ServerView

FUJITSU

ServerView Resource Orchestrator Cloud Edition V3.1.0
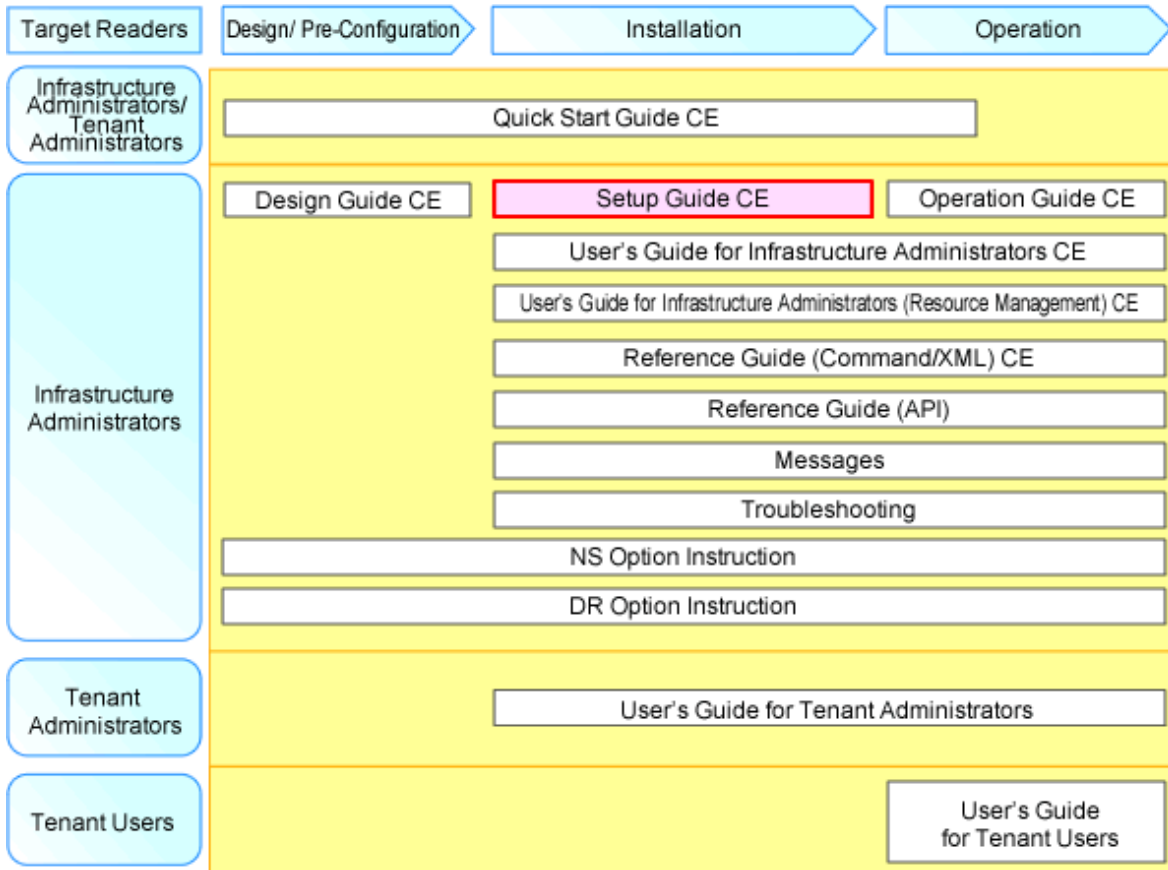
Setup Guide

Windows/Linux

Preface

Resource Orchestrator Documentation Road Map

The documentation road map for Resource Orchestrator is as shown below.

Resource Orchestrator Documentation Road Map

🅿 Point

Refer to the user role manuals displayed in the table below for roles that are not in the diagram.

Roles that are not in the diagram	Roles that are in the diagram
Infrastructure operator Infrastructure monitor	Infrastructure administrator
Tenant operator Tenant monitor	Tenant administrator
(Dual-Role) Administrator (Dual-Role) Operator (Dual-Role) Monitor	Infrastructure administrator and Tenant administrator

For information about the documents for Resource Orchestrator, refer to "Chapter 1 Documentation Road Map" in the "Quick Start Guide CE".

Purpose

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

Target Readers

This manual is written for system administrators who will use Resource Orchestrator to operate the infrastructure in private cloud or data center environments.
When setting up systems, it is assumed that readers have the basic knowledge required to configure the servers, storage, network devices, and server virtualization software to be installed. Additionally, a basic understanding of directory services such as Active Directory and LDAP is necessary.

Organization

This manual is composed as follows:

Notational Conventions

The notation in this manual conforms to the following conventions.

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

[Windows Manager]	Sections related to Windows manager
[Linux Manager]	Sections related to Linux manager
[Windows]	Sections related to Windows (When not using Hyper-V)
[Linux]	Sections related to Linux
[Solaris]	Sections related to Solaris or Solaris Containers

[VMware]	Sections related to VMware
[Hyper-V]	Sections related to Hyper-V
[Xen]	Sections related to RHEL5-Xen
[KVM]	Sections related to RHEL-KVM
[Solaris Containers]	Sections related to Solaris containers
[Oracle VM]	Sections related to Oracle VM
[Physical Servers]	Sections related to physical servers
[VM host]	Sections related to Windows Server 2008 with VMware or Hyper-V enabled

- Unless specified otherwise, the blade servers mentioned in this manual refer to PRIMERGY BX servers.

- Oracle Solaris may also be indicated as Solaris, Solaris Operating System, or Solaris OS.

- References and character strings or values requiring emphasis are indicated using double quotes (").

- Window names, dialog names, menu names, and tab names are shown enclosed by brackets ([ ]).

- Button names are shown enclosed by angle brackets (< >) or square brackets ([ ]).

- The order of selecting menus is indicated using [ ]-[ ].

- Text to be entered by the user is indicated using bold text.

- Variables are indicated using italic text and underscores.

- The ellipses ("...") in menu names, indicating settings and operation window startup, are not shown.

- The ">" used in Windows is included in usage examples. When using Linux, read ">" as meaning "#".

- The URLs in this manual were correct when the manual was written.

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.

When using Windows 64-bit (x64)

C:\Program Files (x86)\Resource Orchestrator

When using Windows 32-bit (x86)

C:\Program Files\Resource Orchestrator

Abbreviations

The following abbreviations are used in this manual:

Abbreviation	Products
Windows	Microsoft(R) Windows Server(R) 2008 Standard Microsoft(R) Windows Server(R) 2008 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Standard Microsoft(R) Windows Server(R) 2008 R2 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Datacenter

Abbreviation	Products
	Microsoft(R) Windows Server(R) 2003 R2, Standard Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition Windows(R) 7 Professional Windows(R) 7 Ultimate Windows Vista(R) Business Windows Vista(R) Enterprise Windows Vista(R) Ultimate Microsoft(R) Windows(R) XP Professional operating system
Windows Server 2008	Microsoft(R) Windows Server(R) 2008 Standard Microsoft(R) Windows Server(R) 2008 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Standard Microsoft(R) Windows Server(R) 2008 R2 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Datacenter
Windows 2008 x86 Edition	Microsoft(R) Windows Server(R) 2008 Standard (x86) Microsoft(R) Windows Server(R) 2008 Enterprise (x86)
Windows 2008 x64 Edition	Microsoft(R) Windows Server(R) 2008 Standard (x64) Microsoft(R) Windows Server(R) 2008 Enterprise (x64)
Windows Server 2003	Microsoft(R) Windows Server(R) 2003 R2, Standard Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition
Windows 2003 x64 Edition	Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition
Windows 7	Windows(R) 7 Professional Windows(R) 7 Ultimate
Windows Vista	Windows Vista(R) Business Windows Vista(R) Enterprise Windows Vista(R) Ultimate
Windows XP	Microsoft(R) Windows(R) XP Professional operating system
Linux	Red Hat(R) Enterprise Linux(R) 5 (for x86) Red Hat(R) Enterprise Linux(R) 5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.1 (for x86) Red Hat(R) Enterprise Linux(R) 5.1 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.2 (for x86) Red Hat(R) Enterprise Linux(R) 5.2 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.3 (for x86) Red Hat(R) Enterprise Linux(R) 5.3 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.4 (for x86) Red Hat(R) Enterprise Linux(R) 5.4 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.5 (for x86) Red Hat(R) Enterprise Linux(R) 5.5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.6 (for x86) Red Hat(R) Enterprise Linux(R) 5.6 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.7 (for x86) Red Hat(R) Enterprise Linux(R) 5.7 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.8 (for x86) Red Hat(R) Enterprise Linux(R) 5.8 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64)

Abbreviation	Products
	SUSE(R) Linux Enterprise Server 11 for x86 SUSE(R) Linux Enterprise Server 11 for EM64T
Red Hat Enterprise Linux	Red Hat(R) Enterprise Linux(R) 5 (for x86) Red Hat(R) Enterprise Linux(R) 5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.1 (for x86) Red Hat(R) Enterprise Linux(R) 5.1 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.2 (for x86) Red Hat(R) Enterprise Linux(R) 5.2 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.3 (for x86) Red Hat(R) Enterprise Linux(R) 5.3 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.4 (for x86) Red Hat(R) Enterprise Linux(R) 5.4 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.5 (for x86) Red Hat(R) Enterprise Linux(R) 5.5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.6 (for x86) Red Hat(R) Enterprise Linux(R) 5.6 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.7 (for x86) Red Hat(R) Enterprise Linux(R) 5.7 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.8 (for x86) Red Hat(R) Enterprise Linux(R) 5.8 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64)
Red Hat Enterprise Linux 5	Red Hat(R) Enterprise Linux(R) 5 (for x86) Red Hat(R) Enterprise Linux(R) 5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.1 (for x86) Red Hat(R) Enterprise Linux(R) 5.1 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.2 (for x86) Red Hat(R) Enterprise Linux(R) 5.2 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.3 (for x86) Red Hat(R) Enterprise Linux(R) 5.3 (for Intel64) 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 Enterprise Linux 6	Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64)
RHEL5-Xen	Red Hat(R) Enterprise Linux(R) 5.4 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.4 (for Intel64) Linux Virtual Machine Function
RHEL-KVM	Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64) Virtual Machine Function
DOS	Microsoft(R) MS-DOS(R) operating system, DR DOS(R)
SUSE Linux Enterprise Server	SUSE(R) Linux Enterprise Server 11 for x86 SUSE(R) Linux Enterprise Server 11 for EM64T
Oracle VM	Oracle VM Server for x86
ESC	ETERNUS SF Storage Cruiser
GLS	PRIMECLUSTER GLS

Abbreviation	Products
Navisphere	EMC Navisphere Manager
Solutions Enabler	EMC Solutions Enabler
MSFC	Microsoft Failover Cluster
Solaris	Solaris(TM) 10 Operating System
SCVMM	System Center Virtual Machine Manager 2008 R2 System Center 2012 Virtual Machine Manager
VMware	VMware vSphere(R) 4 VMware vSphere(R) 4.1 VMware vSphere(R) 5
VMware 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 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 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 vDS	VMware(R) vNetwork Distributed Switch
VMware Storage VMotion	VMware(R) Storage VMotion
VIOM	ServerView Virtual-IO Manager
BladeLogic	BMC BladeLogic Server Automation
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	ServerView Resource Orchestrator
ROR VE	ServerView Resource Orchestrator Virtual Edition
ROR CE	ServerView Resource Orchestrator Cloud Edition
Resource Coordinator	Systemwalker Resource Coordinator Systemwalker Resource Coordinator Virtual server Edition

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Contents

Chapter 1 Flow of Setup for Resource Orchestrator

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

Setup operations when using Resource Orchestrator are performed by the users below.

System Administrators

System administrators manage the entire system. They install Resource Orchestrator and configure the necessary settings.

OS administrator privileges are required for these operations. Usually, the roles of infrastructure administrator and system administrator are performed by the person.

Infrastructure Administrators

Infrastructure administrators manage ICT resources such as servers, storage, networks, and images.

They collectively manage ICT resources in resource pools, and perform addition, configuration modification, and maintenance of ICT resources when necessary.

In Resource Orchestrator, the following roles can be assigned to infrastructure administrators:

- infra_admin (infrastructure administrator)

Tenant Administrators

Provide tenant users with L-Platform templates based on their needs.

In Resource Orchestrator, the following roles can be assigned to tenant administrators:

- tenant_admin (tenant administrator)

Tenant Users

Tenant users create L-Platforms and use them.

In Resource Orchestrator, the following roles can be assigned to tenant users:

- tenant_user (tenant user)

- lplatform_user (L-Platform user)

Dual-role Administrators

The following role combines the roles of infrastructure administrators and tenant administrators.

In Resource Orchestrator, the following roles can be assigned to dual-role administrators:

- administrator (administrator)

For details on roles, refer to "5.1 Restricting Access Using Roles" in the "Design Guide CE".

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

Flow of Setup and Service Provision Using Applications

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

Figure 1.1 Flow of Setup and Service Provision Using Applications
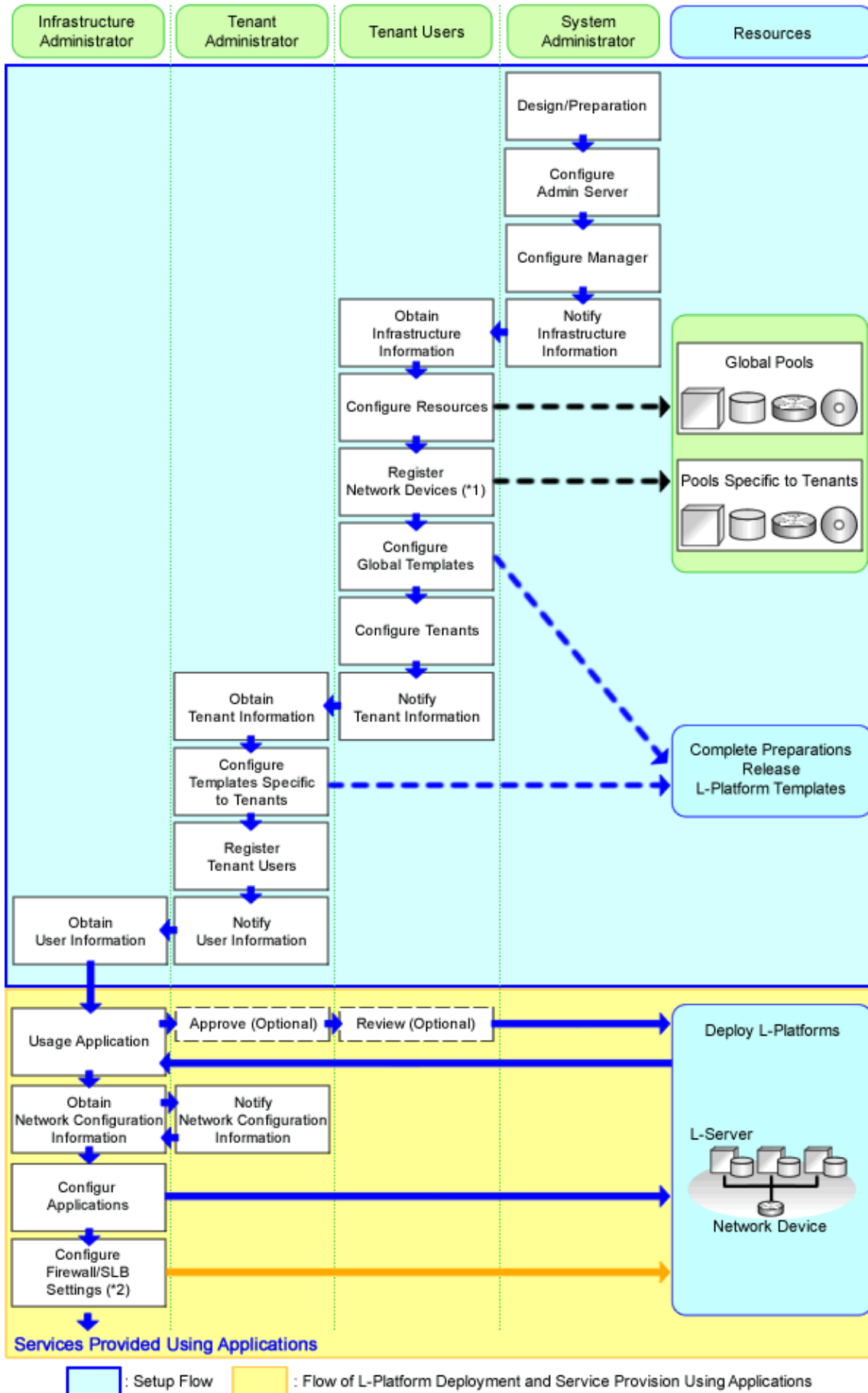
*1: Necessary when using firewalls, server load balancers (SLB), or L2 switches.
*2: Necessary when using firewalls or server load balancers (SLB).

The flow of setup is as follows:

Table 1.1 Flow of Setup

Operator	Operation Overview	Details	Reference
System Administrators	Design	- Designing the system configuration - Defining user accounts - Defining tenants and resource pools - Defining high availability and Disaster Recovery - Defining the server environment - Defining the network - Defining the storage environment - Deciding server virtualization software	Refer to "1.1 Flow of Setup for System Administrators".
	Preparations	- Configuring the server environment - Configuring the network environment - Configuring the storage environment - Settings for server virtualization software - Installing and defining Single Sign-On - Deciding and configuring the power monitoring environment	
	Software installation on admin servers	- Installing an OS - Installing required software	
	Manager installation and configuration	- Installing the manager - Configuring SSL communications on the ROR console (*1) - Logging in to the ROR Console - License setup - Importing a certificate to a browser (*2) - Registering infrastructure administrators - Creating definition files	
	Notification of infrastructure information	- Notifying the infrastructure information	
Infrastructure Administrators	Obtaining infrastructure information	- Obtaining the infrastructure information	Refer to "1.2 Flow of Setup for Infrastructure Administrators".
	Resource configuration	- Registering resources with Resource Orchestrator - Settings for the HBA address rename setup service (*4) - Installing software and registering agents on VM hosts (*5) - Registering resource pools to the global pool - Creating L-Server templates - Collecting and registering cloning images	
	Registration of network devices	- Creating the network configuration information (XML definition) - Creating scripts for network device auto-configuration settings - Registering network device resources - Registering network pools for network devices (*3)	
	Global template configuration	- Creating and releasing global templates and registering accounting information (*6)	
	Tenant configuration	- Creating tenants and tenant administrators	
	Notification of tenant information	- User IDs and passwords for the tenant administrator - Information of tenants which can be used by the tenant administrator and resources allocated to tenants	

Operator	Operation Overview	Details	Reference
		- Global template information - Notifying the information to configure on a firewall or a server load balancer (*3)	
Tenant Administrators	Obtaining tenant information	- Obtaining available tenant and resource information - Obtaining the global template information - Obtaining the information to configure on a firewall or a server load balancer (*3)	Refer to "1.3 Flow of Setup for Tenant Administrators".
	Configuration of a template specific to the tenant	- Copying and editing a template specific to the tenant - Releasing and retracting a template specific to the tenant	
	User registration	- Registering tenant users	
	Notification of the user information	- Notifying the user information	
	Notification of the segment settings	- Notifying the segment settings - Notifying the information to configure on a firewall or a server load balancer (*3)	

*1: Necessary when replacing the test certificate set up by default with another certificate.
*2: Necessary when using the site certificate for tests.
*3: Necessary when using a firewall or a server load balancer.
*4: Necessary when using HBA address rename.
*5: Necessary when using server virtualization software
*6: It is necessary to register accounting information when using accounting.

The flow of service provision using applications is as shown below.

Table 1.2 Flow of Service Provision Using Applications

Operator	Operation Overview	Details	Reference
Tenant Users	Obtaining the user information	- Obtaining the user information	Refer to "1.4 Flow of Operations for Tenant Users".
	L-Platform deployment	- Applying for L-Platform usage - Checking L-Platform usage application status	
	Configuration of applications	- Configuring applications	
	Configuration of firewalls or server load balancers	- Configuring a firewall - Configuring a server load balancer	
	Service provision using applications	- Providing services using applications	

* Note: Necessary when using firewalls or server load balancers.

1.1 Flow of Setup for System Administrators

This section explains flow of setup for system administrators.

Table 1.3 Overview of Setup for System Administrators

Operation Overview	Tabs Used on the ROR Console	Reference
Design	-	Refer to "Design for Resource Orchestrator Setup".
Preparations	-	Refer to "Preparations for Resource Orchestrator Setup".

Operation Overview		Tabs Used on the ROR Console	Reference
Software installation on admin servers		-	Refer to "1.1.2 Installing Software on Admin Servers".
Manager installation and configuration	Manager installation	-	Refer to "1.1.3 Manager Installation".
	Login to the ROR Console	-	Refer to "1.1.4 Login to the ROR Console".
	License Setup	[Resource]	Refer to "1.1.5 License Setup".
	Configuration after manager installation	-	Refer to "1.1.6 Configuration after Manager Installation".
Notification of infrastructure configuration information		-	Refer to "1.1.7 Notifying the Infrastructure Administrator of Infrastructure Configuration Information".

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

1.1.1 Preparations for Setup and Design of Resource Orchestrator

This section explains the design and preparations necessary for installing this product.

Design for Resource Orchestrator Setup

The following operations have to be performed to install this product.

- Defining the System Configuration

    Refer to "Chapter 4 System Configuration Design" in the "Design Guide CE".

- Defining User Accounts

    Refer to "Chapter 5 Defining User Accounts" in the "Design Guide CE".

- Defining Tenants and Resource Pools

    Refer to "Chapter 6 Defining Tenants and Resource Pools" in the "Design Guide CE".

- Defining High Availability and Disaster Recovery

    Refer to "Chapter 7 Defining High Availability and Disaster Recovery" in the "Design Guide CE", and the "DR Option Instruction".

- Defining the Server Environment

    Refer to "8.1 Define the Server Environment" in the "Design Guide CE".

- Defining the Network Environment

    Refer to "Chapter 9 Defining and Configuring the Network Environment" in the "Design Guide CE".

- Defining the Storage Environment

    Refer to "10.1 Defining the Storage Environment" in the "Design Guide CE".

- Deciding Server Virtualization Software

    Refer to "11.1 Deciding Server Virtualization Software" in the "Design Guide CE".

- Deciding the Power Monitoring Environment

    Refer to "13.1 Deciding the Power Monitoring Environment" in the "Design Guide CE".

Preparations for Resource Orchestrator Setup

Perform preparations for setup and design of Resource Orchestrator.

- Configuring the Server Environment

    Refer to "8.2 Configure the Server Environment" in the "Design Guide CE".

- Configuring the Network Environment

  Refer to "Chapter 9 Defining and Configuring the Network Environment" in the "Design Guide CE".

- Configuring the Storage Environment

  Refer to "10.2 Configuring the Storage Environment" in the "Design Guide CE".

- Settings for Server Virtualization Software

  Refer to "11.2 Settings for Server Virtualization Software" in the "Design Guide CE".

- Installing and Defining Single Sign-On

  Refer to "Chapter 12 Installing and Defining Single Sign-On" in the "Design Guide CE".

- Configuring the Power Monitoring Environment

  Refer to "11.2 Configuring the Power Monitoring Environment" in the "Design Guide CE".

1.1.2 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

1.1.3 Manager Installation

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

2. Install the Manager

   Install the manager of Resource Orchestrator.

   For details, refer to "2.1 Manager Installation".

3. Configure SSL Communications on the ROR Console

   Use SSL communications when accessing the ROR console from a browser.

   When changing the certificate used for SSL communication from the test certificate set up by default to 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.

1.1.4 Login to the ROR Console

Log in to Resource Orchestrator.

Refer to "Chapter 4 Login to the ROR Console" and "Login and Logout" in the "User's Guide for Infrastructure Administrators CE".

1.1.5 License Setup

Configure licenses.

For details, refer to "Chapter 5 License Setup and Confirmation".

1.1.6 Configuration after Manager Installation

Configure the license for the manager, after installing the manager.

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 6 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".

3. Create Definition Files

Create the Definition Files

For details, refer to "Chapter 8 Creating Definition Files".

1.1.7 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 "Chapter 9 Registering Resources with Resource Orchestrator".

- 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 1.4 Overview of Setup for Infrastructure Administrators

Operation Overview	Tabs Used on the ROR Console	Reference
Obtaining infrastructure configuration information	-	Refer to "1.2.1 Obtaining Infrastructure Configuration Information".
Resource configuration	[Resource]	Refer to "1.2.2 Configuring Resources".
Network device registration (*1)	[Resource]	Refer to "1.2.3 Registering Network Devices".

Operation Overview	Tabs Used on the ROR Console	Reference
Global template configuration	[Template] [Usage Charge]	Refer to "1.2.4 Creating and Releasing Global Templates and Registering Accounting Information". (*2)
Tenant configuration	[Tenant]	Refer to "Configuring Tenants".
Notification of tenant information	-	Refer to "1.2.6 Notifying the Tenant Administrator 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.

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.

1.2.2.1 When Creating Physical L-Servers

This section explains how to configure resources when creating physical L-Servers.

The settings for resources when creating a physical L-Server are different when using a blade server, rack-mount server, or tower server.

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

Table 1.5 Resource Settings when Creating Physical L-Servers

Settings	Details	When Using Blade Servers	When Using Rack Mount or Tower Servers
Resource Registration	Register VIOM	Yes	No
	Register storage management software	Yes	Yes
	Register chassis	Yes	No
	Register managed servers (within chassis)	Yes	No
	Register managed servers	No	Yes
	Register LAN switch blades	Yes	No
	Configure VLANs for LAN switch blades manually	Yes (*1)	No
	Configure power monitoring devices	Yes (*2)	Yes (*2)
	Settings for the HBA address rename Setup Service	No	Yes
Resource Registration for Resource Pools	Register physical server resources to resource pools	Yes	Yes
	Register network resources to network pools	Yes	Yes
	Register virtual storage resources to storage pools	Yes	Yes
	Register disk resources to storage pools	Yes	Yes
	Register MAC addresses and WWNs to address pools	Yes	Yes

Settings	Details	When Using Blade Servers	When Using Rack Mount or Tower Servers
L-Server Template Creation	Create an L-Server template	Yes	Yes
Collection and Registration of Cloning Images	Create an L-Server for the Infrastructure Administrator	Yes	Yes
	Install OSs on physical L-Servers	Yes	Yes
	Install required software on physical L-Servers	Yes	Yes
	Install agents on physical L-Servers	Yes	Yes
	Install agents (Dashboard Function) on physical L-Servers	Yes	Yes
	Create and Register Cloning Images	Yes	Yes

Yes: Required

No: Not required

*1: Necessary when not using automatic VLAN configuration for LAN switch blades.

*2: Necessary when monitoring power consumption.

1.2.2.1.1 When Using Blade Servers

The procedure when using blade servers is as follows.

1. Resource Registration

   Register the required resources in Resource Orchestrator.

   For details, refer to "Chapter 9 Registering Resources with Resource Orchestrator".

2. Resource Registration for Resource Pools

   Register resources in a resource pool.

   For details, refer to "Chapter 12 Registering Resources to the Global Pool".

3. Create an L-Server Template

   Create an L-Server template.

   For details, refer to "Chapter 13 Creating L-Server Templates".

4. Create an L-Server for the Infrastructure Administrator

   Create an L-Server for the infrastructure administrator.

   For details, refer to "Chapter 14 Creating an L-Server for an Infrastructure Administrator".

5. Install software on physical L-Servers for infrastructure administrators, and register agents

   Install software on the physical L-Server for infrastructure administrators created in step 4. and register agents in Resource Orchestrator.

   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

      Refer to "2.2 Agent Installation".

   d. Install agents (Dashboard Function) on physical L-Servers for infrastructure administrators

      Refer to "2.3 Agent (Dashboard Function) Installation".

   e. Register the Agent

6. Create and Register Cloning Images

   Create and register cloning images.

   For details, refer to "Chapter 15 Collecting and Registering Cloning Images".

1.2.2.1.2 When Using Rack Mount or Tower Servers

The procedure when using rack-mount or tower servers is as follows.

1. Resource Registration

   Register the required resources in Resource Orchestrator.

   For details, refer to "Chapter 9 Registering Resources with Resource Orchestrator".

   Configure the HBA address rename service.

2. Resource Registration for Resource Pools

   Register resources in a resource pool.

   For details, refer to "Chapter 12 Registering Resources to the Global Pool".

3. Create an L-Server Template

   Create an L-Server template.

   For details, refer to "Chapter 13 Creating L-Server Templates".

4. Create an L-Server for the Infrastructure Administrator

   Create an L-Server for the infrastructure administrator.

   For details, refer to "Chapter 14 Creating an L-Server for an Infrastructure Administrator".

5. Install software on physical L-Servers for infrastructure administrators, and register agents

   Install software on the physical L-Server for infrastructure administrators created in step 4. and register agents in Resource Orchestrator.

   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

      Refer to "2.2 Agent Installation".

   d. Install agents (Dashboard Function) on physical L-Servers for infrastructure administrators

      Refer to "2.3 Agent (Dashboard Function) Installation".

   e. Register the Agent

6. Create and Register Cloning Images

   Create and register cloning images.

   For details, refer to "Chapter 15 Collecting and Registering Cloning Images".

1.2.2.2 When Creating a Virtual L-Server

This section explains how to configure resources when creating virtual L-Servers.

The settings for resources when creating a virtual L-Server differ depending on the server virtualization software that is used.

1.2.2.2.1 Resource Registration

Register the required resources in Resource Orchestrator.

Resource registration when creating a virtual L-Server is as follows.

For details, refer to "Chapter 9 Registering Resources with Resource Orchestrator".

Table 1.6 Resource Registration when Creating Virtual L-Servers

Settings	Details	When Using Blade Servers	When Using Rack Mount or Tower Servers
Resource Registration	Register VIOM	Yes (*1)	No
	Register VM management software	Yes (*2)	Yes (*2)
	Register Server Management Software	No	Yes (*3)
	Register storage management software	Yes (*4)	Yes (*4)
	Register chassis	Yes	No
	Register managed servers (within chassis)	Yes	No
	Register managed servers	No	Yes
	Register LAN switch blades	Yes	No
	Configure VLANs for LAN switch blades manually	Yes (*5)	No
	Configure power monitoring devices	Yes (*1)	Yes (*1)
	HBA address rename Settings	No	Yes (*1)
	Settings for the HBA address rename Setup Service	No	Yes (*1)
	Register Disk Resources	Yes (*3, *6)	Yes (*3, *6)

Yes: Required

No: Not required

*1: Necessary when using.

*2: Not necessary when using RHEL5-Xen, KVM or Solaris Containers.

*3: Necessary when using Solaris Containers.

*4: It is necessary to register storage management software when using RHEL5-Xen.

*5: Necessary when not using automatic VLAN configuration for LAN switch blades.

*6: Necessary when using RHEL-KVM.

1.2.2.2.2 Installing Software and Registering Agents on VM Hosts

Install software on VM hosts and register agents in Resource Orchestrator.

1. Install OSs on VM Hosts

2. Install Required Software on VM Hosts

3. Install Agents and Agents (Dashboard Function) on VM Hosts

    Refer to "2.2 Agent Installation".

4. Register the Agent

1.2.2.2.3 Registering Resources to the Global Pool

Register resources to the global pool.

The overview of registration of resources to the global pool when creating a virtual L-Server is as follows.

For details, refer to "Chapter 12 Registering Resources to the Global Pool".

Table 1.7 Resource Registration in Global Pools when Creating Virtual L-Servers

Settings	VMware	Hyper-V	Oracle VM	RHEL5-Xen	KVM	Solaris Containers
Register VM host resources to VM pools	Yes	Yes	Yes	Yes	Yes	Yes

Settings	VMware	Hyper-V	Oracle VM	RHEL5-Xen	KVM	Solaris Containers
Pre-configure network resources	No	No	Yes	Yes	Yes	Yes
Register network resources to network pools	Yes	Yes	Yes	Yes	Yes	Yes
Register virtual storage resources to storage pools	Yes	Yes	Yes	Yes	No	No
Register disk resources to storage pools	No	No	No	No	Yes	Yes
Register MAC addresses to address pools	No	No	No	Yes	Yes	No

Yes: Required

No: Not required

1.2.2.2.4 Creating L-Server Templates

Create an L-Server template.

For details, refer to "Chapter 13 Creating L-Server Templates".

1.2.2.2.5 Creating and Registering Cloning Images

Create a cloning image and register it in Resource Orchestrator.

1. Create an L-Server for the Infrastructure Administrator

   Create an L-Server for the infrastructure administrator.

   For details, refer to "Chapter 14 Creating an L-Server for an Infrastructure Administrator".

2. Install Software on Virtual L-Servers for Infrastructure Administrators

   Install software on the virtual L-Server for the infrastructure administrator created in step 1.

3. Create and Register Cloning Images

   Create and register cloning images.

   For details, refer to "Chapter 15 Collecting and Registering Cloning Images".

P Point
. . . .

When using Solaris Containers, create cloning images using BladeLogic.

For details, refer to the BladeLogic manual.
. . . .

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".

1.2.4 Creating and Releasing Global Templates and Registering Accounting Information

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

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

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

   For details, refer to "8.3.2 Creating New L-Platform Template" and "8.3.3 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 "15.3.1 Registering Accounting Information" in the "Operation Guide CE".

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

   For details, refer to "8.3.6 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.

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".

1.2.6 Notifying the Tenant Administrator 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 which can be used by the tenant administrator and resources allocated to tenants

- Global template information

When Using Firewalls or Server Load Balancers

When using a firewall or a server load balancer, the infrastructure administrator notifies the tenant administrator 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 to create.

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

  Inform the tenant administrator of this fact.

  - Configure Firewalls

    Inform the tenant user of the values of virtual IP addresses used for the firewall address conversion functions, and the parameters and values for other firewall settings.

  - Configure Server Load Balancers

    Inform the tenant user of the values of virtual IP addresses used for server load balancing functions of the server load balancer and the parameters or values for other server load balancer settings.

- Use the ruleset for server load balancer operations

  Inform the tenant administrator of the ruleset used during operations. Inform the tenant administrator of the parameters and the values set for the ruleset and the operation logs.

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 "7.3.3 Copying L-Platform Template" or "7.3.4 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 "7.3.6 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 1.

     - 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

       Inform the tenant user of the values of virtual IP addresses used for the firewall address conversion functions, and the parameters and values for other firewall settings.

- Configure Server Load Balancers

  Inform the tenant user of the values of virtual IP addresses used for server load balancing functions of the server load balancer and the parameters or values for other server load balancer settings.

- Use the ruleset for server load balancer operations

  Inform the tenant user of the ruleset used during operations. Inform the tenant user of the parameters and the values set for the ruleset and the operation logs.

1.4 Flow of Operations for Tenant Users

The details of operations by the tenant user until starting to provide services using 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 applications from the tenant administrator.

4. Configure Applications

   Configure 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 "5.3.9 Server Load Balancer (SLB) Settings" in the "User's Guide for Tenant Users CE".

7. Provide Services Using Applications

   Provide services using applications.

Chapter 2 Installation

This chapter explains the installation of ServerView Resource Orchestrator.

2.1 Manager Installation

This section explains installation of managers.

2.1.1 Preparations

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

- Host Name Checks

    Refer to "Host Name Checks".

- SMTP Server Checks

    Refer to "SMTP Server Checks".

- System Time Checks

    Refer to "System Time Checks".

- Exclusive Software Checks

    Refer to "Exclusive Software Checks".

- Required Software Preparation and Checks

    Refer to "Required Software Preparation and Checks".

- Required Patch Checks

    Refer to "Required Patch Checks".

- Required Package Checks [Linux Manager]

    Refer to "Required Package Checks [Linux Manager]".

- Collection and Checking of Required Information

    Refer to "2.1.1.2 Collecting and Checking Required Information".

- Configuration Parameter Checks

    Refer to "2.1.1.3 Configuration Parameter Checks".

- Checking Used Port Numbers

    Refer to "2.1.1.4 Checking Used Port Numbers".

2.1.1.1 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

[Windows Manager]

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

[Linux Manager]

```
/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". If other value (IPv6 format) is set, change the value to "127.0.0.1" (IPv4 format). (for Linux Manager)

 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.

. . . .

SMTP Server Checks

Resource Orchestrator uses e-mail. Configure the SMTP server settings to create an environment where e-mail is available.

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 Conditions] tab on the ROR console.

Exclusive Software Checks

Before installing Resource Orchestrator, check that the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" and the manager of Resource Orchestrator have not been installed on the system.
Use the following procedure to check that exclusive software has not been installed.

[Windows Manager]

1. Open [Add or Remove Programs] on the Windows Control Panel.

   The [Add or Remove Programs] window will be displayed.

2. Check that none of the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" or the following software are displayed.

   - "ServerView Resource Orchestrator Manager"

3. If the names of exclusive software have been displayed, uninstall them according to the procedure described in the relevant manual before proceeding.

If managers of an earlier version of Resource Orchestrator have been installed, they can be upgraded. Refer to "F.2 Manager".
When reinstalling a manager on a system on which the same version of Resource Orchestrator has been installed, perform uninstallation referring to "20.1 Manager Uninstallation", and then perform the reinstallation.

Information

For Windows Server 2008, select [Programs and Features] from the Windows Control Panel.

[Linux Manager]

1. Check that none of the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" or the following software are displayed.

Execute the following command and check if Resource Orchestrator Manager has been installed.

> # **rpm -q FJSVrcvmr** <RETURN>

2. If the names of exclusive software have been displayed, uninstall them according to the procedure described in the relevant manual before proceeding.

If managers of an earlier version of Resource Orchestrator have been installed, they can be upgraded. Refer to "F.2 Manager".
When reinstalling a manager on a system on which the same version of Resource Orchestrator has been installed, perform uninstallation referring to "20.1 Manager Uninstallation" and then perform the reinstallation.

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.

- With the standard settings of Red Hat Enterprise Linux 5 or later, when DVD-ROMs are mounted automatically, execution of programs on the DVD-ROM cannot be performed. Release the automatic mount settings and perform mounting manually, or start installation after copying the contents of the DVD-ROM to the hard disk.
  When copying the contents of the DVD-ROM, replace "*DVD-ROM_mount_point*" with the used directory in the procedures in this manual.

Required Software Preparation and Checks

Before installing Resource Orchestrator, check that the required software given in "2.4.2.2 Required Software" in the "Design Guide CE" has been installed. If it has not been installed, install it before continuing.

Note

[Windows Manager]

- 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

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.

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 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

- **Changing Settings of ServerView Operations Manager**

  When installing ServerView Operations Manager 5.50 or an earlier version 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, please edit the following file of ServerView Operation 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.

- **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 necessary to configure the router settings. For details, refer to "9.2.4.2 Admin LAN Settings" in the "Design Guide 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 manual for Windows.

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 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 <Authorize>.

       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 <OK>.

       The [Confirm Authorization] window will be displayed.

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

    f. Click <OK>.

       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.

- **Stopping the BMC BladeLogic Server Automation service [Solaris container]**

Stop the BladeLogic Application Server service in the **Services** window in **Administrative Tools**.

[Linux Manager]

- **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

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.

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 limited to 3 characters.

• •

After extracting the following modules, deploy them to a work folder (/tmp) on the system for installation.

  - PROTMAN.DOS

  - PROTMAN.EXE

  - NETBIND.COM

- **SNMP Trap Daemon**

  In order for Resource Orchestrator to operate correctly 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 necessary to configure the router settings. For details, refer to "9.2.4.2 Admin LAN Settings" in the "Design Guide CE".

  Install the DHCP server following the procedure below:

  1. Install the dhcp package.

  2. Execute the following command to modify the setting for automatic startup of the DHCP server service (dhcpd):

     ```
     # 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.

- **Stopping the BMC BladeLogic Server Automation service [Solaris container]**

  Stop the BladeLogic Application Server service by executing the following command:

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

Required Patch Checks

Before installing Resource Orchestrator, check that the required patches for the manager listed in "2.4.2.1 Required Basic Software" in the "Design Guide CE" have been applied.

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

Required Package Checks [Linux Manager]

Before installing Resource Orchestrator, check that the required packages for the manager [Linux Manager] listed in "2.4.2.1 Required Basic Software" in the "Design Guide CE" have been applied.

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

User Account Checks

The OS user account name used for the database connection for Resource Orchestrator is fixed as "rcxdb". When applications using the OS user account "rcxdb" exist, delete them after confirming there is no effect on them.

Single Sign-On Preparation and Checks

Before installing Resource Orchestrator, install ServerView Operations Manager.

Configure the directory service at that time.

It is also necessary to prepare certificates and perform user registration with the directory service.

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

For setting up Resource Orchestrator, it is necessary to establish communication beforehand, since communication between the manager and the directory service requires LDAP (Lightweight Directory Access Protocol) of the TCP/IP protocol protected by SSL.

Use tools or commands to check communications.

- When the directory server is Microsoft Active Directory

  For details, refer to the Microsoft web site below.

  How to enable LDAP over SSL with a third-party certification authority

  ```
  URL: http://support.microsoft.com/kb/321051/en/
  ```

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].
· ·

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.

🅿 Point
· ·
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.shmmni = 4154
kernel.shmall = 4294967296
kernel.shmmax = 68719476736


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

2.1.1.2 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

  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 "2.4.2.4 Static Disk Space" and "2.4.2.5 Dynamic Disk Space" in the "Design Guide CE".

- 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 "2.4.2.5 Dynamic Disk Space" in the "Design Guide CE".

  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

  Check the settings of the directory service used for Single Sign-On.

  Refer to the following manual when the OpenDS that is included with ServerView Operations Manager is used.

  "ServerView user management via an LDAP directory service" in the "ServerView Suite User Management in ServerView" manual of ServerView Operations Manager

Parameters Used for Installation

The following table contains the parameters used for installation.

[Windows Manager]

No.	Window	Entry	Description
1	Installation Folder Selection	Installation Folder	This is the folder where Resource Orchestrator is installed. (*) - When using a 64-bit (x64) OS Default value: **C:\Program Files (x86)\Resource Orchestrator** - When using a 32-bit (x86) OS Default value: **C:\Program Files\Resource Orchestrator** The installation folder can contain 45 characters or less including the drive letter and "\". A path starting with "\\" or a relative path cannot be specified. Alphanumeric characters, and blank spaces (" ") can be used.
2	Administrative User Creation	User Account	This is the user account name to be used for logging into Resource Orchestrator as an administrative user.

No.	Window	Entry	Description
			Specifying the administrator account, "administrator", of ServerView Operations Manager enables Single Sign-On coordination with ServerView Operations Manager when the OpenDS that is included with ServerView Operations Manager is used. The name must start with an alphabetic character and can be up to 16 alphanumeric characters long, including underscores ("_"), hyphens ("-"), and periods, ("."). Input is case-sensitive.
3	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.
4	Port Number Settings	Interstage Management Console	This is the port number of the Interstage management console. Default value: **12000**
		Web Server (Interstage HTTP Server)	This is the port number of the Web server. Default value: **80**
		CORBA Service	The port number of the CORBA service used by Resource Orchestrator. Default value: **8002**
5	Admin Server Settings	FQDN for the Admin Server	The FQDN of the authentication server used by Resource Orchestrator. The FQDN of the authentication server must be the FQDN of the admin server. The FQDN can be up to 255 characters long and must be supported for name resolution.

* Note: Specify an NTFS disk.

[Linux Manager]

No.	Window	Entry	Description
1	Administrative User Creation	User Account	This is the user account name to be used for logging into Resource Orchestrator as an administrative user. Specifying the administrator account, "administrator", of ServerView Operations Manager enables Single Sign-On coordination with ServerView Operations Manager when the OpenDS that is included with ServerView Operations Manager is used. The name must start with an alphabetic character and can be up to 16 alphanumeric characters long, including underscores ("_"), hyphens ("-"), and periods, ("."). Input is case-sensitive.
2	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

No.	Window	Entry	Description
			255.255.0.0 (16-bit mask). However, 255.255.255.254 cannot be specified.
3	Port Number Settings	Interstage Management Console	This is the port number of the Interstage management console. Default value: **12000**
		Web Server (Interstage HTTP Server)	This is the port number of the Web server. Default value: **80**
		CORBA Service	The port number of the CORBA service used by Resource Orchestrator. Default value: **8002**
4	Admin Server Settings	FQDN for the Admin Server	The FQDN of the authentication server used by Resource Orchestrator. The FQDN of the authentication server must be the FQDN of the admin server. The FQDN can be up to 106 characters long and must be supported for name resolution.

2.1.1.3 Configuration Parameter Checks

Check configuration parameters following the procedure below:

[Windows Manager]

1. Log in as the administrator.

2. 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.

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

   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.

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

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

   For details on how to change ports to use, refer to "Appendix A Port List" in the "Design Guide CE".

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

   C:\temp\ror_precheckresult-*YYYY-MM-DD-hhmmss*.txt

   Refer to the check results, and check that no error is contained. If any error is contained, remove the causes of the error.
   The file of the result confirmation is not automatically deleted in the processing of the installation etc. Please delete it according to the timing that became unnecessary.

[Linux Manager]

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 agent installation command (the RcSetup.sh command).

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

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

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.

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

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

For details on how to change ports to use, refer to "Appendix A Port List" in the "Design Guide CE".

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

2.1.1.4 Checking Used Port Numbers

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 following port numbers used by Resource Orchestrator in the services file using numbers not used by other software, and then start the installer.

📝 Example
• •

```
# service name port number/protocol
name
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
```

• •

For details on how to change the port number of the manager, refer to the following:

- "6.2 Changing Port Numbers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE"

- "8.3 Changing Admin Server Port Numbers" in the "Operation Guide CE"

ephemeral Port [Windows Manager]

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

Other Ports

Check that the following ports are not used, and they are not included in the range for ephemeral ports.

If the following ports are in use or are included in the range for ephemeral ports, contact Fujitsu technical staff.

- 7676
- 8015
- 8686
- 12001
- 23600
- 23601
- 23602
- 23700
- 28080

2.1.2 Installation [Windows Manager]

The procedure for manager installation is given below.

Before installation, check if "2.1.1 Preparations" have been performed.

Precautions for Installation

When a terminal server has been installed, execute the following command using the command prompt to change the terminal service to installation mode.

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

Installation

The procedure for manager installation is given below.

1. Log on as the administrator.

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

2. 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.

3. Click "Manager(Cloud Edition) installation".

4. Following the installation wizard, enter the parameters prepared and confirmed in "Parameters Used for Installation" properly.

5. Upon request of the wizard for DVD-ROM switching, set the second DVD-ROM and the third DVD-ROM to continue the installation.

🅿 Point
....

[Solaris container]
When BMC BladeLogic Server Automation is installed on the admin server and BMC BladeLogic Server Automation is installed after this product was installed, perform the following procedure:

1. Stop the Interstage data store service in the **Services** window in **Administrative Tools**.

2. Change the startup type from **Automatic** to **Disabled**.
....

It is necessary to set up the manager after installation. For details, refer to "2.1.4 Setup".

🅖 Note
....

- Advisory Notes for Changing the Installation Folder

    - Enter the location using 45 characters or less.

    - When installing this product on Windows 2003 x64 Edition or Windows 2008 x64 Edition, the "Program Files" folder cannot be specified for the installation folder.

- 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 "20.1.3 Uninstallation [Windows Manager]". If the problem persists, please collect troubleshooting information and contact Fujitsu technical staff.

- 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 "20.1.3 Uninstallation [Windows Manager]". If the problem persists even if reinstallation is performed, please collect troubleshooting information and contact Fujitsu technical staff.

- 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.

- If used ports exist when performing installation, the message "The specified port number *Port Number* selected for ServerView Resource Orchestrator is already used." will be displayed, and installation will fail. If this happens, please contact Fujitsu technical staff.

- The following files are created under the system drive after installation.

    - F4ANsetup.log

    - swinst.err

    - swrba_inst.log

These files are the material for investigation of installation failure.

Post-installation Cautions

- When a terminal server has been installed, execute the following command using the command prompt to change the terminal service to the execution mode.

  When continuously setting up after installation, this step is not necessary.

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

- The following users are added.

  - swrbadbuser

    swrbadbuser is used as an OS account to start the database service for process management. Do not delete this account when Resource Orchestrator has been installed.

  - swrbajobuser

    swrbajobuser is used as an OS account to start service for job execute control.
    Do not delete this account when Resource Orchestrator has been installed.

2.1.3 Installation [Linux Manager]

The procedure for manager installation is given below.

Before installation, check if "2.1.1 Preparations" have been performed.

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

   Boot the admin server that Resource Orchestrator 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 and 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.

   Set the same value for the first, second, and third DVD-ROMs in the DVD mount point.

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

3. Execute the manager installation command (the RcSetup.sh command).

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

4. Select "2. Manager(Cloud Edition) installation".

5. Perform installation according to the installer's interactive instructions.

   Enter the parameters prepared and confirmed in "Parameters Used for Installation" in "2.1.1.2 Collecting and Checking Required Information".

6. A message for disk switching will be output.

7. 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>
   ```

8. Set the second DVD-ROM and wait for the completion of auto-mounting.

9. Mount the DVD-ROM again.

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

10. Press the [Enter] key to continue the installation.

11. Repeat 8. to 10. with the third DVD-ROM as well to continue the installation.

P Point

[Solaris container]
When BMC BladeLogic Server Automation is installed on the admin server and BMC BladeLogic Server Automation is installed after this product was installed, perform the following procedure:

1. Execute the following command as the OS administrator (root) and stop the Interstage data store service:

   # /opt/FJSVena/Enabler/server/bin/enablerstop <RETURN>

2. Execute the following command as the OS administrator (root) and disable the Interstage data store service:

   # /sbin/chkconfig --del Enabler <RETURN>

It is necessary to set up the manager after installation. For details, refer to "2.1.4 Setup".

Note

- Current Directory Setting

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

- In Single User Mode

  In single user mode, X Windows 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

- 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.

- 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.

- If used ports exist when performing installation, the message "The specified port number *Port Number* selected for ServerView Resource Orchestrator is already used." will be displayed, and installation will fail. If this happens, please contact Fujitsu technical staff.

- Destination Directories

  The destination directories are fixed as those below and cannot be changed.

    - /opt

- /etc/opt

- /var/opt

- /root/InstallShield

- The following users are added.

- swrbadbuser

swrbadbuser is used as an OS account to start the database service for process management. Do not delete this account when Resource Orchestrator has been installed.

- swrbajobuser

swrbajobuser is used as an OS account to start service for job execute control.
Do not delete this account when Resource Orchestrator has been installed.

- rcxctdbchg

rcxctdbchg is used as an OS account to start the database service for metering. Do not delete this account when Resource Orchestrator has been installed.

2.1.4 Setup

This section explains the procedure for manager setup.

Advisory Notes for Pre-setup

When Using Microsoft Active Directory on a Different Server from the Manager

Add "Active Directory Lightweight Directory Services".

Use the following procedure to add "Active Directory Lightweight Directory Services".

1. Select [Start]-[Administrative Tools]-[Server Manager] on the Windows menu.

    The [Server Manager] dialog is displayed.

2. Select [Roles]-[Add Roles]-[Active Directory Lightweight Directory Services].

3. Following the wizard to add roles, click <Install> on a confirmation window.

Setup

For manager setup, execute the setup command.
Setup is executable from either the media or the extracted module.

[Windows Manager]

1. Log on as the administrator.

    Log on to the system on which the manager is to be set up.
    Log on using the Administrator account.

2. Execute the setup command.

    - When executing from the media

    >*Installation_medium***RcSetup.exe** <RETURN>

    - When executing from the extracted module

    >*Installation_folder***SVROR\Manager\sys\setup\RcSetup.exe** <RETURN>

3. Select setup from the menu to execute the setup command.

4. Check the execution results of the setup command.

   - When setup is successful

     The following message is displayed.

     > INFO : Resource Orchestrator Cloud Edition setup successfully.

   - When setup fails

     The following message is displayed.

     > ERROR : Resource Orchestrator Cloud Edition setup failed.

     Refer to the Note, and perform setup again after resolving the problem.

     If the problem cannot be resolved, collect troubleshooting information and contact Fujitsu technical staff.

5. Change the directory service connection information.

   When using OpenDS provided with ServerView Operations Manager V5.3, it is necessary to change the information of the directory server administrator that has registered with the Resource Orchestrator.
   Change directory service connection information in the following procedures.

   a. 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" of the "Reference Guide (Command/XML) CE".

   b. Change the directory service connection information.

      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".
      For details on the rcxadm authctl modify command, refer to "5.4 rcxadm authctl" of the "Reference Guide (Command/XML) CE".

   c. 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" of the "Reference Guide (Command/XML) CE".

[Linux Manager]

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

2. Execute the setup command.

   - When executing from the media

     > >*Installation_medium*/**RcSetup.sh** <RETURN>

   - When executing from the extracted module

     > >**/opt/FJSVrcvmr/sys/setup/RcSetup.sh** <RETURN>

3. Select setup from the menu to execute the setup command.

4. Check the execution results of the setup command.

   - When setup is successful

     The following message is displayed.

     > INFO : Resource Orchestrator Cloud Edition setup successfully.

   - When setup fails

     The following message is displayed.

     > ERROR : Resource Orchestrator Cloud Edition setup failed.

     Refer to the Note, and perform setup again after resolving the problem.

     If the problem cannot be resolved, collect troubleshooting information and contact Fujitsu technical staff.

5. Change the directory service connection information.

   When using OpenDS provided with ServerView Operations Manager V5.3, it is necessary to change the information of the directory server administrator that has registered with the Resource Orchestrator.
   Change directory service connection information in the following procedures.

   a. 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" of the "Reference Guide (Command/XML) CE".

   b. Change the directory service connection information.

      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".
      For details on the rcxadm authctl modify command, refer to "5.4 rcxadm authctl" of the "Reference Guide (Command/XML) CE".

   c. 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" of the "Reference Guide (Command/XML) CE".

📄 Note
. . . .

- When setup failed, check if there are no problems for the following cases:

  - Unsetup has not been completed

    Delete the following entries from the directory service to use:

    - swrbaadmin

    - swrbasch

    - Group

- The OpenDS LDAP port number has been changed

  Reset the port number to the default, and perform the operation again.

Advisory Notes for Post-setup

- The following users are added.

  [Windows Manager]

  - rcxctdbchg

    rcxctdbchg is used as an OS account to start the database service for metering. Do not delete this account when Resource Orchestrator has been installed.

  - rcxctdbdsb

    rcxctdbdsb is used as an OS account to start the database service for dashboards. Do not delete this account when Resource Orchestrator has been installed.

  [Linux Manager]

  - rcxctdbdsb

    rcxctdbdsb is used as an OS account to start the database service for dashboards. Do not delete this account when Resource Orchestrator has been installed.

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 is as follows.

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

Installation Directories		Agent (Cloud Edition)	Agent (Cloud Edition Dashboard Function)
VM Host	VMware	Yes (*)	-
	Hyper-V	Yes	Yes
	RHEL5-Xen	Yes	-
	Oracle VM	Yes	-
	KVM	Yes	-
	Solaris Containers	Yes	Yes
Physical L-Server	Windows	Yes	Yes
	Linux	Yes	Yes
	Solaris	Yes	Yes

* Note: When using VMware ESXi, Resource Orchestrator agents cannot be installed.
Install ServerView ESXi CIM Provider agents.
Also, when installing other vendor's servers, perform "C.1.5 Configuration when Creating a Virtual L-Server Using VMware ESXi on Other Vendor's Servers".

For the installation method, refer to the following:

- Agent (Cloud Edition)

  - 2.2.2 Installation [Windows] [Hyper-V]

  - 2.2.3 Installation [Linux] [VMware] [Xen] [KVM] [Oracle VM]

2.2.1 Preparations

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

2.2.1.1 Software Preparation and Checks

Software preparation and checks are explained in the following sections.

- 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]".

Exclusive Software Checks

Before installing Resource Orchestrator, check that the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" and the agent of Resource Orchestrator have not been installed on the system.
Use the following procedure to check that exclusive software has not been installed.

[Windows] [Hyper-V]

1. Open [Add or Remove Programs] on the Windows Control Panel.

   The [Add or Remove Programs] window will be displayed.

2. Check that none of the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" has been installed on the system, and there is no information which shows a Resource Orchestrator agent has been installed.

   - "ServerView Resource Orchestrator Agent"

3. When any of the exclusive software is displayed on the [Add or Remove Programs] window, uninstall it according to the procedure described in the relevant manual before installing Resource Orchestrator.

   If agents of an earlier version of Resource Orchestrator have been installed, they can be upgraded. Refer to "F.3 Agent".
   When reinstalling an agent on a system on which an agent of the same version of Resource Orchestrator has been installed, perform uninstallation referring to "20.2.1 Uninstallation [Windows] [Hyper-V]", and then perform installation.

   Information
   ....
   For Windows Server 2008, select [Programs and Features] from the Windows Control Panel.
   ....

[Linux]

1. Check that none of the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" are displayed. Execute the following command and check if Resource Orchestrator Agent has been installed.

```
# rpm -q FJSVrcvat <RETURN>
```

2. If the names of exclusive software have been displayed, uninstall them according to the procedure described in the relevant manual before proceeding.

   If agents of an earlier version of Resource Orchestrator have been installed, they can be upgraded. Refer to "F.3 Agent".
   When reinstalling an agent on a system on which an agent of the same version of Resource Orchestrator has been installed, perform uninstallation referring to "20.2.2 Uninstallation [Linux] [VMware] [Xen] [KVM] [Oracle VM]" and then perform installation.

📝 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.

- With the standard settings of Red Hat Enterprise Linux 5 or later, when DVD-ROMs are mounted automatically, execution of programs on the DVD-ROM cannot be performed. Release the automatic mount settings and perform mounting manually, or start installation after copying the contents of the DVD-ROM to the hard disk.
  When copying the contents of the DVD-ROM, replace "*DVD-ROM_mount_point*" with the used directory in the procedures in this manual.

Required Software Preparation and Checks

Before installing Resource Orchestrator, check that the required software given in "2.4.2.2 Required Software" in the "Design Guide CE" has been installed. If it has not been installed, install it before continuing.

📝 Note

- ServerView Agents Settings

  To operate Resource Orchestrator correctly on PRIMERGY series servers, perform the necessary settings for SNMP services during installation of 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, 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 "2.4.2.2 Required Software" in the "Design Guide CE".

  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 "2.4.2.1 Required Basic Software" in the "Design Guide CE" 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 "2.4.2.1 Required Basic Software" in the "Design Guide CE" have been applied.

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

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].

Red Hat Enterprise Linux 6 Preconfiguration

Only perform this when using Red Hat Enterprise Linux 6 as the basic software of a server.

- When using cloning and server switchover, perform 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 =
"0000:2:00 AM.0"
Class Device = "eth3"
Device =
"0000:2:00 AM.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.

- Disable NetworkManager service

   1. Execute the following commands to disable the NetworkManager service.

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

   2. Edit the "/etc/sysconfig/network-scripts/ifcfg-eth*X*" files(eth*X* is the interface name of eth0, eth1, etc.) to change the value for NM_CONTROLLED to "no".

      ## Example

      - Before changing

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

```
ONBOOT="yes"
TYPE=Ethernet
```

- After changing

```
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.

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

Configuration File Check

- When using Red Hat Enterprise Linux

When using the following functions, check the configuration files of network interfaces before installing Resource Orchestrator, and release any settings made to bind MAC addresses.

- Server switchover

- Cloning

Only perform this when using Red Hat Enterprise Linux 4 AS/ES as the basic software of a server.

Refer to the /etc/sysconfig/network-scripts/ifcfg-eth*X* file (eth*X* is an interface name such as eth0 or eth1), and check that there is no line starting with "HWADDR=" in the file.
If there is a line starting with "HWADDR=", this is because the network interface is bound to a MAC address. In that case, comment out the line.

Example

When the admin LAN interface is eth0

```
DEVICE=eth0
#HWADDR=xx:xx:xx:xx:xx:xx <- If this line exists, comment it out.
ONBOOT=yes
TYPE=Ethernet
```

- When using SUSE Linux Enterprise Server

- When using cloning and server switchover, perform 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 = "0000:2:00 AM.0"

  Class Device = "eth3"
    Device = "0000:2:00 AM.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. 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

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.

- 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/
```

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 "2.4.2.4 Static Disk Space" and "2.4.2.5 Dynamic Disk Space" in the "Design Guide CE".

- 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

  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)	- 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 a Cloning Image" 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, check whether Administrator accounts have been changed (renamed).
  Environments which have been changed (renamed) are not supported.

2.2.2 Installation [Windows] [Hyper-V]

This section explains the procedure for agent installation.

Before installation, check if "2.2.1 Preparations" have been performed.

1. Log on to Windows as the administrator.

   Log on to the system on which the agent is to be installed. Log on using the Administrator account.

2. Start the installer from the window displayed when the first Resource Orchestrator DVD-ROM is set.

   Click [Agent(Cloud Edition) installation] which is displayed on the window.

3. The Resource Orchestrator setup window will be displayed.

   Check the contents of the license agreement window etc. and then click <Yes>.

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

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

Note

. . . .

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 installing this product to Windows 2003 x64 Edition or Windows 2008 x64 Edition, the following folder names cannot be specified for the installation folders.

  - "%SystemRoot%\System32\"

- When using cloning, installation on the OS system drive is advised, because Sysprep initializes the drive letter during deployment of cloning images.

. . . .

5. The [Admin Server Registration] window will be displayed.

   Specify the admin LAN IP address of the admin server, the folder containing the "setupcl.exe" and "sysprep.exe" modules, then click <Next>>.

   Admin Server IP Address

   Specify the IP address of the admin server. When the admin server has multiple IP addresses, specify the IP address used for communication with managed servers.

   Folder Containing the setupcl.exe and sysprep.exe Modules

   Click <Refer> and specify "deploy.cab" or "setupcl.exe" and "sysprep.exe" as prepared in "2.2.1.1 Software Preparation and Checks".

Information

. . . .

With Windows Server 2008, "setupcl.exe" and "sysprep.exe" are installed along with the OS so specification is not necessary (<Refer> will be disabled).

. . . .

6. 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

   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.

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 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 [Add or Remove Programs] 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 "20.2 Agent Uninstallation".

    ## Information

    For Windows Server 2008, select "Programs and Features" from the Windows Control Panel.

  - 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] [Oracle VM]

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 this product 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. 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 agent installation command (RcSetup.sh).

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

5. Select "4. Agent(Cloud Edition) installation".

6. Perform installation according to the installer's interactive instructions.

7. Enter the host name or IP address of a connected admin server.

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]

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 this product 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 agent installation command (RcSetup.sh).

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

4. Select "2. Agent(Cloud Edition) installation".

5. Perform installation according to the installer's interactive instructions.

🛑 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).

2.3.1 Preparations

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

Before installing agent (Cloud Edition Dashboard Function), install agent (Cloud Edition).

2.3.2 Exclusive Software Checks

Before installing agent (Cloud Edition Dashboard Function), check that the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" and the agent (Cloud Edition Dashboard Function) of Resource Orchestrator have not been installed on the system.

Use the following procedure to check that exclusive software has not been installed.

[Windows] [Hyper-V]

1. Open "Add or Remove Programs" on the Windows Control Panel.

   The [Add or Remove Programs] window will be displayed.

2. Check that none of the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" or the agent (Cloud Edition Dashboard Function) of Resource Orchestrator have not been installed on the system.

3. When any of the exclusive software is displayed on the [Add or Remove Programs] window, uninstall it according to the procedure described in the relevant manual before installing Resource Orchestrator.

Information

For Windows Server 2008, select "Programs and Features" from the Windows Control Panel.

[Linux]

1. Execute the following command and check if the package has been installed.

   > # **rpm -q FJSVsqcag** <RETURN>

2. If it has been installed, uninstall it before continuing.

[Solaris]

1. Execute the following command and check if the package has been installed.

   > # **pkginfo FJSVsqcag** <RETURN>

2. If it has been installed, uninstall it before continuing.

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 Windows as the administrator.

   Log on to the system on which the agent (Cloud Edition Dashboard Function) is to be installed. Log on using the Administrator account.

2. Start the installer from the window displayed when the Resource Orchestrator DVD-ROM is set.

   Click "Agent(Cloud Edition for Dashboard) installation" which is displayed on the window.

3. When installation is completed successfully, the following message will be displayed:

   > INFO : ServerView Resource Orchestrator Agent (Cloud Edition for Dashboard) was installed successfully.

4. Execute the command below when using Hyper-V.

   > >*Installation_folder***RCXCTMGA\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.

   Confirm that the message below is displayed after the command is completed.

```
Info: Setup completed successfully.
```

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.

If the target system is one of the following OSs, there is no need to install agent (Cloud Edition Dashboard Function):

- VMWare

- Xen/KVM

- OracleVM

- SUSE Enterprise Linux Server

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

   Boot the managed server that 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 Resource Orchestrator DVD-ROM.

   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>
   ```

3. Launch the installation command (RcSetup.sh).

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

4. Perform installation according to the installer's interactive instructions.

   Click "Agent(Cloud Edition for Dashboard) installation" which is displayed on the window.

5. When installation is completed successfully, the following message will be displayed:

   ```
   INFO: ServerView Resource Orchestrator Agent (Cloud Edition for Dashboard) was installed successfully.
   ```

Note
. . . .

If the host name specified as "HOSTNAME" of the /etc/sysconfig/network does not exist in /etc/hosts, the message below is displayed.

```
hostname: Unknown host
```

Check beforehand that the host name is described in /etc/hosts, and perform installation.
. . . .

2.3.5 Installation [Solaris]

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

Before installing Resource Orchestrator, check that the preparations given in "2.3.1 Preparations" have been performed.

Install the agent (Cloud Edition Dashboard Function) on a physical L-Server or the Oracle Solaris Zone (global zone).

It does not need to be installed in the Oracle Solaris Zone (non global zone).

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

   Boot the managed server that 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 Resource Orchestrator DVD-ROM.

3. Launch the installation command (RcSetup.sh).

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

4. Perform installation according to the installer's interactive instructions.

   Click "Agent(Cloud Edition for Dashboard) installation" which is displayed on the window.

5. Specify the IP address of a connected admin server for Admin Server IP Address.

6. Specify the admin LAN IP address of the managed server for Managed Server IP Address.

7. When installation is completed successfully, the following message will be displayed:

   ```
   INFO: ServerView Resource Orchestrator Agent (Cloud Edition for Dashboard) was installed successfully.
   ```

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 "2.6 System Configuration" 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

Before installing Resource Orchestrator, check that the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" and the HBA address rename setup service of Resource Orchestrator have not been installed on the system.
Use the following procedure to check that exclusive software has not been installed.

1. Check if the HBA address rename setup service has been installed using the following procedure:

   [Windows]
   Open [Add or Remove Programs] from the Windows Control Panel, and check that none of the software listed in "2.4.2.3 Exclusive Software" in the "Design Guide CE" or the HBA address rename setup service have been installed.

   ### Information
   ....

   For Windows Server 2008 or Windows Vista, select [Programs and Features] from the Windows Control Panel.
   ....

   [Linux]
   Execute the following command and check if the package has been installed.

rpm -q FJSVrcvhb FJSVscw-common FJSVscw-tftpsv <RETURN>

2. If exclusive software has been installed, uninstall it according to the procedure described in the relevant manual before proceeding.

Required Software Checks

Before installing Resource Orchestrator, check that the required software given in "2.4.2.2 Required Software" in the "Design Guide CE" 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 "2.4.2.1 Required Basic Software" in the "Design Guide CE" 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 "2.4.2.1 Required Basic Software" in the "Design Guide CE" 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 "2.4.2.4 Static Disk Space" and "2.4.2.5 Dynamic Disk Space" in the "Design Guide CE".

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 Windows as the administrator.

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

2. Start the installer from the window displayed when the first Resource Orchestrator DVD-ROM is set.

   Click "HBA address rename setup service installation" on the window.

   ## Information

   If the above window does not open, execute "RcSetup.exe" from the DVD-ROM drive.

3. The Resource Orchestrator setup window will be displayed.

   Check the contents of the license agreement window etc. and then click <Yes>.

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

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

   ## Note

   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 installing this product to Windows 2003 x64 Edition or Windows 2008 x64 Edition, the following folder names cannot be specified for the installation folders.

     - "%SystemRoot%\System32\"

     - Folder names including "Program Files" (except the default "C:\Program Files (x86)")

5. 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>.

6. 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 10 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 [Add or Remove Programs] from the Windows Control Panel, and if [ServerView Resource Orchestrator HBA address rename Setup Service] is displayed, uninstall it and then install the service again.
    For uninstallation, refer to "20.4 HBA address rename Setup Service Uninstallation".

Information

For Windows Server 2008 or Windows Vista, select "Programs and Features" from the Windows Control Panel.

- If [ServerView Resource Orchestrator HBA address rename setup service] is not displayed, install it again.

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 this product 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. 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/hdccd** *DVD-ROM_mount_point* <RETURN>

4. Execute the installation command (RcSetup.sh).

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

5. Perform installation according to the installer's instructions.

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>

Chapter 3 SSL Communication Environment Settings for the ROR Console

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

This chapter explains how to replace the default test certificate with another certificate to use with SSL communication.

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

📖 Note

[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 Communication" 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

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

The CSR creation command (from now on, this is referred to as the "scsmakeenv command") is used to create the CSR that will create the Interstage certificate environment and apply for the certificate that is used for SSL communication.

The creation procedure and execution example are shown below:

Creation procedure

1. Set the JDK or JRE installation path in the JAVA_HOME environment variable. This procedure is only required for Linux. Setting of the environment variable JAVA_HOME is unnecessary for Windows.

2. Execute the scsmakeenv command.

    [Windows Manager]

    ```
    scsmakeenv -n <private key nickname> -f <output destination file name for the CSR>
    ```

    [Linux Manager]

    ```
    scsmakeenv -n <private key nickname> -f <output destination file name for the CSR> -g <Group that
    has permissions to access the Interstage certificate environment>
    ```

    Change the CSR output destination file name if necessary.

📖 Note

The private key nickname specified in the scsmakeenv command will be required when the site certificate obtained from the CA is registered.

Refer to Chapter 16, "SSL Environment Setting Commands" in the "Interstage Application Server Reference Manual (Command Edition)" for information on the scsmakeenv command.

3. Enter a password to access the Interstage certificate environment.

    The default password is "changeit".

4. Enter an identifier.

    When the "What is your first and last name?" enquiry is made, specify the FQDN of the server used to apply for the certificate as the Web server host name.

5. As with step 4, enter the following items:

    - Name of organizational unit

    - Name of organization

    - Name of City or Locality

    - Name of State or Province

    - Two-letter country code

6. Check the values that were entered.

    To create the CSR using the values that were entered, enter **yes**. To change the values that were entered, enter **no**.

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

    If the scsmakeenv command has terminated normally, the CSR will be output to the certificate output destination file name that was specified in the -f option of the scsmakeenv command. Send that file to the CA and request that a certificate be issued. Follow the request method used by the CA.

Execution example [Windows Manager]

The command execution examples shown below use the following values:

```
- Site certificate nickname: SERVERCERT
- Applicant output destination file name: C:\temp\ssocert.txt
- First and last name: rormanager.example.com
- Name of organizational unit: FUJITSU TOKYO
- Name of organization: FUJITSU
- Name of City or Locality: Shinjuku
- Name of State or Province: Tokyo
- Two-letter country code for this unit:jp
```

```
C:\>scsmakeenv -n SERVERCERT -f C:\temp\ssocert.txt
Password:

Input X.500 distinguished names.
What is your first and last name?
  [Unknown]: rormanager.example.com
What is the name of your organizational unit?
  [Unknown]: FUJITSU TOKYO
What is the name of your organization?
  [Unknown]: FUJITSU
What is the name of your City or Locality?
  [Unknown]: Shinjuku
What is the name of your State or Province?
  [Unknown]: Tokyo
What is the two-letter country code for this unit?
```

```
  [Un]: jp

Is <CN=rormanager.example.com, OU=FUJITSU TOKYO, O=FUJITSU, L=Shinjuku, ST=Tokyo,C=jp> correct?
  [no]: yes
C:\>
```

Execution example [Linux Manager]

The command execution examples shown below use the following values:

```
- Site certificate nickname: SERVERCERT
- Applicant output destination file name: /tmp/ssocert.txt
- Group that has permissions to access the Interstage certificate environmentiscertg
- First and last name: rormanager.example.com
- Name of organizational unit: FUJITSU TOKYO
- Name of organization: FUJITSU
- Name of City or Locality: Shinjuku
- Name of State or Province: Tokyo
- Two-letter country code for this unit:jp
```

In the execution example, a new Interstage certificate environment is created for which "iscertg" access permissions are set, and the CSR is also created. Then set access permissions to it if necessary.

The Bourne shell has been used in the execution example.

```
# JAVA_HOME=/opt/FJSVawjbk/jdk5;export JAVA_HOME
# scsmakeenv -n SERVERCERT -f /tmp/ssocert.txt -g iscertg
Password:

Input X.500 distinguished names.
What is your first and last name?
  [Unknown]: rormanager.example.com
What is the name of your organizational unit?
  [Unknown]: FUJITSU TOKYO
What is the name of your organization?
  [Unknown]: FUJITSU
What is the name of your City or Locality?
  [Unknown]: Shinjuku
What is the name of your State or Province?
  [Unknown]: Tokyo
What is the two-letter country code for this unit?
  [Un]: jp

Is <CN=rormanager.example.com, OU=FUJITSU TOKYO, O=FUJITSU, L=Shinjuku, ST=Tokyo,C=jp> correct?
  [no]: yes
UX:SCS: INFO: scs0180: The owners group of Interstage certificate environment was set.
#
```

> 📝 **Note**
>
> ....
>
> You will be asked for the password for the Interstage certificate environment. Enter the password for the Interstage certificate environment.
>
> The default password is "changeit".
>
> ....

3.1.2 Registering Certificates used in SSL Communication

Obtain the site certificate that was issued by the CA, and the CA certificate of the issuer of that certificate, and register them using the certificate/CRL registration command (from now on, this is referred to as the "scsenter command").

Creation procedure

1. Set the JDK or JRE installation path in the JAVA_HOME environment variable.

2. Register the CA certificate using the scsenter command.

```
scsenter -n <CA certificate nickname> -f <CA certificate>
```

3. Enter a password to access the Interstage certificate environment.

   Enter the password that was specified in the scsmakeenv command to access the Interstage certificate environment.

4. Register the site certificate using the scsenter command.

```
scsenter -n <Site certificate nickname> -f <Site certificate> -o
```

To register the site certificate that was obtained from the CA, specify the nickname that was specified in the private key in the scsmakeenv command. Note that the -o option must be specified to register the site certificate.

5. Enter a password to access the Interstage certificate environment.

   Enter the password that was specified in the scsmakeenv command to access the Interstage certificate environment.

Execution example [Windows Manager]

The command execution examples shown below use the following values:

```
- CA certificate: C:\temp\ca-cert.cer
- CA certificate nickname: CACERT
- Site certificate: C:\temp\server-cert.cer
- Site certificate nickname: SERVERCERT
```

Change the file names of the CA and site certificates that were obtained if necessary.

```
C:\>scsenter -n CACERT -f C:\temp\ca-cert.cer
Password:
SCS: INFO: scs0104: Certificate was imported.
C:\>scsenter -n SERVERCERT -f C:\temp\server-cert.cer -o
Password:
SCS: INFO: scs0104: Certificate was imported.
C:\>
```

Execution example [Linux Manager]

The command execution examples shown below use the following values:

```
- CA certificate: /tmp/ca-cert.cer
- CA certificate nickname: CACERT
- Site certificate: /tmp/server-cert.cer
- Site certificate nickname: SERVERCERT
```

Change the file names of the CA and site certificates that were obtained if necessary.
The Bourne shell has been used in the execution example.

```
# JAVA_HOME=/opt/FJSVawjbk/jdk5;export JAVA_HOME
# scsenter -n CACERT -f /tmp/ca-cert.cer
Password:
UX:SCS: INFO: scs0104: Certificate was imported.
# scsenter -n SERVERCERT -f /tmp/server-cert.cer -o
Password:
UX:SCS: INFO: scs0104: Certificate was imported.
#
```

3.2 Changing SSL Definitions

Change the SSL definition according to the registered certificate.

1. Start the Interstage Management Console.

   a. Start the Web browser.

   b. Specify the URL of the Interstage Management Console.

      The URL format is as follows:
      (If SSL encrypted communication is not used)

      ```
      http://[<host name>]:[<port number>]/IsAdmin/
      ```

      (If SSL encrypted communication is used)

      ```
      https://[<host name>]:[<port number>]/IsAdmin/
      ```

   c. Log in to the Interstage Management Console.

2. Change the SSL definition.

   Select **System** >> **Security** >> **SSL** >> **RCX-SSL**.

   Set the following items, and then click the **Update** button:

Setting item	Setting value
Site Certificate Nickname	Select the nickname that was specified when the site certificate was registered in the Interstage certificate environment as described in "3.1 Obtaining Certificates and Registering them with Certificate Authorities". Registered site certificates can be viewed at the Interstage Management Console at **System** >> **Security** >> **Certificates** >> **Site Certificates** window.

3. Restart the Web server.
   Select **Interstage Management Console >> Interstage Application Server >> System >> Services >> Web Server >> List.**
   Stop the following Web server before starting it.

   - RCXCT-acnt

   - RCXCF-API

   - RCXCT-ext

   - RCXCT-ext2

3.3 Importing a Certificate to ServerView SSO Authentication Server

This section explains how to import a certificate to the ServerView SSO authentication server.

1. Export the registered certificate information.

   Use the following command to export the registered certificate information:

   ```
   scsexppfx -n <certificate nickname> -f <export file name>
   ```

   The parameters to specify in the command are shown below.

Setting item	Setting value
Certificate nickname	Select the nickname that was specified when the site certificate was registered in the Interstage certificate environment as described in "3.1 Obtaining Certificates and Registering them with Certificate Authorities". Registered site certificates can be viewed at the Interstage Management Console at **System** >> **Security** >> **Certificates** >> **Site Certificates** window.
Export file name	Specify the temporary file name used for import in Step 2.

2. Import the certificate information to the authentication server.

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

   [Windows Manager]

   ```
   <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]

   ```
   <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: testCert
- Export file name: c:\work\isas.p12
```

```
C:\>scsexppfx -n testCert -f c:\work\isas.p12
Password:<Interstage certificate environment password>
PKCS#12 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\server\serverview\conf\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.

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

[Linux Manager]

Use screen input for the following commands:

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

```
# scsexppfx -n testCert -f /tmp/isas.p12
Password:<Interstage certificate environment password>
PKCS#12 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/server/serverview/conf/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 Login to the ROR Console

This chapter describes how to open and close the ROR console.

Preparations

Preparations are necessary for log in to the ROR console.

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

Opening the ROR Console

This section explains how to access the ROR console.

Add the URL of the ROR console to the "Trusted sites" of the browser.
Start a Web browser from an admin client and specify the URL of the ROR console for connection.
If the port number was changed, specify the new port number.

When the ROR console is connected, the login window is displayed.
When Single Sign-On authentication has already been performed, the ROR console can be started without displaying the login window.

For details on Single Sign-On, refer to "Chapter 12 Installing and Defining Single Sign-On" in the "Design Guide CE".

> URL: https://*Admin_server_FQDN*:23461/

On a Windows admin server, the ROR console can also be opened by selecting [start]-[All Programs]-[Resource Orchestrator]-[ROR console].

Information

For details, refer to "Chapter 2 Login and Logout" in the "User's Guide for Infrastructure Administrators CE".

Login

In the login screen, enter the following items, and click <Login>.
The ROR console is displayed after a successful login.

- User ID

- Password

When login to the ROR console fails, configuration of the environment may have failed.

Stop the manager, and reconfigure Single Sign-On.

For details on how to reconfigure Single Sign-On, refer to "Chapter 12 Installing and Defining Single Sign-On" in the "Design Guide CE".

Logout

To log out, select "Logout" in the global header, and click <OK> in the confirmation dialog.

Note

- If the Web browser is closed without logging out, the user may stay logged in, making it possible to access the ROR console without authentication.
  It is advised that the users log out properly after using the ROR console or BladeViewer.

- If the ROR console has been opened simultaneously in several Web browser windows, those login sessions may also be terminated.

Exit

To exit the ROR console, simply close the Web browser window.

Chapter 5 License Setup and Confirmation

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 into Resource Orchestrator, select the [Resource] tab, then select [Tools]-[Licenses] from the menu, and click <Add> in the displayed dialog.

   The [Register License] dialog is displayed.

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

3. Click <OK>.

   The license will be registered.

Note

After applying the Cloud Edition license, restart the manager.

Confirming the License

Use the following procedure to confirm the registered license:

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

   The [Licenses] dialog is displayed.

Note

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

Chapter 6 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".

🅿 Point
. . . .

- The license settings must be completed, before starting operations in Resource Orchestrator. For details on how to configure licenses, refer to "License Setup" in "Chapter 5 License Setup and Confirmation".

- If multiple admin clients are used, perform this operation on each admin client.

. . . .

1. Open the [Certificate] dialog.

   For Internet Explorer 8 and 9, 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.

🅖 Note
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- When the OS is Windows 7 or later version, there may be cases where the URL of the ROR console must be registered in the "Trusted sites", depending on the details of OS security policies.

- 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

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Chapter 7 Registering 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".

Chapter 8 Creating Definition Files

This chapter 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.

📝 Note

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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.

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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

Definition File Required for Creating a Physical L-Server

When creating a physical L-Server, it is necessary to create a definition file combining ports of SAN storage first.
For details, refer to "B.1.1 Creating Definition Files Combining Ports of SAN Storage".
For a list of the other definition files that are necessary when creating a physical L-Server, refer to "Table 8.1 List of Functions Requiring a Definition File (For Both Physical L-Servers and Virtual L-Servers)" and "Table 8.2 List of Functions Requiring a Definition File (For Physical L-Servers)".

Definition File Required for Creating a Virtual L-Server

For the definition files necessary when creating a virtual L-Server, refer to "Table 8.1 List of Functions Requiring a Definition File (For Both Physical L-Servers and Virtual L-Servers)" and "Table 8.3 List of Functions Requiring a Definition File (For Virtual L-Servers))".

Definition File Required for Network Auto-Configuration

For a list of the definition files necessary for network auto-configuration, refer to "Table 8.10 List of Functions Requiring a Definition File (Network)".
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".

8.1 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 8.1 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 "B.1 Creating Definition Files" and "C.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

* Note: When there is both a storage pool with thin provisioning attributes set and a storage pool without thin provisioning attributes set.

8.2 Definition Files (For Physical L-Servers)

The definition file for physical L-Servers is as follows:

Table 8.2 List of Functions Requiring a Definition File (For Physical L-Servers)

Function		Definition File Name	Reference
When using SAN storage	Settings required for all storage units	storage_portset.rcxprop	Refer to "B.1.1 Creating Definition Files Combining Ports of SAN Storage".
	Settings when using ETERNUS storage	storage.rcxprop	Refer to "B.1 Creating Definition Files".
	Settings when using dynamic LUN mirroring	storage_mirroring.rcxprop	Refer to "B.1 Creating Definition Files".
	When using configuration of priority for resource selection on Automatic Storage Layering	storage.rcxprop	Refer to "B.1 Creating Definition Files".
	Settings when using EMC storage	emcpath.conf	Refer to "B.1 Creating Definition Files". Store the file in the following location: [Windows Manager] Installation_folder\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 "17.1.1 L-Server High Availability" 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 "B.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		server_spec.rcxprop	Refer to "B.1 Creating Definition Files".

Function	Definition File Name	Reference
When the number of FCs fitted and their position differ depending on the physical server	fc_connection_pattern	Refer to "B.1 Creating Definition Files".
When using L-Server alive monitoring	Physical.rcxprop Place the file directly under the alive_monitoring directory.	Refer to "B.1 Creating Definition Files".

8.3 Definition Files (For Virtual L-Servers)

The definition file for virtual L-Servers is as follows:

Table 8.3 List of Functions Requiring a Definition File (For Virtual L-Servers)

Function	Definition File Name	Reference

When simplifying the parameter settings for an OS	- For User Groups
	
	  os_setting_*user_group_name*.rcxprop
	
	- Common on System
	
	  os_setting.rcxprop
		[VMware]
		
		Refer to "C.2 VMware".
		
		[Hyper-V]
		
		Refer to "C.3 Hyper-V".
		
		[Oracle VM]
		
		Refer to "C.5 Oracle VM".

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	- For User Groups
	
	  vm_*user_group_name_VM_type*.rcxprop
	
	- Common on System
	
	  vm_*VM_type*.rcxprop
	
	Place the file directly under the vm_prop directory.
		Refer to "C.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

When creating a virtual L-Server using a server which cannot use ServerView Agents	server_spec.rcxprop	Refer to "C.1 Definition Files Commonly Shared when Creating Virtual L-Servers".
When using L-Server alive monitoring	[Windows Manager] \alive_monitoring\vm_VM_type.rcxprop [Linux Manager] \alive_monitoring\vm_VM_type.rcxprop	Refer to "C.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

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.

8.3.1 Definition Files (VMware)

The definition file for VMware is as follows:

Table 8.4 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_dc	Refer to "E.1 VMware" in the "Design Guide CE". Store the file in the following location: [Windows Manager] *Installation_folder*\SVROR\Manager\etc\vm
When the Messages Notified by VM Management Software are Output in English	vm.rcxprop	Refer to "C.1 Definition Files Commonly Shared when Creating Virtual L-Servers".
When configuring power control for VMware DRS and DPM	vm.rcxprop	Refer to "C.2.1 Creating Definition Files" in "C.2 VMware".
When connecting to the virtual L-Server console from the admin client linking with the public LAN	vm_console.rcxprop	Refer to "C.2.1 Creating Definition Files" in "C.2 VMware".

8.3.2 Definition Files (Hyper-V)

The definition file for Hyper-V is as follows:

Table 8.5 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	- For User Groups library_share_*user group name*_deny.conf - Common on System library_share_deny.conf	Refer to "C.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_scvmm	Refer to "C.3.8 Collecting and Deleting Cloning Images". Store the file in the following location: [Windows Manager] *Installation_folder*\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	- For User Groups image_admin_hyperv_*user_group_name*.rcxprop - Common on System image_admin_hyperv.rcxprop	Refer to "C.3.9 [OS] Tab Configuration".
Configuring Network	vnetwork_hyperv.rcxprop	Refer to "C.3.5 Manual Network Configuration".

Function	Definition File Name	Reference
Resources when Using a Physical Network Adapter Number that Differs from Configuration Patterns of VM Hosts which Support Automation of Network Configuration		

8.3.3 Definition Files (RHEL5-Xen)

The definition file for RHEL5-Xen is as follows:

Table 8.6 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 "C.4.1 Creating Definition Files".
Relating the virtual bridge and VLAN ID	vnetwork_rhelxen.rcxprop	Refer to "C.4.4 Manual Network Configuration".

8.3.4 Definition Files (Oracle VM)

The definition file for Oracle VM is as follows:

Table 8.7 List of Functions Requiring a Definition File (Oracle VM)

Function	Definition File Name	Reference
Relating the virtual bridge and VLAN ID	vnetwork_oraclevm.rcxprop	Refer to "C.5.4 Manual Network Configuration".
Specifying SSL access for VM management software	ovmm.rcxprop	Refer to "C.5.9 Advisory Notes for Oracle VM Usage".

8.3.5 Definition Files (RHEL-KVM)

The definition file for RHEL-KVM is as follows:

Table 8.8 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 "C.6.4 Manual Network Configuration".
When performing the following operations for a virtual L-Server, the data type to be deleted can be selected	storage.rcxprop	Refer to "C.6.1 Creating Definition Files".

Function	Definition File Name	Reference
- Deleting Virtual L-Servers - Detaching Virtual L-Server Disks - Deleting Cloning Images		

8.3.6 Definition Files (Solaris Containers)

The definition file for Solaris Containers is as follows:

Table 8.9 List of Functions Requiring a Definition File (Solaris Containers)

Function	Definition File Name	Reference
Definition of managed resource pools	container_resource.rcxprop	Refer to "C.7.1 Creating Definition Files".
Definition of reserved memory size for VM hosts	global_zone_reserved_memory.rcxprop	Refer to "C.7.1 Creating Definition Files".
Association of VLAN IDs and network interfaces	vnetwork_solariscontainer.rcxprop	Refer to "C.7.4 Manual Network Configuration".

8.4 Definition Files (Network)

The definition file for the network is as follows:

Table 8.10 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 "14.11 Server NIC Definitions" 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 "14.12 VMware Exclusion Port Group Definition Files" in the "Reference Guide (Command/XML) CE".
When configuring network devices automatically	unm_provisioning.rcxprop	Refer to "F.7 When Automatically Configuring Network Devices" in the "Design Guide CE".
When using the network device file management function	unm_mon.rcxprop	Refer to "9.4.8.3 Network Device Management Function Definition File" in the "Design Guide CE".

Chapter 9 Registering Resources with Resource Orchestrator

This chapter explains how to register, change, and delete resources used by Resource Orchestrator.

The Resource Orchestrator manager must be completely installed beforehand.

For details on the resources to manage with Resource Orchestrator, refer to "9.1 Necessity of Resource Registration".

The resources that must be registered differ depending on the type of L-Server and the type of servers to use.
For details on the required resources, refer to "9.1 Necessity of Resource Registration".
For details on the registration method and registration order for each type of L-Server, refer to "9.2 Registration Order and Registration Method for Resources".

Information
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- 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".

- Backing up the Admin Server

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

    For details on backup, refer to "10.1.2 Offline Backup of the Admin Server" and "10.1.3 Online Backup of the Admin Server" in the "Operation Guide CE".

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9.1 Necessity of Resource Registration

This section explains the necessity of resource registration.

The resources that must be registered differ depending on the type of L-Server and the type of servers to use.

Table 9.1 List of Resources that Require Registration

Resources that can be Registered	Necessity of Registration Based on Server Type	
	Physical L-Server	Virtual L-Server
VIOM	Yes (*1)	No
VM management software	No	Yes (*2)
Server Management Software	No	Yes (*3)
Storage management software	Yes	Yes (*4)
Chassis	Yes (*1)	
Managed servers	Yes	
LAN switch blades	Yes (*1)	
Virtual storage resources	Yes (*5)	Yes (*6)
Disk resources	Yes (*7)	Yes (*3, *8)
Network device resources	Yes (*9)	
Network resources	Yes	
Address set resources	Yes	Yes (*4, *8)
Physical image resources	Yes (*10)	No
Virtual image resources	No	Yes (*10)

Resources that can be Registered	Necessity of Registration Based on Server Type	
	Physical L-Server	Virtual L-Server
Power monitoring devices	Yes (*11)	

Yes: Required

No: Not required

*1: Register when using blade servers.

*2: Register when using VMware, Hyper-V, or Oracle VM.

*3: Register resources when using Solaris Containers.

*4: Register when using RHEL5-Xen servers.

*5: Register when using virtual storage resources such as RAID groups and aggregates.

*6: Register when using virtual storage resources such as datastores.

*7: Register when using disk resources created in advance such as LUNs.

*8: Register when using RHEL-KVM servers.

*9: Register when using firewalls, server load balancers, and L2 switches.

*10: Register when using images created in advance.

*11: Register when monitoring power consumption.

9.2 Registration Order and Registration Method for Resources

This section explains the registration order and registration method for resources.

The resources that must be registered differ depending on the type of L-Server and the type of servers to use.

When Installing Physical L-Servers

- When using blade servers

  Refer to "B.2.1 When using Blade Servers".

- When using something other than a blade server

  Refer to "B.2.2 When Registering Something other than a Blade Server".

When Using Virtual L-Servers

[VMware]
Refer to "C.2.2 Registering Resources with Resource Orchestrator".

[Hyper-V]
Refer to "C.3.2 Registering Resources with Resource Orchestrator".

[Xen]
Refer to "C.4.2 Registering Resources with Resource Orchestrator".

[Oracle VM]
Refer to "C.5.2 Registering Resources with Resource Orchestrator".

[KVM]
Refer to "C.6.2 Registering Resources with Resource Orchestrator".

[Solaris Containers]
Refer to "C.7.2 Registering Resources with Resource Orchestrator".

Chapter 10 Settings for the HBA address rename Setup Service

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

🅿 Point

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

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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 managed servers HBAs WWNs in the same way the admin server does.

For details on HBA address rename settings, refer to "5.5.3 Configuring HBA address rename" 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. Define the following settings:

   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.

P Point
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When the graphical mode cannot be used in a Linux environment, 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.

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

. . . .

Note
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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.

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Chapter 11 Installing Software and Registering Agents on VM Hosts

This chapter explains how to install software and register an agent on VM host.

🅿 Point
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As OSs, required software, and agents are installed on physical L-Servers after their creation, the procedures in this chapter are not necessary for physical L-Servers. Simply skip the steps that were already performed.
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Use the following procedure to install required software and register an agent on a VM host for .

After agent registration, the VM host on which the agent was installed will be displayed in the server resource tree. Usually, a server agent is automatically registered during server registration. In that case, this procedure can be skipped.

It is not necessary to re-install an already-setup operating system, required software, or agent. Simply skip the steps that were already performed.

1. Install an OS

   a. Install the operating system on the managed server.

   b. Set up the admin LAN.

      Set up the admin IP address, the related network mask, and the default gateway for the managed servers defined in "9.2.5. Settings for Managed Servers" in the "Design Guide CE".

   Using storage devices in multi-path configurations

   - Install a multi-path driver on a and VM hosts. For VM hosts, use the one provided by default by either the operating system or virtualization software, when one is available.

   - When using SAN boot and HBA address rename, refer to "2. Settings for the HBA address rename Function" in "5.5.3 HBA address rename Settings" in the "User's Guide for Infrastructure Administrators (Resource Management) CE" to set the number of HBA paths used with HBA address rename for the number of HBA ports.
     The server is automatically restarted using a multi-path configuration.

   - When using SAN boot together with VIOM, follow the procedure described in "5.1.1 Registering VIOM Server Profiles" in the "User's Guide for Infrastructure Administrators (Resource Management) CE" to configure server profiles on the Web interface of ServerView Virtual-IO Manager.
     After configuration, the server will be started using a multi-path configuration.

   - When using SAN boot together with ESC, follow the procedure described in "8.1 Configuring WWN Settings for ETERNUS SF Storage Cruiser Integration" in the "User's Guide for Infrastructure Administrators (Resource Management) CE", and set the path name for HBA, WWNs of each HBA and the target CA, and Affinity Group. Also, correct the settings of the OS and OBP for multi-path use.
     After configuration, the server will be started using a multi-path configuration.

🔶 Note
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After configuration of agents, the server name (computer name for [Hyper-V] or a system node name for [Solaris] [VMware] [Xen] [KVM]) defined during OS installation should be set according to the following guidelines.

[Hyper-V]
Specify up to 63 characters, including alphanumeric characters, underscores ("_"), and hyphens ("-").
The string cannot be composed solely of numbers.

[VMware] [Xen] [KVM]
Specify up to 64 characters, including alphanumeric characters as well as the following symbols.

"%", "+", ",", "-", ".", "/", ":", "=", "@", "_", "~"

[Solaris]
Specify up to 24 characters, including alphanumeric characters, underscores ("_"), and hyphens ("-"). This name should start with an alphabetical character.

However, it is recommended that the name is comprised of the following characters defined in RFC (Request For Comment) 952, to take into consideration communication with other servers.

- Alphanumeric Characters

- Hyphens, ("-")

It is recommended not to use duplicate names for , VM hosts, and VM guests. If duplicated names are used, those resources cannot be managed from the command-line.
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2. Install Required Software

    Install the software packages that are required for a managed server.
    For details of the required software, refer to "2.4.2.2 Required Software" in the "Design Guide CE".

📝 **Note**
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When installing RSCD Agent, add managed servers to BladeLogic.
Specify the admin IP addresses of managed servers to add.
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3. Install the Agent

    Refer to "2.2 Agent Installation".

4. Register the Agent

    Register the agent from the ROR console while the target server is running.

    a. In the ROR console server resource tree, right-click the target server, and select [Register]-[Agent] from the popup menu.

        The [Register Agent] dialog is displayed.

    b. Select the Server OS category (VM host).

        - For Other than SPARC Enterprise Servers

            Select [VM Host], and enter the VM host login account information.
            This login account information will be used by Resource Orchestrator to control and communicate with the registered VM host.

        - For SPARC Enterprise Servers

            Select "Solaris Containers", and enter the VM host login account information.
            This login account information will be used by Resource Orchestrator to control and communicate with the registered VM host.

    User ID

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

    Password

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

    c. Click <OK>.

        The admin server starts to monitor and display server information obtained from the agent.

 Note

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- If "unknown" is displayed in the server resource tree for the status of a server in which the agent is installed, refer to "2.2 "unknown" Server Status" in "Troubleshooting" to solve the problem.

- When an agent is registered on a VM host, all VM guests running on that VM host are also registered automatically. Whenever a VM guest is created, modified, deleted, or moved on a registered VM host, the changes are automatically updated in the server resource tree.

  The VM guest name displayed in the ROR console is either the VM name defined in its server virtualization software or the hostname defined in the guest OS.

  The timing at which the hostname of a guest OS is detected and displayed varies according its server virtualization software. For details, refer to "D.3 Functional Differences between Products" in the "Design Guide VE".

- When performing system image backup or cloning image collection, it is necessary to either reboot the managed server or restart its "Related services" (explained in the "2.2 Starting and Stopping the Agent" section in the "Operation Guide CE") after server registration.
  For details on how to restart the agent, refer to "2.2 Starting and Stopping the Agent" in the "Operation Guide CE".

- A server running a VM host can still be registered as a physical OS if "Windows/Linux" is selected in the [Server OS category] selection list. (Windows Server 2008 etc.)
  A VM host server that was mistakenly registered as a physical OS should be deleted and re-registered as a VM host.

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Chapter 12 Registering Resources to the Global Pool

This chapter explains the registration of resources to resource pools.

When creating a cloning image common to tenants, an L-Server for the infrastructure administrator must be created.

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

The resources that are required to be registered to the resource pool differ depending on the type of L-Server.

Table 12.1 Registering Resources to Resource Pools Based on Resource Type

Resource Pool Types	Type of Resources Stored in the Resource Pool	Method of Registration to the Resource Pool	Necessity of Registration Based on Server Type	
			Physical L-Server	Virtual L-Server
VM pool	VM host resources	Refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".	No	Yes
Server pool	Physical server resources	Refer to "14.2 Physical Server Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".	Yes	No
Storage pool	Virtual storage resources or disk resources	Refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".	Yes	Yes
Network pool	Network resources or network devices (firewalls or server load balancers)	For details on how to register network device resources, refer to "14.3 Network Resources" or "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".	Yes	Yes
Address pool	Address set resources	Refer to "14.6 Address Set Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".	Yes	Yes (*1, *2)

Yes: Required
No: Not required
*1: It is not necessary to register resources when using Solaris Containers.

*2: When using RHEL5-Xen or RHEL-KVM, it is necessary to register MAC addresses.
It is necessary to manage MAC addresses in Resource Orchestrator, since the MAC addresses used for VM guests are not managed by the server virtualization software.

Information
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For details on changing the settings for, canceling registration, and deleting resources registered in a resource pool, refer to "Chapter 19 Resource Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
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12.1 Physical L-Servers

Refer to "B.3 Registering Resources in Resource Pools".

12.2 Virtual L-Servers

[VMware]
Refer to "C.2.3 Registering Resources in Resource Pools".

[Hyper-V]
Refer to "C.3.3 Registering Resources in Resource Pools".

[Xen]
Refer to "C.4.3 Registering Resources in Resource Pools".

[Oracle VM]
Refer to "C.5.3 Registering Resources in Resource Pools".

[KVM]
Refer to "C.6.3 Registering Resources in Resource Pools".

[Solaris Containers]
Refer to "C.7.3 Registering Resources in Resource Pools".

Chapter 13 Creating L-Server Templates

This chapter explains how to create an L-Server template.

An L-Server template comprises pre-defined specifications (number of CPUs, memory capacity, disk capacity, number of NICs, etc.) for an L-Server.

L-Server templates can be created using the following methods.

Using the Wizard GUI

L-Server templates can be created using a 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

L-Server templates can be created using an editor.
For details on how to export L-Server templates, refer to "15.2 Editing a Template Using an Editor" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Chapter 14 Creating an L-Server for an Infrastructure Administrator

This chapter explains how to create 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)

    Refer to "Chapter 15 Collecting and Registering Cloning Images".

- To install VM hosts on physical L-Servers

    Refer to "Appendix D 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

When Creating a Physical L-Server

Refer to "B.5 Creating an L-Server".

When Creating a Virtual L-Server

[VMware]
Refer to "C.2.7 Creating an L-Server".

[Hyper-V]
Refer to "C.3.7 Creating an L-Server".

[Xen]
Refer to "C.4.6 Creating an L-Server".

[Oracle VM]
Refer to "C.5.6 Creating an L-Server".

[KVM]
Refer to "C.6.6 Creating an L-Server".

Chapter 15 Collecting and Registering Cloning Images

This chapter explains how to collect and register cloning images.

📙 Note

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[Linux]
On Redhat Enterprise Linux 6, the information for MAC address is also registered in /etc/udev/rules.d/70persistent-net.rules.
Delete the virtual network interface definition information for /etc/udev/rules.d/70persistent-net.rules, before collecting images.

[Windows]
Resource Orchestrator collects cloning images using Sysprep.

When using MAK license authentication for activation of Windows Server 2008 image, Sysprep can be executed a maximum of three times.

Cloning images cannot be collected four times or more from L-Servers to which cloning images have been deployed.

Collect cloning images by creating a dedicated L-Server for cloning image collection.

Operation Methods for Cloning Image Collection
Use the following methods to collect cloning images.

Figure 15.1 When not Changing the Primary Server (1)
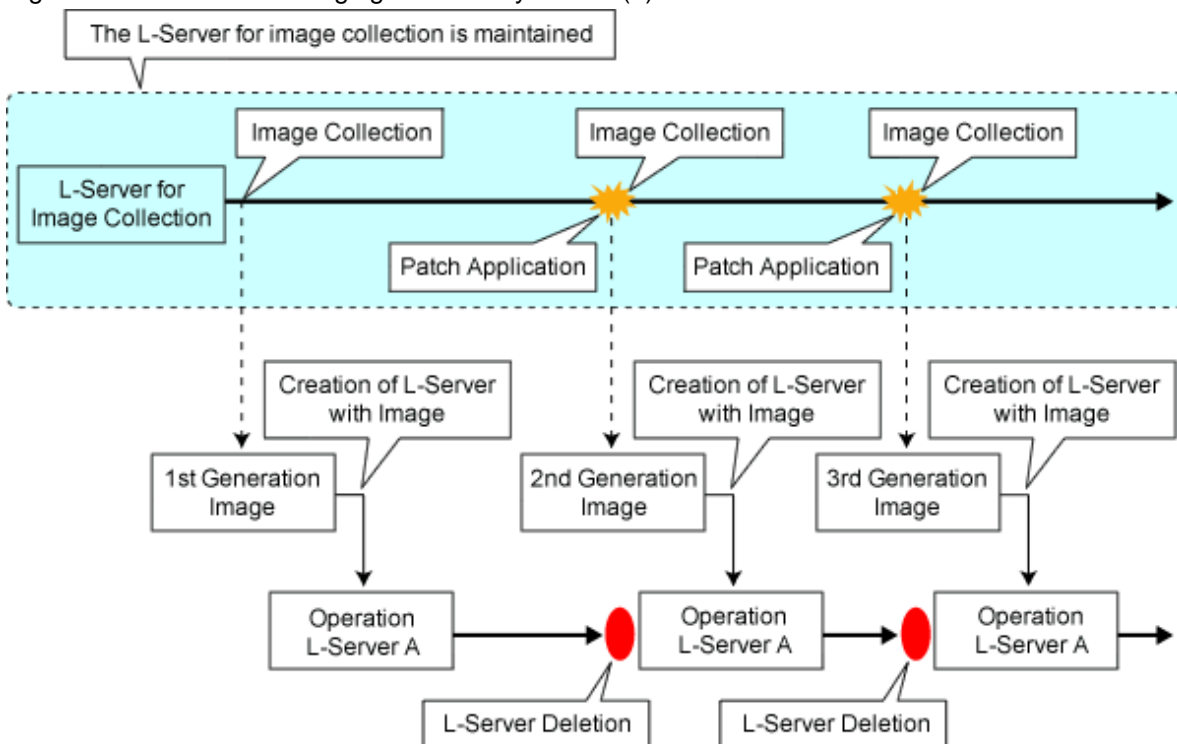
*As there cannot be multiple L-Servers with the same name, the old L-Server must be deleted.

Figure 15.2 When not Changing the Primary Server (2)
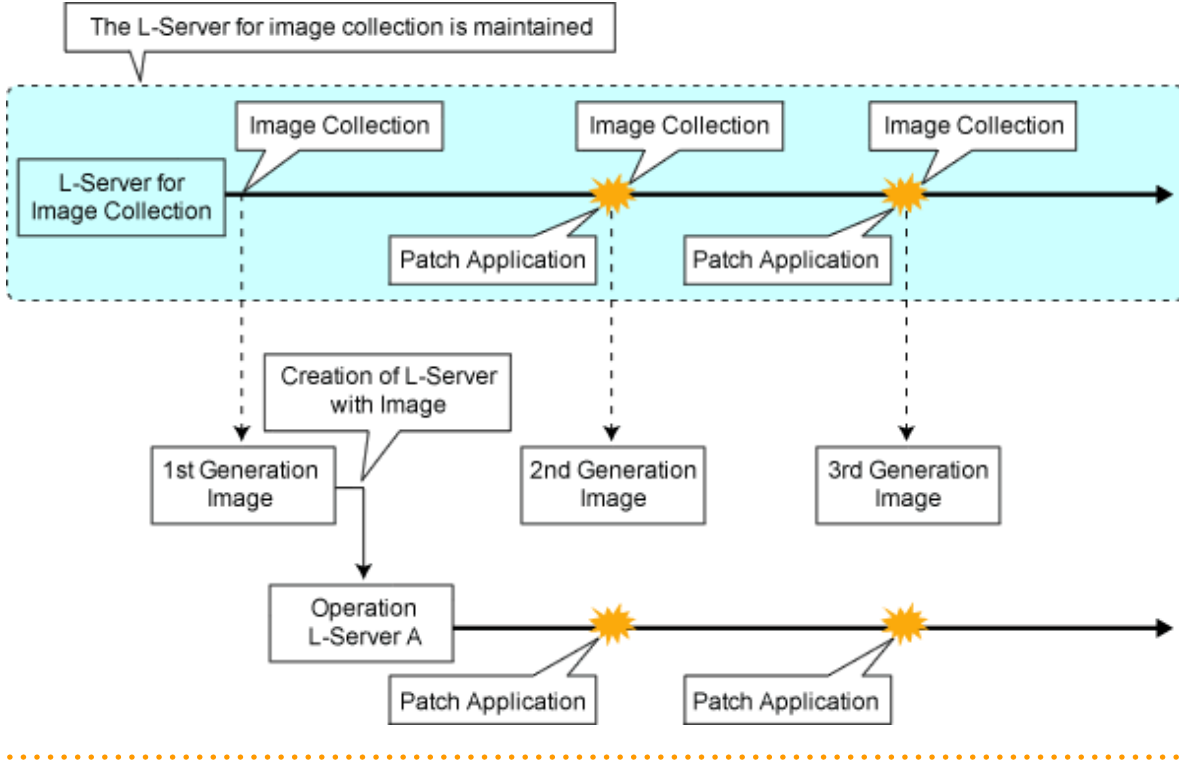
15.1 Physical L-Servers

When Collecting from a Physical L-Server

Refer to "B.6 Collecting and Registering Cloning Images".

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".

15.2 Virtual L-Servers

When Collecting from a Virtual L-Server

[VMware]
Refer to "C.2.8 Collecting a Cloning Image".

[Hyper-V]
Refer to "C.3.8 Collecting and Deleting Cloning Images".

[Oracle VM]
Refer to "C.5.7 Collecting Cloning Images".

[KVM]
Refer to "C.6.7 Collecting Cloning Images".

Note

[VMware]

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 Registering an Image (Template) Created with VM Management Software in Advance to the Image Pool

Refer to "14.7.1 Virtual Image Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Point

In the following cases, Sysprep is executed and included in the count:

- Customizing a guest OS using a template in VMware

- Template creation in SCVMM

Refer to "Note Operation Methods for Cloning Image Collection" for the operation.

Chapter 16 Creating L-Platform Templates

This chapter explains how to create an L-Platform template.

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.
For details on the [Template] tab, refer to "Chapter 8 Template" in the "User's Guide for Infrastructure Administrators CE".

Chapter 17 Creating Tenants, Tenant Administrators, or Tenant Users

Create tenants, tenant administrators, and tenant users.

For details, refer to "1.2.5 Configuring Tenants". Also refer to "Chapter 11 Tenant" in the "User's Guide for Infrastructure Administrators CE".

Chapter 18 Saving Environment Settings

This chapter explains how to save environment settings.

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

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- For details on the admin server backup command, refer to "10.1 Backing Up and Restoring Image Files" in the "Operation Guide CE".

- For collecting troubleshooting data, refer to "1.2 Collecting Troubleshooting Data (Cloud Edition)".

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Chapter 19 To Customize Environment

This section explains how to customize the environment.

19.1 Settings for Sending Email

This section explains how to change settings for sending email.

This product sends the following five types of email:

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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".

For details of "Setup Wizard", refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE".

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- Email sent from the tenant management

  Email sent from the tenant management will be enabled only if the tenant has set the performing tenant management setting.
  When an operation such as registering a tenant or adding or changing a user has been performed, notification to that effect is sent to the tenant administrators, tenant users, and tenant email addresses within that same tenant.

- Email sent from the L-Platform Management window

  Email sent from the L-Platform management window 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-Platform management window:

  - 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.

19.1.1 Stopping the Manager

Stop the manager before making settings for sending email.
Refer to "2.1 Starting and Stopping the Manager" in the "Operation Guide CE" for information on how to stop the manager.

19.1.2 Settings for Email Sent from Tenant Management

Modify the operating environment file so that the tenant administrator (within the same tenant), the tenant users, and the tenant email addresses are notified when operations such as adding or modifying users are performed.

portal.properties settings

Follow the steps below to modify the email settings:

1. Open the following file.

   [Windows Manager]

   ```
   <installation_folder>\RCXCTMG\SecurityManagement\conf\portal.properties
   ```

   [Linux Manager]

   ```
   /etc/opt/FJSVctsec/conf/portal.properties
   ```

2. The following information must be modified:

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

An example is shown below.

```
    ...
# sendmail
sendmail.smtp = smtp.example.com
sendmail.smtp.port = 25
sendmail.fromAddress = cloud-master@example.com
    ...
```

> 📌 **Note**
> ....
>
> - When editing the portal.properties file, do not change any settings items other than sendmail.smtp, sendmail.smtp.port, and sendmail.fromAddress.
>
> - Save the portal.properties file before editing it. If any settings items other than sendmail.smtp, sendmail.smtp.port, and sendmail.fromAddress have been changed, restore the saved file.
>
> ....

19.1.3 Settings for Email Sent from the L-Platform Management Window

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-Platform Management window 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. Open the following file.

   [Windows Manager]

   ```
   <installation_folder>\RCXCFMG\config\mail_config.xml
   ```

   [Linux Manager]

   ```
   /etc/opt/FJSVcfmg/config/mail_config.xml
   ```

2. The following information must be modified:

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
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.

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>
```

Note

- When editing the mail_config.xml file, do not change any settings items other than enable-email, smtp-host, smtp-port, from-email, from-name, and show-password.

- Save the mail_config.xml file before editing it. If any settings items other than enable-email, smtp-host, smtp-port, from-email, from-name, and show-password have been changed, restore the saved file.

19.1.4 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. Open the following operating environment file:

[Windows Manager]

```
<installation_folder>\RCXCTMG\Charging\conf\accounting.properties
```

[Linux Manager]

```
/etc/opt/FJSVctchg/conf/accounting.properties
```

2. Set the following items in the operating environment file:

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.

An example is shown below.

```
    ...
# Mail Information
sendmail.smtp = smtp.example.com
sendmail.smtp.port = 25
sendmail.fromAddress = cloud-master@example.com
    ...
```

Note

- When editing the accounting.properties file, do not change any settings other than sendmail.smtp, sendmail.smtp.port, and sendmail.fromAddress.

- Save a backup of the accounting.properties file before editing it. If any settings items other than sendmail.smtp, sendmail.smtp.port, and sendmail.fromAddress have been changed, restore the saved file.

19.1.5 Starting the Manager

Start the manager in order to enable the email settings set in "19.1.2 Settings for Email Sent from Tenant Management" and "19.1.3 Settings for Email Sent from the L-Platform Management Window".
Refer to "2.1 Starting and Stopping the Manager" in the "Operation Guide CE" for information on how to stop the manager.

19.1.6 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 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 the Manager" in the "Operation Guide CE" for information on how to start this product.

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/FJSVibpm/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).

    1. 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.

    2. Mail sender settings file (emailaddress.conf)

        Set the following items:

Setting item	Description	Default value
ServerEmailAddress	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 user] [Process Management Database password]
```

[Linux Manager]

```
/opt/FJSVibpm/server/deployment/bin/importProperties.sh mtpserver.conf [Process Management
Database user] [Process Management Database password]
```

> 📌 **Note**
> ....
> "swrbadb" as Process Management Database user and Process Management Database password is set during installation.
> ....

4. Register the mail sender information.

   [Windows Manager]

```
<installation_folder>\IBPM\server\deployment\bin\importProperties.bat emailaddress.conf
[Process Management Database user] [Process Management Database password] Default
```

   [Linux Manager]

```
/opt/FJSVibpm/server/deployment/bin/importProperties.sh emailaddress.conf [Process Management
Database user] [Process Management Database password] Default
```

   The "Default" option must be specified at the end.

> 📌 **Note**
> ....
> "swrbadb" as Process Management Database user and Process Management Database password is set during installation.
> ....

5. Restart the manager

   Restart the manager in order to apply the new settings.
   Refer to "2.1 Starting and Stopping the Manager" in the "Operation Guide CE" for information on how to restart the manager.

19.1.7 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 "E.2.1 Customizing Email Send 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 "E.6.1 Access" 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 "E.6.4 Restarting the Analytics Server" for details.

> 📝 **Note**

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- The initial password must be changed. Use the operation management console of Interstage Business Process Manager Analytics to change the password. Refer to "E.6.2 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.

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19.2 Application Process Settings

This section explains how to set application process setting.
To use application process, perform the following procedure.

- Registering an Application Process Assessor

- Setting Application process settings

- Setting Application process to be used

19.2.1 Registering an Application Process Assessor

This section explains how to register an infrastructure administrator or dual-role administrator as an application process assessor.

Add all infrastructure administrators and dual-role administrators to the directory service IflowUsers group in order to use application processes. Use the LDIF file to register an application process assessor at the directory server. Follow the procedure below to register as application process assessor.

1. Create an infrastructure administrator or dual-role administrator.

2. Add the infrastructure administrator or dual-role administrator as a member of the IflowUsers group.

> 📝 **Note**

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- Infrastructure administrators and dual-role administrators who have not been registered in the "IflowUsers" group cannot conduct assessment in application processes. Also, if infrastructure administrators and dual-role administrators not registered in the "IflowUsers" group select the **Request** tab in the ROR Console, the following error message appears:

```
Error message : Failed to authenticate the user.
```

- Administrators (dual-role administrators) created during installation are not registered in the "IflowUsers" group. Add them to the "IflowUsers" group.

- If an email address is not set, assessment request emails are not sent, and reservation notification emails are not sent when an error occurs.

- If no infrastructure administrators or dual-role administrators are registered in the IflowUsers group, the following message is displayed after the application is forwarded from the **Forward screen** window when the user subscribes to the service:

```
PCS1002
An error occurred while processing application.
Please contact the infrastructure administrator.
```

⋯⋯

19.2.1.1 Creating an infrastructure administrator/dual-role administrator

Use the following procedure to register infrastructure administrators and dual-role administrators.

1. Check if user information is registered in the directory service. If no user information is registered, register it.

   This operation is not necessary when using internal authentication in Basic mode.

2. In the ROR console, select [Settings]-[User Accounts].

   The [User Accounts] dialog is displayed.

3. Click <Add>.

   The [Add User Account] dialog is displayed.

4. Set the following:

   User ID

   Specify a user ID registered in the directory service.

   E-mail address

   Specify the email address of the user.
   Specify a string using up to 64 alphanumeric characters or symbols.

   User Groups

   Select the user group to configure for the user account from the already created user group.

   Select the "supervisor" user group to register as an application process assessor.

   Scopes/Roles (Optional)

   Access Scope

   Select the scope of access to set for the user account.

   Role

   Select the role to set for the user account.

   Label (Optional)

   Enter a label for the user account.
   Enter a maximum of 32 characters.

   Comment (Optional)

   Enter any comments for the user group.
   Enter a maximum of 256 characters.

5. Click <OK>.
   The user account is created.

When using user operations to register users also in the directory service in Resource Orchestrator, use the rcxadm user create command after checking the settings of the definition file for directory service operations (ldap_attr.rcxprop). For details on the definition file for directory service operations, refer to "8.6.1 Settings for Tenant Management and Account Management" in the "Operation Guide CE". For details on the rcxadm user create command, refer to "7.1 rcxadm user" in the "Reference Guide (Command/XML) CE".

19.2.1.2 Adding an infrastructure administrator/dual-role administrator to IflowUsers Group

Follow the procedure below to add an infrastructure administrator or dual-role administrator as a member of the IflowUsers group.

For OpenDS

1. Create an LDIF file.

   Edit a sample LDIF file to create the file. An example of an LDIF file is shown below.

   ```
   # Add manager to IflowUsers
   dn: cn=IflowUsers,ou=group,dc=fujitsu,dc=com
   changetype: modify
   add: member
   member: cn=manager,ou=users,dc=fujitsu,dc=com
   ```

2. Execute the ldapmodify command.

Before executing the ldapmodify command of OpenDS, set JAVA_HOME as the path of Java SE 6.

[Windows Manager]

Specify the created LDIF file, and then execute the ldapmodify command.

```
<OpenDS installation directory>\bat\ldapmodify.bat" -p <port number> -f <ldif file> -D <
administrator user DN> -w <password>
```

An execution example is shown below.

```
c:\> c:\Program Files (x86)\Fujitsu\ServerView Suite\opends\bat\ldapmodify -p 1473 -f c:\ldif
\adduser2group.ldif -D "cn=Directory Manager" -w admin
Processing MODIFY request for cn=IflowUsers,ou=group,dc=fujitsu,dc=com
MODIFY operation successful for DN cn=IflowUsers,ou=group,dc=fujitsu,dc=com
```

[Linux Manager]

Specify the created LDIF file, and then execute the ldapmodify command.

```
# <OpenDS installation directory>/bin/ldapmodify" -p <port number> -f <ldif file> -D
<administrator user DN> -w <password>
```

An execution example is shown below.

```
# /opt/fujitsu/ServerViewSuite/opends/bin/ldapmodify -p 1473 -D "cn=Directory Manager" -f /tmp/
ldif/adduser2group.ldif -w admin
Processing MODIFY request for cn=IflowUsers,ou=group,dc=fujitsu,dc=com
MODIFY operation successful for DN cn=IflowUsers,ou=group,dc=fujitsu,dc=com
```

Note

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- In the command input line, enter the command as one line without entering any line feeds.

- For the directory service port number, administrator DN, and administrator DN password, enter the values that were set during installation.

....

For Active Directory

1. From the Start menu, open [Control Panel]-[Administrative Tools]-[Active Directory Users and Computers].

2. Select the name of a domain that is managed by Active Directory.

3. Right-click "IflowUsers" of the organizational unit "Group", and select [Property].

4. Select the [Members] tab, and click the [Add] button.

5. The [Select Users, Contacts, Computers, Or Groups] window will be displayed. Input the member list of the above table in the [Enter the object names to select] field, and click the [OK] button. If there is more than one member, separate them with semicolons.

6. After returning to the property window of the group, confirm that the members have been added correctly, and click the [OK] button.

19.2.2 Stopping the Manager

Stop the manager before making settings for sending email.
Refer to "2.1 Starting and Stopping the Manager" in the "Operation Guide CE" for information on how to stop the manager.

19.2.3 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.

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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 "19.2.4 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".

For details of "Setup Wizard", refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE".
. . . .

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.

🛈 Note
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If the values of the setting items are all "false", the **Request** tab is not displayed in the ROR Console.
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An example is shown below.

```
<?xml version="1.0" encoding="UTF-8"?>
<properties>
    ...
    <entry key="enable-create-workflow">true</entry>
    <entry key="enable-reconfigure-workflow">true</entry>
    <entry key="enable-return-workflow">true</entry>
    ...
</properties>
```

19.2.4 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.

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 "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
    ...
```

19.2.5 Starting the Manager

Start the manager in order to enable the email settings set in "19.2.3 Setting Application process settings" and "19.2.4 Setting Application process to be used".

Refer to "2.1 Starting and Stopping the Manager" in the "Operation Guide CE" for information on how to stop the manager.

19.3 Customizing the Dashboard

Refer to "Appendix E To Customize Dashboard", for information on customizing the dashboard.

19.4 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
XXXXXXXXX: 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.

19.4.1 Setting Method

Point

Setting the Host Names for Virtual Servers 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
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.

Key name	Setting range	Content
		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 the Manager" in the "Operation Guide CE" for information on how to Restart the manager.

19.4.2 Setting Form

Automatic generation

The following host name will be automatically generated:

```
VXXXXXXXXXNNNN
XXXXXXXXX: 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	15 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

- Host names can be set up only when new systems are created.
  The host name will not be changed even if the server name is changed by changing the configuration after deployment.

- 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 container 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 "12.5 cfmg_listhostnamecounter (Display List of Serial Numbers for Host Name Settings)" in the "Reference Guide (Command/XML) CE" for details 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 (cfmg_resethostnamecounter) or change the value for "hostname-header" to enable systems to be deployed again.

Refer to "12.6 cfmg_resethostnamecounter (Reset List of Serial Numbers for Host Name Settings)" in the "Reference Guide (Command/XML) CE" for details

📓 **Note**

. . . .

- When Solaris containers 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 (cfmg_listhostnamecounter).

Refer to "12.5 cfmg_listhostnamecounter (Display List of Serial Numbers for Host Name Settings)" in the "Reference Guide (Command/XML) CE" for details on this command.

📓 **Note**

. . . .

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 (cfmg_resethostnamecounter) to enable systems to be deployed again.

Refer to "12.6 cfmg_resethostnamecounter (Reset List of Serial Numbers for Host Name Settings)" in the "Reference Guide (Command/XML) CE" for details 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".

. . . .

19.5 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

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

19.5.1 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.

Key name	Setting range	Content
		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 the Manager" in the "Operation Guide CE" for information on how to Restart the manager.

19.5.2 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:

```
sosiki1-0001
```

This string is not displayed in the L-Platform management window 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-Platform management window as the name of the folder corresponding to the L-Platform to be deployed.

Example

The result will be the following kind of string:

```
sosiki1-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 L-Platform applications window 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 resource window 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.

The result will be the following kind of string:

```
sosiki1-WCJFRUH6L-S-0001
```

The server ID is not displayed in the L-Platform management window, 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 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 virtualization software.

Server name

This method sets the server name specified with the L-Platform management window 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 container server names.

19.6 Settings for the Overcommit Function

The overcommit function can virtually allocate more resources to guest operating systems than the total resources (such as CPU or memory resources) installed on the server.

The overcommit function involves specifying the following kind of settings for CPU and memory:

Item name	Content	Virtualization software			
		VMware	Hyper-V	RHEL-KVM	Solaris container
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

Item name	Content	Virtualization software			
		VMware	Hyper-V	RHEL-KVM	Solaris container
[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 set

N: No item.

🈁 **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.

. . . .

ℙ **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 a Resource Pool" of "Chapter 20 Resource Pool Operations" 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 "8.7.3 Metering Log 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.

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:

[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 the Manager" 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.

For information about setting up VM pools, refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE"

19.7 Editing the Environment Setup File for the L-Platform API

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-protcol:<Protocol for communicating with L-Platform API> (*)
   l_platform-api-host:<Host name or IP address of server on which L-Platform API operates>
   l_platform-api-port:<Port number on which L-Platform API operates>
   l_platform-api-uri :<Path on which L-Platform API operates>
   ```

   * Note: https is set by default. Set a new value if the default value needs to be changed.

   A specification example is shown below:

   ## 📝 Example
   ....

   <entry key="l_platform-api-protocol">https</entry>
   <entry key="l_platform-api-host">localhost</entry>
   <entry key="l_platform-api-port">8014</entry>
   <entry key="l_platform-api-uri">/cfmgapi/endpoint</entry>
   ....

19.8 Settings when RHEL5-Xen is used

When RHEL5-Xen is used as 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 the Manager" in the "Operation Guide CE" for information on how to Restart the manager.

📝 Note

When RHEL5-Xen is used as 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.

19.9 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-Platform window.

🅿 Point

System Disk Settings for Physical L-Servers 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".

📝 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 the Manager" in the "Operation Guide CE" for information on how to Restart the manager.

19.10 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.

For details on how to restart the manager, refer to "Restarting Managers" of the "Appendix A Notes on Operating ServerView Resource Orchestrator" in the "Operation Guide CE".

19.11 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.

For details on how to change multiple operations of managers, refer to "Changing Multiple Operations of Managers" of the "Appendix A Notes on Operating ServerView Resource Orchestrator" in the "Operation Guide CE".

19.12 Edit the License Agreement

This section explains how to edit the license agreement that is displayed in the L-Platform management window.

19.12.1 Edit the License Agreement when Subscribing to the L-Platform

This section explains how to edit the license agreement that is displayed when applying to use L-Platform.

To edit the license agreement, edit the following file:

[Windows Manager]

```
<installation_folder>\RCXCTMG\MyPortal\config\license\create\default
```

[Linux Manager]

```
/etc/opt/FJSVctmyp/config/license/create/default
```

Note

If the file does not exist, the Terms of use window will not be displayed when the service is being subscribed to. The file must not be deleted.

If the license agreement has been edited, collect a backup of the file after the edit.

Settings

The license agreement must be written in the file.

The character-code of the file is UTF-8.

When the number of characters exceeds 10000 characters, it might take time to display the Terms of use window.

The following description is written in the file as the initial value. Edit the file as required to suit your usage.

```
To install and operate, edit the following file.
[Windows]
[installation_folder]\RCXCTMG\MyPortal\config\license\create\default


[Linux]
/etc/opt/FJSVctmyp/config/license/create/default
```

```
[Description example]
L-Platform subscription license agreement
...
```

Example of settings

```
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
```

19.12.2 Edit the License Agreement when Reconfiguring the L-Platform

This section explains how to edit the license agreement that is displayed when reconfiguring the L-Platform.

To edit the license agreement, edit the following file:

[Windows Manager]

```
<installation_folder>\RCXCTMG\MyPortal\config\license\reconfigure\default
```

[Linux Manager]

```
/etc/opt/FJSVctmyp/config/license/reconfigure/default
```

 Note
. . . .

If the file does not exist, the Terms of use window will not be displayed when reconfiguring the L-Platform. The file must not be deleted.

If the license agreement has been edited, collect a backup of the file after the edit.

. . . .

Settings

The license agreement must be written in the file.

The character-code of the file is UTF-8.

When the number of characters exceeds 10000 characters, it might take time to display the Terms of use window.

The following description is written in the file as the initial value. Edit the file as required to suit your usage.

```
To install and operate, edit the following file.
[Windows]
[installation_folder]\RCXCTMG\MyPortal\config\license\reconfigure\default

[Linux]
/etc/opt/FJSVctmyp/config/license/reconfigure/default

[Description example]
L-Platform reconfiguration license agreement
...
```

Example of settings

```
L-Platform reconfiguration license agreement
The following actions involving the modification of the L-Platform are not permitted.
  To use this L-Platform for personal use
  To use this L-Platform under false identity
```

19.12.3 Edit the License Agreement When Canceling L-Platform

This section explains how to edit the cancellation of the license agreement that is displayed when cancelling L-Platform.

To edit the license agreement, edit the following file:

[Windows Manager]

```
<installation_folder>\RCXCTMG\MyPortal\config\license\return\default
```

[Linux Manager]

```
/etc/opt/FJSVctmyp/config/license/return/default
```

Note

If the file does not exist, the Terms of cancel window will not be displayed when canceling the subscription. The file must not be deleted.

If the cancellation of the license agreement has been edited, collect a backup of the file after the edit.

Settings

The license agreement must be described in the file.

The character-code of the file is UTF-8.

When the number of characters exceeds 10000 characters, it might take time to display the Terms of cancel window.

The following description is entered in the file as the initial value. Edit the file as required to suit your usage.

```
To install and operate, edit the following file.
[Windows]
[installation_folder]\RCXCTMG\MyPortal\config\license\return\default

[Linux]
/etc/opt/FJSVctmyp/config/license/return/default

[Description example]
Cancellation of L-Platform license agreement
...
```

Example of settings

```
Cancellation of L-Platform license agreement
The following action involving the cancellation of the L-Platform is not permitted:
  To cancel this L-Platform under a false identity
```

19.13 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:

[Windows Manager]

```
<installation_folder>\IAPS\F3FMihs\servers\FJapache\htdocs\sopdocs\pub\html\en
\cRegApply_agreement.forUse_en.html
```

[Linux Manager]

```
/var/opt/FJSVihs/servers/FJapache/htdocs/sopdocs/pub/html/en/cRegApply_agreement.forUse_en.html
```

Settings

The user agreement must be written in a section defined with the <body> tag in the HTML file.

Edit according to the HTML syntax.

Only the section defined with the <div> tag can be edited. Do not edit a section outside the <div> tag. When a section outside the <div> tag is edited, the user agreement may not be displayed properly when a user is added.

The following is written as the initial value in the section defined with the <div> tab in the HTML file. Edit the section as required to suit your usage.

```
<body>
<div id="iframeHeight" style="font-size:small;">
To install and operate, edit the following file.<br>
[Windows]<br>
  <installation_folder>\IAPS\F3FMihs\servers\FJapache\htdocs\sopdocs\pub\html\en
\cRegApply_agreement.forUse_en.html<br>
<br>
[Linux]
  /var/opt/FJSVihs/servers/FJapache/htdocs/sopdocs/pub/html/en/
cRegApply_agreement.forUse_en.html<br>
<br>
[Description example]<br>
<br>
Article 1 GENERAL RULES <br>
<br>
Section 1 (Application of User Agreement)
This agreement defines the conditions required to grant the user the use of XXXX service (hereafter
referred to as "the service") supplied by XXXX. <br>
    <br>
    <br>
    <br>
<br>
Supplementary provision <br>
1.This agreement takes effect on 20XX/XX/XX. <br><br>
</div>
</body>
```

Example of settings

```
<body>
<div id="iframeHeight" style="font-size:small;">
The following actions involving the use of the service are not permitted.<br>
<br>
    To collect personal information other than that of one's own through fraudulent means or without
agreement of the owner of the information<br>
    To falsify or delete information that this service may use<br>
    To use this service under false identity<br>
<br>
Supplementary provision<br>
1.This agreement takes effect on 1 November 2011.<br><br>
</div>
</body>
```

Chapter 20 Uninstallation

This chapter explains the uninstallation of ServerView Resource Orchestrator.

The uninstallation of managers, agents, and the HBA address rename setup service is performed in the following order:

1. Manager Uninstallation

   Refer to "20.1 Manager Uninstallation".

2. Agent (Dashboard Function) Uninstallation

   Refer to "20.3 Agent (Dashboard Function) Uninstallation".

3. Agent Uninstallation

   Refer to "20.2 Agent Uninstallation".

4. HBA address rename setup service Uninstallation

   For uninstallation, refer to "20.4 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 "20.5 Uninstallation of "Uninstall (Middleware)"".

20.1 Manager Uninstallation

The uninstallation of managers is explained in the following sections.

The procedure for manager uninstallation is given below.

- Preparations

  Refer to "20.1.1 Preparations".

- Unsetup

  Refer to "20.1.2 Unsetup".

- Uninstallation

  Refer to "20.1.3 Uninstallation [Windows Manager]" or "20.1.4 Uninstallation [Linux Manager]".

20.1.1 Preparations

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

Pre-uninstallation Advisory Notes

- Executing unsetup

  Be sure to execute unsetup before commencing uninstallation.
  For details, refer to "20.1.2 Unsetup".

- 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.

  If changed from the default, it remains in the directory storing the image file.

- 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 icon] **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.

. . . .

- Back up (copy) certificates

  When operating managers in cluster environments, back up (copy) certificates before performing uninstallation.

  Manager certificates are stored in the following folders:

  [Windows Manager]
  Drive_name:\Fujitsu\ROR\SVROR\certificate

  [Linux Manager]
  Shared_disk_mount_point/Fujitsu/ROR/SVROR

- 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

- 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).

20.1.2 Unsetup

This section explains the procedure for manager unsetup.

Unsetup

For manager unsetup, execute the unsetup command.

Unsetup is executable from either the media or the extracted module.

[Windows Manager]

1. Log in as the administrator.

2. Execute the unsetup command.

   - When executing from the media

> >*Installation_medium***RcSetup.exe** <RETURN>

   - When executing from the extracted module

> >*Installation_folder***SVROR\Manager\sys\setup\RcSetup.exe** <RETURN>

3. Select unsetup from the menu to execute the unsetup command.

4. Check the execution results of the unsetup command.

   - When unsetup is successful

   The following message is displayed.

> INFO : Resource Orchestrator Cloud Edition unsetup successfully.

   - When unsetup fails

   The following message is displayed.

> ERROR : Resource Orchestrator Cloud Edition unsetup failed.

   Collect troubleshooting information and contact Fujitsu technical staff.

[Linux Manager]

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

2. Execute the unsetup command.

   - When executing from the media

> # *Installation_medium*/**RcSetup.sh** <RETURN>

   - When executing from the extracted module

> # **/opt/FJSVrcvmr/sys/setup/RcSetup.sh** <RETURN>

3. Select unsetup from the menu to execute the unsetup command.

4. Check the execution results of the unsetup command.

   - When unsetup is successful

   The following message is displayed.

> INFO : Resource Orchestrator Cloud Edition unsetup successfully.

   - When unsetup fails

   The following message is displayed.

> ERROR : Resource Orchestrator Cloud Edition unsetup failed.

   Collect troubleshooting information and contact Fujitsu technical staff.

20.1.3 Uninstallation [Windows Manager]

The procedure for manager uninstallation is given below.

Before uninstalling this product, check that the preparations given in "20.1.1 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. Execute the following command.

> ***Installation_folder\SWRBAM\F4ANswnc\bin\swncctrl stop*** <RETURN>

3. 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.

Information

The services of Resource Orchestrator are automatically stopped and deleted.

The start-up account created during installation is not automatically deleted.
When 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 updates 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.

  When operating managers in cluster environments, back up the certificates as indicated in the preparations for uninstallation.
  When reinstalling a manager in a cluster environment and using the same certificates, copy the backed up certificates from the primary node to the above folders.

- After uninstallation, folders and files may remain. Delete the following folders (along with contained files and sub-folders) and files.

    - *Installation_folder* (by default, C:\Fujitsu\ROR or C:\ProgramFiles(x86)\Resource Orchestrator) and its contents

    - IAPS

    - IBPM

- IBPMA

- IBPMA_DATA

- J2EE

- SQCM

- SQC_CL

- SQC_DATA

- RCXCFMG

- RCXCFMG-upgradedata (remains when upgrade installation is performed)

- RCXCTMG

- RCXCTMG-upgradedata (remains when upgrade installation is performed)

- ROR_upgradedata (remains when upgrade installation is performed)

- SVROR

- SWOMGR

- SWRBAM

When Systemwalker Runbook Automation has been installed, delete the following folders and files, after uninstalling Systemwalker Runbook Automation.

- IAPS

- IBPM

- IJEE

- J2EE

- SWOMGR

- SWRBAM

- Deletion may fail due to locked files. Restart the OS and then delete them.

- The "%SystemDrive%\ProgramData" folder is not displayed on Explorer as it is a hidden folder.
  To look into the folder, specify the folder name directly, or go to [Organize]-[Folder and search options] of Explorer, select the [View] tab, and enable "Show hidden files, folders, and drives" under [Hidden files and folders].

- Setting information of the DHCP server modified using Resource Orchestrator will not be initialized after uninstallation. Perform initialization if necessary.

- After uninstallation of Resource Orchestrator, the automatic startup settings of the DHCP server (dhcpd) become "OFF" and the service is stopped.

- After uninstallation, when a password has been saved using the rcxlogin command, the password saved in the following folder remains for each OS user account on which the rcxlogin command was executed. When re-installing the manager, delete it.

Folder_set_for_each_user's_APPDATA_environment_variable\Systemwalker Resource Coordinator\

- After uninstallation, following files may remain under the system drive. If they are not necessary, delete the following files.

- F4ANsetup.log

- swinst.err

- swrba_inst.log

- swrba_uninst.log

20.1.4 Uninstallation [Linux Manager]

The procedure for manager uninstallation is given below.

Before uninstalling this product, check that the preparations given in "20.1.1 Preparations" have been performed.

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

2. Execute the following command.

   # /opt/FJSVswnc/bin/swncctrl stop <RETURN>

3. Execute the following command.

   # isstop -f <RETURN>

4. Execute the following command.

   # ismngconsolestop <RETURN>

5. If the Interstage HTTP Server service is already started, stop the service.

   Confirm the value of "Status" using the ihsdisp command.
   Execute the ihsstop command with "-all" option if a Web Server, which "Status" value is "Running", exists.

   ```
   # /opt/FJSVihs/bin/ihsdisp <RETURN>
   Web Server Name   : FJapache
   Status            : Running
   Configuration File: /opt/FJSVihs/servers/FJapache/conf/httpd.conf
   Server Version    : FJapache/10.0
   Current Time      : Wednesday, 13-Jun-2012 13:27:53
   Start Time        : Wednesday, 13-Jun-2012 13:25:54
   Daemon Process ID : 11888
   Child Process ID  : 11894 11895 11896 11897 11898
   Listening Port    : [::]:80
   0 requests currently being processed, 5 idle servers

   # /opt/FJSVihs/bin/ihsstop -all <RETURN>
   ```

6. If the Interstage Java EE DAS service is already started, stop the service.

   Confirm the value of "Status" using the ijdasstat command.
   Execute the ijdasstop command if the value of "Status" is "started".

   ```
   # /opt/FJSVisjee/bin/ijdasstat <RETURN>
   Name                            Status
   ------------------------------------
   Interstage Java EE DAS          started

   # /opt/FJSVisjee/bin/ijdasstop <RETURN>
   ```

7. If the Interstage Java Node Agent service is already started, stop the service.

   Confirm the value of "Status" using the ijnastat command.
   Execute the ijnastop command if the value of "Status" is "started".

   ```
   # /opt/FJSVisjee/bin/ijnastat <RETURN>
   Name                            Status
   ------------------------------------
   Interstage Java EE Node Agent   started

   # /opt/FJSVisjee/bin/ijnastop <RETURN>
   ```

8. If Interstage Directory Service is being used, stop all the repositories of the service.

   Detect the active repositories using the ireplist command, and then stop all of them using the irepstop command.

```
# ireplist <RETURN>
No Repository Status
-- ---------- --------
 1 rep001     Active
# irepstop -R rep001 <RETURN>
```

9. 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, return it to the state prior to application 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/FJSVrcvmr/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.
  When operating managers in cluster environments, back up the certificates as indicated in the preparations for uninstallation.
  When reinstalling a manager in a cluster environment and using the same certificates, copy the backed up certificates from the primary node to the above folders.

- After uninstallation, the installation directories below may remain. In that case, delete any remaining directories manually.

    - /opt/FJSVawjbk

    - /opt/FJSVctchg

    - /opt/FJSVctdsb

    - /opt/FJSVctmg

    - /opt/FJSVctmyp

    - /opt/FJSVctope

    - /opt/FJSVctpw

    - /opt/FJSVctsec

    - /opt/FJSVena

    - /opt/FJSVibpma

    - /opt/FJSVssqc

    - /opt/FJSVtd (Confirm whether directories in this directory can be deleted referring to the caution below.)

    - /opt/remcs

- /etc/opt/FJSVctchg

- /etc/opt/FJSVctmg

- /etc/opt/FJSVctmyp

- /etc/opt/FJSVctope

- /etc/opt/FJSVctpw

- /etc/opt/FJSVctsec

- /etc/opt/FJSVibpma

- /etc/opt/FJSVirep

- /etc/opt/FJSVisas

- /etc/opt/FJSVisgui

- /etc/opt/FJSVod

- /etc/opt/FJSVssqc

- /var/opt/FJSVcfmg

- /var/opt/FJSVctchg

- /var/opt/FJSVctdsb

- /var/opt/FJSVctmg

- /var/opt/FJSVctmyp

- /var/opt/FJSVctsec

- /var/opt/FJSVena

- /var/opt/FJSVibpma

- /var/opt/FJSVirep

- /var/opt/FJSVisas

- /var/opt/FJSVisgui

- /var/opt/FJSVisjmx

- /var/opt/FJSVssqc

- /var/opt/FJSVswrbam

- /var/opt/FJSVtd

- root_account_home_directory/InstallShield

- Do not delete /opt/FJSVtd/var/IRDB.

- After uninstallation, when a password is saved using the rcxlogin command, the password saved in the following directory remains depending on the user account for an OS on which the rcxlogin commands are executed. When re-installing the manager, delete it.

  /*Directory_set_for_each_user's_HOME_environment_variable*/.rcx/

- Setting information of the DHCP server modified using Resource Orchestrator will not be initialized after uninstallation of Resource Orchestrator. Perform initialization if necessary.

- After uninstallation of Resource Orchestrator, the DHCP server service (dhcpd) is stopped.

20.1.5 Post-uninstallation Procedure

This section explains the procedures to be taken after manager uninstallation.

If necessary, delete the users registered in the directory service.
If necessary, delete the IflowUsers group registered in the directory service.

20.1.5.1 Fujitsu XML Processor Uninstallation [Windows Manager]

This section explains the uninstallation of the Fujitsu XML Processor.

🛈 Note

Confirm that other products are not using it before performing uninstallation.

[Add or Remove Programs] ([Programs and Functions] on Windows Server 2008) may display an old version of Fujitsu XML Processor. If it is not necessary, uninstall it as well.

The procedure for uninstallation of the Fujitsu XML Processor is given below:

1. Log in using an account belonging to the Administrators group.

2. Start the uninstaller.

   Open [Add or Remove Programs] from the Windows Control Panel.

   Select "Fujitsu XML Processor V5.2.4" and then click <Remove>.

   ### 🛈 Information

   When using Windows Server 2008, open "Programs and Functions" from the Windows Control Panel.

3. A confirmation message for continuing uninstallation will be displayed.

   To execute uninstallation, click <OK>.
   To cancel, click <Cancel>.

4. Execute uninstallation.

   The program removal window will open.
   The program and the relevant registry information will be removed.

20.1.5.2 SMEE Uninstallation [Linux]

This section explains the uninstallation of SMEE.

🛈 Note

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>
   ```

20.1.5.3 Securecrypto Library RunTime Uninstallation [Linux]

This section explains the uninstallation of Securecrypto Library RunTime.

![Note icon] Note
....
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 FJSVsclr <RETURN>
   ```

20.1.5.4 Groups Remaining after Uninstallation

The iscertg and swadmin groups have been created. If it is not necessary, delete this group.

20.1.5.5 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.

  - /opt/FJSVsmee

  - /etc/opt/FJSVsclr

20.2 Agent Uninstallation

The uninstallation of agents is explained in the following sections.

20.2.1 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 "Add or Remove Programs" from the Windows Control Panel, and if "ServerView Resource Orchestrator Agent" is not displayed on the [Add or Remove Programs] window, delete any remaining resources manually.

   ![Information icon] Information
   ....
   For Windows Server 2008, select "Programs and Features" from the Windows Control Panel.
   ....

3. The [Confirm Uninstall] dialog will be displayed.

   Click <OK>.

4. When uninstallation is completed, the confirmation window will be displayed.

   Click <Finish>.

20.2.2 Uninstallation [Linux] [VMware] [Xen] [KVM] [Oracle VM]

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.

3. If uninstallation fails, use the rpm command to remove the packages given in the message, and start the process from 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, return it to the state prior to application before performing uninstallation.
>
> - After uninstallation, the installation directories and files below may remain. In that case, delete any remaining directories and files manually.
>
>   **Directories**
>
>   - /opt/FJSVnrmp
>
>   - /opt/FJSVrcxat
>
>   - /opt/FJSVrcximg
>
>   - /opt/FJSVrcxkvm
>
>   - /opt/FJSVssagt
>
>   - /opt/FJSVssqc
>
>   - /opt/systemcastwizard
>
>   - /etc/opt/FJSVnrmp
>
>   - /etc/opt/FJSVrcxat
>
>   - /etc/opt/FJSVssagt
>
>   - /etc/opt/FJSVssqc
>
>   - /var/opt/systemcastwizard
>
>   - /var/opt/FJSVnrmp
>
>   - /var/opt/FJSVrcxat
>
>   - /var/opt/FJSVssagt
>
>   - /var/opt/FJSVssqc
>
>   **Files**
>
>   - /boot/clcomp2.dat
>
>   - /etc/init.d/scwagent
>
>   - /etc/scwagent.conf
>
> ⋅⋅

20.2.3 Uninstallation [Solaris]

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.

Information

···

When the uninstaller of Resource Orchestrator is started, its services are stopped.

If uninstallation fails, use the pkgrm command to remove the packages given in the message, and start the process from 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.
  When the PATH variable has not been configured, return it to the state prior to application before performing uninstallation.

- After uninstallation, the installation directories below may remain. In that case, delete any remaining directories manually.

  - /opt/FJSVrcvat

  - /opt/FJSVssqc

  - /etc/opt/FJSVrcvat

  - /etc/opt/FJSVssqc

  - /var/opt/FJSVrcvat

  - /var/opt/FJSVssqc

···

20.3 Agent (Dashboard Function) Uninstallation

This section explains the procedure for uninstallation of agents (Dashboard Function).

20.3.1 Uninstallation [Windows] [Hyper-V]

When the agent is uninstalled, the agent (Dashboard Function) is uninstalled.

Note

···

- Any updates that have been applied to Resource Orchestrator will be deleted during uninstallation.

- When the agent (Dashboard Function) has been installed, the agent (Cloud Edition for Dashboard) is also uninstalled automatically.

- 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.

···

20.3.2 Uninstallation [Linux] [VMware] [Xen] [KVM] [Oracle VM]

When the agent is uninstalled, the agent (Dashboard Function) is uninstalled.

> 📌 **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. Therefore, there is no need to return it to the state prior to application. When the PATH variable has not been configured, return it to the state prior to application before performing uninstallation.
>
> - When the agent (Dashboard Function) has been installed, the agent (Cloud Edition for Dashboard) is also uninstalled automatically.
>
> - After uninstallation, the installation directories and files below may remain. In that case, delete any remaining directories and files manually.
>
>   - Directories
>
>   - /opt/systemcastwizard
>
>   - /opt/FJSVnrmp
>
>   - /opt/FJSVrcvat
>
>   - /opt/FJSVssagt
>
>   - /opt/FJSVssqc
>
>   - /etc/opt/FJSVnrmp
>
>   - /etc/opt/FJSVrcvat
>
>   - /etc/opt/FJSVssagt
>
>   - /etc/opt/FJSVssqc
>
>   - /var/opt/systemcastwizard
>
>   - /var/opt/FJSVnrmp
>
>   - /var/opt/FJSVrcvat
>
>   - /var/opt/FJSVssagt
>
>   - /var/opt/FJSVssqc
>
>   - Files
>
>   - /boot/clcomp2.dat
>
>   - /etc/init.d/scwagent
>
>   - /etc/scwagent.conf
> ....

20.3.3 Uninstallation [Solaris]

When the agent is uninstalled, the agent (Dashboard Function) is uninstalled.

> 📌 **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. Therefore, there is no need to return it to the state prior to application. When the PATH variable has not been configured, return it to the state prior to application before performing uninstallation.
>
> - After uninstallation, the installation directories and files below may remain. In that case, delete any remaining directories and files manually.
>
>   - /opt/FJSVrcvat
>
>   - /opt/FJSVssqc

- /etc/opt/FJSVrcvat

- /etc/opt/FJSVssqc

- /var/opt/FJSVrcvat

- /var/opt/FJSVssqc

20.4 HBA address rename Setup Service Uninstallation

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

20.4.1 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 "Add or Remove Programs" from the Windows Control Panel, and select "ServerView Resource Orchestrator HBA address rename setup service" and delete it from the [Add or Remove Programs] window.

Information

For Windows Server 2008 or Windows Vista, select "Programs and Features" from the Windows Control Panel.

3. The [Confirm Uninstall] dialog will be displayed.

   Click <OK>.

Information

The services of Resource Orchestrator are automatically stopped and deleted.

4. When uninstallation is completed, the confirmation window will be displayed.

   Click <Finish>.

Note

- Any updates 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 "Add or Remove Programs" from the Windows Control Panel, and if "ServerView Resource Orchestrator HBA address rename setup service" is not displayed on the [Add or Remove Programs] window, delete any remaining folders manually.

> ## 📖 Information
>
> ....
>
> For Windows Server 2008 or Windows Vista, select "Programs and Features" from the Windows Control Panel.
>
> ....

20.4.2 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 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, return it to the state prior to application before performing uninstallation.
>
> - After uninstallation, the installation directories below may remain. In that case, delete any remaining directories manually.
>
>   - /opt/FJSVrcvhb
>
>   - /opt/FJSVscw-common
>
>   - /opt/FJSVscw-tftpsv
>
>   - /etc/opt/FJSVrcvhb
>
>   - /etc/opt/FJSVscw-common
>
>   - /etc/opt/FJSVscw-tftpsv

- /var/opt/FJSVrcvhb

- /var/opt/FJSVscw-common

- /var/opt/FJSVscw-tftpsv

20.5 Uninstallation of "Uninstall (Middleware)"

The uninstallation of "Uninstall (middleware)" is explained in this section.

Note

- When uninstalling Resource Orchestrator, specify Resource Orchestrator using "Uninstall (middleware)" first, and uninstall it.

- "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>

Information

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/bin/cimanager.sh -c** <RETURN>

Note

∙∙

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/cirreomve.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

   [Linux] [Solaris]
   /var/opt/FJSVcir

∙∙

Appendix A Advisory Notes for Environments with Systemwalker Centric Manager or ETERNUS SF Storage Cruiser

This appendix explains advisory notes for use of Resource Orchestrator in combination with Systemwalker Centric Manager or ETERNUS SF Storage Cruiser.

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 ServerView Trap Server for Linux (trpsrvd) is necessary.

- Systemwalker Centric Manager (Operation management servers and section admin servers)

- ETERNUS SF Storage Cruiser Manager 14.1 or earlier

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. 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 14.1 or later

In this case, execute the following command as the OS administrator (root) and delete the SystemWalker MpWksttr service.

```
# rpm -e FJSVswstt <RETURN>
```

Appendix B Configuration when Creating Physical L-Servers

This appendix 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 managed servers used to configure a physical L-Server.

- Blade Servers

    Use VIOM.

- Rack Mount Servers

    Use HBA address rename.

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.
For details, refer to "Chapter 8 Creating Definition Files".

B.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.

When using SAN storage

- For all storage

    Refer to "B.1.1 Creating Definition Files Combining Ports of SAN Storage".

- When using ETERNUS storage

    Refer to "B.1.2 Format Selection for the Names of Virtual Storage Resources and Disk Resources Managed by ESC".

    - 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".
        Refer to "G.1.1 Overcommit Definition Files", 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.

    - When using configuration of priority for resource selection on Thin Provisioning and Automatic Storage Layering

        Refer to "B.1.3 Configuration of Priority for Resource Selection on Thin Provisioning on Thin Provisioning and Automatic Storage Layering".

    - When using dynamic LUN mirroring

        Refer to "B.1.4 Creating Mirroring Definition Files for Dynamic LUN Mirroring".

- When using EMC storage

    For details, refer to "B.1.5 Definition File for EMC Storage".

- When the number of FCs fitted and their position differ depending on the physical server

    Refer to "B.1.7 Setting the Number of FCs Fitted and their Position for Each Physical Server".

When creating a physical L-Server without specifying a model name in the L-Server template

Refer to "B.1.6 Configuration when Creating a Physical L-Server without Specifying a Model Name in the L-Server Template".

When using alive monitoring

Refer to "B.1.8 Definition File for Alive Monitoring".

B.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 definition file has been edited, it is not necessary to restart the manager.

Storage 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_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 (":"). Up to 64 combination 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
> ....
>
> When using rack mount servers, the order of HBA Port 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

  storage_unit_ipaddr

    Specify the IP address of SP of EMC CLARiiON 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 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 (":"). Up to 64 combination 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 "B.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, 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 (":"). Up to 1 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 "B.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

An example definition file is indicated below.

  - When using ETERNUS storage

> 192.168.1.24,"500000E0D00C7006:500000E0D00C7086","500000E0D00C7086:500000E0D00C7087"

  - When using EMC CLARiiON storage

> 192.168.1.24,"SPAPort0:SPBPort0","SPAPort1:SPBPort1"

  - When using EMC Symmetrix DMX storage or EMC Symmetrix VMAX storage

> 000192601264,"07GPort1:08GPort1"

B.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/FJSVrcvmr/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

> ETERNUS_VOLUME_NAME_TO_DISK_NAME
>
> > Select the format of the name of disk resources managed by ESC.
> >
> > - If "true" is specified
> >
> > The disk resource name is used as the alias name for ESC. If the format of the alias name is unavailable 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 ESC does not support the alias name, the combination of the IP address of ETERNUS, the RAID group number, and the volume number will be used as the disk resource name.
> >
> > - If "false" is specified
> >
> > The combination of the IP address of ETERNUS, the RAID group number, and the volume number will be used as the disk resource name.
> >
> > - If nothing is specified
> >
> > "false" is set.

> 📙 Note
> ....
> 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 RAID group name of ESC is used as the virtual storage resource name. If the format of the RAID group name is unavailable for the format of the virtual storage resource name, Resource Orchestrator automatically set a virtual storage resource name that conforms to the RAID group name. Even if "true" has been specified, when ESC does not support the RAID group name, the combination of the IP address of ESC and the RAID group number will be used as the virtual storage resource name.

- If "false" is specified

  The combination of the IP address of ESC and the RAID group number will be used as the virtual storage resource name.

- 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
> ```
> ....

B.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/FJSVrcvmr/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.

```
Specified item = Specified
value
```

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
```

. . . .

B.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_storege_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
```

. . . .

B.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/FJSVrcvmr/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\\EMC\\Navisphere CLI
secfilepath=..\\..\\..\\etc\\storage\\emc
symcli=C:\\Program Files\\EMC\\SYMCLI\\bin
```

[Linux]

```
naviseccli=/opt/Navisphere/bin
secfilepath=/etc/opt/FJSVrcvmr/storage/emc
symcli=/opt/symcli/bin
```

B.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.

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

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.

Storage 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,V1.0
```

- 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.
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.

Example

....

An example definition file is indicated below.

```
ServerSpec,V1.0

##########################################################################
# server_spec.rcxprop
#
#All Rights Reserved, Copyright(C) FUJITSU LIMITED 2011
```

```
##########################################################################
#
# 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
```

B.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:

- EMC CLARiiON Storage

- 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"
```

B.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".

Storage 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/FJSVrcvmr/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.

```
Item_specified=Value_specified
```

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.
....

B.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.

- When using Blade Servers

  Refer to "B.2.1 When using Blade Servers".

- When using something other than a blade server

  Refer to "B.2.2 When Registering Something other than a Blade Server".

B.2.1 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. Registering 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".

3. Register Chassis

4. Refer to "5.4.1 Registering Chassis" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

5. Register Managed Servers (within Chassis)

   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".

   When performing admin LAN NIC redundancy and registering a physical server, 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.

   - Creation of 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".
   ....

6. Register LAN Switch Blades

   Refer to "5.4.3 Registering LAN Switch Blades" and "5.5.2 Registering LAN Switches" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

7. 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".

8. 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 "B.3 Registering Resources in Resource Pools".

B.2.2 When Registering 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. HBA address rename Settings

   Refer to "5.5.3 Configuring HBA address rename" 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.

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 and registering a physical server, 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.

- Creation of 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 "B.3 Registering Resources in Resource Pools".

B.3 Registering Resources in Resource Pools

This chapter 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 "B.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".

B.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 B.1 Physical Server (Blade Servers) Configuration (for PRIMERGY BX900 S1 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 BX922 S2 BX924 S3	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)	1,2
	CB3 and CB4	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	5 - 8
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109)	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)	3,4

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number
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 (*2)	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	3 - 6
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109)	3,4

*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: Only configurations where LAN expansion cards are mounted in expansion slot 1 are supported.

Table B.2 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 BX922 S2 BX924 S3	CB1 and CB2 (*1), or no specification for uplink port	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	1 - 8
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) (*2)	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.

Table B.3 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 B.4 Configuration Example

Server blades	BX920 S2
Specification of uplink port	CB1 and CB2

LAN switch blade to use	PY-SWB103(PG-SW112)

Figure B.1 Physical Server (Blade Servers) Configuration (for PRIMERGY BX900 S1 Chassis)
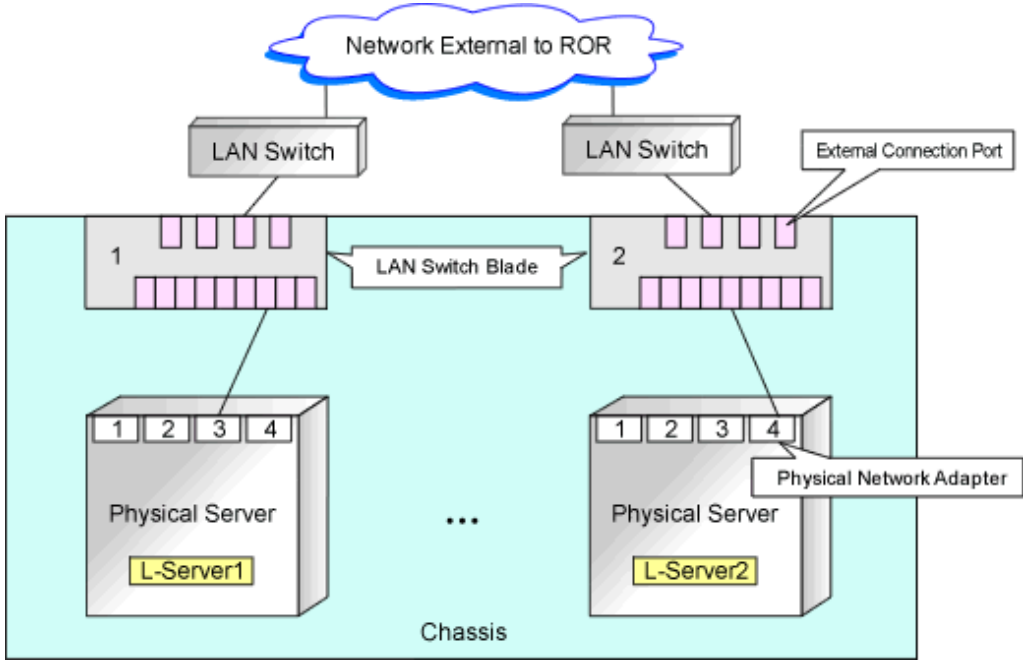
B.3.2 Manual Network Configuration

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.] checkbox.

- From the Command-line:

    1. Create the XML file that defines network resources.

       In this case, specify auto="false" in the Network tag.

       For details on the Network element and creation of XML files that define network resources, refer to "14.5 Network Resources" in the "Reference Guide (Command/XML) CE".

    2. Execute the rcxadm network create command specifying the XML file created in 1.

See
....
- For details on the Network element and creation of XML files that define network resources, refer to "14.5 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".
....

B.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 a 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 Exporting a Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

   2. Edit an L-Server Template

      The L-Server template output in 1. can be edited with an editor, etc.
      For details on the L-Server templates for physical L-Servers, refer to "14.2.1 Physical L-Server Templates" in the "Reference Guide (Command/XML) CE".

   3. Import an L-Server Template

      The L-Server template edited in 2. can be imported.
      For details on how to import L-Server templates, refer to "15.2.3 Importing a Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

B.5 Creating an L-Server

This section explains the creation of physical L-Servers.

Physical L-Servers can be created using the following methods:

- Creating an L-Server Using an L-Server Template

   Refer to "B.5.1 Creating an L-Server Using an L-Server Template".

- Creating an L-Server Specifying Individual Specifications

   Refer to "B.5.2 Creating an L-Server Specifying Individual Specifications".

- Installation of an Operating System Using PXE Boot

   Refer to "B.5.4 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 "B.7 [OS] Tab Configuration".

For details, refer to the following:

B.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 "B.5.3 Manual OS Installation".

3. Install a Multipath Driver (when using a Multipath for the Path to the SAN)

   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 <OK>.

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 <OK>.

      The [Register Agent] dialog is displayed.

   c. Click <OK>.

- 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.

B.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 "B.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".

B.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 for cloning, and 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=Windows product key (*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

    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 B.5 Structure of the Definition File

Format	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.

B.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 <OK>.

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 <OK>.

       The [Register Agent] dialog is displayed.

    b. Click <OK>.

B.6 Collecting and Registering Cloning Images

Cloning images can be collected using the following two methods:

- Collecting a Cloning Image from an L-Server after OS Installation

  Refer to "B.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.

Collect cloning images in the state where a multi driver is installed.

B.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. 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".

2. Collecting a Cloning Image

   In the orchestration tree on the [Resource] tab of the ROR console, right-click the L-Server created in "Chapter 14 Creating an L-Server for an Infrastructure Administrator", 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 Cloning Images" 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 "Appendix B Co-Existence with ServerView Deployment Manager" in the "Setup Guide VE".

- 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 drivers or Linux partitions) are set in the first disk, all the partitions are cloned.

  Table B.6 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

- 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 for 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 the activation of Windows Server 2008, Sysprep can be executed a maximum of three times.

  Since Sysprep is executed when deploying a cloning image, cloning image collection and deployment cannot be executed four or more times.

  Therefore, it is recommended not to collect cloning images from managed 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.

B.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 B.7 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.

B.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 B.8 List of Items Specified in the Network Information File

Variable	Meaning	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	
Group[index]_[NetworkLinkIndex]_DNSServer	DNS addresses of groups [Windows]	

Variable	Meaning	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]_DNSServer	NIC DNS addresses [Windows]	
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
DNSServer	DNS Server [Linux]	-
Route [index]	Static routing configuration Type, destination address for packet, net mask and gateway address are specified, separated by commas	- type: type of destination address - net: net address - host: host address - destination address: destination address for packet - mask: net mask - gateway address: gateway address

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 of monitoring targets for GLS or Bonding)

   /etc/opt/FJSVrcvmr/customize_data/net/net_info.*network_resource_name*.conf

- L-Server unit parameter (configures QoS or others to set for NICs)

   /etc/opt/FJSVrcvmr/customize_data/l_server/net/net_info.*l_server_name*.conf

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.

📝 Example

```
#MAC information list of NIC equipped on Physical Server
NIC1_MacAddress="XX:XX:XX:XX:XX:X1"
NIC2_MacAddress="YY:YY:YY:YY:YY:Y2"
NIC3_MacAddress="XX:XX:XX:XX:XX:X3"
NIC4_MacAddress="YY:YY:YY:YY:YY:Y4"
NIC5_MacAddress="XX:XX:XX:XX:XX:X5"
NIC6_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="1 2" #Bonding NIC 1 and 2
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"
Group0_0_DNSServer="ipaddress"

Group1_0_Nics="3 4" #Bonding NIC 3 and 4
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="3 4" #Bonding NIC 3 and 4
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
Group1_1_DNSServer="ipaddress"
#############################################################
#Non redundant NIC information
#############################################################
SingleNics="5 6"#List of non-redundant NIC
NIC5_NetworkLinks ="0"   #One NetworkLink exists in NIC5(index 0 only)
NIC6_NetworkLinks ="0 1" #Multiple NetworkLinks exist in NIC6(index 0 to 1)

NIC5_0_IpAddress="192.168.20.1"
```

```
NIC5_0_Netmask="255.255.255.0"
NIC5_0_VlanMode="untagged"#Example where VLANID is not specified, since this group is
untagged VLAN
NIC5_0_DNSServer="ipaddress"

NIC6_0_IpAddress="192.168.30.1"
NIC6_0_Netmask="255.255.255.0"
NIC6_0_VlanMode="untagged"#Example where VLANID is not specified, since this group is
untagged VLAN

NIC6_1_IpAddress="192.168.40.1"
NIC6_1_Netmask="255.255.255.0"
NIC6_1_Vlanid=40
NIC6_1_VlanMode="tagged"#Tagged VLAN
NIC6_1_DNSServer="ipaddress"
Route0=net,192.168.200.0,255.255.255.0,192.168.1.254
```

B.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 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

- 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 (*1)

    - 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 (*1)

    - 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

- Switch over spare servers of physical L-Servers

    - The server in the server pool to which a high priority has been given (*1)

    - 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)

*1: 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.

*2: 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 capacity

      - Number of NICs

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.

B.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 "B.8 Network Redundancy and VLAN Settings of L-Servers".

Appendix C Configuration when Creating Virtual L-Servers

This appendix explains configuration regarding the creation of virtual L-Servers.

C.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.

- When using overcommit [VMware] [Hyper-V] [KVM] [Solaris Containers]

    Refer to "C.1.1 Overcommit Definition Files".

- When defining VM specific information [VMware] [Hyper-V] [KVM]

    Refer to "C.1.2 VM Specific Information Definition File".

- When using thin provisioning [VMware]

    Refer to "C.1.3 Configuration of Priority for Resource Selection on Thin Provisioning".

- When creating a virtual L-Server using a server which cannot use ServerView Agents

    Refer to "C.1.4 Configuration when Creating a Virtual L-Server Using a Server which cannot Use ServerView Agents".

- Configuration when creating a virtual L-Server using VMware ESXi on other vendor's servers [VMware]

    Refer to "C.1.5 Configuration when Creating a Virtual L-Server Using VMware ESXi on Other Vendor's Servers".

- When using alive monitoring [VMware] [Hyper-V]

    Refer to "C.1.6 Definition File for Alive Monitoring".

- When generating the default value for the information such as the [OS]Tab when creating an L-Server [VMware] [Hyper-V] [KVM] [Solaris Containers]

    Refer to "C.1.7 OS Property Definition File [VMware] [Hyper-V] [KVM] [Solaris Containers]".

C.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".

Storage 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 "G.1.1 Overcommit Definition Files".
∙∙

C.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)

Storage Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data\vm_prop

[Linux Manager]
/etc/opt/FJSVrcvmr/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 C.1 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	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	Specify the minimum amount of memory resources to be allocated.

Key	Description
	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".
memory_share	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. Enter an integer between 1 and 10,000. 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".
dynamic_memory	Specify the dynamic memory settings. - When dynamic memory is enabled 　Specify "true". - When dynamic memory is disabled 　Specify "false". When omitted, the value varies depending on the initial memory size and memory buffer specified when creating an L-Server. - 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 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".
memory_startup_size	Specify the initial amount of memory to be allocated at startup. 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. - 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 When dynamic memory is disabled, this setting is ignored. Enabled when the VM type is set to "Hyper-V".
memory_buffer_rate	Specify the percentage of memory to be reserved as a buffer. 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

Key	Description

	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.
	
	- 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
	
	When dynamic memory is disabled, this setting is ignored.
	Enabled when the VM type is set to "Hyper-V".

memory_weight	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	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.

See

When not describing a parameter in the VM specific information definition file, refer to each element name in "14.3.2 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.

C.1.3 Configuration 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/FJSVrcvmr/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

C.1.4 Configuration 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.

. . . .

Storage 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,V1.0

- 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,V1.0

#############################################################################
# server_spec.rcxprop
#
#All Rights Reserved, Copyright(C) FUJITSU LIMITED 2011
#############################################################################
#
# 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
```

C.1.5 Configuration when Creating a Virtual L-Server Using VMware ESXi on Other 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 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 configuration definition 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

Storage Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
/etc/opt/FJSVrcvmr/customize_data

P 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

- 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
```

. . . .

C.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.

....

Storage 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/FJSVrcvmr/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.

Note

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.

C.1.7 OS Property Definition File [VMware] [Hyper-V] [KVM] [Solaris Containers]

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.

Point

. . . .

The OS property definition file can be configured using the"Setup Wizard" of the ROR console.

For details on the setup wizard, refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE".

. . . .

For details on the [OS] Tab, refer to the following:

[VMware]
Refer to "C.2.9 [OS] Tab Configuration".

[Hyper-V]
Refer to "C.3.9 [OS] Tab Configuration".

[KVM]
Refer to "C.6.8 [OS] Tab Configuration".

[Solaris Containers]
Refer to "C.7.7 [OS] Tab Configuration".

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.

Key = Value

When adding comments, start the line with a number sign ("#").

Definition File Items

Specify the following items in a definition file.

Table C.2 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:	-

Item	Key	Value	Remarks
		- "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)	-
Hardware clock configuration	hwclock	Specify one of the following: - "UTC" - "LOCAL"	-
DNS server (When configuring for each NIC on Windows) (*2)	nic$N$_dns_address$X$	Specify the IP address using numeric values (between 0 and 255) and periods. (*2) When not configuring a DNS server, specify a hyphen ("-").	For N, specify the NIC number. For X, specify primary ("1") or secondary ("2").
DNS server (When configuring all NICs using the same settings on Windows)	dns_address$X$	Specify the IP address using numeric values (between 0 and 255) and periods.	For X, specify primary ("1") or secondary ("2"). Priority is given to nic$N$_dns_address$X$ specifications.
DNS server (for Linux)	dns_address$X$	Specify the IP address using numeric values (between 0 and 255) and periods.	For X, specify primary ("1"), secondary ("2"), or tertiary ("3").

*1: For details on the values, refer to the following:
[VMware]
Refer to "Table C.10 List of Settings".
[Hyper-V]
Refer to "Table C.17 List of Settings".
[KVM]
Refer to "Table C.20 List of Settings".
[Solaris Containers]
Refer to "Table C.22 List of Settings".

*2: When omitting keys or values, use the value "dns_address$X$" to configure the same values for the NIC definitions of all NICs on Windows.

🗒 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 =

# 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 =
```

C.2 VMware

This section explains the settings used when using VMware as server virtualization software.

C.2.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "C.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:

Key = *Value*

Definition File Items

Table C.3 List of Items

Item	Key	Value	Remarks
Configuration of power control for VMware DRS and DPM	drs_power_on_vm	true|false	When server virtualization software is VMware, the values are valid. - 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".

- 185 -

Item	Key	Value	Remarks
			If left blank, "false" is set. Restarting of the server is not required after changing this configuration. When specifying "true", set VMware DRS and VMware DPM as follows: - VMware DRS "partly automatic" or "full automatic" - VMware DPM "off" or "automatic" When specifying "Manual", startup of L-Servers and VM guests may fail. 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".

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 C.4 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 "/").
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 a "#", 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
....

C.2.2 Registering Resources with Resource Orchestrator

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 resource device, specify a network pool when creating the network resource device.

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 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 "5.5.2 Registering LAN Switches" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network resource device, specify a network pool when creating the network resource device.

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".

C.2.3   Registering Resources in Resource Pools

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 to 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 "C.2.4 Automatic Network Configuration".

   A redundant NIC configuration will be configured. When configuring a non-redundant NIC, refer to "C.2.5 Manual Network Configuration".

   P 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 "C.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".

C.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

    If the required network resources do not exist, they are automatically created. A redundant NIC configuration will be configured.

    If it already exists, the virtual switch and port group are used.

    When the user configures the network automatically using an arbitrary physical NIC, define the physical NIC to be used in the server NIC definition file, and then specify the physical LAN segment 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.

    In addition, when using rack mount and 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.

- 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.

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 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".

See

- For details on the server NIC definitions, refer to "14.11 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 C.5 Default Blade Server Configuration for Network Auto-Configuration (for PRIMERGY BX900 S1 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*4)
BX920 S1 BX920 S2 BX920 S3 BX922 S2 BX924 S3	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)	1,2
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	5,6
	CB5 and CB6	PY-SWB104(PG-SW109)	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)	1,2

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*4)
		PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	3,4
	CB5 and CB6	PY-SWB104(PG-SW109)	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 (*2)	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	3,4
	CB5 and CB6 (*3)	PY-SWB104(PG-SW109)	7,8
	CB7 and CB8 (*3)	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	9,10
	CB7 and CB8 (*3)	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: A LAN expansion card is mounted in expansion slot 1.
*3: A LAN expansion card is mounted in expansion slot 2.
*4: Use each physical network adapter, by performing redundancy using teaming.

Table C.6 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 (*3)
BX920 S2 BX920 S3 BX922 S2 BX924 S3	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)	2,6
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	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)	7,8

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*3)
		PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	

*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: Use each physical network adapter, by performing redundancy using teaming.

Table C.7 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.

When the user configures the network automatically using an arbitrary physical NIC, define the physical NIC to be used in the server NIC definition file, and specify the physical LAN segment 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. This enables automatic network configuration even in configurations using an arbitrary physical NIC.
However, when using server NIC definitions, the operation must be performed from the command-line.
In addition, when using rack mount and 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.

 See
• •
- For details on the server NIC definitions, refer to "14.11 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 C.8 Configuration Example 1

Server blades	BX920 S2
Specification of uplink port	CB1 and CB2
LAN switch blade to use	PY-SWB103(PG-SW112)

Table C.9 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 C.1 Blade Server Diagram of Configuration Example 1
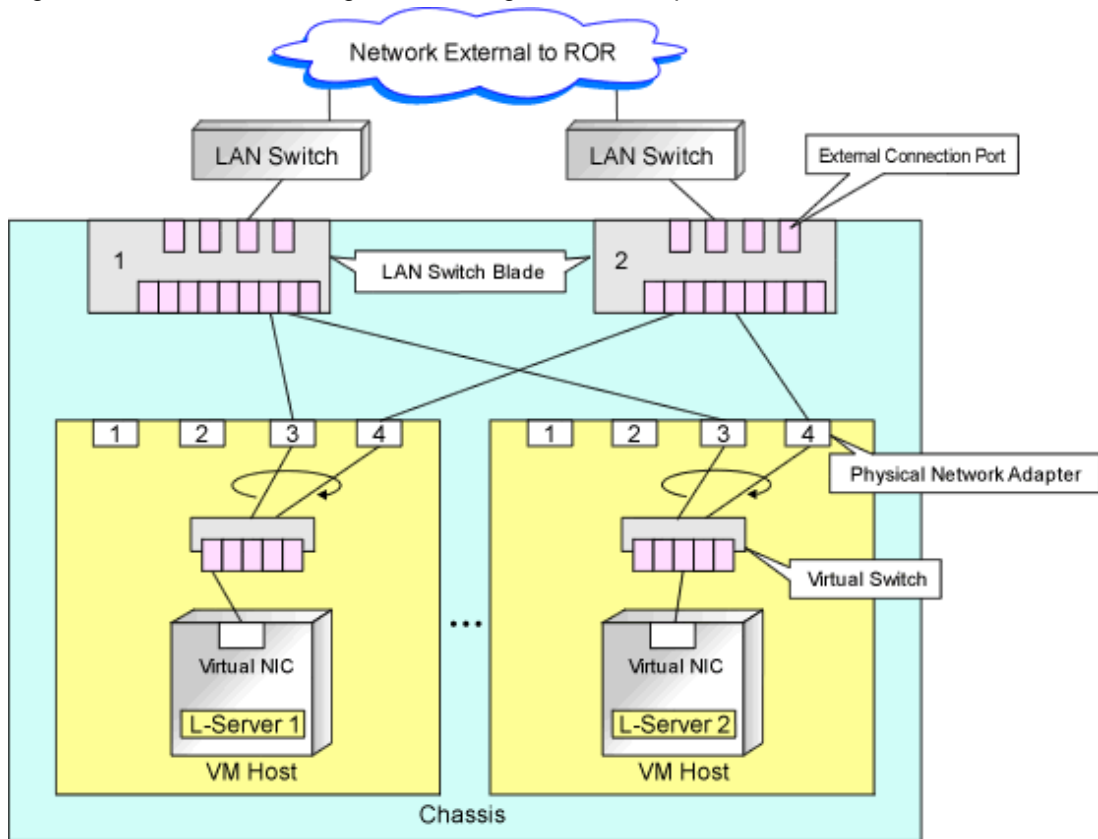
Figure C.2 Blade Server Diagram of Configuration Example 2
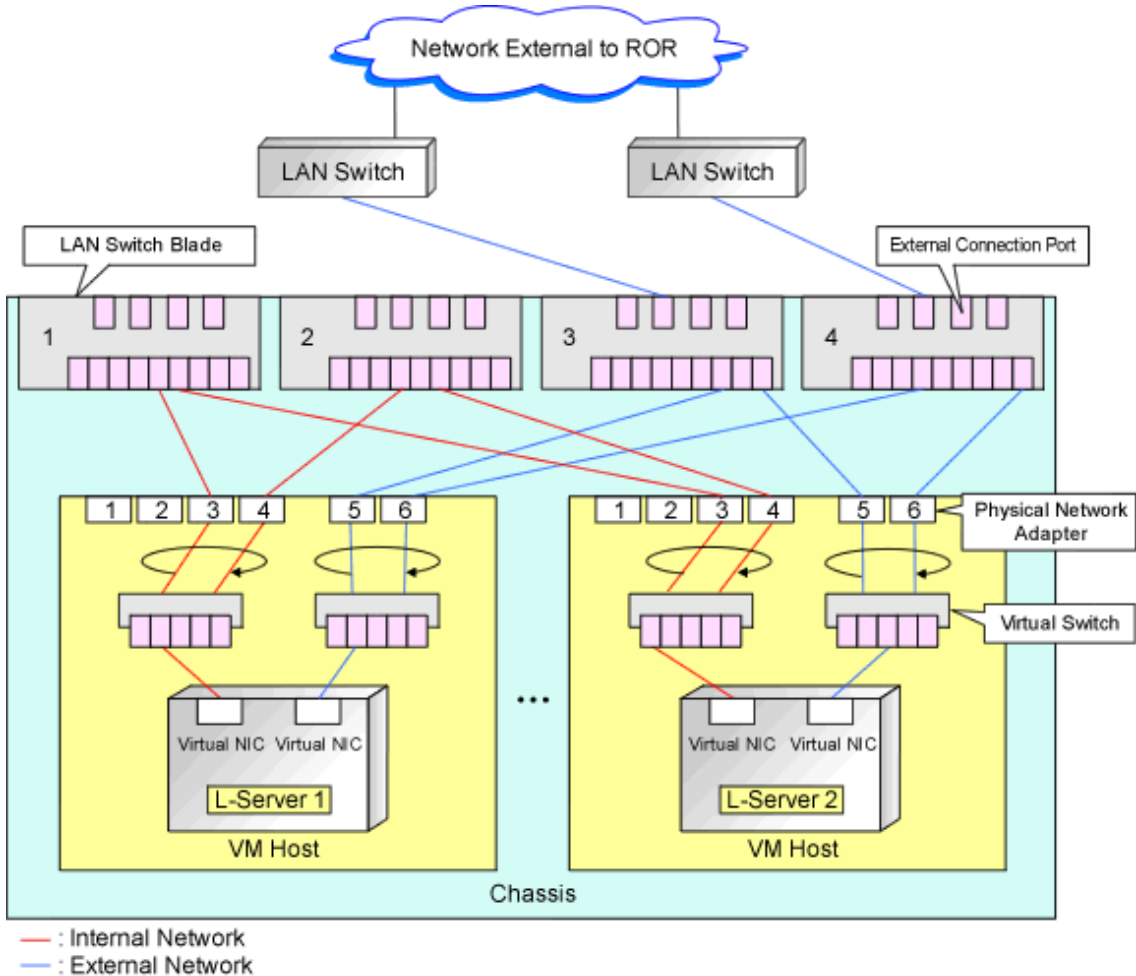
C.2.5   Manual Network Configuration

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:

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 created in 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.

   When manually configuring a port group, for the name of port groups using the same VLAN ID, it is necessary to use a common name on all VM hosts. 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.

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 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 2. and 3., check the [Use configured virtual switches.] checkbox and create a network resource.

- From the Command-line:

    a. Create the XML file that defines network resources.

       Define the VLAN ID specified at 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 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
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- For details on the Network element and creation of XML files that define network resources, refer to "14.5 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 C.3 Network Diagram

C.2.6 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 a 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 Exporting a Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in 1. can be edited with an editor, etc.

For details on the L-Server templates for virtual L-Servers, refer to "14.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

3. Import an L-Server Template

Refer to "15.2.3 Importing a Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

C.2.7 Creating an L-Server

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 "C.2.8 Collecting a Cloning Image".

   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 "C.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 <OK>.

   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
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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.
. . . .

C.2.8 Collecting a Cloning Image

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 <OK>.

   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.

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. When using Windows Server 2008, the modules are already configured in the OS so there is no need to obtain new modules.

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

- If an L-Server is created with a specified Windows image, when deploying the image use Sysprep, provided by Microsoft, to re-configure 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 image OS, Sysprep can be executed a maximum of three times. Since Sysprep is executed when creating L-Server with images specified or when collecting cloning images, collection of cloning images and creation of L-Servers with images specified cannot be performed more than 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.

C.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.

Table C.10 List of Settings

Item	Windows		Linux		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
Host name/ Computer name	Possible	*L-Server Name*	Possible	*L-Server Name*	Enter the host name or computer name. For Windows, enter a string of between 1 and 15 alphanumeric characters or hyphens ("-"). For Linux, enter between 1 and 63 alphanumeric characters or hyphens ("-"). In either case, the first character must be an alphanumeric character. The string cannot be composed solely of numbers. 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.
Domain name	Possible	WORKGROUP (*1)	Possible	localdomain (*1)	For Windows, enter the workgroup name. Settings for participation in a domain cannot be made. For Linux, enter the domain name. Enter between 1 and 255 alphanumeric characters, hyphens ("-"), or periods ("."), using an alphabetic character for the first character.
DNS search path	Not Required	-	Essential	-	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.

Item	Windows		Linux		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
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) - For Windows Server 2003, the product key entry screen is displayed the first time the server is started. - For Windows Server 2008, the product key is unregistered.	Not Required	-	Enter a product key.
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: - 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.

*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

📖 Information
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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 "C.1.7 OS Property Definition File [VMware] [Hyper-V] [KVM] [Solaris Containers]".

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C.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
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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 problems 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".

C.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 Reservation Performance
      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 Reservation Capacity
      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", "C.2.7 Creating an L-Server", or "Chapter 16 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
For details on resource pools, refer to "2.2.2 Resource Pool" 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, VMware, 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".

   P 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 "G.1.1 Overcommit Definition Files".
   ....

   Note
   ....

   - For the VM pool for overcommit, register only VM hosts that support overcommit (VMware, Hyper-V, or RHEL-KVM). If VM hosts other than VMware, Hyper-V, or RHEL-KVM have been registered, move those VM hosts to another VM pool. The following operations cannot be performed on the VM hosts other than VMware, Hyper-V, or RHEL-KVM registered in the VM pool for overcommit.

     - Creating an L-Server

     - Linking 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 of overcommit exist, the VM host that disposes L-Server is selected regardless of the priority of the resource pool from among all VM host.

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 "C.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 Exporting a Template" 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 "14.2.2 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 Reservation Performance

   - CPU Shares

   - Memory Reservation Capacity

   - 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 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".

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 icon] **Note**

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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 Moving an L-Server between Servers (Migration)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

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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".

![Note icon] **Note**

. . . .

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.

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C.3   Hyper-V

This section explains how to configure Hyper-V as server virtualization software.

C.3.1   Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "C.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

C.3.2   Registering Resources with Resource Orchestrator

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 "C.3.4 Automatic Network Configuration".

When using a server other than a blade server

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 "5.5.2 Registering LAN 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 "C.3.4 Automatic Network Configuration".

C.3.3 Registering Resources in Resource Pools

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 "C.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 to the network pool.

   Refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

C.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 "C.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.

See
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- For details on the server NIC definitions, refer to "14.11 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".
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- Network configuration for servers other than blade servers

  Refer to "C.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 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 "C.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 C.11 Default Blade Server Configuration for Network Auto-Configuration (for PRIMERGY BX900 S1 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*4)
BX920 S1 BX920 S2 BX920 S3 BX922 S2 BX924 S3	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)	1,2
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	5,6
	CB5 and CB6	PY-SWB104(PG-SW109)	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)	3,4
	CB5 and CB6	PY-SWB104(PG-SW109)	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 (*2)	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	3,4
	CB5 and CB6 (*3)	PY-SWB104(PG-SW109)	7,8
	CB7 and CB8 (*3)	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: A LAN expansion card is mounted in expansion slot 1.

*3: A LAN expansion card is mounted in expansion slot 2.

*4: 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 C.12 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 (*3)
BX920 S2 BX920 S3 BX922 S2 BX924 S3	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)	2,6
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	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)	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: 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 C.13 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 rcxadm 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 rcxadm 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.] 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 a.

See
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- For details on the server NIC definitions, refer to "14.11 Server NIC Definitions" 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 "14.5 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 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 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 C.14 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 C.15 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 C.4 Blade Server Diagram of Configuration Example 1
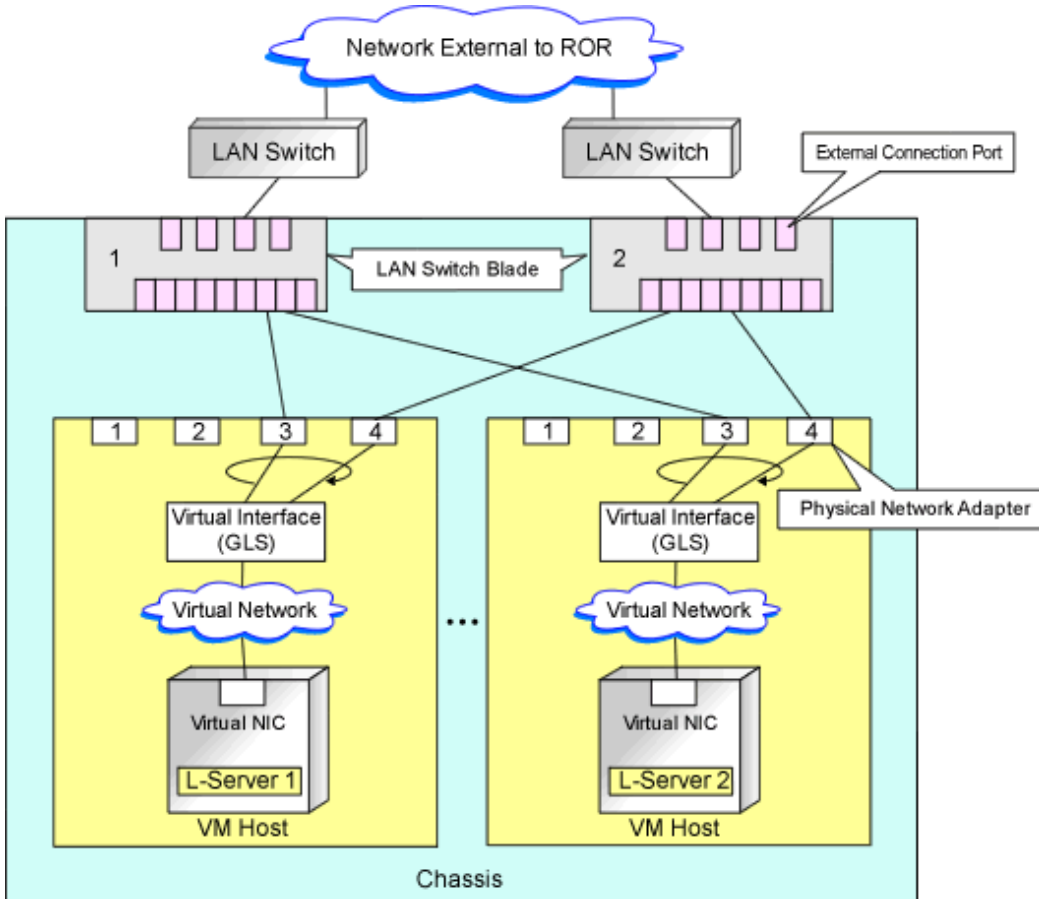
Figure C.5 Blade Server Diagram of Configuration Example 2
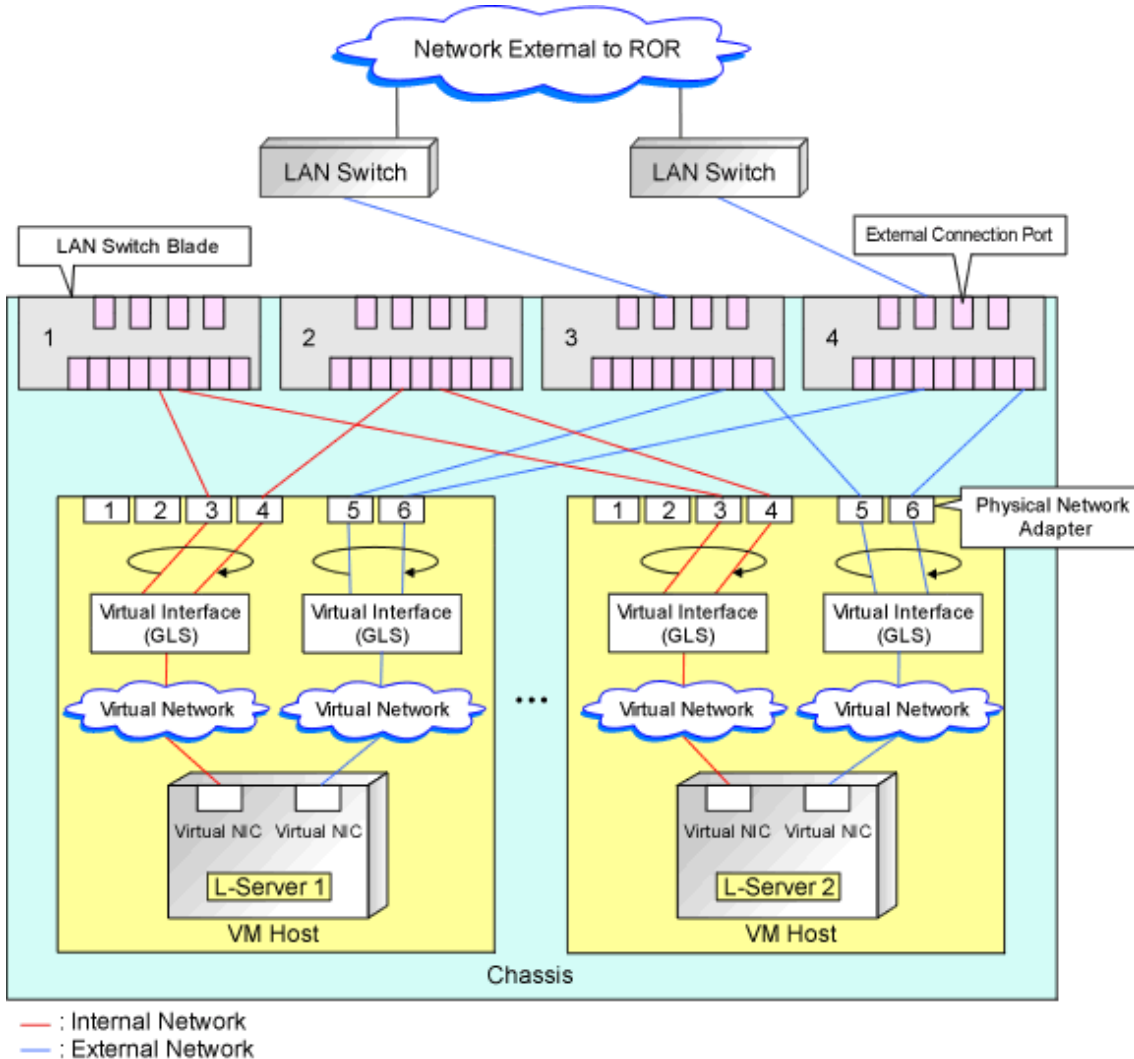
C.3.5 Manual Network Configuration

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".

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 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 switches to enable communication using the tagged VLAN between virtual networks using the same name.

   Right-click the target LAN switch 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 2. and 4., uncheck the [Use configured virtual switches.] checkbox and create a network resource.

   - From the Command-line:

     a. Create the XML file that defines network resources.

        Define the VLAN ID specified at 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 a.

        The network resources are created.

See

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- 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 "14.5 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".

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Figure C.6 Network Diagram
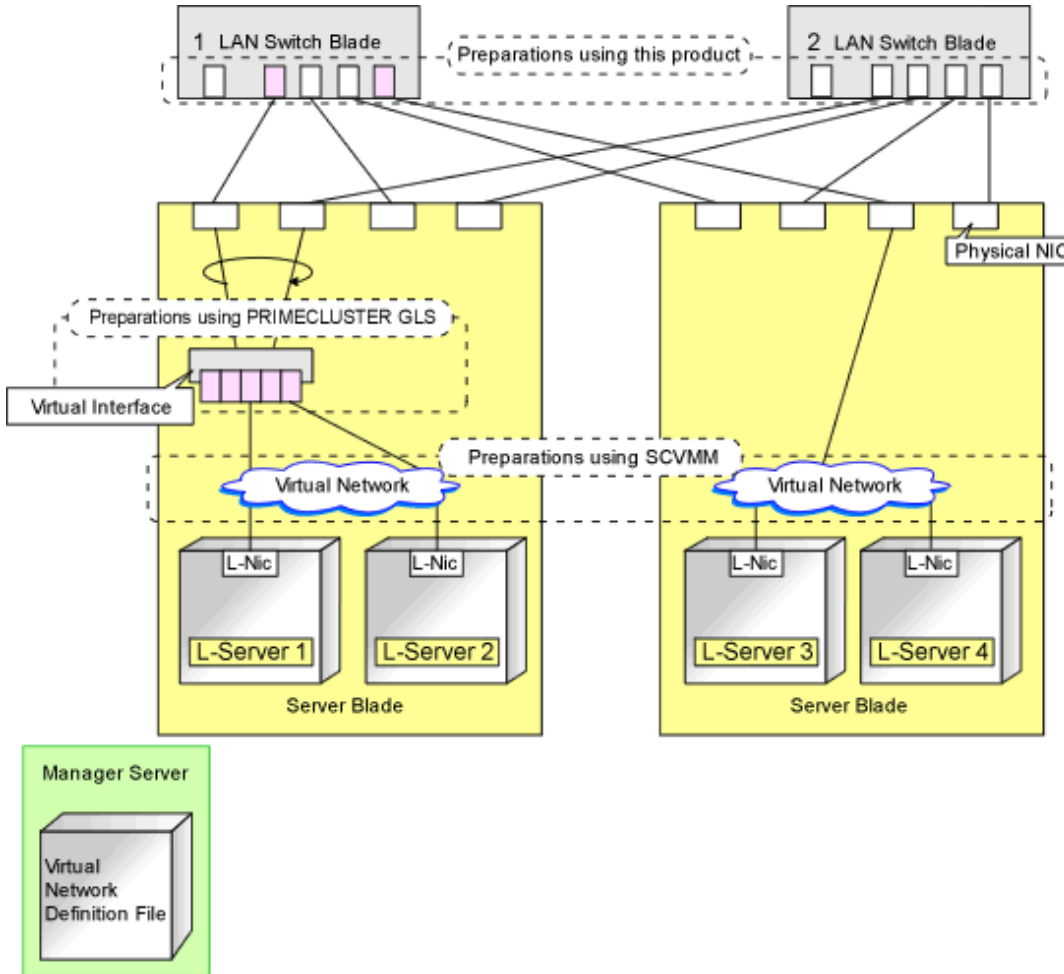
Connections with Virtual Networks Created in Advance

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 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 switches to enable communication using the tagged VLAN between virtual networks using the same name.

   a. Right-click the target LAN switch 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 2. and 3., uncheck the [Use configured virtual switches.] checkbox and create a network resource.

   - From the Command-line:

     a. Create the XML file that defines network resources.

        Define the VLAN ID specified at 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 a.

        The network resources are created.

See

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- 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".

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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 C.7 Virtual NIC Configuration and Virtual Network Connection Using Network Resources for Rack Mount or Tower Servers
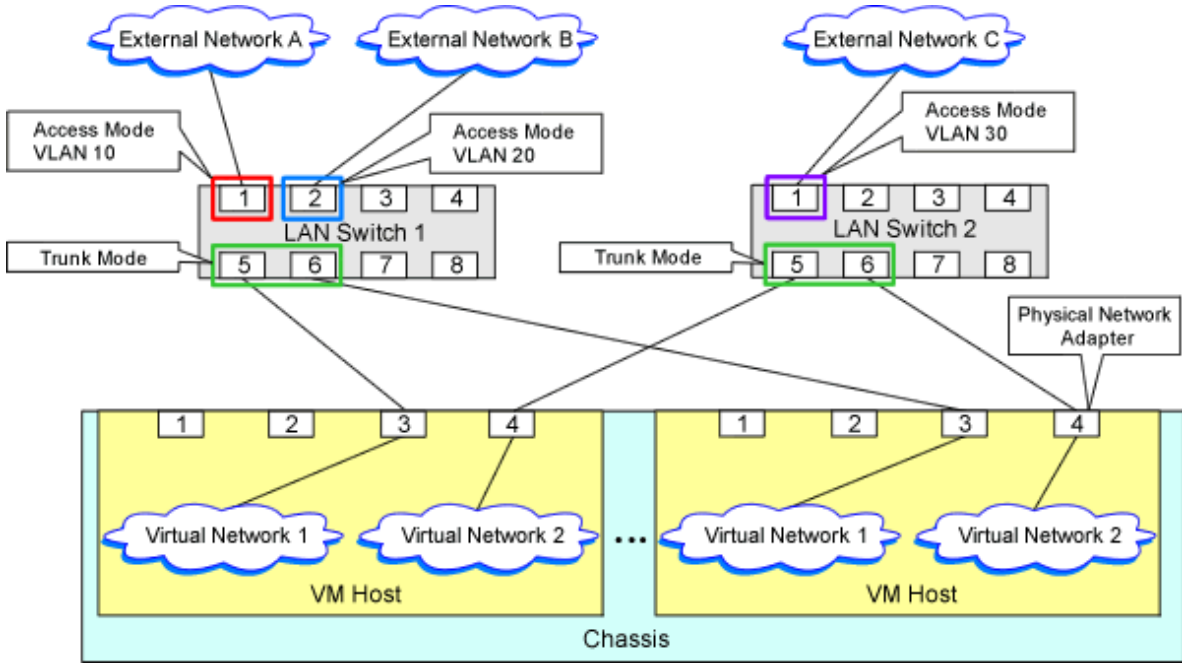
File Format for Virtual Network Definitions

Describe the virtual network definition file in one line as below:

"Virtual Network Name"=*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 System Center 2012 Virtual Machine Manager, use MAC address pools for System Center 2012 Virtual Machine Manager.

When not changing the default MAC address pool on System Center 2012 Virtual Machine Manager, 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 System Center 2012 Virtual Machine Manager, create a MAC address pool to allocate MAC addresses using System Center 2012 Virtual Machine Manager.

When there are multiple MAC address pools on System Center 2012 Virtual Machine Manager, 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 System Center 2012 Virtual Machine Manager, 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 1., define the MAC address pool used in each tenant in the MAC address definition file.

   When creating multiple host groups in System Center 2012 Virtual Machine Manager, 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 C.16 Definition File Items

Item	Description
Key	- When one SCVMM is registered all - When multiple SCVMMs are registered scvmm[SCVMM registered name]
Value	Specify the name of a MAC address pool created in System Center 2012 Virtual Machine Manager. When the MAC address pool name being specified includes blank spaces, enclose the MAC address pool name in double quotes ("). For details on the character types available for MAC address pools, refer to the SCVMM manual.

📥 Example
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- 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"
```

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📖 Note
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- 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 "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.

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C.3.6 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 a 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:

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".

Edit an L-Server Template

The L-Server template output in 1. can be edited with an editor, etc.

For details on the L-Server templates for virtual L-Servers, refer to "14.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

Import an L-Server Template

Refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

C.3.7 Creating an L-Server

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 "C.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 "C.3.9 [OS] Tab Configuration".

🅖 Note
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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://www.microsoft.com/windowsserver2008/en/us/hyperv-supported-guest-os.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.

C.3.8 Collecting and Deleting Cloning Images

This section explains how to collect and delete cloning images.

Collecting 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 <OK>.

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.

📑 Note

- If an L-Server is created with a specified Windows image, when deploying the image use Sysprep, provided by Microsoft, to re-configure 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 image OS, Sysprep can be executed a maximum of three times. Since Sysprep is executed when creating L-Server with images specified or when collecting cloning images, collection of cloning images and creation of L-Servers with images specified cannot be performed more than 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.

- Creation of L-Servers by specifying cloning images on which Windows 2000 Server and Windows 2000 Advanced Server are installed is not supported.

- When using System Center 2012 Virtual Machine Manager 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 configuration definition 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.

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).

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.

Storage Location of the Configuration File

[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

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An example configuration file is indicated below:

```
\\rcxvmm1.rcxvmmshv.local\MSSCVMMLibrary
\\rcxvmm2.rcxvmmshv.local\lib
```

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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 <OK>.

   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.

Storage Location of the Configuration File

> [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.

C.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.

Table C.17 List of Settings

| Item | Windows | | Description |
	Necessity of Entry	Values When Omitted	
Host name/ Computer name	Possible	*L-Server Name*	Enter the host name or computer name. Enter a string of between 1 and 15 alphanumeric characters or hyphens ("-"), beginning with an alphanumeric character. The string cannot be composed solely of numbers. 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.
Domain name	Possible	WORKGROUP (*)	Enter the workgroup name. Settings for participation in a domain cannot be made. Enter between 1 and 255 alphanumeric characters, hyphens ("-"), or periods ("."), using an alphabetic character for the first character.
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.

Item	Windows		Description
	Necessity of Entry	Values When Omitted	
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. When the OS type is Windows Server 2008, Windows Server 2008 R2, Windows 7, or Windows Vista, a full name cannot be set for guest OSs.
Organization name	Possible	WORKORGANIZATION (*)	Enter the organization name displayed in the Windows system properties using between 1 and 50 characters. When the OS type is Windows Server 2008, Windows Server 2008 R2, Windows 7, or Windows Vista, an organization name cannot be set for guest OSs.
Product key	Essential	- (*)	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	-	Specify one of the following: - UTC - Local (LOCAL)
Time zone	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
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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 "C.1.7 OS Property Definition File [VMware] [Hyper-V] [KVM] [Solaris Containers]".
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📖 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"
```

C.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(TM)

Citrix(R) XenServer(TM) can be managed by Microsoft(R) System Center 2012 Virtual Machine Manager, but only VM hosts for Hyper-V can be managed when using SCVMM.

Attaching and Detaching 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.

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.

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.

Creation of L-Servers by specifying cloning images on which Windows 2000 Server and Windows 2000 Advanced Server are installed is not supported.

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://www.microsoft.com/windowsserver2008/en/us/hyperv-supported-guest-os.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) 2008 R2

- Microsoft(R) Windows Server(R) 2008

- Microsoft(R) Windows Server(R) 2003 R2

- Microsoft(R) Windows Server(R) 2003

- Microsoft(R) Windows(R) 7

- Microsoft(R) Windows Vista(R)

- Microsoft(R) Windows(R) XP

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.

Note

If this procedure is not performed correctly, automatic network configuration will fail.

C.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.

📝 **Note**

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When using dynamic memory and memory weight, Windows Server 2008 R2 Service Pack 1(SP1) or later must be applied to the VM host, and SCVMM must be upgraded to System Center Virtual Machine Manager 2008 R2 Service Pack 1(SP1) or later.

If there 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

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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", "C.3.7 Creating an L-Server", or "Chapter 16 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

  For details on resource pools, refer to "2.2.2 Resource Pool" 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".

   P Point

   ....
   Refer to the "Point" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "C.2.11 Overcommit".
   ....

   Note

   ....
   Refer to the "Note" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "C.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 "C.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 (step 3. to 5.) can be performed by using 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 "14.2.2 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 Reservation Performance

       - CPU Weight

       - Initial Memory Size

       - Memory Buffer

       - Memory Weight

Information

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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

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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 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 "14.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

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 icon] **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 of VM Hosts between Servers" 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".

![Note icon] **Note**
....

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.
....

C.4 RHEL5-Xen

This section explains how to configure RHEL5-Xen as server virtualization software.

C.4.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "C.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*,...

C.4.2   Registering Resources with Resource Orchestrator

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 which belong to the scope.

   When registering PRIMECLUSTER GDS as storage management software, single disks which were created in advance during pre-setup preparations, are automatically registered in 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 (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 "5.5.2 Registering LAN Switches" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

C.4.3   Registering Resources in Resource Pools

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 <OK>.

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 <OK>.

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 "C.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 to 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".

C.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 in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

   Configure LAN switches 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 2. and 3., check the [Use configured virtual switches.] checkbox and create a network resource.

   - From the Command-line:

      a. Create the XML file that defines network resources.

      Define the VLAN ID specified at 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 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 "14.5 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 C.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"=VLAN ID
```

For the *VLAN ID*, a value from 1 to 4094 can be specified.

📝 Example
･････････････････････････････････ - 237 - ･････････････････････････････････

"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.

C.4.5 Creating L-Server Templates

This chapter 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 a 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 1. can be edited with an editor, etc.

     For details on the XML definition of L-Server templates, refer to "14.2.2 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".

C.4.6 Creating an L-Server

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. Collect 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".

        ### P 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 *N*th L-Server, after completing creation of the *N*th-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 "14.3.2 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:

> CAP value = (($Specified\_CPU\_clock\_speed$ GHz * 1000) * CPU_number * 100) / $physical\_CPU\_clock\_speed$ MHz

C.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 Server

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]

Total resource space * 80% - (Total of resources used for L-Server)

Attaching Resources

When attaching VM hosts, virtual storage or networks, perform the same procedure as in "C.4.2 Registering Resources with Resource Orchestrator" or "C.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 "C.6.9 Advisory Notes for RHEL-KVM Usage" for details.

C.5 Oracle VM

This section explains how to configure Oracle VM as server virtualization software.

C.5.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "C.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

C.5.2 Registering Resources with Resource Orchestrator

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. Define the following settings:

      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 <OK>.

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 "5.5.2 Registering LAN 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 "C.5.4 Manual Network Configuration".

C.5.3 Registering Resources in Resource Pools

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 <OK>.

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 <OK>.

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 "C.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 to the network pool.

   Refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

C.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 Oracle VM 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 in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

   Configure LAN switches 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 2. and 3., check the [Use configured virtual switches.] checkbox and create a network resource.

- From the Command-line:

   a. Create the XML file that defines network resources.

      Define the VLAN ID specified at 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 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 "14.5 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 C.9 Virtual NIC Configuration and Connection with Virtual Networks Using Bridge Resources
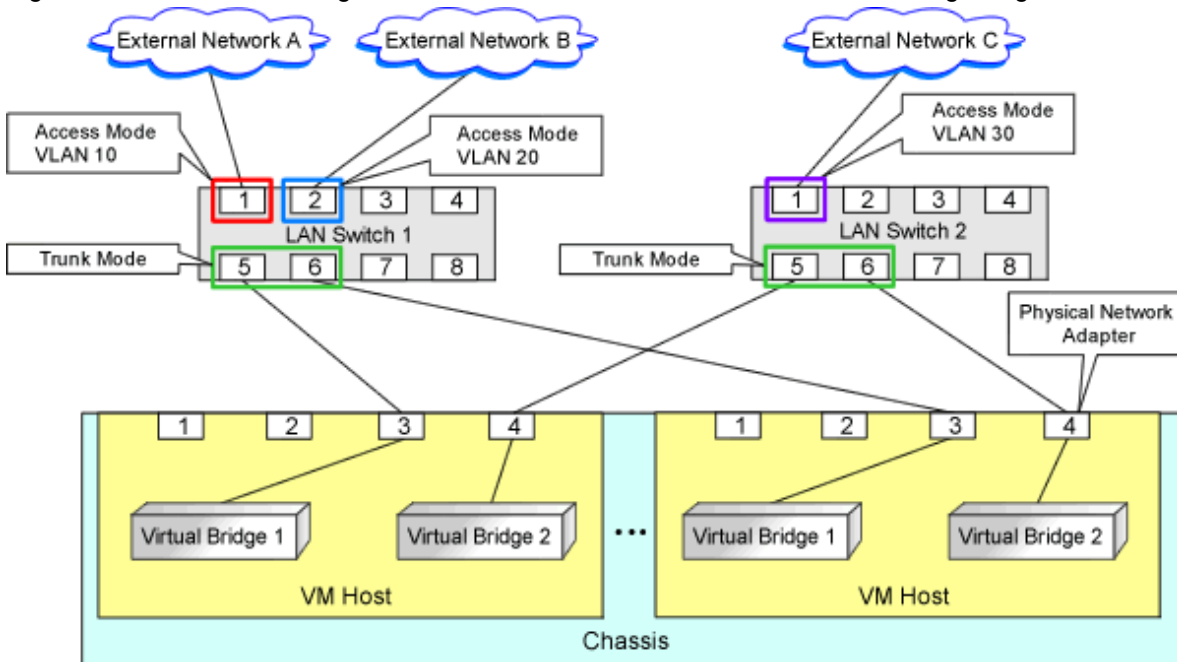
File Format for Virtual Bridge Definitions

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*"=*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.

C.5.5 Creating L-Server Templates

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 a Template" 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".

C.5.6 Creating an L-Server

Use the following procedure to create L-Servers:

1. Creating 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 "C.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

C.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 <OK>.

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.

C.5.8 [OS] Tab Configuration

For Oracle VM, the values specified in the [OS] tab are not set.

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.

```
Key = Value
```

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 C.18 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
```

C.5.9 Advisory Notes for Oracle VM Usage

This section explains advisory notes for when using Oracle VM.

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 Oracle VM, snapshots cannot be used.

L-Server Creation

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/FJSVrcvmr/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.

Table C.19 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 or attaching a disk, specify an image, VM host, or virtual storage that satisfies the following conditions:

- Belongs to the same server pool as the image and VM host

- The disk created is a virtual storage recognized by the 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

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
```

. . . .

C.6   KVM

This section explains how to configure RHEL-KVM as server virtualization software.

C.6.1   Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "C.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/FJSVrcvmr/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.

```
Specified item = Specified
value
```

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".

· ·

C.6.2 Registering Resources with Resource Orchestrator

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 is different 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 resource device, specify a network pool when creating the network resource device.

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 something other than a blade server

1. Register Managed Servers (Hosts)

The procedure is different depending on the managed server to be used.

Refer to "5.5 When Using Rack Mount or Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

1. Register LAN Switches

Refer to "5.5.2 Registering LAN Switches" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network resource device, specify a network pool when creating the network resource device.

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".

C.6.3 Registering Resources in Resource Pools

1. Register VM Host Resources (Hosts)

   Refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register Disk Resources (Raw Devices or Partitions)

   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.

   Disk resources can be registered by executing the rcxadm disk register command.

   For details on the rcxadm disk register command, refer to "3.3 rcxadm disk" in the "Reference Guide (Command/XML) CE".

   To register disk resources, an XML file that contains the information of the disk resources to be registered is necessary.

   For the definition of the XML file, refer to "14.4.1 Disk Resources [KVM]" in the "Reference Guide (Command/XML) CE".

   For the commands that support creation of XML files, refer to "5.24 rcxvmdisk" and "5.25 rcxvmdiskagt" in the "Reference Guide (Command/XML) CE".

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 "C.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 to 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".

C.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 in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

   Configure LAN switches 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 2. and 3., check the [Use configured virtual switches.] checkbox and create a network resource.

   - From the Command-line:

     a. Create the XML file that defines network resources.

        Define the VLAN ID specified at 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 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 "14.5 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 C.10 Virtual NIC Configuration and Connection with Virtual Networks Using Bridge Resources
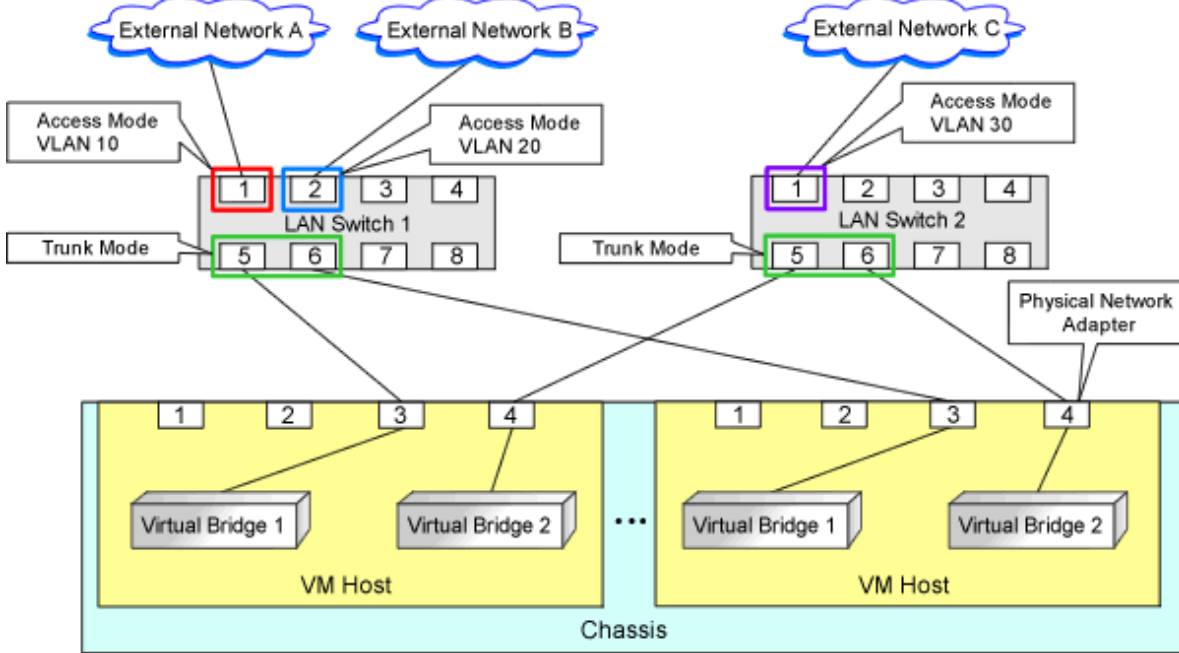
File Format for Virtual Bridge Definitions

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"=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.

C.6.5 Creating L-Server Templates

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 "14.2 L-Server Templates" in the "Reference Guide (Command/XML)".

    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".

C.6.6 Creating an L-Server

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. 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

        3. Collect 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 "C.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.

- 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 "C.6.8 [OS] Tab Configuration".

C.6.7 Collecting Cloning Images

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 <OK>.

   A cloning image is collected.

   A given cloning image (identified by its name attribute) can be managed by image version.

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 of the cloning image to use.

- When using a Linux cloning image

  There are no preparations.

- When using a Windows cloning image

  - OS versions supporting the OS auto-configuration functions

    - Microsoft(R) Windows Server(R) 2008 R2

  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 following packages on the host OS.

      - guestfish.x86_64

      - libguestfs-mount.x86_64

      - libguestfs-tools-c.x86_64

      - libguestfs-tools.x86_64

      - perl-Sys-Guestfs.x86_64

      - perl-Sys-Virt.x86_64

      - perl-XML-Parser.x86_64

      - perl-XML-Writer.noarch

      - perl-XML-XPath.noarch

      - perl-libintl.x86_64

      - libguestfs-winsupport.x86_64

Obtain libguestfs-winsupport from the "RHEL V2VWIN (v. 6 for 64-bit x86_64)" channel for Red Hat Network.

For details, refer to "Chapter 17. Guest disk access with offline tools".

```
URL:
http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/
Virtualization_Administration_Guide/index.html
```

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
```

- 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 re-configure 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 image 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 "already allocated" in the "Allocation" in the "Configuration Information" confirmed in "Disk Details", and in the state where there is no information in "L-Server Properties".

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".

C.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.

When the OS type on the [Server] tab is "Linux" or "Windows", the items can be entered, but when the OS type is "Linux(SELinux)", 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 SELinux setting for the guest OS is "Enable"

- When the system volume for the guest OS is LVM

Table C.20 List of Settings

Item	Linux		Windows		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
Host name/Computer name	Possible	*L-Server Name*	Possible	*L-Server Name*	Enter the host name or computer name. For Windows, enter a string of between 1 and 15 alphanumeric characters or hyphens ("-"). For Linux, enter between 1 and 63 alphanumeric characters or hyphens ("-"). In either case, the first character must be an alphanumeric character. The string cannot be composed solely of numbers.
Domain name	Possible	localdomain (*1)	Possible	WORKGRO UP (*1)	Enter the domain name. Enter between 1 and 255 alphanumeric characters, hyphens ("-"), or periods ("."), beginning with an alphabetical character. For Windows, enter the workgroup name. Settings for participation in a domain cannot be made.
DNS search path	Essential	-	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	WORKNAM E (*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	WORKORG ANIZATION (*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.

Item	Linux		Windows		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
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	*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.

*1: When the value is specified in the OS property definition file, its values are configured.

*2: The values for the [OS] Tab or the OS property definition file can only be configured automatically when the cloning image is for Windows 2008 R2.

📖 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 "C.1.7 OS Property Definition File [VMware] [Hyper-V] [KVM] [Solaris Containers]".
....

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".

C.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

When using RHEL-KVM, snapshots cannot be used.

Guest OS Automatic Configuration

When using RHEL-KVM, guest OS auto-configuration can be used for Linux or Windows.

Note

When the OS type is Windows, OS auto-configuration can be used for the OS versions described below.

"C.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 "C.6.1 Creating Definition Files".

Configuration of Swap Area for the Host OS

As a guide, set the twice the amount of memory of a VM host for the swap area of a host OS.
When there is insufficient swap area for the host OS, the virtual L-Server may fail to start.
When it is difficult to secure sufficient swap area, it is also possible to configure the kernel parameters (/proc/sys/vm/overcommit_memory) to avoid failure of start operations due to a lack of virtual L-Server memory space.

For details, refer to the following section in the "Red Hat Enterprise Linux 6 Virtualization Administration Guide".

- Chapter 6. Overcommitting with KVM

URL:http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/Virtualization_Administration_Guide/index.html

Configuration for L-Server Live Migration

In RHEL-KVM environments, use SSH to perform live migration on virtual L-Servers.

It is necessary to perform the following configuration for the hosts involved to enable live migration of an L-Server from the manager.

- Configuration of /etc/hosts

- Configuration when using SSH

Configure the settings, referring to the following section in the "Red Hat Enterprise Linux 6 Virtualization Administration Guide".

- Chapter 4. KVM live migration

- Chapter 5. Remote management of guests

URL:http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/Virtualization_Administration_Guide/index.html

> 📝 **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 on the virsh command, refer to the Command Reference in the following Red Hat manuals:
>
> - 15.1. virsh command quick reference
>
> > URL: http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/Virtualization_Administration_Guide/index.html
>
> ⋯⋯

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.

C.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 "Point" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "C.2.11 Overcommit".
. . . .

 Note

. . . .

Refer to "Note" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "C.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 "C.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 "C.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.

 Note

. . . .

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.
. . . .

C.7 Solaris Containers

This section explains the settings used when using Solaris Containers as server virtualization software.

C.7.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "Chapter 8 Creating Definition Files".

This section explains the definition files specific to Solaris Containers.

Definition Files of Managed Resource Pools

In Resource Orchestrator, the resource pool for Solaris Containers with the name "pool_resource" is the target of management.
When changing the managed resource pools for Solaris Containers, 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.

Storage Location of the Definition File

> [Windows Manager]
> *Installation_folder*\SVROR\Manager\etc\customize_data
>
> [Linux Manager]
> /etc/opt/FJSVrcvmr/customize_data

 P Point
. . . .

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 C.21 Definition File Items

Key	Description
MANAGED_POOL	Specify this item when using common resource pools in the overall managed VM host (global zone) in Resource Orchestrator.
Admin IP address of the VM host	Define a 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

- When definitions are changed during operation, or the resource pool name is changed in a Solaris Container environment, 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 a "#", 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 Solaris Containers.

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.

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 (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.

```
Key = Value
```

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.
Admin IP address of the VM host	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 icon] **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.

・・・

C.7.2 Registering Resources with Resource Orchestrator

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".

Register Managed Servers (Global Zone)

Refer to "5.9 When using SPARC Enterprise Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

C.7.3 Registering Resources in Resource Pools

Use the following procedure to register a resource to a resource pool:

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 <OK>.

   For details, refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

> **P Point**
>
> ....
>
> - 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.

   Disk resources can be registered by executing the rcxadm disk register command.
   For details on the rcxadm disk register command, refer to "3.3 rcxadm disk" in the "Reference Guide (Command/XML) CE".

   To register disk resources, an XML file that contains the information of the disk resources to be registered is necessary.
   For the definition of the XML file, refer to "14.4.3 Disk Resources [Solaris Containers]" in the "Reference Guide (Command/XML) CE".

   For the commands that support creation of XML files, refer to "5.24 rcxvmdisk" and "5.25 rcxvmdiskagt" in the "Reference Guide (Command/XML) CE".

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 "C.7.4 Manual Network Configuration".

   Check the information of VLANs and subnets to which the NICs for the VM guest to be imported are connected. These settings are not necessary when there are already network resources corresponding to the combinations of VLANs and subnets. When there are no network resources, use the following procedure to create a new network resource.

   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.

      - VLAN ID

        When using a VLAN, specify the value. When not using a VLAN, specify an arbitrary VLAN ID that is not used for already created network resource and will not be used in the future.

      - Uplink port

        Do not specify anything.

      - Detail configuration

        Do not configure anything.

   For details on how to add the NIC information to the L-Server, refer to "3.6 rcxadm lserver" in the "Reference Guide (Command/XML) CE".

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.

a. 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 re-configured, 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 on Solaris Containers, the images can also be used for other VM hosts.

b. Register the BladeLogic virtual package with Resource Orchestrator

Refer to "17.5.1 Collecting and Registering Cloning Images" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

c. 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".

C.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.

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.

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 Solaris Containers 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.] checkbox.

   - From the Command-line:

     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.

     To create the network resource, execute the rcxadm network create command specifying the XML file created in 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 "14.5 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/FJSVrcvmr/customize_data

Definition File Name

   vnetwork_solariscontainer.rcxprop

Definition File Format

Describe the network definition file in one line as below:

"Network interface name"=VLAN ID

For the VLAN ID, a value from 1 to 4094 can be specified.

📄 Example
. . . .

"bge1"=10
. . . .

Blank spaces before and after equal signs ("=") are ignored.

Describe the network interface 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 network interface name, the first occurrence in the file is valid and the lines after it are ignored.

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.

C.7.5 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 a 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 1. can be edited with an editor, etc.
        For details on the L-Server templates for virtual L-Servers, refer to "14.2.2 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".

C.7.6 Creating 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 "C.7.7 [OS] Tab Configuration".

[Solaris Containers]
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.

cap value = *CPU performance*(GHz) * *number of CPUs* / *physical CPU performance*(GHz) * 100

C.7.7   [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.

If any other parameters are set, they will be ignored.

Table C.22 List of Settings

| Item | Solaris | | Description |
	Necessity of Entry	Values When Omitted	
Host name	Possible	L-Server Name	Enter the host name. 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 Enter a string of between 1 and 21 alphanumeric characters or hyphens ("-"). Hyphens ("-") cannot be specified for the first or last characters. 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.
Administrator password	Possible	- (*)	Set the administrator password for the L-Server. Enter the password using between 1 and 255 alphanumeric characters or symbols.

* 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 "C.1.7 OS Property Definition File [VMware] [Hyper-V] [KVM] [Solaris Containers]".

C.7.8   Advisory Notes for Solaris Container Usage

Resource Pools for Solaris Containers Managed in Resource Orchestrator

In Resource Orchestrator, resource management is performed with one resource pool for Solaris Containers being managed in each global zone.

The target resource pool can be changed.

For details, refer to "C.7.1 Creating Definition Files".

Non-Global Zone Names in Solaris Containers

When specifying the names of non-global zones managed by Resource Orchestrator, ensure that those names are unique.

When managing multiple non-global zones with the same names as L-Servers, do not manage only some of those non-global zones as L-Servers. Either manage all or none of such non-global zones as L-Servers.

When there are multiple non-global zones with the same name, if only some of them are managed as L-Servers, those zones may be erroneously recognized as the same non-global zone.

Operations when uuids Change in Solaris Containers

In Resource Orchestrator, manage the non-global zone using uuids.

As Solaris Containers 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 an L-Server" 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

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 which 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 primary 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 C.23 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.

C.7.9 Overcommit

This section explains the overcommit function for L-Servers.

Overcommit

The Solaris Container overcommit function for the CPU and memory is available on Resource Orchestrator.

The Solaris Containers 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 Container 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".

   P Point
   ....
   Refer to "Point" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "C.2.11 Overcommit".
   ....

   Note
   ....
   Refer to "Note" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "C.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 "C.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 Containers, the values can only be specified when configuring overcommit in the L-Server template.

Appendix D 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

- DR

  In order to be able to perform DR of virtual L-Servers, it is necessary to install a VM host on a physical L-Server.

Note

This function cannot be used in RHEL-KVM environments.

D.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 Environment Preparation" in the "Design Guide CE"

   - "D.4 Network Preparations" in the "Design Guide CE"

   - "Appendix B 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 "B.5 Creating an L-Server".

- 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.

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 Agents

   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 agents.

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 "C.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 Agents

   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".

D.2 Changing Configuration

Configuration of VM hosts can be changed the same way as physical L-Servers.

Refer to "17.2 Modifying an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

D.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 Unregistering" 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 an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

D.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.

Appendix E To Customize Dashboard

The dashboard provides an alert function for sending notifications via email if the global pool use rate exceeds the threshold value.

The following settings can be customized by changing the alert information:

- Email send settings

- Threshold value

- Monitored pools

A dashboard development environment is required in order to customize alert information. This appendix explains how to build a dashboard development environment and how to change the alert information.

P 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.

. . . .

E.1 Building the Dashboard Development Environment

The dashboard development environment is required to customize the cloud operation management dashboard. This section explains how to build the dashboard development environment.

The installation flow is shown as follows:

1. Installing the Dashboard Development Environment

2. Setting up the Dashboard Development Environment

Note

. . . .

The dashboard development environment can be built in the Windows environment only. If a Linux version is used, a separate Windows machine must be arranged for to build the dashboard development environment.

. . . .

E.1.1 Installing the Dashboard Development Environment

This section explains the steps required to install the dashboard development environment.

Note

. . . .

- Use Interstage Business Process Manager Studio and Interstage Business Process Manager Analytics Studio bundled with this product when installing them. Studio bundled with Interstage Business Process Manager or Interstage Business Process Manager Analytics supplied as a standalone product cannot be used.

- If a Linux version is used, a Windows client machine that has been arranged for the dashboard development environment must be used to perform the tasks.

. . . .

Firstly, insert the following DVD-ROM (Disk 3) into the DVD-ROM drive of the computer.

Follow the steps below to install.

Install JRE 5.0

Install JRE 5.0 in advance when installing the dashboard development environment to a machine other than the admin Server.

1. Execute the following file:

   [Windows Manager]

   ```
   DVD-ROM drive:\DISK3\Studio\Windows\RCXCTMG\Disc1\en\autorun.exe
   ```

   [Linux Manager]

   ```
   DVD-ROM drive:\DISK3\Studio\Windows\RCXCTMG\Disc1\en\autorun.exe
   ```

2. Click **Install**.

3. Select **Custom**, and click **Next**.

4. To select an installation folder other than the default folder, select **Destination Folder** displayed and select the installation folder. Click **Next**.

5. To select installation functions, select the **JRE-JBK Plugin** and >> **5.0** checkboxes only. Clear all other checkboxes. Click **Next**.

6. Check the installation details and click **Install**.

7. Click **Finish** when installation is completed.

Install Interstage Business Process Manager Studio

Install BPM Studio.
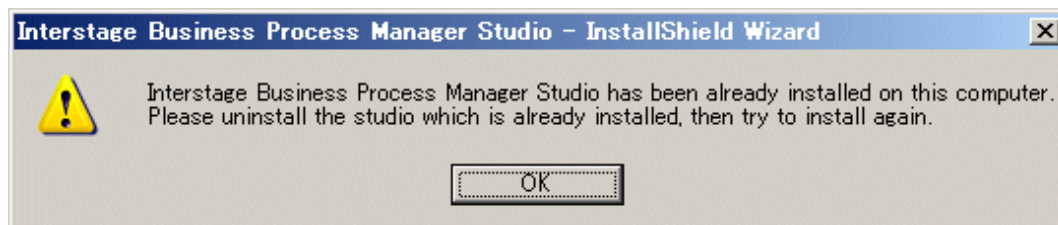
1. Execute the following file:

   [Windows Manager]

   ```
   DVD-ROM drive:\DISK3\Studio\Windows\RCXCTMG\Disc2\setup.exe
   ```

   [Linux Manager]

   ```
   DVD-ROM drive:\DISK3\Studio\Windows\RCXCTMG\Disc2\setup.exe
   ```

   The following dialog box will be displayed if exclusive software such as Systemwalker Runbook Automation Studio and Interstage BPM Studio for Systemwalker, or a standalone product such as Interstage BPM Studio has been installed.

   If exclusive software is installed, build the dashboard development environment after uninstalling the exclusive software or build the dashboard development environment on a separate Windows machine.

2. Click **Next**.

3. To change the installation folder, click **Change** and select the folder. Click **Next**.

4. Check if the JDK or JRE folder is set correctly. If it is not set properly, set either one of the following and click **Next**:

   - *Installation folder*\IAPS\JDK5

   - *Installation folder specified when JRE5.0 was installed*\JBKDI\jre5

5. Do not enter anything in **UDDI Search URL** and click **Next**.

6. Click **Next**.

7. Click **Finish** when installation is completed.

Install Interstage BPM Analytics Studio

Install Analytics Studio.

1. Execute the following file:

   [Windows Manager]

   ```
   DVD-ROM drive:\DISK3\Manager_Extended\Windows\Install\RCXCTMG\Disc3\IBPMM\setup.exe
   ```

   [Linux Manager]

   ```
   DVD-ROM drive:\unified\Disc5\ibpma\Client\IBPMM\setup.exe
   ```

2. **[Windows Manager]**Specify **Client**, and install the Interstage Business Process Manager Analytics client.

   Select the client when in the same environment as the admin server, then click **Next**.
   Do not remove the selection in **Server**.

3. Confirm that **[Install Location of Analytics Studio Plug-in]** is *<Interstage Business Process Manager Studio Installation_folder>*\bin in the **Check Instllation settings** window, and with **Do not make any change** selected click **Next**. Installation will start.

   When the **[Install Location of Analytics Studio Plug-in]** is other than *BPM Studio installation folder*\bin, select **Change** and then click **Next**, and then select the correct installation folder.

   The **Check Instllation settings** window described above will not be displayed when in the same environment as the admin server. The following window will be displayed when using the wizard, click **Next**.Installation will start.

4. Click **Finish** when installation is completed.

E.1.2 Setting up the Dashboard Development Environment

1. Perform the connection setting to the admin Server.

   a. Select Windows **start** menu >> **Interstage Business Process Manager Studio** and then **Studio**.

   b. The confirmation window for the work space folder will be displayed. Change the folder as required, and click the **OK** button.

   c. Select **Open Perspective** on the **Window** menu, and click **Analytics Studio**.

   d. Enter the IP address and the port number of the admin Server in **Analytics Server**, and click the **OK** button. (If the admin Server is installed on the same machine, "localhost" may also be specified.)

2. Click the **Reload from Server** button, and obtain the definition from the server (initial account and initial password: bpm)
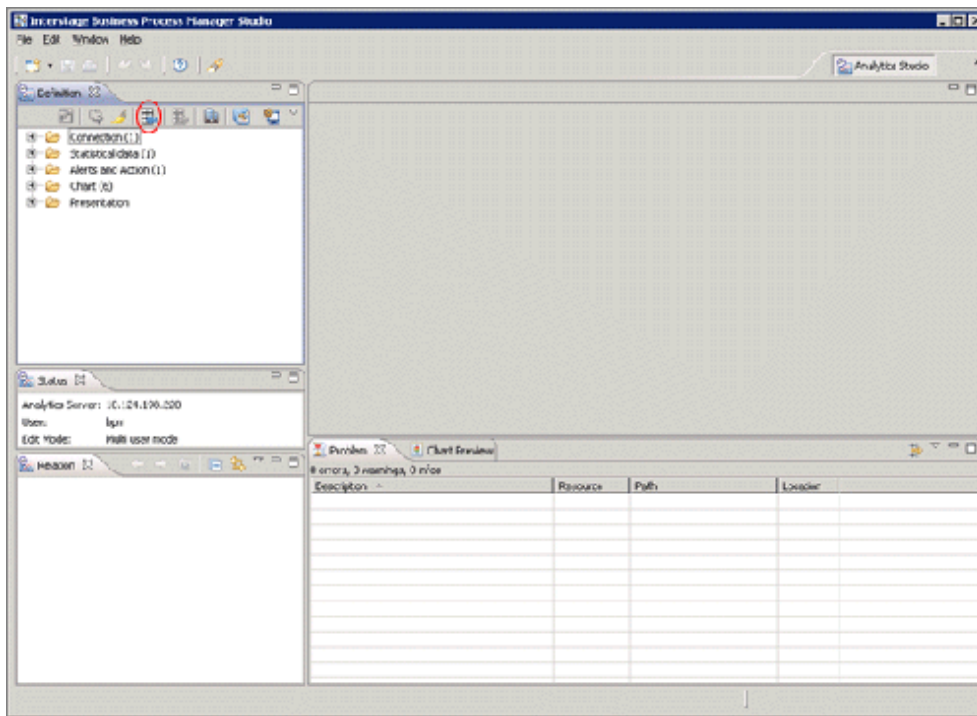
The initial password must be changed. Login to the operation management console of Interstage Business Process Manager Analytics to change the initial password.

Refer to "E.6.3 Creating and Changing Analytics Studio Users" for details.

3. If **Single user mode** is not specified in **Edit Mode**, click the **Edit Mode** icon located on the top left hand side of the window.
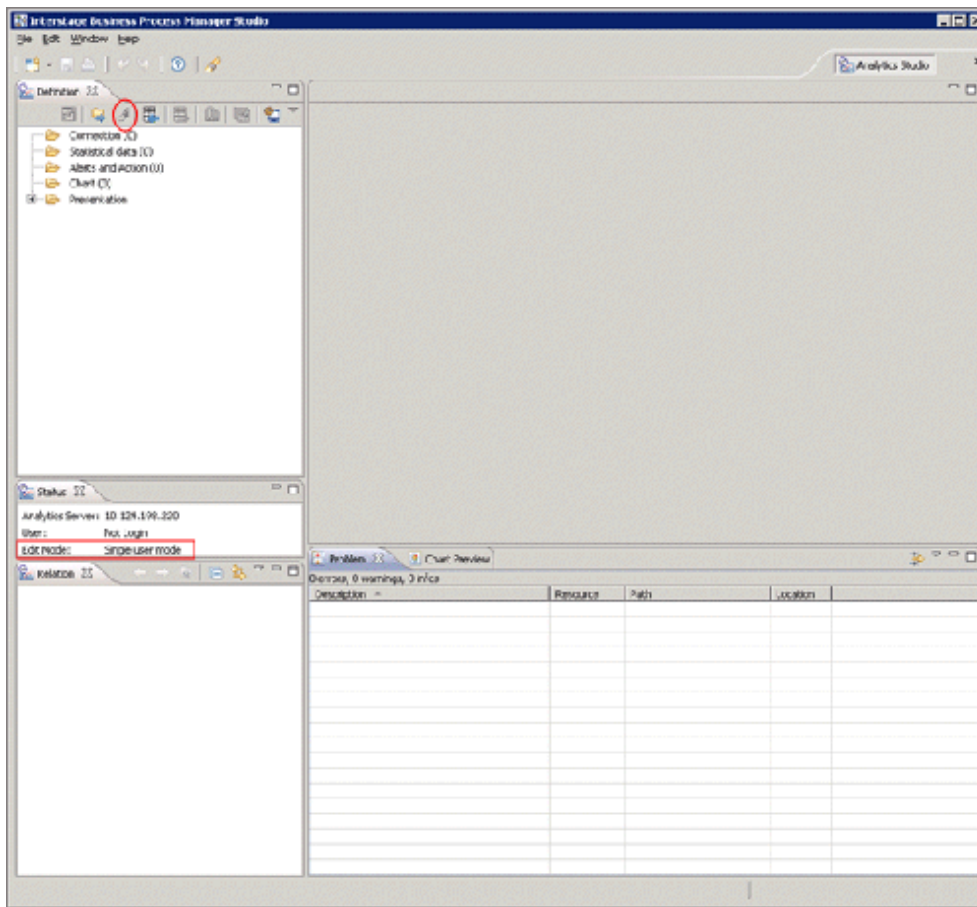
The processing starts by clicking the **Yes** button.

E.2 To Customize Dashboard

The following items can be customized:

- Email send settings

  The send destination email address, the email subject, and the text can be set.

- Threshold values

  The resource pool use rate threshold value 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.

E.2.1 Customizing Email Send Settings

This section explains the procedure for customizing email send settings. It is necessary to customize email send settings. Customize threshold values and monitored pools as required.

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 "19.1.7 Settings for Email Sent from the Dashboard" for information on email setting for mail server.

. . . .

1. Open "Alerts and Action" in the "Definition" view definition tree in the dashboard development environment.
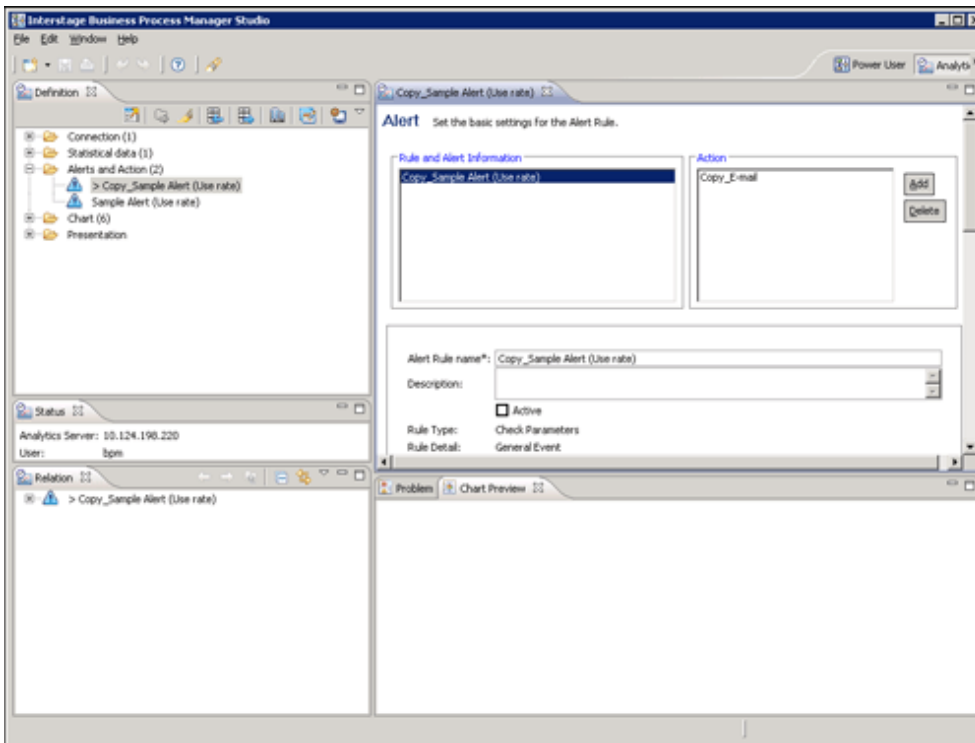
2. From the displayed list of alert definitions, right-click "Sample Alert (Use rate)", and then select "Copy".

3. Double-click the copied "Copy_Sample Alert (Use rate)" to open the definition.

4. Change the alert rule name from "Copy_Sample Alert (Use rate)" to a suitable name.

5. Set the "Active" checkbox below the alert rule name to ON.

6. Customize threshold values as required. Refer to "E.2.2 Customizing Threshold Values" for information on changing threshold values.

7. Customize monitored Pools as required. Refer to "E.2.3 Customizing Monitored Pools" for information on changing monitored Pools.

8. Select "Copy Email" in Action at the upper-right of the editor view.

9. At **Email address**, specify the email address of the alert email send destination. 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:;".

Modify the following items, as required:

- Action: Change from "Copy_Email" to a suitable name.

- 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 time: ${ALERT.OCCURRENCETIME}

  - Pool name: ${EVENT.VALUE,Pool}

  - Pool resource type: ${EVENT.VALUE,RscTYPE}

  - Availability: ${EVENT.VALUE,Availability}%

The alert parameter to be used in Subject and Body is as follows:

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%
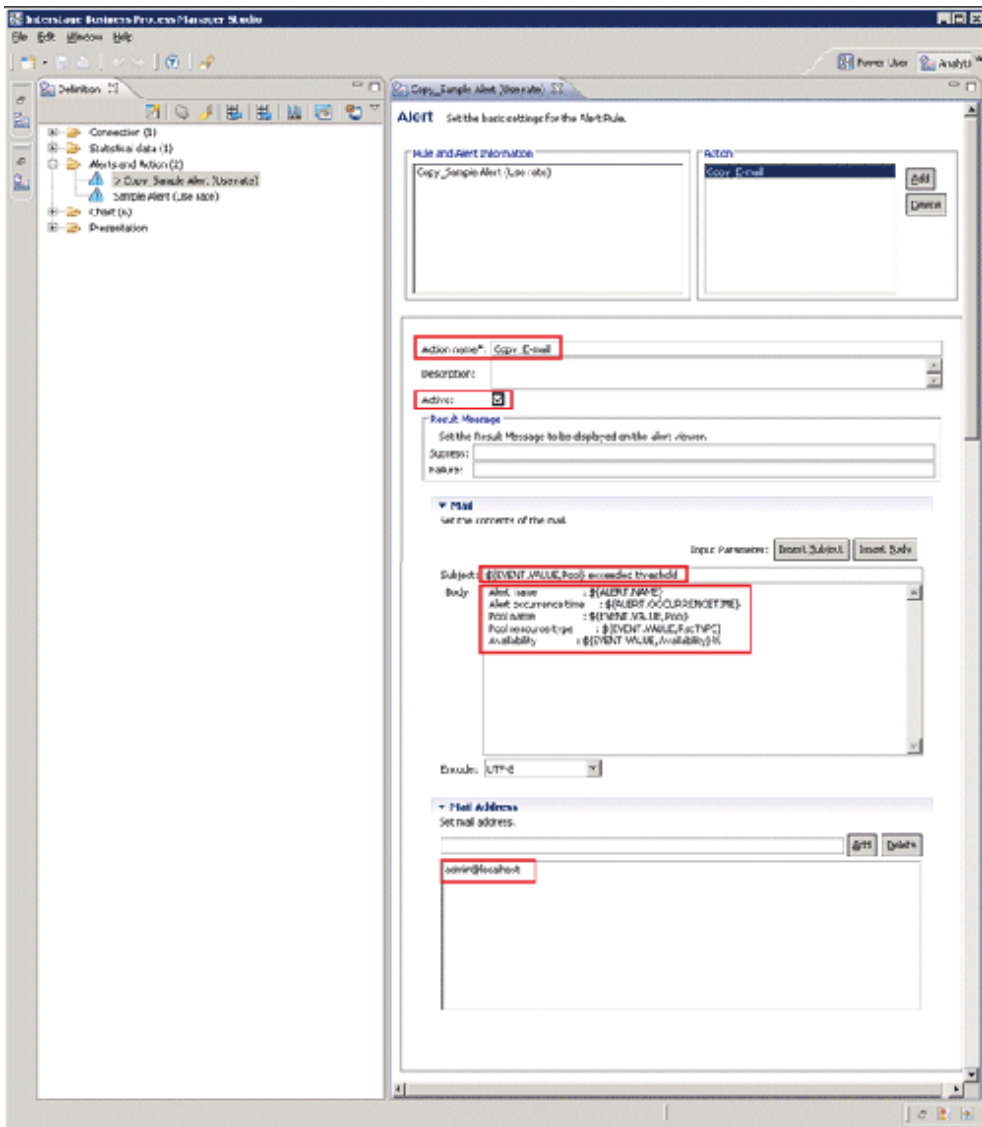
10. Click the **Save** icon.

11. Click the **Upload to Server** icon from the tool bar on the **Definition** view.

12. Do not select the **After uploading the Analytics Definition, replicate result in the system** checkbox but click the **OK** button.

13. Click **OK**.

14. Restart the Analytics server. Refer to "E.6.4 Restarting the Analytics Serverr" for details.

    - The initial password must be changed. Use the operation management console of Interstage Business Process Manager Analytics to change the initial password. Refer to "E.6.2 Changing the Password of the Administrator" for details.

    - Do not perform any operations from the operation management console other than setting passwords and the procedure described above for restarting the Interstage Business Process Manager Analytics server.

E.2.2 Customizing Threshold Values

This section explains the procedure for customizing threshold values.

1. At "Condition" in the editor view, right-click a condition in the condition tree, and the select **Edit**. In the example below, "[Availability] is greater the equal 90" is selected. The availability is the use rate.
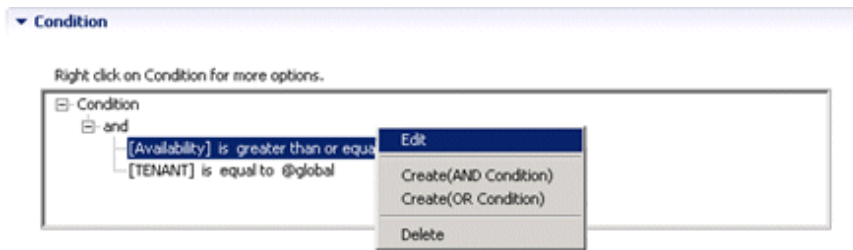
2. Use the "Right condition" radio buttons to select Constants. In the input field, enter the value to be used as the threshold value. The "Left condition" cannot be changed.
   In the Comparison drop-down list, select either "greater than or equal" or "greater than".
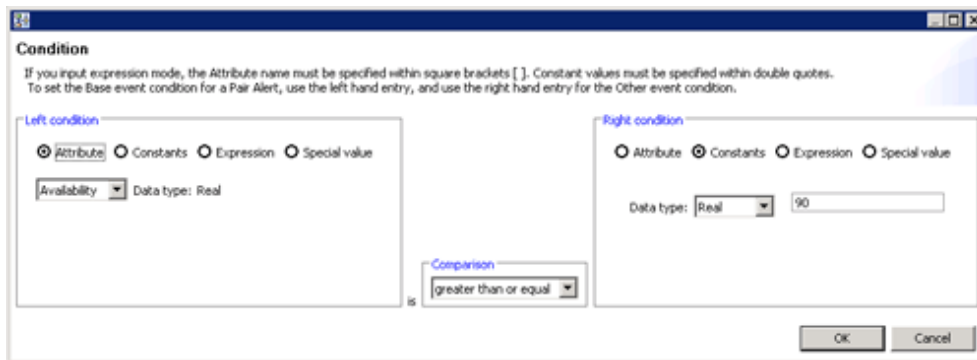
3. Click the **OK** button.

E.2.3 Customizing Monitored Pools

This section explains the procedure for customizing the pools targeted for monitoring.

1. At "Condition" in the editor view right-click "and" in the condition tree, and then select "Create (Condition Value)".
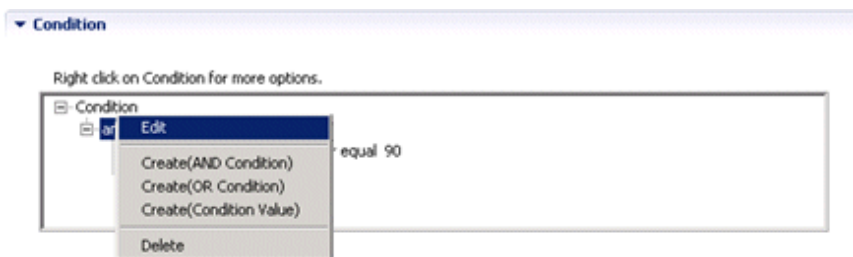
2. Right-click the added "is equal to", and then select **Edit**.

3. Set the following in the conditions settings window:

   - If the "Pool for a specific resource pool" alert is set:

     Set the conditions below. Threshold values can be monitored for any of the VM pool (CPU), the VM pool (memory), the storage pool, the network pool, the server pool, and the address pool.

     (Left-side conditions)

     - Select the **Attribute** radio button.

     - Select "RscTYPE" in the drop-down list.

     (Right-side conditions)

     - Select the "Constants" radio button.

- For the data type, select "String".

- Enter any of the following as resource types for which an alert is being set:

  For VM pool (CPU) : CPU

  For VM pool (memory) : MEMORY

  For storage pool: STORAGE

  For network pool: NETWORK

  For server pool: SERVERPOOL

  For address pool: ADDRESS

(Operator)

- In the drop-down list, select "equal to".
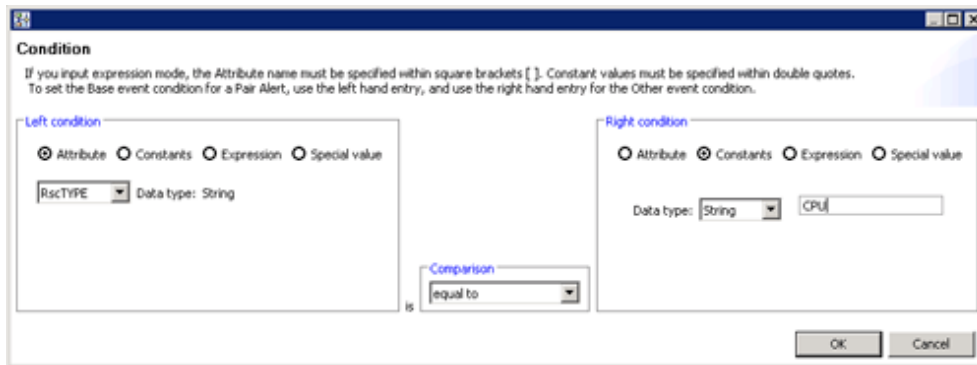
Set the above conditions, and then click the **OK** button. The conditions below are set.
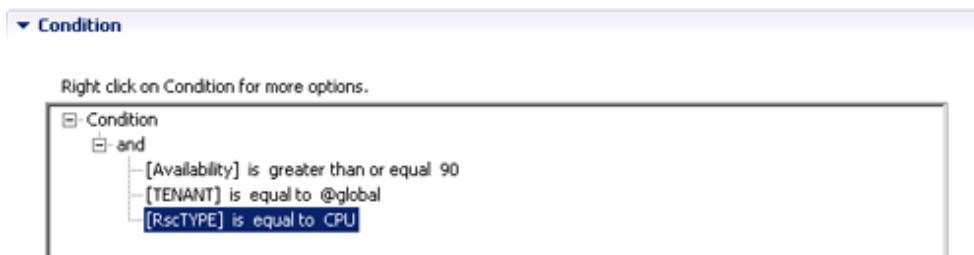
- If the "Pool having a specific pool name" alert is set:

  Set the conditions below. The pool names for which threshold values can be monitored can be specified.

  (Left-side conditions)

  - Select the **Attribute** radio button.

  - Select "Pool" in the drop-down list.

  (Right-side conditions)

  - Select the "Constants " radio button.

  - For the data type, select "String".

  - Specify (enter) the name of the pool for which the alert is being set.

  (Operator)

- In the drop-down list, select "equal to".
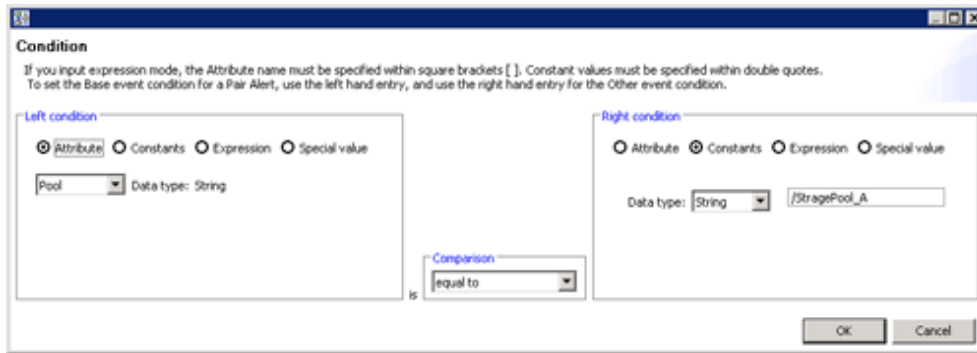
Set the above conditions, and then click the **OK** button. The conditions below are set.
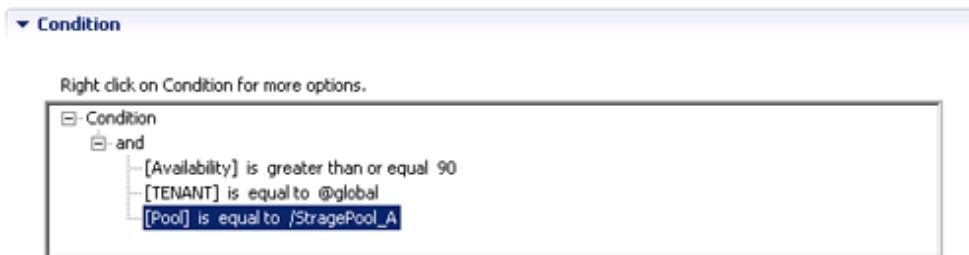
4. Click the **OK** button.

E.3 Backup and Restore the Dashboard Development Environment

Backup and restore of the dashboard development environment refers to the backup and restore of the definition information being edited in the dashboard development environment.

This section explains the procedure required to backup and restore the definition information.

E.3.1 Backup the Definition Information

Follow the steps below to backup the definition information:

1. Close the dashboard development environment if it had been started.

2. Copy the workspace folder used in the dashboard development environment to another location without modifying it. The workspace folder that was copied becomes the backup.

E.3.2 Restore the Definition Information

Follow the steps below to restore the definition information:

1. Close the dashboard development environment if it had been started.

2. Delete the workspace folder used in the dashboard development environment if it exists.

3. Copy the backed-up workspace folder to the workspace folder used in the dashboard development environment.

4. Start the dashboard development environment.

5. Click the **Open the definition** icon.
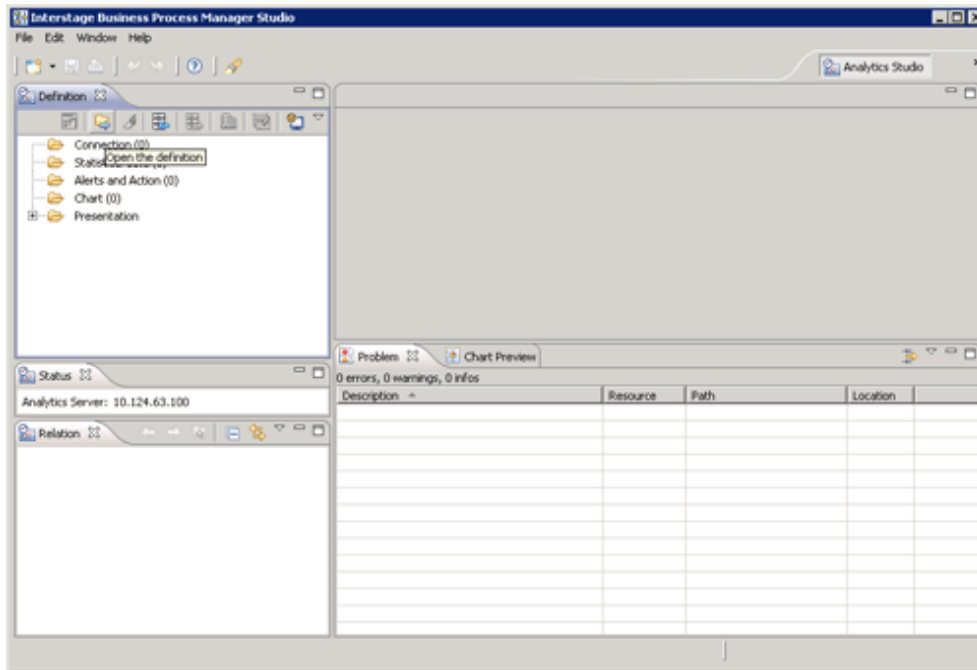
E.4   Uninstalling the Dashboard Development Environment

Delete the dashboard development environment by uninstalling it. The uninstallation flow is shown as follows:

1. Uninstall the Interstage Business Process Manager Analytics Client

2. Uninstall Interstage Business Process Manager Studio

3. Uninstall JRE 5.0

E.4.1   Uninstall the Interstage Business Process Manager Analytics Client

[Windows Manager]

If the dashboard development environment and the admin Server are installed on the same machine, follow the steps below to uninstall the dashboard development environment:

1. Select **Interstage Business Process Manager Analytics** from the list displayed on **Control Panel** >> **Uninstall or change a program**, and click the **Uninstall** button.

2. Deselect the **Client** checkbox on the **Select function** dialog box, and click **Next**.

3. A dialog box confirming the deletion of the **Client** function will be displayed. Click **Yes** and execute uninstallation.

4. After uninstallation is completed, delete the work area for the dashboard development environment. Delete the following folder:

<Workspace selected when BPM Studio was started>\Interstage BPM Analytics

When the dashboard development environment is installed on a different machine from where the admin Server is installed, uninstall the dashboard development environment by following the same procedure as that for [Linux].

[Linux]

1. Select **Interstage Business Process Manager Analytics** from the list displayed on **Control Panel** >> **Add or Remove Programs**, and click the **Remove** button.

2. Uninstall by following the confirmation dialog boxes.

3. After uninstallation is completed, delete the work area for the dashboard development environment. Delete the following directory:

```
<Workspace selected when BPM Studio was started>\Interstage BPM Analytics
```

🔰 **Note**
. . . .
When both the admin Server and the dashboard development environment are built on the same machine and both of these are to be uninstalled, the clients of Interstage Business Process Manager Analytics are also uninstalled when the admin Server is uninstalled. Tasks discussed in this section are therefore not required.
. . . .

E.4.2   Uninstall Interstage Business Process Manager Studio

1. Select **Interstage Business Process Manager Studio** from the list displayed on **Control Panel** >> **Uninstall or change a program**, and click the **Uninstall** button.

2. Uninstall by following the confirmation dialog boxes.

E.4.3   Uninstall JRE 5.0

1. Select **Interstage Application Server V9.3.0 Client Package** from the list displayed on **Control panel** >> **Uninstall or change a program**, and click the **Uninstall/Change** button.

2. Uninstall by following the confirmation dialog boxes.

E.5   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 this situation occurs, perform the following procedure to change the time to a more appropriate one.

E.5.1   Settings

1. Connect to the operation management console and log in. Refer to "E.6.1 Access" for details.

2. Select the Archive Rules CTDSB002 to CTDSB004 in the operation management console, display the **Execution Schedule**, then select the time to be changed and click **Modify**. Refer to "E.6.5 Changing the Schedule for Data Deletion" for details.

   Initial frequency and times

```
                          Time
  CTDSB001 : Everyday       03:51   (reservation not used)
  CTDSB002 : Everyday       02:51
  CTDSB003 : Everyday       01:51
  CTDSB004 : Everymonth  1st 00:51
```

3. Select the time to be changed and click **Modify**.

 Note

....

Do not change this unless there is a particular need.

The most appropriate times have been selected for the default settings.

....

E.6 The Interstage Business Process Manager Analytics Management Console

To log into the Interstage Business Process Manager Analytics management console, connect to the operation management console and log in (the default password is "bpm").

In the operation management console, perform only those operations described in this section and in "19.1.7 Settings for Email Sent from the Dashboard".

E.6.1 Access

Access the following URL in a browser to start the Interstage Business Process Manager Analytics management console:

```
http://<FQDN of the admin server>/ibpmm/BPMAdminTool.do
```

E.6.2 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 security policy.

The password at installation is "bpm".

Change the password of the administrator using the following procedure:

1. After logging into the operation management console, click **BPM Analytics** 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**

E.6.3 Creating and Changing Analytics Studio Users

f uploading operation settings to the Analytics Server using the Analytics Studio, user authentication is required.

The default Analytics Studio user has the user ID "bpm" and the password "bpm".

Create or change the Analytics Studio user with the following procedure:

1. After logging into the operation management console, click **BPM Analytics** >> **System** >> **Analytics Studio Authentication** in the pane on the left.

2. Click on the **User List** in the pane on the right, then either edit an existing user or click on the **Create a New User** tab and create a new user.

E.6.4 Restarting the Analytics Server

Restart the Analytics server using the following procedure:

1. After logging into the operation management console, click **BPM Analytics** >> **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**.

E.6.5 Changing the Schedule for Data Deletion

Change the time for regularly deleting dashboard data using the following procedure:

1. After logging into the operation management console, click **BPM Analytics** >> **System** >> **Data Migration** in the pane on the left.

2. Click **Archive Rules** in the pane on the right, then click the name of the definition to be edited in **Rule Name**.

3. Click **Execution Schedule [Open/Close]**.

4. Change the time and click **Change**.

Appendix F Upgrading from Earlier Versions

This appendix explains the upgrade procedures for the following environments.

- How to upgrade environments configured using ServerView Resource Coordinator VE (hereinafter RCVE) to this version of ServerView Resource Orchestrator Cloud Edition (hereinafter ROR CE) environments

- How to upgrade environments configured using an earlier version of ServerView Resource Orchestrator (hereinafter ROR Express) to this version of ROR CE environments

- How to upgrade environments configured using an earlier version of ServerView Resource Orchestrator Virtual Edition (hereinafter earlier version of ROR VE) to this version of ROR CE environments

- How to upgrade environments configured using earlier version of ROR CE to this version of ROR CE environments

- How to upgrade environments configured using this version of ROR VE to this version of ROR CE environments

F.1 Overview

This section explains an overview of the following upgrades.

Support Scope

The combinations of managers and agents, clients, and HBA address rename setup service supported by Resource Orchestrator are as shown below.

[Windows Manager]

Old Software	Resource Orchestrator	Upgradability	Reference
ROR V2.3	ROR CE V3.1	Yes	Refer to "Upgrade using Upgrade Installation".
ROR VE V3.0	ROR CE V3.1	Yes	Refer to "Upgrade using Upgrade Installation".
ROR CE V3.0	ROR CE V3.1	Yes	Refer to "Upgrade using Upgrade Installation".
ROR VE V3.1	ROR CE V3.1	Yes	Refer to "Upgrade from this version of ROR VE to ROR CE".

[Linux Manager]

Old Software	Resource Orchestrator	Upgradability	Reference
RCVE V2.2.2	ROR CE V3.1	Yes	Refer to "Upgrade using Upgrade Installation".
ROR VE V3.0	ROR CE V3.1	Yes	Refer to "Upgrade using Upgrade Installation".
ROR VE V3.1	ROR CE V3.1	Yes	Refer to "Upgrade from this version of ROR VE to ROR CE".

Yes: Supported
-: Not supported

Note
....
After upgrading RCVE V2.2.2 to ROR VE V3.1, it is not possible to upgrade from ROR VE V3.1 to ROR CE V3.1.
....

Upgrade using Upgrade Installation

Using the installer of Resource Orchestrator it is possible to automatically upgrade from an earlier version to this version.

When upgrading from an earlier version to this version, perform the upgrade in the order of manager, agents, clients, and then the HBA address rename setup service.

Upgrade from this version of ROR VE to ROR CE

The upgrade from ROR VE of this version to ROR CE can be automatically done with the installer of this product.

The manager, agent, client, and HBA address rename setup service must be upgraded for upgrading from ROR VE to ROR CE. In addition, Cloud Edition licenses are required for each agent used.

For license registration, refer to "Chapter 5 License Setup and Confirmation".

F.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 "G.1 Maintaining Compatibility with Earlier Versions", and change each setting.

[Windows Manager]

- When upgrading an environment configured using an earlier version of ServerView Resource Coordinator to this version of ServerView Resource Coordinator 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 is created and stored in the following folder. Ensure that the folder is not deleted until after the upgrade is complete.

[Windows Manager]
32-bit (x86) OS
Drive_name\Program Files\RCVE-upgradedata
64-bit (x64) OS
Drive_name\Program Files (x86)\RCVE-upgradedata
System_drive\swrbawork
installation_ folder\RCXCFMG-upgradedata
installation_ folder\RCXCTMG-upgradedata

[Linux Manager]
/var/opt/RCVE-upgradedata
/var/opt/backupscwdir

Note

The total disk space of the following folders plus 100 MB is required under *System_drive*\swrbawork and /var/tmp/swrbawork.

[Windows Manager]

- *System_drive*\SWRBADB

- *installation_ folder*\SWRBAM

- *installation_ folder*\IAPS

- *installation_ folder*\SWOMGR

[Linux Manager]

- /var/opt/FJSVJMCMN

- /var/opt/FJSVJOBSC

- /var/opt/FJSVMJS

- /var/opt/FJSVcmdba

- /var/opt/FJSVcmdbi

- /var/opt/FJSVcmdbm

- /var/opt/FJSVejb

- /var/opt/FJSVena

- /var/opt/FJSVes

- /var/opt/FJSVextp

- /var/opt/FJSVftlo

- /var/opt/FJSVfwseo

- /var/opt/FJSVfwtco

- /var/opt/FJSVihs

- /var/opt/FJSVirep

- /var/opt/FJSVirepc

- /var/opt/FJSVisas

- /var/opt/FJSVisgui

- /var/opt/FJSVisjmx

- /var/opt/FJSVisscs

- /var/opt/FJSVj2ee

- /var/opt/FJSVjmcal

- /var/opt/FJSVjms

- /var/opt/FJSVjmweb

- /var/opt/FJSVjs2su

- /var/opt/FJSVjs5

- /var/opt/FJSVlnkbs

- /var/opt/FJSVod

- /var/opt/FJSVots

- /var/opt/FJSVporb

- /var/opt/FJSVshnsk

- /var/opt/FJSVshs

- /var/opt/FJSVssoac

- /var/opt/FJSVssoaz

- /var/opt/FJSVssocm

- /var/opt/FJSVssofs

- /var/opt/FJSVssosv

- /var/opt/FJSVstem

- /var/opt/FJSVsvmon

- /var/opt/FJSVswaic

- /var/opt/FJSVswnc

- /var/opt/FJSVswrbac

- /var/opt/FJSVswrbam

- /var/opt/FJSVtd

- /etc/opt/FJSVMJS

- /etc/opt/FJSVcmdba

- /etc/opt/FJSVcmdbm

- /etc/opt/FJSVejb

- /etc/opt/FJSVes

- /etc/opt/FJSVextp

- /etc/opt/FJSVftlo

- /etc/opt/FJSVihs

- /etc/opt/FJSVirep

- /etc/opt/FJSVisas

- /etc/opt/FJSVisgui

- /etc/opt/FJSVisjmx

- /etc/opt/FJSVisscs

- /etc/opt/FJSVj2ee

- /etc/opt/FJSVjms

- /etc/opt/FJSVjs2su

- /etc/opt/FJSVjs5

- /etc/opt/FJSVlnkbs

- /etc/opt/FJSVod

- /etc/opt/FJSVots

- /etc/opt/FJSVporb

- /etc/opt/FJSVsclr

- /etc/opt/FJSVshnsk

- /etc/opt/FJSVshs

- /etc/opt/FJSVssoac

- /etc/opt/FJSVssoaz

- /etc/opt/FJSVssofs

- /etc/opt/FJSVssosv

- /etc/opt/FJSVsvmon

- /etc/opt/FJSVswaic

- /etc/opt/FJSVswnc

- /etc/opt/FJSVswrbac

- /etc/opt/FJSVswrbam

- /etc/opt/FJSVtd

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 "2.4 Software Environment" and "2.5 Hardware Environment" in the "Design Guide CE".
  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 "ServerView Resource Coordinator VE Operation Guide".

- 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.

- Check that the following ports are not used: If they are being used, please contact Fujitsu technical staff.

  - 7676

  - 8015

  - 8686

  - 12001

  - 23600

  - 23601

  - 23602

  - 23700

  - 28080

- Stop the BMC BladeLogic Server Automation service if it is in use. Refer to "Required Software Preparation and Checks" in "2.1.1 Preparations" for information on how to stop the service.

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 there are system images and cloning images, the same amount of disk space as necessary for the system images and cloning images is required on the admin server in order to temporarily copy the images during the upgrade. Before performing the upgrade, check the available disk space.

- 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.

- In the event that upgrade installation fails, please restore the system that was backed up during the preparations and then perform upgrade installation again.
  If the problem cannot be resolved and upgrade installation fails again, please contact Fujitsu technical staff.

- 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.

- If used ports exist when performing an upgrade installation, the message "The specified port number Port Number selected for ServerView Resource Orchestrator is already used." will be displayed, and installation will fail. If this happens, please contact Fujitsu technical staff.

  [Windows Manager]
  The specified port number *Port Number* selected for ServerView Resource Orchestrator is already used.

  [Linux Manager]
  The specified port number *Port Number* selected for ServerView Resource Orchestrator is already used.

- 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.
. . . .

1. Upgrade Installation

   [Windows Manager]

   Refer to steps 1. to 5 and Point in the installation section in "2.1.2 Installation [Windows Manager]", 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>. The settings to be inherited from the earlier version will be displayed. Check them and click <Next>. Upgrade installation will begin.

   [Linux Manager]

Refer to steps 1. to 11 and Point in the installation section in "2.1.3 Installation [Linux Manager]", 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. Restarting after Upgrade Installation is Finished

   After upgrade installation is finished, restart the system in order to complete the upgrade.

3. 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/FJSVrcvmr/bin/rcxmigrate_oc

   For details on the rcxmigrate_oc command, refer to "5.2 rcxmigrate_oc" in the "Reference Guide (Command/XML) CE".

   ### 📝 Note
   ・・

   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 "G.1.1 Overcommit Definition Files".
   ・・

4. Configure a Single Sign-On Environment

   When performing upgrade installation from the following products to Cloud Edition, configuration of a "Single Sign-On environment" is necessary.

   - Earlier version of ROR

   - Earlier version of ROR Express

   - Earlier version of ROR VE

   - This version of ROR Express

   - This version of ROR VE

   After this step, refer to "12.5 Updating from Earlier Versions" in the "Design Guide CE", and configure a Single Sign-On environment.

   When upgrading from ROR V3.0.0 to Cloud Edition this procedure is not necessary.

5. 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 are necessary to transfer.

      It is neccssary to transfer the template which has Physical for TYPE and '-' for NICS.

      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        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
```

b. Export the physical L-Server template which is necessary to transfer

The following is an example of 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 step b. Set more than 1 for NumOfNIC (the following example is 2).

If NICs tag does not exist, add NICs tag.
If a NIC tag and a NICIndex tag are output, 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 more 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             2
sample_small       Virtual   1.0GHz,1,1.0GB      20.0GB             1
```

📒 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 "5.2 Agent" in the "ServerView Resource Coordinator VE Setup Guide".

- Before upgrading, installation and configuration of Single Sign-On are required.
  For details, refer to "Chapter 12 Installing and Defining Single Sign-On" in the "Design Guide CE".

. . . .

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".

📖 See

. . . .

For pre-configuration, refer to the following manuals:

[RCVE]

- "Chapter 7 Pre-configuration" in the "ServerView Resource Orchestrator 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 V3.0 Virtual Edition User's Guide"

- "Appendix D 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

- 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 Orchestrator Setup Guide"

   [ROR VE V3.0.0]

    - "Chapter 6 Pre-configuration" in the "ServerView Resource Orchestrator V3.0 Virtual Edition User's Guide"

3. Back up (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/FJSVrcvmr/opt/FJSVssmgr/current/certificate
/etc/opt/FJSVrcvmr/sys/apache/conf/ssl.crt
/etc/opt/FJSVrcvmr/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/FJSVrcvmr/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 back up (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 Orchestrator 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.

   ....

   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 the Manager" 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 Administrator (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]
Installation_folder\Manager\etc\trapop.bat

[Linux]
/etc/opt/FJSVrcvmr/trapop.sh

  e. Start the manager.

For the methods for starting and stopping managers, refer to "2.1 Starting and Stopping the Manager" 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 for Infrastructure Administrators" in the "User's Guide for Infrastructure Administrator (Resource Management) CE".

7. Edit System Configuration Files

Based on the environment created for the manager, edit the system configuration file (CSV format) exported in step 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 ("-").

8. 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 "Chapter 11 Installing Software and Registering Agents on VM Hosts".
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 Server Switchover Settings" 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 step 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".

9. Set Maintenance Mode

Using the information recorded during preparation, place the managed serves 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".

10. Manager Setup

It is necessary to confirm whether Single Sign-On has been configured before performing setup of the manager.

For setting Single Sign-On, refer to "Chapter 12 Installing and Defining Single Sign-On" in the "Design Guide CE".

For the manager's setup, refer to "2.1.4 Setup".

After completing transfer of a manager of this version of ROR CE using the pre-configuration function, setup of the manager is necessary.

11. 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 5 License Setup and Confirmation".

Use SSL communications when accessing the ROR console from a browser.
When changing the certificate used for SSL communication from the test certificate set up by default to another certificate, refer to "Chapter 3 SSL Communication Environment Settings for the ROR Console".

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 an Agent" in the "Operation Guide CE".

F.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.

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]
There is no resource to transfer.

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.

[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 "2.4 Software Environment" and "2.5 Hardware Environment" in the "Design Guide CE".

- 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.

Note

- 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. 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] [Oracle VM]", 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.

🈁 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.

- 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.

2. 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.

3. 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

4. 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 3. When 3. was not performed, this step is not necessary.

   a. Stop agents.

   For the method for stopping agents, refer to "2.2 Starting and Stopping the Agent" in the "Operation Guide CE".

b. Restore the definition file.

Restore the folders and files backed up (copied) in step 3. 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 the Agent" in the "Operation Guide CE".

5. Setup agents (Dashboard Function)

Execute the command below.

[Windows] [Hyper-V]

```
> Installation_folder\RCXCTMGA\setup\dsbsetup.bat IP_address <RETURN>
```

[Linux]

```
# /opt/FJSVssqc/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]

The command does not have to be executed.

6. Release Maintenance Mode

Release the maintenance mode of managed servers placed into maintenance mode in step 2.

 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.
. . . .

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 Earlier Version ROR Agents

Refer to the "ServerView Resource Orchestrator User's Guide", and uninstall the agents.

4. Install ROR CE Agents

Install ROR CE agents.
For installation, refer to "2.2 Agent Installation".

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 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 the Agent" 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 the Agent" in the "Operation Guide CE".

6. Setup agents (Dashboard Function)

Execute the command below.

[Windows] [Hyper-V]

```
> Installation_folder\RCXCTMGA\setup\dsbsetup.bat IP_address <RETURN>
```

[Linux]

```
# /opt/FJSVssqc/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]

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 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.

- -

F.4 Client

This section explains the upgrading of clients.

Web browsers are used as clients of this version.

When upgrading clients, it is necessary to clear the Web browser's cache (temporary internet files).

Use the following procedure to clear the Web browser's cache.

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 <Delete>.

   The Web browser's cache is cleared.

F.5 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 "2.4 Software Environment" and "2.5 Hardware Environment" in the "Design Guide CE".

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:

📙 Note
・・・

- 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 10 Settings for the HBA address rename Setup Service", and start the HBA address rename setup service.

   [Linux]
   Refer to "Chapter 10 Settings for the HBA address rename Setup Service", and start the HBA address rename setup service.

Appendix G Compatibility with Earlier Versions

This appendix explains compatibility with earlier versions of Resource Orchestrator.

Maintaining Compatibility with Earlier Versions

This section explains how to maintain compatibility with earlier versions of Resource Orchestrator.

Information about Incompatibility with Earlier Versions

This section explains information about incompatibilities between this version and earlier versions.

This Version

This chapter specifies this version as described below.

- The state in which patches have been applied to V3.1.0

- The state in which patches have been applied to V3.1.0, after upgrade from V3.0 to V3.1.0

- The state in which patches have been applied to V3.1.0, after upgrading from RCVE or earlier versions of ROR to V3.1.0

Patches

Patches refers to either of the following patches.

- Patch T007218LP-02 [Linux Manager] for managers

- Patch T007141WP-01 [Windows Manager] for managers

Reference

For details on information about incompatibility with earlier versions, refer to the following:

- Information about incompatibility between this version and V3.1.0

  Refer to "G.2 Information about Information between This Version and V3.1.0".

- Information about incompatibility between this version and V3.0

  Refer to "G.3 Information about Incompatibility between This Version and V3.0".

- Information about incompatibility between V3.0 and V3.1.0

  Refer to "G.4 Information about Incompatibility between V3.0 and V3.1.0".

G.1 Maintaining Compatibility with Earlier Versions

This section explains how to maintain compatibility with earlier versions of Resource Orchestrator.

- G.1.1 Overcommit Definition Files

- G.1.2 Definition Files for Display Control of VM Pool Attribute Information

- G.1.3 Sorting the Resource List in the Tree

- G.1.4 Configuring Display of Errors that Occur on Related Products

G.1.1 Overcommit Definition Files

This section explains overcommit definition files.

The following settings are configured in overcommit definition files:

- VM pools used for overcommit

- Calculation methods for the available space for VM pools used for overcommit

- Configurations for Thin Provisioning attributes on storage pools

🅿 Point
. . . .

Overcommit definition files are provided to remain compatible between V2.3 and V3.1, and V3.0 and V3.1 of Resource Orchestrator. Do not use overcommit definition files for anything other than the intended use.
Overcommit definition files may not be provided in future versions of Resource Orchestrator. Use the following procedure to transfer the configuration information and start to use the specification method in V3.1 at an early stage.

- Transfer of Configurations for Overcommit Attributes

    1. Execute the rcxmigrate_oc command.

       For details on the rcxmigrate_oc command, refer to "5.2 rcxmigrate_oc" in the "Reference Guide (Command/XML) CE".

    2. Delete the following key and value from the definition file.

       - over_commit

       - over_commit_calculate_by_reserve_value

- Transfer of Configurations for Thin Provisioning Attributes

    1. Delete the following key and value from the definition file.

       - thin_provisioning

. . . .

Storage Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
/etc/opt/FJSVrcvmr/customize_data

Definition File Name

pool.rcxprop

Definition File Format

```
over_commit=pool1,pool2,...
over_commit_calculate_by_reserve_value=true|false
thin_provisioning=pool1,pool2,...
```

over_commit

Specify the VM pools used for overcommit.

Multiple VM pool names can be specified. When specifying multiple resource pools, separate them using commas (",").

If the VM pool is arranged in a hierarchy, specify the name using an absolute path.

For a VM pool directly under the orchestration tree, specify only its name.

📝 Example
. . . .
over_commit=VMPool,/folder1/VMPool
. . . .

🅿 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.

After editing overcommit definition files, open the [Resource] tab of the ROR console, and then confirm that the modification has been reflected on the resource pool attributes displayed in the resource details or the resource pool list.
. . . .

over_commit_calculate_by_reserve_value

Specify the calculation method for available space for a VM pool used for overcommit.

One of the following values can be specified.

- When using a reservation value

  Specify "true".

- When using a maximum value

  Specify "false".

"false" is specified in the following cases:

- When specification of "over_commit_calculate_by_reserve_value" is omitted

- When an invalid value is specified

📝 Example
. . . .
over_commit_calculate_by_reserve_value=true
. . . .

thin_provisioning

Specify names of storage pools that have Thin Provisioning attributes configured.

Multiple storage pool names can be specified. When specifying multiple resource pools, separate them using commas (",").

If a storage pool is arranged in a hierarchy, specify the name using an absolute path.

For a storage pool directly under the orchestration tree, specify only its name.

📝 Example
. . . .
thin_provisioning=StoragePool,/folder/StoragePool
. . . .

📒 Note
. . . .
Thin Provisioning attributes of a storage pool are configured when the storage pool is created.

If the thin_provisioning key is specified in a overcommit definition file (the file is configured when a storage pool is created and is loaded into Resource Orchestrator), a storage pool with Thin Provisioning attributes will be created.

If the thin_provisioning key is not specified in the definition file, a storage pool without Thin Provisioning attributes will be created.

For storage pools that have already been created, the setting for Thin Provisioning attributes cannot be changed even if the following operations are performed:

- Changing the value of the thin_provisioning key

- Changing storage pool names

When creating storage pools for which Thin Provisioning attributes are configured, specify the names of storage pools that are planned for the thin_provisioning key beforehand.
. . . .

G.1.2 Definition Files for Display Control of VM Pool Attribute Information

This section explains the definition files for display control of VM pool attribute information.

The definition files for display control of VM pool attribute information provided to remain compatible between V3.0.0 and this version of Resource Orchestrator.

When performing upgrade from ROR V3.0.0, the definition files for display control of VM pool attribute information are created to provide compatibility between V3.0.0 and V3.1 for execution of the rcxadm pool list -extend attributes command.

To display the "ATTRIBUTES" item of a VM pool as a result of the command execution, delete this definition file.

Storage Location of the Definition File

> [Windows Manager]
> *Installation_folder*\SVROR\Manager\etc\customize_data
>
> [Linux Manager]
> /etc/opt/FJSVrcvmr/customize_data

Definition File Name

> cli_notlist_oc.rcxprop

> - If the definition file exists
>
>   The "ATTRIBUTES" item of a VM pool will not be displayed when the rcxadm pool list -extend attributes command is executed.
>
> - If the definition file does not exist
>
>   The "ATTRIBUTES" item of a VM pool will be displayed when the rcxadm pool list -extend attributes command is executed.

G.1.3 Sorting the Resource List in the Tree

This section describes the way to change the sorting order of the resource list in the tree.

In V3.1.0, the tree on the ROR console [Resource] tab displays the resources listed in ascending order of name, by resource type.

As with earlier versions of Resource Orchestrator, to display resources in order of registration or creation, edit the following definition file.

Location of the Definition File

> [Windows Manager]
> *Installation_folder*\SVROR\Manager\etc\customize_data
>
> [Linux Manager]
> /etc/opt/FJSVrcvmr/customize_data

Definition File Name

> gui_config.rcxprop

Definition File Format

> RESOURCE_TREE_SORT_ORDER=RESOURCE_TREE_ORDER

Definition File Items

> RESOURCE_TREE_ORDER
>
> Specify the display order using one of the following options:
>
> name
>
> > Displays the resource list in alphabetical order of resource names.
>
> registered
>
> > Displays the resource list in the order in which the resources were registered or created.

G.1.4 Configuring Display of Errors that Occur on Related Products

This section describes how to configure whether to display errors that occur on related products.

When an error occurs during operation of related products using commands, the related product name and an error message are displayed. As with earlier versions of Resource Orchestrator, to prevent display of these error messages, configure the following definition file.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
/etc/opt/FJSVrcvmr/customize_data

Definition File Name

product_report.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

> *Item_Name*=*Values*

Definition File Items

Table G.1 List of Items

Item Name	Description

product_report	When obtaining the operation results for each resource (including command executions), specify whether the information returned is to be backward compatible or not.
	
	 - true
	   New format
	
	 - false
	   Conventional format
	
	 To configure the backward compatible mode, specify false.
	
	 When omitted, true is configured and the information is returned in the new format.

Item Name	Description
	When an invalid value is specified, the information is returned in the new format.
product_report_for_cli	Specify whether to make command error output backward compatible.
	If false is specified for product_report, that setting will be given priority, and errors will be output in the conventional format regardless of the setting for this parameter.
	- true New format
	- false Conventional format
	To not include the information on related products in command error output, specify false.
	When omitted, true is configured and the error is output in the new format.
	When an invalid value is specified, the error is output in the new format.

G.2　Information about Information between This Version and V3.1.0

This section explains information about incompatibility between this version and V3.1.0.

G.2.1　When Using Linux Manager with Managed Servers Using Local Boot or SAN Data Environments

Details of Modification

When using Linux manager with managed servers using local boot or SAN data environments, modification of boot agents was not necessary up to V3.1.

It is necessary to change the boot agent before image operations when using this version in the following configurations:

- Local boot, SAN data environments where SAN data is configured using a physical WWN or VIOM

Effect

When upgrading from an earlier version, if the boot agent is not changed, for image operations that were correctly implemented before upgrade, processing may be performed for data disks. An error will occur during image operations.

Corrective Actions

Perform the image operations, after changing the boot agent to DR-DOS using the following command:

```
#/opt/FJSVrcvmr/bin/rcxadm server set -name physical server -attr bootagt=dos <RETURN>
```

G.2.2　Modification the number of service of agents

Details of Modification

When the managed server's OS is XenServer6, the following service is not operate in agent.

- Deployment Agent

Effect

When Agent's services are monitored, the monitor misjudges that Deployment Agent stop.

Corrective Actions

Delete Deployment Agent from the monitoring target of service.

G.2.3 Regarding Modification of Messages

From V3.1.0, the messages displayed in the following cases have been changed:

- When Operating L-Servers or Resource Pools

- When Monitoring Network Devices

When Operating L-Servers or Resource Pools

- Message output when the value of the XML tag is invalid, when applying for an L-Platform including a virtual L-Server, creating a virtual L-Server, or modifying a virtual L-Server. Or message output when the value of the XML tag is invalid, when importing a L-Server template.

    - For V3.1.0

    FJSVrcx:ERROR:65910:The value of *item*, *value*, is invalid.

    - For this version

    The content of *item* is changed.

- Message output when the XML tag of the unsupport is specified for VM type of virtual L-Server, when applying for an L-Platform including a virtual L-Server, creating a virtual L-Server, or modifying a virtual L-Server. Or message output when the option of the unsupport is specified for the pool type, when registering a resource to a resource pool.

    - For V3.1.0

    FJSVrcx:ERROR:67280:*obj.function* not supported. *detail*

    - For this version

    The content of *detail* is changed.

- Message output when the specified resource does not exist in the resource pool, when applying for an L-Platform including a virtual L-Server, creating a virtual L-Server, modifying a virtual L-Server, attaching a disk, or starting a virtual L-Server.

    - For V3.1.0

    FJSVrcx:ERROR:67154:*obj*:not found

    - For this version

    FJSVrcx:ERROR:62553:no *AddressType* found in *targets*

- Message output when the MAC address resource does not exist in the specified resource pool, when applying for an L-Platform including a virtual L-Server, or creating a virtual L-Server.

    - For V3.1.0

    FJSVrcx:ERROR:67154:*obj*:not found

    - For this version

    FJSVrcx:ERROR:62553:no *AddressType* found in *targets*

    Or

    FJSVrcx:ERROR:62554:*AddressType*:no more addresses available in *targets*

- Message output when the cloning image is not specified, and the disk deployment settings during image specification (disk=all) is specified, when applying for an L-Platform including a virtual L-Server, creating a virtual L-Server, or modifying a virtual L-Server.

    - For V3.1.0

    FJSVrcx:ERROR:67280:*obj.function* not supported. *detail*

    - For this version

    FJSVrcx:ERROR:62537:*obj* cannot be specified because of *condition. detail*

- Message output when the option of the unsupport is specified for the pool type, when creating a resource pool.

    - For V3.1.0

    FJSVrcx:ERROR:67280:*obj*:function not supported. *detail*

    - For this version

    FJSVrcx:ERROR:62538:*obj1* cannot be specified for *obj2. detail*

- Message output when the resource that had been registered in the resource pool is specified, when registering a resource to a resource pool.

    - For V3.1.0

    FJSVrcx:ERROR:67155:*type obj*:already exists

    - For this version

    The content of *obj* is changed.

- Message output when the resource that cannot be registered is specified, when registering a resource to a resource pool.

    - For V3.1.0

    FJSVrcx:ERROR:67154:*obj*:not found

    - For this version

    FJSVrcx:ERROR:62537:*obj* cannot be specified because of *condition. detail*

- Message output when the resource type and the pool type do not match, when registering a resource to a resource pool.

    - For V3.1.0

    FJSVrcx:ERROR:67280:*obj.function* not supported. *detail*

    - For this version

    FJSVrcx:ERROR:62551:The specified *obj1* and *obj2* do not matched. *detail*

When Monitoring Network Devices

From V3.1.0, the messages output when monitoring network devices have been changed.

- Messages output when changes in port status are detected when monitoring network devices

    - For V3.1.0

        - FJSVrcx:WARNING:42781:*device*:Port *port_name* status change from *prev_status* to *cur_status* has been detected

    - For this version

        - FJSVrcx:INFO:22784:*device*:Port *port_name* status change from *prev_status* to *cur_status* has been detected

Corrective Actions

- It is necessary to add the message for the target of monitoring, when monitoring the messages (numbers or message text) for Resource Orchestrator using other vendors' products.

- It is necessary to update the operation guide, when the messages before modification are described in an operation guide created by users.

G.3 Information about Incompatibility between This Version and V3.0

This section explains information about incompatibility between this version and V3.0.

G.3.1 Message Modification

Details of Modification

The message displayed when all specified network devices have already been registered during the import of network devices has been changed.

- Messages output when all specified network devices have already been registered during the import of network devices

    - For V3.0

      FJSVrcx:INFO:25901:Import has not been performed.

    - For this version

      FJSVrcx:INFO:22781:Import has not been performed because all specified network devices have already been registered.

Corrective Actions

It is necessary to update the operation guide, when the messages before modification are described in an operation guide created by users.

G.4 Information about Incompatibility between V3.0 and V3.1.0

This section explains information about incompatibility between V3.0 and V3.1.0.

G.4.1 Regarding Modification of Messages

Details of Modification

From V3.0 the message displayed when operating an L-Server has been changed.

- Message output when a MacAddress cannot be obtained, when applying for an L-Platform including a physical L-Server, or creating a physical L-Server

    - For V3.0

        - FJSVrcx:ERROR:65910:The value of MacAddress, *value*, is invalid.

        - FJSVrcx:ERROR:67154:MacAddress:not found

    - For V3.1.0

        - FJSVrcx:ERROR:62552:*value* is outside range of *targets*

        - FJSVrcx:ERROR:62553:no *AddressType* found in *targets*

        - FJSVrcx:ERROR:62554:*AddressType*:no more addresses available

- Message output when the WWNAddress cannot be obtained, when applying for an L-Platform including a physical L-Server, or creating a physical L-Server

  - For V3.0

    - FJSVrcx:ERROR:67133:remained amount of WWN address:out of range

  - For V3.1.0

    - FJSVrcx:ERROR:62552:*value* is outside range of *targets*

    - FJSVrcx:ERROR:62553:no *AddressType* found in *targets*

    - FJSVrcx:ERROR:62554:*AddressType*:no more addresses available

- Message output when the specified system disk does not exist, when applying for an L-Platform including a physical L-Server, or creating a physical L-Server

  - For V3.0

    - FJSVrcx:ERROR:67154:System Disk:not found

  - For V3.1.0

    - FJSVrcx:ERROR:62549:*obj1* not specified for *obj2*. (*detail*)

- Message output when the resource has no access authority, when starting an L-Platform including a physical L-Server, or starting a physical L-Server

  - For V3.0

    - FJSVrcx:ERROR:67280:*obj*:start not supported. The resources used are permission denied.

  - For V3.1.0

    - FJSVrcx:ERROR:62548:*obj1* access rights not possessed for *obj2*. (*detail*)

- Message output when there are no physical servers, when applying for an L-Platform including a physical L-Server, or creating or starting a physical L-Server

  - For V3.0

    - FJSVrcx:ERROR:65911:Specified resource PhysicalServer not found.

  - For V3.1.0

    - FJSVrcx:ERROR:62532:*resource* not found in *target*. (*detail*)

    - FJSVrcx:ERROR:62533:*resource* matching conditions not found in *target*. (*detail*)

- Message output when there is no access authority for the person creating a virtual L-Server to VM host associating the configured virtual machine and the virtual L-Server

  - For V3.0

    - FJSVrcx:ERROR:67154:TargetServer id=*id*:not found

  - For V3.1.0

    - FJSVrcx:ERROR:62547:*obj* access rights not possessed. (*detail*)

- Message output when the resource has no access authority, when starting an L-Platform including a virtual L-Server, or starting a virtual L-Server

  - For V3.0

    - FJSVrcx:ERROR:67280:*obj*:start not supported. The resources used are permission denied.

  - For V3.1.0

    - FJSVrcx:ERROR:62548:*obj1* access rights not possessed for *obj2*. (*detail*)

The message is output to command prompt and the terminal where the command was executed when operating it by the command.

Corrective Actions

- It is necessary to add the message for the target of monitoring, when monitoring the messages (numbers or message text) for Resource Orchestrator using other vendors' products.

- It is necessary to add or revise messages after modification, when the messages before modification are described in the operation guide created by users.

G.4.2 Modification of Results Output Using the Command (rcxadm lserver show)

Details of Modification

- The lines for VMHostPool and StoragePool[num] are added to the information output using the rcxadm lserver show command. Depending on the status of resource allocation, the information may not be displayed.

- The following tags are added to the information using the rcxadm lserver show -format xml command. Depending on the status of resource allocation, the information may not be displayed.

    - Pool elements in Current elements

    - Current elements in Disk elements, and Pool elements under Current elements

- When disk space is unclear and the VM type is Solaris Containers, DiskSize is shown as "-" in the information output using the rcxadm lserver show command.

Effect

When the command output results are analyzed by programs, the analysis may fail.

Corrective Actions

When the command output results are analyzed by programs, it is necessary to skip reading of added information.

When the output results are analyzed in the text format, it is necessary to extract the necessary items by lines, but this is only required for users analyzing the results in text format.

G.4.3 Date Format Displayed on the Dashboard (System Conditions)

Details of Modification

The Date format displayed on the Dashboard (System Conditions) has been modified.

In V3.0 the format was yyyy/mm/dd.

In V3.1, the format is yyyy-mm-dd.

Note that the date format output to CSV files has also been modified.

Effect

When using the date output to the CSV file, processing may fail.

Corrective Actions

When using the date output to the CSV file, modification is required.

G.4.4 Date Format Displayed on the Dashboard (Pool Conditions)

Details of Modification

The Date format displayed on the Dashboard (pool conditions) has been modified.

In V3.0 the format was mm/dd/yyyy.

In V3.1, the format is yyyy-mm-dd.

Note that the date format output to CSV files has also been modified.

Effect

When using the date output to the CSV file, processing may fail.

Corrective Actions

When using the date output to the CSV file, modification is required.

G.4.5 L-Server Template Setting Values that occur in L-Platform Reconfiguration

Details of Modification

The method of handling L-Server template setting values that occur in L-Platform reconfiguration has been modified.

In V3.0, when reconfiguring post deployment L-Platforms, even if the following setting values were modified to a different type (L-Server template), the changes were not reflected in the L-Server setting values:

- Alive Monitoring Settings

- Redundancy

- Repurpose

In V3.1, when reconfiguring post deployment L-Platforms, if the above setting values are modified to a different type (L-Server template), the changes are now reflected in the L-Server setting values.

Corrective Actions

Reregister the L-Server template which has the same setting values as the following items:

Also, when modifying only the Server specs, select the type of Server that has the same setting values as the following items, and perform the L-Platform reconfiguration:

- Alive Monitoring Settings

- Redundancy

- Repurpose

G.4.6 Registering Image Information Specifying Cloning Images that include Data Disks

Details of Modification

Previously, when registering L-Platform template image information which specified cloning images that included data disks, the image information from the system disk configuration only was registered in V3.0.

But in V3.1, image information with the data disks is now included in the configuration is registered.

Corrective Actions

- Infrastructure administrators

  After deleting the data disk from the L-Server which was the source of the cloning image collection, recollect the cloning image. Specify the recollected cloning image and reregister the image information.

- Tenant administrators

  After deploying a configuration which includes the data disks, collect a cloning image in the L-Platform Management window which specifies exclusion of the data disks. If this is done, image information configured only with system disks is automatically registered.

G.4.7 The Number of Disks That Can Be Attached Using the L-Platform API

Details of Modification

AttachDisk or CreateDisk of the L-Platform API was able to attach one disk to a server even if the maximum number of extension disks of the server was set to zero.

It has been corrected, and now CreateDisk cannot attach a disk if the maximum number of extension disks is zero.

Corrective Actions

If it is expected that a disk will be attached to a server that is created using image information with the maximum number of extension disks set to zero, edit the image information and change the maximum number of extension disks to a value more than zero.

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**
> ....
> When registering it with Resource Orchestrator as server management software, coordination with the software in BMC BladeLogic Server Automation Suite 8.2 or later is possible.
> ....

Functional Overview

Through coordination, the following becomes possible:

When Registering BMC BladeLogic Server Automation with Resource Orchestrator as Server Management Software

- VM guest operations

  Registering BMC BladeLogic Server Automation with Resource Orchestrator as server management software enables operations such as migration of VM guests.

When Not Registering BMC BladeLogic Server Automation with Resource Orchestrator as Server Management Software

- 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

When Registering BMC BladeLogic Server Automation with Resource Orchestrator as Server Management Software

- VM guest operations

  For the supported functions, refer to "D.1 Common Functions of Server Virtualization Software" in the "Design Guide VE".

When Not Registering BMC BladeLogic Server Automation with Resource Orchestrator as Server Management Software

- 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.

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 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

When Registering BMC BladeLogic Server Automation with Resource Orchestrator as Server Management Software

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_blcli_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.

When Not Registering BMC BladeLogic Server Automation with Resource Orchestrator as Server Management Software

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.

> 📖 **Note**
>
> ⋯⋯⋯
>
> 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.

   > 📖 **Note**
   >
   > ⋯⋯⋯
   >
   > 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/FJSVrcvmr/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
Cloning image deployment	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	Meaning
PROFILE	The name of the authentication profile used for connection to Application Server
ID	A user name with authority for executing coordination patch jobs

Variable	Meaning
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	Meaning
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.

Glossary

access path

A logical path configured to enable access to storage volumes from servers.

active mode

The state where a managed server is performing operations.
Managed servers must be in active mode in order to use Auto-Recovery.
Move managed servers to maintenance mode in order to perform backup or restoration of system images, or collection or deployment of cloning images.

active server

A physical server that is currently operating.

admin client

A terminal (PC) connected to an admin server, which is used to operate the GUI.

admin LAN

A LAN used to manage resources from admin servers.
It connects managed servers, storage, and network devices.

admin server

A server used to operate the manager software of Resource Orchestrator.

affinity group

A grouping of the storage volumes allocated to servers. A function of ETERNUS.

Equivalent to the LUN mapping of EMC.

agent

The section (program) of Resource Orchestrator that operates on managed servers.

aggregate

A unit for managing storage created through the aggregation of a RAID group.

Aggregates can contain multiple FlexVols.

alias name

A name set for each ETERNUS LUN to distinguish the different ETERNUS LUNs.

Auto Deploy

A function for deploying VMware ESXi 5.0 to servers using the PXE boot mechanism.

Automatic Storage Layering

A function that optimizes performance and cost by automatically rearranging data in storage units based on the frequency of access.

Auto-Recovery

A function which continues operations by automatically switching over the system image of a failed server to a spare server and restarting it in the event of server failure.
This function can be used when managed servers are in a local boot configuration, SAN boot configuration, or a configuration such as iSCSI boot where booting is performed from a disk on a network.

- When using a local boot configuration

  The system is recovered by restoring a backup of the system image of the failed server onto a spare server.

- When booting from a SAN or a disk on a LAN

  The system is restored by having the spare server inherit the system image on the storage.
  Also, when a VLAN is set for the public LAN of a managed server, the VLAN settings of adjacent LAN switches are automatically switched to those of the spare server.

backup site

An environment prepared in a different location, which is used for data recovery.

BACS (Broadcom Advanced Control Suite)

An integrated GUI application (comprised from applications such as BASP) that creates teams from multiple NICs, and provides functions such as load balancing.

Basic Mode

A function that can be used by configuring a Cloud Edition license after installing ROR VE.

BASP (Broadcom Advanced Server Program)

LAN redundancy software that creates teams of multiple NICs, and provides functions such as load balancing and failover.

blade server

A compact server device with a thin chassis that can contain multiple server blades, and has low power consumption.
As well as server blades, LAN switch blades, management blades, and other components used by multiple server blades can be mounted inside the chassis.

blade type

A server blade type.
Used to distinguish the number of server slots used and servers located in different positions.

BladeViewer

A GUI that displays the status of blade servers in a style similar to a physical view and enables intuitive operation.
BladeViewer can also be used for state monitoring and operation of resources.

BMC (Baseboard Management Controller)

A Remote Management Controller used for remote operation of servers.

boot agent

An OS for disk access that is distributed from the manager to managed servers in order to boot them when the network is started during image operations.

CA (Channel Adapter)

An adapter card that is used as the interface for server HBAs and fibre channel switches, and is mounted on storage devices.

CCM (ETERNUS SF AdvancedCopy Manager Copy Control Module)

This is a module that does not require installation of the ETERNUS SF AdvancedCopy Manager agent on the server that is the source of the backup, but rather uses the advanced copy feature of the ETERNUS disk array to make backups.

chassis

A chassis used to house server blades and partitions.
Sometimes referred to as an enclosure.

cloning

Creation of a copy of a system disk.

cloning image

A backup of a system disk, which does not contain server-specific information (system node name, IP address, etc.), made during cloning.
When deploying a cloning image to the system disk of another server, Resource Orchestrator automatically changes server-specific information to that of the target server.

Cloud Edition

The edition which can be used to provide private cloud environments.

data center

A facility that manages client resources (servers, storage, networks, etc.), and provides internet connections and maintenance/operational services.

directory service

A service for updating and viewing the names (and associated attributes) of physical/logical resource names scattered across networks, based on organizational structures and geographical groups using a systematic (tree-shaped structure) management methodology.

disk resource

The unit for resources to connect to an L-Server. An example being a virtual disk provided by LUN or VM management software.

DN (Distinguished Name)

A name defined as a line of an RDN, which contains an entry representing its corresponding object and higher entry.

Domain

A system that is divided into individual systems using partitioning. Also used to indicate a partition.

DR Option

The option that provides the function for remote switchover of servers or storage in order to perform disaster recovery.

Dual-Role Administrators

The administrators with both infrastructure administrator's and tenant administrator's role.

dynamic LUN mirroring

This is a feature whereby a mirror volume is generated at the remote site when a volume is generated at the local site, and copies are maintained by performing REC.

dynamic memory

A function that optimizes physical memory allocation for virtual machines, depending on their execution status on Hyper-V.

end host mode

This is a mode where the uplink port that can communicate with a downlink port is fixed at one, and communication between uplink ports is blocked.

environmental data

Measured data regarding the external environments of servers managed using Resource Orchestrator.
Measured data includes power data collected from power monitoring targets.

ESC (ETERNUS SF Storage Cruiser)

Software that supports stable operation of multi-vendor storage system environments involving SAN, DAS, or NAS. Provides configuration management, relation management, trouble management, and performance management functions to integrate storage related resources such as ETERNUS.

ETERNUS SF AdvancedCopy Manager

This is storage management software that makes highly reliable and rapid backups, restorations and replications using the advanced copy feature of the ETERNUS disk array.

Express

The edition which provides server registration, monitoring, and visualization.

external FTP server

An FTP server used to relay network device files between the ROR manager and network devices that do not possess their own FTP server function.

FC switch (Fibre Channel Switch)

A switch that connects Fibre Channel interfaces and storage devices.

Fibre Channel

A method for connecting computers and peripheral devices and transferring data.

Generally used with servers requiring high-availability, to connect computers and storage systems.

Fibre Channel port

The connector for Fibre Channel interfaces.

When using ETERNUS storage, referred to as an FC-CA port, when using NetApp storage, referred to as an FC port, when using EMC CLARiiON, referred to as an SP port, when using EMC Symmetrix DMX or EMC Symmetrix VMAX, referred to as a DIRECTOR port.

fibre channel switch blade

A fibre channel switch mounted in the chassis of a blade server.

FlexVol

A function that uses aggregates to provide virtual volumes.

Volumes can be created in an instant.

FTRP

The pool for physical disks created by Automatic Storage Layering for ETERNUS.
In Resource Orchestrator, FTRPs are used as virtual storage resources on which Thin Provisioning attributes are configured.

FTV

The virtual volumes created by Automatic Storage Layering for ETERNUS.
In Resource Orchestrator, FTVs are used as disk resources on which Thin Provisioning attributes are configured.

global pool

A resource pool that contains resources that can be used by multiple tenants.
It is located in a different location from the tenants.
By configuring a global pool with the attributes of a tenant, it becomes possible for tenant administrators to use the pool.

global zone

The actual OS that is used for a Solaris container.

A Solaris environment that has been installed on a physical server.

GLS (Global Link Services)

Fujitsu network control software that enables high availability networks through the redundancy of network transmission channels.

GSPB (Giga-LAN SAS and PCI_Box Interface Board)

A board which mounts onboard I/O for two partitions and a PCIe (PCI Express) interface for a PCI box.

GUI (Graphical User Interface)

A user interface that displays pictures and icons (pictographic characters), enabling intuitive and easily understandable operation.

HA (High Availability)

The concept of using redundant resources to prevent suspension of system operations due to single problems.

hardware initiator

A controller which issues SCSI commands to request processes.
In iSCSI configurations, NICs fit into this category.

hardware maintenance mode

In the maintenance mode of PRIMEQUEST servers, a state other than Hot System Maintenance.

HBA (Host Bus Adapter)

An adapter for connecting servers and peripheral devices.
Mainly used to refer to the FC HBAs used for connecting storage devices using Fibre Channel technology.

HBA address rename setup service

The service that starts managed servers that use HBA address rename in the event of failure of the admin server.

HBAAR (HBA address rename)

I/O virtualization technology that enables changing of the actual WWN possessed by an HBA.

host affinity

A definition of the server HBA that is set for the CA port of the storage device and the accessible area of storage.
It is a function for association of the Logical Volume inside the storage which is shown to the host (HBA) that also functions as security internal to the storage device.

Hyper-V

Virtualization software from Microsoft Corporation.

Provides a virtualized infrastructure on PC servers, enabling flexible management of operations.

I/O virtualization option

An optional product that is necessary to provide I/O virtualization.
The WWNN address and MAC address provided is guaranteed by Fujitsu Limited to be unique.
Necessary when using HBA address rename.

IBP (Intelligent Blade Panel)

One of operation modes used for PRIMERGY switch blades.
This operation mode can be used for coordination with ServerView Virtual I/O Manager (VIOM), and relations between server blades and switch blades can be easily and safely configured.

ICT governance

A collection of principles and practices that encourage desirable behavior in the use of ICT (Information and Communication Technology) based on an evaluation of the impacts and risks posed in the adoption and application of ICT within an organization or community.

ILOM (Integrated Lights Out Manager)

The name of the Remote Management Controller for SPARC Enterprise T series servers.

image file

A system image or a cloning image. Also a collective term for them both.

infrastructure administrator

A user who manages the resources comprising a data center.
infra_admin is the role that corresponds to the users who manage resources.
Infrastructure administrators manage all of the resources comprising a resource pool (the global pool and local pools), provide tenant administrators with resources, and review applications by tenant users to use resources.

integrated network device

A network device with integrated firewall or server load balancing functions.
The IPCOM EX IN series fits into this category.

IPMI (Intelligent Platform Management Interface)

IPMI is a set of common interfaces for the hardware that is used to monitor the physical conditions of servers, such as temperature, power voltage, cooling fans, power supply, and chassis.
These functions provide information that enables system management, recovery, and asset management, which in turn leads to reduction of overall TCO.

IQN (iSCSI Qualified Name)

Unique names used for identifying iSCSI initiators and iSCSI targets.

iRMC (integrated Remote Management Controller)

The name of the Remote Management Controller for Fujitsu's PRIMERGY servers.

iSCSI

A standard for using the SCSI protocol over TCP/IP networks.

iSCSI boot

A configuration function that enables the starting and operation of servers via a network.

The OS and applications used to operate servers are stored on iSCSI storage, not the internal disks of servers.

iSCSI storage

Storage that uses an iSCSI connection.

LAG (Link Aggregation Group)

A single logical port created from multiple physical ports using link aggregation.

LAN switch blades

A LAN switch that is mounted in the chassis of a blade server.

LDAP (Lightweight Directory Access Protocol)

A protocol used for accessing Internet standard directories operated using TCP/IP.

LDAP provides functions such as direct searching and viewing of directory services using a web browser.

license

The rights to use specific functions.
Users can use specific functions by purchasing a license for the function and registering it on the manager.

link aggregation

Function used to multiplex multiple ports and use them as a single virtual port.
By using this function, it becomes possible to use a band equal to the total of the bands of all the ports.
Also, if one of the multiplexed ports fails its load can be divided among the other ports, and the overall redundancy of ports improved.

local pool

A resource pool that contains resources that can only be used by a specific tenant.

They are located in tenants.

logical volume

A logical disk that has been divided into multiple partitions.

L-Platform

A resource used for the consolidated operation and management of systems such as multiple-layer systems (Web/AP/DB) comprised of multiple L-Servers, storage, and network devices.

L-Platform template

A template that contains the specifications for servers, storage, network devices, and images that are configured for an L-Platform.

LSB (Logical System Board)

A system board that is allocated a logical number (LSB number) so that it can be recognized from the domain, during domain configuration.

L-Server

A resource defined using the logical specifications (number of CPUs, amount of memory, disk capacity, number of NICs, etc.) of the servers, and storage and network devices connected to those servers.
An abbreviation of Logical Server.

L-Server template

A template that defines the number of CPUs, memory capacity, disk capacity, and other specifications for resources to deploy to an L-Server.

LUN (Logical Unit Number)

A logical unit defined in the channel adapter of a storage unit.

MAC address (Media Access Control address)

A unique identifier that is assigned to Ethernet cards (hardware).

Also referred to as a physical address.

Transmission of data is performed based on this identifier. Described using a combination of the unique identifying numbers managed by/assigned to each maker by the IEEE, and the numbers that each maker assigns to their hardware.

maintenance mode

The state where operations on managed servers are stopped in order to perform maintenance work.
In this state, the backup and restoration of system images and the collection and deployment of cloning images can be performed.
However, when using Auto-Recovery it is necessary to change from this mode to active mode. When in maintenance mode it is not possible to switch over to a spare server if a server fails.

managed server

A collective term referring to a server that is managed as a component of a system.

management blade

A server management unit that has a dedicated CPU and LAN interface, and manages blade servers.
Used for gathering server blade data, failure notification, power control, etc.

Management Board

The PRIMEQUEST system management unit.
Used for gathering information such as failure notification, power control, etc. from chassis.

manager

The section (program) of Resource Orchestrator that operates on admin servers.
It manages and controls resources registered with Resource Orchestrator.

master configuration file

This is the original network device configuration file that is backed up from each network device immediately after Resource Orchestrator is set up.
It is used for the following purposes:

- When initializing the settings of network devices

- When checking the differences between the current and original configurations

- For providing the initial settings when creating a new system with the same configuration

In regards to the network device file management function, these files are excluded from the scope of version management (They are not automatically deleted).

master slot

A slot that is recognized as a server when a server that occupies multiple slots is mounted.

member server

A collective term that refers to a server in a Windows network domain that is not a domain controller.

migration

The migration of a VM guest to a different VM host. The following two types of migration are available:

- Cold migration

  Migration of an inactive (powered-off) VM guest.

- Live migration

  Migration of an active (powered-on) VM guest.

multi-slot server

A server that occupies multiple slots.

NAS (Network Attached Storage)

A collective term for storage that is directly connected to a LAN.

network device

The unit used for registration of network devices.
L2 switches, firewalls, and server load balancers fit into this category.

network device configuration file

These files contain definitions of settings regarding communication, such as VLAN information for network devices and interfaces, rules for firewalls and server load balancers, etc.
As the content of these files changes each time settings are configured from the CLI, they are the target of automatic backup by Resource Orchestrator, and a constant number of versions (32 by default) are backed up inside Resource Orchestrator.
Many network devices have two types of network device configuration files: "running config", which holds the current configuration details, and "startup config", which holds the configuration that is valid directly after startup.
In Resource Orchestrator these two types of files are the target of backup and restore operations.

network device environment file

A collective term that refers to the files necessary for operating devices, such as CA certificates, user authentication databases, customized user information, etc. (but excluding the network device configuration file).
As these files are not usually changed after they have been configured, Resource Orchestrator does not back them up each time automatic configuration is performed.

network device file

Regarding the network device file management function, this is a collective term that refers to the files held by network devices that are the target of backup and restore operations.
The two types of network device files are network device configuration files and network device environment files.

network map

A GUI function for graphically displaying the connection relationships of the servers and LAN switches that compose a network.

network view

A window that displays the connection relationships and status of the wiring of a network map.

NFS (Network File System)

A system that enables the sharing of files over a network in Linux environments.

NIC (Network Interface Card)

An interface used to connect a server to a network.

non-global zone

A virtual machine environment that has been prepared in a global zone. Its OS kernel is shared with the global zone. Non-global zones are completely separate from each other.

OS

The OS used by an operating server (a physical OS or VM guest).

overcommit

A function to virtually allocate more resources than the actual amount of resources (CPUs and memory) of a server.
This function is used to enable allocation of more disk resources than are mounted in the target server.

PDU (Power Distribution Unit)

A device for distributing power (such as a power strip).
Resource Orchestrator uses PDUs with current value display functions as Power monitoring devices.

physical LAN segment

A physical LAN that servers are connected to.
Servers are connected to multiple physical LAN segments that are divided based on their purpose (public LANs, backup LANs, etc.).
Physical LAN segments can be divided into multiple network segments using VLAN technology.

physical network adapter

An adapter, such as a LAN, to connect physical servers or VM hosts to a network.

physical OS

An OS that operates directly on a physical server without the use of server virtualization software.

physical server

The same as a "server". Used when it is necessary to distinguish actual servers from virtual servers.

pin-group

This is a group, set with the end host mode, that has at least one uplink port and at least one downlink port.

Pool Master

On Citrix XenServer, it indicates one VM host belonging to a Resource Pool.
It handles setting changes and information collection for the Resource Pool, and also performs operation of the Resource Pool.
For details, refer to the Citrix XenServer manual.

port backup

A function for LAN switches which is also referred to as backup port.

port VLAN

A VLAN in which the ports of a LAN switch are grouped, and each LAN group is treated as a separate LAN.

port zoning

The division of ports of fibre channel switches into zones, and setting of access restrictions between different zones.

power monitoring devices

Devices used by Resource Orchestrator to monitor the amount of power consumed.
PDUs and UPSs with current value display functions fit into this category.

power monitoring targets

Devices from which Resource Orchestrator can collect power consumption data.

pre-configuration

Performing environment configuration for Resource Orchestrator on another separate system.

primary server

The physical server that is switched from when performing server switchover.

primary site

The environment that is usually used by Resource Orchestrator.

private cloud

A private form of cloud computing that provides ICT services exclusively within a corporation or organization.

public LAN

A LAN used for operations by managed servers.
Public LANs are established separately from admin LANs.

rack

A case designed to accommodate equipment such as servers.

rack mount server

A server designed to be mounted in a rack.

RAID (Redundant Arrays of Inexpensive Disks)

Technology that realizes high-speed and highly-reliable storage systems using multiple hard disks.

RAID management tool

Software that monitors disk arrays mounted on PRIMERGY servers.
The RAID management tool differs depending on the model or the OS of PRIMERGY servers.

RDM (Raw Device Mapping)

A function of VMware. This function provides direct access from a VMware virtual machine to a LUN.

RDN (Relative Distinguished Name)

A name used to identify the lower entities of a higher entry.

Each RDN must be unique within the same entry.

Remote Management Controller

A unit used for managing servers.
Used for gathering server data, failure notification, power control, etc.

- For Fujitsu PRIMERGY servers

  iRMC2

- For SPARC Enterprise

  ILOM (T series servers)
  XSCF (M series servers)

- For HP servers

  iLO2 (integrated Lights-Out)

- For Dell/IBM servers

  BMC (Baseboard Management Controller)

Remote Server Management

A PRIMEQUEST feature for managing partitions.

Reserved SB

Indicates the new system board that will be embedded to replace a failed system board if the hardware of a system board embedded in a partition fails and it is necessary to disconnect the failed system board.

resource

General term referring to the logical definition of the hardware (such as servers, storage, and network devices) and software that comprise a system.

resource folder

An arbitrary group of resources.

resource pool

A unit for management of groups of similar resources, such as servers, storage, and network devices.

resource tree

A tree that displays the relationships between the hardware of a server and the OS operating on it using hierarchies.

role

A collection of operations that can be performed.

ROR console

The GUI that enables operation of all functions of Resource Orchestrator.

ruleset

A collection of script lists for performing configuration of network devices, configured as combinations of rules based on the network device, the purpose, and the application.

SAN (Storage Area Network)

A specialized network for connecting servers and storage.

SAN boot

A configuration function that enables the starting and operation of servers via a SAN.

The OS and applications used to operate servers are stored on SAN storage, not the internal disks of servers.

SAN storage

Storage that uses a Fibre Channel connection.

script list

Lists of scripts for the automation of operations such as status and log display, and definition configuration of network devices.
Used to execute multiple scripts in one operation. The scripts listed in a script list are executed in the order that they are listed.
As with individual scripts, they can are created by the infrastructure administrator, and can be customized to meet the needs of tenant administrators.
They are used to configure virtual networks for VLANs on physical networks, in cases where it is necessary to perform auto-configuration of multiple switches at the same time, or to configure the same rules for network devices in redundant configurations.
The script lists contain the scripts used to perform automatic configuration.
There are the following eight types of script lists:

- script lists for setup

- script lists for setup error recovery

- script lists for modification

- script lists for modification error recovery

- script lists for setup (physical server added)

- script lists for setup error recovery (physical server added)

-   script lists for deletion (physical server deleted)

-   script lists for deletion

server

A computer (operated with one operating system).

server blade

A server blade has the functions of a server integrated into one board.
They are mounted in blade servers.

server management unit

A unit used for managing servers.
A management blade is used for blade servers, and a Remote Management Controller is used for other servers.

server name

The name allocated to a server.

server NIC definition

A definition that describes the method of use for each server's NIC.
For the NICs on a server, it defines which physical LAN segment to connect to.

server virtualization software

Basic software which is operated on a server to enable use of virtual machines. Used to indicate the basic software that operates on a PC server.

ServerView Deployment Manager

Software used to collect and deploy server resources over a network.

ServerView Operations Manager

Software that monitors a server's (PRIMERGY) hardware state, and notifies of errors by way of the network.
ServerView Operations Manager was previously known as ServerView Console.

ServerView RAID

One of the RAID management tools for PRIMERGY.

ServerView Update Manager

This is software that performs jobs such as remote updates of BIOS, firmware, drivers, and hardware monitoring software on servers being managed by ServerView Operations Manager.

ServerView Update Manager Express

Insert the ServerView Suite DVD1 or ServerView Suite Update DVD into the server requiring updating and start it.

This is software that performs batch updates of BIOS, firmware, drivers, and hardware monitoring software.

Single Sign-On

A system among external software which can be used without login operations, after authentication is executed once.

slave slot

A slot that is not recognized as a server when a server that occupies multiple slots is mounted.

SMB (Server Message Block)

A protocol that enables the sharing of files and printers over a network.

SNMP (Simple Network Management Protocol)

A communications protocol to manage (monitor and control) the equipment that is attached to a network.

software initiator

An initiator processed by software using OS functions.

Solaris container resource pool

The Solaris Containers resource pool used in the global zone and the non-global zone.

Solaris Containers

Solaris server virtualization software.
On Solaris servers, it is possible to configure multiple virtual Solaris servers that are referred to as a Solaris Zone.

Solaris Zone

A software partition that virtually divides a Solaris OS space.

SPARC Enterprise Partition Model

A SPARC Enterprise model which has a partitioning function to enable multiple system configurations, separating a server into multiple areas with operating OS's and applications in each area.

spare server

A server which is used to replace a failed server when server switchover is performed.

storage blade

A blade-style storage device that can be mounted in the chassis of a blade server.

storage management software

Software for managing storage units.

storage resource

Collective term that refers to virtual storage resources and disk resources.

storage unit

Used to indicate the entire secondary storage as one product.

surrogate pair

A method for expressing one character as 32 bits.
In the UTF-16 character code, 0xD800 - 0xDBFF are referred to as "high surrogates", and 0xDC00 - 0xDFFF are referred to as "low surrogates". Surrogate pairs use "high surrogate" + "low surrogate".

switchover state

The state in which switchover has been performed on a managed server, but neither failback nor continuation have been performed.

system administrator

The administrator who manages the entire system. They perform pre-configuration and installation of Resource Orchestrator.

Administrator privileges for the operating system are required. Normally the roles of the infrastructure administrator and system administrator are performed concurrently.

System Board

A board which can mount up to 2 Xeon CPUs and 32 DIMMs.

system disk

The disk on which the programs (such as the OS) and files necessary for the basic functions of servers (including booting) are installed.

system image

A copy of the contents of a system disk made as a backup.
Different from a cloning image as changes are not made to the server-specific information contained on system disks.

tenant

A unit for the division and segregation of management and operation of resources based on organizations or operations.

tenant administrator

A user who manages the resources allocated to a tenant.
tenant_admin is the role for performing management of resources allocated to a tenant.
Tenant administrators manage the available space on resources in the local pools of tenants, and approve or reject applications by tenant users to use resources.

tenant user

A user who uses the resources of a tenant, or creates and manages L-Platforms, or a role with the same purpose.

Thick Provisioning

Allocation of the actual requested capacity when allocating storage resources.

Thin Provisioning

Allocating of only the capacity actually used when allocating storage resources.

tower server

A standalone server with a vertical chassis.

TPP (Thin Provisioning Pool)

One of resources defined using ETERNUS. Thin Provisioning Pools are the resource pools of physical disks created using Thin Provisioning.

TPV (Thin Provisioning Volume)

One of resources defined using ETERNUS. Thin Provisioning Volumes are physical disks created using the Thin Provisioning function.

UNC (Universal Naming Convention)

Notational system for Windows networks (Microsoft networks) that enables specification of shared resources (folders, files, shared printers, shared directories, etc.).

💡 Example
. . . .
\\hostname\dir_name
. . . .

UPS (Uninterruptible Power Supply)

A device containing rechargeable batteries that temporarily provides power to computers and peripheral devices in the event of power failures.
Resource Orchestrator uses UPSs with current value display functions as power monitoring devices.

URL (Uniform Resource Locator)

The notational method used for indicating the location of information on the Internet.

VIOM (ServerView Virtual-IO Manager)

The name of both the I/O virtualization technology used to change the MAC addresses of NICs and the software that performs the virtualization.
Changes to values of WWNs and MAC addresses can be performed by creating a logical definition of a server, called a server profile, and assigning it to a server.

Virtual Edition

The edition that can use the server switchover function.

Virtual I/O

Technology that virtualizes the relationship of servers and I/O devices (mainly storage and network) thereby simplifying the allocation of and modifications to I/O resources to servers, and server maintenance.
For Resource Orchestrator it is used to indicate HBA address rename and ServerView Virtual-IO Manager (VIOM).

virtual server

A virtual server that is operated on a VM host using a virtual machine.

virtual storage resource

This refers to a resource that can dynamically create a disk resource.
An example being RAID groups or logical storage that is managed by server virtualization software (such as VMware datastores).
In Resource Orchestrator, disk resources can be dynamically created from ETERNUS RAID groups, NetApp aggregates, and logical storage managed by server virtualization software.

virtual switch

A function provided by server virtualization software to manage networks of VM guests as virtual LAN switches.
The relationships between the virtual NICs of VM guests and the NICs of the physical servers used to operate VM hosts can be managed using operations similar to those of the wiring of normal LAN switches.

A function provided by server virtualization software in order to manage L-Server (VM) networks as virtual LAN switches.
Management of relationships between virtual L-Server NICs, and physical server NICs operating on VM hosts, can be performed using an operation similar to the connection of a normal LAN switch.

VLAN (Virtual LAN)

A splitting function, which enables the creation of virtual LANs (seen as differing logically by software) by grouping ports on a LAN switch.
Using a Virtual LAN, network configuration can be performed freely without the need for modification of the physical network configuration.

VLAN ID

A number (between 1 and 4,095) used to identify VLANs.
Null values are reserved for priority tagged frames, and 4,096 (FFF in hexadecimal) is reserved for mounting.

VM (Virtual Machine)

A virtual computer that operates on a VM host.

VM guest

A virtual server that operates on a VM host, or an OS that is operated on a virtual machine.

VM Home Position

The VM host that is home to VM guests.

VM host

A server on which server virtualization software is operated, or the server virtualization software itself.

VM maintenance mode

One of the settings of server virtualization software, that enables maintenance of VM hosts.
For example, when using high availability functions (such as VMware HA) of server virtualization software, by setting VM maintenance mode it is possible to prevent the moving of VM guests on VM hosts undergoing maintenance.
For details, refer to the manuals of the server virtualization software being used.

VM management software

Software for managing multiple VM hosts and the VM guests that operate on them.
Provides value adding functions such as movement between the servers of VM guests (migration).

VMware

Virtualization software from VMware Inc.
Provides a virtualized infrastructure on PC servers, enabling flexible management of operations.

VMware DPM (VMware Distributed Power Management)

A function of VMware. This function is used to reduce power consumption by automating power management of servers in VMware DRS clusters.

VMware DRS (VMware Distributed Resource Scheduler)

A function of VMware. This function is used to monitor the load conditions on an entire virtual environment and optimize the load dynamically.

VMware Teaming

A function of VMware. By using VMware Teaming it is possible to perform redundancy by connecting a single virtual switch to multiple physical network adapters.

Web browser

A software application that is used to view Web pages.

WWN (World Wide Name)

A 64-bit address allocated to an HBA.
Refers to a WWNN or a WWPN.

WWNN (World Wide Node Name)

A name that is set as a common value for the Fibre Channel ports of a node. However, the definitions of nodes vary between manufacturers, and may also indicate devices or adapters. Also referred to as a node WWN.

WWPN (World Wide Port Name)

A name that is a unique value and is set for each Fibre Channel port (HBA, CA, fibre channel switch ports, etc.), and is the IEEE global MAC address.

As the Fibre Channel ports of the same WWPN are unique, they are used as identifiers during Fibre Channel port login. Also referred to as a port WWN.

WWPN zoning

The division of ports into zones based on their WWPN, and setting of access restrictions between different zones.

Xen

A type of server virtualization software.

XSB (eXtended System Board)

Unit for domain creation and display, composed of physical components.

XSCF (eXtended System Control Facility)

The name of the Remote Management Controller for SPARC Enterprise M series servers.

zoning

A function that provides security for Fibre Channels by grouping the Fibre Channel ports of a Fibre Channel switch into zones, and only allowing access to ports inside the same zone.