FUJITSU

FUJITSU Software
Systemwalker Operation Manager

Cluster Setup Guide for UNIX

UNIX

J2X1-8193-03ENZ0(00)
January 2022

Preface

Purpose of This Document

This document presents an overview of installing Systemwalker Operation Manager on cluster systems. It also describes how to perform settings for these systems and how to operate them.

Use this document for the Solaris version, Linux version, HP-UX version, and AIX version of this product.

Intended Readers

This document is intended for users who are installing Systemwalker Operation Manager on any of the following cluster systems, as well as for users administering Systemwalker Operation Manager with cluster systems.

- PRIMECLUSTER for Solaris version
- PRIMECLUSTER for Linux version
- Sun(TM) Cluster 3.0 (hereinafter referred to as Sun Cluster)
- HP Multi-Computer/ServiceGuard (hereinafter referred to as MC/ServiceGuard)
- HACMP

Readers are assumed to have an overall understanding of cluster system in general and Systemwalker Operation Manager in particular.

Abbreviations and Generic Terms Used

- The term "Windows Server 2019 " is used to refer to all of the following products:
  - Microsoft(R) Windows Server(R) 2019 Standard (x64)
  - Microsoft(R) Windows Server(R) 2019 Datacenter (x64)
- The term "Windows Server 2016" is used to refer to all of the following products:
  - Microsoft(R) Windows Server(R) 2016 Standard (x64)
  - Microsoft(R) Windows Server(R) 2016 Datacenter (x64)
- The term "Server Core" is used to refer to all of the following products:
  - Microsoft(R) Windows Server(R) 2019 Standard Server Core
  - Microsoft(R) Windows Server(R) 2019 Datacenter Server Core
  - Microsoft(R) Windows Server(R) 2016 Standard Server Core
  - Microsoft(R) Windows Server(R) 2016 Datacenter Server Core
- The term "Windows(R) 10" is used to refer to all of the following products:
  - Windows(R) 10 Home (x64)
  - Windows(R) 10 Pro (x64)
  - Windows(R) 10 Enterprise (x64)
- The term "Windows(R) 8.1" is used to refer to all of the following products:
  - Windows(R) 8.1 (x64)
  - Windows(R) 8.1 Pro (x64)
  - Windows(R) 8.1 Enterprise (x64)
- Windows Internet Explorer(R) is abbreviated as "Internet Explorer".

- Versions of Systemwalker Operation Manager that run on all of the following operating systems are referred to as "Windows versions of Systemwalker Operation Manager" or simply "Windows versions":
  - Windows
  - 64-bit versions of Windows, except Itanium
- Articles specific to the version of Systemwalker Operation Manager that runs on 32-bit versions of Windows are referred to as "Windows x86 version".
- Articles specific to the version of Systemwalker Operation Manager that runs on Itanium-compatible versions of Windows are referred to as "Windows for Itanium version".
- Articles specific to the version of Systemwalker Operation Manager that runs on 64-bit versions of Windows, except Itanium, are referred to as "Windows x64 version".
- Server Core, Windows Server 2019, and Windows Server 2016 may be abbreviated as "Windows servers".

Oracle Solaris may be referred to as Solaris, Solaris Operating System or Solaris OS.

- Versions of Systemwalker Operation Manager that run on Solaris are referred to as "Solaris versions of Systemwalker Operation Manager" or simply "Solaris versions".
- Articles specific to the version of Systemwalker Operation Manager that runs on 32-bit versions of Solaris are referred to as "Solaris 32-bit version".
- Articles specific to the version of Systemwalker Operation Manager that runs on 64-bit versions of Solaris are referred to as "Solaris 64-bit version".
- Versions of Systemwalker Operation Manager that run on HP-UX are referred to as "HP-UX versions of Systemwalker Operation Manager" or simply "HP-UX versions".
- Versions of Systemwalker Operation Manager that run on AIX are referred to as "AIX versions of Systemwalker Operation Manager" or simply "AIX versions".
- Articles specific to the version of Systemwalker Operation Manager that runs on 64-bit versions of Linux, except Itanium, are referred to as "Linux x64 version" or simply "Linux versions".
- Articles specific to the version of Systemwalker Operation Manager that runs on 32-bit versions of Linux are referred to as "Linux x86 version".
- Articles specific to the version of Systemwalker Operation Manager that runs on Itanium-compatible version of Linux are referred to as "Linux for Itanium version".
- Solaris, HP-UX, AIX, Linux and Linux for Itanium versions of Systemwalker Operation Manager are referred to collectively as "UNIX versions of Systemwalker Operation Manager" or simply "UNIX versions".
- Solaris, HP-UX, AIX and Linux may be referred to as "UNIX servers".
- Systemwalker Operation Manager Standard Edition may be abbreviated as "SE".
- Systemwalker Operation Manager Enterprise Edition may be abbreviated as "EE".
- Standard Edition may be abbreviated as "SE" and Enterprise Edition may be abbreviated as "EE".
- Arcserve(R) Backup for Windows is abbreviated as "Arcserve".
- Microsoft(R)-Mail that is provided as a standard feature with Windows NT(R) is abbreviated as "MS-Mail".

Export Restriction

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

Trademarks

APC and PowerChute are trademarks or registered trademarks of Schneider Electric IT Corporation.

All products, service name, company name and logo of Arcserve are registered trademark or trademark of Arcserve (USA), LLC.

HP-UX is a registered trademark of Hewlett-Packard Development Company.

AIX and HACMP are trademarks or registered trademarks of International Business Machines Corporation in the United States.

Intel and Itanium are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries.

MC/ServiceGuard is a registered trademark of Hewlett-Packard Development Company, or L.P.

Microsoft, Windows, Windows Server and Azure, or the name and the product name of other Microsoft product are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Red Hat are registered trademarks of Red Hat, Inc. in the U.S. and other countries.

Linux(R) is a registered trademark of Linus Torvalds in the United States and/or other countries.

Oracle and Java are registered trademarks of Oracle Corporation or its subsidiaries in the U.S. and/or other countries.

R/3, SAP and all SAP trade name that are presented are registered trademarks or trademarks of SAP SE in Germany and in several other countries.

UNIX is a registered trademark of The Open Group.

VMware and the VMware logo are registered trademarks or trademarks of VMware in the United States and/or other jurisdictions.

Amazon Web Services, Amazon Elastic Compute Cloud, Amazon CloudWatch and AWS Lambda are trademarks of Amazon.com, Inc. or its affiliated company in the United States and/or other countries.

Short Mail is a registered trademark of NTT DoCoMo, Inc.

In addition, company name and product name may appear in this document are trademarks or registered trademarks of their respective owners.

The use of screenshots follows the guidelines of Microsoft Corporation.

Copyright 1995-2022 FUJITSU LIMITED

Contents

Chapter 1 Overview....1
1.1 Supported Cluster System....1
1.2 Supported Cluster System Configurations....2
1.2.1 1:1 active/standby configuration....2
1.2.2 N:1 active/standby configuration....3
1.2.3 Dual node mutual standby configuration....4
1.2.4 Cascading configuration....5
1.3 Systemwalker Operation Manager Configurations on Cluster System....5
1.3.1 Using a cluster configuration for the entire Systemwalker Operation Manager server system....6
1.3.2 Using a cluster configuration for the schedule server only....9
1.3.3 Using a cluster configuration for some Systemwalker Operation Manager server subsystems....14
1.4 Jobs Taken Over in the Cluster System....15
1.5 Notes on Cluster System Operation....15

Chapter 2 Installation....17
2.1 Installation Procedure....17
2.2 Installation....18
2.2.1 Creating a cluster system....18
2.2.2 Installing Systemwalker Operation Manager....19
2.2.3 Canceling the settings for starting and stopping daemons automatically....20
2.2.4 Registering cluster information....28
2.3 Settings for Submitting Network Jobs from Cluster System....29
2.3.1 Specify continuous execution mode with the jmmode command....29
2.3.2 Setting logical IP address for Job Execution Control....31
2.4 Settings for Using the Master Schedule Management Function....33
2.5 IP Address Settings....35
2.6 Moving Resources to the Shared Disk....35
2.6.1 Moving resources in the case of 1:1 active/standby (without subsystems), 1:1 active/standby (with subsystems), N:1 active/standby, and cascading configurations....35
2.6.2 Moving resources in the case of dual node mutual standby configuration....43
2.6.3 Moving resources in the case of 1:1 active/standby (with subsystems and partial cluster operation) configurations....53
2.7 Settings for Automatic Reflection....59
2.8 Registering Systemwalker Operation Manager with a Cluster System....69
2.9 Standardizing the Information Managed by Each Node....69
2.9.1 Standardizing operating system information....69
2.9.2 Standardizing the User Management Method....69
2.9.3 Standardizing Systemwalker Operation Manager environment definitions....69
2.10 Failover Testing....71
2.11 Settings for Making Jobs Restart....72
2.12 Uninstalling Systemwalker Operation Manager from a Cluster System....72

Chapter 3 Operation....74
3.1 Systemwalker Operation Manager Operations in Cluster Systems....74
3.1.1 Connecting to cluster system from clients....74
3.1.2 Settings for changing operation definitions....74
3.2 Starting and Stopping Daemons in Cluster Systems....75
3.3 Distributing and Applying Policies in Cluster System Operations....75
3.4 Backing up and Restoring Resources in Cluster System Operations....76
3.4.1 Procedure for backing up resources in cluster systems....77
3.4.2 Procedure for restoring resources in cluster systems....82
3.5 Changing the Schedule Mode for the Master Schedule Management Function....86

Chapter 4 Cluster Setup Procedure Specific to Systems Using PRIMECLUSTER for Solaris....87
4.1 Registering Systemwalker Operation Manager with the PRIMECLUSTER System....87
4.1.1 Creating state transition procedures....87
4.1.1.1 Creating state transition procedures that control daemon behavior....87

4.1.1.2 Creating monitoring scripts 93
4.1.1.3 Creating state transition procedures that monitor daemons 94
4.1.2 Registering state transition procedures 96
4.1.3 Registering resources that use state transition procedures 96
4.1.4 Registering cluster applications and resources 97
4.2 Uninstalling Systemwalker Operation Manager from the PRIMECLUSTER System 99
4.3 Starting and Stopping Daemons in the PRIMECLUSTER System 102

Chapter 5 Cluster Setup Procedure Specific to Systems Using PRIMECLUSTER for Linux 104
5.1 Registering Systemwalker Operation Manager with the PRIMECLUSTER System 104
5.1.1 Creating state transition procedures 104
5.1.1.1 Creating state transition procedures that control daemon behavior 104
5.1.1.2 Creating monitoring scripts 110
5.1.1.3 Creating state transition procedures that monitor daemons 111
5.1.2 Registering state transition procedures 113
5.1.3 Registering resources that use state transition procedures 113
5.1.4 Registering cluster applications and resources 114
5.2 Uninstalling Systemwalker Operation Manager from the PRIMECLUSTER System 124
5.3 Starting and Stopping Daemons in the PRIMECLUSTER System 130

Chapter 6 Cluster Setup Procedure Specific to Systems Using Oracle Solaris Cluster 132
6.1 Registering Systemwalker Operation Manager with the Oracle Solaris Cluster System 132
6.1.1 Creating applications 132
6.1.1.1 Creating resource type registration files 132
6.1.1.2 Creating START callback methods 134
6.1.1.3 Creating STOP callback methods 137
6.1.1.4 Creating fault monitors 139
6.1.2 Registering resources 145
6.2 Uninstalling Systemwalker Operation Manager from the Oracle Solaris Cluster System 147
6.3 Starting and Stopping Daemons in the Oracle Solaris Cluster System 148

Chapter 7 Cluster Setup Procedure Specific to Systems Using MC/ServiceGuard 150
7.1 Registering Systemwalker Operation Manager with the MC/ServiceGuard System 150
7.1.1 Creating scripts 150
7.1.1.1 Creating package configuration files 150
7.1.1.2 Creating package control scripts 152
7.1.1.3 Creating package monitoring scripts 159
7.1.2 Registering package 161
7.1.3 Starting and stopping the package 163
7.2 Uninstalling Systemwalker Operation Manager from the MC/ServiceGuard System 165
7.2.1 For 1:1 active/standby and N:1 active/standby configurations 165
7.2.2 For dual node mutual standby configuration 168
7.3 Starting and Stopping Daemons in the MC/ServiceGuard System 172

Chapter 8 Cluster Setup Procedure Specific to Systems Using HACMP 174
8.1 Registering Systemwalker Operation Manager with the HACMP System 174
8.1.1 Setting the Startup Order of Daemons at System Startup 174
8.1.2 Creating applications 174
8.1.2.1 Creating start scripts 175
8.1.2.2 Creating stop scripts 177
8.1.2.3 Creating monitor methods 180
8.1.3 Registering resource groups 181
8.2 Uninstalling Systemwalker Operation Manager from the HACMP System 184
8.2.1 For 1:1 active/standby configuration 184
8.2.2 For dual node mutual standby configuration 189
8.3 Starting and Stopping Daemons in the HACMP System 193

Chapter 1 Overview

This chapter describes how Systemwalker Operation Manager servers operate in a cluster system.

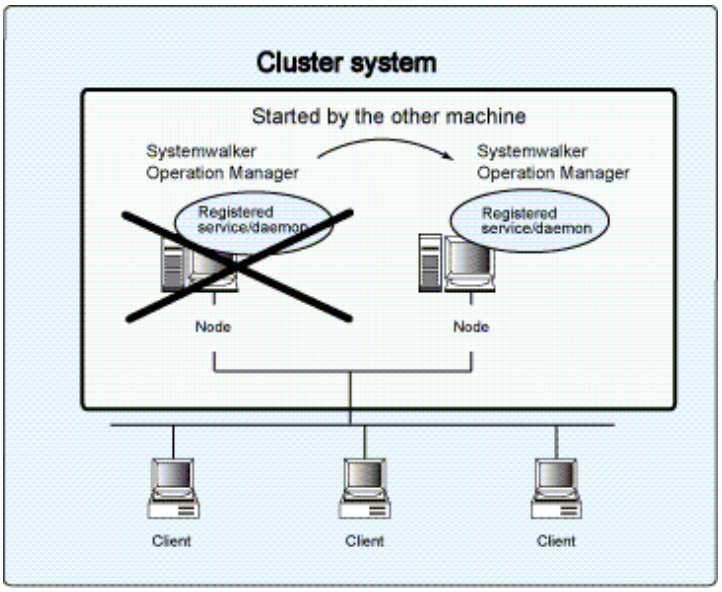
1.1 Supported Cluster System

Systemwalker Operation Manager can support the following cluster systems:

Operating System	Cluster
Solaris	PRIMECLUSTER Oracle Solaris Cluster
Linux	PRIMECLUSTER
HP-UX	MC/ServiceGuard
AIX	HACMP

Refer to the *Systemwalker Operation Manager Technical Guide* for details on the version levels.

The following figure shows a schematic representation of Systemwalker Operation Manager operation with cluster system.



The terminology for describing nodes and processes in cluster system varies from cluster system to cluster system. However, the descriptions in this manual use the following terms:

Active node

This is the node where jobs normally run.

Standby node

This node is on standby to take over jobs when the active node fails.

Failover

This refers to the transfer of jobs from the active node to the standby node when errors occur.

Shared disk

This is the disk that is shared between the active node and the standby node.

Logical IP address

This is the virtual IP address used by the cluster system and is common to both the active node and standby node.

Physical IP address

This is the IP address specific to each node.

However, the terminology of relevant cluster system is also used to describe windows, and in other cases where the use of such terminology makes explanation easier to understand.

Daemons that can be registered with cluster system

The following Systemwalker Operation Manager daemons can be registered as resources with cluster system:

- Jobscheduler (including the Master Schedule Management function)
- Job Execution Control

Information that can be automatically reflected in the cluster system

The following information can be automatically reflected in both the active node and the standby node of the cluster system:

- Security information
- Calendar information
  - Day change time
  - Calendar holiday information
  - Schedule information, power schedule information and completion monitoring information for the SYSTEM_CALENDAR
- Service/application startup information
  - Application startup information

Settings can also be made so that "schedule information, power schedule information and completion monitoring information for SYSTEM_CALENDAR" under "Calendar information" and "Application startup information" under "Service/application startup information" are not reflected automatically.

Failover trigger

Failover takes place when an error occurs in the resources registered with the cluster systems.

1.2 Supported Cluster System Configurations

Systemwalker Operation Manager supports the following cluster system configurations:

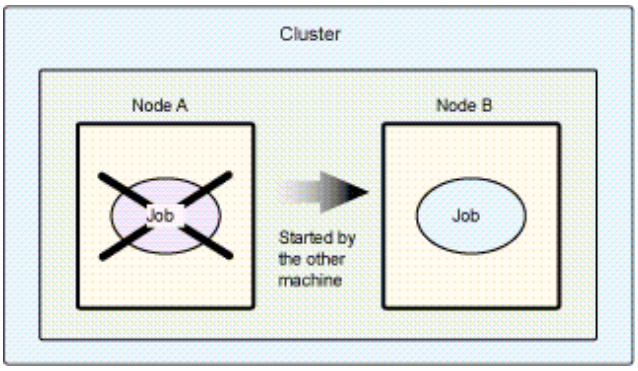
- 1:1 active/standby configuration
- N:1 active/standby configuration
  This configuration is available in the following cluster systems:
  - PRIMECLUSTER for Solaris version
  - PRIMECLUSTER for Linux version
  - Oracle Solaris Cluster
  - MC/ServiceGuard
- Dual node mutual standby configuration
- Cascading configuration (PRIMECLUSTER only)

This section describes each configuration as well as notes on operating Systemwalker Operation Manager.

1.2.1 1:1 active/standby configuration

In this configuration, there is one standby node for each active node.

The following figure shows the node configuration of this type.



Node A is the active node and Node B is the standby node. Node B is on standby in case error occurs with Node A.

The 1:1 active/standby configuration has the following features:

- Features
  - Processing performance is guaranteed after processing is taken over by the standby node when the active node fails.
  - Subsystems can be created on a single node and then the newly created subsystems can be operated together in a cluster system. Cluster configurations are supported by the following cluster systems:
    - PRIMECLUSTER for Solaris version
    - PRIMECLUSTER for Linux version
    - MC/ServiceGuard
    - HACMP

    Subsystems numbered between 0 and 9 (making a total of 10 subsystems) can be operated together as a cluster system.
  - It is also possible to create subsystems on a single node and operate only some of these newly created subsystems as individual clusters. The following cluster systems support partial subsystem clustering:
    - Solaris version of PRIMECLUSTER
    - Linux version of PRIMECLUSTER
    - MC/ServiceGuard
    - HACMP

    When only some subsystems are operated as a cluster, those subsystems that are not organized into clusters can be used to operate business independently. When partial subsystems clustering is used, subsystems numbered from 1 to 9 (making a total of nine subsystems) can be used in cluster operation. Subsystem 0 cannot be used in cluster operation.

Point

A subsystem and multi-subsystem operations

Multiple instances of the Systemwalker Operation Manager Jobscheduler and Job Execution Control can run simultaneously. The Jobscheduler and Job Execution Control are collectively referred to as "subsystem", and operation that runs multiple subsystems is referred to as "multi-subsystem operation".

1.2.2 N:1 active/standby configuration

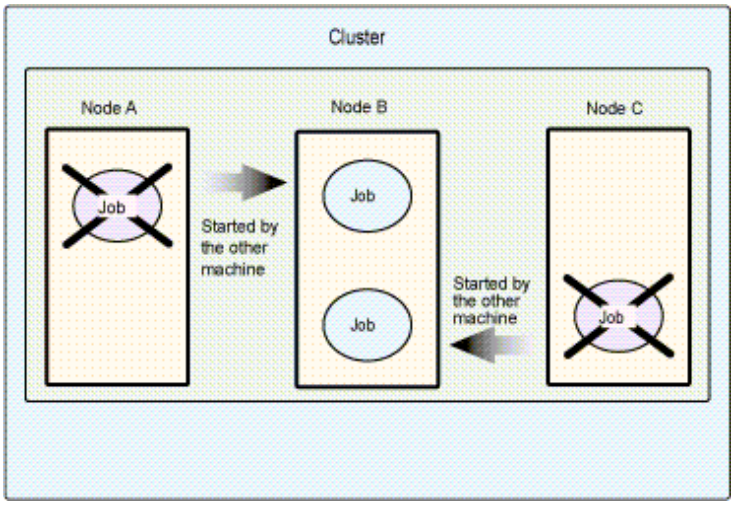
In this configuration, there is one node on standby for multiple active nodes.

This configuration is available in the following cluster systems:

- PRIMECLUSTER for Solaris version

- PRIMECLUSTER for Linux version
- Oracle Solaris Cluster
- MC/ServiceGuard

The following figure shows the node configuration of this type as an example.



Node A and Node C are active nodes, and Node B is the standby node. Node B is on standby in case error occurs with either Node A or Node C.

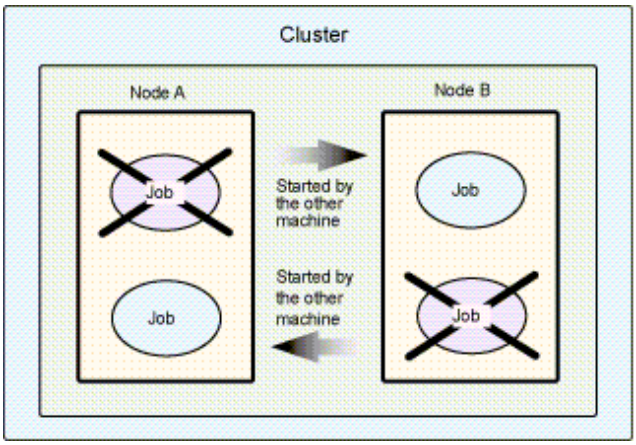
The N:1 active/standby configuration has the following features and precautions:

- Features
  - Standby costs are low because there is only one standby node. Processing performance is guaranteed if one of the active nodes fails.
- Precautions
  - If error occurs with more than one active node, the standby node can only take over jobs from the first active node that failed.

1.2.3 Dual node mutual standby configuration

In this configuration, two nodes are on standby for each other.

The following figure shows the node configuration of this type.



Node A is an active node and Node B is a standby node. Node B is on standby in case error occurs with Node A.

On the other hand, Node B is an active node and Node A is a standby node. Node A is on standby in case error occurs with Node B.

The dual node mutual standby configuration has the following features and precautions:

- Features
  - Both nodes can be used as active nodes during regular operation.
  - Multiple subsystems can run on both nodes. The two nodes can run a total of up to nine subsystems (numbered 1 through to 9). Subsystem number 0 cannot be used in cluster operation.
- Precautions
  - If jobs are processed separately on the two active nodes, then all the jobs will have to be processed in a single node after failover occurs. This will reduce the level of performance available after the failover.

See

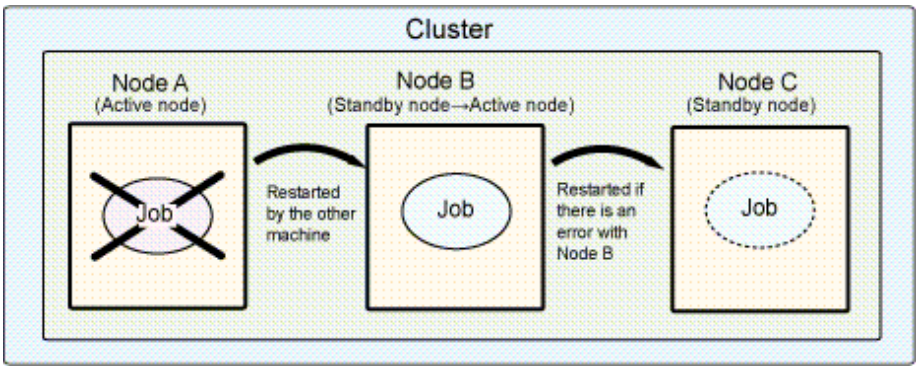
To register different resources for each subsystem in a 1:1 active/standby configuration environment, follow the dual node mutual standby configuration procedure.

1.2.4 Cascading configuration

In this configuration, there are multiple standby nodes for a single active node.

This configuration is available only in PRIMECLUSTER.

The following figure shows a cascading node configuration with two standby nodes.



Node A is the active node, and Node B and Node C are the standby nodes. When all nodes are operating normally, Node B is on standby in case error occurs with Node A, in which case Node B becomes the active node and Node C is on standby in case error occurs with Node B.

The cascading configuration has the following features:

- Features
  - After jobs have been taken over by the standby node when the active node fails, a redundant configuration for jobs can still be sustained by the remaining nodes, thereby ensuring availability even during maintenance.

1.3 Systemwalker Operation Manager Configurations on Cluster System

Systemwalker Operation Manager can be run on cluster system using the following configurations:

- Using a cluster configuration for the entire Systemwalker Operation Manager server system
  - 1:1 active/standby cluster configuration

  - N:1 active/standby cluster configuration
  - Dual node mutual standby cluster configuration
  - Cascading cluster configuration (PRIMECLUSTER)
- Using a cluster configuration for the schedule server only
  - Using the schedule server with a 1:1 active/standby cluster configuration
  - Using the schedule server with a N:1 active/standby cluster configuration
  - Using the schedule server with a dual node mutual standby cluster configuration
  - Using the schedule server with a cascading cluster configuration (PRIMECLUSTER)
- Using a cluster configuration for some Systemwalker Operation Manager server subsystems
  - Operating with a 1:1 active/standby cluster configuration

A cluster configuration can be used for either the execution server only, or for both the schedule server and the execution server.

This section describes cluster configurations for the following cases:

- Using a cluster configuration for the entire Systemwalker Operation Manager server system
- Using a cluster configuration for the schedule server only

1.3.1 Using a cluster configuration for the entire Systemwalker Operation Manager server system

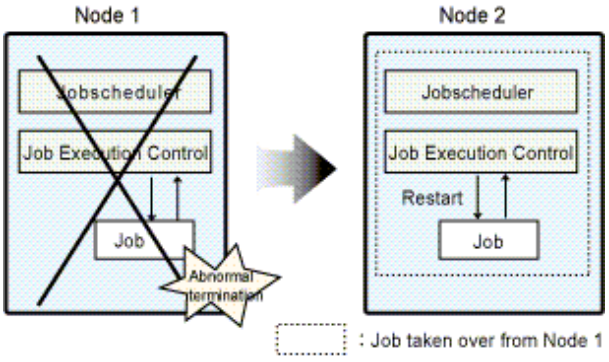
This section outlines the cluster system configurations that are possible when a cluster configuration is used for the entire Systemwalker Operation Manager server system.

1:1 active/standby configuration

In this configuration, the way that jobs are taken over by the standby node differs in the non multi-subsystem operation and the multi-subsystem operation.

Non multi-subsystem operation

In the following figure, Node 1 is operating as the active node, and Node 2 is operating as the standby node.



If error occurs with Node 1, jobs are taken over by Node 2.

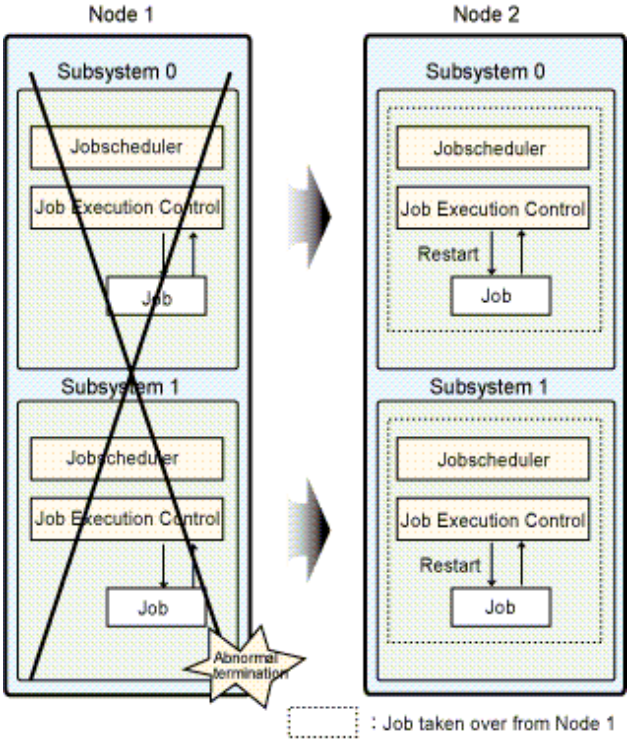
Multi-subsystem operation

This operational configuration is available in the following cluster systems:

- PRIMECLUSTER for Solaris version
- PRIMECLUSTER for Linux version
- MC/ServiceGuard

- HACMP

In the following figure, Node 1 is operating as the active node, and Node 2 is operating as the standby node. This figure shows an example where the multi-subsystem operation is implemented in Subsystem 0 and Subsystem 1, and error occurs with Node 1. If error occurs with Node 1, all the jobs in Subsystem 0 and Subsystem 1 are taken over by the standby node.



If error occurs with Subsystem 1 on Node 1, the jobs in Subsystem 0 are also taken over by Node 2.

The configurations -- the non multi-subsystem operation in 1:1 active/standby configuration and the multi-subsystem operation in 1:1 active/standby configuration--are each referred to as the follow:

In case not implementing the multi-subsystem operation in 1:1 active/standby configuration:

1:1 active/standby configuration (without subsystems)

In case implementing the multi-subsystem operation in 1:1 active/standby configuration:

1:1 active/standby configuration (with subsystems)

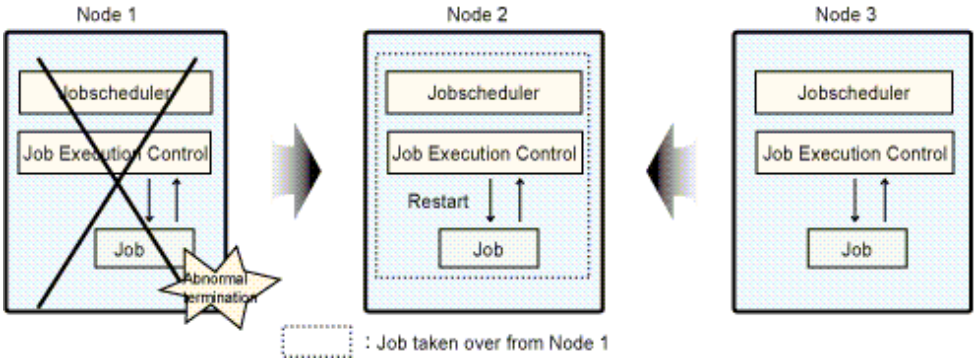
The term "1:1 active/standby configuration" includes 1:1 active/standby configurations without subsystems, active/standby configurations with subsystems, and active/standby configurations with subsystems and partial cluster operation.

N:1 active/standby configuration

This operational configuration is available in the following cluster systems:

- PRIMECLUSTER for Solaris version
- PRIMECLUSTER for Linux version
- Oracle Solaris Cluster
- MC/ServiceGuard

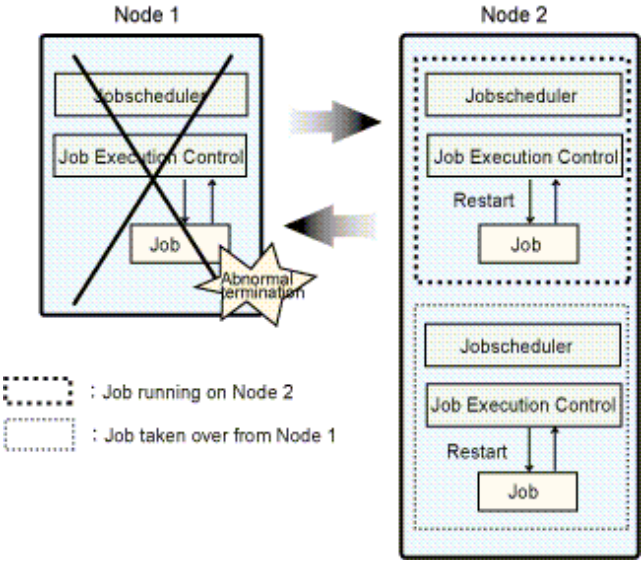
In the following figure, Node 1 and Node 3 are running as active nodes, and Node 2 is running as standby node. In this example, if error occurs with Node 1, jobs on Node 1 are taken over by Node 2. Similarly, jobs on Node 3 will be taken over by Node 2 if error occurs with Node 3.



If error occurs with either Node 1 or Node 3, jobs are taken over by Node 2. If errors occur with more than one node, then only jobs from the node where error occurred first will be taken over by the standby node. Jobs from the second failed node will not be taken over.

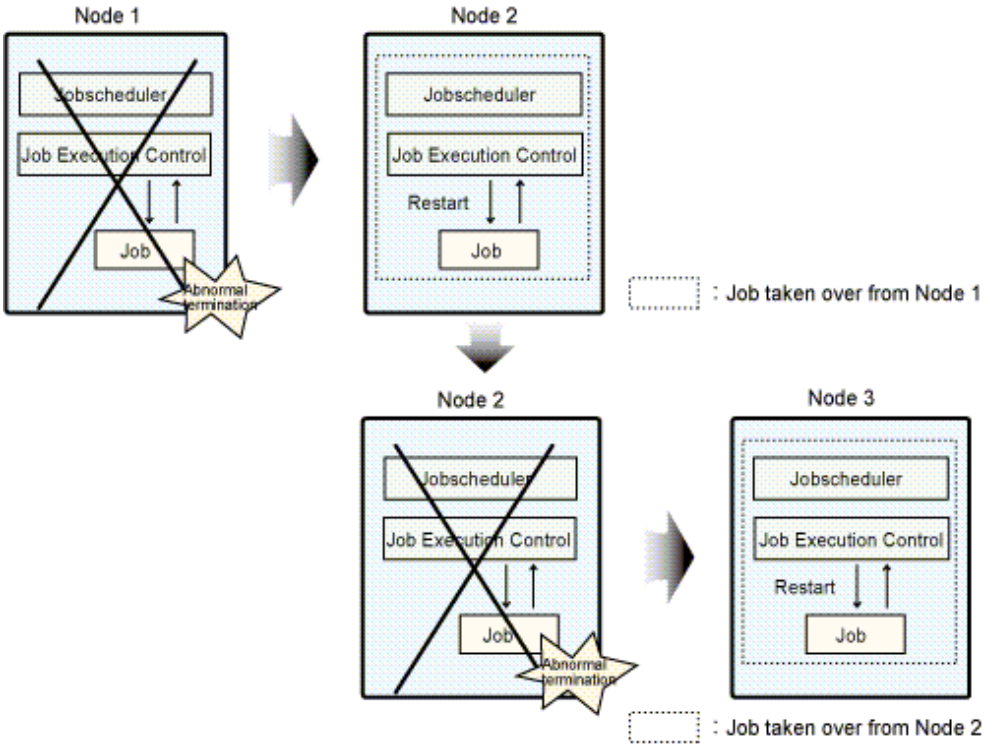
Dual node mutual standby configuration

In the following figure, Node 1 and Node 2 are on standby for one another while each node executes its own jobs. In this example, if error occurs with Node 1, jobs on Node 1 are taken over by Node 2. Similarly, jobs on Node 2 will be taken over by Node 1 if error occurs with Node 2.



Cascading configuration

This configuration is available only in PRIMECLUSTER.
In the following figure, Node 2 and Node 3 are on standby while jobs are executed on Node 1.



If error occurs with Node 1, jobs will be taken over by Node 2. If error then occurs with Node 2, jobs will be taken over by Node 3.

1.3.2 Using a cluster configuration for the schedule server only

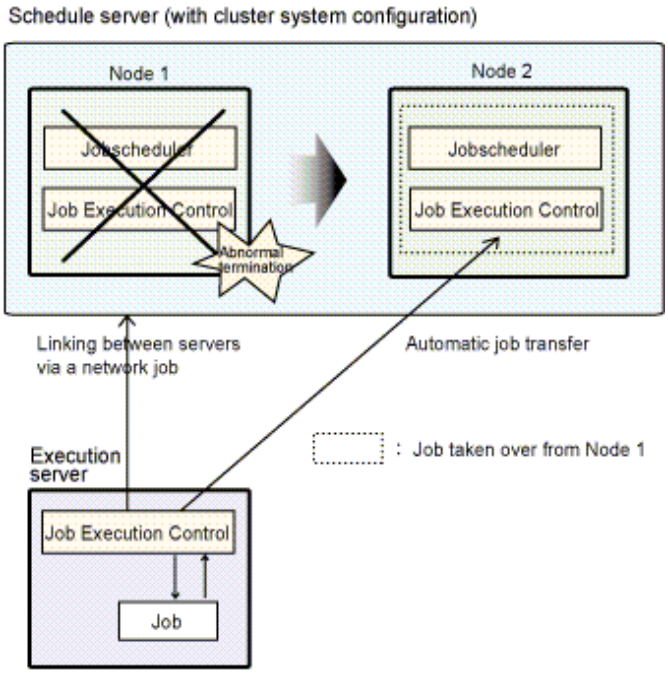
This section outlines the cluster system configurations that are possible when a cluster configuration is used for the schedule server only (with the execution server being set up on a separate node).

1:1 active/standby configuration

In this configuration, the way that jobs are taken over by the standby node differs in the non multi-subsystem operations and the multi-subsystem operations.

Non multi-subsystem operation

In the following figure, Node 1 is running as the active node, and Node 2 is running as the standby node.



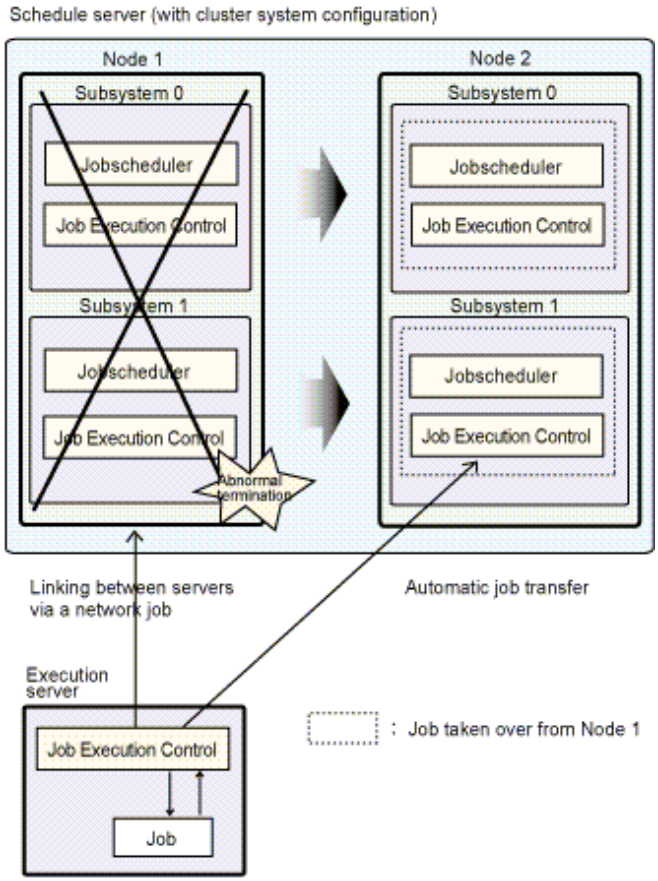
If error occurs with Node 1, jobs are taken over by Node 2. Network jobs running on the execution server are automatically taken over by Node 2.

Multi-subsystem operation

This operational configuration is available in following cluster systems:

- PRIMECLUSTER for Solaris version
- PRIMECLUSTER for Linux version
- MC/ServiceGuard
- HACMP

In the following figure, Node 1 is operating as the active node, and Node 2 is operating as the standby node. This figure shows an example where the multi-subsystem operation is implemented in Subsystem 0 and Subsystem 1, and error occurs with Node 1. If error occurs with Node 1, all the jobs in Subsystem 0 and Subsystem 1 are taken over by the standby node.



If error occurs with Subsystem 1 on Node 1, the jobs in Subsystem 0 are also taken over by Node 2. Network jobs running on the execution server are automatically taken over by Node 2.

The configurations -- the non multi-subsystem operation in 1:1 active/standby configuration and the multi-subsystem operation in 1:1 active/standby configuration--are each referred to as the follow:

In case not implementing the multi-subsystem operation in 1:1 active/standby configuration:

1:1 active/standby configuration (without subsystems)

In case implementing the multi-subsystem operation in 1:1 active/standby configuration:

1:1 active/standby configuration (with subsystems)

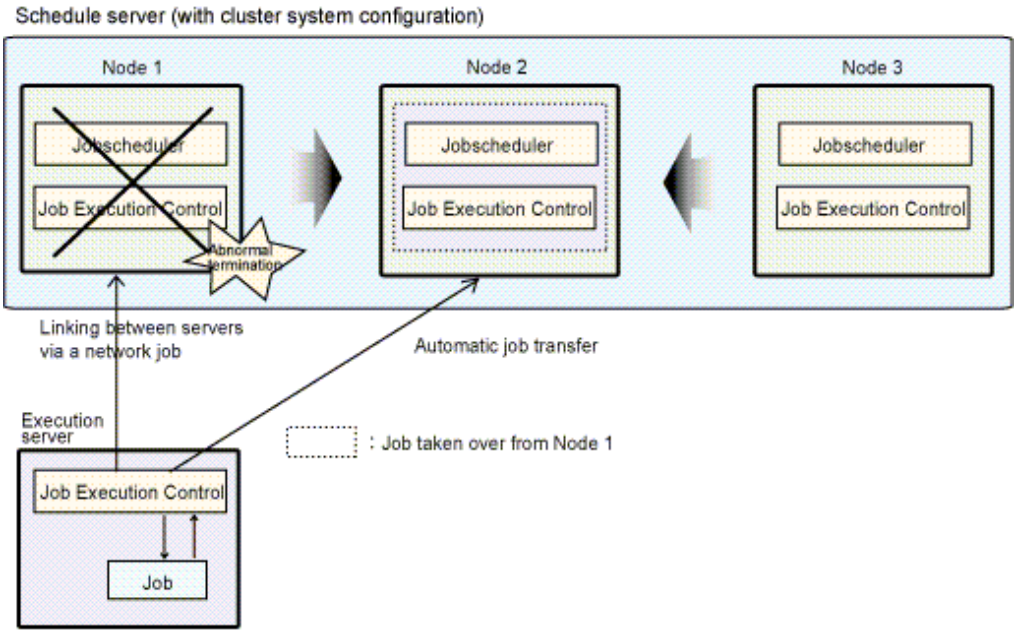
The term "1:1 active/standby configuration" includes 1:1 active/standby configurations without subsystems, active/standby configurations with subsystems, and active/standby configurations with subsystems and partial cluster operation.

N:1 active/standby configuration

This operational configuration is available in following cluster systems:

- PRIMECLUSTER for Solaris version
- PRIMECLUSTER for Linux version
- Oracle Solaris Cluster
- MC/ServiceGuard

In the following figure, Node 1 and Node 3 are operating as the active nodes, and Node 2 is operating as the standby node.



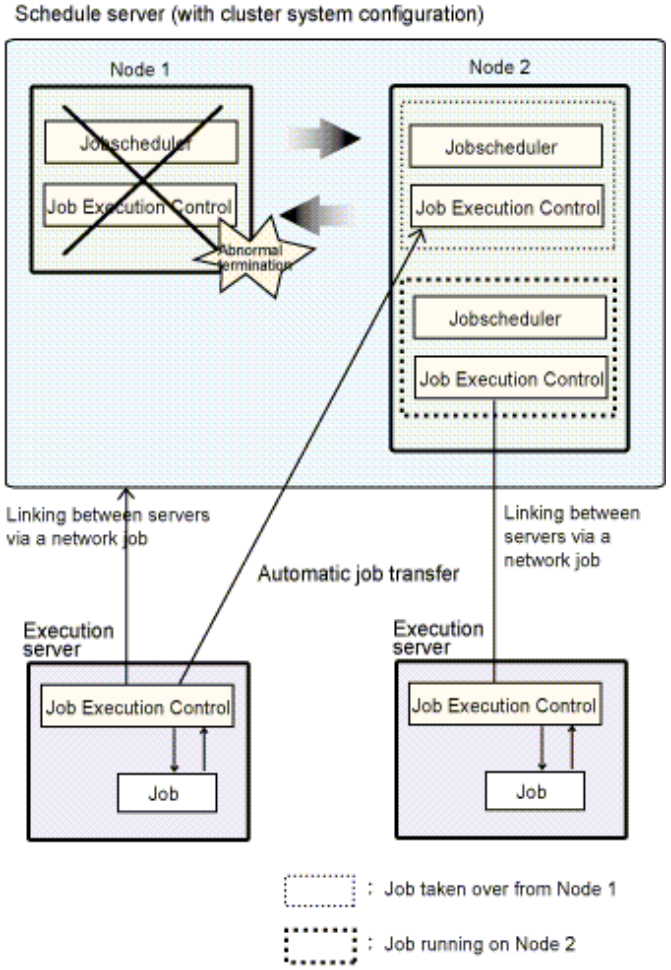
If error occurs with either Node 1 or Node 3, jobs are taken over by Node 2. Network jobs running on the execution server for Node 1 or Node 3 are also automatically taken over by Node 2.

If errors occur on more than one node, then only jobs from the node where error occurred first will be taken over by the standby node. Jobs from the second failed node will not be taken over.

Dual node mutual standby configuration

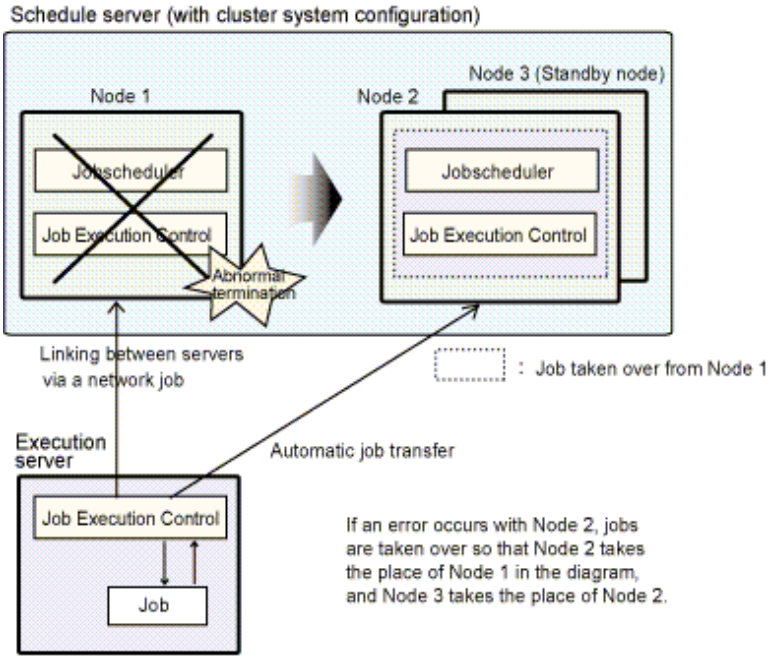
In the following figure, Node 1 and Node 2 are on standby for one another while each node executes its own jobs, with the execution server placed on a separate node.

In this example, if error occurs with Node 1, jobs are taken over by Node 2. Network jobs running on the execution server for Node 1 are also automatically taken over by Node 2. If error occurs with Node 2, jobs are taken over by Node 1. Network jobs running on the execution server for Node 2 are also automatically taken over by Node 1.



Cascading configuration

This configuration is available only in PRIMECLUSTER.
In the following figure, Node 2 and Node 3 are on standby while jobs are executed on Node 1, with the execution server placed on a separate node.



If error occurs with Node 1, jobs are taken over by Node 2. Network jobs running on the execution server for Node 1 are also automatically taken over by Node 2. If error occurs with Node 2, jobs are taken over by Node 3. Network jobs running on the execution server for Node 2 are also automatically taken over by Node 3.

1.3.3 Using a cluster configuration for some Systemwalker Operation Manager server subsystems

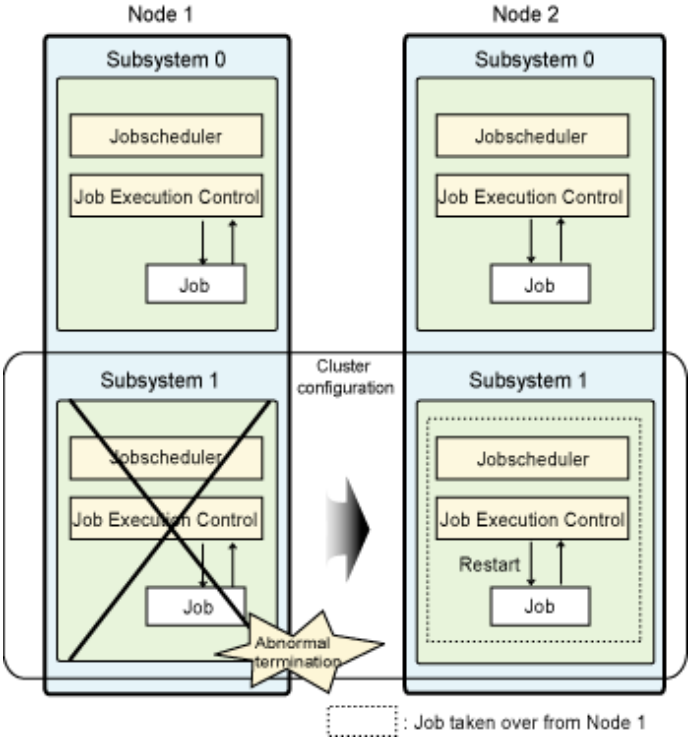
This section outlines how to organize some of the Systemwalker Operation Manager server subsystems into a cluster configuration.

The following cluster systems support this operation mode:

- Solaris version of PRIMECLUSTER
- Linux version of PRIMECLUSTER
- MC/ServiceGuard
- HACMP

1:1 active/standby

The following diagram shows an example of a system in which only Subsystem 1 is used in a cluster configuration, with Node 1 used as the active node and Node 2 used as the standby node. Subsystem 0 is not placed in a cluster configuration and operates on both Node 1 and Node 2. The example in the following diagram illustrates what happens when an error occurs on Node 1. When the error occurs on Node 1, business on Subsystem 1 is transferred to the standby node. Because the business on Subsystem 0 is not in a cluster configuration, it is not affected by the change in the business on Subsystem 1. As long as Subsystem 0 is able to operate on Node 1, it will continue to do so.



When multiple subsystems are operating and only some are organized into a 1:1 active/standby cluster configuration, the configuration is referred to as follows:

1:1 active/standby (with subsystems and partial cluster operation)

The term "1:1 active/standby configuration" includes 1:1 active/standby configurations with subsystems and partial cluster operation as well as the 1:1 active/standby configurations without subsystems and active/standby configurations with subsystems described earlier.

1.4 Jobs Taken Over in the Cluster System

The following Systemwalker Operation Manager jobs are taken over when failover occurs in the cluster system:

- Schedule information

  When failover occurs, schedule information for the Jobscheduler is automatically taken over by the standby node.

- Active jobs and job nets

  - If both the schedule server and the execution server are running on the same cluster system, jobs and job nets that terminated abnormally can be restarted after failover is complete.

    Settings are required in order to automatically restart jobs and job nets after failover. Refer to "2.11 Settings for Making Jobs Restart" for details on these settings.

  - If the schedule server is running as a cluster configuration and a network job is running on a separate execution server, jobs and job nets can still continue to execute after a failover occurs.

    Settings are required in order to have jobs and job nets automatically continue to execute after failover. Refer to "2.3 Settings for Submitting Network Jobs from Cluster System" for details."

1.5 Notes on Cluster System Operation

This section presents some notes on operating Systemwalker Operation Manager on cluster system.

Jobs that cannot be submitted

The following jobs and job nets cannot be run on cluster system:

- Network jobs submitted from an active node to a standby node in a cluster configuration

  It is not possible to submit network jobs from an active node to a standby node when an entire Systemwalker Operation Manager server system is in a cluster configuration, as described in "1.3.1 Using a cluster configuration for the entire Systemwalker Operation Manager server system" and "1.3.2 Using a cluster configuration for the schedule server only."

  When only some Systemwalker Operation Manager server subsystems are organized into a cluster configuration, as described in "1.3.3 Using a cluster configuration for some Systemwalker Operation Manager server subsystems," network jobs can be submitted to those subsystems not in a cluster configuration, even if those subsystems exist on the standby node.

- Network jobs submitted to a lower version when multiple subsystems are operating

  If a 1:1 active/standby (with subsystems), a 1:1 active/standby (with subsystems and partial cluster operation) or a dual node mutual standby configuration is used, network jobs cannot be submitted to the following versions:

  - SystemWalker/OperationMGR V5.0L30 or earlier for Windows
  - SystemWalker/OperationMGR 5.0 or earlier for Solaris/HP-UX/AIX
  - SystemWalker/OperationMGR 5.2 for Linux

  Refer to the *Systemwalker Operation Manager Technical Guide* for details on the range of jobs that can be submitted.

Execution attributes for registering job nets

When registering user resources required for running batch jobs (such as shell scripts, executable files and data) on the shared disk, register the execution attribute of the job net as the Job Execution Control attribute. Do not place user resources on the shared disk if the backward version compatibility (earlier/standard) attribute is to be used.

If job nets with the backward version compatibility (earlier/standard) attribute are registered on the shared disk, then if error occurs on the node where the job is executing, the batch job may continue to access resources on the shared disk, preventing the shared disk from being released and preventing the active node from failing over to the standby node.

Notes on when servers running Systemwalker Operation Manager coexist with Operation Management Servers running Systemwalker Centric Manager and those servers are running as cluster systems

The Event Monitoring function and the Action Management function are failed over as a group of Systemwalker Centric Manager. To use the following functions, Systemwalker Centric Manager and Systemwalker Operation Manager need to work on the same node. Therefore, register them with the same cluster application (*1).

- Using the Event Monitoring function and Action Management function from Systemwalker Operation Manager clients
- By linking with Systemwalker Centric Manager, monitoring job nets abended, and restarting/confirming the job net abended so that the job net's status is automatically changed to "resolved"
- By linking with Systemwalker Centric Manager, displaying the **Monitor Job Net** window of the abended job net directly from the event list of Systemwalker Centric Manager's monitoring screen

***1:**

The terminology "cluster application" varies from cluster system to cluster system. So, "cluster application" should be interpreted depending on cluster system as below:

PRIMECLUSTER: cluster application
Oracle Solaris Cluster: resource group
MC/ServiceGuard: package
HACMP: resource group

Notes on defining cluster system as trusted hosts

When defining cluster system as trusted hosts, define the logical IP address specified in the **Cluster Settings** tab of the **Define Operating Information** window.

Submitting network jobs from the cluster system configuration's schedule server

When submitting a network job from the cluster system configuration's schedule server, define the logical IP address of the schedule server, according to the communications environment of the execution server, as follows:

- When the execution server is in an IPv6 single stack environment:

  IPv6 address

- When the execution server is in an IPv4 single stack environment or an IPv4/IPv6 dual stack environment:

  IPv4 address

Note that you cannot operate an execution server in an IPv6 single stack environment together with an execution server in an IPv4 single stack environment or an IPv4/IPv6 dual stack environment. Refer to the following for whether or not to allow operation in cases where the execution server's communications environment is mixed, and for the logical IP address of the schedule server that will be defined during operations.

Combinations of execution server communications environments			Operation allowed	Schedule server logical IP address
IPv6 single	IPv4 single	-	N	-
IPv6 single	-	IPv4/IPv6 dual	N	-
IPv6 single	IPv4 single	IPv4/IPv6 dual	N	-
-	IPv4 single	IPv4/IPv6 dual	Y	IPv4 address

```
Y: Operation allowed/ N: Operation not allowed
```

Chapter 2 Installation

This chapter describes the installation and environment setup procedures for installing Systemwalker Operation Manager on cluster system.

The commands described in this chapter must be executed by a user with system administrator (superuser) privileges.

Do not move the current directory to the shared disk when executing the *soperationmgr* command or the *poperationmgr* command. Otherwise, the installation process may not work correctly.

2.1 Installation Procedure

This section describes the procedure for installing Systemwalker Operation Manager on cluster system.

New installations

The procedure for installing Systemwalker Operation Manager on a cluster system for the first time is as follows:

1. Determine the structure for the cluster system, and install the cluster system and Systemwalker Operation Manager on each node making up the cluster system.

   Refer to "2.2 Installation."

2. For structures where a cluster configuration will only be used for the schedule server (with network jobs executed in an execution server), or structures where some Systemwalker Operation Manager server subsystems will be clustered (with network jobs submitted to non-clustered subsystems), use the *jmmode* command to set up "continuous execution mode" on all the nodes making up the cluster system and also on the nodes that will execute network jobs. Also set a logical IP address for Job Execution Control.

   Refer to "2.3 Settings for Submitting Network Jobs from Cluster System."

   These definitions are not required if the schedule server and the execution server are both part of the same cluster system configuration.

3. Set up the Master Schedule Management function if it is to be used.

   Refer to "2.4 Settings for Using the Master Schedule Management Function."

   These definitions are not required if the Master Schedule Management function is not used.

4. Set the IP address required to operate Systemwalker Operation Manager with a cluster system.

   Refer to "2.5 IP Address Settings."

5. Move the resources used by Systemwalker Operation Manager to the shared disk of the cluster system.

   Refer to "2.6 Moving Resources to the Shared Disk."

6. Perform settings so that information can be automatically reflected in both the active node and the standby node.

   Refer to "2.7 Settings for Automatic Reflection."

7. Register Systemwalker Operation Manager with the cluster system.

   Refer to "2.8 Registering Systemwalker Operation Manager with a Cluster System."

8. Standardize the information managed by each node between active and standby nodes in the cluster system.

   Refer to "2.9 Standardizing the Information Managed by Each Node."

9. Stop the Jobscheduler daemon when you test a failover.

   Refer to "2.10 Failover Testing."

10. To enable jobs to restart automatically when failover occurs (assuming that a cluster configuration is used for the entire Systemwalker Operation Manager server system), perform the settings required to restart jobs.

    Refer to "2.11 Settings for Making Jobs Restart."

    These definitions are not required if a cluster configuration is only used for the schedule server with the execution server running on a separate node.

Migrating to a cluster system

Refer to "New installations" to migrate Systemwalker Operation Manager from a standard system to a cluster system.

Note that, however, back up resources by using the *mpbko* command before migrating to a cluster system.

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpbko* command.

Upgrading Systemwalker Operation Manager on a cluster system

Use the following procedure to upgrade an installation of Systemwalker Operation Manager operating on a cluster system:

1. Remove Systemwalker Operation Manager from the cluster system.

   Refer to "2.12 Uninstalling Systemwalker Operation Manager from a Cluster System."

2. Upgrade Systemwalker Operation Manager on all the nodes (active and standby) making up the cluster system.

   Refer to the *Systemwalker Operation Manager Upgrade Guide*.

3. Apply Systemwalker Operation Manager to the cluster system again.

   Perform the procedure described in "2.2.3 Canceling the settings for starting and stopping daemons automatically" and the subsequent procedures.

Information

When upgrade installation is performed, the following settings are transferred from the previous installation, and so need not be set again.

- Subsystem environments
- Continuous execution mode
- IP address settings

The process monitoring targets are not transferred. Either perform the settings again, or transfer them by referring to the *Systemwalker Operation Manager Upgrade Guide*.

For Solaris version 10.1 or earlier or HP-UX version 10.0 or earlier, any node name definitions that have been specified will be transferred. To perform operation using logical IP address, set the logical IP address by referring to "2.3.2 Setting logical IP address for Job Execution Control."

2.2 Installation

This section describes the procedure for creating a cluster system and installing Systemwalker Operation Manager on the cluster system that has been created.

2.2.1 Creating a cluster system

Create a cluster system using the following procedure:

1) Determine the system configuration

Determine which operation mode to use (1:1 active/standby, N:1 active/standby, dual node mutual standby, or cascading), considering the strengths and weaknesses of each mode. Also determine how the Systemwalker Operation Manager server system is to be configured as a cluster system.

2) Prepare resources

Prepare the following resources, which are required to install Systemwalker Operation Manager on cluster system:

- Shared disk
- Logical IP address

The terminology of "shared disk" and "logical IP address" varies from cluster system to cluster system. So, they should be interpreted as explained below:

- Oracle Solaris Cluster

  Shared disk: global file system

- HACMP

  Logical IP address: service address

Estimate the space required for the shared disk

Estimate the amount of space required on the shared disk that will be shared between the nodes in the cluster system. The following Systemwalker Operation Manager directories are placed on the shared disk, so estimate the amount of space that these directories will require.

- The directory for calendar control information
- The database directory for the Jobscheduler
- The spool directory for Job Execution Control
- The database directory for Master Schedule Management

The amount of space required for the Jobscheduler, Job Execution Control, and Master Schedule Management directories is the same as for normal system. Refer to the *Systemwalker Operation Manager Technical Guide* for details on how to estimate the amount of space required.

The amount of space required for the calendar control information directory can be calculated using the following formula:

Amount of space (bytes) on the shared disk required for calendar control information = 50 (bytes) x the number of registered calendars x the number of subsystems being used

Prepare logical IP address

Prepare a logical IP address for the cluster system. The logical IP address is the virtual IP address used in common between the active node and the standby node.

Prepare logical IP address, separate from the node-specific physical IP address. (Prepare one logical IP address for 1:1 active/standby or cascading configuration, "*N*" logical IP addresses for N:1 active/standby configuration and two logical IP addresses for dual node mutual standby configuration.) Make sure that these IP addresses are not used by any other nodes on the network.

3) Resolve the physical IP address for the primary host name

If the IP address cannot be resolved for the primary NIC host name (in default, it is a local host name displayed by the *hostname* command), enter the primary host name and physical IP address in the /etc/hosts file so that they are associated each other.

4) Install the cluster system

Install and create the cluster system. Refer to the cluster system manual for details on how to create cluster system.

2.2.2 Installing Systemwalker Operation Manager

Install Systemwalker Operation Manager on the active and standby nodes.
Refer to the *Systemwalker Operation Manager Installation Guide* for details on how to install Systemwalker Operation Manager on each type of node.

Do not install Systemwalker Operation Manager on the shared disk.

If the Systemwalker Operation Manager users are controlled by selecting the **Restrict so that only users included in the swadmin group can start demand jobs, start jobnet Job execution control attributes or use the Jobscheduler command functions.** option in the **Define Operation**

Manager Shared Parameter window, define user restrictions on the active and standby nodes after installing Systemwalker Operation Manager.

Note that the users are restricted (the user restriction definition option is enabled) by default for new installation in V17.0.0 or later.

Refer to the *Systemwalker Operation Manager Installation Guide* for details.

Note

The user restriction definitions cannot be changed after registering Systemwalker Operation Manager with a cluster system.

Be sure to set the definition before registering Systemwalker Operation Manager with the cluster system.

Information

It is easy to register Systemwalker Operation Manager with a cluster system if state transition procedures for registering Systemwalker Operation Manager with a cluster system are created in advance by using an installation sample.

For details, refer to the article of "Creating state transition procedures" that is cluster-system specific procedure.

The terminology of "state transition procedure" varies from cluster system to cluster system. So, it should be interpreted as explained below:

PRIMECLUSTER: state transition procedure
Oracle Solaris Cluster
MC/ServiceGuard: script
HACMP: application

Create subsystem environments

A prerequisite for 1:1 active/standby configurations (with subsystems), 1:1 active/standby configurations (with subsystems and partial cluster operation), and dual node mutual standby configurations is that the subsystem environment must be created in advance so that multiple subsystems can run on the cluster system. Additionally, create the same subsystem environment on both the active node and the standby node for the 1:1 active/standby configuration (with subsystems), or the N:1 active/standby configuration.

1. Create the subsystem environment

   Execute the createsubsystem.sh command on both the active node and the standby node. Refer to "Creating Subsystem Environments" in the *Systemwalker Operation Manager Installation Guide* for details.

2. Set port numbers for subsystems

   Set port numbers for the subsystems used by the Jobscheduler on both the active node and the standby node. Refer to "Assigning Subsystem Port Numbers" in the *Systemwalker Operation Manager Installation Guide* for details.

3. Set port numbers for network jobs

   These settings are required only if the execution server for network jobs uses a multiple subsystem configuration and the own server (schedule server) uses a multiple subsystem configuration where a job that spans multiple subsystems is submitted.

   Set port numbers for network jobs on all the nodes on the cluster system and also on the execution server for network jobs. Refer to "Assigning Subsystem Port Numbers" in the *Systemwalker Operation Manager Installation Guide* for details.

4. Restart Systemwalker Operation Manager

2.2.3 Canceling the settings for starting and stopping daemons automatically

After installing Systemwalker Operation Manager, cancel the settings that start and stop the daemons automatically.

Stopping daemons

Stop each Systemwalker Operation Manager daemon on all the nodes (active and standby). The following example shows the stop command:

```
# /opt/systemwalker/bin/poperationmgr -s
```

For environments that include both Systemwalker Operation Manager and Systemwalker Centric Manager, be sure to specify the "-s" option with the *poperationmgr* command.

Canceling the settings to start and stop daemons automatically

On each node (active and standby), cancel the automatic startup settings for the following Systemwalker Operation Manager daemons:

- Jobscheduler
- Job Execution Control

Canceling the settings for starting daemons automatically

To cancel the settings for starting daemons automatically, use the following procedure to edit the daemon batch start customization file:

For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

1. Open the following daemon batch start customization file with a text editor such as vi:

   ```
   /etc/opt/FJSVftlo/daemon/custom/rc3.ini
   ```

2. Comment out the lines shown in the following examples (from [Before] to [After]):

   [Before]

   ```
   @   Function name: Job Execution Control
   (data omitted...)
   DAEMONxx(Lo)="/etc/opt/FJSVMJS/etc/rc3.d/S99MJS"
   ```

   Note: "*xx*" is a number.

   [After]

   ```
   @   Function name: Job Execution Control
   (data omitted...)
   #DAEMONxx(Lo)="/etc/opt/FJSVMJS/etc/rc3.d/S99MJS"
   ```

   Note: "*xx*" is a number.

   [Before]

   ```
   @   Function name: Jobscheduler
   (data omitted...)
   DAEMONxx(Lo)="/opt/FJSVJOBSC/etc/rc3.d/start_jobs"
   ```

   Note: "*xx*" is a number.

   [After]

   ```
   @   Function name: Jobscheduler
   (data omitted...)
   #DAEMONxx(Lo)="/opt/FJSVJOBSC/etc/rc3.d/start_jobs"
   ```

   Note: "*xx*" is a number.

3. When a 1:1 active/standby configuration (with subsystems and partial cluster operation) is to be used, edit the settings so that the subsystems that are not registered with a cluster system start automatically.

   The following example shows an environment containing two subsystems, Subsystem 0 and Subsystem 1. This example illustrates the procedure used to register Subsystem 1 with a cluster system while leaving Subsystem 0 not registered.

[Before]

```
@   Function name: Job Execution Control
(data omitted...)
#DAEMONxx(Lo)="/etc/opt/FJSVMJS/etc/rc3.d/S99MJS"
```

Note: "*xx*" is a number.

[After]

```
@   Function name: Job Execution Control
(data omitted...)
#DAEMONxx(Lo)="/etc/opt/FJSVMJS/etc/rc3.d/S99MJS"
DDAEMONxx0(Lo)="/etc/opt/FJSVMJS/etc/rc3.d/S99MJS -sys 0"
```

Note: "*xx*" is a number.

[Before]

```
@   Function name: Jobscheduler
(data omitted...)
#DAEMONxx(Lo)="/opt/FJSVJOBSC/etc/rc3.d/start_jobs"
```

Note: "*xx*" is a number.

[After]

```
@   Function name: Jobscheduler
(data omitted...)
#DAEMONxx(Lo)="/opt/FJSVJOBSC/etc/rc3.d/start_jobs"
DAEMONxx0(Lo)="/opt/FJSVJOBSC/etc/rc3.d/S99JOBSCH -sys 0"
```

Note: "*xx*" is a number.

Note the following points with regard to step 3:

- When naming "DAEMON*xx*(Lo)" variables, ensure that the subsystem number that will be subject to automatic startup is appended to the end of the numeric part of the name. For example, if the variable name is "DAEMON05(Lo)" and the subsystem is "0", add "0" to the end so that the variable name becomes "DAEMON050(Lo)".
- Specify the number of the subsystem that will be subject to automatic startup after the -sys option.
- If there is more than one subsystem that will not be registered with a cluster system, add a definition for all of the subsystems concerned. (The specification can extend over multiple lines.)

For MC/ServiceGuard

1. Open the following daemon batch start customization file with a text editor such as vi:

```
/etc/opt/FJSVftlo/daemon/custom/rc3.ini
```

2. Comment out the lines shown in the following examples (from [Before] to [After]):

[Before]

```
@   Function name: Job Execution Control
(data omitted...)
DAEMONxx(Lo)="/opt/FHPMJS/usr/lib/mjes/S99MJS"
```

Note: "*xx*" is a number.

[After]

```
@   Function name: Job Execution Control
(data omitted...)
#DAEMON0xx(Lo)="/opt/FHPMJS/usr/lib/mjes/S99MJS"
```

Note: "*xx*" is a number.

[Before]

```
@   Function name: Jobscheduler
(data omitted...)
DAEMON0xx(Lo)="/opt/FHPJOBSCH/bin/start_jobs"
```

Note: "*xx*" is a number.

[After]

```
@   Function name: Jobscheduler
(data omitted...)
#DAEMONxx(Lo)="/opt/FHPJOBSCH/bin/start_jobs"
```

Note: "*xx*" is a number.

3. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), edit the settings so that subsystems that are not registered in clusters will be started automatically.

   The following example illustrates the procedure used to register Subsystem 1 but not Subsystem 0 in a cluster, in an environment in which Subsystems 0 and 1 have been created.

   [Before]

```
@   Function name: Job Execution Control
(data omitted...)
#DAEMONxx(Lo)="/opt/FHPMJS/usr/lib/mjes/S99MJS"
```

   Note: "*xx*" is a number.

   [After]

```
@   Function name: Job Execution Control
(data omitted...)
#DAEMONxx(Lo)="/opt/FHPMJS/usr/lib/mjes/S99MJS"
DAEMONxx0(Lo)="/opt/FHPMJS/usr/lib/mjes/S99MJS -sys 0"
```

   Note: "*xx*" is a number.

   [Before]

```
@   Function name: Jobscheduler
(data omitted...)
#DAEMONxx(Lo)="/opt/FHPJOBSCH/bin/start_jobs"
```

   Note: "*xx*" is a number.

   [After]

```
@   Function name: Jobscheduler
(data omitted...)
#DAEMONxx(Lo)="/opt/FHPJOBSCH/bin/start_jobs"
DAEMONxx0(Lo)="/opt/FHPJOBSCH/bin/S99JOBSCH -sys 0"
```

Note: "*xx*" is a number.

Note the following points with regard to step 3:

- When naming "DAEMON*xx*(Lo)" variables, ensure that the subsystem number that will be subject to automatic startup is appended to the end of the numeric part of the name. For example, if the variable name is "DAEMON05(Lo)" and the subsystem is "0", add "0" to the end so that the variable name becomes "DAEMON050(Lo)".
- Specify the automatic start target subsystem number as the -sys option.
- If there are multiple subsystems that will not be registered in the cluster, add a definition for all the subsystems that will not be registered. (This can be defined on multiple lines.)

For HACMP

1. Open the following daemon batch start customization file with a text editor such as vi:

```
/etc/opt/FJSVftlo/daemon/custom/rc3.ini
```

2. Comment out the lines shown in the following examples (from [Before] to [After]):

[Before]

```
@   Function name: Job Execution Control
(data omitted...)
DAEMON*xx*(Lo)="/opt/FAIXMJS/usr/lib/mjes/S99MJS"
```

Note: "*xx*" is a number.

[After]

```
@   Function name: Job Execution Control
(data omitted...)
#DAEMON*xx*(Lo)="/opt/FAIXMJS/usr/lib/mjes/S99MJS"
```

Note: "*xx*" is a number.

[Before]

```
@   Function name: Jobscheduler
(data omitted...)
DAEMON*xx*(Lo)="/usr/FAIXJOBSC/bin/start_jobs"
```

Note: "*xx*" is a number.

[After]

```
@   Function name: Jobscheduler
(data omitted...)
#DAEMON*xx*(Lo)="/usr/FAIXJOBSC/bin/start_jobs"
```

Note: "*xx*" is a number.

3. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), edit the settings so that subsystems that are not registered in clusters will be started automatically.

   The following example illustrates the procedure used to register Subsystem 1 but not Subsystem 0 in a cluster, in an environment in which Subsystems 0 and 1 have been created.

   [Before]

```
@   Function name: Job Execution Control
(data omitted...)
#DAEMONxx(Lo)="/opt/FAIXMJS/usr/lib/mjes/S99MJS"
```

Note: "*xx*" is a number.

[After]

```
@   Function name: Job Execution Control
(data omitted...)
#DAEMONxx(Lo)="/opt/FAIXMJS/usr/lib/mjes/S99MJS"
DAEMONxx0(Lo)="/opt/FAIXMJS/usr/lib/mjes/S99MJS -sys 0"
```

Note: "*xx*" is a number.

[Before]

```
@   Function name: Jobscheduler
(data omitted...)
#DAEMONxx(Lo)="/usr/FAIXJOBSC/bin/start_jobs"
```

Note: "*xx*" is a number.

[After]

```
@   Function name: Jobscheduler
(data omitted...)
#DAEMONxx(Lo)="/usr/FAIXJOBSC/bin/start_jobs"
DAEMONxx0(Lo)="/usr/FAIXJOBSC/bin/S99JOBSCH -sys 0"
```

Note: "*xx*" is a number.

Note the following points with regard to step 3:

- When naming "DAEMON*xx*(Lo)" variables, ensure that the subsystem number that will be subject to automatic startup is appended to the end of the numeric part of the name. For example, if the variable name is "DAEMON05(Lo)" and the subsystem is "0", add "0" to the end so that the variable name becomes "DAEMON050(Lo)".
- Specify the automatic start target subsystem number as the -sys option.
- If there are multiple subsystems that will not be registered in the cluster, add a definition for all the subsystems that will not be registered. (This can be defined on multiple lines.)

Canceling the settings for stopping daemons automatically

To cancel the settings for stopping daemons automatically, use the following procedure to edit the daemon batch stop customization file:

For PRIMECLUSTER (for Solaris or Linux version), Sun Cluster

1. Open the following daemon batch stop file with a text editor such as vi:

```
/etc/opt/FJSVftlo/daemon/ini/rc0.ini
```

2. Comment out the lines shown in the following examples (from [Before] to [After]):

[Before]

```
DAEMONxx(Lo)="/opt/FJSVJOBSC/etc/rc0.d/end_jobs"
DAEMONxx(Lo)="/etc/opt/FJSVMJS/etc/rc0.d/K00MJS"
```

Note: "*xx*" is a number.

[After]

```
#DAEMONxx(Lo)="/opt/FJSVJOBSC/etc/rc0.d/end_jobs"
#DAEMONxx(Lo)="/etc/opt/FJSVMJS/etc/rc0.d/K00MJS"
```

Note: "*xx*" is a number.

3. If a 1:1 active/standby configuration (with subsystems and partial cluster operation) is to be used, edit the settings so that subsystems that will not be registered with a cluster system are shut down automatically.

   The following example shows an environment containing two subsystems, Subsystem 0 and Subsystem 1. This example illustrates the procedure used to register Subsystem 1 with a cluster system while leaving Subsystem 0 not registered.

   [Before]

```
#DAEMONxx(Lo)="/opt/FJSVJOBSC/etc/rc0.d/end_jobs"
#DAEMONxx(Lo)="/etc/opt/FJSVMJS/etc/rc0.d/K00MJS"
```

   Note: "*xx*" is a number.

   [After]

```
#DAEMONxx(Lo)="/opt/FJSVJOBSC/etc/rc0.d/end_jobs"
DAEMONxx0(Lo)="/opt/FJSVJOBSC/etc/rc0.d/K00JOBSCH -sys 0"
#DAEMONxx(Lo)="/etc/opt/FJSVMJS/etc/rc0.d/K00MJS"
DAEMONxx0(Lo)="/etc/opt/FJSVMJS/etc/rc0.d/K00MJS -sys 0"
```

   Note: "*xx*" is a number.

   Note the following points with regard to step 3:

   - When naming "DAEMON*xx*(Lo)" variables, ensure that the subsystem number that will be subject to automatic shutdown is appended to the end of the numeric part of the name. For example, if the variable name is "DAEMON02(Lo)" and the subsystem is "0", add "0" to the end so that the variable name becomes "DAEMON020(Lo)".
   - Specify the number of the subsystem that will be subject to automatic shutdown after the -sys option.
   - If there is more than one subsystem that will not be registered with a cluster system, add a definition for all of the subsystems concerned. (The specification can extend over multiple lines.)

For MC/ServiceGuard

1. Open the following daemon batch stop file with a text editor such as vi:

```
/etc/opt/FJSVftlo/daemon/ini/rc0.ini
```

2. Comment out the lines shown in the following examples (from [Before] to [After]):

   [Before]

```
DAEMONxx(Lo)="/opt/FHPJOBSCH/bin/end_jobs"
DAEMONxx(Lo)="/opt/FHPMJS/usr/lib/mjes/K00MJS"
```

   Note: "*xx*" is a number.

   [After]

```
#DAEMONxx(Lo)="/opt/FHPJOBSCH/bin/end_jobs"
#DAEMONxx(Lo)="/opt/FHPMJS/usr/lib/mjes/K00MJS"
```

   Note: "*xx*" is a number.

3. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), edit the settings so that subsystems that are not registered in clusters will be stopped automatically.

   The following example illustrates the procedure used to register Subsystem 1 but not Subsystem 0 in a cluster, in an environment in which Subsystems 0 and 1 have been created.

   [Before]

```
#DAEMONxx(Lo)="/opt/FHPJOBSCH/bin/end_jobs"
#DAEMONxx(Lo)="/opt/FHPMJS/usr/lib/mjes/K00MJS"
```

   Note: "*xx*" is a number.

   [After]

```
#DAEMONxx(Lo)="/opt/FHPJOBSCH/bin/end_jobs"
DAEMONxx0(Lo)="/opt/FHPJOBSCH/bin/K00JOBSCH -sys 0"
#DAEMONxx(Lo)="/opt/FHPMJS/usr/lib/mjes/K00MJS"
DAEMONxx0(Lo)="/opt/FHPMJS/usr/lib/mjes/K00MJS -sys 0"
```

   Note: "*xx*" is a number.

   Note the following points with regard to step 3:

   - When naming "DAEMON*xx*(Lo)" variables, ensure that the subsystem number that will be subject to automatic shutdown is appended to the end of the numeric part of the name. For example, if the variable name is "DAEMON02(Lo)" and the subsystem is "0", add "0" to the end so that the variable name becomes "DAEMON020(Lo)".
   - Specify the automatic stop target subsystem number as the -sys option.
   - If there are multiple subsystems that will not be registered in the cluster, add a definition for all the subsystems that will not be registered. (This can be defined on multiple lines.)

For HACMP

1. Open the following daemon batch stop file with a text editor such as vi:

```
/etc/opt/FJSVftlo/daemon/ini/rc0.ini
```

2. Comment out the lines shown in the following examples (from [Before] to [After]):

   [Before]

```
DAEMONxx(Lo)="/usr/FAIXJOBSC/bin/end_jobs"
DAEMONxx(Lo)="/opt/FAIXMJS/usr/lib/mjes/K00MJS"
```

   Note: "*xx*" is a number.

   [After]

```
#DAEMONxx(Lo)="/usr/FAIXJOBSC/bin/end_jobs"
#DAEMONxx(Lo)="/opt/FAIXMJS/usr/lib/mjes/K00MJS"
```

   Note: "*xx*" is a number.

3. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), edit the settings so that subsystems that are not registered in clusters will be stopped automatically.

   The following example illustrates the procedure used to register Subsystem 1 but not Subsystem 0 in a cluster, in an environment in which Subsystems 0 and 1 have been created.

   [Before]

```
#DAEMONxx(Lo)="/usr/FAIXJOBSC/bin/end_jobs"
#DAEMONxx(Lo)="/opt/FAIXMJS/usr/lib/mjes/K00MJS"
```

Note: "*xx*" is a number.

[After]

```
#DAEMONxx(Lo)="/usr/FAIXJOBSC/bin/end_jobs"
DAEMONxx0(Lo)="/usr/FAIXJOBSC/bin/K00JOBSCH -sys 0"
#DAEMONxx(Lo)="/opt/FAIXMJS/usr/lib/mjes/K00MJS"
DAEMONxx0(Lo)="/opt/FAIXMJS/usr/lib/mjes/K00MJS -sys 0"
```

Note: "*xx*" is a number.

Note the following points with regard to step 3:

- When naming "DAEMON*xx*(Lo)" variables, ensure that the subsystem number that will be subject to automatic shutdown is appended to the end of the numeric part of the name. For example, if the variable name is "DAEMON02(Lo)" and the subsystem is "0", add "0" to the end so that the variable name becomes "DAEMON020(Lo)".
- Specify the automatic stop target subsystem number as the -sys option.
- If there are multiple subsystems that will not be registered in the cluster, add a definition for all the subsystems that will not be registered. (This can be defined on multiple lines.)

Changing the monitored process

On each node (active and standby), remove the Jobscheduler and Job Execution Control from the list of processes monitored by the process monitoring function.

1. Open the following definition file for monitored processes with a text editor such as vi:

   ```
   /etc/opt/FJSVftlo/pmon/mppmon.usr
   ```

2. Edit the lines shown in the following examples (from [Before] to [After]):

   [Before]

   ```
   start_jobs=1
   S99MJS=1
   ```

   [After]

   ```
   start_jobs=0
   S99MJS=0
   ```

Refer to "Changing the Processes to be monitored" in the *Systemwalker Operation Manager Installation Guide* for details on the procedure for changing the monitored processes.

As a result of this procedure, Jobscheduler and Job Execution Control processes for subsystems not registered with a cluster system will also be removed from the list of processes monitored by the process monitoring function. This procedure will also prevent messages from being sent to the event log or syslog when a process error occurs.

2.2.4 Registering cluster information

On all the nodes (active and standby) in the cluster system, execute the command to register the fact that a cluster environment has been created.

The following example shows how this command is executed.

```
/opt/systemwalker/bin/mpsetcluster -c
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpsetcluster* command.

2.3 Settings for Submitting Network Jobs from Cluster System

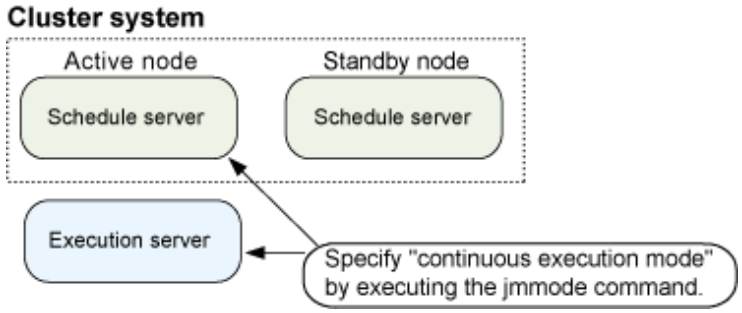
For operation where the schedule server is running on a cluster system and network jobs are submitted to an execution server, jobs and job nets can still continue to execute after the schedule server failover. For this to happen, the following definitions are required:

- Specify continuous execution mode with the *jmmode* command
- Setting up a logical IP address for Job Execution Control

2.3.1 Specify continuous execution mode with the jmmode command

Specify continuous execution mode by executing the *jmmode* command on all schedule servers and execution servers.

The following figure shows an overview of this definition.



Execute this command with all the Systemwalker Operation Manager daemons stopped. After the command is executed, these daemons will need to be restarted in order for continuous execution mode to take effect.

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *jmmode* command.

Example of command execution for a 1:1 active/standby configuration (without subsystems), N:1 active/standby configuration, or cascading configuration

Perform the following procedure on all the nodes:

1. Stop the Systemwalker Operation Manager daemons.

```
# /opt/systemwalker/bin/poperationmgr
```

2. Execute the *jmmode* command with the "continue -func JOB" option specified.

```
# jmmode continue -func JOB
```

3. Execute the *jmmode* command with the "check" option specified, and check that "JOB" has been set to "on".

```
# jmmode check
```

[Display example]

```
SYS 0
JOB on
WRT off
```

Example of command execution for a 1:1 active/standby configuration (with subsystems)

Perform the following procedure on all nodes. In this example, Subsystem 0 and Subsystem 1 are operating.

1. Stop the Systemwalker Operation Manager daemons.

```
# /opt/systemwalker/bin/poperationmgr
```

2. Execute the *jmmode* command with the "continue -func JOB" option specified

```
# jmmode continue -func JOB -sys 0
# jmmode continue -func JOB -sys 1
```

3. Execute the *jmmode* command with the "check" option specified, and check that "JOB" has been set to "on".

```
# jmmode check
```

[Display example]

```
SYS 0
JOB on
WRT off

SYS 1
JOB on
WRT off
```

Example of command execution for a 1:1 active/standby configuration (with subsystems and partial cluster operation)

Perform the following procedure on all nodes. The following example shows a configuration in which both Subsystem 0 and Subsystem 1 are operating but only Subsystem 1 is registered with a cluster system and Subsystem 0 is using a network job. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation) in which Subsystem 0 cannot be used in cluster operation but a network job is used, use the *jmmode* command with Subsystem 0, just as in the example of a 1:1 active/standby configuration (with subsystems).

1. Stop the Systemwalker Operation Manager daemons.

```
# /opt/systemwalker/bin/poperationmgr
```

2. Execute the *jmmode* command with the "continue -func JOB" option specified

```
# jmmode continue -func JOB -sys 0
# jmmode continue -func JOB -sys 1
```

3. Execute the *jmmode* command with the "check" option specified, and check that "JOB" has been set to "on".

```
# jmmode check
```

[Display example]

```
SYS 0
JOB on
WRT off

SYS 1
JOB on
WRT off
```

Example of command execution for a dual node mutual standby configuration

Perform the following procedure on all the nodes:

1. Stop the Systemwalker Operation Manager daemons.

```
# /opt/systemwalker/bin/poperationmgr
```

2. Execute the *jmmode* command with the "continue -func JOB" option specified.

```
# jmmode continue -func JOB -sys 1
# jmmode continue -func JOB -sys 2
```

3. Execute the *jmmode* command with the "check" option specified, and check that "JOB" has been set to "on".

```
# jmmode check
```

[Display example]

```
SYS 0
JOB off
WRT off

SYS 1
JOB on
WRT off

SYS 2
JOB on
WRT off
```

Remark:

Continuous execution mode has not been specified for Subsystem 0, and so "JOB off" is set for this subsystem.

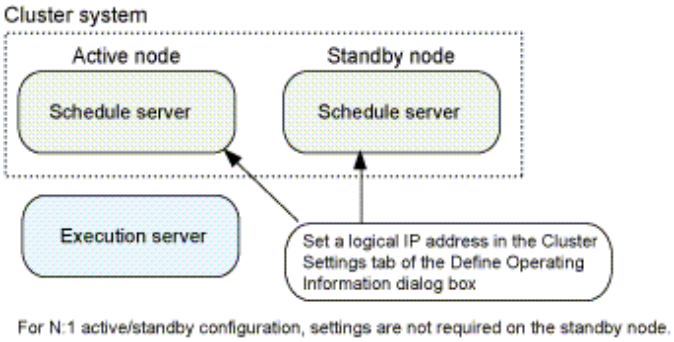
Note

When executing the *jmmode* command after transferring resources to the shared disk in "2.6 Moving Resources to the Shared Disk," be sure to run this command on the active node where the shared disk is mounted.

2.3.2 Setting logical IP address for Job Execution Control

To submit network jobs from a schedule server with a cluster configuration, set a logical IP address for Job Execution Control.

The following figure shows an overview of this definition.



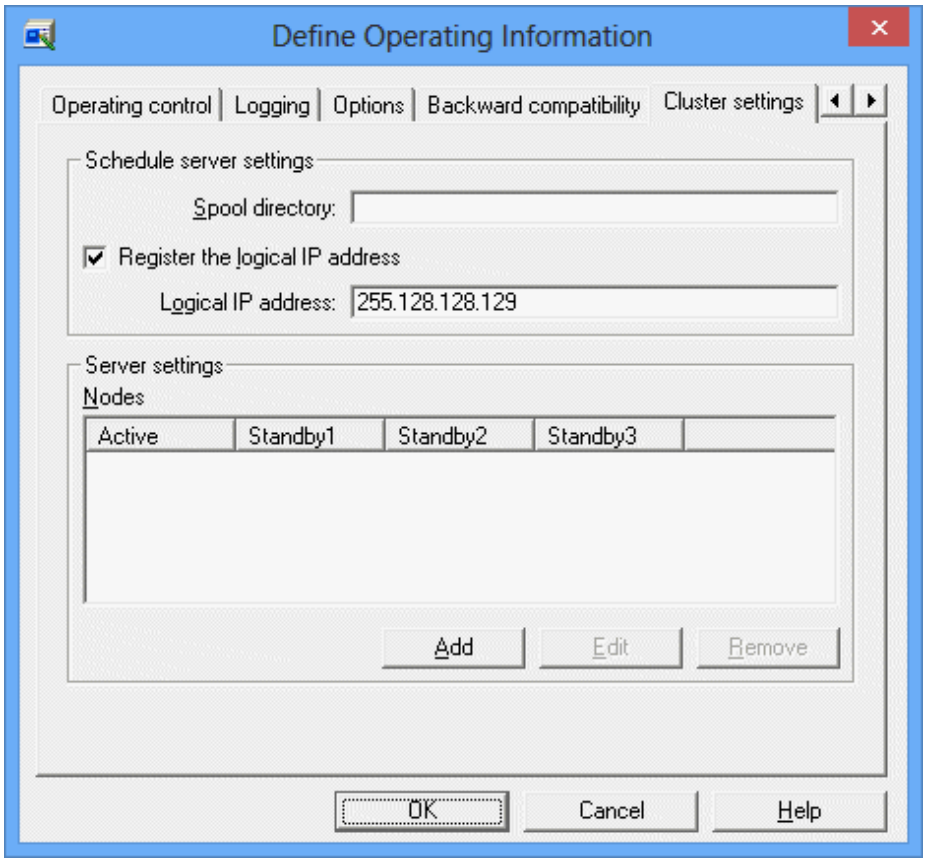
For N:1 active/standby configuration, settings are not required on the standby node.

For 1:1 active/standby configuration, dual node mutual standby configuration, and cascading configuration, define an IP address on each node (active and standby) on the cluster system. For N:1 active/standby configuration, perform this definition on the active nodes only.

1. Start the Systemwalker Operation Manager infrastructure daemon by executing the *soperationmgr* command on each node.

```
# /opt/systemwalker/bin/soperationmgr
```

2. Connect to the active node from the environment setup client by specifying its physical IP address, and then set a logical IP address by selecting the **Register the logical IP address** check box in the **Schedule server settings** section under the **Cluster Settings** tab of the **Define Operating Information** window. The **Server settings** section need not be set.



3. For 1:1 active/standby (without subsystems), dual node mutual standby and cascading configurations, connect to the standby node from the environment setup client by specifying its physical IP address, and then perform the same settings as in step 2.

For 1:1 active/standby configurations (with subsystems), perform the procedure shown in steps 2 and 3 for all subsystems. For 1:1 active/standby configurations (with subsystems and partial cluster operation), perform steps 2 and 3 for all subsystems to be registered with a cluster system.

To set the trust host name for the trust host definition on the execution server, set the logical IP address that was specified here.

Information

Node name definition

If node names are used, define them on the execution server that will receive network jobs from the schedule server with a cluster configuration. Define the names of the active and standby nodes in the **Server settings** section under the **Cluster Settings** tab of the **Define Operating Information** window. In this case, the **Schedule server settings** section need not be set.

Point

Configuring logical IP addresses that take execution server communications environments into account

When submitting a network job from the cluster system configuration's schedule server, define the logical IP address of the schedule server, according to the communications environment of the execution server, as follows:

- When the execution server is in an IPv6 single stack environment:

  IPv6 address

- When the execution server is in an IPv4 single stack environment or an IPv4/IPv6 dual stack environment:

  IPv4 address

Note that you cannot operate an execution server in an IPv6 single stack environment together with an execution server in either an IPv4 single stack environment or an IPv4/IPv6 dual stack environment.

Refer to the *Systemwalker Operation Manager Installation Guide* for details on how to make definitions using the **Define Operating Information** window, and to the *Systemwalker Operation Manager Online Help* for details on the **Define Operating Information** window.

2.4 Settings for Using the Master Schedule Management Function

Set up the Master Schedule Management function if it is to be used. The Master Schedule Management function does not need to be set up if it is not to be used or if a 1:1 active/standby configuration (with subsystems and partial cluster operation) is to be used and subsystems are not to be registered with a cluster system.

If the Master Schedule Management function is to be used, refer to the Systemwalker Operation Manager User's Guide - Master Schedule Management, and determine in advance which server to use as the management server and which server to use as the schedule server, including issues such as which servers will be used with a cluster configuration.

1. Create an environment for the Master Schedule Management function.

   Create an environment for the Master Schedule Management function by executing the *stemenvset* environment setup command on all management servers and schedule servers that will use the Master Schedule Management function. If the management server or the schedule server is using a cluster configuration, create environments for the Master Schedule Management function on all the nodes (active and standby) on the cluster system by executing the *stemenvset* environment setup command for Master Schedule Management on each node.

   ```
   # /opt/FJSVstem/bin/stemenvset.sh -set
   ```

   For details on the *stemenvset* environment setup command, refer to the *Systemwalker Operation Manager Reference Guide*.

2. Set up Schedule by dates mode.

   Execute the *soperationmgr* command to start the Systemwalker Operation Manager infrastructure daemon in advance.

   [If the management server is in a cluster system configuration]

   Connect to the active node, then specify either **Daily schedule management** or **Daily schedule management (Test mode)** as the mode in the **Master Schedule Management Environment Setup** dialog box.

   [If the schedule server is in a cluster system configuration]

   In the **Add Schedule Server** dialog box of the **Master Schedule Management Environment Setup** dialog box for the management server connected, specify the physical IP address of the active node in the IP address field in order to register the active node as a schedule server.

   Note

   A message will appear asking whether to restart the Jobscheduler daemon. Select **No** not to restart the Jobscheduler daemon.

   Refer to the *Systemwalker Operation Manager User's Guide - Master Schedule Management* for details on the Master Schedule Management environment settings.

3. Set up a logical IP address.

   Use the following procedure to set logical IP address for the subsystems for which the Schedules by dates mode has been set up:

   [If the management server is in a cluster system configuration]

   Set a logical IP address for the management server by executing the stemConfig Master Schedule Management environment setup command [UNIX] on the active node management server and schedule servers.

- Settings for 1:1 active/standby (without subsystems), N:1 active/standby and cascading configuration

  In the following example, the logical IP address for the management server is xxx.xxx.xxx.1.

```
# /opt/FJSVstem/bin/stemConfig set -m -ip xxx.xxx.xxx.1
```

- Settings for 1:1 active/standby (with subsystems)

  In the following example, the logical IP address for the management server is xxx.xxx.xxx.1 and Subsystem 0 and Subsystem 1 with the Schedule by dates mode specified.

```
# /opt/FJSVstem/bin/stemConfig set -m -ip xxx.xxx.xxx.1 -sys 0
# /opt/FJSVstem/bin/stemConfig set -m -ip xxx.xxx.xxx.1 -sys 1
```

- Settings for 1:1 active/standby configuration (with subsystems and partial cluster operation)

  In the following example, the logical IP address for the management server is xxx.xxx.xxx.1, only Subsystem 1 is used in cluster operation, and Subsystem 1 is configured for Schedule by Dates mode:

```
# /opt/FJSVstem/bin/stemConfig set -m -ip xxx.xxx.xxx.1 -sys 1
```

- Settings for dual node mutual standby configuration

  In the following example, the logical IP address for Subsystem 1 on the management server is xxx.xxx.xxx.1.

```
# /opt/FJSVstem/bin/stemConfig set -m -ip xxx.xxx.xxx.1 -sys 1
```

  In the following example, the logical IP address for Subsystem 2 on the management server is xxx.xxx.xxx.2.

```
# /opt/FJSVstem/bin/stemConfig set -m -ip xxx.xxx.xxx.2 -sys 2
```

[If the schedule server is in a cluster system configuration]

Set the logical IP address for the schedule server that will run as a cluster system by executing the stemConfig Master Schedule Management environment setup command [UNIX] on the management server.

- Settings for 1:1 active/standby (without subsystems), N:1 active/standby and cascading configuration

  In the following example, the logical IP address for the schedule server (server1) is xxx.xxx.xxx.3.

```
# /opt/FJSVstem/bin/stemConfig set -h server1 -ip xxx.xxx.xxx.3
```

- Settings for 1:1 active/standby (with subsystems)

  In the following example, the logical IP address for the schedule server (server 1) is xxx.xxx.xxx.3 and Subsystem 0 and Subsystem 1 with the Schedule by dates mode specified.

```
# /opt/FJSVstem/bin/stemConfig set -h server1 -ip xxx.xxx.xxx.3 -sys 0
# /opt/FJSVstem/bin/stemConfig set -h server1 -ip xxx.xxx.xxx.3 -sys 1
```

- Settings for 1:1 active/standby configuration (with subsystems and partial cluster operation)

  In the following example, the logical IP address for the schedule server (server1) is xxx.xxx.xxx.3, only Subsystem 1 is used in cluster operation, and Subsystem 1 is configured for Schedule by Dates mode:

```
# /opt/FJSVstem/bin/stemConfig set -h server1 -ip xxx.xxx.xxx.3 -sys 1
```

- Settings for dual node mutual standby configuration

  In the following example, the logical IP address for Subsystem 1 on the schedule server (server1) is xxx.xxx.xxx.3.

```
# /opt/FJSVstem/bin/stemConfig set -h server1 -ip xxx.xxx.xxx.3 -sys 1
```

  In the following example, the logical IP address for Subsystem 2 on the schedule server (server1) is xxx.xxx.xxx.4.

```
# /opt/FJSVstem/bin/stemConfig set -h server1 -ip xxx.xxx.xxx.4 -sys 2
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *stemenvset* environment setup command and the *stemConfig* Master Schedule Management environment setup command [UNIX].

2.5 IP Address Settings

If Systemwalker Operation Manager is to be operating as a cluster system, specify the settings relating to the IP address according to the type of operation being used.

Refer to the *Systemwalker Operation Manager Installation Guide* for details on how to make these settings.

IP address settings for the client machine

If a logical IP address is registered in the "hosts" file on the client machine, the Systemwalker Operation Manager client can be connected to the server by specifying the host name corresponding to this logical IP address.

IP address settings for the monitored host

If a monitored host managed by Systemwalker Operation Manager is in a cluster system configuration, then a logical IP address can be set as the IP address of the monitored host.

Monitored host definition is stored on each node, not on the shared disk. If the definition on one node is modified, modify the other so that the settings are the same on both the nodes. Refer to "2.9.3 Standardizing Systemwalker Operation Manager environment definitions," for details.

Monitoring-permission host definitions

If the multi-server monitoring function is used to monitor other servers from a cluster system, define both nodes making up the cluster system as monitoring-permission hosts for the monitored servers.

2.6 Moving Resources to the Shared Disk

This section describes the procedure for moving resources to the shared disk of a cluster system.

For N:1 active/standby and dual node mutual standby configuration, move the resources for each active node to its own shared disk separately. Any directory can be used as the destination directory.

The procedure for moving resources to the shared disk for 1:1 active/standby, N:1 active/standby and cascading configuration is different from that for dual node mutual standby configuration. Each case is described below.

Move only the "spool directory for Job Execution Control" to the shared disk on the execution server that configures the cluster system.

2.6.1 Moving resources in the case of 1:1 active/standby (without subsystems), 1:1 active/standby (with subsystems), N:1 active/standby, and cascading configurations

Resources to be moved

For 1:1 active/standby, N:1 active/standby or cascading configuration, move the following resources to the shared disk.

In the 1:1 active/standby configuration (with or without subsystems), move the following resources to the shared disk. And this task does not need to be done on each subsystem.

For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

a. The directory for calendar control information

```
/var/opt/FJSVjmcal/post
```

b. The database directory for the Jobscheduler

```
/var/opt/FJSVJOBSC
```

c. The spool directory for Job Execution Control

```
/var/opt/FJSVMJS/var/spool/mjes
```

(Delete the symbolic link to "/var/spool/mjes".)

d. The operation information directory for Job Execution Control

```
/etc/opt/FJSVMJS/etc/mjes
```

(Delete the symbolic link to "/etc/mjes".)

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem
```

For MC/ServiceGuard

a. The directory for calendar control information

```
/opt/FHPjmcal/post
```

b. The database directory for Jobscheduler

```
/opt/FHPJOBSCH/db
```

c. The spool directory for Job Execution Control

```
/opt/FHPMJS/var/spool/mjes
```

(Delete the symbolic link to "/var/spool/mjes".)

d. The operation information directory for Job Execution Control

```
/opt/FHPMJS/etc/mjes
```

(Delete the symbolic link to "/etc/mjes".)

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem
```

For HACMP

a. The directory for calendar control information

```
/opt/FAIXjmcal/post
```

b. The database directory for Jobscheduler

```
/opt/FAIXJOBSC/db
```

c. The spool directory for Job Execution Control

```
/opt/FAIXMJS/var/spool/mjes
```

(Delete the symbolic link to "/var/spool/mjes".)

d. The operation information directory for Job Execution Control

```
/opt/FAIXMJS/etc/mjes
```

(Delete the symbolic link to "/etc/mjes".)

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem
```

Relocation procedure

For PRIMECLUSTER (for Solaris or Linux version), Sun Cluster

The explanation in the following example assumes that the mount point of the shared disk is "/disk1". The command line provided here as a sample is for Solaris version.

1) Stop the daemon.

Stop the Systemwalker Operation Manager daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

For environments that include both Systemwalker Operation Manager and Systemwalker Centric Manager, be sure to specify the "-s" option with the *poperationmgr* command.

2) Mount the shared disk.

Mount the shared disk.

```
# mount /disk1 (*1)
```

*1:

The command line for Linux version is as follows. (In this example, the device is "/dev/sdb1".)

```
# /bin/mount /dev/sdb1 /disk1
```

3) Move resources from the active node to the shared disk.

Move the resources from the active node to the shared disk, and delete the symbolic links.

```
# mkdir -p /disk1/FJSVfwseo/JM (*1)
# chmod -R 755 /disk1/FJSVfwseo

# mkdir -p /disk1/FJSVjmcal
# chmod -R 755 /disk1/FJSVjmcal
# mv /var/opt/FJSVjmcal/post /disk1/FJSVjmcal/post

# mkdir -p /disk1/FJSVJOBSC
# chmod -R 755 /disk1/FJSVJOBSC
# mv /var/opt/FJSVJOBSC/* /disk1/FJSVJOBSC
# rm -r /var/opt/FJSVJOBSC

# mkdir -p /disk1/FJSVMJS/var/spool
# chmod -R 755 /disk1/FJSVMJS
# mv /var/opt/FJSVMJS/var/spool/mjes /disk1/FJSVMJS/var/spool/mjes
# rm /var/spool/mjes

# mkdir -p /disk1/FJSVMJS/etc
# chmod -R 755 /disk1/FJSVMJS
# mv /etc/opt/FJSVMJS/etc/mjes /disk1/FJSVMJS/etc/mjes
# rm /etc/mjes

# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/* /disk1/FJSVstem (*2)
# rm -r /var/opt/FJSVstem (*2)
```

*1:

For security information, simply a directory is created on the shared disk. This information will be updated by the "2.7 Settings for Automatic Reflection."

*2:

This is required only if the Master Schedule Management function is enabled.

4) Delete resources from the standby node.

Delete the resources from the standby node.

```
# rm -r /var/opt/FJSVjmcal/post

# rm -r /var/opt/FJSVJOBSC

# rm -r /var/opt/FJSVMJS/var/spool/mjes
# rm /var/spool/mjes

# rm -r /etc/opt/FJSVMJS/etc/mjes
# rm /etc/mjes

# rm -r /var/opt/FJSVstem (*1)
```

*1:

This is required only if the Master Schedule Management function is enabled.

5) Create symbolic links to the relocated resources.

Create symbolic links on all the nodes (active and standby) so that any one of them can use the resources that have been relocated to the shared disk.

For N:1 active/standby configuration, state transition procedures are set up to create symbolic links when failover occurs, so symbolic links from the standby node do not need to be created here.

```
# ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM

# ln -s /disk1/FJSVjmcal/post /var/opt/FJSVjmcal/post

# ln -s /disk1/FJSVJOBSC /var/opt/FJSVJOBSC

# ln -s /disk1/FJSVMJS/var/spool/mjes /var/spool/mjes

# ln -s /disk1/FJSVMJS/etc/mjes /etc/mjes

# ln -s /disk1/FJSVstem /var/opt/FJSVstem (*1)
```

*1:

This is required only if the Master Schedule Management function is enabled.

6) Configure settings for SELinux.

This must be done only in Linux environments where SELinux is enabled. Otherwise, it is not necessary.

Execute the following commands in order to set the SELinux security policies on the relocated resources. They must be executed on each node with the shared disk mounted.

```
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVfwseo/JM(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVjmcal(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVJOBSC(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVstem(/.*)?' (*1)
# /usr/sbin/semanage fcontext -a -t sw_fjsvmjs_spool_t '/disk1/FJSVMJS/var/spool(/.*)?'
# /usr/sbin/semanage fcontext -a -t etc_t '/disk1/FJSVMJS/etc(/.*)?'
# /sbin/restorecon -R /disk1
```

*1:

This is required only if the Master Schedule Management function is enabled.

7) Unmount the shared disk.

Unmount the shared disk.

```
# umount /disk1 (*1)
```

*1:

The command line for Linux version is as follows.

```
# /bin/umount /disk1
```

For MC/ServiceGuard

The explanation in the following example assumes that the device of the shared disk is "/dev/vg01/lvol1" and the mount point of the shared disk is "/disk1".

1) Stop the daemon.

Stop the Systemwalker Operation Manager daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

For environments that include both Systemwalker Operation Manager and Systemwalker Centric Manager, be sure to specify the "-s" option with the *poperationmgr* command.

2) Move resources from the active node to the shared disk.

Mount the shared disk and move resources from the active node to the shared disk.

1. Mount the shared disk by using the *vgchange* command for HP-UX on the active node.

```
# vgchange -c y /dev/vg01
# vgchange -a e /dev/vg01
# mount /dev/vg01/lvol1 /disk1
```

2. Move the resources from the active node to the shared disk, and delete the symbolic links.

```
# mkdir -p /disk1/FJSVfwseo/JM (*1)

# mkdir -p /disk1/FHPjmcal
# chmod -R 755 /disk1/FHPjmcal
# mv /opt/FHPjmcal/post /disk1/FHPjmcal/post

# mkdir -p /disk1/FHPJOBSCH
# chmod -R 755 /disk1/FHPJOBSCH
# mv /opt/FHPJOBSCH/db/* /disk1/FHPJOBSCH
# rm -r /opt/FHPJOBSCH/db

# mkdir -p /disk1/FHPMJS/var/spool
# chmod -R 755 /disk1/FHPMJS
# mv /opt/FHPMJS/var/spool/mjes /disk1/FHPMJS/var/spool/mjes
# rm /var/spool/mjes

# mkdir -p /disk1/FHPMJS/etc
# chmod -R 755 /disk1/FHPMJS
# mv /opt/FHPMJS/etc/mjes /disk1/FHPMJS/etc/mjes
# rm /etc/mjes

# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/* /disk1/FJSVstem (*2)
# rm -r /var/opt/FJSVstem (*2)
```

*1

For security information, simply a directory is created on the shared disk. This information will be updated by the "2.7 Settings for Automatic Reflection."

*2

This is required only if the Master Schedule Management function is enabled.

3) Delete resources from the standby node.

Delete the resources from the standby node.

```
# rm -r /opt/FHPjmcal/post

# rm -r /opt/FHPJOBSCH/db

# rm -r /opt/FHPMJS/var/spool/mjes
# rm /var/spool/mjes

# rm -r /opt/FHPMJS/etc/mjes
# rm /etc/mjes

# rm -r /var/opt/FJSVstem (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

4) Create symbolic links to the relocated resources.

Create symbolic links on both the nodes (active and standby) so that any one of them can use the resources that have been relocated to the shared disk.

For N:1 active/standby configuration, the package control script is set up to create symbolic links when failover occurs, so symbolic links from the standby node do not need to be created here.

1. Create symbolic links on the active node.

```
# ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM

# ln -s /disk1/FHPjmcal/post /opt/FHPjmcal/post

# ln -s /disk1/FHPJOBSCH /opt/FHPJOBSCH/db

# ln -s /disk1/FHPMJS/var/spool/mjes /var/spool/mjes

# ln -s /disk1/FHPMJS/etc/mjes /etc/mjes

# ln -s /disk1/FJSVstem /var/opt/FJSVstem (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

2. Unmount the shared disk by using the *vgchange* command for HP-UX on the active node.

```
# umount /disk1
# vgchange -a n /dev/vg01
```

3. Mount the shared disk by using the vgchange command for HP-UX on the standby node.

```
# vgchange -a e /dev/vg01
# mount /dev/vg01/lvol1 /disk1
```

4. Create symbolic links on the standby node.

```
# ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
```

```
# ln -s /disk1/FHPjmcal/post /opt/FHPjmcal/post

# ln -s /disk1/FHPJOBSCH /opt/FHPJOBSCH/db

# ln -s /disk1/FHPMJS/var/spool/mjes /var/spool/mjes

# ln -s /disk1/FHPMJS/etc/mjes /etc/mjes

# ln -s /disk1/FJSVstem /var/opt/FJSVstem (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

5. Unmount the shared disk by using the vgchange command for HP-UX on the standby node.

```
# umount /disk1
# vgchange -a n /dev/vg01
```

For HACMP

The explanation in the following example assumes that the volume name of the shared disk is "datavg1" and the mount point of the shared disk is "/disk1".

1) Stop the daemon.

Stop the Systemwalker Operation Manager daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

For environments that include both Systemwalker Operation Manager and Systemwalker Centric Manager, be sure to specify the "-s" option with the *poperationmgr* command.

2) Move resources from the active node to the shared disk.

Mount the shared disk and move the resources from the active node to the shared disk.

1. Activate the volume by using the *varyonvg* command for AIX on the active node, and then mount the shared disk.

```
# varyonvg datavg1
# mount /disk1
```

2. Move the resources from the active node to the shared disk, and delete the symbolic links.

```
# mkdir -p /disk1/FJSVfwseo/JM (*1)
# chmod -R 755 /disk1/FJSVfwseo

# mkdir -p /disk1/FAIXjmcal
# chmod -R 755 /disk1/FAIXjmcal
# mv /opt/FAIXjmcal/post /disk1/FAIXjmcal/post

# mkdir -p /disk1/FAIXJOBSC
# chmod -R 755 /disk1/FAIXJOBSC
# mv /opt/FAIXJOBSC/db/* /disk1/FAIXJOBSC
# rm -r /opt/FAIXJOBSC/db

# mkdir -p /disk1/FAIXMJS/var/spool
# chmod -R 755 /disk1/FAIXMJS
# mv /opt/FAIXMJS/var/spool/mjes /disk1/FAIXMJS/var/spool/mjes
# rm /var/spool/mjes

# mkdir -p /disk1/FAIXMJS/etc
# chmod -R 755 /disk1/FAIXMJS
# mv /opt/FAIXMJS/etc/mjes /disk1/FAIXMJS/etc/mjes
# rm /etc/mjes
```

```
# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/* /disk1/FJSVstem (*2)
# rm -r /var/opt/FJSVstem (*2)
```

*1

For security information, simply a directory is created on the shared disk. This information will be updated by the "2.7 Settings for Automatic Reflection."

*2

This is required only if the Master Schedule Management function is enabled.

3) Delete resources from the standby node.

Delete the resources from the standby node.

```
# rm -r /opt/FAIXjmcal/post

# rm -r /opt/FAIXJOBSC/db

# rm -r /opt/FAIXMJS/var/spool/mjes
# rm /var/spool/mjes

# rm -r /opt/FAIXMJS/etc/mjes
# rm /etc/mjes

# rm -r /var/opt/FJSVstem (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

4) Create symbolic links to the relocated resources.

Create symbolic links on both the nodes (active and standby) so that any one of them can use the resources that have been relocated to the shared disk.

1. Create symbolic links on the active node.

```
# ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM

# ln -s /disk1/FAIXjmcal/post /opt/FAIXjmcal/post

# ln -s /disk1/FAIXJOBSC /opt/FAIXJOBSC/db

# ln -s /disk1/FAIXMJS/var/spool/mjes /var/spool/mjes

# ln -s /disk1/FAIXMJS/etc/mjes /etc/mjes

# ln -s /disk1/FJSVstem /var/opt/FJSVstem (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

2. Unmount the shared disk on the active node and deactivate the volume by using the varyoffvg command for AIX.

```
# umount /disk1
# varyoffvg datavg1
```

3. Activate the volume by using the varyonvg command for AIX on the standby node, and then mount the shared disk.

```
# varyonvg datavg1
# mount /disk1
```

4. Create symbolic links on the standby node.

```
# ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM

# ln -s /disk1/FAIXjmcal/post /opt/FAIXjmcal/post

# ln -s /disk1/FAIXJOBSC /opt/FAIXJOBSC/db

# ln -s /disk1/FAIXMJS/var/spool/mjes /var/spool/mjes

# ln -s /disk1/FAIXMJS/etc/mjes /etc/mjes

# ln -s /disk1/FJSVstem /var/opt/FJSVstem (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

5. Unmount the shared disk and deactivate the volume by using the varyoffvg command for AIX on the standby node.

```
# umount /disk1
# varyoffvg datavg1
```

2.6.2 Moving resources in the case of dual node mutual standby configuration

Resources to be moved

For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

For dual node mutual standby configuration, move the following resources to the shared disk.

a. The directory for calendar control information

```
/var/opt/FJSVjmcal/post/sysn
```

n: Subsystem number

b. The database directory for Jobscheduler

```
/var/opt/FJSVJOBSC/JOBDBn
```

n: Subsystem number

c. The spool directory for Job Execution Control

```
/var/opt/FJSVMJS/var/spool/mjes/mjesn
```

n: Subsystem number

d. The operation information directory for Job Execution Control

```
/etc/opt/FJSVMJS/etc/mjes/mjesn
```

n: Subsystem number

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem/stemDBn
```

n: Subsystem number

For MC/ServiceGuard

For dual node mutual standby configuration, move the following resources to the shared disk.

a. The directory for calendar control information

```
/opt/FHPjmcal/post/sysn
```

n: Subsystem number

b. The database directory for Jobscheduler

```
/opt/FHPJOBSCH/db/JOBDBn
```

n: Subsystem number

c. The spool directory for Job Execution Control

```
/opt/FHPMJS/var/spool/mjes/mjesn
```

n: Subsystem number

d. The operation information directory for Job Execution Control

```
/opt/FHPMJS/etc/mjes/mjesn
```

n: Subsystem number

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem/stemDBn
```

n: Subsystem number

For HACMP

For dual node mutual standby configuration, move the following resources to the shared disk.

a. The directory for calendar control information

```
/opt/FAIXjmcal/post/sysn
```

n: Subsystem number

b. The database directory for Jobscheduler

```
/opt/FAIXJOBSC/db/JOBDBn
```

n: Subsystem number

c. The spool directory for Job Execution Control

```
/opt/FAIXMJS/var/spool/mjes/mjesn
```

n: Subsystem number

d. The operation information directory for Job Execution Control

```
/opt/FAIXMJS/etc/mjes/mjesn
```

n: Subsystem number

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem/stemDBn
```

n: Subsystem number

Relocation procedure

For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

The explanation in the following example assumes that Subsystem 1 and Subsystem 2 are running on the cluster system, and the mount points of the shared disks are set to "/disk1" and "/disk2". The command line provided here as a sample is for Solaris version.

1) Stop the daemon.

Stop the Systemwalker Operation Manager daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

For environments that include both Systemwalker Operation Manager and Systemwalker Centric Manager, be sure to specify the "-s" option with the *poperationmgr* command.

2) Mount the shared disks.

1. Mount the first shared disk.

   ```
   # mount /disk1 (*1)
   ```

   *1

   The command line for Linux version is as follows. (In this example, the device is "/dev/sdb1".)

   ```
   # /bin/mount /dev/sdb1 /disk1
   ```

2. Mount the second shared disk.

   ```
   # mount /disk2 (*1)
   ```

   *1

   The command line for Linux version is as follows. (In this example, the device is "/dev/sdb2".)

   ```
   # /bin/mount /dev/sdb2 /disk2
   ```

3) Move resources from the active node to the shared disk.

Move the resources from the active node to the shared disks.

```
# mkdir -p /disk1/FJSVfwseo/JM1 (*1)
# chmod -R 755 /disk1/FJSVfwseo
# mkdir -p /disk2/FJSVfwseo/JM2 (*1)
# chmod -R 755 /disk2/FJSVfwseo

# mkdir -p /disk1/FJSVjmcal/post
# chmod -R 755 /disk1/FJSVjmcal
# mv /var/opt/FJSVjmcal/post/sys1 /disk1/FJSVjmcal/post/sys1
# mkdir -p /disk2/FJSVjmcal/post
# chmod -R 755 /disk2/FJSVjmcal
# mv /var/opt/FJSVjmcal/post/sys2 /disk2/FJSVjmcal/post/sys2

# mkdir -p /disk1/FJSVJOBSC
# chmod -R 755 /disk1/FJSVJOBSC
# mv /var/opt/FJSVJOBSC/JOBDB1 /disk1/FJSVJOBSC/JOBDB1
# mkdir -p /disk2/FJSVJOBSC
# chmod -R 755 /disk2/FJSVJOBSC
# mv /var/opt/FJSVJOBSC/JOBDB2 /disk2/FJSVJOBSC/JOBDB2

# mkdir -p /disk1/FJSVMJS/var/spool
# chmod -R 755 /disk1/FJSVMJS
# mv /var/opt/FJSVMJS/var/spool/mjes/mjes1 /disk1/FJSVMJS/var/spool/mjes1
# mkdir -p /disk2/FJSVMJS/var/spool
# chmod -R 755 /disk2/FJSVMJS
# mv /var/opt/FJSVMJS/var/spool/mjes/mjes2 /disk2/FJSVMJS/var/spool/mjes2
```

```
# mkdir -p /disk1/FJSVMJS/etc
# chmod -R 755 /disk1/FJSVMJS
# mv /etc/opt/FJSVMJS/etc/mjes/mjes1 /disk1/FJSVMJS/etc/mjes1
# mkdir -p /disk2/FJSVMJS/etc
# chmod -R 755 /disk2/FJSVMJS
# mv /etc/opt/FJSVMJS/etc/mjes/mjes2 /disk2/FJSVMJS/etc/mjes2

# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB1 /disk1/FJSVstem/stemDB1 (*2)
# mkdir -p /disk2/FJSVstem (*2)
# chmod -R 755 /disk2/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB2 /disk2/FJSVstem/stemDB2 (*2)
```

*1

For security information, simply a directory is created on the shared disk. This information will be updated by the "2.7 Settings for Automatic Reflection."

*2

This is required only if the Master Schedule Management function is enabled.

4) Delete resources from the standby node.

Delete the resources from the standby node.

```
# rm -r /var/opt/FJSVjmcal/post/sys1
# rm -r /var/opt/FJSVjmcal/post/sys2

# rm -r /var/opt/FJSVJOBSC/JOBDB1
# rm -r /var/opt/FJSVJOBSC/JOBDB2

# rm -r /var/opt/FJSVMJS/var/spool/mjes/mjes1
# rm -r /var/opt/FJSVMJS/var/spool/mjes/mjes2

# rm -r /etc/opt/FJSVMJS/etc/mjes/mjes1
# rm -r /etc/opt/FJSVMJS/etc/mjes/mjes2

# rm -r /var/opt/FJSVstem/stemDB1 (*1)
# rm -r /var/opt/FJSVstem/stemDB2 (*1)
```

*1

This is required only if the Master Schedule Management function is enabled and the target directory exists.

5) Create symbolic links to the relocated resources.

Create symbolic links on all the nodes (active and standby) so that any one of them can use the resources that have been relocated to the shared disks.

```
# ln -s /disk1/FJSVfwseo/JM1 /var/opt/FJSVfwseo/JM1
# ln -s /disk2/FJSVfwseo/JM2 /var/opt/FJSVfwseo/JM2

# ln -s /disk1/FJSVjmcal/post/sys1 /var/opt/FJSVjmcal/post/sys1
# ln -s /disk2/FJSVjmcal/post/sys2 /var/opt/FJSVjmcal/post/sys2

# ln -s /disk1/FJSVJOBSC/JOBDB1 /var/opt/FJSVJOBSC/JOBDB1
# ln -s /disk2/FJSVJOBSC/JOBDB2 /var/opt/FJSVJOBSC/JOBDB2

# ln -s /disk1/FJSVMJS/var/spool/mjes1 /var/spool/mjes/mjes1
# ln -s /disk2/FJSVMJS/var/spool/mjes2 /var/spool/mjes/mjes2

# ln -s /disk1/FJSVMJS/etc/mjes1 /etc/mjes/mjes1
# ln -s /disk2/FJSVMJS/etc/mjes2 /etc/mjes/mjes2
```

```
# ln -s /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
# ln -s /disk2/FJSVstem/stemDB2 /var/opt/FJSVstem/stemDB2 (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

6) Configure settings for SELinux.

This must be done only in Linux environments where SELinux is enabled. Otherwise, it is not necessary.

Execute the following commands in order to set the SELinux security policies on the relocated resources. They must be executed on each node with the shared disk mounted.

```
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVfwseo/JM1(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk2/FJSVfwseo/JM2(/.*)?'

# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVjmcal(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk2/FJSVjmcal(/.*)?'

# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVJOBSC(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk2/FJSVJOBSC(/.*)?'

# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVstem(/.*)?' (*1)
# /usr/sbin/semanage fcontext -a -t var_t '/disk2/FJSVstem(/.*)?' (*1)

# /usr/sbin/semanage fcontext -a -t sw_fjsvmjs_spool_t '/disk1/FJSVMJS/var/spool(/.*)?'
# /usr/sbin/semanage fcontext -a -t sw_fjsvmjs_spool_t '/disk2/FJSVMJS/var/spool(/.*)?'

# /usr/sbin/semanage fcontext -a -t etc_t '/disk1/FJSVMJS/etc(/.*)?'
# /usr/sbin/semanage fcontext -a -t etc_t '/disk2/FJSVMJS/etc(/.*)?'

# /sbin/restorecon -R /disk1
# /sbin/restorecon -R /disk2
```

*1:

This is required only if the Master Schedule Management function is enabled.

7) Unmount the shared disks.

1. Unmount the first shared disk.

   ```
   # umount /disk1 (*1)
   ```

   *1

   The command line for Linux version is as follows.

   ```
   # /bin/umount /disk1
   ```

2. Unmount the second shared disk.

   ```
   # umount /disk2 (*1)
   ```

   *1

   The command line for Linux version is as follows.

   ```
   # /bin/umount /disk2
   ```

For MC/ServiceGuard

The explanation in the following example assumes that the devices of shared disks are "/dev/vg01/lvol1" and "/dev/vg02/lvol1" and the mount points of shared disks are "/disk1" and "/disk2".

1) Stop the daemon.

Stop the Systemwalker Operation Manager daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

For environments that include both Systemwalker Operation Manager and Systemwalker Centric Manager, be sure to specify the "-s" option with the *poperationmgr* command.

2) Move resources from the active node to the shared disks.

Mount the shared disks and move resources from the active node to the shared disks.

1. Mount the shared disks by using the vgchange command for HP-UX on the active node.

```
# vgchange -c y /dev/vg01
# vgchange -a e /dev/vg01
# mount /dev/vg01/lvol1 /disk1
# vgchange -c y /dev/vg02
# vgchange -a e /dev/vg02
# mount /dev/vg02/lvol1 /disk2
```

2. Move the resources from the active node to the shared disks.

```
# mkdir -p /disk1/FJSVfwseo/JM1 (*1)
# chmod -R 755 /disk1/FJSVfwseo
# mkdir -p /disk2/FJSVfwseo/JM2 (*1)
# chmod -R 755 /disk2/FJSVfwseo

# mkdir -p /disk1/FHPjmcal/post
# chmod -R 755 /disk1/FHPjmcal
# mv /opt/FHPjmcal/post/sys1 /disk1/FHPjmcal/post/sys1
# mkdir -p /disk2/FHPjmcal/post
# chmod -R 755 /disk2/FHPjmcal
# mv /opt/FHPjmcal/post/sys2 /disk2/FHPjmcal/post/sys2

# mkdir -p /disk1/FHPJOBSCH
# chmod -R 755 /disk1/FHPJOBSCH
# mv /opt/FHPJOBSCH/db/JOBDB1 /disk1/FHPJOBSCH/JOBDB1
# mkdir -p /disk2/FHPJOBSCH
# chmod -R 755 /disk2/FHPJOBSCH
# mv /opt/FHPJOBSCH/db/JOBDB2 /disk2/FHPJOBSCH/JOBDB2

# mkdir -p /disk1/FHPMJS/var/spool
# chmod -R 755 /disk1/FHPMJS
# mv /opt/FHPMJS/var/spool/mjes/mjes1 /disk1/FHPMJS/var/spool/mjes1
# mkdir -p /disk2/FHPMJS/var/spool
# chmod -R 755 /disk2/FHPMJS
# mv /opt/FHPMJS/var/spool/mjes/mjes2 /disk2/FHPMJS/var/spool/mjes2

# mkdir -p /disk1/FHPMJS/etc
# chmod -R 755 /disk1/FHPMJS
# mv /opt/FHPMJS/etc/mjes/mjes1 /disk1/FHPMJS/etc/mjes1
# mkdir -p /disk2/FHPMJS/etc
# chmod -R 755 /disk2/FHPMJS
# mv /opt/FHPMJS/etc/mjes/mjes2 /disk2/FHPMJS/etc/mjes2

# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB1 /disk1/FJSVstem/stemDB1 (*2)
# mkdir -p /disk2/FJSVstem (*2)
# chmod -R 755 /disk2/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB2 /disk2/FJSVstem/stemDB2 (*2)
```

*1

For security information, simply a directory is created on the shared disk. This information will be updated by the "2.7 Settings for Automatic Reflection."

*2

This is required only if the Master Schedule Management function is enabled.

3) Delete resources from the standby node.

Delete the resources from the standby node.

```
# rm -r /opt/FHPjmcal/post/sys1
# rm -r /opt/FHPjmcal/post/sys2

# rm -r /opt/FHPJOBSCH/db/JOBDB1
# rm -r /opt/FHPJOBSCH/db/JOBDB2

# rm -r /opt/FHPMJS/var/spool/mjes/mjes1
# rm -r /opt/FHPMJS/var/spool/mjes/mjes2

# rm -r /opt/FHPMJS/etc/mjes/mjes1
# rm -r /opt/FHPMJS/etc/mjes/mjes2

# rm -r /var/opt/FJSVstem/stemDB1 (*1)
# rm -r /var/opt/FJSVstem/stemDB2 (*1)
```

*1

This is required only if the Master Schedule Management function is enabled and the target directory exists.

4) Create symbolic links to the relocated resources.

Create symbolic links on all the nodes (active and standby) so that any one of them can use the resources that have been relocated to the shared disks.

The following example assumes that "/disk1" and "/disk2" are the mount points of the shared disks.

1. Create symbolic links on the active node.

```
# ln -s /disk1/FJSVfwseo/JM1 /var/opt/FJSVfwseo/JM1
# ln -s /disk2/FJSVfwseo/JM2 /var/opt/FJSVfwseo/JM2

# ln -s /disk1/FHPjmcal/post/sys1 /opt/FHPjmcal/post/sys1
# ln -s /disk2/FHPjmcal/post/sys2 /opt/FHPjmcal/post/sys2

# ln -s /disk1/FHPJOBSCH/JOBDB1 /opt/FHPJOBSCH/db/JOBDB1
# ln -s /disk2/FHPJOBSCH/JOBDB2 /opt/FHPJOBSCH/db/JOBDB2

# ln -s /disk1/FHPMJS/var/spool/mjes1 /var/spool/mjes/mjes1
# ln -s /disk2/FHPMJS/var/spool/mjes2 /var/spool/mjes/mjes2

# ln -s /disk1/FHPMJS/etc/mjes1 /etc/mjes/mjes1
# ln -s /disk2/FHPMJS/etc/mjes2 /etc/mjes/mjes2

# ln -s /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
# ln -s /disk2/FJSVstem/stemDB2 /var/opt/FJSVstem/stemDB2 (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

2. Unmount the shared disks by using the vgchange command for HP-UX on the active node.

```
# umount /disk1
# vgchange -a n /dev/vg01
```

```
# umount /disk2
# vgchange -a n /dev/vg02
```

3. Mount the shared disks by using the vgchange command for HP-UX on the standby node.

```
# vgchange -a e /dev/vg01
# mount /dev/vg01/lvol1 /disk1
# vgchange -a e /dev/vg02
# mount /dev/vg02/lvol1 /disk2
```

4. Create symbolic links on the standby node.

```
# ln -s /disk1/FJSVfwseo/JM1 /var/opt/FJSVfwseo/JM1
# ln -s /disk2/FJSVfwseo/JM2 /var/opt/FJSVfwseo/JM2

# ln -s /disk1/FHPjmcal/post/sys1 /opt/FHPjmcal/post/sys1
# ln -s /disk2/FHPjmcal/post/sys2 /opt/FHPjmcal/post/sys2

# ln -s /disk1/FHPJOBSCH/JOBDB1 /opt/FHPJOBSCH/db/JOBDB1
# ln -s /disk2/FHPJOBSCH/JOBDB2 /opt/FHPJOBSCH/db/JOBDB2

# ln -s /disk1/FHPMJS/var/spool/mjes1 /var/spool/mjes/mjes1
# ln -s /disk2/FHPMJS/var/spool/mjes2 /var/spool/mjes/mjes2

# ln -s /disk1/FHPMJS/etc/mjes1 /etc/mjes/mjes1
# ln -s /disk2/FHPMJS/etc/mjes2 /etc/mjes/mjes2

# ln -s /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
# ln -s /disk2/FJSVstem/stemDB2 /var/opt/FJSVstem/stemDB2 (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

5. Unmount the shared disk by using the vgchange command for HP-UX on the standby node.

```
# umount /disk1
# vgchange -a n /dev/vg01
# umount /disk2
# vgchange -a n /dev/vg02
```

For HACMP

The explanation in the following example assumes that volume names of the shared disks are "datavg1" and "datavg2", and the mount points of the shared disks are "/disk1" and "/disk2".

1) Stop the daemon.

Stop the Systemwalker Operation Manager daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

For environments that include both Systemwalker Operation Manager and Systemwalker Centric Manager, be sure to specify the "-s" option with the *poperationmgr* command.

2) Move resources from the active node to the shared disks.

Mount the shared disks and move resources from the active node to the shared disks.

1. Activate the volumes by using the *varyonvg* command for AIX on the active node, and then mount the shared disks.

```
# varyonvg datavg1
# mount /disk1
# varyonvg datavg2
# mount /disk2
```

2. Move the resources from the active node to the shared disks.

```
# mkdir -p /disk1/FJSVfwseo/JM1 (*1)
# chmod -R 755 /disk1/FJSVfwseo
# mkdir -p /disk2/FJSVfwseo/JM2 (*1)
# chmod -R 755 /disk2/FJSVfwseo

# mkdir -p /disk1/FAIXjmcal/post
# chmod -R 755 /disk1/FAIXjmcal
# mv /opt/FAIXjmcal/post/sys1 /disk1/FAIXjmcal/post/sys1
# mkdir -p /disk2/FAIXjmcal/post
# chmod -R 755 /disk2/FAIXjmcal
# mv /opt/FAIXjmcal/post/sys2 /disk2/FAIXjmcal/post/sys2

# mkdir -p /disk1/FAIXJOBSC
# chmod -R 755 /disk1/FAIXJOBSC
# mv /opt/FAIXJOBSC/db/JOBDB1 /disk1/FAIXJOBSC/JOBDB1
# mkdir -p /disk2/FAIXJOBSC
# chmod -R 755 /disk2/FAIXJOBSC
# mv /opt/FAIXJOBSC/db/JOBDB2 /disk2/FAIXJOBSC/JOBDB2

# mkdir -p /disk1/FAIXMJS/var/spool
# chmod -R 755 /disk1/FAIXMJS
# mv /opt/FAIXMJS/var/spool/mjes/mjes1 /disk1/FAIXMJS/var/spool/mjes1
# mkdir -p /disk2/FAIXMJS/var/spool
# chmod -R 755 /disk2/FAIXMJS
# mv /opt/FAIXMJS/var/spool/mjes/mjes2 /disk2/FAIXMJS/var/spool/mjes2

# mkdir -p /disk1/FAIXMJS/etc
# chmod -R 755 /disk1/FAIXMJS
# mv /opt/FAIXMJS/etc/mjes/mjes1 /disk1/FAIXMJS/etc/mjes1
# mkdir -p /disk2/FAIXMJS/etc
# chmod -R 755 /disk2/FAIXMJS
# mv /opt/FAIXMJS/etc/mjes/mjes2 /disk2/FAIXMJS/etc/mjes2

# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB1 /disk1/FJSVstem/stemDB1 (*2)
# mkdir -p /disk2/FJSVstem (*2)
# chmod -R 755 /disk2/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB2 /disk2/FJSVstem/stemDB2 (*2)
```

*1

For security information, simply a directory is created on the shared disk. This information will be updated by the "2.7 Settings for Automatic Reflection."

*2

This is required only if the Master Schedule Management function is enabled.

3) Delete resources from the standby node.

Delete the resources from the standby node.

```
# rm -r /opt/FAIXjmcal/post/sys1
# rm -r /opt/FAIXjmcal/post/sys2

# rm -r /opt/FAIXJOBSC/db/JOBDB1
# rm -r /opt/FAIXJOBSC/db/JOBDB2

# rm -r /opt/FAIXMJS/var/spool/mjes/mjes1
# rm -r /opt/FAIXMJS/var/spool/mjes/mjes2

# rm -r /opt/FAIXMJS/etc/mjes/mjes1
```

```
# rm -r /opt/FAIXMJS/etc/mjes/mjes2

# rm -r /var/opt/FJSVstem/stemDB1 (*1)
# rm -r /var/opt/FJSVstem/stemDB2 (*1)
```

*1

This is required only if the Master Schedule Management function is enabled and the target directory exists.

4) Create symbolic links to the relocated resources.

Create symbolic links on all the nodes (active and standby) so that any one of them can use the resources that have been relocated to the shared disks.

The following example assumes that "/disk1" and "/disk2" are the mount points of the shared disks.

1. Create symbolic links on the active node.

```
# ln -s /disk1/FJSVfwseo/JM1 /var/opt/FJSVfwseo/JM1
# ln -s /disk2/FJSVfwseo/JM2 /var/opt/FJSVfwseo/JM2

# ln -s /disk1/FAIXjmcal/post/sys1 /opt/FAIXjmcal/post/sys1
# ln -s /disk2/FAIXjmcal/post/sys2 /opt/FAIXjmcal/post/sys2

# ln -s /disk1/FAIXJOBSC/JOBDB1 /opt/FAIXJOBSC/db/JOBDB1
# ln -s /disk2/FAIXJOBSC/JOBDB2 /opt/FAIXJOBSC/db/JOBDB2

# ln -s /disk1/FAIXMJS/var/spool/mjes1 /var/spool/mjes/mjes1
# ln -s /disk2/FAIXMJS/var/spool/mjes2 /var/spool/mjes/mjes2

# ln -s /disk1/FAIXMJS/etc/mjes1 /etc/mjes/mjes1
# ln -s /disk2/FAIXMJS/etc/mjes2 /etc/mjes/mjes2

# ln -s /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
# ln -s /disk2/FJSVstem/stemDB2 /var/opt/FJSVstem/stemDB2 (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

2. Unmount the shared disks on the active node and deactivate the volumes by using the *varyoffvg* command for AIX.

```
# umount /disk1
# varyoffvg datavg1
# umount /disk2
# varyoffvg datavg2
```

3. Activate the volumes by using the varyonvg command for AIX on the standby node, and then mount the shared disks.

```
# varyonvg datavg1
# mount /disk1
# varyonvg datavg2
# mount /disk2
```

4. Create symbolic links on the standby node.

```
# ln -s /disk1/FJSVfwseo/JM1 /var/opt/FJSVfwseo/JM1
# ln -s /disk2/FJSVfwseo/JM2 /var/opt/FJSVfwseo/JM2

# ln -s /disk1/FAIXjmcal/post/sys1 /opt/FAIXjmcal/post/sys1
# ln -s /disk2/FAIXjmcal/post/sys2 /opt/FAIXjmcal/post/sys2

# ln -s /disk1/FAIXJOBSC/JOBDB1 /opt/FAIXJOBSC/db/JOBDB1
# ln -s /disk2/FAIXJOBSC/JOBDB2 /opt/FAIXJOBSC/db/JOBDB2

# ln -s /disk1/FAIXMJS/var/spool/mjes1 /var/spool/mjes/mjes1
```

```
# ln -s /disk2/FAIXMJS/var/spool/mjes2 /var/spool/mjes/mjes2

# ln -s /disk1/FAIXMJS/etc/mjes1 /etc/mjes/mjes1
# ln -s /disk2/FAIXMJS/etc/mjes2 /etc/mjes/mjes2

# ln -s /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
# ln -s /disk2/FJSVstem/stemDB2 /var/opt/FJSVstem/stemDB2 (*1)
```

*1

This is required only if the Master Schedule Management function is enabled.

5. Unmount the shared disk on the standby node and deactivate the volumes by using the varyoffvg command for AIX.

```
# umount /disk1
# varyoffvg datavg1
# umount /disk2
# varyoffvg datavg2
```

2.6.3 Moving resources in the case of 1:1 active/standby (with subsystems and partial cluster operation) configurations

Resources to be moved

In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), transfer the following resources of the subsystems to be used in cluster operation to a shared disk. Do not transfer the resources of subsystems that will not be used in cluster operation.

For PRIMECLUSTER (for Solaris or Linux version)

a. Directory for calendar control information:

```
/var/opt/FJSVjmcal/post/sysn
```

n: Subsystem number

b. Jobscheduler database directory:

```
/var/opt/FJSVJOBSC/JOBDBn
```

n: Subsystem number

c. Job Execution Control spool directory:

```
/var/opt/FJSVMJS/var/spool/mjes/mjesn
```

n: Subsystem number

d. Directory for Job Execution Control operation information:

```
/etc/opt/FJSVMJS/etc/mjes/mjesn
```

n: Subsystem number

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem/stemDBn
```

n: Subsystem number

For MC/ServiceGuard

a. Directory for calendar control information:

```
/opt/FHPjmcal/post/sysn
```

n: Subsystem number

b. Jobscheduler database directory:

```
/opt/FHPJOBSCH/db/JOBDBn
```

n: Subsystem number

c. Job Execution Control spool directory:

```
/opt/FHPMJS/var/spool/mjes/mjesn
```

n: Subsystem number

d. Directory for Job Execution Control operation information:

```
/opt/FHPMJS/etc/mjes/mjesn
```

n: Subsystem number

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem/stemDBn
```

n: Subsystem number

For HACMP

a. Directory for calendar control information:

```
/opt/FAIXjmcal/post/sysn
```

n: Subsystem number

b. Jobscheduler database directory:

```
/opt/FAIXJOBSC/db/JOBDBn
```

n: Subsystem number

c. Job Execution Control spool directory:

```
/opt/FAIXMJS/var/spool/mjes/mjesn
```

n: Subsystem number

d. Directory for Job Execution Control operation information:

```
/opt/FAIXMJS/etc/mjes/mjesn
```

n: Subsystem number

e. The database directory for Master Schedule Management (only if the Master Schedule Management function is enabled)

```
/var/opt/FJSVstem/stemDBn
```

n: Subsystem number

Migration procedure

For PRIMECLUSTER (for Solaris or Linux version)

This section explains the migration procedure using an example where Subsystem 1 is used in cluster operation and "/disk1" is designated as the mount point of the shared disk. The command line provided here as a sample is for the Solaris version.

1) Stop the daemon.

Stop the Systemwalker Operation Manager daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

If Systemwalker Operation Manager shares the environment with Systemwalker Centric Manager, always use the *poperationmgr* command with the *-s* option.

2) Mount the shared disk.

1. Mount the shared disk.

   ```
   # mount /disk1 (*1)
   ```

   *1

   The command line for Linux version is as follows. (In this example, the device is "/dev/sdb1".)

   ```
   # /bin/mount /dev/sdb1 /disk1
   ```

3) Move resources from the active node to the shared disk.

Move resources from the active node to the shared disk.

```
# mkdir -p /disk1/FJSVfwseo/JM1 (*1)
# chmod -R 755 /disk1/FJSVfwseo

# mkdir -p /disk1/FJSVjmcal/post
# chmod -R 755 /disk1/FJSVjmcal
# mv /var/opt/FJSVjmcal/post/sys1 /disk1/FJSVjmcal/post/sys1

# mkdir -p /disk1/FJSVJOBSC
# chmod -R 755 /disk1/FJSVJOBSC
# mv /var/opt/FJSVJOBSC/JOBDB1 /disk1/FJSVJOBSC/JOBDB1

# mkdir -p /disk1/FJSVMJS/var/spool
# chmod -R 755 /disk1/FJSVMJS
# mv /var/opt/FJSVMJS/var/spool/mjes/mjes1 /disk1/FJSVMJS/var/spool/mjes1

# mkdir -p /disk1/FJSVMJS/etc
# chmod -R 755 /disk1/FJSVMJS
# mv /etc/opt/FJSVMJS/etc/mjes/mjes1 /disk1/FJSVMJS/etc/mjes1

# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB1 /disk1/FJSVstem/stemDB1 (*2)
```

*1

For security information, only create directories on the shared disk at this stage. Security information is applied in "2.7 Settings for Automatic Reflection".

*2

This operation is performed only when the Master Schedule Management function is enabled.

4) Delete resources from the standby node.

Delete resources from the standby node.

```
# rm -r /var/opt/FJSVjmcal/post/sys1

# rm -r /var/opt/FJSVJOBSC/JOBDB1

# rm -r /var/opt/FJSVMJS/var/spool/mjes/mjes1

# rm -r /etc/opt/FJSVMJS/etc/mjes/mjes1
```

```
# rm -r /var/opt/FJSVstem/stemDB1 (*1)
```

*1

This operation is performed only when the Master Schedule Management function is enabled and the target directory exists.

5) Create symbolic links to the relocated resources.

Create symbolic links on the active and standby nodes so that the resources transferred to the shared disk can be accessed from both active and standby nodes.

```
# ln -s /disk1/FJSVfwseo/JM1 /var/opt/FJSVfwseo/JM1

# ln -s /disk1/FJSVjmcal/post/sys1 /var/opt/FJSVjmcal/post/sys1

# ln -s /disk1/FJSVJOBSC/JOBDB1 /var/opt/FJSVJOBSC/JOBDB1

# ln -s /disk1/FJSVMJS/var/spool/mjes1 /var/spool/mjes/mjes1

# ln -s /disk1/FJSVMJS/etc/mjes1 /etc/mjes/mjes1

# ln -s /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
```

*1

This operation is performed only when the Master Schedule Management function is enabled.

6) Configure settings for SELinux.

This must be done only in Linux environments where SELinux is enabled. Otherwise, it is not necessary.

Execute the following commands in order to set the SELinux security policies on the relocated resources. They must be executed on each node with the shared disk mounted.

```
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVfwseo/JM1(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVjmcal(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVJOBSC(/.*)?'
# /usr/sbin/semanage fcontext -a -t var_t '/disk1/FJSVstem(/.*)?' (*1)
# /usr/sbin/semanage fcontext -a -t sw_fjsvmjs_spool_t '/disk1/FJSVMJS/var/spool(/.*)?'
# /usr/sbin/semanage fcontext -a -t etc_t '/disk1/FJSVMJS/etc(/.*)?'
# /sbin/restorecon -R /disk1
```

*1:

This operation is performed only when the Master Schedule Management function is enabled.

7) Unmount the shared disk.

1. Unmount the shared disk.

   ```
   # umount /disk1(*1)
   ```

   *1

   The command line for Linux version is as follows:

   ```
   # /bin/umount /disk1
   ```

For MC/ServiceGuard

In the examples that explain the migration procedure shown below, Subsystem 1 runs as a cluster system, the shared disk device is "/dev/vg01/lvol1", and the mount point to the shared disk is "/disk1".

1) Stop the daemon

Stop the Systemwalker Operation daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

In the case of mixed environments with Systemwalker Centric Manager, the -s option must be specified for the poperationmgr command.

2) Mount the shared disk

1. Mount the shared disk.

```
# vgchange -c y /dev/vg01
# vgchange -a e /dev/vg01
# mount /dev/vg01/lvol1 /disk1
```

3) Migrate the active node resources to the shared disk

Migrate the active node resources to the shared disk.

```
# mkdir -p /disk1/FJSVfwseo/JM1 (*1)
# chmod -R 755 /disk1/FJSVfwseo

# mkdir -p /disk1/FHPjmcal/post
# chmod -R 755 /disk1/FHPjmcal
# mv /opt/FHPjmcal/post/sys1 /disk1/FHPjmcal/post/sys1

# mkdir -p /disk1/FHPJOBSCH
# chmod -R 755 /disk1/FHPJOBSCH
# mv /opt/FHPJOBSCH/db/JOBDB1 /disk1/FHPJOBSCH/JOBDB1

# mkdir -p /disk1/FHPMJS/spool
# chmod -R 755 /disk1/FHPMJS
# mv /opt/FHPMJS/var/spool/mjes/mjes1 /disk1/FHPMJS/spool/mjes1

# mkdir -p /disk1/FHPMJS/etc
# chmod -R 755 /disk1/FHPMJS
# mv /opt/FHPMJS/etc/mjes/mjes1 /disk1/FHPMJS/etc/mjes1

# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB1 /disk1/FJSVstem/stemDB1 (*2)
```

*1

For security information, only create directories on the shared disk at this stage. Security information is applied in "2.7 Settings for Automatic Reflection".

*2

This operation is performed only when the Master Schedule Management function is enabled.

4) Delete the standby node resources

Delete the standby node resources.

```
# rm -r /opt/FHPjmcal/post/sys1

# rm -r /opt/FHPJOBSCH/db/JOBDB1

# rm -r /opt/FHPMJS/var/spool/mjes/mjes1

# rm -r /opt/FHPMJS/etc/mjes/mjes1

# rm -r /var/opt/FJSVstem/stemDB1 (*1)
```

*1

This operation is performed only when the Master Schedule Management function is enabled and the target directory exists.

5) Create the symbolic links to the resources that were migrated

So that the resources that were migrated to the shared disk can be used on both the active and the standby nodes, create the symbolic links on each node.

```
# ln -s /disk1/FJSVfwseo/JM1 /var/opt/FJSVfwseo/JM1

# ln -s /disk1/FHPjmcal/post/sys1 /opt/FHPjmcal/post/sys1

# ln -s /disk1/FHPJOBSCH/JOBDB1 /opt/FHPJOBSCH/db/JOBDB1

# ln -s /disk1/FHPMJS/spool/mjes1 /var/spool/mjes/mjes1

# ln -s /disk1/FHPMJS/etc/mjes1 /etc/mjes/mjes1

# ln -s /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
```

*1

This operation is performed only when the Master Schedule Management function is enabled.

6) Unmount the shared disk

1. Unmount the shared disk.

```
# umount /disk1
# vgchange -a n /dev/vg01
```

For HACMP

In the examples that explain the migration procedure shown below, Subsystem 1 runs as a cluster system, the shared disk volume name is "datavg1", and the mount point to the shared disk is "/disk1".

1) Stop the daemon

Stop the Systemwalker Operation daemon.

```
# /opt/systemwalker/bin/poperationmgr -s
```

In the case of mixed environments with Systemwalker Centric Manager, the -s option must be specified for the poperationmgr command.

2) Mount the shared disk

1. Mount the shared disk.

```
# varyonvg datavg1
# mount /disk1
```

3) Migrate the active node resources to the shared disk

Migrate the active node resources to the shared disk.

```
# mkdir -p /disk1/FJSVfwseo/JM1 (*1)
# chmod -R 755 /disk1/FJSVfwseo

# mkdir -p /disk1/FAIXjmcal/post
# chmod -R 755 /disk1/FAIXjmcal
# mv /opt/FAIXjmcal/post/sys1 /disk1/FAIXjmcal/post/sys1

# mkdir -p /disk1/FAIXJOBSC
# chmod -R 755 /disk1/FAIXJOBSC
# mv /opt/FAIXJOBSC/db/JOBDB1 /disk1/FAIXJOBSC/JOBDB1

# mkdir -p /disk1/FAIXMJS/spool
# chmod -R 755 /disk1/FAIXMJS
# mv /opt/FAIXMJS/var/spool/mjes/mjes1 /disk1/FAIXMJS/spool/mjes1

# mkdir -p /disk1/FAIXMJS/etc
# chmod -R 755 /disk1/FAIXMJS
```

```
# mv /opt/FAIXMJS/etc/mjes/mjes1 /disk1/FAIXMJS/etc/mjes1

# mkdir -p /disk1/FJSVstem (*2)
# chmod -R 755 /disk1/FJSVstem (*2)
# mv /var/opt/FJSVstem/stemDB1 /disk1/FJSVstem/stemDB1 (*2)
```

*1

For security information, only create directories on the shared disk at this stage. Security information is applied in "2.7 Settings for Automatic Reflection".

*2

This operation is performed only when the Master Schedule Management function is enabled.

4) Delete the standby node resources

Delete the standby node resources.

```
# rm -r /opt/FAIXjmcal/post/sys1

# rm -r /opt/FAIXJOBSC/db/JOBDB1

# rm -r /opt/FAIXMJS/var/spool/mjes/mjes1

# rm -r /opt/FAIXMJS/etc/mjes/mjes1

# rm -r /var/opt/FJSVstem/stemDB1 (*1)
```

*1)

This operation is performed only when the Master Schedule Management function is enabled and the target directory exists.

5) Create the symbolic links to the resources that were migrated

So that the resources that were migrated to the shared disk can be used on both the active and the standby nodes, create the symbolic links on each node.

```
# ln -s /disk1/FJSVfwseo/JM1 /var/opt/FJSVfwseo/JM1

# ln -s /disk1/FAIXjmcal/post/sys1 /opt/FAIXjmcal/post/sys1

# ln -s /disk1/FAIXJOBSC/JOBDB1 /opt/FAIXJOBSC/db/JOBDB1

# ln -s /disk1/FAIXMJS/spool/mjes1 /var/spool/mjes/mjes1

# ln -s /disk1/FAIXMJS/etc/mjes1 /etc/mjes/mjes1

# ln -s /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
```

*1)

This operation is performed only when the Master Schedule Management function is enabled.

6) Unmount the shared disk

1. Unmount the shared disk.

```
# umount /disk1
# varyoffvg datavg1
```

2.7 Settings for Automatic Reflection

Perform settings so that the following information can be automatically reflected on the active and standby nodes:

- Security information

- Calendar information
  - Day change time
  - Calendar holiday information
  - Schedule information, power schedule information and completion monitoring information for SYSTEM_CALENDAR
- Service/application startup information
  - Application startup information

These settings are not required on the execution server that configures the cluster system.

Settings for automatically reflecting security information

This section describes the procedure for automatically reflecting security information.

If many users should be given the access right, it takes time to switch clusters.

As a guide, if the access right is given to more than 100 users, confirm the time required to switch clusters by performing a verification.

If the switch takes more time than planned, consider one of the following measures.

- Create a group for the users with the access right.
- Delete unnecessary users.
- [Solaris] [Linux] Review (extend) the monitoring start time (60 seconds by default) in the monitoring script

  The following sample monitoring script is provided:
  - Solaris: /opt/FJSVJMCMN/etc/script/omgr_smonitor
  - Linux: /opt/FJSVJMCMN/etc/script/omgr_smonitor

Settings for 1:1 active/standby (without subsystems), 1:1 active/standby (with subsystems), N:1 active/standby, and cascading configurations

For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

Use the following procedure to perform settings on the active node. The command line provided here as a sample is for Solaris version.

1. Mount the shared disk. In the following example, the mount point of the shared disk is "/disk1".

   ```
   # mount /disk1 (*1)
   ```

   *1

   The command line for Linux version is as follows. (In this example, the device is "/dev/sdb1" and the shared disk is "/disk1".)

   ```
   # /bin/mount /dev/sdb1 /disk1
   ```

2. For N:1 active/standby configuration, create symbolic links to the shared disk.

   ```
   # rm /var/opt/FJSVfwseo/JM 2> /dev/null
   # ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
   ```

3. Set up cluster information by executing the following command:

   ```
   # mpaclcls
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

4. Reflect security information in files on the shared disk by executing the following command:

```
# mpcssave
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

5. Unmount the shared disk.

```
# umount /disk1 (*1)
```

   *1

   The command line for Linux version is as follows.

```
# /bin/umount /disk1
```

For N:1 active/standby configuration, perform steps 1 to 5 on each active node.

In this case, specify the shared disk of each active node.

For MC/ServiceGuard

Use the following procedure to perform settings on the active node.

1. Mount the shared disk. In the following example, the device is "/dev/vg01" and the mount point of the shared disk is "/disk1".

```
# vgchange -a e /dev/vg01
# mount /disk1
```

2. For N:1 active/standby configuration, create symbolic links to the shared disk.

```
# rm /var/opt/FJSVfwseo/JM 2> /dev/null
# ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
```

3. Set up cluster information by executing the following command:

```
# mpaclcls
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

4. Reflect security information in files on the shared disk by executing the following command:

```
# mpcssave
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

5. Unmount the shared disk.

```
# umount /disk1
# vgchange -a n /dev/vg01
```

For N:1 active/standby configuration, perform steps 1 to 5 on each active node.

In this case, specify the shared disk of each active node.

For HACMP

Use the following procedure to perform settings on the active node.

1. Mount the shared disk. In the following example, the volume name of the shared disk is "datavg1" and the mount point to the shared disk is "/disk1".

```
# varyonvg datavg1
# mount /disk1
```

2. Set up cluster information by executing the following command:

```
# mpaclcls
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

3. Reflect security information in files on the shared disk by executing the following command:

```
# mpcssave
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

4. Unmount the shared disk.

```
# umount /disk1
# varyoffvg datavg1
```

Settings for 1:1 active/standby configuration (with subsystems and partial cluster operation)

Note

These settings should only be applied to subsystems that will be registered with a cluster system.

For PRIMECLUSTER (for Solaris or Linux version)

This section explains the setup procedure using an example where Subsystem 1 is used in cluster operation and "/disk1" is designated as the mount point of the shared disk. The command line provided here as a sample is for the Solaris version.

Perform the following settings at the active node.

1. Mount the shared disk.

```
# mount /disk1(*1)
```

*1

The command line for Linux version is as follows. (In this example, the device is "/dev/sdb1" and the shared disk is "/disk1".)

```
# /bin/mount /dev/sdb1 /disk1
```

2. Execute the following command to set the cluster information:

```
# mpaclcls-s 1
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpaclcls command.

3. Execute the following command to apply the security information to files on the shared disk:

```
# mpcssave-s 1
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpcssave command.

4. Unmount the shared disk.

```
# umount /disk1(*1)
```

*1

The command line for Linux version is as follows:

```
# /bin/umount /disk1
```

For MC/ServiceGuard

In the examples that explain the migration procedure shown below, Subsystem 1 runs as a cluster system, the device is "/dev/vg01", and the mount point to the shared disk is "/disk1".

Use the following procedure to configure the settings on the active node.

1. Mount the shared disk.

```
# vgchange -a e /dev/vg01
# mount /disk1
```

2. Execute the following command to set the cluster information:

```
# mpaclcls -s 1
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpaclcls command.

3. Execute the following command to reflect the security information in the files on the shared disk:

```
# mpcssave -s 1
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpcssave command.

4. Unmount the shared disk.

```
# umount /disk1
# vgchange -a n /dev/vg01
```

For HACMP

In the examples that explain the settings procedure shown below, Subsystem 1 runs as a cluster system, the shared disk volume name is "datavg1", and the mount point to the shared disk is "/disk1".

Use the following procedure to configure the settings on the active node.

1. Mount the shared disk.

```
# varyonvg datavg1
# mount /disk1
```

2. Execute the following command to set the cluster information:

```
# mpaclcls -s 1
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpaclcls command.

3. Execute the following command to reflect the security information in the files on the shared disk:

```
# mpcssave -s 1
```

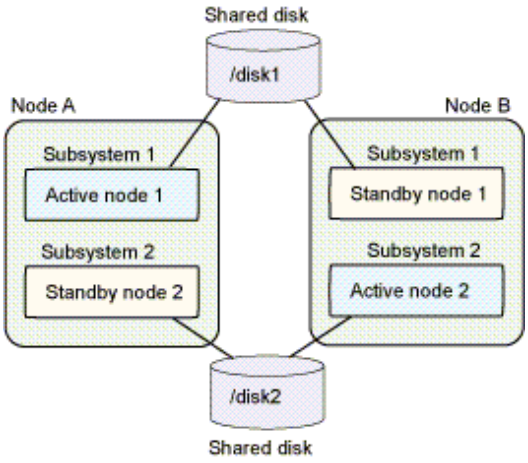
   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpcssave command.

4. Unmount the shared disk.

```
# umount /disk1
# varyoffvg datavg1
```

Settings for dual node mutual standby configuration

The explanation provided here as an example is based on the cluster configuration shown in the following figure:



For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

1. Mount the shared disk on Node A.

```
# mount /disk1 (*1)
```

*1

The command line for Linux version is as follows. (In this example, the device is "/dev/sdb1" the shared disk is "/disk1".)

```
# /bin/mount /dev/sdb1 /disk1
```

2. Set up cluster information by executing the following command on Node A.

```
# mpaclcls -s 1
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

3. Reflect security information in files on the shared disk by executing the following command on Node A.

```
# mpcssave -s 1
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

4. Unmount the shared disk on Node A.

```
# umount /disk1 (*1)
```

*1

The command line for Linux version is as follows.

```
# /bin/umount /disk1
```

5. Mount the shared disk on Node B.

```
# mount /disk2 (*1)
```

*1

The command line for Linux version is as follows. (In this example, the device is "/dev/sdb2" the shared disk is "/disk2".)

```
# /bin/mount /dev/sdb2 /disk2
```

6. Set up cluster information by executing the following command on Node B.

```
# mpaclcls -s 2
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

7. Reflect security information in files on the shared disk by executing the following command on Node B.

```
# mpcssave -s 2
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

8. Unmount the shared disk on Node B.

```
# umount /disk2 (*1)
```

*1

The command line for Linux version is as follows.

```
# /bin/umount /disk2
```

For MC/ServiceGuard

1. Mount the shared disk on Node A.

```
# vgchange -a e /dev/vg01
# mount /disk1
```

2. Set up cluster information by executing the following command on Node A.

```
# mpaclcls -s 1
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

3. Reflect security information in files on the shared disk by executing the following command on Node A.

```
# mpcssave -s 1
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

4. Unmount the shared disk on Node A.

```
# umount /disk1
# vgchange -a n /dev/vg01
```

5. Mount the shared disk on Node B.

```
# vgchange -a e /dev/vg02
# mount /disk2
```

6. Set up cluster information by executing the following command on Node B.

```
# mpaclcls -s 2
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

7. Reflect security information in files on the shared disk by executing the following command on Node B.

```
# mpcssave -s 2
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

8. Unmount the shared disk on Node B.

```
# umount /disk2
# vgchange -a n /dev/vg02
```

For HACMP

1. Mount the shared disk on Node A.

```
# varyonvg datavg1
# mount /disk1
```

2. Set up cluster information by executing the following command on Node A.

```
# mpaclcls -s 1
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

3. Reflect security information in files on the shared disk by executing the following command on Node A.

```
# mpcssave -s 1
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

4. Unmount the shared disk on Node A.

```
# umount /disk1
# varyoffvg datavg1
```

5. Mount the shared disk on Node B.

```
# varyonvg datavg2
# mount /disk2
```

6. Set up cluster information by executing the following command on Node B.

```
# mpaclcls -s 2
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command.

7. Reflect security information in files on the shared disk by executing the following command on Node B.

```
# mpcssave -s 2
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpcssave* command.

8. Unmount the shared disk on Node B.

```
# umount /disk2
# varyoffvg datavg2
```

Settings for automatically reflecting calendar information and service/application startup information

The procedure for automatically reflecting calendar information is described below.

1) Enable the automatic reflection function

Information

In the operation of registering Systemwalker Operation Manager with a cluster system, the automatic reflection function allows you to automatically synchronize the setting information of the calendar and the service application startup function between active node and standby node by using Systemwalker Operation Manager daemons.

Enable the automatic reflection function for calendar information and service/application startup information.

Enable the automatic reflection function for calendar information and service/application startup information by executing the *calsetcluster* command on all the nodes (active and standby) on the cluster system.

The following examples show how this command is executed.

- For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

  [Example where all information is automatically reflected with a 1:1 active/standby configuration]

```
# /opt/FJSVjmcal/bin/calsetcluster -type s
```

  [Example where all information is automatically reflected with a N:1 active/standby configuration]

```
# /opt/FJSVjmcal/bin/calsetcluster -type n
```

  [Example where all information is automatically reflected with a dual node mutual standby configuration]

```
# /opt/FJSVjmcal/bin/calsetcluster -type e
```

  [Example where all information is automatically reflected with a cascading configuration]

```
# /opt/FJSVjmcal/bin/calsetcluster -type c
```

- For MC/ServiceGuard

  [Example where all information is automatically reflected with a 1:1 active/standby configuration]

```
# /opt/FHPjmcal/bin/calsetcluster -type s
```

  [Example where all information is automatically reflected with a N:1 active/standby configuration]

```
# /opt/FHPjmcal/bin/calsetcluster -type n
```

  [Example where all information is automatically reflected with a dual node mutual standby configuration]

```
# /opt/FHPjmcal/bin/calsetcluster -type e
```

- For HACMP

  [Example where all information is automatically reflected with a 1:1 active/standby configuration]

```
# /opt/FAIXjmcal/bin/calsetcluster -type s
```

  [Example where all information is automatically reflected with a dual node mutual standby configuration]

```
# /opt/FAIXjmcal/bin/calsetcluster -type e
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the calsetcluster command.

2) Set up the automatic reflection hosts

Define the hosts where calendar information and service/application startup information will be reflected in the *calcphost.def* definition file on the active and standby nodes.

When performing automatic reflection using an IP address (hereinafter referred to as "specific IP address") different from the local host IP address (acquired by name resolution, for example from the hosts file) on the nodes that use multiple physical IP addresses, perform steps 3 to 5 on those nodes that use a "specific IP address". The following steps 3 to 5 are not required if using the local host IP address (acquired by name resolution, for example from the hosts file).

1. Open the *calcphost.def* definition file with a text editor such as vi.

   - For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

```
/var/opt/FJSVjmcal/etc/calcphost.def
```

   - For MC/ServiceGuard

```
/opt/FHPjmcal/etc/calcphost.def
```

   - For HACMP

```
/opt/FAIXjmcal/etc/calcphost.def
```

2. Enter the physical IP addresses or the host names corresponding to the physical IP addresses for all the nodes on the cluster system. Make sure that the definition files include the host name or physical IP address of the local node.

   Also, specify the same content for the *calcphost.def* definition file in all nodes that configure cluster systems.

   When setting a "specific IP address" as the automatic reflection destination without using a "main IP address", specify the physical IP address to be used as the "specific IP address" instead of specifying a host name.

3. Open the *myhostip.def* definition file with a text editor such as vi in nodes that will use a "specific IP address".

   - For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

     ```
     /var/opt/FJSVjmcal/etc/myhostip.def
     ```

   - For MC/ServiceGuard

     ```
     /opt/FHPjmcal/etc/myhostip.def
     ```

   - For HACMP

     ```
     /opt/FAIXjmcal/etc/myhostip.def
     ```

4. Enter the physical IP address that will be used as the "specific IP address".

   ```
   XXX.XXX.XXX.XXX
   ```

   ```
   Note: Only use alphanumeric characters, or "." and ":" as separators.
        Do not include characters other than those listed above such as leading or trailing blank
   spaces or newline codes.
   ```

5. Set access rights in the *myhostip.def* definition file.

   Set write permissions for administrators and read permissions for all users.

   ```
   # chmod 644 /var/opt/FJSVjmcal/etc/myhostip.def
   ```

To enable the contents of the definition file, start the calendar daemon.

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *calcphost.def* definition file.

Note

To apply automatic reflection to nodes that are already operating, first distribute policy to standardize the calendar information and service/application startup information on all the nodes. The information extracted by the policy is the information that will be subject to automatic reflection (either calendar information or service/application startup information or both).

Note

myhostip.def definition file

- The physical IP address specified in the *myhostip.def* definition file must exist in the calendar reflection destination host *calcphost.def* definition file. Also if the IP address does not exist or the specification format is invalid, automatic reflection of calendar information will be invalid.
- The *myhostip.def* definition file is not subject to backup and restore by Systemwalker Operation Manager. If necessary, manually perform backup or restore.

2.8 Registering Systemwalker Operation Manager with a Cluster System

The procedure to register Systemwalker Operation Manager with a cluster system is described in the following sections as the specific cluster information.

- To register Systemwalker Operation Manager with the PRIMECLUSTER system for Solaris version

  Refer to "4.1 Registering Systemwalker Operation Manager with the PRIMECLUSTER System ."

- To register Systemwalker Operation Manager with the PRIMECLUSTER system for Linux version

  Refer to "5.1 Registering Systemwalker Operation Manager with the PRIMECLUSTER System."

- To register Systemwalker Operation Manager with the Sun Cluster system

  Refer to "6.1 Registering Systemwalker Operation Manager with the Oracle Solaris Cluster System."

- To register Systemwalker Operation Manager with the MC/ServiceGuard system

  Refer to "7.1 Registering Systemwalker Operation Manager with the MC/ServiceGuard System."

- To register Systemwalker Operation Manager with the HACMP system

  Refer to "8.1 Registering Systemwalker Operation Manager with the HACMP System."

2.9 Standardizing the Information Managed by Each Node

For Systemwalker Operation Manager to run correctly on a cluster system, some of the information managed by each node must be standardized between the active and standby nodes. This section describes how to standardize the information on each node.

2.9.1 Standardizing operating system information

The information below must be the same for the active and standby nodes. If this information is changed on one node, make the same changes on the other node.

- User name, password, user group
- "hosts" file
- "services" file
- User resources and file systems required for batch jobs executed from Systemwalker Operation Manager, such as exit files, batch files, executable files, and data.

The changes take effect when the operating systems on both the active and standby nodes are restarted.

2.9.2 Standardizing the User Management Method

The user management method must be the same on each node in the cluster. In each user management method, the users that have been registered on each node must also be standardized.

User names, passwords, and user group names registered in the operating system must be the same on each node.

2.9.3 Standardizing Systemwalker Operation Manager environment definitions

Some of the information managed by Systemwalker Operation Manager is managed separately on each node. As a result, if changes are made to this information (listed below) on one node, these changes will not be reflected in the other nodes on the cluster system. Accordingly, if this definition information is modified on one node, copy this information to the other nodes so that the active and standby nodes will both have the same information.

Monitored host definition information

When to copy this information:

When changes are made to the monitored host information definitions in the environment settings

How to copy this information:

Use a command such as rcp to copy the following file to the other node:

- For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

  /var/opt/FJSVJMCMN/etc/monitor_hosts_ex

  /var/opt/FJSVJMCMN/etc/*.mhz

- For MC/ServiceGuard

  /opt/FHPJMCMN/db/etc/monitor_hosts_ex

  /opt/FHPJMCMN/db/etc/*.mhz

- For HACMP

  /opt/FAIXJMCMN/db/etc/monitor_hosts_ex

  /opt/FAIXJMCMN/db/etc/*.mhz

Password management book information/host information definitions

When to copy this information:

When users or groups are added or deleted with the password management command, or changes are made to their passwords

When the host information file is created or updated

How to copy this information:

Use a command such as rcp to copy the following file to the other node:

- For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

  /opt/FJSVsnjss/manage/*.*

- For MC/ServiceGuard

  /opt/FHPsnjss/manage/*.*

- For HACMP

  /opt/FAIXsnjss/manage/*.*

Refer to the *Systemwalker Operation Manager Installation Guide* for the "password management book" and "host information file" definitions of Task Link.

Job folder information

When to copy this information:

When job folders are added

When resources that include job folder information are restored

When policy distribution in the environment settings is performed

How to copy this information:

Use a command such as rcp to copy the directories defined as job folders and all of their contents to the other node:

Note:

There is no need to copy directories specified as job folders if they are on the shared disk.

Web Console definition information

When to copy this information:

When a setting is changed in the Web Console **Settings** tab.

How to copy this information:

Use a command such as rcp to copy the following files to the other node:

/var/opt/FJSVjmweb/data/*

Note

For N:1 active/standby configuration and dual node mutual standby configuration, the cluster system includes multiple active nodes. In such cases, note the following points:

- Standardize the monitored host definition information, password management book information, host information definitions, and job folder information for all the active nodes. Information definitions cannot differ between active nodes.

2.10 Failover Testing

Before testing a failover

Before testing a failover, terminate the following process by sending the signal "SIGTERM" to the process:

- Jobscheduler: tskwnsrv

How to identify the tskwnsrv process of a subsystem

When operating multiple subsystems, follow the procedure below to identify the process ID of the tskwnsrv process of the applicable subsystem in order to send it the signal SIGTERM.

1. Execute the ps command.

```
# ps aux | grep tskwnsrv
```

```
Note:
 The above example is for Linux. The command varies depending on the operating system.
   Solaris: Solaris 10): /usr/ucb/ps -auxww | grep tskwnsrv
            Solaris 11): /usr/bin/ps auxww | grep tskwnsrv
   HP-UX: ps -aex | grep tskwnsrv
   AIX: ps auxww | grep tskwnsrv
 The command varies depending on the machine environment. Refer to the relevant operating
system manual for information on commands.
```

2. From the listed processes, identify the ID of the tskwnsrv process of the applicable subsystem from the displayed result of the ps command.

Example of ps command output for subsystem 0

```
root 6944 0.0 0.0 155408 2484 ? S Aug 31 0:00 /opt/FJSVJOBSC/bin/tskwnsrv 229380 /var/opt/FJSVJOBSC 0 -1
```

In the example above, the process ID is "6944".

Example of ps command output for subsystem n (1 to 9) (the example below is for subsystem 1)

```
root 7250 0.0 0.0 153324 2452 ? S Aug 31 0:00 /opt/FJSVJOBSC/bin/tskwnsrv 327687 /var/opt/FJSVJOBSC/JOBDB1
1 -1
```

In the example above, the process ID is "7250".

A failover does not take place if the daemon has been stopped using the poperationmgr command.

This is because the daemons (Jobscheduler, Job Execution Control) to be registered in the cluster are excluded from the targets for automatic startup/stop using the soperationmgr/poperationmgr command when creating a cluster system.

Triggering a failover

There are many types of events that can trigger a failover. However, do not forcefully unmount the shared disk to start a failover.

Systemwalker Operation Manager references shared disk information in the process of stopping the Jobscheduler daemon. Therefore, after the shared disk is forcefully unmounted, the process of stopping the Jobscheduler daemon cannot be performed correctly. (The failover is completed.)

If a failover occurs because the shared disk is unmounted, send the SIGTERM signal to the tskwnsrv process on the node from which the shared disk has been unmounted.

Note that the SIGKILL signal should not be sent.

2.11 Settings for Making Jobs Restart

If the schedule server and the execution server are both running on the same cluster system, any jobs or job nets that are executing when failover occurs will be displayed as having terminated abnormally (execution suspended status: completion code =239) when the failover is completed.

Recovery processing (such as restarting) for these jobs and job nets whose execution was suspended when the failover occurred is not performed automatically. Check the abnormal termination, and take the appropriate action (restarting, etc.).

In order to continue operation after the failover occurred, create a job to perform the following processing, and then register this job as the job net to be executed when the server starts up. Be sure to set startup days for the job net to be registered. If not set the startup days, the job net will not start after the failover.

1. Output a job net status list with the *jobschprint -n* command. Redirect the output results to a file and save the file.
2. Read the file saved in step 1, and check whether the job net is in suspended status by checking whether the completion code is "239".
3. If the job net was suspended, restart it with the *jobschcontrol rerun* command.
4. Repeat steps 2 and 3 for each job net in the list output in step 1.

Sample source code that performs this processing can be found at the following location:

- For PRIMECLUSTER (for Solaris or Linux version), Oracle Solaris Cluster

```
/opt/FJSVJOBSC/sample/abendrerun.c
```

- For MC/ServiceGuard

```
/opt/FHPJOBSCH/sample/abendrerun.c
```

- For HACMP

```
/opt/FAIXJOBSC/sample/abendrerun.c
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *jobschprint* command and the *jobschcontrol* command.

2.12 Uninstalling Systemwalker Operation Manager from a Cluster System

The procedure to uninstall Systemwalker Operation Manager from a cluster system is described in the following sections as the specific cluster information.

- To uninstall Systemwalker Operation Manager from the PRIMECLUSTER system for Solaris version

  Refer to "4.2 Uninstalling Systemwalker Operation Manager from the PRIMECLUSTER System."

- To uninstall Systemwalker Operation Manager from the PRIMECLUSTER system for Linux version

  Refer to "5.2 Uninstalling Systemwalker Operation Manager from the PRIMECLUSTER System."

- To uninstall Systemwalker Operation Manager from the Sun Cluster system

  Refer to "6.2 Uninstalling Systemwalker Operation Manager from the Oracle Solaris Cluster System."

- To uninstall Systemwalker Operation Manager from the MC/ServiceGuard system

  Refer to "7.2 Uninstalling Systemwalker Operation Manager from the MC/ServiceGuard System."

- To uninstall Systemwalker Operation Manager from the HACMP system

  Refer to "8.2 Uninstalling Systemwalker Operation Manager from the HACMP System."

Chapter 3 Operation

This chapter describes the procedures and cautions for operating Systemwalker Operation Manager on cluster systems.

Execute the commands described in this chapter with system administrator (superuser) privileges.

3.1 Systemwalker Operation Manager Operations in Cluster Systems

This section describes the procedures and cautions for operating Systemwalker Operation Manager on cluster system.

3.1.1 Connecting to cluster system from clients

To use the following functions displayed in the **Job Selection** window of the **Systemwalker Operation Manager** window, the clients specify either the physical IP address or the logical IP address when connecting to the Systemwalker Operation Manager server running on a cluster system:

- Jobscheduler
- Job
- Queue

When using the following functions, how to specify the connection setting differs depending on whether the automatic reflection is enabled with the calsetcluster command.

- Registering, modifying or deleting calendars
- Automatically controlling the server power supply
- Defining service/application startup information

Automatic reflection is enabled with the calsetcluster command

Specify either the logical IP address of the cluster system or the host name corresponding to that logical IP address when starting the Systemwalker Operation Manager client.

Automatic reflection is disabled with the calsetcluster command

Specify the physical IP address of the respective machine when starting the Systemwalker Operation Manager client.

If the Master Schedule Management function is to be used, specify either the logical IP address for the cluster system or the host name corresponding to the logical IP address when connecting from either **Master Schedule Management** or **Master Schedule Management Environment Setup**.

When setting up an environment for Systemwalker Operation Manager, specify the physical IP address for the "server IP address" when the Systemwalker Operation Manager Environment Setup window starts up.

When using multi-server monitoring client, use the physical IP address to specify the server IP address at startup.

When using the Jobscheduler information print client, either the physical IP address or the logical IP address can be used to specify the server IP address at startup.

If failover occurs while the client is connected to the server, the connection to the server will be broken. Reconnect after the failover completes.

3.1.2 Settings for changing operation definitions

The following information for Systemwalker Operation Manager is managed separately on each node. As a result, changes made to this information on one node will not be reflected on other nodes on the cluster system. If this information is modified, copy the definition information from the node where the changes are made over to the other nodes.

Refer to "2.9.3 Standardizing Systemwalker Operation Manager environment definitions," for details on how and when to copy this information.

- Monitoring host definition information

- Password management list information/host information definitions
- Job folder information
- Web Console definition information

3.2 Starting and Stopping Daemons in Cluster Systems

Descriptions of starting and stopping of Systemwalker Operation Manager in cluster systems are provided in each cluster specific section as follows:

- Starting and stopping daemons in PRIMECLUSTER system for Solaris

  Refer to "4.3 Starting and Stopping Daemons in the PRIMECLUSTER System"

- Starting and stopping daemons in PRIMECLUSTER for Linux

  Refer to "5.3 Starting and Stopping Daemons in the PRIMECLUSTER System"

- Starting and stopping daemons in Oracle SolarisCluster system

  Refer to "6.3 Starting and Stopping Daemons in the Oracle Solaris Cluster System"

- Starting and stopping daemons in MC/ServiceGuard system

  Refer to "7.3 Starting and Stopping Daemons in the MC/ServiceGuard System"

- Starting and stopping daemons in HACMP system

  Refer to "8.3 Starting and Stopping Daemons in the HACMP System"

3.3 Distributing and Applying Policies in Cluster System Operations

Use the following procedure to distribute and apply Systemwalker Operation Manager policy information to cluster system:

1. Distribute a policy to the active nodes.

   Distribute a policy to the active nodes by specifying the host name for the active node in the **Specify Distribution Subsystem** window. Select **Apply at the next service startup** in the **Apply Policy** dialog box.

2. Stop the daemons on the active nodes.

   Stop all the Systemwalker Operation Manager daemons running on the active nodes. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to stop daemons.

3. Start the daemons on the active nodes.

   Start all the Systemwalker Operation Manager daemons for the active nodes. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to start daemons.

   The distributed policy information will be applied when the daemons start up.

4. Reflect security information on the shared disk.

   Reflect security information for the active nodes on the shared disk by executing the following command. Before executing this command, mount the shared disk for each active node.

   [1:1 active/standby (without subsystems), 1:1 active/standby (with subsystems), N:1 active/standby, and cascading configuration]

   ```
   mpcssave
   ```

   [1:1 active/standby (with subsystems and partial cluster operation), and dual node mutual standby configuration]

   ```
   mpcssave -s subsystem number for the active node
   ```

5. Copy information to the standby node.

   Copy the following information from an active node to the standby node. Refer to "2.9.3 Standardizing Systemwalker Operation Manager environment definitions" for details on when and how to copy this information.

   - Monitoring host definition information
   - Password management list information/host information definitions
   - Job folder information
   - Web Console definition information

Note

If cluster operation is being used, select **Apply at the next service startup**. Do not select **Apply at once (Restart the service)**.

Accordingly, to distribute the policy changed on the active node immediately, restart the daemons. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to restart daemons.

The policy distributed to the standby node will be applied on the next failover.

Note

If Systemwalker Operation Manager is operating as a cluster system, do not distribute **Shared Parameter** policy.

Note

Policy information does not include the following cluster operation information for calendar information, so this information must be set on each node.

- Information registered with the *calsetcluster* command
- Information in the calendar reflection host definition file

Note

Distribute the information set in **Job control** in the **Registration Information** window as a policy to the active node. Do not distribute it to the standby node. Since this information is managed by the shared disk, the same information is retained even in the event of failover.

Note

Refer to the **Logging** tab in the **Define Operating Information** window and check the saved location of the job execution history information and the operation record information of the extraction source server. Check if this saved location is a server where the system performs cluster operations. If it is not, create a directory in a system that performs cluster operations so that the saved location of the directory is the same as the extraction source server. Perform this step before distributing the operation information.

3.4 Backing up and Restoring Resources in Cluster System Operations

This section describes how to back up and restore Systemwalker Operation Manager resources in a cluster system.

3.4.1 Procedure for backing up resources in cluster systems

This section describes the procedure for backing up Systemwalker Operation Manager resources in a cluster system.

Backing up resources while daemons are running

Execute the *mpbko* backup command with the -SN option specified to back up the Systemwalker Operation Manager resources on a cluster system while daemons are running.

```
# /opt/systemwalker/bin/mpbko -b backup directory -SN
```

In the following example, resources are backed up to the "/var/tmp/OMGRBack" directory.

```
# /opt/systemwalker/bin/mpbko -b /var/tmp/OMGRBack -SN
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpbko* command.

Note

On dual node standby configuration, information on the active subsystems is backed up but information on the standby subsystems is not backed up. You need to make a backup of information on the nodes of each active subsystem as required.

Backing up resources while daemons are not running

Perform the following steps to back up the Systemwalker Operation Manager resources on a cluster system while daemons are not running.

Example of how to backup resources in PRIMECLUSTER systems (for Solaris/Linux)/ Oracle Solaris Cluster

1. Stop the daemons on the active nodes.

   Stop all the Systemwalker Operation Manager daemons running on the active nodes. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to stop daemons.

2. Mount the shared disk on the active nodes:

   When the daemons are stopped with the cluster system management function in step 1, the shared disk is demounted, so mount the shared disk on the active nodes manually. An example is shown below:

   [Solaris version]

   ```
   # mount /disk1 (*1)
   ```

   *1:

   The mount point for the shared disk is "/disk1".

   [Linux version]

   ```
   # /bin/mount /dev/sdb1 /disk1 (*2)
   ```

   *2:

   The device is dev/sdb1 and the mount point for the shared disk is "/disk1".

   For N:1 active/standby configuration, the symbolic links to the shared disk are deleted, so recreate them manually.

   In the following example, the shared disk has been mounted to "/disk1".

   ```
   # ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
   # ln -s /disk1/FJSVjmcal/post /var/opt/FJSVjmcal/post
   # ln -s /disk1/FJSVJOBSC /var/opt/FJSVJOBSC
   # ln -s /disk1/FJSVMJS/var/spool/mjes /var/spool/mjes
   # ln -s /disk1/FJSVMJS/etc/mjes /etc/mjes
   # ln -s /disk1/FJSVstem /var/opt/FJSVstem (*1)
   ```

*1:

Required only if the Master Schedule Management function is enabled.

For dual node mutual standby configuration, delete the symbolic links to Job Execution Control for the subsystems on the standby node.

In the following example, subsystem 1 is the active node, and subsystem 2 is the standby node.

```
# rm /etc/mjes/mjes2
# rm /var/spool/mjes/mjes2
```

3. Back up resources on the active nodes.

   Execute the *mpbko* backup command on the active nodes.

   ```
   # /opt/systemwalker/bin/mpbko -b backup directory
   ```

   In the following example, resources are backed up to the "/var/tmp/OMGRBack" directory.

   ```
   # /opt/systemwalker/bin/mpbko -b /var/tmp/OMGRBack
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpbko command.

   Steps 4 and 5 below are only performed for the 1:1 active/standby configuration (with subsystems and partial cluster operation). These two steps are used to back up the resources of subsystems on the standby node that are not used in cluster operation and they are not required if these resources are not to be backed up.

4. Stop Systemwalker Operation Manager daemons on the standby node.

   Stop all the Systemwalker Operation Manager daemons running on the standby node. Execute the following command to stop only those subsystems not registered with a cluster system:

   ```
   # /opt/systemwalker/bin/poperationmgr
   ```

5. Perform backup operation on the standby node.

   Back up subsystems not registered with a cluster system at the standby node.

   Temporarily delete any Job Execution Control symbolic links of subsystems registered with a cluster system.

   The following example shows how deletion is performed when Subsystem 1 is registered with a cluster system:

   ```
   # rm /etc/mjes/mjes1
   # rm /var/spool/mjes/mjes1
   ```

   Execute the backup command mpbko on the standby node.

   ```
   # /opt/systemwalker/bin/mpbko -b backup destination directory
   ```

   In the following example, "/var/tmp/OMGRBack" is designated as the backup destination directory:

   ```
   # /opt/systemwalker/bin/mpbko -b /var/tmp/OMGRBack
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpbko command.

   Recreate the Job Execution Control symbolic links that were deleted.

   The following example shows how creation is performed when Subsystem 1 is registered with a cluster system and "/disk1" is designated as the shared disk:

   ```
   # ln -s /disk1/FJSVMJS/var/spool/mjes1 /var/spool/mjes/mjes1
   # ln -s /disk1/FJSVMJS/etc/mjes1 /etc/mjes/mjes1
   ```

6. Unmount the shared disk.

   Remove the mount point to the shared disk mounted manually in step 2. The following example shows how to unmount the shared disk.

   [Solaris version]

```
# umount /disk1 (*1)
```

*1:

The mount point for the shared disk is "/disk1".

[Linux version]

```
# /bin/umount /disk1 (*2)
```

*2:

The mount point for the shared disk is "/disk1".

For N:1 active/standby configuration, delete the symbolic links to the shared disk.

```
# rm /var/opt/FJSVfwseo/JM
# rm /var/opt/FJSVjmcal/post
# rm /var/opt/FJSVJOBSC
# rm /var/spool/mjes
# rm /etc/mjes
# rm /var/opt/FJSVstem (*1)
```

*1:

Required only if the Master Schedule Management function is enabled.

For dual node mutual standby configuration, recreate the symbolic links to Job Execution Control for the subsystems on the standby node.

In the following example, subsystem 1 is the active node, and subsystem 2 is the standby node.

```
# ln -s /disk2/FJSVMJS/spool/mjes2 /var/spool/mjes/mjes2
# ln -s /disk2/FJSVMJS/etc/mjes2 /etc/mjes/mjes2
```

7. Start the daemons on the active nodes.

   On the active nodes, start all the Systemwalker Operation Manager daemons registered with the cluster system. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to start daemons.

Example of how to backup resources in MC/ServiceGuard systems

In the following example, the shard disk device is set to "/dev/vg01/lvol1" and the mount point for the shared disk is set to "/disk1".

1. Stop the daemons on the active nodes.

   Stop all the Systemwalker Operation Manager daemons running on the active nodes. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to stop daemons.

2. Mount the shared disk on the active nodes:

   When the daemons are stopped with the cluster system in step 1, the shared disk is unmounted, so mount the shared disk on the active nodes manually.

   ```
   # vgchange -a e /dev/vg01
   # mount /dev/vg01/lvol1 /disk1
   ```

   For N:1 active/standby configuration, the symbolic links to the shared disk are deleted, so recreate them manually.

   ```
   # ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
   # ln -s /disk1/FHPjmcal/post /opt/FHPjmcal/post
   # ln -s /disk1/FHPJOBSCH /opt/FHPJOBSCH/db
   # ln -s /disk1/FHPMJS/var/spool/mjes /var/spool/mjes
   # ln -s /disk1/FHPMJS/etc/mjes /etc/mjes
   # ln -s /disk1/FJSVstem /var/opt/FJSVstem (*1)
   ```

   *1:

   Required only if the Master Schedule Management function is enabled.

For dual node mutual standby configuration, recreate the symbolic links to Job Execution Control for the subsystems on the standby node.

In the following example, subsystem 1 is the active node, and subsystem 2 is the standby node.

```
# rm /etc/mjes/mjes2
# rm /var/spool/mjes/mjes2
```

3. Back up resources on the active nodes.

   Execute the *mpbko* backup command on the active nodes.

   ```
   # /opt/systemwalker/bin/mpbko -b backup directory
   ```

   In the following example, resources are backed up to the "/var/tmp/OMGRBack" directory.

   ```
   # /opt/systemwalker/bin/mpbko -b /var/tmp/OMGRBack
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpbko command.

   Steps 4 and 5 below should only be performed for 1:1 active/standby configurations (with subsystems and partial cluster operation). These steps are performed in order to back up the resources of subsystems that have not been operated in a cluster on the standby node. These steps are not required if the resources of subsystems that have not been operated in a cluster on the standby node will not be backed up.

4. Stop the daemon on the standby node.

   Stop each Systemwalker Operation Manager daemon that is running on the standby node. To stop a subsystem that is not registered in a cluster system, execute the following command:

   ```
   # /opt/systemwalker/bin/poperationmgr
   ```

5. Perform the backup on the standby node.

   Perform the backup of the subsystem that is not registered in the cluster system on the standby node.

   Delete the Job Execution Control symbolic links of the subsystem that is registered in the cluster system.

   In the following example, subsystem 1 will be deleted if it is registered in the cluster system.

   ```
   # rm /etc/mjes/mjes1
   # rm /var/spool/mjes/mjes1
   ```

   Execute the mpbko backup command on the standby node.

   ```
   # /opt/systemwalker/bin/mpbko -b backup destination directory name
   ```

   In the following example, the backup destination directory is "/var/tmp/OMGRBack".

   ```
   # /opt/systemwalker/bin/mpbko -b /var/tmp/OMGRBack
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpbko command.

   Recreate the Job Execution Control symbolic links that were deleted.

   In the following example, the Job Execution Control symbolic links will be recreated when subsystem 1 is registered in the cluster system and the shared disk is "/disk1".

   ```
   # ln -s /disk1/FHPMJS/spool/mjes1 /var/spool/mjes/mjes1
   # ln -s /disk1/FHPMJS/etc/mjes1 /etc/mjes/mjes1
   ```

6. Unmount the shared disk.
   Remove the mount point to the shared disk mounted manually in step 2.

   ```
   # umount /disk1
   # vgchange -a n /dev/vg01
   ```

   For N:1 active/standby configuration, delete the symbolic links to the shared disk.

```
# rm /var/opt/FJSVfwseo/JM
# rm /opt/FHPjmcal/post
# rm /opt/FHPJOBSCH/db
# rm /var/spool/mjes
# rm /etc/mjes
# rm /var/opt/FJSVstem (*1)
```

*1:

Required only if the Master Schedule Management function is enabled.

For dual node mutual standby configuration, recreate the symbolic links to Job Execution Control for the subsystems on the standby node.

In the following example, subsystem 1 is the active node, and subsystem 2 is the standby node.

```
# ln -s /disk2/FHPMJS/var/spool/mjes2 /var/spool/mjes/mjes2
# ln -s /disk2/FHPMJS/etc/mjes2 /etc/mjes/mjes2
```

7. Start the daemons on the active nodes.

   On the active nodes, start all the Systemwalker Operation Manager daemons registered with the cluster system. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to start daemons.

Example of how to backup resources in HACMP systems

In the following example, the volume name of the shared disk is set to "datavg1" and the mount point to the shared disk is set to "/disk1".

1. Stop the daemons on the active nodes.

   Stop all the Systemwalker Operation Manager daemons running on the active nodes. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to stop daemons.

2. Mount the shared disk on the active nodes:

   When the daemons are stopped with the cluster system in step 1, the shared disk is unmounted, so mount the shared disk on the active nodes manually.

   ```
   # varyonvg datavg1
   # mount /disk1
   ```

   For dual node mutual standby configuration, delete the symbolic links to Job Execution Control for the subsystems on the standby node once.

   In the following example, subsystem 1 is the active node, and subsystem 2 is the standby node.

   ```
   # rm /etc/mjes/mjes2
   # rm /var/spool/mjes/mjes2
   ```

3. Back up resources on the active nodes.
   Execute the *mpbko* backup command on the active nodes.

   ```
   # /opt/systemwalker/bin/mpbko -b backup directory
   ```

   In the following example, resources are backed up to the "/var/tmp/OMGRBack" directory.

   ```
   # /opt/systemwalker/bin/mpbko -b /var/tmp/OMGRBack
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpbko command.

   Steps 4 and 5 below should only be performed for 1:1 active/standby configurations (with subsystems and partial cluster operation). These steps are performed in order to back up the resources of subsystems that have not been operated in a cluster on the standby node. These steps are not required if the resources of subsystems that have not been operated in a cluster on the standby node will not be backed up.

4. Stop the daemon on the standby node.

   Stop each Systemwalker Operation Manager daemon that is running on the standby node. To stop a subsystem that is not registered in a cluster system, execute the following command:

```
# /opt/systemwalker/bin/poperationmgr
```

5. Perform the backup on the standby node.

   Perform the backup of the subsystem that is not registered in the cluster system on the standby node.

   Delete the Job Execution Control symbolic links of the subsystem that is registered in the cluster system.

   In the following example, subsystem 1 will be deleted if it is registered in the cluster system.

```
# rm /etc/mjes/mjes1
# rm /var/spool/mjes/mjes1
```

   Execute the mpbko backup command on the standby node.

```
# /opt/systemwalker/bin/mpbko -b backup destination directory name
```

   In the following example, the backup destination directory is "/var/tmp/OMGRBack".

```
# /opt/systemwalker/bin/mpbko -b /var/tmp/OMGRBack
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpbko command.

   Recreate the Job Execution Control symbolic links that were deleted.

   In the following example, the Job Execution Control symbolic links will be recreated when subsystem 1 is registered in the cluster system and the shared disk is "/disk1".

```
# ln -s /disk1/FAIXMJS/spool/mjes1 /var/spool/mjes/mjes1
# ln -s /disk1/FAIXMJS/etc/mjes1 /etc/mjes/mjes1
```

6. Unmount the shared disk.
   Remove the mount point to the shared disk mounted manually in step 2.

```
# umount /disk1
# varyoffvg datavg1
```

   For dual node mutual standby configuration, recreate the symbolic links to Job Execution Control for the subsystems on the standby node.

   In the following example, subsystem 1 is the active node, and subsystem 2 is the standby node.

```
# ln -s /disk2/FAIXMJS/var/spool/mjes2 /var/spool/mjes/mjes2
# ln -s /disk2/FAIXMJS/etc/mjes2 /etc/mjes/mjes2
```

7. Start the daemons on the active nodes.

   On the active nodes, start all the Systemwalker Operation Manager daemons registered with the cluster system. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to start daemons.

There is no need to back up information for the standby node, because the contents of the local disks are the same for the active and standby nodes, as a result of the operation performed in "2.9 Standardizing the Information Managed by Each Node".

For N:1 active/standby configuration and dual node mutual standby configuration, perform backup at each active node.

3.4.2 Procedure for restoring resources in cluster systems

The procedure for restoring the Systemwalker Operation Manager resources in a cluster system is described below. This procedure is the same as the backup procedure, except for the following: executing the restore command, reflecting security information, and restoring calendar information and service/application startup information. Refer to "3.4.1 Procedure for backing up resources in cluster systems" for details.

1. Stop the daemons on the active nodes.

   Stop all the Systemwalker Operation Manager daemons running on the active nodes. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to stop daemons.

2. Mount the shared disk on the active nodes:

   When the daemons are stopped with the cluster system management function in step 1, the shared disk is unmounted, so mount the shared disk on the active nodes manually.

   For N:1 active/standby configuration, the symbolic links to the shared disk are deleted, so recreate them manually.

   For dual node mutual standby configuration, delete the symbolic links to Job Execution Control for the subsystems on the standby node.

3. Restore resources on the active nodes.

   Execute the mprso restore command on the active nodes.

   ```
   # /opt/systemwalker/bin/mprso -b name of the directory where information has been backed up
   ```

   In the following example, information has been backed up to the "/var/tmp/OMGRBack" directory.

   ```
   # /opt/systemwalker/bin/mprso -b /var/tmp/OMGRBack
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mprso command.

   Steps 4 and 5 below are only performed for the 1:1 active/standby configuration (with subsystems and partial cluster operation). Steps 4 and 5 are used to restore the resources of subsystems on the standby node that are not used in cluster operation, and they are not required if these resources are not to be restored.

4. Stop Systemwalker Operation Manager daemons on the standby node.

   Stop all the Systemwalker Operation Manager daemons running on the standby node. Execute the following command to stop only those subsystems not registered with a cluster system:

   ```
   # /opt/systemwalker/bin/poperationmgr
   ```

5. Perform restore operation on the standby node.

   Restore subsystems not registered with a cluster system at the standby node.

   At the standby node, temporarily delete any Job Execution Control symbolic links of subsystems registered with a cluster system.

   Execute the restore command *mprso* on the standby node.

   ```
   # /opt/systemwalker/bin/mprso -b name of directory where information has been backed up
   ```

   In the following example, "/var/tmp/OMGRBack" is designated as the directory where information has been backed up:

   ```
   # /opt/systemwalker/bin/mprso -b /var/tmp/OMGRBack
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mprso command.

   Recreate the Job Execution Control symbolic links that were deleted from the standby node.

6. Reflect security information on the shared disk.

   For N:1 active/standby configuration, since stopping the daemons using the cluster system management function cancels the settings for automatic security information reflection, set cluster information by executing the following command:

   ```
   mpaclcls
   ```

   Reflect security information on the shared disk for the active nodes by executing the following command.

   1:1 active/standby (without subsystems), 1:1 active/standby (with subsystems), N:1 active/standby, and cascading configuration:

   ```
   mpcssave
   ```

   1:1 active/standby (with subsystems and partial cluster operation), and dual node mutual standby configuration:

```
mpcssave -s subsystem number for the active node
```

7. Unmount the shared disk.

   Unmount the shared disk mounted manually in step 2.

   For N:1 active/standby configuration, delete the symbolic links to the shared disk.

   For dual node mutual standby configuration, recreate the symbolic links to Job Execution Control for the subsystems on the standby node.

8. Start the daemons on the active nodes.

   On the active nodes, start all the Systemwalker Operation Manager daemons. Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to start daemons.

9. Copy information to the standby node.

   Copy the following files from the active node to the standby node.

   - Monitoring host definition information
   - Password management list information/host information definitions
   - Job folder information
   - Web Console definition information

Refer to "2.9.3 Standardizing Systemwalker Operation Manager environment definitions," for details on copying this information.

Restoring calendar information and service/application startup information

After resources have been completely restored on the active node, the following types of data that have been created on the standby node since the backup was taken will be automatically reflected on the active nodes.

- Calendar information
- Service/application startup information

Use the procedure below for the appropriate situation:

To use data that existed when the backup was taken (and not use data created after the backup was taken)

After stopping the Systemwalker Operation Manager daemons on all nodes, delete the following files from each node. Then, by restoring resources, all nodes will be standardized with the definitions that existed when the backup was taken.

- For PRIMECLUSTER systems (for the Solaris/Linux versions)/ Oracle Solaris Cluster

```
/var/opt/FJSVjmcal/caldb/*.*
/var/opt/FJSVjmcal/srvapp/f3crhsvb.ini
```

Remark:

Only delete the files. Do not delete the directory.

- For MC/ServiceGuard systems

```
/opt/FHPjmcal/caldb/*.*
/opt/FHPjmcal/srvapp/f3crhsvb.ini
```

Remark:

Only delete the files. Do not delete the directory.

- For HACMP systems

```
/opt/FAIXjmcal/caldb/*.*
/opt/FAIXjmcal/srvapp/f3crhsvb.ini
```

Remark:

Only delete the files. Do not delete the directory.

Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to stop the Systemwalker Operation Manager daemons.

If either SYSTEM_CALENDAR or service/application startup information is not subject to automatic reflection

If the following information has been defined separately for each node, then this information will have to be backed up and restored on each node.

- SYSTEM_CALENDAR schedule information, power schedule information, termination monitoring information
- Service/application startup information

The procedures for backing up and restoring this information are as follows:

[Backup procedure]

1. Back up information on the active nodes.

   Refer to "3.4.1 Procedure for backing up resources in cluster systems" for details on the back up procedure.

2. Back up the following files on the standby node separately using the copy command.

   - For PRIMECLUSTER systems (for the Solaris/Linux versions)/ Oracle Solaris Cluster

     ```
     /var/opt/FJSVjmcal/caldb/*.*
     ```

     ```
     /var/opt/FJSVjmcal/srvapp/f3crhsvb.ini
     ```

   - For MC/ServiceGuard systems

     ```
     /opt/FHPjmcal/caldb/*.*
     ```

     ```
     /opt/FHPjmcal/srvapp/f3crhsvb.ini
     ```

   - For HACMP systems

     ```
     /opt/FAIXjmcal/caldb/*.*
     ```

     ```
     /opt/FAIXjmcal/srvapp/f3crhsvb.ini
     ```

   Do not save calendars or service/application startup information until the backup operations are completed on both the active and standby nodes.

[Restoration procedure]

1. Stop the Systemwalker Operation Manager daemons on both the active and standby nodes.

   Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to stop the Systemwalker Operation Manager daemons.

2. On the active nodes, restore the data that was backed up on the active nodes.

   Refer to "3.4.2 Procedure for restoring resources in cluster systems" for details on the restoration procedure.

3. Restore data on the standby node.

   Copy the files created in step 2 of the backup procedure over to the standby node. Place these files on the standby node using the same directory path as the active node where the data was backed up.

4. Start the Systemwalker Operation Manager daemons on both the active and standby nodes.

   Refer to "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to start the Systemwalker Operation Manager daemons.

Information

Use the *calsetcluster* command to check the automatic reflection settings for each node.

- For PRIMECLUSTER systems (for the Solaris/Linux versions)/Sun Cluster systems

```
# /opt/FJSVjmcal/bin/calsetcluster -v
```

- For MC/ServiceGuard systems

```
# /opt/FHPjmcal/bin/calsetcluster -v
```

- For HACMP systems

```
# /opt/FAIXjmcal/bin/calsetcluster -v
```

Items with "Disable" displayed in the standard output when this command is executed are not subject to automatic reflection.

3.5 Changing the Schedule Mode for the Master Schedule Management Function

This section describes the procedure for changing the schedule mode when Systemwalker Operation Manager is running on a cluster system.

When changing the mode between Daily schedule management and Daily schedule management (Test mode)

Change the schedule mode by using the following procedure:

1. Refer to the *Systemwalker Operation Manager User's Guide - Master Schedule Management* to change the schedule mode for the Master Schedule Management function.

   ### Note

   - When setting up an environment for the Master Schedule Management function (where Systemwalker Operation Manager is operating as a cluster system), specify either the logical IP address for the cluster system or the host name corresponding to this logical IP address in the **Master Schedule Management [Login]** window.
   - When reflecting the Master Schedule Management environment settings, do not restart the JobScheduler daemon from the **Master Schedule Management Environment Setup** dialog box.

2. Restart the Systemwalker Operation Manager daemons in order to reflect the settings. Refer to Section "3.2 Starting and Stopping Daemons in Cluster Systems" for details on how to restart the Systemwalker Operation Manager daemons.

When changing the mode from Normal schedule to Daily schedule management, or Daily schedule management (Test mode)

Change the schedule mode by using the following procedure:

1. Release Systemwalker Operation Manager from its application to the cluster system as described in "2.12 Uninstalling Systemwalker Operation Manager from a Cluster System".
2. Reapply Systemwalker Operation Manager to the cluster system. (Perform the procedure starting from "2.2.3 Canceling the settings for starting and stopping daemons automatically)."

Chapter 4 Cluster Setup Procedure Specific to Systems Using PRIMECLUSTER for Solaris

This chapter describes the cluster setup procedure specific to systems using PRIMECLUSTER for Solaris (hereinafter referred to as PRIMECLUSTER system).

4.1 Registering Systemwalker Operation Manager with the PRIMECLUSTER System

Use the following procedure to register Systemwalker Operation Manager with the PRIMECLUSTER system:

1. Creating state transition procedures
2. Registering the state transition procedures
3. Registering resources that use state transition procedures
4. Registering cluster applications and resources

Each of these operations is described below.

4.1.1 Creating state transition procedures

Create the following state transition procedures to register Systemwalker Operation Manager with the PRIMECLUSTER system:

- State transition procedures that control daemon behavior (required)
- Monitoring scripts (required if there are state transition procedures that monitor daemons)
- State transition procedures that monitor daemons (optional)

Create these procedures on both the active and standby nodes, and place them at the same location in each node (use the same directory path). Do not create these files on the shared disk. Be sure to set up execution privileges after creating these procedures.

Create monitoring scripts and state transition procedures that monitor daemons in order to monitor the daemons running on the active node, and use daemon termination as a trigger for cluster failover. These procedures do not need to be created if daemon termination is not going to be used as trigger for a cluster failover.

The following sections describe examples of how to create each of these procedures. Samples of each of these procedures are provided with this product. Use these samples by making copies and modifying the copies to match the environment.

4.1.1.1 Creating state transition procedures that control daemon behavior

Create a state transition procedure that controls the behavior of the Jobscheduler and Job Execution Control daemons.

The following sample state transition procedure to control daemon behavior is provided:

```
/opt/FJSVJMCMN/etc/script/OperationMGR.proc
```

The sample state transition procedure is for 1:1 active/standby (without subsystems) and cascading configurations.

The state transition procedure must be modified for 1:1 active/standby (with subsystems), 1:1 active/standby (with subsystems and partial cluster operation), N:1 active/standby, and dual node mutual standby configurations.

Note also that the sample state transition procedure mounts the shared disk as "/disk1". If necessary, modify the state transition procedure file so that the shared disk is referred to by the correct name.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby (without subsystems) and cascading configuration, this sample file can be used without modification, but should be backed up anyway.

The following example shows how to modify the state transition procedure.

Example showing how to modify state transition procedures for 1:1 active/standby (with subsystems) and 1:1 active/standby (with subsystems and partial cluster operation) configurations

In a system where multiple subsystems are running, start/stop the daemons of Jobscheduler and Job Execution Control on each subsystem.

Below are an example showing Subsystem 0 and Subsystem 1 operating in a 1:1 active/standby configuration (with subsystems) and an example of a 1:1 active/standby configuration (with subsystems and partial cluster operation) in which Subsystem 1 is involved in cluster operation but Subsystem 0 is not.

1. Change the "SUBSYSTEM" variable to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), modify the procedure so that only the numbers of subsystems involved in cluster operation are specified.

   [Before]

```
SUBSYSTEM="0"
```

   [After]

   1:1 active/standby configuration (with subsystems):

```
PLU_SUBSYSTEM="0 1"
```

   1:1 active/standby configuration (with subsystems and partial cluster operation):

```
PLU_SUBSYSTEM="1"
```

2. Add the for, do, and done statements to the end of START-RUN-AFTER to start Jobscheduler and Job Execution Control on each subsystem.

   [Before]

```
# Starts Job Scheduler & Job Execution Control
# - 1:1 standby, N:1 standby, 2 nodes mutual standby
      sh /etc/opt/FJSVMJS/etc/rc3.d/S99MJS -sys $SUBSYSTEM
      sh /opt/FJSVJOBSC/etc/rc3.d/S99JOBSCH -sys $SUBSYSTEM
      ;;
```

   [After]

```
# Starts Job Scheduler & Job Execution Control
# - 1:1 standby, N:1 standby, 2 nodes mutual standby
      for SUBSYSTEM in $PLU_SUBSYSTEM
      do
      sh /etc/opt/FJSVMJS/etc/rc3.d/S99MJS -sys $SUBSYSTEM
      sh /opt/FJSVJOBSC/etc/rc3.d/S99JOBSCH -sys $SUBSYSTEM
      done
      ;;
```

3. Add the for and do statements to the top of STOP-RUN-BEFORE to stop Jobscheduler and Job Execution Control on each subsystem.

   [Before]

```
'BEFORE')
    # Job Execution Control Server
    if [ -x /usr/bin/zonename ]
```

   [After]

```
'BEFORE')
    # Job Execution Control Server
    for SUBSYSTEM in $PLU_SUBSYSTEM
    do
    if [ -x /usr/bin/zonename ]
```

4. Add the done statement to the end of STOP-RUN-BEFORE.

   [Before]

```
    done
    ;;
'AFTER')
```

   [After]

```
    done
    done
    ;;
'AFTER')
```

5. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), add the for, do and done statements to the end of START-RUN-AFTER to update security information on each subsystem automatically.

   [Before]

```
# - 1:1 standby, N:1 standby
        /opt/FJSVfwseo/bin/mpaclcls
        sh /opt/FJSVfwseo/bin/jmacltrn.sh
```

   [After]

```
# - 1:1 standby, N:1 standby
        for SUBSYSTEM in $PLU_SUBSYSTEM
        do
        /opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
        sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
        done
```

Example of how to modify the state transition procedure for N:1 active/standby configurations

1. For START-RUN-AFTER, remove the comments for the "Make symbolic links. (if N:1 standby)" section. (That is, remove the "#" from the lines of code.)

   [Before]

```
# Make symbolic links. (if N:1 standby)
# ACL Manager
#if [ ! "(" -h "/var/opt/FJSVfwseo/JM" -o -f "/var/opt/FJSVfwseo/JM" ")" ]
#then
#  ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
#fi
# Job Scheduler
#if [ ! "(" -h "/var/opt/FJSVJOBSC" -o -f "/var/opt/FJSVJOBSC" ")"]
#then
#  ln -s /disk1/FJSVJOBSC /var/opt/FJSVJOBSC
#fi
# Job Execution Control
#if [ ! "(" -h "/var/spool/mjes" -o -f "/var/spool/mjes" ")" ]
#then
#  ln -s /disk1/FJSVMJS/var/spool/mjes /var/spool/mjes
#fi
#if [ ! "(" -h "/etc/mjes" -o -f "/etc/mjes" ")" ]
#then
#  ln -s /disk1/FJSVMJS/etc/mjes /etc/mjes
#fi
# Calendar
#if [ ! "(" -h "/var/opt/FJSVjmcal/post" -o -f "/var/opt/FJSVjmcal/post" ")" ]
#then
#  ln -s /disk1/FJSVjmcal/post /var/opt/FJSVjmcal/post
#fi
```

```
# Stem
#if [ ! "(" -h "/var/opt/FJSVstem" -o -f "/var/opt/FJSVstem" ")" ]
#then
#  ln -s /disk1/FJSVstem /var/opt/FJSVstem
#fi
#  - 1:1 standby, N:1 standby
```

[After]

```
# Make symbolic links. (if N:1 standby)
# ACL Manager
if [ ! "(" -h "/var/opt/FJSVfwseo/JM" -o -f "/var/opt/FJSVfwseo/JM" ")" ]
then
  ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
fi
# Job Scheduler
if [ ! "(" -h "/var/opt/FJSVJOBSC" -o -f "/var/opt/FJSVJOBSC" ")"]
then
  ln -s /disk1/FJSVJOBSC /var/opt/FJSVJOBSC
fi
# Job Execution Control
if [ ! "(" -h "/var/spool/mjes" -o -f "/var/spool/mjes" ")" ]
then
  ln -s /disk1/FJSVMJS/var/spool/mjes /var/spool/mjes
fi
if [ ! "(" -h "/etc/mjes" -o -f "/etc/mjes" ")" ]
then
 ln -s /disk1/FJSVMJS/etc/mjes /etc/mjes
fi
# Calendar
if [ ! "(" -h "/var/opt/FJSVjmcal/post" -o -f "/var/opt/FJSVjmcal/post" ")" ]
then
  ln -s /disk1/FJSVjmcal/post /var/opt/FJSVjmcal/post
fi
# Stem  (*1)
if [ ! "(" -h "/var/opt/FJSVstem" -o -f "/var/opt/FJSVstem" ")" ]
then
  ln -s /disk1/FJSVstem /var/opt/FJSVstem
fi
# - 1:1 standby, N:1 standby
```

*1: Remove this comment only if the Master Schedule Management function is enabled.

2. For STOP-RUN-AFTER, remove the comments for the "remove symbolic links. (if N:1 standby)" section. (That is, remove the "#" from the lines of code.)

   [Before]

```
# remove symbolic links.(if N:1 standby)
# Job Scheduler
#if [ -h "/var/opt/FJSVJOBSC" ]
#then
#      rm /var/opt/FJSVJOBSC
#fi
# Job Execution Control
#if [ -h "/var/spool/mjes" ]
#then
#      rm /var/spool/mjes
#fi
#if [ -h "/etc/mjes" ]
#then
#      rm /etc/mjes
#fi
# ACL Manager
```

```
#/opt/FJSVfwseo/bin/mpaclcls -u
#if [ -h "/var/opt/FJSVfwseo/JM" ]
#then
#   rm /var/opt/FJSVfwseo/JM
#fi
# Calendar
#if [ -h "/var/opt/FJSVjmcal/post" ]
#then
#      rm /var/opt/FJSVjmcal/post
#fi
# Stem
#if [ -h "/var/opt/FJSVstem" ]
#then
#      rm /var/opt/FJSVstem
#fi
;;
```

[After]

```
# remove symbolic links. (if N:1 standby)
# Job Scheduler
if [ -h "/var/opt/FJSVJOBSC" ]
then
      rm /var/opt/FJSVJOBSC
fi
# Job Execution Control
if [ -h "/var/spool/mjes" ]
then
      rm /var/spool/mjes
fi
if [ -h "/etc/mjes" ]
then
   rm /etc/mjes
fi
# ACL Manager
/opt/FJSVfwseo/bin/mpaclcls -u
if [ -h "/var/opt/FJSVfwseo/JM" ]
then
      rm /var/opt/FJSVfwseo/JM
fi
# Calendar
if [ -h "/var/opt/FJSVjmcal/post" ]
then
      rm /var/opt/FJSVjmcal/post
fi
# Stem (*1)
if [ -h "/var/opt/FJSVstem" ]
then
      rm /var/opt/FJSVstem
fi
;;
```

*1: Remove this comment only if the Master Schedule Management function is enabled.

3. Prepare N copies of the state transition procedure file (one for each active node), assigning a unique name to each copy. Change the directory ("/disk1" in the example) where symbolic links will be created so that it matches the shared disk of each active node.

4. Place each state transition procedure file on its respective active node, and then copy all of the state transition procedure files to the standby node, storing all N files in the same directory path as was used to store the files on the active nodes.

   The following example shows how to place these files when there are three active nodes:

   ```
   Active node1: /opt/FJSVJMCMN/etc/script/OperationMGR1.proc
   ```

```
Active node2: /opt/FJSVJMCMN/etc/script/OperationMGR2.proc

Active node3: /opt/FJSVJMCMN/etc/script/OperationMGR3.proc

Standby node: /opt/FJSVJMCMN/etc/script/OperationMGR1.proc
              /opt/FJSVJMCMN/etc/script/OperationMGR2.proc
              /opt/FJSVJMCMN/etc/script/OperationMGR3.proc
```

Example of how to modify the state transition procedure for dual node mutual standby configuration

1. Change the value of the "SUBSYSTEM" variable in the state transition procedure file to "1".

   [Before]

   ```
   SUBSYSTEM="0"
   ```

   [After]

   ```
   SUBSYSTEM="1"
   ```

2. Modify the "- 1:1 standby, N:1 standby" section for START-RUN-AFTER so that it matches dual node mutual standby configuration. (Change the positions of "#".)

   [Before]

   ```
   # - 1:1 standby, N:1 standby
       /opt/FJSVfwseo/bin/mpaclcls
       sh /opt/FJSVfwseo/bin/jmacltrn.sh
   # - 2 nodes mutual standby
       #/opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
       #sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
   # Starts Job Scheduler & Job Execution Control
   ```

   [After]

   ```
   # - 1:1 standby, N:1 standby
       #/opt/FJSVfwseo/bin/mpaclcls
       #sh /opt/FJSVfwseo/bin/jmacltrn.sh
   # - 2 nodes mutual standby
       /opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
       sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
   # Starts Job Scheduler & Job Execution Control
   ```

3. Prepare another state transition procedure file with the same (modified) contents, rename the file, and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

   ```
   SUBSYSTEM="1"
   ```

   [After]

   ```
   SUBSYSTEM="2"
   ```

4. Place the two state transition procedure files on the active and standby nodes, using the same directory path in each case.

   The following example shows how to place these files:

   ```
   Active node1:/opt/FJSVJMCMN/etc/script/OperationMGR1.proc
     (Standby node2)/opt/FJSVJMCMN/etc/script/OperationMGR2.proc

   Active node2:/opt/FJSVJMCMN/etc/script/OperationMGR2.proc
     (Standby node1)/opt/FJSVJMCMN/etc/script/OperationMGR1.proc
   ```

4.1.1.2 Creating monitoring scripts

Create monitoring scripts that will be called by the state transition procedure that monitors the daemons.

The following sample monitoring script is provided:

```
/opt/FJSVJMCMN/etc/script/omgr_smonitor
```

The sample monitoring script is for 1:1 active/standby (without subsystems) and cascading configurations. It must be modified for 1:1 active/standby (with subsystems), 1:1 active/standby (with subsystems and partial cluster operation), N:1 active/standby and dual node mutual standby configurations.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby configuration (without subsystems) and cascading configuration, this sample file can be used without modification, but should be backed up anyway.

The following example shows how to modify the monitoring script.

Example showing how to modify state transition procedures for 1:1 active/standby (with subsystems) and 1:1 active/standby (with subsystems and partial cluster operation) configurations

In a system where multiple subsystems are running, perform daemon monitoring for each subsystem. Below are an example showing Subsystem 0 and Subsystem 1 operating in a 1:1 active/standby configuration (with subsystems) and an example of a 1:1 active/standby configuration (with subsystems and partial cluster operation) in which Subsystem 1 is involved in cluster operation but Subsystem 0 is not.:

1. Change the "SUBSYSTEM" variable to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), modify the procedure so that only the numbers of subsystems involved in cluster operation are specified.

   [Before]

   ```
   SUBSYSTEM="0"
   ```

   [After]

   1:1 active/standby configuration (with subsystems):

   ```
   PLU_SUBSYSTEM="0 1"
   ```

   1:1 active/standby configuration (with subsystems and partial cluster operation):

   ```
   PLU_SUBSYSTEM="1"
   ```

2. Add the for and do statements immediately after while do to monitor daemons on each subsystem.

   [Before]

   ```
   while /bin/true
   do
       if [ -x /usr/bin/zonename ]
   ```

   [After]

   ```
   while /bin/true
   do
       for SUBSYSTEM in $PLU_SUBSYSTEM
       do
       if [ -x /usr/bin/zonename ]
   ```

3. Add the done statement before sleep 10.

   [Before]

   ```
       sleep 10
   done
   ```

   [After]

```
    done
    sleep 10
done
```

Example of how to modify the monitoring script for N:1 active/standby configuration

1. Prepare N copies of the monitoring script (one for each active node), assigning a unique name to each copy.
2. Place each monitoring script on its respective active node, and then copy all the monitoring scripts to the standby node, storing all N files in the same directory path as was used to store the files on the active nodes.

   The following example shows how to place these files when there are three active nodes:

```
Active node1:/opt/FJSVJMCMN/etc/script/omgr_smonitor1

Active node2:/opt/FJSVJMCMN/etc/script/omgr_smonitor2

Active node3:/opt/FJSVJMCMN/etc/script/omgr_smonitor3

Standby node:/opt/FJSVJMCMN/etc/script/omgr_smonitor1
             /opt/FJSVJMCMN/etc/script/omgr_smonitor2
             /opt/FJSVJMCMN/etc/script/omgr_smonitor3
```

Example of how to modify the monitoring script for dual node mutual standby configuration

1. Change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Prepare another state transition procedure file with the same (modified) contents, rename the file, and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

   [After]

```
SUBSYSTEM="2"
```

3. Place the two state transition procedure files on the active and standby nodes, using the same directory path in each case.

   The following example shows how to place these files:

```
Active node1:/opt/FJSVJMCMN/etc/script/omgr_smonitor1
  (Standby node2)/opt/FJSVJMCMN/etc/script/omgr_smonitor2

Active node2:/opt/FJSVJMCMN/etc/script/omgr_smonitor2
  (Standby node1)/opt/FJSVJMCMN/etc/script/omgr_smonitor1
```

4.1.1.3 Creating state transition procedures that monitor daemons

Create a state transition procedure that monitors Jobscheduler and Job Execution Control daemons.

The following sample state transition procedure to monitor daemons is provided:

```
/opt/FJSVJMCMN/etc/script/omgr_monitor.proc
```

The sample state transition procedure is for 1:1 active/standby configuration and cascading configuration. This state transition procedure must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby and cascading configuration, this sample file can be used without modification, but should be backed up anyway.

The following example shows how to modify the state transition procedure.

Example of how to modify the state transition procedure for N:1 active/standby configuration

Create N copies of state transition procedure file that monitor daemons, assigning a unique name to each copy. Change the monitoring script file name specified in the state transition procedure to the name of the file created in "4.1.1.2 Creating monitoring scripts ."

1. Prepare N copies of the state transition procedure file (one for each active node), assigning a unique name to each copy. Change the information in each file to match the environment.

   The following example shows how to make changes when there are three nodes:

   - State transition procedure that monitors daemons: omgr_monitor1.proc

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor1 -c 0
   ```

   - State transition procedure that monitors daemons: omgr_monitor2.proc

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor2 -c 0
   ```

   - State transition procedure that monitors daemons: omgr_monitor3.proc

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor3 -c 0
   ```

2. Place each state transition procedure file on its respective active node, and then copy all of the state transition procedure files to the standby node, storing all N files in the same directory path as was used to store the files on the active nodes.

   The following example shows how to place these files when there are three active nodes:

   ```
   Active node1:/opt/FJSVJMCMN/etc/script/omgr_monitor1.proc

   Active node2:/opt/FJSVJMCMN/etc/script/omgr_monitor2.proc

   Active node3:/opt/FJSVJMCMN/etc/script/omgr_monitor3.proc

   Standby node:/opt/FJSVJMCMN/etc/script/omgr_monitor1.proc
                /opt/FJSVJMCMN/etc/script/omgr_monitor2.proc
                /opt/FJSVJMCMN/etc/script/omgr_monitor3.proc
   ```

Example of how to modify the state transition procedure for dual node mutual standby configuration

Create two copies of state transition procedure file that monitor daemons, assigning a unique name to each copy. Change the monitoring script file name specified in the state transition procedure to the name of the file created in "4.1.1.2 Creating monitoring scripts ."

1. Change the file name in the monitoring script for one state transition procedure.

   [Before]

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor -c 0
   ```

   [After]

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor1 -c 0
   ```

2. Change the file name in the monitoring script for another state transition procedure.

   [Before]

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor -c 0
   ```

   [After]

```
$CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor2 -c 0
```

3. Place the two state transition procedure files on the active and standby nodes, using the same directory path in each case.

   The following example shows how to place these files:

```
Active node1:/opt/FJSVJMCMN/etc/script/omgr_monitor1.proc
  (Standby node2)/opt/FJSVJMCMN/etc/script/omgr_monitor2.proc

Active node2:/opt/FJSVJMCMN/etc/script/omgr_monitor2.proc
  (Standby node1)/opt/FJSVJMCMN/etc/script/omgr_monitor1.proc
```

4.1.2 Registering state transition procedures

Use the *clsetproc* cluster system command to register the created state transition procedures with the cluster system.

For 1:1 active/standby configuration, register state transition procedures by executing this command on both the active node and the standby node.

For N:1 active/standby configuration, register state transition procedures by executing this command on each active node, and then register all N state transition procedures with the standby node.

For dual node mutual standby configuration, register both types of state transition procedure with each node.

For cascading configuration, register state transition procedures by executing this command on the active node and all standby nodes.

When registering state transition procedure file names, specify a state transition procedure file name that actually exists. Also, make each state transition procedure name unique within the cluster system.

Registering state transition procedures that control daemon behavior

The following execution example shows that the "opt/FJSVJMCMN/etc/script/OperationMGR.proc" state transition procedure file that controls daemon behavior is registered under the SystemState3 class as state transition procedure name "omgr".

```
# /etc/opt/FJSVcluster/bin/clsetproc -c SystemState3 -m omgr /opt/FJSVJMCMN/etc/script/
OperationMGR.proc
```

Registering state transition procedures that monitor daemons

The following execution example shows that the "opt/FJSVJMCMN/etc/script/omgr_monitor.proc" state transition procedure file that monitors daemons is registered under the SystemState3 class as state transition procedure name "omgrmonitor".

```
# /etc/opt/FJSVcluster/bin/clsetproc -c SystemState3 -m omgrmonitor /opt/FJSVJMCMN/etc/script/
omgr_monitor.proc
```

4.1.3 Registering resources that use state transition procedures

Use the *claddprocrsc* cluster system command to register the state transition procedures as program resources in the cluster system.

For 1:1 active/standby configuration, register state transition procedures as resources by executing this command on both the active node and the standby node.

For N:1 active/standby configuration, register state transition procedures as resources by executing this command on each active node, and then register all N state transition procedures with the standby node.

For dual node mutual standby configuration, register both types of state transition procedure as resources with each node.

For cascading configuration, register state transition procedures as resources by executing this command on the active node and all standby nodes.

Registering state transition procedures that control daemon behavior

The following execution example shows that "omgr" is specified as the state transition procedure file, "AFTER" is specified for the state transition instruction type "START RUN", and "BEFORE" and "AFTER" are specified for "STOP RUN". The resource key is OMGR, the resource class name is SystemState3 and the startup priority is 100.

```
# /etc/opt/FJSVcluster/bin/claddprocrsc  -k OMGR -m omgr -c SystemState3 -p 100 -K AFTER -S
BEFORE,AFTER
```

When the registration process completes, the resource ID will be displayed.

Registering state transition procedures that monitor daemons

The following execution example shows that "omgrmonitor" is specified as the state transition procedure file, "AFTER" is specified for the state transition instruction type "START RUN", and "BEFORE" is specified for "STOP RUN". The resource key is OMGRMONITOR, the resource class name is SystemState3 and the startup priority is 150.

```
# /etc/opt/FJSVcluster/bin/claddprocrsc -k OMGRMONITOR -m omgrmonitor -c SystemState3 -p 150 -K AFTER
-S BEFORE
```

When the registration process completes, the resource ID will be displayed.

4.1.4 Registering cluster applications and resources

Register Systemwalker Operation Manager with the cluster system from PRIMECLUSTER's **Web-Based Admin View.**

The registration procedure is shown below.

Note

The assignment of active and standby nodes may be determined according to the order of node selection. Be careful not to make a mistake in selecting nodes.

1) Stop RMS

Before registering the cluster application, use either ClusterAdmin or the hvdisp command to check that RMS is not running. If RMS is running, stop it on every node in the cluster system using either ClusterAdmin or the hvshut command.

Refer to the PRIMECLUSTER manual for details on the hvdisp and hvshut commands.

Example of how to stop RMS with the hvshut command:

```
# /opt/SMAW/bin/hvshut -a
```

2) Start the userApplication Configuration Wizard window.

1. Start the top menu for PRIMECLUSTER's **Web-Based Admin View** and select **Global Cluster Services**.
2. Select **userApplication Configuration Wizard** from the **Global Cluster Services** window.
   The **userApplication Configuration Wizard** window will be displayed.

3) Create resources.

Select **Create Resource** from the **userApplication Configuration Wizard** window, and create the following resources:

- Fsystem resources
- Inheritance network resources
- Procedure resources

1. Create Fsystem resources.

   Perform the following settings in the displayed window:

   1. **Create resource** window.

      - **Resource type**: "Fsystem"

- **Resource name**: Any resource name

2. **Select SysNode** window

   Select the active and standby nodes.

   The first node selected will be the active node, and the next node selected will be the standby node.

3. **Select mount point** window

   Select the mount point for the shared disk.

4. **Select attributes** window

   Use the default values.

5. **Confirm registration** window

   Check the registered contents, and click the **Registration** button.

2. Create inheritance network resources.

   Perform the following settings in the displayed window:

   1. **Create resource** window.

      - **Resource type**: "Ipaddress"
      - **Resource name**: Any resource name

   2. **Select SysNode** window

      Select the active and standby nodes.

      The first node selected will be the active node, and the next node selected will be the standby node.

   3. **Select takeover IP address** window

      Select "IP_Address Takeover".

   4. **Select interface** window

      Select the name of the network interface that has been assigned to the logical IP address.

   5. **Select IP address and host name** window

      Specify the logical IP address and host name.

   6. **Confirm registration** window

      Check the registered contents, and click the **Registration** button.

3. Create procedure resources.

   Perform the following settings in the displayed window:

   1. **Create Resource** window

      - **Resource type**: "Procedure"
      - **Resource name**: Any resource name

   2. **Select SysNode** window

      Select the active and standby nodes.

      The first node selected will be the active node, and the next node selected will be the standby node.

   3. **Select procedure class** window

      Select the "SystemState3" resource class specified in "4.1.2 Registering state transition procedures."

   4. **Select procedure resource** window

      Select the resource key specified with the "-k" option in "4.1.3 Registering resources that use state transition procedures."

5. **Confirm registration** window

   Check the registered contents, and click the [Registration] button.

4) Create cluster applications.

Select **Create userApplication** in the **userApplication Configuration Wizard** window.

Perform the following settings in the displayed windows:

1. **Setup userApplication name and operation method** window

   - **userApplication name**: Cluster application name
   - **Resource name**: "standby"

2. **Select SysNode** window

   Select the active and standby nodes.

   The first node selected will be the active node, and the next node selected will be the standby node.

3. **Set up attribute** window

   It is recommended that **AutoSwitchOver** be set to "HoseFailure|ResourceFailure". Change this value to match the actual cluster system operations.

4. **Select Resource** window

   Select all of the resources to be registered with the user application.

5. **Confirm registration** window

   Check the registered contents, and click the [Registration] button.

Registered user applications will be displayed for each node in the list on the left-hand side of the window.

For N:1 active/standby configuration, repeat step 2) "Create resources" and step 3) "Create cluster applications" N times (once for each active node) and register N cluster applications to match the operating environment.

For dual node mutual standby configuration, repeat step 2) "Create resources" and step 3) "Create cluster applications", and register two cluster applications. In the **Select SysNode** window, the active and standby nodes must be registered in the correct order.

5) Set up dependency relationship between cluster applications

Perform this procedure for N:1 active/standby configuration only.

Set up exclusive control so that multiple active nodes do not start on the same cluster node at the same time.

1. Select **Set up dependency between userApplication** in the **userApplication Configuration Wizard** window.
2. Specify **Exclusivity of userApplication** setting.

Add the N Operation Manager cluster applications that have been registered to the group.

4.2 Uninstalling Systemwalker Operation Manager from the PRIMECLUSTER System

This section describes how to uninstall Systemwalker Operation Manager from the PRIMECLUSTER system.

The explanation in the following example assumes that the Systemwalker Operation Manager application name is "omgr" and the mount point of the shared disk is set to "/disk1".

1. Stop applications registered with the cluster system.

   1. Select **Global Cluster Services** from the top menu of the PRIMECLUSTER **Web-Based Admin View**, and then select **Cluster Admin** from the displayed window.

      A pop-up menu will be displayed for selecting the node to connect to.

2. Select the node from the pop-up menu.

   The RMS main window will be displayed.

3. Right-click on the Systemwalker Operation Manager cluster application to be stopped on the active node from the RMS tree in the RMS main window, and then select Offline from the pop-up menu. For N:1 active/standby configuration and dual node mutual standby configuration, right-click on all active cluster applications and select Offline from the pop-up menu.

   The Systemwalker Operation Manager cluster application (in other words, the Systemwalker Operation Manager daemon managed by the cluster system) will stop.

2. Delete user applications and their resources.

   Delete the Systemwalker Operation Manager user applications and resources that have been registered in "4.1 Registering Systemwalker Operation Manager with the PRIMECLUSTER System ."

   1. Select **Global Cluster Services** from the top menu of the PRIMECLUSTER's **Web-Based Admin View**, and then select **userApplication Configuration Wizard** from the displayed window.

      A top menu of the **userApplication Configuration Wizard** window will be displayed.

   2. Right-click on the Systemwalker Operation Manager user application to be deleted from the tree on the left-hand side of the window, and then select **Remove userApplication or Resource** from the displayed pop-up menu.

      A confirmation window will be displayed.

   3. Select **All**.

      The selected Systemwalker Operation Manager user application and all of its resources will be deleted.

   For N:1 active/standby configuration and dual node mutual standby configuration, delete all of the registered Systemwalker Operation Manager user applications and resources by repeating the procedure above.

3. Delete resources that use the state transition procedure.

   Delete the resources that use the state transition procedure by using the *cldelprocrsc* command. In the example below, the resource ID is 113.

   Resource IDs that have been registered can be looked up with the *clgetree* command.

   Refer to the PRIMECLUSTER manual for details on the *cldelprocrsc* command and the *clgetree* command.

```
# /etc/opt/FJSVcluster/bin/cldelprocrsc  -r 113
```

4. Delete state transition procedure.

   Delete the state transition procedure by executing the *cldelproc* command on each of the active and standby nodes. In the following example, the procedure name is "omgr".

```
# /etc/opt/FJSVcluster/bin/cldelproc -c SystemState3 omgr
```

5. Stop daemons.

   On each node in the cluster system, use the poperationmgr command to stop each Systemwalker Operation Manager daemon. Refer to the *Systemwalker Operation Manager Reference Guide* for details on the poperationmgr command.

6. Delete symbolic links.

   Delete the symbolic links for the resources that were moved to the shared disk when the cluster system was created. Do this operation at each node in the cluster system.

7. Copy resources back from the shared disk to the local disks.

   Copy the resources that were moved to the shared disk when the cluster system was created back to the local disks. Do this operation at each active node.

8. Copy resources to the standby node.

   Copy the resources moved back to the local disk on the active node over to the standby node. For N:1 active/standby configuration, copy these resources to the standby node from any one of the N active nodes. For cascading configuration, copy these resources to all standby nodes.

9. Create symbolic links.

   For 1:1 active/standby (without subsystems), 1:1 active/standby (with subsystems), N:1 active/standby and cascading configurations, recreate the symbolic links that were deleted when resources were moved to the shared disk.

   - Create "/var/spool/mjes" as a symbolic link to "var/opt/FJSVMJS/var/spool/mjes".
   - Create "/etc/mjes" as a symbolic link to "etc/opt/FJSVMJS/etc/mjes".

   Perform this operation on all active and standby nodes. This operation is not required for 1:1 active/standby (with subsystems and partial cluster operation) configurations or dual node mutual standby configurations.

10. Restore the settings for starting and stopping daemons automatically.

    Restore the settings for the monitored process and the settings for automatically starting and stopping daemons (these were canceled in "2.2.3 Canceling the settings for starting and stopping daemons automatically") to their original settings.

11. Cancel the settings for automatic reflection.

    1. Use the following command to cancel the security information settings:

       ```
       mpaclcls -u
       ```

    2. Use the following command to cancel the settings for automatically reflecting calendar and service/application startup information:

       ```
       /opt/FJSVjmcal/bin/calsetcluster -d
       ```

    Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* command and the *calsetcluster* command.

12. Delete cluster information.

    Execute the *mpsetcluster* command with the "-d" option specified on each node in the cluster system to delete cluster information that was registered after Systemwalker Operation Manager was installed.

    ```
    # /opt/systemwalker/bin/mpsetcluster -d
    ```

    Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpsetcluster command.

13. Delete unnecessary directories from the shared disk.

    Delete any unnecessary directories left over on the shared disk from the resources that were moved to the shared disk in "2.6 Moving Resources to the Shared Disk."

    Steps 1 through 13 release Systemwalker Operation Manager from its application to the cluster system.

14. Uninstall Systemwalker Operation Manager.

    Uninstall Systemwalker Operation Manager. Refer to the *Systemwalker Operation Manager Installation Guide* for details on how to uninstall Systemwalker Operation Manager.

To reinstall Systemwalker Operation Manager, first use the procedure above to uninstall Systemwalker Operation Manager, and then reinstall it in the cluster system.

To perform upgrade installation, release Systemwalker Operation Manager from its application to the cluster system by following steps 1 through to 13 above, perform the upgrade installation, and then reapply Systemwalker Operation Manager to the cluster system, starting from "2.2.3 Canceling the settings for starting and stopping daemons automatically."

Note

While uninstalling Systemwalker Operation Manager using the procedure above, be sure to cancel the calendar automatic reflection settings using the "/opt/FJSVjmcal/bin/calsetcluster -d" command. Otherwise, the following symbolic file will remain and need to be deleted manually:

- /etc/rc3.d/S28JMCAL

4.3 Starting and Stopping Daemons in the PRIMECLUSTER System

This section describes how to start and stop the Systemwalker Operation Manager daemons in the PRIMECLUSTER system.

Starting daemons

This section describes the procedure for starting the Systemwalker Operation Manager daemons.

1. On all the servers on both the active and standby nodes, execute the *soperationmgr* command to start any Systemwalker Operation Manager daemons not registered with PRIMECLUSTER. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), the Jobscheduler and Job Execution Control daemons of subsystems not registered with a cluster system will also start.

```
# /opt/systemwalker/bin/soperationmgr
```

2. Start the Systemwalker Operation Manager daemons registered with the cluster system by varying the applications registered with the cluster system online.

    1. Select **Global Cluster Services** from the top menu of the PRIMECLUSTER's **Web-Based Admin View**, and then select **Cluster Admin** from the displayed window.

        A pop-up menu will be displayed for selecting the node to connect to.

    2. Select the required node from the pop-up menu.

        The RMS main window will be displayed.

    3. Right-click on the Systemwalker Operation Manager cluster application to be started from the RMS tree in the RMS main window, and then select Online from the pop-up menu.

        The Systemwalker Operation Manager cluster application (i.e., the Systemwalker Operation Manager daemon managed by the cluster system) will start.

Stopping daemons

This section describes the procedure for stopping the Systemwalker Operation Manager daemons.

1. Stop the Systemwalker Operation Manager daemons registered with the cluster system by varying the applications registered with the cluster system offline.

    1. Select **Global Cluster Services** from the top menu of the PRIMECLUSTER's **Web-Based Admin View**, and then select **Cluster Admin** from the displayed window.

        A pop-up menu will be displayed for selecting the node to connect to.

    2. Select the required node from the pop-up menu.

        The RMS main window will be displayed.

    3. Right-click on the Systemwalker Operation Manager cluster application to be stopped on the active node from the RMS tree in the RMS main window, and then select **Offline** from the pop-up menu.

        The Systemwalker Operation Manager cluster application (i.e., the Systemwalker Operation Manager daemons managed by the cluster system) will stop.

2. On all the servers on both the active and standby nodes, execute the *poperationmgr* command to stop any Systemwalker Operation Manager daemons not registered with PRIMECLUSTER. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), the Jobscheduler and Job Execution Control daemons of subsystems not registered with a cluster system will also stop.

```
# /opt/systemwalker/bin/poperationmgr
```

Note

- Do not move the current directory to the shared disk when executing the *soperationmgr* command or the *poperationmgr* command. Otherwise, a failover may not be performed normally.
- Do not start or stop any services with the **Service control** section of the **Systemwalker Operation Manager Environment Setup** window.
- Any cluster application where Systemwalker Operation Manager resources have been registered must be stopped before stopping Systemwalker Operation Manager (if Systemwalker Operation Manager has been registered with a cluster system).

  As a result, the shared disk and logical IP address registered with any such cluster application will also stop, along with the Operation Manager resources and any applications (such as Oracle or Interstage) registered with it. Resources created for state transition procedures that monitor daemons and registered with the cluster application will also stop.
- In order for the Jobscheduler daemon to operate, the calendar daemon must be activated before the Jobscheduler daemon.

Chapter 5 Cluster Setup Procedure Specific to Systems Using PRIMECLUSTER for Linux

This chapter describes the cluster setup procedure specific to systems using PRIMECLUSTER for Linux (hereinafter referred to as PRIMECLUSTER system).

5.1 Registering Systemwalker Operation Manager with the PRIMECLUSTER System

Use the following procedure to register Systemwalker Operation Manager with the PRIMECLUSTER system:

1. Creating state transition procedures
2. Registering the state transition procedures
3. Registering resources that use state transition procedures
4. Registering the cluster application and its resources

Each of these operations is described below.

5.1.1 Creating state transition procedures

Create the following state transition procedures to register Systemwalker Operation Manager with the PRIMECLUSTER system:

- State transition procedures that control daemon behavior (required)
- Monitoring scripts (required if there are state transition procedures that monitor daemons)
- State transition procedures that monitor daemons (optional)

Create these procedures on both the active and standby nodes, and place them at the same location in each node (use the same directory path). Do not create these files on the shared disk. Be sure to set up execution privileges after creating these procedures.

Create monitoring scripts and state transition procedures that monitor daemons in order to monitor the daemons running on the active node, and use daemon termination as a trigger for cluster failover. These procedures do not need to be created if daemon termination is not going to be used as trigger for a cluster failover.

The following sections describe examples of how to create each of these procedures. Samples of each of these procedures are provided with this product. Use these samples by making copies and modifying the copies to match the environment.

5.1.1.1 Creating state transition procedures that control daemon behavior

Create a state transition procedure to control the behavior of the Jobscheduler and Job Execution Control daemons.

The following sample state transition procedure to control daemon behavior is provided:

```
/opt/FJSVJMCMN/etc/script/OperationMGR.proc
```

The sample state transition procedure is for 1:1 active/standby (without subsystems) and cascading configurations. The state transition procedure must be modified for 1:1 active/standby (with subsystems), 1:1 active/standby (with subsystems and partial cluster operation), N:1 active/standby, and dual node mutual standby configurations.

This sample state transition procedure assumes that the name of the shared disk is "/disk1". If necessary, change this specification to match the actual name of the shared disk.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby (without subsystems) and cascading configurations, this sample file can be used without modification, but should be backed up anyway.

The following examples show how to modify the state transition procedure.

Example showing how to modify state transition procedures for 1:1 active/standby (with subsystems) and 1:1 active/standby (with subsystems and partial cluster operation) configurations

In a system where multiple subsystems are running, start/stop the daemons of Jobscheduler and Job Execution Control on each subsystem.

Below are an example showing Subsystem 0 and Subsystem 1 operating in a 1:1 active/standby configuration (with subsystems) and an example of a 1:1 active/standby configuration (with subsystems and partial cluster operation) in which Subsystem 1 is involved in cluster operation but Subsystem 0 is not. :

1. Change the "SUBSYSTEM" variable to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), modify the procedure so that only the numbers of subsystems involved in cluster operation are specified.

   [Before]

```
SUBSYSTEM="0"
```

   [After]

   1:1 active/standby configuration (with subsystems):

```
PLU_SUBSYSTEM="0 1"
```

   1:1 active/standby configuration (with subsystems and partial cluster operation):

```
PLU_SUBSYSTEM="1"
```

2. Add the for, do, and done statements to the end of START-RUN-AFTER to start Jobscheduler and Job Execution Control on each subsystem.

   [Before]

```
# Starts Job Scheduler & Job Execution Control
# - 1:1 standby, N:1 standby, 2 nodes mutual standby
      /bin/sh /etc/opt/FJSVMJS/etc/rc3.d/S99MJS -sys $SUBSYSTEM
      /bin/sh /opt/FJSVJOBSC/etc/rc3.d/S99JOBSCH -sys $SUBSYSTEM
      ;;
```

   [After]

```
# Starts Job Scheduler & Job Execution Control
# - 1:1 standby, N:1 standby, 2 nodes mutual standby
      for SUBSYSTEM in $PLU_SUBSYSTEM
      do
      /bin/sh /etc/opt/FJSVMJS/etc/rc3.d/S99MJS -sys $SUBSYSTEM
      /bin/sh /opt/FJSVJOBSC/etc/rc3.d/S99JOBSCH -sys $SUBSYSTEM
      done
      ;;
```

3. Add the for and do statements to the top of STOP-RUN-BEFORE to stop Jobscheduler and Job Execution Control on each subsystem.

   [Before]

```
'BEFORE')
    # Job Execution Control Server
    MJSDAEMON=`/bin/ps -eo pid,args | /bin/grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | /bin/
grep -v "grep" | /usr/bin/wc -l `
```

   [After]

```
BEFORE')
    # Job Execution Control Server
    for SUBSYSTEM in $PLU_SUBSYSTEM
    do
    MJSDAEMON=`/bin/ps -eo pid,args | /bin/grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | /bin/
grep -v "grep" | /usr/bin/wc -l `
```

4. Add the done statement to the end of STOP-RUN-BEFORE.

   [Before]

```
    done
    ;;
'AFTER')
```

   [After]

```
   done
    done
    ;;
'AFTER')
```

5. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), add the for, do and done statements to the end of START-RUN-AFTER to update security information on each subsystem automatically.

   [Before]

```
# - 1:1 standby, N:1 standby
        /opt/FJSVfwseo/bin/mpaclcls
        /bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh
```

   [After]

```
# - 1:1 standby, N:1 standby
        for SUBSYSTEM in $PLU_SUBSYSTEM
        do
        /opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
        /bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
        done
```

Example of how to modify the state transition procedures for N:1 active/standby configuration

1. For START-RUN-AFTER, remove the comments for the "Make symbolic links. (if N:1 standby)" section. (That is, remove the "#" from the lines of code.)

   [Before]

```
# Make symbolic links.(if N:1 standby)
# ACL Manager
#if [ ! "(" -h "/var/opt/FJSVfwseo/JM" -o -f "/var/opt/FJSVfwseo/JM" ")" ]
#then
#  /bin/ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
#fi
# Job Scheduler
#if [ ! "(" -h "/var/opt/FJSVJOBSC" -o -f "/var/opt/FJSVJOBSC" ")"]
#then
#  /bin/ln -s /disk1/FJSVJOBSC /var/opt/FJSVJOBSC
#fi
# Job Execution Control
#if [ ! "(" -h "/var/spool/mjes" -o -f "/var/spool/mjes" ")" ]
#then
#  /bin/ln -s /disk1/FJSVMJS/var/spool/mjes /var/spool/mjes
#fi
#if [ ! "(" -h "/etc/mjes" -o -f "/etc/mjes" ")" ]
#then
#  /bin/ln -s /disk1/FJSVMJS/etc/mjes /etc/mjes
#fi
# Calendar
#if [ ! "(" -h "/var/opt/FJSVjmcal/post" -o -f "/var/opt/FJSVjmcal/post" ")" ]
#then
#  /bin/ln -s /disk1/FJSVjmcal/post /var/opt/FJSVjmcal/post
#fi
```

```
# Stem
#if [ ! "(" -h "/var/opt/FJSVstem" -o -f "/var/opt/FJSVstem" ")" ]
#then
#  /bin/ln -s /disk1/FJSVstem /var/opt/FJSVstem
#fi
# - 1:1 standby, N:1 standby
```

[After]

```
# Make symbolic links.(if N:1 standby)
# ACL Manager
if [ ! "(" -h "/var/opt/FJSVfwseo/JM" -o -f "/var/opt/FJSVfwseo/JM" ")" ]
then
  /bin/ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
fi
# Job Scheduler
if [ ! "(" -h "/var/opt/FJSVJOBSC" -o -f "/var/opt/FJSVJOBSC" ")"]
then
  /bin/ln -s /disk1/FJSVJOBSC /var/opt/FJSVJOBSC
fi
# Job Execution Control
if [ ! "(" -h "/var/spool/mjes" -o -f "/var/spool/mjes" ")" ]
then
 /bin/ln -s /disk1/FJSVMJS/var/spool/mjes /var/spool/mjes
fi
if [ ! "(" -h "/etc/mjes" -o -f "/etc/mjes" ")" ]
then
 /bin/ln -s /disk1/FJSVMJS/etc/mjes /etc/mjes
fi
# Calendar
if [ ! "(" -h "/var/opt/FJSVjmcal/post" -o -f "/var/opt/FJSVjmcal/post" ")" ]
then
 /bin/ln -s /disk1/FJSVjmcal/post /var/opt/FJSVjmcal/post
fi
# Stem (*1)
if [ ! "(" -h "/var/opt/FJSVstem" -o -f "/var/opt/FJSVstem" ")" ]
then
/bin/ln -s /disk1/FJSVstem /var/opt/FJSVstem
fi
# - 1:1 standby, N:1 standby
```

*1: Remove the comment only if the Master Schedule Management function is enabled.

2. For STOP-RUN-AFTER, remove the comments for the "remove symbolic links. (if N:1 standby)" section. (That is, remove the "#" from the lines of code.)

   [Before]

```
# remove symbolic links.(if N:1 standby)
# Job Scheduler
#if [ -h "/var/opt/FJSVJOBSC" ]
#then
#      /bin/rm /var/opt/FJSVJOBSC
#fi
# Job Execution Control
#if [ -h "/var/spool/mjes" ]
#then
#      /bin/rm /var/spool/mjes
#fi
#if [ -h "/etc/mjes" ]
#then
#      /bin/rm /etc/mjes
#fi
# ACL Manager
```

```
#/opt/FJSVfwseo/bin/mpaclcls -u
#if [ -h "/var/opt/FJSVfwseo/JM" ]
#then
#      /bin/rm /var/opt/FJSVfwseo/JM
#fi
# Calendar
#if [ -h "/var/opt/FJSVjmcal/post" ]
#then
#      /bin/rm /var/opt/FJSVjmcal/post
#fi
# Stem
#if [ -h "/var/opt/FJSVstem" ]
#then
#      /bin/rm /var/opt/FJSVstem
#fi
;;
```

[After]

```
# remove symbolic links.(if N:1 standby)
# Job Scheduler
if [ -h "/var/opt/FJSVJOBSC" ]
then
      /bin/rm /var/opt/FJSVJOBSC
fi
# Job Execution Control
if [ -h "/var/spool/mjes" ]
then
      /bin/rm /var/spool/mjes
fi
if [ -h "/etc/mjes" ]
then
      /bin/rm /etc/mjes
fi
# ACL Manager
/opt/FJSVfwseo/bin/mpaclcls -u
if [ -h "/var/opt/FJSVfwseo/JM" ]
then
      /bin/rm /var/opt/FJSVfwseo/JM
fi
# Calendar
if [ -h "/var/opt/FJSVjmcal/post" ]
then
      /bin/rm /var/opt/FJSVjmcal/post
fi
# Stem (*1)
if [ -h "/var/opt/FJSVstem" ]
then
      /bin/rm /var/opt/FJSVstem
fi
;;
```

*1: Remove the comment only if the Master Schedule Management function is enabled.

3. Prepare N copies of the state transition procedure file (one for each active node), assigning a unique name to each copy. Change the directory ("/disk1" in the example) where symbolic links will be created so that it matches the shared disk of each active node.

4. Place each state transition procedure file on its respective active node, and then copy all of the state transition procedure files to the standby node, storing all N files in the same directory path as was used to store the files on the active nodes.

   The following example shows how to place these files when there are three active nodes:

   ```
   Active node1: /opt/FJSVJMCMN/etc/script/OperationMGR1.proc
   ```

```
Active node2: /opt/FJSVJMCMN/etc/script/OperationMGR2.proc

Active node3: /opt/FJSVJMCMN/etc/script/OperationMGR3.proc

Standby node: /opt/FJSVJMCMN/etc/script/OperationMGR1.proc
              /opt/FJSVJMCMN/etc/script/OperationMGR2.proc
              /opt/FJSVJMCMN/etc/script/OperationMGR3.proc
```

Example of how to modify the state transition procedure for dual node mutual standby configurations

1. Change the value of the "SUBSYSTEM" variable in the state transition procedure file to "1".

   [Before]

   ```
   SUBSYSTEM="0"
   ```

   [After]

   ```
   SUBSYSTEM="1"
   ```

2. Modify the "- 1:1 standby, N:1 standby" section for START-RUN-AFTER so that it matches dual node mutual standby configuration. (Change the positions of "#".)

   [Before]

   ```
   # - 1:1 standby, N:1 standby
       /opt/FJSVfwseo/bin/mpaclcls
       /bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh
   # - 2 nodes mutual standby
       #/opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
       #/bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
   # Starts Job Scheduler & Job Execution Control
   ```

   [After]

   ```
   # - 1:1 standby, N:1 standby
       #/opt/FJSVfwseo/bin/mpaclcls
       #/bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh
   # - 2 nodes mutual standby
       /opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
       /bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
   # Starts Job Scheduler & Job Execution Control
   ```

3. Prepare another state transition procedure file with the same (modified) contents, rename the file, and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

   ```
   SUBSYSTEM="1"
   ```

   [After]

   ```
   SUBSYSTEM="2"
   ```

4. Place the two state transition procedure files on the active and standby nodes, using the same directory path in each case.
   The following example shows how to place these files:

   ```
   Active node1: /opt/FJSVJMCMN/etc/script/OperationMGR1.proc
     (Standby node2)/opt/FJSVJMCMN/etc/script/OperationMGR2.proc

   Active node2: /opt/FJSVJMCMN/etc/script/OperationMGR2.proc
     (Standby node1)/opt/FJSVJMCMN/etc/script/ OperationMGR1.proc
   ```

5.1.1.2 Creating monitoring scripts

Create monitoring scripts that will be called from the state transition procedure that monitors the daemons.

The following sample monitoring script is provided:

```
/opt/FJSVJMCMN/etc/script/omgr_smonitor
```

This sample monitoring script is for the 1:1 active/standby (without subsystems) and cascading configurations. It must be modified for 1:1 active/standby (with subsystems), 1:1 active/standby (with subsystems and partial cluster operation), N:1 active/standby and dual node mutual standby configurations.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby (without subsystems) and cascading configurations, this sample file can be used without modification, but should be backed up anyway.

The following examples show how to modify the monitoring script.

Example showing how to modify state transition procedures for 1:1 active/standby (with subsystems) and 1:1 active/standby (with subsystems and partial cluster operation) configurations

In a system where multiple subsystems are running, perform daemon monitoring for each subsystem. Below are an example showing Subsystem 0 and Subsystem 1 operating in a 1:1 active/standby configuration (with subsystems) and an example of a 1:1 active/standby configuration (with subsystems and partial cluster operation) in which Subsystem 1 is involved in cluster operation but Subsystem 0 is not. :

1. Change the "SUBSYSTEM" variable to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), modify the script so that only the numbers of subsystems involved in cluster operation are specified.

   [Before]

   ```
   SUBSYSTEM="0"
   ```

   [After]

   1:1 active/standby configuration (with subsystems):

   ```
   PLU_SUBSYSTEM="0 1"
   ```

   1:1 active/standby configuration (with subsystems and partial cluster operation):

   ```
   PLU_SUBSYSTEM="1"
   ```

2. Add the for and do statements immediately after while do to monitor daemons on each subsystem.

   [Before]

   ```
   while /bin/true
   do
       MJSDAEMON=`/bin/ps -eo pid,args | /bin/grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | /bin/
   grep -v "grep" | /usr/bin/wc -l `
   ```

   [After]

   ```
   while /bin/true
   do
       for SUBSYSTEM in $PLU_SUBSYSTEM
       do
       MJSDAEMON=`/bin/ps -eo pid,args | /bin/grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | /bin/
   grep -v "grep" | /usr/bin/wc -l `
   ```

3. Add the done statement before sleep 10.

   [Before]

   ```
     /bin/sleep 10
   done
   ```

[After]

```
  done
  /bin/sleep 10
done
```

Example of how to modify the monitoring script for N:1 active/standby configuration

1. Prepare N copies of the monitoring scripts (one for each active node), assigning a unique name to each copy.
2. Place each monitoring script on its respective active node, and then copy all of the monitoring scripts to the standby node, storing all N scripts in the same directory path as was used to store the files on the active nodes.

   The following example shows how to place these files when there are three active nodes:

```
Active node1: /opt/FJSVJMCMN/etc/script/omgr_smonitor1

Active node2: /opt/FJSVJMCMN/etc/script/omgr_smonitor2

Active node3: /opt/FJSVJMCMN/etc/script/omgr_smonitor3

Standby node: /opt/FJSVJMCMN/etc/script/omgr_smonitor1
              /opt/FJSVJMCMN/etc/script/omgr_smonitor2
              /opt/FJSVJMCMN/etc/script/omgr_smonitor3
```

Example of how to modify the monitoring script for dual node mutual standby configuration

1. Change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Prepare another monitoring script with the same (modified) contents, rename the file, and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

   [After]

```
SUBSYSTEM="2"
```

3. Place the two monitoring scripts on the active and standby nodes, using the same directory path in each case.

   The following example shows how to place these files:

```
Active node1: /opt/FJSVJMCMN/etc/script/omgr_smonitor1
  (Standby node2)/opt/FJSVJMCMN/etc/script/omgr_smonitor2

Active node2: /opt/FJSVJMCMN/etc/script/omgr_smonitor2
  (Standby node1)/opt/FJSVJMCMN/etc/script/omgr_smonitor1
```

5.1.1.3 Creating state transition procedures that monitor daemons

Create a state transition procedure that monitors the daemons of Jobscheduler and Job Execution Control. The following sample state transition procedure that monitors the daemons is provided:

```
/opt/FJSVJMCMN/etc/script/omgr_monitor.proc
```

This sample state transition procedure is for 1:1 active/standby and cascading configurations. This state transition procedure must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby and cascading configurations, this sample file can be used without modification, but should be backed up anyway.

The following examples show how to modify the state transition procedure.

Example of how to modify the state transition procedure for N:1 active/standby configuration

Create N copies of state transition procedure file that monitor daemons, assigning a unique name to each copy. Change the monitoring script file name specified in the state transition procedure to the name of the file created in "5.1.1.2 Creating monitoring scripts."

1. Prepare N copies of the state transition procedure file (one for each active node), assigning a unique name to each copy. Change the information in each file to match the environment.
   The following example shows how to make changes when there are three nodes:

   - State transition procedure that monitors daemons: omgr_monitor1.proc

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor1 -c 0
   ```

   - State transition procedure that monitors daemons: omgr_monitor2.proc

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor2 -c 0
   ```

   - State transition procedure that monitors daemons: omgr_monitor3.proc

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor3 -c 0
   ```

2. Place each state transition procedure file on its respective active node, and then copy all the state transition procedure files to the standby node, storing all N files in the same directory path as was used to store the files on the active nodes.

   The following example shows how to place these files when there are three active nodes:

   ```
   Active node1: /opt/FJSVJMCMN/etc/script/omgr_monitor1.proc

   Active node2: /opt/FJSVJMCMN/etc/script/omgr_monitor2.proc

   Active node3: /opt/FJSVJMCMN/etc/script/omgr_monitor3.proc

   Standby node: /opt/FJSVJMCMN/etc/script/omgr_monitor1.proc
                 /opt/FJSVJMCMN/etc/script/omgr_monitor2.proc
                 /opt/FJSVJMCMN/etc/script/omgr_monitor3.proc
   ```

Example of how to modify the state transition procedure for dual node mutual standby configuration

Create two copies of state transition procedure file that monitor daemons, assigning a unique name to each copy. Change the monitoring script file name specified in the state transition procedure to the name of the file created in "5.1.1.2 Creating monitoring scripts."

1. Change the file name of the monitoring script for one state transition procedure.

   [Before]

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor -c 0
   ```

   [After]

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor1 -c 0
   ```

2. Change the file name of the monitoring script for the other state transition procedure.

   [Before]

   ```
   $CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor -c 0
   ```

   [After]

```
$CLMONPROC -s -r $4 -a /opt/FJSVJMCMN/etc/script/omgr_smonitor2 -c 0
```

3. Place the two state transition procedure files on the active and standby nodes, using the same directory path in each case.

   The following example shows how to place these files:

```
Active node1: /opt/FJSVJMCMN/etc/script/omgr_monitor1.proc
  (Standby node2)/opt/FJSVJMCMN/etc/script/omgr_monitor2.proc

Active node2: /opt/FJSVJMCMN/etc/script/omgr_monitor2.proc
  (Standby node1)/opt/FJSVJMCMN/etc/script/omgr_monitor1.proc
```

5.1.2 Registering state transition procedures

Use the *clsetproc* cluster system command to register the created state transition procedures with the cluster system.

For 1:1 active/standby configuration, register state transition procedures by executing this command on both the active node and the standby node.

For N:1 active/standby configuration, register state transition procedures by executing this command on each active node, and then register all N state transition procedures with the standby node.

For dual node mutual standby configuration, register both types of state transition procedure with each node.

For cascading configuration, register state transition procedures by executing this command on the active node and all the standby nodes.

When registering state transition procedure file names, specify a state transition procedure file name that actually exists. Also, make each state transition procedure name unique within the cluster system.

Registering state transition procedures that control daemon behavior

The following execution example shows that the "opt/FJSVJMCMN/etc/script/OperationMGR.proc" state transition procedure file that controls daemon behavior is registered under the SystemState3 class as state transition procedure name "omgr".

```
# /etc/opt/FJSVcluster/bin/clsetproc -c SystemState3 -m omgr /opt/FJSVJMCMN/etc/script/
OperationMGR.proc
```

Registering state transition procedures that monitor daemons

The following execution example shows that the "opt/FJSVJMCMN/etc/script/omgr_monitor.proc" state transition procedure file that monitors daemons is registered under the SystemState3 class as state transition procedure name "omgrmonitor".

```
# /etc/opt/FJSVcluster/bin/clsetproc -c SystemState3 -m omgrmonitor /opt/FJSVJMCMN/etc/script/
omgr_monitor.proc
```

5.1.3 Registering resources that use state transition procedures

Use the *claddprocrsc* cluster system command to register the state transition procedures as program resources with the cluster system.

For 1:1 active/standby configuration, register state transition procedures as resources by executing this command on both the active node and the standby node.

For N:1 active/standby configuration, register state transition procedures as resources by executing this command on each active node, and then register all N state transition procedures with the standby node.

For dual node mutual standby configuration, register both types of state transition procedure as resources on each node.

For cascading configuration, register state transition procedures as resources by executing this command on the active node and all the standby nodes.

Registering state transition procedures that control daemon behavior

The following execution example shows that "omgr" is specified as the state transition procedure file, "AFTER" is specified for the state transition instruction type "START RUN", and "BEFORE" and "AFTER" are specified for "STOP RUN". The resource key is OMGR, the resource class name is SystemState3 and the startup priority is 100.

```
# /etc/opt/FJSVcluster/bin/claddprocrsc  -k OMGR -m omgr -c SystemState3 -p 100 -K AFTER -S
BEFORE,AFTER
```

When the registration process completes, the resource ID will be displayed.

Registering state transition procedures that monitor daemons

The following execution example shows that "omgrmonitor" is specified as the state transition procedure file, "AFTER" is specified for the state transition instruction type "START RUN", and "BEFORE" is specified for "STOP RUN". The resource key is OMGRMONITOR, the resource class name is SystemState3 and the startup priority is 150.

```
# /etc/opt/FJSVcluster/bin/claddprocrsc -k OMGRMONITOR -m omgrmonitor -c SystemState3 -p 150 -K AFTER
-S BEFORE
```

When the registration process completes, the resource ID will be displayed.

5.1.4 Registering cluster applications and resources

This section describes the procedure for registering Systemwalker Operation Manager as a cluster application.

1) Stop RMS and start the RMS Wizard

Before registering the cluster application, use either ClusterAdmin or the *hvdisp* command to check that RMS is not running. If RMS is running, stop it on every node in the cluster system using either ClusterAdmin or the *hvshut* command.

Refer to the PRIMECLUSTER manual for details on the *hvdisp* and *hvshut* commands.

Example of how to stop RMS with the *hvshut* command:

```
# /opt/SMAW/SMAWRrms/bin/hvshut -a
```

Start the RMS Wizard by executing the *hvw* command.

Refer to the PRIMECLUSTER manual for details on the *hvw* command.

Example of how to start the RMS Wizard using "config" as the configuration file name:

```
# /opt/SMAW/SMAWRrms/bin/hvw -n config
```

The "Main Configuration Menu" will be displayed.

If other products are already registered with the cluster system, be sure to specify a configuration file that includes configuration information for all such products. Otherwise, the settings for products that have already been set up may be erased.

2) Set up the userApplication (cluster application).

Use the following procedure to set up the cluster application:

1. Select "Application-Create".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                              10) Configuration-Remove
 2) QUIT                              11) Configuration-Freeze
 3) Application-Create                12) Configuration-Thaw
 4) Application-Edit                  13) Configuration-Edit-Global-Settings
 5) Application-Remove                14) Configuration-Consistency-Report
 6) Application-Clone                 15) Configuration-ScriptExecution
 7) Configuration-Generate            16) RMS-CreateMachine
```

```
 8) Configuration-Activate              17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 3
```

2. Select "STANDBY".

```
Creation: Application type selection menu:
1) HELP                                 7) SCALABLE
2) QUIT                                 8) STANDBY
3) RETURN
4) OPTIONS
5) DEMO
6) GENERIC
Application Type: 8
```

3. Select "ApplicationName" and set up a name for the userApplication.

```
Settings of turnkey wizard "STANDBY" (APP1:not yet consistent)
1) HELP                                 4) REMOVE+EXIT
2) NO-SAVE+EXIT                         5) ApplicationName=APP1
3) SAVE+EXIT                            6) Machines+Basics(-)
Choose the setting to process: 5
```

Select "FREECHOICE".

```
1) HELP
2) RETURN
3) FREECHOICE
Enter the name of this turnkey type wizard name: 3
```

Set "ApplicationName". Specify any name for the application. In the following example, "OP1" is specified as the name of the application.

```
        >> OP1
```

4. Select "Machines+Basics" to perform node settings and basic settings.

```
Settings of turnkey wizard "STANDBY" (OP1:not yet consistent)
1) HELP                                 4) REMOVE+EXIT
2) NO-SAVE+EXIT                         5) ApplicationName=OP1
3) SAVE+EXIT                            6) Machines+Basics(-)
Choose the setting to process: 6
```

Select "AdditionalMachine".

```
Machines+Basics (op1:consistent)
 1) HELP                                14) (AutoStartUp=no)
 2) -                                   15) (AutoSwitchOver=No)
 3) SAVE+EXIT                           16) (PreserveState=no)
 4) REMOVE+EXIT                         17) (PersistentFault=0)
 5) AdditionalMachine                   18) (ShutdownPriority=)
 6) AdditionalConsole                   19) (OnlinePriority=)
 7) Machines[0]=linux01RMS              20) (StandbyTransitions=)
 8) (PreCheckScript=)                   21) (LicenseToKill=no)
 9) (PreOnlineScript=)                  22) (AutoBreak=yes)
10) (PostOnlineScript=)                 23) (HaltFlag=no)
11) (PreOfflineScript=)                 24) (PartialCluster=0)
12) (OfflineDoneScript=)                25) (ScriptTimeout=)
13) (FaultScript=)
Choose the setting to process: 5
```

Select "linux02RMS". Set Machines[0] for the active node and Machines[1] for the standby node.

```
1) HELP
2) RETURN
3) linux01RMS
4) linux02RMS
Choose a machine for this application: 4
```

Select "AutoSwitchOver".

```
Machines+Basics (op1:consistent)
 1) HELP                              14) (FaultScript=)
 2) -                                 15) (AutoStartUp=no)
 3) SAVE+EXIT                         16) (AutoSwitchOver=No)
 4) REMOVE+EXIT                       17) (PreserveState=no)
 5) AdditionalMachine                 18) (PersistentFault=0)
 6) AdditionalConsole                 19) (ShutdownPriority=)
 7) Machines[0]=linux01RMS            20) (OnlinePriority=)
 8) Machines[1]=linux02RMS            21) (StandbyTransitions=)
 9) (PreCheckScript=)                 22) (LicenseToKill=no)
10) (PreOnlineScript=)                23) (AutoBreak=yes)
11) (PostOnlineScript=)               24) (HaltFlag=no)
12) (PreOfflineScript=)               25) (PartialCluster=0)
13) (OfflineDoneScript=)              26) (ScriptTimeout=)
Choose the setting to process: 16
```

Select "HOSTFAILURE" and "RESOURCEFAILURE".

In this example, "HOSTFAILURE" and "RESOURCEFAILURE" are selected to trigger a failover when the active node fails or when resources fail. When making actual settings, select values that are appropriate to the actual cluster system operation.

```
Set flags for AutoSwitchOver:  Currently set: NO (N)
1) HELP                  4) DEFAULT               7) RESOURCEFAILURE(R)
2) -                     5) NO(N)                 8) SHUTDOWN(S)
3) SAVE+RETURN           6) HOSTFAILURE(H)
Choose one of the flags: 6

Set flags for AutoSwitchOver:  Currently set: HOSTFAILURE (H)
1) HELP                  4) DEFAULT               7) RESOURCEFAILURE(R)
2) -                     5) NO(N)                 8) SHUTDOWN(S)
3) SAVE+RETURN           6) NOT:HOSTFAILURE(H)
Choose one of the flags: 7
```

After making these settings, select "SAVE+RETURN".

```
Set flags for AutoSwitchOver:  Currently set: HOSTFAILURE,RESOURCEFAILURE (HR)
1) HELP                  4) DEFAULT               7) NOT:RESOURCEFAILURE(R)
2) -                     5) NO(N)                 8) SHUTDOWN(S)
3) SAVE+RETURN           6) NOT:HOSTFAILURE(H)
Choose one of the flags: 3
```

5. After performing these settings, select "SAVE+EXIT".

   In this example, "AutoStartUp" is set to "no", so that the cluster application does not start automatically when RMS starts. When performing the actual settings, select values that are appropriate to the actual cluster system operation. Similarly for other values, select values that are appropriate to the actual cluster system operation.

```
Machines+Basics (op1:consistent)
 1) HELP
 2) -
 3) SAVE+EXIT
 4) REMOVE+EXIT
 5) AdditionalMachine
 6) AdditionalConsole
 7) Machines[0]=linux01RMS
 8) Machines[1]=linux02RMS
```

```
 9) (PreCheckScript=)
10) (PreOnlineScript=)
11) (PostOnlineScript=)
12) (PreOfflineScript=)
13) (OfflineDoneScript=)
14) (FaultScript=)
15) (AutoStartUp=no)
16) (AutoSwitchOver=HostFailure|ResourceFailure)
17) (PreserveState=no)
18) (PersistentFault=0)
19) (ShutdownPriority=)
20) (OnlinePriority=)
21) (StandbyTransitions=)
22) (LicenseToKill=no)
23) (AutoBreak=yes)
24) (HaltFlag=no)
25) (PartialCluster=0)
26) (ScriptTimeout=)
Choose the setting to process: 3
```

3) Set up resources.

Register resources with the cluster application. The procedure for setting up cluster applications using the following resources is explained below.

- Fsystem resources (shared disk resources)
- Gls resources (takeover IP address resources)
- Procedure resources (state transition procedures)

- The mount point used as resource must be defined beforehand in the /etc/fstab directory (for PRIMECLULSTER 4.2A00) or in the /etc/fstab.pcl directory (for PRIMECLUSTER 4.2A30 or later) on all nodes that configure the cluster application. Refer to the PRIMECLUSTER manual for details.
- Before setting the Gls resource, you need to set the virtual interface and the takeover virtual interface. Refer to the PRIMECLUSTER manual for details.

[Set up Fsystem resources]

1. Set up Fsystem resources (shared disks) by selecting "LocalFileSystem".

```
Settings of turnkey wizard "STANDBY" (OP1:not yet consistent)
 1) HELP                                9) Procedure:BasicApplication(-)
 2) -                                  10) Symfoware(-)
 3) SAVE+EXIT                          11) Procedure:SystemState3(-)
 4) -                                  12) Procedure:SystemState2(-)
 5) ApplicationName=OP1                13) Gls:Global-Link-Services(-)
 6) Machines+Basics(op1)               14) LocalFileSystems(-)
 7) CommandLines(-)                    15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 14
```

Select "AdditionalMountPoint".

```
File systems (Lfs_OP1:not yet consistent)
1) HELP                  4) REMOVE+EXIT           7) (Timeout=180)
2) -                     5) AdditionalMountPoint
3) SAVE+EXIT             6) (Filter=)
Choose the setting to process: 5
```

2. Select the mount point to be registered with the cluster application. In the following example, "/disk1" is selected.

```
1) HELP
2) RETURN
3) FREECHOICE
4) ALL
5) /disk1
Choose a mount point: 5
```

3. To set the "MONITORONLY" attribute to ON, select "MONITORONLY".

```
Set flags for mount point: /disk1 Currently set: LOCAL,AUTORECOVER (LA)
1) HELP                  4) DEFAULT               7) SHARE(S)
2) -                     5) SYNC(Y)               8) MONITORONLY(M)
3) SAVE+RETURN           6) NOT:AUTORECOVER(A)
Choose one of the flags: 8
```

4. Select "SAVE+RETURN".

```
Set flags for mount point: /disk1 Currently set: LOCAL,AUTORECOVER,MONITORONLY (LAM)
1) HELP                  4) DEFAULT               7) SHARE(S)
2) -                     5) SYNC(Y)               8) MONITORONLY(M)
3) SAVE+RETURN           6) NOT:AUTORECOVER(A)
Choose one of the flags: 3
```

5. Select "SAVE+EXIT".

```
File systems (Lfs_OP1:consistent)
1) HELP                              5) AdditionalMountPoint
2) -                                 6) MountPoints[0]=LAM:/disk1
3) SAVE+EXIT                         7) (Filter=)
4) REMOVE+EXIT                       8) (Timeout=180)
Choose the setting to process: 3
```

[Set up Gls resources]

1. Select "Gls" to set up Gls resources (takeover IP address).

```
Settings of turnkey wizard "STANDBY" (OP1:consistent)
 1) HELP                              9) Procedure:BasicApplication(-)
 2) -                                10) Symfoware(-)
 3) SAVE+EXIT                        11) Procedure:SystemState3(-)
 4) -                                12) Procedure:SystemState2(-)
 5) ApplicationName=OP1              13) Gls:Global-Link-Services(-)
 6) Machines+Basics(op1)             14) LocalFileSystems(Lfs_OP1)
 7) CommandLines(-)                  15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 13
```

2. Select "AdditionalTakeoverIpaddress".

```
Gls (Gls_OP1:not yet consistent)
1) HELP                              4) REMOVE+EXIT
2) -                                 5) AdditionalTakeoverIpaddress
3) SAVE+EXIT                         6) (Timeout=60)
Choose the setting to process: 5
```

3. The takeover IP address will be displayed. Select the takeover IP address to be registered with the cluster application. In the following example, "000.000.000.00x" is selected.

```
1) HELP
2) RETURN
3) FREECHOICE
```

```
4) 000.000.000.00x
Choose a takeover IP address for Gls: 4
```

4. Select "SAVE+RETURN".

```
Set a flag for takeover IP address: 000.000.000.00x
Currently set:
1) HELP                                5) AUTORECOVER(A)
2) -
3) SAVE+RETURN
4) DEFAULT
Choose additonally one of the flags: 3
```

5. Select "SAVE+EXIT".

```
Gls (Gls_OP1:consistent)
1) HELP                                5) AdditionalTakeoverIpaddress
2) -                                   6) TakeoverIpaddress[0]=N,000.000.000.00x
3) SAVE+EXIT                           7) (Timeout=60)
4) REMOVE+EXIT
Choose the setting to process: 3
```

[Set up procedure resources]

1. Select "SystemState3". Select the "SystemState3" resource class specified in "5.1.3 Registering resources that use state transition procedures."

```
Settings of turnkey wizard "STANDBY" (OP1:consistent)
 1) HELP                                9) Procedure:BasicApplication(-)
 2) -                                  10) Symfoware(-)
 3) SAVE+EXIT                          11) Procedure:SystemState3(-)
 4) -                                  12) Procedure:SystemState2(-)
 5) ApplicationName=OP1                13) Gls:Global-Link-Services(Gls_OP1)
 6) Machines+Basics(op1)               14) LocalFileSystems(Lfs_OP1)
 7) CommandLines(-)                    15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 11
```

2. Select "AdditionalProcedureResource".

```
SystemState3 Procedure (ProSS3_OP1:not yet consistent)
1) HELP                                3) REMOVE+EXIT
2) -                                   4) AdditionalProcedureResource
Choose the setting to process: 4
```

3. "OMGR", the state transition procedure specified in "5.1.3 Registering resources that use state transition procedures," will be displayed. Select "OMGR" to be registered with the cluster application.

```
1) HELP
2) RETURN
3) OMGR
4) OMGRMONITOR
Choose an procedure resource name: 3
```

4. Select "SAVE+RETURN".

```
Set flags for Procedure resource :
Currently set: TIMEOUT (T1800), PRIORITY (P100)
1) HELP
2) -
3) SAVE+RETURN
4) TIMEOUT
5) PRIORITY
Choose one of the flags: 3
```

5. Select "AdditionalProcedureResourc".

```
SystemState3 Procedure (ProSS3_OP1:consistent)
1) HELP
2) -
3) SAVE+EXIT
4) REMOVE+EXIT
5) AdditionalProcedureResource
6) ProcedureResources[0]=OMGR:T1800,P100
Choose the setting to process: 5
```

6. "OMGRMONITOR", the state transition procedure specified in "5.1.3 Registering resources that use state transition procedures," will be displayed. Select "OMGRMONITOR" to be registered with the cluster application.

```
1) HELP
2) RETURN
3) OMGR
4) OMGRMONITOR
Choose an procedure resource name: 4
```

7. Select "SAVE+RETURN".

```
Set flags for Procedure resource :
Currently set: TIMEOUT (T1800), PRIORITY (P150)
1) HELP
2) -
3) SAVE+RETURN
4) TIMEOUT
5) PRIORITY
Choose one of the flags: 3
```

8. Select "SAVE+EXIT".

```
SystemState3 Procedure (ProSS3_OP1:consistent)
1) HELP
2) -
3) SAVE+EXIT
4) REMOVE+EXIT
5) AdditionalProcedureResource
6) ProcedureResources[0]=OMGR:T1800,P100
7) ProcedureResources[1]=OMGRMONITOR:T1800,P150
Choose the setting to process: 3
```

[Set up resources]

After performing these settings, select "SAVE+EXIT" to set up resources with the cluster application.

```
Settings of turnkey wizard "STANDBY" (OP1:consistent)
 1) HELP                                9) Procedure:BasicApplication(-)
 2) -                                  10) Symfoware(-)
 3) SAVE+EXIT                          11) Procedure:SystemState3(ProSS3_OP1)
 4) -                                  12) Procedure:SystemState2(-)
 5) ApplicationName=OP1                13) Gls:Global-Link-Services(Gls_OP1)
 6) Machines+Basics(op1)               14) LocalFileSystems(Lfs_OP1)
 7) CommandLines(-)                    15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 3
```

4) Perform "Generate" and "Activate" operations.

The procedures for the "Generate" and "Activate" operations are explained below. Perform these operations after verifying that the created cluster application is correct.

1. Select "Configuration-Generate".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                              10) Configuration-Remove
 2) QUIT                              11) Configuration-Freeze
 3) Application-Create                12) Configuration-Thaw
 4) Application-Edit                  13) Configuration-Edit-Global-Settings
 5) Application-Remove                14) Configuration-Consistency-Report
 6) Application-Clone                 15) Configuration-ScriptExecution
 7) Configuration-Generate            16) RMS-CreateMachine
 8) Configuration-Activate            17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 7
```

2. Select "Configuration-Activate".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                              10) Configuration-Remove
 2) QUIT                              11) Configuration-Freeze
 3) Application-Create                12) Configuration-Thaw
 4) Application-Edit                  13) Configuration-Edit-Global-Settings
 5) Application-Remove                14) Configuration-Consistency-Report
 6) Application-Clone                 15) Configuration-ScriptExecution
 7) Configuration-Generate            16) RMS-CreateMachine
 8) Configuration-Activate            17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 8
```

3. Select "QUIT" to end the procedure.

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                              10) Configuration-Remove
 2) QUIT                              11) Configuration-Freeze
 3) Application-Create                12) Configuration-Thaw
 4) Application-Edit                  13) Configuration-Edit-Global-Settings
 5) Application-Remove                14) Configuration-Consistency-Report
 6) Application-Clone                 15) Configuration-ScriptExecution
 7) Configuration-Generate            16) RMS-CreateMachine
 8) Configuration-Activate            17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 2
```

For N:1 active/standby configuration, repeat steps 2), 3) and 4) to register N copies of cluster applications (one for each active node) according to the operating environment.

For dual node mutual standby configuration, repeat steps 2), 3) and 4) to register two copies of cluster applications. For "Machines[0]" and "Machines[1]" in "Machines+Basics", ensure that the active and standby nodes are registered in the correct priority order.

5) Cluster service registration of products supported by PRIMECLUSTER

Register with the cluster service using the procedure below.

1. Register the cluster service for the products supported by PRIMECLUSTER

   Execute the following command on 1 node that configures the cluster system:

```
# /etc/opt/FJSVcluster/bin/clrwzconfig
```

6) Set up exclusive relationship between cluster applications

Perform this procedure for N:1 active/standby configuration only.

Set up exclusive control so that multiple cluster applications do not become active on the same cluster node at the same time. Create a cluster application group in order to set up exclusive relationship.

1. Start the RMS Wizard to select "Application-Edit".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                              10) Configuration-Remove
 2) QUIT                              11) Configuration-Freeze
 3) Application-Create                12) Configuration-Thaw
 4) Application-Edit                  13) Configuration-Edit-Global-Settings
 5) Application-Remove                14) Configuration-Consistency-Report
 6) Application-Clone                 15) Configuration-ScriptExecution
 7) Configuration-Generate            16) RMS-CreateMachine
 8) Configuration-Activate            17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 4
```

2. Select an application for which you set up exclusive relationship.

```
Edit: Application selection menu (restricted):
1) HELP
2) QUIT
3) RETURN
4) OPTIONS
5) OP1
Application Name: 5
```

3. Select "Machines+Basics".

```
Settings of turnkey wizard "STANDBY" (OP1:consistent)
 1) HELP                               9) Procedure:BasicApplication(-)
 2) READONLY                          10) Symfoware(-)
 3) SAVE+EXIT                         11) Procedure:SystemState3(ProSS3_OP1)
 4) -                                 12) Procedure:SystemState2(-)
 5) ApplicationName=OP1               13) Gls:Global-Link-Services(Gls_OP1)
 6) Machines+Basics(op1)              14) LocalFileSystems(Lfs_OP1)
 7) CommandLines(-)                   15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 6
```

4. Select "LicenseToKill".

```
Machines+Basics (op1:consistent)
 1) HELP
 2) -
 3) SAVE+EXIT
 4) REMOVE+EXIT
 5) AdditionalMachine
 6) AdditionalConsole
 7) Machines[0]=linux01RMS
 8) Machines[1]=linux02RMS
 9) (PreCheckScript=)
10) (PreOnlineScript=)
11) (PostOnlineScript=)
12) (PreOfflineScript=)
13) (OfflineDoneScript=)
14) (FaultScript=)
15) (AutoStartUp=no)
16) (AutoSwitchOver=HostFailure|ResourceFailure)
17) (PreserveState=no)
18) (PersistentFault=0)
19) (ShutdownPriority=)
20) (OnlinePriority=)
```

```
21) (StandbyTransitions=)
22) (LicenseToKill=no)
23) (AutoBreak=yes)
24) (HaltFlag=no)
25) (PartialCluster=0)
26) (ScriptTimeout=)
Choose the setting to process: 22
```

5. Select "FREECHOICE".

```
1) HELP
2) RETURN
3) FREECHOICE
4) yes
5) no
Shut down other applications prior to coming Online: 3
```

6. Select "A20X".

   In this example, the group is set as "A", and the cluster application with the highest job priority is set as "20X". When performing actual settings, select values that are appropriate to the actual cluster system operation. Refer to the PRIMECLUSTER manual for details.

```
        >> A20X
```

7. After performing these settings, select "SAVE+EXIT".

```
Machines+Basics (op1:consistent)
 1) HELP
 2) -
 3) SAVE+EXIT
 4) REMOVE+EXIT
 5) AdditionalMachine
 6) AdditionalConsole
 7) Machines[0]=linux01RMS
 8) Machines[1]=linux02RMS
 9) (PreCheckScript=)
10) (PreOnlineScript=)
11) (PostOnlineScript=)
12) (PreOfflineScript=)
13) (OfflineDoneScript=)
14) (FaultScript=)
15) (AutoStartUp=no)
16) (AutoSwitchOver=HostFailure|ResourceFailure)
17) (PreserveState=no)
18) (PersistentFault=0)
19) (ShutdownPriority=)
20) (OnlinePriority=)
21) (StandbyTransitions=)
22) (LicenseToKill=A20X)
23) (AutoBreak=A20X)
24) (LicenseToKillWait=yes)
25) (HaltFlag=no)
26) (PartialCluster=0)
27) (ScriptTimeout=)
Choose the setting to process: 3
```

8. Select "SAVE+EXIT".

```
Settings of turnkey wizard "STANDBY" (OP1:consistent)
 1) HELP                                9) Procedure:BasicApplication(-)
 2) -                                  10) Symfoware(-)
 3) SAVE+EXIT                          11) Procedure:SystemState3(ProSS3_OP1)
 4) -                                  12) Procedure:SystemState2(-)
```

```
 5) ApplicationName=OP1                13) Gls:Global-Link-Services(Gls_OP1)
 6) Machines+Basics(op1)               14) LocalFileSystems(Lfs_OP1)
 7) CommandLines(-)                    15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 3
```

9. Repeat steps 2. through 8. for all the applications.

10. Execute "Generate and Activate operations" in step 4) again.

5.2 Uninstalling Systemwalker Operation Manager from the PRIMECLUSTER System

This section describes how to uninstall Systemwalker Operation Manager from the PRIMECLUSTER system.

The explanation in the following examples assumes that the Systemwalker Operation Manager configuration file registered with PRIMECLUSTER is "config", the Systemwalker Operation Manager application name is "OP1", and the mount point for the shared disk has been set to "/disk1".

1) Stop RMS and start the RMS Wizard

Before deleting cluster applications and resources, use either ClusterAdmin or the *hvdisp* command to check that RMS is not running. If RMS is running, stop it on every node in the cluster system using either ClusterAdmin or the *hvshut* command.

Refer to the PRIMECLUSTER manual for details on the *hvdisp* and *hvshut* commands.

Example of how to stop RMS with the hvshut command:

```
# /opt/SMAW/SMAWRrms/bin/hvshut -a
```

Start the RMS Wizard by executing the *hvw* command.

Refer to the PRIMECLUSTER manual for details on the *hvw* command.

Example of how to start the RMS Wizard using "config" as the configuration file name:

```
# /opt/SMAW/SMAWRrms/bin/hvw -n config
```

The "Main Configuration Menu" will be displayed.

2) Delete resources

This section describes the procedure for deleting resources.

1. Select "Application-Edit".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                               10) Configuration-Remove
 2) QUIT                               11) Configuration-Freeze
 3) Application-Create                 12) Configuration-Thaw
 4) Application-Edit                   13) Configuration-Edit-Global-Settings
 5) Application-Remove                 14) Configuration-Consistency-Report
 6) Application-Clone                  15) Configuration-ScriptExecution
 7) Configuration-Generate             16) RMS-CreateMachine
 8) Configuration-Activate             17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 4
```

2. Select the name of the userApplication where the resources to be deleted are registered.

```
Edit: Application selection menu (restricted):
1) HELP
2) QUIT
3) RETURN
4) OPTIONS
5) OP1
Application Name: 5
```

3. Select "Procedure:SystemState3".

```
Settings of turnkey wizard "STANDBY" (OP1:consistent)
 1) HELP                                9) Procedure:BasicApplication(-)
 2) READONLY                           10) Symfoware(-)
 3) SAVE+EXIT                          11) Procedure:SystemState3(ProSS3_OP1)
 4) -                                  12) Procedure:SystemState2(-)
 5) ApplicationName=OP1                13) Gls:Global-Link-Services(Gls_OP1)
 6) Machines+Basics(op1)               14) LocalFileSystems(Lfs_OP1)
 7) CommandLines(-)                    15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 11
```

4. Select "REMOVE+EXIT" to cancel the procedure resource settings.
   However, if procedure resources of other than OMGR and OMGRMONITOR coexist, delete only the procedure resources of OMGR or OMGRMONITOR by selecting "NONE" in the window displayed after selecting "OMGR" or "OMGRMONITOR".

```
SystemState3 Procedure (ProSS3_OP1:consistent)
1) HELP
2) NO-SAVE+EXIT
3) SAVE+EXIT
4) REMOVE+EXIT
5) AdditionalProcedureResource
6) ProcedureResources[0]=OMGR:T1800,P100
7) ProcedureResources[1]=OMGRMONITOR:T1800,P150
Choose the setting to process: 4
```

5. Enter "yes".

```
About to remove all data of ProSS3_OP1,
        Please confirm this by typing yes: yes
```

6. Select "Gls".

```
Settings of turnkey wizard "STANDBY" (OP1:consistent)
 1) HELP                                9) Procedure:BasicApplication(-)
 2) -                                  10) Symfoware(-)
 3) SAVE+EXIT                          11) Procedure:SystemState3(-)
 4) -                                  12) Procedure:SystemState2(-)
 5) ApplicationName=OP1                13) Gls:Global-Link-Services(Gls_OP1)
 6) Machines+Basics(op1)               14) LocalFileSystems(Lfs_OP1)
 7) CommandLines(-)                    15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 13
```

7. Select "REMOVE+EXIT" to cancel the Gls resource settings.

```
Gls (Gls_OP1:consistent)
1) HELP                                5) AdditionalTakeoverIpaddress
2) NO-SAVE+EXIT                        6) TakeoverIpaddress[0]=N,000.000.000.00x
3) SAVE+EXIT                           7) (Timeout=60)
4) REMOVE+EXIT
Choose the setting to process: 4
```

8. Enter "yes".

```
About to remove all data of Gls_OP1,
        Please confirm this by typing yes: yes
```

9. Select "LocalFileSystems".

```
Settings of turnkey wizard "STANDBY" (OP1:consistent)
 1) HELP                                 9) Procedure:BasicApplication(-)
 2) -                                   10) Symfoware(-)
 3) SAVE+EXIT                           11) Procedure:SystemState3(-)
 4) -                                   12) Procedure:SystemState2(-)
 5) ApplicationName=OP1                 13) Gls:Global-Link-Services(-)
 6) Machines+Basics(op1)                14) LocalFileSystems(Lfs_OP1)
 7) CommandLines(-)                     15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 14
```

10. Select "REMOVE+EXIT" to cancel the Fsystem resource settings.

```
File systems (Lfs_OP1:consistent)
1) HELP                                 5) AdditionalMountPoint
2) NO-SAVE+EXIT                         6) MountPoints[0]=LA:/disk1
3) SAVE+EXIT                            7) (Filter=)
4) REMOVE+EXIT                          8) (Timeout=180)
Choose the setting to process: 4
```

11. Enter "yes".

```
About to remove all data of Lfs_OP1,
        Please confirm this by typing yes: yes
```

12. Select "SAVE+EXIT".

```
Settings of turnkey wizard "STANDBY" (OP1:not yet consistent)
 1) HELP                                 9) Procedure:BasicApplication(-)
 2) -                                   10) Symfoware(-)
 3) SAVE+EXIT                           11) Procedure:SystemState3(-)
 4) -                                   12) Procedure:SystemState2(-)
 5) ApplicationName=OP1                 13) Gls:Global-Link-Services(-)
 6) Machines+Basics(op1)                14) LocalFileSystems(-)
 7) CommandLines(-)                     15) Gds:Global-Disk-Services(-)
 8) Procedure:Application(-)
Choose the setting to process: 3
```

13. Select "RETURN".

```
Edit: Application selection menu (restricted):
1) HELP
2) QUIT
3) RETURN
4) OPTIONS
5) OP1
Application Name: 3
```

14. Select "Configuration-Generate".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                                10) Configuration-Remove
 2) QUIT                                11) Configuration-Freeze
 3) Application-Create                  12) Configuration-Thaw
 4) Application-Edit                    13) Configuration-Edit-Global-Settings
 5) Application-Remove                  14) Configuration-Consistency-Report
```

```
 6) Application-Clone                  15) Configuration-ScriptExecution
 7) Configuration-Generate             16) RMS-CreateMachine
 8) Configuration-Activate             17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 7
```

15. Select "Configuration-Activate".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                               10) Configuration-Remove
 2) QUIT                               11) Configuration-Freeze
 3) Application-Create                 12) Configuration-Thaw
 4) Application-Edit                   13) Configuration-Edit-Global-Settings
 5) Application-Remove                 14) Configuration-Consistency-Report
 6) Application-Clone                  15) Configuration-ScriptExecution
 7) Configuration-Generate             16) RMS-CreateMachine
 8) Configuration-Activate             17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 8
```

3) Delete the userApplication (cluster application).

Use the following procedure to delete the cluster application:

1. Select "Application-Remove".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                               10) Configuration-Remove
 2) QUIT                               11) Configuration-Freeze
 3) Application-Create                 12) Configuration-Thaw
 4) Application-Edit                   13) Configuration-Edit-Global-Settings
 5) Application-Remove                 14) Configuration-Consistency-Report
 6) Application-Clone                  15) Configuration-ScriptExecution
 7) Configuration-Generate             16) RMS-CreateMachine
 8) Configuration-Activate             17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 5
```

2. Delete the cluster application by selecting the name of the userApplication to be deleted.

```
Removal: Application selection menu:
1) HELP
2) QUIT
3) RETURN
4) OPTIONS
5) OP1
Application Name: 5
```

3. Enter "yes".

```
About to remove all data of OP1,
        Please confirm this by typing yes: yes
```

4. Select "Configuration-Generate".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                               10) Configuration-Remove
 2) QUIT                               11) Configuration-Freeze
 3) Application-Create                 12) Configuration-Thaw
 4) Application-Edit                   13) Configuration-Edit-Global-Settings
 5) Application-Remove                 14) Configuration-Consistency-Report
```

```
 6) Application-Clone                  15) Configuration-ScriptExecution
 7) Configuration-Generate             16) RMS-CreateMachine
 8) Configuration-Activate             17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 7
```

5. Select "Configuration-Activate".

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                               10) Configuration-Remove
 2) QUIT                               11) Configuration-Freeze
 3) Application-Create                 12) Configuration-Thaw
 4) Application-Edit                   13) Configuration-Edit-Global-Settings
 5) Application-Remove                 14) Configuration-Consistency-Report
 6) Application-Clone                  15) Configuration-ScriptExecution
 7) Configuration-Generate             16) RMS-CreateMachine
 8) Configuration-Activate             17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 8
```

6. Select "QUIT" to end the procedure.

```
linux01: Main configuration menu, current configuration: config
No RMS active in the cluster
 1) HELP                               10) Configuration-Remove
 2) QUIT                               11) Configuration-Freeze
 3) Application-Create                 12) Configuration-Thaw
 4) Application-Edit                   13) Configuration-Edit-Global-Settings
 5) Application-Remove                 14) Configuration-Consistency-Report
 6) Application-Clone                  15) Configuration-ScriptExecution
 7) Configuration-Generate             16) RMS-CreateMachine
 8) Configuration-Activate             17) RMS-RemoveMachine
 9) Configuration-Copy
Choose an action: 2
```

For N:1 active/standby configuration, delete all N cluster applications by repeating steps 2) and 3).

For dual node mutual standby configuration, delete both cluster applications by repeating steps 2) and 3).

4) Delete resources that use state transition procedures.

Use the *cldelprocrsc* command to delete the resources that use state transition procedures. In the example below, the resource ID is 113.

Resource IDs that have been registered can be looked up with the *clgettree* command.

Refer to the PRIMECLUSTER manual for details on the *cldelprocrsc* and *clgettree* commands.

```
# /etc/opt/FJSVcluster/bin/cldelprocrsc  -r 113
```

For N:1 active/standby configuration, delete all N resources. For dual node mutual standby configuration, delete both resources.

5) Delete state transition procedures.

Delete the state transition procedures by using the *cldelproc* command on each of the active and standby nodes. In the following example, the procedure name is "omgr".

```
# /etc/opt/FJSVcluster/bin/cldelproc -c SystemState3 omgr
```

6) Stop the daemons.

Use the *poperationmgr* command on each node in the cluster system to stop all the Systemwalker Operation Manager daemons. Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *poperationmgr* command.

7) Delete the symbolic links.

Delete the symbolic links created to point to the resources that were moved to the shared disk. Do this operation at each node (active and standby) in the cluster system.

8) Copy resources back from the shared disk to the local disks.

Move the resources that were moved to the shared disk when the cluster system was created back to the local disks. Do this operation at each active node.

9) Copy resources to the standby node.

Copy the resources moved back to the local disk on the active node over to the standby node. Copy the resources to the standby node from any one of the N active nodes. For cascading configuration, copy the resources to all the standby nodes.

10) Create symbolic links.

For 1:1 active/standby (without subsystems), 1:1 active/standby (with subsystems), N:1 active/standby, and cascading configurations, recreate the symbolic links that were deleted when the resources were moved to the shared disk.

- Create "/var/spool/mjes" as a symbolic link to "var/opt/FJSVMJS/var/spool/mjes".
- Create "/etc/mjes" as a symbolic link to "etc/opt/FJSVMJS/etc/mjes".

Do this operation on all nodes (active and standby). This operation is not required for 1:1 active/standby (with subsystems and partial cluster operation) configurations or dual node mutual standby configurations.

11) Perform settings for automatically starting and stopping daemons.

Restore the settings for the monitored processes and the settings for automatically starting and stopping daemons (canceled in "2.2.3 Canceling the settings for starting and stopping daemons automatically") to their original settings.

12) Cancel automatic reflection settings.

1. Use the following command to cancel the security information settings:

```
mpaclcls -u
```

2. Use the following command to cancel the settings for automatically reflecting calendar and service/application startup information:

```
/opt/FJSVjmcal/bin/calsetcluster -d
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpaclcls command and the calsetcluster command.

13) Delete cluster information.

Execute the *mpsetcluster* command with the "-d" option specified on each node in the cluster system to delete cluster information registered after Systemwalker Operation Manager was installed.

```
# /opt/systemwalker/bin/mpsetcluster -d
```

Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpsetcluster command.

14) Cancel SELinux settings.

In Linux environments where SELinux is enabled, the SELinux settings have been made in "2.6 Moving Resources to the Shared Disk", so cancel them.

This must be performed on each node with the shared disk mounted.

The following is a cancellation example for configurations of 1:1 active/standby (without subsystems), 1:1 active/standby (with subsystems), N:1 active/standby, and cascading:

```
# /usr/sbin/semanage fcontext -d -t var_t '/disk1/FJSVfwseo/JM(/.*)?'
# /usr/sbin/semanage fcontext -d -t var_t '/disk1/FJSVjmcal(/.*)?'
# /usr/sbin/semanage fcontext -d -t var_t '/disk1/FJSVJOBSC(/.*)?'
```

```
# /usr/sbin/semanage fcontext -d -t var_t '/disk1/FJSVstem(/.*)?' (*1)
# /usr/sbin/semanage fcontext -d -t sw_fjsvmjs_spool_t '/disk1/FJSVMJS/var/spool(/.*)?'
# /usr/sbin/semanage fcontext -d -t etc_t '/disk1/FJSVMJS/etc(/.*)?'
```

***1:**

This is required only if the Master Schedule Management function is enabled.

15) Delete unnecessary directories from the shared disk.

Delete any unnecessary directories left over on the shared disk from the resources that were moved to the shared disk in "2.6 Moving Resources to the Shared Disk."

Steps 1 through 14 release Systemwalker Operation Manager from its application to the cluster system.

16) Uninstall Systemwalker Operation Manager.

Uninstall Systemwalker Operation Manager. Refer to the *Systemwalker Operation Manager Installation Guide* for details.

To reinstall Systemwalker Operation Manager, first use the procedure above to uninstall Systemwalker Operation Manager, and then perform a fresh installation in the cluster system again.

To perform an upgrade installation, release Systemwalker Operation Manager from its application to the cluster system by following steps 1 through to 14 above, perform the upgrade installation, and then reapply Systemwalker Operation Manager to the cluster system, starting from "2.2.3 Canceling the settings for starting and stopping daemons automatically."

Note

While uninstalling Systemwalker Operation Manager using the procedure above, be sure to cancel the automatic calendar reflection settings using the "/opt/FJSVjmcal/bin/calsetcluster -d" command. If these settings are not canceled in Red Hat Enterprise Linux 6, the following symbolic file will remain and need to be deleted manually:

- /etc/rc3.d/S28JMCAL

5.3 Starting and Stopping Daemons in the PRIMECLUSTER System

This section describes how to start and stop Systemwalker Operation Manager daemons in the PRIMECLUSTER system.

Starting daemons

This section describes the procedure for starting the Systemwalker Operation Manager daemons.

1. On all servers on both the active and standby nodes, execute the *soperationmgr* command to start any Systemwalker Operation Manager daemons not registered with PRIMECLUSTER. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), the Jobscheduler and Job Execution Control daemons of subsystems not registered with a cluster system will also start.

   ```
   # /opt/systemwalker/bin/soperationmgr
   ```

2. Start the Systemwalker Operation Manager daemons registered with the cluster system by varying the application registered with the cluster system online.

   1. Select **Global Cluster Services** from the top menu of the PRIMECLUSTER's Web-Based Admin View, and then select **Cluster Admin** from the window that is displayed.

      A pop-up menu will be displayed for selecting the node to connect to.

   2. Select the node from the pop-up menu.

      The RMS main window will be displayed.

3. Right-click on the Systemwalker Operation Manager cluster application to be started from the RMS tree in the RMS main window, and then select [Online] from the pop-up menu.

   The Systemwalker Operation Manager cluster application (i.e., the Systemwalker Operation Manager daemon managed by the cluster system) will start.

Stopping daemons

This section describes the procedure for stopping the Systemwalker Operation Manager daemons.

1. Stop Systemwalker Operation Manager daemons registered with the cluster system by varying the application registered with the cluster system offline.

   1. Select **Global Cluster Services** from the top menu of the PRIMECLUSTER's Web-Based Admin View, and then select **Cluster Admin** from the window that is displayed.

      A pop-up menu will be displayed for selecting the node to connect to.

   2. Select the node from the pop-up menu.

      The RMS main window will be displayed.

   3. Right-click on the Systemwalker Operation Manager cluster application to be stopped from the RMS tree in the RMS main window, and then select **Offline** from the pop-up menu.

      The Systemwalker Operation Manager cluster application (i.e., the Systemwalker Operation Manager daemon managed by the cluster system) will stop.

2. On all servers on both the active and standby nodes, execute the *poperationmgr* command to stop any Systemwalker Operation Manager daemons not registered with PRIMECLUSTER. In the case of a 1:1 active/standby configuration (with subsystems and partial cluster operation), the Jobscheduler and Job Execution Control daemons of subsystems not registered with a cluster system will also stop.

```
# /opt/systemwalker/bin/poperationmgr
```

Note

- Do not move the current directory to the shared disk when executing the *soperationmgr* command or the *poperationmgr* command. Otherwise, failover may not be performed normally.
- Do not start or stop any services with the **Service control** section of the **Systemwalker Operation Manager Environment Setup** window.
- Any cluster application where the Systemwalker Operation Manager resources have been registered must be stopped before Systemwalker Operation Manager is stopped (if Systemwalker Operation Manager has been registered with a cluster system).

  As a result, the shared disk and logical IP address registered with any such cluster application will also stop, along with the Operation Manager resources and any applications (such as Oracle or Interstage) registered with it. Resources created for state transition procedures that monitor daemons and registered with the cluster application will also stop.
- In order for the *Jobscheduler* daemon to operate, the calendar daemon must be activated before the *Jobscheduler* daemon.

Chapter 6 Cluster Setup Procedure Specific to Systems Using Oracle Solaris Cluster

This chapter describes the cluster setup procedure specific to systems using Oracle Solaris Cluster (hereinafter referred to as Oracle Solaris Cluster system).

6.1 Registering Systemwalker Operation Manager with the Oracle Solaris Cluster System

This section describes how to register Systemwalker Operation Manager data service resources with the Oracle Solaris Cluster system by creating applications that start, stop and restart the data service in response to Oracle Solaris Cluster events.

6.1.1 Creating applications

Create the following applications to control the starting and stopping of each Systemwalker Operation Manager daemon:

- Resource type registration file (RTR file, required.)
- START callback method (required)
- STOP callback method (required)
- Fault monitor (optional)

  Create the following programs:

  - A program to check whether resources are running
  - A program to start resources
  - A program to stop resources
  - A program to check whether resources are running when failover occurs

Create these application files on both the active and standby nodes, and place them at the same location in each node (use the same directory path). Do not create these files on the shared disk. Be sure to set up execution privileges after creating these applications.

Create fault monitor to monitor the daemons running on the active node of the cluster system, and use daemon termination as a trigger for cluster failover. There is no need to create fault monitor if it is not required.

The following sections describe examples of how to create each of these applications. Samples of each of these programs are provided with this product. Copy and customize these samples according to your operating environment.

6.1.1.1 Creating resource type registration files

Create resource type registration file (RTR file) to define the static properties of data service. Resource type registration file must be created. The following sample resource type registration file is provided:

```
/opt/FJSVJMCMN/etc/script/SC3.0/resource
```

The sample resource type registration file is for 1:1 active/standby configuration. This file must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby configuration, this sample file can be used without modification, but should be backed up anyway.

The procedure for modifying the resource type registration file is described below.

Example of how to modify the resource type registration file for N:1 active/standby configuration

1. For N:1 active/standby configuration, create a separate resource type registration file for each active node (N files altogether) and assign a unique file name in each case. Modify the information in each file to match the respective environment.

   In the following example, there are three active nodes.

   - Resource type registration file 1: resource1

   ```
   RESOURCE_TYPE = "OMGR1";

   (omitted)

   RT_BASEDIR=/opt/FJSVJMCMN/etc/script/SC3.0;
   PKGLIST = FJSVJMCMN;

   START         = omgr_start1;
   STOP          = omgr_stop1;

   MONITOR_START = omgr_fstart1;
   MONITOR_STOP  = omgr_fstop1;
   MONITOR_CHECK = omgr_check1;
   ```

   - Resource type registration file 2: resource2

   ```
   RESOURCE_TYPE = "OMGR2";

   (omitted)

   RT_BASEDIR=/opt/FJSVJMCMN/etc/script/SC3.0;
   PKGLIST = FJSVJMCMN;

   START         = omgr_start2;
   STOP          = omgr_stop2;

   MONITOR_START = omgr_fstart2;
   MONITOR_STOP  = omgr_fstop2;
   MONITOR_CHECK = omgr_check2;
   ```

   - Resource type registration file 3: resource3

   ```
   RESOURCE_TYPE = "OMGR3";

   (omitted)

   RT_BASEDIR=/opt/FJSVJMCMN/etc/script/SC3.0;
   PKGLIST = FJSVJMCMN;

   START         = omgr_start3;
   STOP          = omgr_stop3;

   MONITOR_START = omgr_fstart3;
   MONITOR_STOP  = omgr_fstop3;
   MONITOR_CHECK = omgr_check3;
   ```

   If fault monitor is not required, comment out the "MONITOR_START", "MONITOR_STOP" and "MONITOR_CHECK" lines.

   If necessary, modify "RT_BASEDIR" to specify the location where the application files are actually stored.

2. Place each resource type registration file on its respective active node, and then copy all the resource type registration files to the standby node, storing all N files in the same directory structure as the active nodes.

   The following example shows how to place these files when there are three active nodes:

   ```
   Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/resource1
   ```

```
Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/resource2

Active node3: /opt/FJSVJMCMN/etc/script/SC3.0/resource3

Standby node: /opt/FJSVJMCMN/etc/script/SC3.0/resource1
              /opt/FJSVJMCMN/etc/script/SC3.0/resource2
              /opt/FJSVJMCMN/etc/script/SC3.0/resource3
```

Example of how to modify the resource type registration file for dual node mutual standby configuration

1. For dual node mutual standby configuration, create a separate resource type registration file for each active node (two files altogether) and assign a unique file name in each case. Modify the information in each file to match the respective environment.

   The following example shows how to change these files:

   - Resource type registration file 1: resource1

   ```
   RESOURCE_TYPE = "OMGR1";

   (omitted)

   RT_BASEDIR=/opt/FJSVJMCMN/etc/script/SC3.0;
   PKGLIST = FJSVJMCMN;

   START         = omgr_start1;
   STOP          = omgr_stop1;

   MONITOR_START = omgr_fstart1;
   MONITOR_STOP  = omgr_fstop1;
   MONITOR_CHECK = omgr_check1;
   ```

   - Resource type registration file 2: resource2

   ```
   RESOURCE_TYPE = "OMGR2";

   (omitted)

   RT_BASEDIR=/opt/FJSVJMCMN/etc/script/SC3.0;
   PKGLIST = FJSVJMCMN;

   START         = omgr_start2;
   STOP          = omgr_stop2;

   MONITOR_START = omgr_fstart2;
   MONITOR_STOP  = omgr_fstop2;
   MONITOR_CHECK = omgr_check2;
   ```

   If fault monitor is not required, comment out the "MONITOR_START", "MONITOR_STOP" and "MONITOR_CHECK" lines.

   If necessary, modify "RT_BASEDIR" to specify the location where the application files are actually stored.

2. Copy the two resource type registration files to the same directory on both the active node and the standby node.

   The following example shows how to place these files:

   ```
   Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/resource1
     (Standby node2)/opt/FJSVJMCMN/etc/script/SC3.0/resource2

   Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/resource2
     (Standby node1)/opt/FJSVJMCMN/etc/script/SC3.0/resource1
   ```

6.1.1.2 Creating START callback methods

Create a START callback method to start the daemons for Jobscheduler and Job Execution Control. The following sample START callback method is provided:

/opt/FJSVJMCMN/etc/script/SC3.0/omgr_start

This sample START callback method is for 1:1 active/standby configuration. This START callback method must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

Note also that in the sample START callback method, the mount point for the shared disk is "/disk1". Modify the mount point so that the shared disk is referred to by the correct name.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby configuration, this sample file can be used without modification, but should be backed up anyway.

The following examples show how to modify the START callback method.

Example of how to modify the START callback method for N:1 active/standby configuration

1. Remove the comment for the "Make symbolic links. (if N:1 standby)" section. (That is, remove the "#" from the lines of code.)

   [Before]

```
# Make symbolic links.(if N:1 standby)
# ACL Manager
#if [ ! "(" -h "/var/opt/FJSVfwseo/JM" -o -f "/var/opt/FJSVfwseo/JM" ")" ]
#then
#      ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
#fi
# Job Scheduler
#if [ ! "(" -h "/var/opt/FJSVJOBSC" -o -f "/var/opt/FJSVJOBSC" ")" ]
#then
#      ln -s /disk1/FJSVJOBSC /var/opt/FJSVJOBSC
#fi
# Job Execution Control
#if [ ! "(" -h "/var/spool/mjes" -o -f "/var/spool/mjes" ")" ]
#then
#      ln -s /disk1/FJSVMJS/var/spool/mjes /var/spool/mjes
#fi
#if [ ! "(" -h "/etc/mjes" -o -f "/etc/mjes" ")" ]
#then
#      ln -s /disk1/FJSVMJS/etc/mjes /etc/mjes
#fi
# Calendar
#if [ ! "(" -h "/var/opt/FJSVjmcal/post" -o -f "/var/opt/FJSVjmcal/post" ")" ]
#then
#      ln -s /disk1/FJSVjmcal/post /var/opt/FJSVjmcal/post
#fi
# Stem
#if [ ! "(" -h "/var/opt/FJSVstem" -o -f "/var/opt/FJSVstem" ")" ]
#then
#      ln -s /disk1/FJSVstem /var/opt/FJSVstem
#fi
# - 1:1 standby, N:1 standby
```

   [After]

```
# Make symbolic links.(if N:1 standby)
# ACL Manager
if [ ! "(" -h "/var/opt/FJSVfwseo/JM" -o -f "/var/opt/FJSVfwseo/JM" ")" ]
then
      ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
fi
# Job Scheduler
if [ ! "(" -h "/var/opt/FJSVJOBSC" -o -f "/var/opt/FJSVJOBSC" ")" ]
then
      ln -s /disk1/FJSVJOBSC /var/opt/FJSVJOBSC
fi
```

```
# Job Execution Control
if [ ! "(" -h "/var/spool/mjes" -o -f "/var/spool/mjes" ")" ]
then
      ln -s /disk1/FJSVMJS/var/spool/mjes /var/spool/mjes
fi
if [ ! "(" -h "/etc/mjes" -o -f "/etc/mjes" ")" ]
then
      ln -s /disk1/FJSVMJS/etc/mjes /etc/mjes
fi
# Calendar
if [ ! "(" -h "/var/opt/FJSVjmcal/post" -o -f "/var/opt/FJSVjmcal/post" ")" ]
then
      ln -s /disk1/FJSVjmcal/post /var/opt/FJSVjmcal/post
fi
# Stem  (*1)
if [ ! "(" -h "/var/opt/FJSVstem" -o -f "/var/opt/FJSVstem" ")" ]
then
      ln -s /disk1/FJSVstem /var/opt/FJSVstem
fi
# - 1:1 standby, N:1 standby
```

*1: Remove this comment only if the Master Schedule Management function is enabled.

2. Prepare N copies of the START callback method (one for each active node), assign a unique name to each copy. Change the directory ("/disk1" in the example) where symbolic links will be created to match the shared disk of each active node.

   Use the same file names as listed in the resource type registration files.

3. Place each START callback method on its respective active node, and then copy all the START callback methods to the standby node, storing all N methods in the same directory structure as the active nodes.

   The following example shows how to place these files when there are three active nodes:

```
Active node1: opt/FJSVJMCMN/etc/script/SC3.0/omgr_start1

Active node2: opt/FJSVJMCMN/etc/script/SC3.0/omgr_start2

Active node3: opt/FJSVJMCMN/etc/script/SC3.0/omgr_start3

Standby node: opt/FJSVJMCMN/etc/script/SC3.0/omgr_start1
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_start2
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_start3
```

Example of how to modify the START callback method for dual node mutual standby configuration

1. Create a START callback method by copying the sample and changing the file name, and then change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Modify the "- 1:1 standby, N:1 standby" and "- 2 nodes mutual standby" sections for dual node mutual standby. (Change the positions of "#".)

   [Before]

```
# - 1:1 standby, N:1 standby
/opt/FJSVfwseo/bin/mpaclcls
sh /opt/FJSVfwseo/bin/jmacltrn.sh
# - 2 nodes mutual standby
#/opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
```

```
#sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM

# - 1:1 standby, N:1 standby, 2 nodes mutual standby
```

[After]

```
# - 1:1 standby, N:1 standby
#/opt/FJSVfwseo/bin/mpaclcls
#sh /opt/FJSVfwseo/bin/jmacltrn.sh
# - 2 nodes mutual standby
/opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM

# - 1:1 standby, N:1 standby, 2 nodes mutual standby
```

3. Create one more START callback method (change the file name), and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

   ```
   SUBSYSTEM="1"
   ```

   [After]

   ```
   SUBSYSTEM="2"
   ```

4. Place the two START callback methods on the active and standby nodes, using the same directory path in both cases.

   Use the same file names as listed in the resource type registration files.

   The following example shows how to place these files:

   ```
   Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_start1
     (Standby node2)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_start2

   Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_start2
     (Standby node1)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_start1
   ```

6.1.1.3 Creating STOP callback methods

Create a STOP callback method to stop the daemons for Jobscheduler and Job Execution Control. The following sample STOP callback method is provided:

```
/opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop
```

This sample STOP callback method is for 1:1 active/standby configuration. This STOP callback method must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

Note also that in the sample STOP callback method, the mount point for the shared disk is "/disk1". Modify the STOP callback method so that the shared disk is referred to by the correct name.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby configuration, this sample file can be used without modification, but should be backed up anyway.

The following examples show how to modify the STOP callback method.

Example of how to modify the STOP callback method for N:1 active/standby configuration

1. Remove the comment for the "remove symbolic links. (if N:1 standby)" section. (That is, remove the "#" from the lines of code.)

   [Before]

   ```
   # remove symbolic links.(if N:1 standby)
   # Job Scheduler
   #if [ -h "/var/opt/FJSVJOBSC" ]
   #then
   #      rm /var/opt/FJSVJOBSC
   ```

```
#fi
# Job Execution Control
#if [ -h "/var/spool/mjes" ]
#then
#      rm /var/spool/mjes
#fi
#if [ -h "/etc/mjes" ]
#then
#      rm /etc/mjes
#fi
# ACL Manager
#/opt/FJSVfwseo/bin/mpaclcls -u
#if [ -h "/var/opt/FJSVfwseo/JM" ]
#then
#      rm /var/opt/FJSVfwseo/JM
#fi
# Calendar
#if [ -h "/var/opt/FJSVjmcal/post" ]
#then
#      rm /var/opt/FJSVjmcal/post
#fi
# Stem
#if [ -h "/var/opt/FJSVstem" ]
#then
#      rm /var/opt/FJSVstem
#fi

exit 0
```

[After]

```
# remove symbolic links.(if N:1 standby)
# Job Scheduler
if [ -h "/var/opt/FJSVJOBSC" ]
then
      rm /var/opt/FJSVJOBSC
fi
# Job Execution Control
if [ -h "/var/spool/mjes" ]
then
      rm /var/spool/mjes
fi
if [ -h "/etc/mjes" ]
then
      rm /etc/mjes
fi
# ACL Manager
/opt/FJSVfwseo/bin/mpaclcls -u
if [ -h "/var/opt/FJSVfwseo/JM" ]
then
      rm /var/opt/FJSVfwseo/JM
fi
# Calendar
if [ -h "/var/opt/FJSVjmcal/post" ]
then
      rm /var/opt/FJSVjmcal/post
fi
# Stem  (*1)
if [ -h "/var/opt/FJSVstem" ]
then
      rm /var/opt/FJSVstem
fi
```

```
exit 0
```

*1: Remove this comment only if the Master Schedule Management function is enabled.

2. Prepare N copies of the STOP callback method (one for each active node), assigning a unique name to each copy.

   Use the same file names as listed in the resource type registration files.

3. Place each STOP callback method on its respective active node, and then copy all of the STOP callback methods to the standby node, storing all N files in the same directory structure as the active nodes.

   The following example shows how to place these files when there are three active nodes:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop1

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop2

Active node3: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop3

Standby node: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop1
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop2
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop3
```

Example of how to modify the STOP callback method for dual node mutual standby configuration

1. Create a STOP callback method by copying the sample and changing the file name, and then change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Create one more STOP callback method (change the file name), and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

   [After]

```
SUBSYSTEM="2"
```

3. Place the two STOP callback methods on the active and standby nodes, using the same directory path in both cases.

   Use the same file names as listed in the resource type registration files.

   The following example shows how to place these files:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop1
  (Standby node2)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop2

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop2
  (Standby node1)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_stop1
```

6.1.1.4 Creating fault monitors

Creating and registering fault monitor allows users to notify cluster system of failover triggers by monitoring network resources and application-specific processes running on the cluster system.

Create the following programs:

- A resource monitoring program

- A callback method to start monitoring program
- A callback method to stop monitoring program
- A callback method to check whether resources are active during failover

Fault monitor has to be created only if application-specific failover triggers are to be set up.

Resource monitoring program

Create a resource monitoring program.

The following sample program is provided:

```
/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor
```

The sample program monitors the execution status of the Jobscheduler and Job Execution Control daemon processes, and triggers a failover if both daemon processes have stopped. For operation monitoring only one of these daemon processes, modify the sample program as appropriate.

This sample program is for 1:1 active/standby configuration. This resource monitoring program must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby configuration, this sample file can be used without modification, but should be backed up anyway.

The following examples show how to modify the resource monitoring program.

Example of how to modify the resource monitoring program for N:1 active/standby configuration

1. Prepare N copies of the resource monitoring program (one for each active node), assign a unique name to each copy.
2. Place each resource monitoring program on its respective active node, and then copy all the resource monitoring programs to the standby node, storing all N files in the same directory structure as the active nodes.

   The following example shows how to place these files when there are three active nodes:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor1

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor2

Active node3: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor3

Standby node: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor1
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor2
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor3
```

Example of how to modify the resource monitoring program for dual node mutual standby configuration

1. Create a resource monitoring program by copying the sample and changing the file name, and then change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Create one more resource monitoring program (change the file name), and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

   [After]

```
SUBSYSTEM="2"
```

3. Place the two resource monitoring programs on the active and standby nodes, using the same directory path in both cases.

   The following example shows how to place these files:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor1
  (Standby node2)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor2

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor2
  (Standby node1)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor1
```

Callback method to start the monitoring program

Create a callback method for starting the monitoring program.

The following sample program is provided:

```
/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart
```

This sample program is for 1:1 active/standby configuration. It must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby configuration, this sample file can be used without modification, but should be backed up anyway.

The following examples show how to modify the callback method to start the monitoring program.

Example of how to modify the callback method to start the monitoring program for N:1 active/standby configuration

1. For N:1 active/standby configuration, create N callback methods to start the monitoring program (one for each active node), and change the "OperationMGR" (an arbitrary string) and "omgr_fmonitor" sections of each file to match the environment.

   Use the same file names as listed in the resource type registration files.

   Change "omgr_fmonitor" to match the name of the file created. The sample program assumes that the monitoring program is in the "opt/FJSVJMCMN/etc/script/SC3.0" directory. If necessary, modify this directory to the directory where the monitoring program is actually located.

   The following example shows how to place these files when there are three active nodes:

   - Callback method 1: omgr_fstart1

```
(omitted)

pmfadm -c OperationMGR1 /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor1 $*
```

   - Callback method 2: omgr_fstart2

```
(omitted)

pmfadm -c OperationMGR2 /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor2 $*
```

   - Callback method 3: omgr_fstart3

```
(omitted)

pmfadm -c OperationMGR3 /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor3 $*
```

2. Place each callback method for starting the monitoring program on its respective active node, and then copy all of the callback methods to the standby node, storing all N files in the same directory structure as the active nodes.

   The following example shows how to place these files when there are three active nodes:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart1

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart2

Active node3: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart3

Standby node: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart1
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart2
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart3
```

Example of how to modify the callback method to start the monitoring program for dual node mutual standby configuration

1. Create a separate callback method for starting the monitoring program for each node (2 files altogether), changing the file name in each case. Modify the information in each file to match the environment.

   The following examples show how to make changes.

   - Callback method 1: omgr_fstart1

```
(omitted)

pmfadm -c OperationMGR1 /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor1 $*
```

   - Callback method 2: omgr_fstart2

```
(omitted)

pmfadm -c OperationMGR2 /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fmonitor2 $*
```

2. Place the two callback methods for starting the monitoring program on the active and standby nodes, using the same directory path in both cases.

   Use the same file names as listed in the resource type registration files.

   The following example shows how to place these file:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart1
  (Standby node2)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart2

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart2
  (Standby node1)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstart1
```

Callback method to stop the monitoring program

Create a callback method to stop the monitoring program.

The following sample program is provided:

```
/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop
```

This sample program is for 1:1 active/standby configuration. This must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

Copy the sample file, and then modify it to match the cluster system operation. For 1:1 active/standby configuration, this sample file can be used without modification, but should be backed up anyway.

The following examples show how to modify the callback method to stop the monitoring program.

Example of how to modify the callback method to stop the monitoring program for N:1 active/standby configuration

1. For N:1 active/standby configuration, create N callback methods to stop the monitoring program (one for each active node), and change the "OperationMGR" (an arbitrary string) sections of each file to match the environment.

   The following examples show how to place these files when there are three active nodes:

   - Callback method 1: omgr_fstop1

   ```
   (omitted)

   pmfadm -s OperationMGR1 TERM
   ```

   - Callback method 2: omgr_fstop2

   ```
   (omitted)

   pmfadm -s OperationMGR2 TERM
   ```

   - Callback method 3: omgr_fstop3

   ```
   (omitted)

   pmfadm -s OperationMGR3 TERM
   ```

2. Place each callback method to stop the monitoring program on its respective active node, and then copy all of the callback methods to the standby node, storing all N files in the same directory structure as the active nodes.

   The following example shows how to place these files when there are three active nodes:

   ```
   Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop1

   Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop2

   Active node3: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop3

   Standby node: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop1
                 /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop2
                 /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop3
   ```

Example of how to modify the callback method to stop the monitoring program for dual node mutual standby configuration

1. Create a separate callback method to stop the monitoring program for each node (2 files altogether), changing the file name in each case. Modify the information in each file to match the environment.

   The following example shows how to make changes.

   - Callback method 1: omgr_fstop1

   ```
   (omitted)

   pmfadm -s OperationMGR1 TERM
   ```

   - Callback method 2: omgr_fstop2

   ```
   (omitted)

   pmfadm -s OperationMGR2 TERM
   ```

2. Place the two callback methods to stop the monitoring program on the active and standby nodes, using the same directory path in both cases.

   Use the same file names as listed in the resource type registration files.

   The following example shows how to place these files:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop1
  (Standby node2)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop2

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop2
  (Standby node1)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_fstop1
```

Callback method to check whether resources are active in the event of a failover

Create a callback method to check whether resources are active in the event of a failover.

The following sample program is provided:

/opt/FJSVJMCMN/etc/script/SC3.0/omgr_check

This sample program is for 1:1 active/standby configuration. This must be modified for N:1 active/standby configuration and dual node mutual standby configuration.

The following examples show how to make changes.

Example of how to modify the callback method to check whether resources are active in the event of a failover for N:1 active/standby configuration

1. Prepare N copies of the callback method to check whether resources are active in the event of a failover (one for each active node), assigning a unique name to each copy.

   Use the same file names as listed in the resource type registration files.

2. Place each callback method to check whether resources are active in the event of a failover on its respective active node, and then copy all of the callback methods to the standby node, storing all N files in the same directory structure as the active nodes.

   The following example shows how to place these files when there are three active nodes:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_check1

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_check2

Active node3: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_check3

Standby node: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_check1
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_check2
              /opt/FJSVJMCMN/etc/script/SC3.0/omgr_check3
```

Example of how to modify the callback method to check whether resources are active in the event of a failover for dual node mutual standby configuration

1. Copy the sample program and then change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Create one more callback method to check whether resources are active in the event of a failover (changing the file name), and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

[After]

```
SUBSYSTEM="2"
```

3. Place the two callback methods to check whether resources are active in the event of a failover on the active and standby nodes, using the same directory path in both cases.

   Use the same file names as listed in the resource type registration files.

   The following example shows how to place these files:

```
Active node1: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_check1
  (Standby node2)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_check 2

Active node2: /opt/FJSVJMCMN/etc/script/SC3.0/omgr_check2
  (Standby node1)/opt/FJSVJMCMN/etc/script/SC3.0/omgr_check1
```

6.1.2 Registering resources

Use the Oracle Solaris Cluster system commands to register resource type, resource group and resource with the Oracle Solaris Cluster system. Refer to the Oracle Solaris Cluster manuals for details on the commands for registering resources.

Before registering resources, check each node (active and standby) to make sure that the resource type registration files, START callback methods, STOP callback methods and fault monitors that have been created all have execution privileges.

Resources to be registered

Register the following resources:

- Resource type
- Resource group
- Shared address resource
- Data service resource

The explanation in the following examples assumes that resources are registered with the following names:

Resource type name	FJSV.OMGR
Resource group name	OMGR_rg
Shared address resources name	OMGR_host
Data service resources name	OMGR_rs
Logical host name	host1
Node name for Node 1	node1
Node name for Node 2	node2

Checking the registered contents of resources

The command below can be used to check the registered contents of resource type, resource group and resources. Continue to register resources while checking the registered contents. If there is a mistake with the registered contents, use the Oracle Solaris Cluster *scrgadm* command to change the registered contents.

```
# /usr/cluster/bin/scrgadm -p[v[v]] [ -t resource type name ] [ -g resource group name ] [ -j resource name ]
```

[Example of how to check a resource group]

```
# /usr/cluster/bin/scrgadm -pv -g OMGR_rg
```

Registration procedure

This section describes the procedure for registering resource type, resource group and resources. For 1:1 active/standby and N:1 active/standby configurations, enter a series of commands on the active node. For dual node mutual standby configuration, two types of settings must be registered.

1) Registering a resource type

Use the following command to register a resource type. In this example, the resource type registration file has been stored at "/opt/FJSVJMCMN/etc/script/SC3.0/resource".

```
# /usr/cluster/bin/scrgadm -a -t resource type name -f resource type registration file name
```

[Example]

```
# /usr/cluster/bin/scrgadm -a -t FJSV.OMGR -f /opt/FJSVJMCMN/etc/script/SC3.0/resource
```

2) Registering a resource group

Use the following command to register a resource group.

```
# /usr/cluster/bin/scrgadm -a -g resource group name -h node 1,node 2
```

[Example]

```
# /usr/cluster/bin/scrgadm -a -g OMGR_rg -h node1,node2
```

3) Adding a shared address resource to a resource group

Use the following command to add a shared address resource to the resource group:

```
# /usr/cluster/bin/scrgadm -a -S -g resource group name -l host name -j resource name
```

[Example]

```
# /usr/cluster/bin/scrgadm -a -S -g OMGR_rg -l host1 -j OMGR_host
```

For dual node mutual standby configuration, register different host names on the active and standby nodes.

4) Registering a data service resource with the resource group

Use the following command to register the data service resource:

```
# /usr/cluster/bin/scrgadm -a -j resource name -t resource type name -g resource group name
```

[Example]

```
# /usr/cluster/bin/scrgadm -a -j OMGR_rs -t FJSV.OMGR -g OMGR_rg
```

5) Checking the registered resources

Use the following command to check whether resources have been registered:

```
# /usr/cluster/bin/scrgadm -p[v[v]] [ -t resource type name ] [ -g resource group name ] [ -j resource name ]
```

[Example]

```
# /usr/cluster/bin/scrgadm -pv -g OMGR_rg -t FJSV.OMGR -j OMGR_rs
```

This completes the resource registration procedure.

6.2 Uninstalling Systemwalker Operation Manager from the Oracle Solaris Cluster System

This section describes how to uninstall Systemwalker Operation Manager from the Oracle Solaris Cluster system.

1. Delete Systemwalker Operation Manager from the cluster system.
   Delete the following settings that control the starting and stopping of each Systemwalker Operation Manager daemon set up in Oracle Solaris Cluster.

   1. Delete the resources.

      ```
      /usr/cluster/bin/scswitch -n -j data service resources name
      /usr/cluster/bin/scrgadm -r -j data service resources name
      ```

      In the following example, the name of the data service resource is "OMGR_rs".

      ```
      /usr/cluster/bin/scswitch -n -j OMGR_rs
      /usr/cluster/bin/scrgadm -r -j OMGR_rs
      ```

   2. Delete the shared address resource name.

      ```
      /usr/cluster/bin/scrgadm -r -j shared address resources name
      ```

      In the following example, the name of the resource type is "FJSV.host".

      ```
      /usr/cluster/bin/scrgadm -r -j FJSV.host
      ```

   3. Delete the resource group.

      ```
      /usr/cluster/bin/scrgadm -r -g resource group name
      ```

      In the following example, the name of the resource group is "OMGR_rg".

      ```
      /usr/cluster/bin/scrgadm -r -g OMGR_rg
      ```

   4. Delete the resource type.

      ```
      /usr/cluster/bin/scrgadm -r -t resource type name
      ```

      In the following example, the name of the resource type is "FJSV.OMGR".

      ```
      /usr/cluster/bin/scrgadm -r -t FJSV.OMGR
      ```

2. Stop daemons not managed by the cluster system.
   On each node in the cluster system, use the *poperationmgr* command to stop all the Systemwalker Operation Manager daemons not managed by the cluster system. Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *poperationmgr* command.

3. Delete symbolic links.
   Delete the symbolic links created for resources moved to the shared disk. Perform this operation on all nodes (active and standby).

4. Copy resources back from the shared disk to the local disks.
   Move the resources relocated to the shared disk when the cluster system was created back to the local disks. Perform this operation at each active node.

5. Copy resources to the standby node.
   Copy the information moved back to the local disk on the active node (4. above) over to the standby node. Copy this information to the standby node from any one of the N active nodes.

6. Create symbolic links.
   For 1:1 active/standby configuration and N:1 active/standby configurations, re-create the symbolic links deleted when the resources were moved to the shared disk.

   - "/var/spool/mjes" is a symbolic link to "var/opt/FJSVMJS/var/spool/mjes".
   - "/etc/mjes" is a symbolic link to "etc/opt/FJSVMJS/etc/mjes".

   Perform this operation on all nodes (active and standby).

7. Restore the settings to start and stop daemons automatically.
   Return the automatic start/stop settings and the settings for the monitored process that were canceled in "2.2.3 Canceling the settings for starting and stopping daemons automatically" to the original state.

8. Cancel the settings for automatic reflection.

   1. Use the following command to cancel the security information settings:

      ```
      mpaclcls -u
      ```

   2. Use the following command to cancel the settings for automatically reflecting calendar and service/application startup information:

      ```
      /opt/FJSVjmcal/bin/calsetcluster -d
      ```

9. Delete cluster information.
   Execute the *mpsetcluster* command with the "-d" option on each node on the cluster system to delete cluster information registered after Systemwalker Operation Manager was installed.

   ```
   # /opt/systemwalker/bin/mpsetcluster -d
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpsetcluster command.

10. Delete unnecessary directories from the shared disk.
    Delete any unnecessary directories left over on the shared disk from the resources that were moved to the local disk. (Refer to "2.6 Moving Resources to the Shared Disk.")

    At this stage, Systemwalker Operation Manager will have been released from its application to the cluster system.

11. Uninstall Systemwalker Operation Manager.
    Uninstall Systemwalker Operation Manager. Refer to the *Systemwalker Operation Manager Installation Guide* for details on how to uninstall Systemwalker Operation Manager.

To reinstall Systemwalker Operation Manager, first use the procedure above to uninstall Systemwalker Operation Manager, and then reinstall on the cluster system.

To perform an upgrade installation, release Systemwalker Operation Manager from its application to the cluster system by following steps 1 through to 10 above, perform the upgrade installation, and then reapply Systemwalker Operation Manager to the cluster system, starting from "2.2.3 Canceling the settings for starting and stopping daemons automatically."

While uninstalling Systemwalker Operation Manager using the procedure above, be sure to cancel the calendar automatic reflection settings using the "/opt/FJSVjmcal/bin/calsetcluster -d" command. Otherwise, the following symbolic file will remain and need to be deleted manually:

- /etc/rc3.d/S28JMCAL

6.3 Starting and Stopping Daemons in the Oracle Solaris Cluster System

This section describes how to start and stop Systemwalker Operation Manager in the Oracle Solaris Cluster system.

Starting daemons

This section describes the procedure for starting the Systemwalker Operation Manager daemons.

1. On all servers on both the active and standby nodes, execute the *soperationmgr* command to start any Systemwalker Operation Manager daemons that are not registered with Oracle Solaris Cluster.

```
# /opt/systemwalker/bin/soperationmgr
```

2. Start the Systemwalker Operation Manager daemons that are registered with the cluster system by varying online the Systemwalker Operation Manager resource groups registered with the cluster system.

```
# /usr/cluster/bin/scswitch -Z -g resource group name
```

   [Example]

```
# /usr/cluster/bin/scswitch -Z -g OMGR_rg
```

Stopping daemons

This section describes the procedure for stopping the Systemwalker Operation Manager daemons.

1. Stop the Systemwalker Operation Manager daemons that are registered with the cluster system by varying offline the Systemwalker Operation Manager resource groups registered with the cluster system.

```
# /usr/cluster/bin/scswitch -F -g resource group name
```

   [Example]

```
# /usr/cluster/bin/scswitch -F -g OMGR_rg
```

2. On all servers on both the active and standby nodes, execute the *poperationmgr* command to stop any Systemwalker Operation Manager daemons that are not registered with Oracle Solaris Cluster.

```
# /opt/systemwalker/bin/poperationmgr
```

Note

- Do not move the current directory to the shared disk when executing the *soperationmgr* command or the *poperationmgr* command. Otherwise, a failover may not be performed correctly.
- Do not start or stop any services using the **Service control** section in the **Systemwalker Operation Manager Environment Setup** window.
- Any resource groups where the Systemwalker Operation Manager data service resource has been registered must be stopped before Systemwalker Operation Manager is stopped (if Systemwalker Operation Manager has been registered with a cluster system).

  As a result, the shared disk and logical IP address registered with any such resource group will also stop, along with the Operation Manager data service and any applications (such as Oracle or Interstage) registered with it. Any data service resources for fault monitor created and registered with the resource group will also stop.
- In order for the Jobscheduler daemon to operate, the calendar daemon must be activated before the Jobscheduler daemon.

Chapter 7 Cluster Setup Procedure Specific to Systems Using MC/ServiceGuard

This chapter describes the cluster setup procedure specific to systems using MC/ServiceGuard (hereinafter referred to as MC/ServiceGuard system).

7.1 Registering Systemwalker Operation Manager with the MC/ServiceGuard System

This section explains how to register Systemwalker Operation Manager with the MC/ServiceGuard system as a package. Registration can be performed using either MC/ServiceGuard commands or System Administration Manager (SAM). In this section, registration using MC/ServiceGuard commands is explained.

7.1.1 Creating scripts

Create the following files and scripts to register, control and monitor Systemwalker Operation Manager as an MC/ServiceGuard package:

- Package configuration file
- Package control script
- Package monitoring script

Create the package configuration file on either the active node or the standby node.

Create package control scripts and package monitoring scripts on each active and standby node, placing them in the same location in each case (using the same directory and path). Do not create script files on the shared disk. With MC/ServiceGuard, it is recommended that scripts be created and stored under the "/etc/cmcluster" directory due to security reasons. After creating scripts, be sure to assign execution rights to them.

Samples of each of these files and scripts are provided.

Copy these samples, and then modify them to match the environment.

7.1.1.1 Creating package configuration files

Create a package configuration file that defines the Systemwalker Operation Manager Jobscheduler and Job Execution Control daemons as MC/ServiceGuard application services.

The following sample package configuration file is provided for Systemwalker Operation Manager:

```
/opt/FHPJMCMN/etc/script/omgr.conf
```

Copy the sample file, and then modify it to match the cluster system operation.

A package configuration file must be created for each active node, so create one file for 1:1 active/standby configurations, "N" files for N:1 active/standby configurations and two files for dual node mutual standby configurations.

The following section explains the definition information for the package configuration file and shows examples of customizing the definition information.

Definition information for the package configuration file

This section shows the information required to create a package configuration file, as well as the items that need to be modified to match the cluster system environment. The sample files presented here are based on MC/ServiceGuard A.11.09. If different version is used, refer to the MC/ServiceGuard manual and change the definition names that correspond to the version of the cluster where Systemwalker Operation Manager is used.

Definition name	Value in the sample file	How to modify item to match the environment
PACKAGE_NAME	omgr	Specify an arbitrary package name. This name will be recognized by MC/ServiceGuard as the package name.
FAILOVER_POLICY	CONFIGURED_NODE	-
FAILBACK_POLICY	MANUAL	-
NODE_NAME	hp01	Specify the name of the node to be used as the active node.
NODE_NAME	hp02	Specify the name of the node to be used as the standby node.
RUN_SCRIPT	/etc/cmcluster/omgr/omgr.sh	Specify the location of the package control script.
RUN_SCRIPT_TIMEOUT	NO_TIMEOUT	-
HALT_SCRIPT	/etc/cmcluster/omgr/omgr.sh	Specify the location of the package control script.
HALT_SCRIPT_TIMEOUT	NO_TIMEOUT	-
SERVICE_NAME	service1	Specify an arbitrary service name. Use the same service name as the value of SERVICE_NAME[0]= in the package control script.
SERVICE_FAIL_FAST_ENABLED	NO	-
SERVICE_HALT_TIMEOUT	300	-
SUBNET	xxx.xxx.xxx.xxx	Specify the subnet address.
PKG_SWITCHING_ENABLED	YES	-
NET_SWITCHING_ENABLED	YES	-
NODE_FAIL_FAST_ENABLED	NO	-

Example of how to make changes for N:1 active/standby configurations

For N:1 active/standby configurations, create "N" package configuration files, each with different names, and change the information in each file to match the environment.

In the following example, there are three active nodes.

- Package configuration file 1: omgr1.conf

```
PACKAGE_NAME:omgr1
NODE_NAME:hp01
NODE_NAME:hpsub
RUN_SCRIPT:/etc/cmcluster/omgr/omgr1.sh
HALT_SCRIPT:/etc/cmcluster/omgr/omgr1.sh
SERVICE_NAME:service1
```

- Package configuration file 2: omgr2.conf

```
PACKAGE_NAME:omgr2
NODE_NAME:hp02
NODE_NAME:hpsub
RUN_SCRIPT:/etc/cmcluster/omgr/omgr2.sh
```

```
HALT_SCRIPT:/etc/cmcluster/omgr/omgr2.sh
SERVICE_NAME:service2
```

- Package configuration file 3: omgr3.conf

```
PACKAGE_NAME:omgr3
NODE_NAME:hp03
NODE_NAME:hpsub
RUN_SCRIPT:/etc/cmcluster/omgr/omgr3.sh
HALT_SCRIPT:/etc/cmcluster/omgr/omgr3.sh
SERVICE_NAME:service3
```

Example of how to make changes for dual node mutual standby configurations

For dual node mutual standby configurations, create two package configuration files, each with different names, and change the information in each file to match the environment.

The following example shows how to change these files:

- Package configuration file 1: omgr1.conf

```
PACKAGE_NAME:omgr1
NODE_NAME:hp01
NODE_NAME:hp02
RUN_SCRIPT:/etc/cmcluster/omgr/omgr1.sh
HALT_SCRIPT:/etc/cmcluster/omgr/omgr1.sh
SERVICE_NAME:service1
```

- Package configuration file 2: omgr2.conf

```
PACKAGE_NAME:omgr2
NODE_NAME:hp02
NODE_NAME:hp01
RUN_SCRIPT:/etc/cmcluster/omgr/omgr2.sh
HALT_SCRIPT:/etc/cmcluster/omgr/omgr2.sh
SERVICE_NAME:service2
```

7.1.1.2 Creating package control scripts

Package control scripts define information required to execute, monitor and respond to faults with application services registered with MC/ServiceGuard.

The following sample package control script is provided for Systemwalker Operation Manager:

```
/opt/FHPJMCMN/etc/script/omgr.sh
```

Copy the sample file, and then modify it to match the cluster system operation.

The sample package control script is for 1:1 active/standby configurations (without subsystems). Changes need to be made for 1:1 active/standby configurations (with subsystems), the 1:1 active/standby configuration (with subsystems and partial cluster operation), and N:1 active/standby configurations and dual node mutual standby configurations.

After package control scripts with modified user-defined functions are created (one script for 1:1 active/standby configurations, "N" scripts for N:1 active/standby configurations and two scripts for dual node mutual standby configurations), the definition information in the package control scripts must be changed to match the actual operation.

The following section presents examples of how to change user-defined functions and the definition information in the package control script.

Changing user-defined functions

This section presents examples of how to change user-defined functions for 1:1 active/standby configurations (with subsystems), 1:1 active/standby configuration (with subsystems and partial cluster operation), and N:1 active/standby configurations and dual node mutual standby configurations.

Example of how to make changes for 1:1 active/standby configurations (with subsystems) and 1:1 active/standby configurations (with subsystems and partial cluster operation)

In a system where multiple subsystems are running, start/stop the daemons of Jobscheduler and Job Execution Control on each subsystem.

The following examples show a 1:1 active/standby configuration (with subsystems), in which both subsystem 0 and subsystem 1 are running, and a 1:1 active/standby configuration (with subsystems and partial cluster operation), in which subsystem 0 is not operated in a cluster but subsystem 1 is.

1. Change the "SUBSYSTEM" variable in the package control script to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), simply change the number for the subsystem that will be operated in the cluster.

   [Before]

```
SUBSYSTEM="0"
```

   [After]

   1:1 active/standby configuration (with subsystems)

```
PLU_SUBSYSTEM="0 1"
```

   1:1 active/standby configuration (with subsystems and partial cluster operation)

```
PLU_SUBSYSTEM="1"
```

2. Add the for, do, and done statements to the end of customer_defined_run_cmds to start Jobscheduler and Job Execution Control on each subsystem.

   [Before]

```
# - 1:1 standby, N:1 standby, 2 nodes mutual standby
sh /opt/FHPMJS/usr/lib/mjes/S99MJS -sys $SUBSYSTEM
sh /opt/FHPJOBSCH/bin/S99JOBSCH -sys $SUBSYSTEM
```

   [After]

```
# - 1:1 standby, N:1 standby, 2 nodes mutual standby
for SUBSYSTEM in $PLU_SUBSYSTEM
do
sh /opt/FHPMJS/usr/lib/mjes/S99MJS -sys $SUBSYSTEM
sh /opt/FHPJOBSCH/bin/S99JOBSCH -sys $SUBSYSTEM
done
```

3. Add the for and do statements to the top of customer_defined_halt_cmds to stop Jobscheduler and Job Execution Control on each subsystem.

```
[Before]
function customer_defined_halt_cmds
{
# ADD customer defined halt commands.
: # do nothing instruction, because a function must contain some command.

MJSDAEMON=`ps -ef | grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | grep -v "grep" | wc -l `
```

   [After]

```
function customer_defined_halt_cmds
{
# ADD customer defined halt commands.
: # do nothing instruction, because a function must contain some command.

for SUBSYSTEM in $PLU_SUBSYSTEM
```

```
do
MJSDAEMON=`ps -ef | grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | grep -v "grep" | wc -l `
```

4. Add the done statement to the end of customer_defined_halt_cmds.

   [Before]

```
    fi
    cnt=`expr $cnt + 1`
    sleep 3
done
```

   [After]

```
    fi
    cnt=`expr $cnt + 1`
    sleep 3
done
done
```

5. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), add the for, do, and done statements to the end of customer_defined_run_cmds so that the security information will be reflected on each subsystem automatically.

   [Before]

```
# - 1:1 standby, N:1 standby
..../opt/FJSVfwseo/bin/mpaclcls
....sh /opt/FJSVfwseo/bin/jmacltrn.sh
```

   [After]

```
# - 1:1 standby, N:1 standby
....for SUBSYSTEM in $PLU_SUBSYSTEM
....do
..../opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
....sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
....done
```

Example of how to make changes for N:1 active/standby configurations

For N:1 active/standby configurations, change the entries so that symbolic links are set up and canceled by the package control script.

Remove the comments (delete the hash "#") from the "# Make symbolic links. (if N:1 standby)" and "# remove symbolic links. (if N:1 standby)" sections.

[Before]

```
# Make symbolic links.(if N:1 standby)
# ACL Manager
#if [ ! "(" -h "/var/opt/FJSVfwseo/JM" -o -f "/var/opt/FJSVfwseo/JM" ")" ]
#then
#   ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
#fi
# Job Scheduler
#if [ ! "(" -h "/opt/FHPJOBSCH/db" -o -f "/opt/FHPJOBSCH/db" ")" ]
#then
#   ln -s /disk1/FHPJOBSCH /opt/FHPJOBSCH/db
#fi
# Job Execution Control
#if [ ! "(" -h "/var/spool/mjes" -o -f "/var/spool/mjes" ")" ]
#then
#   ln -s /disk1/FHPMJS/var/spool/mjes /var/spool/mjes
#fi
#if [ ! "(" -h "/etc/mjes" -o -f "/etc/mjes" ")" ]
#then
```

```
#   ln -s /disk1/FHPMJS/etc/mjes /etc/mjes
#fi
# Calendar
#if [ ! "(" -h "/opt/FHPjmcal/post" -o -f "/opt/FHPjmcal/post" ")" ]
#then
#   ln -s /disk1/FHPjmcal/post /opt/FHPjmcal/post
#fi
# Stem
#if [ ! "(" -h "/var/opt/FJSVstem" -o -f "/var/opt/FJSVstem" ")" ]
#then
#  ln -s /disk1/FJSVstem /var/opt/FJSVstem
#fi

(omitted)

# remove symbolic links.(if N:1 standby)
# Job Scheduler
#if [ -h "/opt/FHPJOBSCH/db" ]
#then
#   rm /opt/FHPJOBSCH/db
#fi
# Job Execution Control
#if [ -h "/var/spool/mjes" ]
#then
#   rm /var/spool/mjes
#fi
#if [ -h "/etc/mjes" ]
#then
#   rm /etc/mjes
#fi
# ACL Manager
#/opt/FJSVfwseo/bin/mpaclcls -u
#if [ -h "/var/opt/FJSVfwseo/JM" ]
#then
#   rm /var/opt/FJSVfwseo/JM
#fi
# Calendar
#if [ -h "/opt/FHPjmcal/post" ]
#then
#   rm /opt/FHPjmcal/post
#fi
# Stem
#if [ -h "/var/opt/FJSVstem" ]
#then
#   rm /var/opt/FJSVstem
#fi
```

[After]

```
# Make symbolic links.(if N:1 standby)
# ACL Manager
if [ ! "(" -h "/var/opt/FJSVfwseo/JM" -o -f "/var/opt/FJSVfwseo/JM" ")" ]
then
   ln -s /disk1/FJSVfwseo/JM /var/opt/FJSVfwseo/JM
fi
# Job Scheduler
if [ ! "(" -h "/opt/FHPJOBSCH/db" -o -f "/opt/FHPJOBSCH/db" ")" ]
then
   ln -s /disk1/FHPJOBSCH /opt/FHPJOBSCH/db
fi
# Job Execution Control
if [ ! "(" -h "/var/spool/mjes" -o -f "/var/spool/mjes" ")" ]
then
```

```
   ln -s /disk1/FHPMJS/var/spool/mjes /var/spool/mjes
fi
if [ ! "(" -h "/etc/mjes" -o -f "/etc/mjes" ")" ]
then
   ln -s /disk1/FHPMJS/etc/mjes /etc/mjes
fi
# Calendar
if [ ! "(" -h "/opt/FHPjmcal/post" -o -f "/opt/FHPjmcal/post" ")" ]
then
   ln -s /disk1/FHPjmcal/post /opt/FHPjmcal/post
fi
# Stem  (*1)
if [ ! "(" -h "/var/opt/FJSVstem" -o -f "/var/opt/FJSVstem" ")" ]
then
ln -s /disk1/FJSVstem /var/opt/FJSVstem
fi

(omitted)

# remove symbolic links.(if N:1 standby)
# Job Scheduler
if [ -h "/opt/FHPJOBSCH/db" ]
then
   rm /opt/FHPJOBSCH/db
fi
# Job Execution Control
if [ -h "/var/spool/mjes" ]
then
   rm /var/spool/mjes
fi
if [ -h "/etc/mjes" ]
then
   rm /etc/mjes
fi
# ACL Manager
/opt/FJSVfwseo/bin/mpaclcls -u
if [ -h "/var/opt/FJSVfwseo/JM" ]
then
   rm /var/opt/FJSVfwseo/JM
fi
# Calendar
if [ -h "/opt/FHPjmcal/post" ]
then
   rm /opt/FHPjmcal/post
fi
# Stem (*1)
if [ -h "/var/opt/FJSVstem" ]
then
   rm /var/opt/FJSVstem
fi
```

Remark:

Change "/disk1" to match the actual mount point of the shared disk.

***1:**

Remove the comment only if the Master Schedule Management function is enabled.

Example of how to make changes for dual node mutual standby configurations

1. Change the value of the "SUBSYSTEM" variable in the package control script to "1".

   [Before]

```
SUBSYSTEM="0"
```

[After]

```
SUBSYSTEM="1"
```

2. Change the "- 1:1 standby, N:1 standby" and "- 2 nodes mutual standby" section for dual node mutual standby. (Change the position of the hash "#".)

   [Before]

```
# - 1:1 standby, N:1 standby
/opt/FJSVfwseo/bin/mpaclcls
sh /opt/FJSVfwseo/bin/jmacltrn.sh
# - 2 nodes mutual standby
#/opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
#sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
```

   [After]

```
# - 1:1 standby, N:1 standby
#/opt/FJSVfwseo/bin/mpaclcls
#sh /opt/FJSVfwseo/bin/jmacltrn.sh
# - 2 nodes mutual standby
/opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
```

3. Prepare another package control script with the same (changed) content but a different file name, and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

   [After]

```
SUBSYSTEM="2"
```

Definition information for package control scripts

This section shows the information required to create a package control script, as well as the items to be changed to match the cluster system environment. The sample files presented here are based on MC/ServiceGuard A.11.09. If different versions are being used, refer to the MC/ServiceGuard manual and change the definition names that correspond to the version of the cluster where Systemwalker Operation Manager is being used.

Definition name	Value in the sample file	How to modify item to match the environment
VGCHANGE	"vgchange -a e"	-
VG[0]	"vg02"	Specify an arbitrary volume group name.
LV[0]	"/dev/vg02/lvol1"	Specify the shared disk device.
FS[0]	"/disk1"	Specify the shared disk mount point.
FS_MOUNT_OPT[0]	""	-
FS_UMOUNT_COUNT	1	-
FS_MOUNT_RETRY_COUNT	0	-

Definition name	Value in the sample file	How to modify item to match the environment
IP[0]	"yyy.yyy.yyy.yyy"	Specify the logical IP address.
SUBNET[0]	"xxx.xxx.xxx.xxx"	Specify the subnet address.
SERVICE_NAME[0]	"service1"	Specify an arbitrary service name. Use the same service name as the value of SERVICE_NAME in the package configuration file.
SERVICE_CMD[0]	"/etc/cmcluster/omgr/omgr_fmonitor"	Specify the location of the package monitoring script.
SERVICE_RESTART[0]	"-r 0"	-

Example of how to make changes for N:1 active/standby configurations

For N:1 active/standby configurations, create "N" package control scripts, each with different file names, and change the information in each file to match the environment.
The following example shows the changes to be made if there are three active nodes.

- Package control script 1: omgr1.sh

```
VG[0]="vg01"
LV[0]="/dev/vg01/lvol1"
FS[0]="/disk1"
IP[0]="111.111.111.111"
SERVICE_NAME[0]="service1"
SERVICE_CMD[0]= "/etc/cmcluster/omgr/omgr_fmonitor1"
```

- Package control script 2: omgr2.sh

```
VG[0]="vg02"
LV[0]="/dev/vg02/lvol1"
FS[0]="/disk1"
IP[0]="111.111.111.112"
SERVICE_NAME[0]="service2"
SERVICE_CMD[0]= "/etc/cmcluster/omgr/omgr_fmonitor2"
```

- Package control script 3: omgr3.sh

```
VG[0]="vg03"
LV[0]="/dev/vg03/lvol1"
FS[0]="/disk1"
IP[0]="111.111.111.113"
SERVICE_NAME[0]="service3"
SERVICE_CMD[0]= "/etc/cmcluster/omgr/omgr_fmonitor3"
```

Example of how to make changes for dual node mutual standby configurations

For dual node mutual standby configurations, create two package control scripts, each with different file names, and change each file to match the environment.
The following example shows how to change these files:

- Package control script 1: omgr1.sh

```
VG[0]="vg01"
LV[0]="/dev/vg01/lvol1"
FS[0]="/disk1"
IP[0]="111.111.111.111"
SERVICE_NAME[0]="service1"
SERVICE_CMD[0]= "/etc/cmcluster/omgr/omgr_fmonitor1"
```

- Package control script 2: omgr2.sh

```
VG[0]="vg02"
LV[0]="/dev/vg02/lvol1"
FS[0]="/disk2"
IP[0]="111.111.111.112"
SERVICE_NAME[0]="service2"
SERVICE_CMD[0]= "/etc/cmcluster/omgr/omgr_fmonitor2"
```

7.1.1.3 Creating package monitoring scripts

By creating package monitoring scripts and specifying the package monitoring script file in the package control script, the Systemwalker Operation Manager daemon running on the cluster system can be monitored and failover triggers can be notified to the cluster system.

The following sample package monitoring script is provided for Systemwalker Operation Manager:

```
/opt/FHPJMCMN/etc/script/omgr_fmonitor
```

Copy the sample file, and then modify it to match the cluster system operation.

The sample script has been coded to monitor the execution status of the Jobscheduler and Job Execution Control daemon processes, and to trigger a failover if both daemon processes have stopped. For operations that only monitor one daemon process or the other, modify the sample script to match the operation.

The sample package monitoring script is for 1:1 active/standby configurations (without subsystems) and N:1 active/standby configurations. Changes need to be made for the 1:1 active/standby configuration (with subsystems), the 1:1 active/standby configuration (with subsystems and partial cluster operation), and dual node mutual standby configurations. A package monitoring script must be created for each active node, so create one file for 1:1 active/standby configurations, "N" files for N:1 active/standby configurations, and two files for dual node mutual standby configurations.

The following section presents examples of how to modify the package monitoring script.

Example of how to make changes for 1:1 active/standby configurations (with subsystems) and 1:1 active/standby configurations (with subsystems and partial cluster operation)

In a system where multiple subsystems are running, monitor daemons on each subsystem. The following examples show a 1:1 active/standby configuration (with subsystems), in which both subsystem 0 and subsystem 1 are running, and a 1:1 active/standby configuration (with subsystems and partial cluster operation), in which subsystem 0 is not operated in a cluster but subsystem 1 is.

1. Change the "SUBSYSTEM" variable in the package monitoring script to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), simply change the number for the subsystem that will be operated in the cluster.

   [Before]

   ```
   SUBSYSTEM="0"
   ```

   [After]

   1:1 active/standby configuration (with subsystems)

   ```
   PLU_SUBSYSTEM="0 1"
   ```

   1:1 active/standby configuration (with subsystems and partial cluster operation)

```
PLU_SUBSYSTEM="1"
```

2. Add the for and do statements immediately after while do to monitor daemons on each subsystem.

   [Before]

```
while /bin/true
do
    # - 1:1 standby, N:1 standby, 2 nodes mutual standby
    MJSDAEMON=`ps -ef | grep "/usr/lib/mjes/mjsdaemon -sys
$SUBSYSTEM" | grep -v "grep" | wc -l `
```

   [After]

```
while /bin/true
do
    for SUBSYSTEM in $PLU_SUBSYSTEM
    do
    # - 1:1 standby, N:1 standby, 2 nodes mutual standby
    MJSDAEMON=`ps -ef | grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | grep -v "grep" | wc -l
`
```

3. Add the done statement before sleep 10.

   [Before]

```
    sleep 10
done
```

   [After]

```
    done
    sleep 10
done
```

Example of how to make changes for N:1 active/standby configurations

For N:1 active/standby configurations, create "N" package monitoring scripts, each with different file names. There is no need to change the content of the script files.

The following example shows how to create the files if there are three active nodes.

- Package monitoring script 1: omgr_fmonitor1
- Package monitoring script 2: omgr_fmonitor2
- Package monitoring script 3: omgr_fmonitor3

Example of how to make changes for dual node mutual standby configurations

For dual node mutual standby configurations, the script must be edited and two script files must be created.

1. Change the value of the "SUBSYSTEM" variable in the package monitoring script to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Prepare another package control script with the same (changed) content but a different file name, and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

[After]

```
SUBSYSTEM="2"
```

7.1.2 Registering package

Use MC/ServiceGuard cluster system commands to register the package and to check that it has been registered correctly.

Refer to the MC/ServiceGuard manual for details on these commands.

Procedure

This section explains the procedure for registering the package and checking that it has been registered correctly.

1) Store the script files

Package configuration scripts can be stored on either the active node or the standby node, but package control scripts and package monitoring scripts must be stored on all nodes (active and standby).

Store the package control script in the location specified in the package configuration file, and save the package monitoring script in the location specified in the package control script, as shown in the following example.

For 1:1 active/standby configurations

- Package configuration file

  Active node "hp01": "/etc/cmcluster/omgr/omgr.conf"

- Package control script

  Active node "hp01": "/etc/cmcluster/omgr/omgr.sh"
  Standby node "hp02": "/etc/cmcluster/omgr/omgr.sh"

- Package monitoring script

  Active node "hp01": "/etc/cmcluster/omgr/omgr.fmonitor"
  Standby node "hp02": "/etc/cmcluster/omgr/omgr.fmonitor"

For N:1 active/standby configurations (if there are three active nodes)

- Package configuration file

  Active node "hp01": "/etc/cmcluster/omgr/omgr1.conf"
  Active node "hp02": "/etc/cmcluster/omgr/omgr2.conf"
  Active node "hp03": "/etc/cmcluster/omgr/omgr3.conf"

- Package control script

  Active node "hp01": "/etc/cmcluster/omgr/omgr1.sh"
  Active node "hp02": "/etc/cmcluster/omgr/omgr2.sh"
  Active node "hp03": "/etc/cmcluster/omgr/omgr3.sh"
  Standby node "hpsub": "/etc/cmcluster/omgr/omgr1.sh"
  Standby node "hpsub": "/etc/cmcluster/omgr/omgr2.sh"
  Standby node "hpsub": "/etc/cmcluster/omgr/omgr3.sh"

- Package monitoring script

  Active node "hp01": "/etc/cmcluster/omgr/omgr1.fmonitor"
  Active node "hp02": "/etc/cmcluster/omgr/omgr2.fmonitor"
  Active node "hp03": "/etc/cmcluster/omgr/omgr3.fmonitor"
  Standby node "hpsub": "/etc/cmcluster/omgr/omgr1.fmonitor"
  Standby node "hpsub": "/etc/cmcluster/omgr/omgr2.fmonitor"
  Standby node "hpsub": "/etc/cmcluster/omgr/omgr3.fmonitor"

For dual node mutual standby configurations

- Package configuration file

  Active node "hp01": "/etc/cmcluster/omgr/omgr1.conf"
  Active node "hp02": "/etc/cmcluster/omgr/omgr2.conf"

- Package control script

  Active node "hp01": "/etc/cmcluster/omgr/omgr1.sh"
  Active node "hp02": "/etc/cmcluster/omgr/omgr2.sh"
  Standby node "hp02": "/etc/cmcluster/omgr/omgr1.sh"
  Standby node "hp01": "/etc/cmcluster/omgr/omgr2.sh"

- Package monitoring script

  Active node "hp01": "/etc/cmcluster/omgr/omgr1.fmonitor"
  Active node "hp02": "/etc/cmcluster/omgr/omgr2.fmonitor"
  Standby node "hp02": "/etc/cmcluster/omgr/omgr1.fmonitor"
  Standby node "hp01": "/etc/cmcluster/omgr/omgr2.fmonitor"

2) Verify the package configuration file

Execute the MC/ServiceGuard *cmcheckconf* command on the node where the package configuration file has been saved to check whether the package configuration file is correct.

```
# cmcheckconf -P /etc/cmcluster/omgr/omgr.conf
```

3) Register the package configuration file

Execute the MC/ServiceGuard *cmapplyconf* command on the node where the package configuration file has been saved to register the package configuration file.

```
# cmapplyconf -v -P /etc/cmcluster/omgr/omgr.conf
```

Enter "y" when the "Modify the package configuration ([y]/n)?" message is output.
This completes the package registration.

4) Check the registered information

Use the following command to check whether the information in the package configuration file has been registered correctly.

```
# cmviewconf
```

Check the display after "Package information:" to see whether the package name, package control script, package monitoring script, active node, and standby node have been registered correctly.

The following display example is for a 1:1 active/standby configuration.

```
Package information:
  package ID 56321:
    package name:               omgr

(omitted)

    package run script:         /etc/cmcluster/omgr/omgr.sh
    package run timeout:        (No Timeout)
    package halt script:        /etc/cmcluster/omgr/omgr.sh
    package halt timeout:       (No Timeout)
    package primary node:       hp01
    package alternate node:     hp02
```

Check the operation status of each node using the following command:

```
# cmviewcl
```

Make sure that the "STATUS" and "STATE" of each "NODE" are "up" and "running".

The following display example is for a 1:1 active/standby configuration.

```
CLUSTER      STATUS
cluster1     up

  NODE         STATUS       STATE
  hp01         up           running
  hp02         up           running

    PACKAGE      STATUS       STATE        PKG_SWITCH   NODE
    omgr         down         halted       disabled     unowned
```

Check the switch status of each node using the following command:

```
# cmviewcl -v -p omgr
```

Check the "Node_Switching_Parameters: " section and make sure that "SWITCHING" is enabled for each "NODE_TYPE ".

The following display example is for a 1:1 active/standby configuration.

```
    PACKAGE      STATUS       STATE        PKG_SWITCH   NODE
    omgr         down         halted       disabled     unowned

(omitted)

      Node_Switching_Parameters:
      NODE_TYPE    STATUS       SWITCHING    NAME
      Primary      up           enabled      hp01
      Alternate    up           enabled      hp02
```

Verify the entire cluster system by repeating steps 2) through 4) "N" times for N:1 active/standby configurations and twice for dual node mutual standby configurations on the nodes where the package configuration files have been saved.

7.1.3 Starting and stopping the package

This section explains how to start and stop the package registered with the MC/ServiceGuard cluster system.

Starting the package

Start the package using the following procedure.

1. Start the Systemwalker Operation Manager daemon that has not been registered with MC/ServiceGuard on all the nodes in the cluster system.

   ```
   # /opt/systemwalker/bin/soperationmgr
   ```

2. Start the Systemwalker Operation Manager package by specifying the node to use as the active node with the *cmrunpkg* MC/ServiceGuard command on either node. In the following example, "hp01" is specified as the active node and the package name is "omgr ".

   ```
   # cmrunpkg -v -n hp01 omgr
   ```

   For N:1 active/standby configurations, start the package "N" times, specifying each active node. For dual node mutual standby configurations, do this twice, once for each node.

3. Check the operation status of the package and each node by using the *cmviewcl* MC/ServiceGuard command on either node.

   ```
   # cmviewcl
   ```

   Make sure that the "STATUS" and "STATE" of the "PACKAGE" and each "NODE" are "up" and "running".

   The following display example is for a 1:1 active/standby configuration.

```
CLUSTER      STATUS
cluster1     up

  NODE         STATUS       STATE
  hp01         up           running
  hp02         up           running

    PACKAGE      STATUS       STATE        PKG_SWITCH   NODE
    omgr         up           running      disabled     hp01
```

4. In this example, the switching status of the package is "disabled", so change the switching status of the Systemwalker Operation Manager package by using the *cmmodpkg* MC/ServiceGuard command on either node.
   In the following example, the package name is "omgr".

```
# cmmodpkg -v -e omgr
```

5. Check the switching status of the Systemwalker Operation Manager package by using the *cmviewcl* MC/ServiceGuard command with the "-p" option on either node.
   In the following example, the package name is "omgr".

```
# cmviewcl -v -p omgr
```

   Make sure that "PKG_SWITCH" for the "PACKAGE" and "SWITCHING" for the "Primary" node and the "Alternate" node are all "enabled". The cluster will not fail over correctly if these are not "enabled".

   The following display example is for a 1:1 active/standby configuration.

```
    PACKAGE      STATUS       STATE        PKG_SWITCH   NODE
    omgr         up           running      enabled      hp01


(omitted)


      Node_Switching_Parameters:
      NODE_TYPE    STATUS       SWITCHING    NAME
      Primary      up           enabled      hp01    (current)
      Alternate    up           enabled      hp02
```

   MC/ServiceGuard packages usually operate in this state.

Information

If the package configuration is changed while the cluster is running, the "STATUS" and "STATE" of the cluster and package displayed with the *cmviewcl* command may become "down" or "halted" and the switching status may become "disabled". In such cases, check whether each node is running and check the connections to the shared disks for the cluster. Then switch the package status using the *cmmodpkg* command. Refer to "Switching the package status" below for details.

Stopping the package

Stop the package by executing the *cmhaltpkg* MC/ServiceGuard command on either node. In the following example, the package name is "omgr".

```
# cmhaltpkg -v omgr
```

For N:1 active/standby configurations, stop the package "N" times, specifying the package name. For dual node mutual standby configurations, do this twice, once for each node.

Switching the package status

If the switching status of the package is "disabled", change the status of the package by specifying the package name with the *cmmodpkg* command. In the following example, the package name is "omgr".

```
# cmmodpkg -v -e omgr
```

If the switching status of a node is "disabled", change the status by specifying the "disabled" node and the package name with the *cmmodpkg* command. In the following example, the name of the "disabled" node is "hp01" and the package name is "omgr".

```
# cmmodpkg -v -e -n hp01 omgr
```

7.2 Uninstalling Systemwalker Operation Manager from the MC/ ServiceGuard System

This section describes how to uninstall Systemwalker Operation Manager from the MC/ServiceGuard system.

7.2.1 For 1:1 active/standby and N:1 active/standby configurations

For 1:1 active/standby and N:1 active/standby configurations, use the following procedure to uninstall Systemwalker Operation Manager from cluster systems.

In this example, the package name for Systemwalker Operation Manager is "omgr", the shared disk device is "/dev/vg01/1vol1", and the mount point to the shared disk is "/disk1".

1. Stop the Systemwalker Operation Manager package registered with MC/ServiceGuard

   Stop the Systemwalker Operation Manager package registered with MC/ServiceGuard by executing the *cmhaltpkg* MC/ ServiceGuard command on each node where Systemwalker Operation Manager is running.

   ```
   # cmhaltpkg -v omgr
   ```

2. Stop Systemwalker Operation Manager

   Stop Systemwalker Operation Manager on each node in the cluster system by executing the *poperationmgr* command.

   ```
   # /opt/systemwalker/bin/poperationmgr
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the poperationmgr command.

3. Delete the service application registered with MC/ServiceGuard

   Delete the Systemwalker Operation Manager service application registered with MC/ServiceGuard by executing the *cmdeleteconf* MC/ServiceGuard command on any node.

   ```
   # cmdeleteconf -p omgr
   ```

4. Move the resources to the active node

   Move the resources that had been moved to the shared disk back to the active node.

   1. Mount the shared disk by executing the *vgchange* HP-UX command on the active node.

      ```
      # vgchange -c n /dev/vg01
      # vgchange -a y /dev/vg01
      # mount /dev/vg01/lvol1 /disk1
      ```

   2. Delete symbolic links

      On the active node, delete the symbolic links that were created to the resources that were moved to the shared disk. This operation is not required for N:1 active/standby configurations.

      [1:1 active/standby configuration (without subsystems), 1:1 active/standby configuration (with subsystems)]

```
# rm /var/opt/FJSVfwseo/JM
# rm /opt/FHPjmcal/post
# rm /opt/FHPJOBSCH/db
# rm /var/spool/mjes
# rm /etc/mjes
# rm /var/opt/FJSVstem (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

[1:1 active/standby configuration (with subsystems and partial cluster operation)]

```
# rm /var/opt/FJSVfwseo/JM1
# rm /opt/FHPjmcal/post/sys1
# rm /opt/FHPJOBSCH/db/JOBDB1
# rm /var/spool/mjes/mjes1
# rm /etc/mjes/mjes1
# rm /var/opt/FJSVstem/stemDB1 (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

3. Move resources from the shared disk to the local disk

   Move the resources that were moved to the shared disk when the cluster system was created back to the local disk on the active node, and restore the symbolic links.

   [1:1 active/standby configuration (without subsystems), 1:1 active/standby configuration (with subsystems), N:1 active/standby configuration]

```
# mv /disk1/FHPjmcal/post /opt/FHPjmcal/post
# mv /disk1/FHPJOBSCH /opt/FHPJOBSCH/db
# mv /disk1/FHPMJS/var/spool/mjes /opt/FHPMJS/var/spool/mjes
# ln -s /opt/FHPMJS/var/spool/mjes /var/spool/mjes
# mv /disk1/FHPMJS/etc/mjes /opt/FHPMJS/etc/mjes
# ln -s /opt/FHPMJS/etc/mjes /etc/mjes
# mv /disk1/FJSVstem /var/opt/FJSVstem (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

   [1:1 active/standby configuration (with subsystems and partial cluster operation)]

```
# mv /disk1/FHPjmcal/post/sys1 /opt/FHPjmcal/post/sys1
# mv /disk1/FHPJOBSCH/JOBDB1 /opt/FHPJOBSCH/db/JOBDB1
# mv /disk1/FHPMJS/var/spool/mjes1 /opt/FHPMJS/var/spool/mjes/mjes1
# mv /disk1/FHPMJS/etc/mjes1 /opt/FHPMJS/etc/mjes/mjes1
# mv /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

4. Unmount the shared disk by executing the HP-UX *vgchange* command on the active node.

```
# umount /disk1
# vgchange -a n /dev/vg01
```

For N:1 active/standby configurations, repeat steps 1), 3) and 4) on each of the "N" active nodes.

5. Copy resources to the standby node

   Copy the resources that have been moved back to the local disk on the active node over to the standby node.

   1. Delete symbolic links.

      On the standby node, delete the symbolic links that were created to the resources that were moved to the shared disk. This operation is not required for N:1 active/standby configurations.

      [1:1 active/standby configuration (without subsystems), 1:1 active/standby configuration (with subsystems)]

```
# rm /var/opt/FJSVfwseo/JM
# rm /opt/FHPjmcal/post
# rm /opt/FHPJOBSCH/db
# rm /var/spool/mjes
# rm /etc/mjes
# rm /var/opt/FJSVstem (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

[1:1 active/standby configuration (with subsystems and partial cluster operation)]

```
# rm /var/opt/FJSVfwseo/JM1
# rm /opt/FHPjmcal/post/sys1
# rm /opt/FHPJOBSCH/db/JOBDB1
# rm /var/spool/mjes/mjes1
# rm /etc/mjes/mjes1
# rm /var/opt/FJSVstem/stemDB1 (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

2. Copy resources

   Copy the resources that have been returned to the local disk on the active node to the standby node, and restore the symbolic links. For N:1 active/standby configurations, copy the resources from any of the "N" active nodes over to the standby node.

   Temporarily compress the spool directory for Job Execution Control before copying it. In the following example, this directory is compressed as "mjes.tar".

   [1:1 active/standby configuration (without subsystems), 1:1 active/standby configuration (with subsystems), N:1 active/standby configuration]

```
# cd /opt/FHPMJS/var/spool
# tar -cvf ./mjes.tar mjes
# rcp /opt/FHPMJS/var/spool/mjes.tar hp02:/opt/FHPMJS/var/spool/mjes.tar
# rm /opt/FHPMJS/var/spool/mjes.tar
```

   Copy the resources. In the following example, resources are copied from the "hp01" active node to the standby node. (This operation is performed on the standby node.)

```
# rcp -r hp01:/opt/FHPJOBSCH/db /opt/FHPJOBSCH/db
# cd /opt/FHPMJS/var/spool
# tar -xvf mjes.tar
# rm /opt/FHPMJS/var/spool/mjes.tar
# ln -s /opt/FHPMJS/var/spool/mjes /var/spool/mjes
# rcp -r hp01:/opt/FHPMJS/etc/mjes /opt/FHPMJS/etc/mjes
# ln -s /opt/FHPMJS/etc/mjes /etc/mjes
# rcp -r hp01:/opt/FHPjmcal/post /opt/FHPjmcal/post
# rcp -r hp01:/var/opt/FJSVstem /var/opt/FJSVstem (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

   [1:1 active/standby configuration (with subsystems and partial cluster operation)]

```
# cd /opt/FHPMJS/var/spool/mjes
# tar -cvf ./mjes1.tar mjes1
# rcp /opt/FHPMJS/var/spool/mjes/mjes1.tar hp02:/opt/FHPMJS/var/spool/mjes/mjes1.tar
# rm /opt/FHPMJS/var/spool/mjes/mjes1.tar
```

   Copy the resources. In the example, the resources are copied from the active node "hp01" on the standby node.

```
# rcp -r hp01:/opt/FHPJOBSCH/db/JOBDB1 /opt/FHPJOBSCH/db/JOBDB1
# cd /opt/FHPMJS/var/spool/mjes
# tar -xvf mjes1.tar
# rm mjes1.tar
# rcp -r hp01:/opt/FHPMJS/etc/mjes/mjes1 /opt/FHPMJS/etc/mjes/mjes1
```

```
# rcp -r hp01:/opt/FHPjmcal/post/sys1 /opt/FHPjmcal/post/sys1
# rcp -r hp01:/var/opt/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

6. Restore the settings to start and stop daemons automatically

   On each node, return the automatic start/stop settings that were canceled in "2.2.3 Canceling the settings for starting and stopping daemons automatically" to the original state. Similarly, undo the changes to the process monitoring target.

7. Cancel the settings for automatic reflection

   1. Use the following command to cancel the security information settings:

      ```
      mpaclcls -u
      ```

   2. Use the following command to cancel the settings for automatically reflecting calendar and service/application startup information:

      ```
      /opt/FHPjmcal/bin/calsetcluster -d
      ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpaclcls command and calsetcluster command.

8. Delete cluster information

   Execute the *mpsetcluster* command with the "-d" option on each node on the cluster system to delete cluster information registered after Systemwalker Operation Manager was installed.

   ```
   # /opt/systemwalker/bin/mpsetcluster -d
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpsetcluster command.

9. Delete unnecessary directories from the shared disk.

   At this stage, Systemwalker Operation Manager will have been released from its application to the cluster system.

10. Uninstallation

    Uninstall Systemwalker Operation Manager.

If Systemwalker Operation Manager is to be reinstalled, first uninstall it using the procedure above, and then perform a fresh installation on to the cluster system (at each node).

To perform an upgrade installation, release Systemwalker Operation Manager from its application to the cluster system by following steps 1 through to 9 above, perform the upgrade installation, and then reapply Systemwalker Operation Manager to the cluster system, starting from "2.2.3 Canceling the settings for starting and stopping daemons automatically."

Note

While uninstalling Systemwalker Operation Manager using the procedure above, be sure to cancel the calendar automatic reflection settings using the "/opt/FHPjmcal/bin/calsetcluster -d" command. Otherwise, the following symbolic file will remain and need to be deleted manually:

- /sbin/rc3.d/S28JMCAL

7.2.2 For dual node mutual standby configuration

For dual node mutual standby configurations, use the following procedure to uninstall Systemwalker Operation Manager from cluster systems.

In this example, the package name for Systemwalker Operation Manager is "omgr", the shared disk devices are "/dev/vg01/1vol1" and "/dev/vg01/1vol2", the mount points to the shared disk are "/disk1" and "/disk2", and the package names are "omgr1" and "omgr2".

1. Stop the Systemwalker Operation Manager packages registered with MC/ServiceGuard

   Stop the Systemwalker Operation Manager packages registered with MC/ServiceGuard by executing the *cmhaltpkg* MC/ServiceGuard command on both nodes where Systemwalker Operation Manager is running.

```
# cmhaltpkg -v omgr1
```

```
# cmhaltpkg -v omgr2
```

2. Stop Systemwalker Operation Manager

   Stop Systemwalker Operation Manager on both nodes by using the *poperationmgr* command.

```
# /opt/systemwalker/bin/poperationmgr
```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the poperationmgr command.

3. Delete the service application registered with MC/ServiceGuard

   Delete the Systemwalker Operation Manager service application registered with MC/ServiceGuard by executing the *cmdeleteconf* MC/ServiceGuard command on either node.

```
# cmdeleteconf -p omgr1
```

```
# cmdeleteconf -p omgr2
```

4. Move resources to each node

   Move resources that had been moved to the shared disk back to each node.

   1. Mount the shared disk by executing the *vgchange* HP-UX command on the active node.

```
# vgchange -c n /dev/vg01
# vgchange -a y /dev/vg01
# mount /dev/vg01/lvol1 /disk1
# vgchange -c n /dev/vg02
# vgchange -a y /dev/vg02
# mount /dev/vg02/lvol1 /disk2
```

   2. Delete symbolic links

      From the node where the shared disk is mounted, delete the symbolic links that were created to the resources that were moved to the shared disk.

```
# rm /var/opt/FJSVfwseo/JM1
# rm /var/opt/FJSVfwseo/JM2

# rm /opt/FHPjmcal/post/sys1
# rm /opt/FHPjmcal/post/sys2

# rm /opt/FHPJOBSCH/db/JOBDB1
# rm /opt/FHPJOBSCH/db/JOBDB2

# rm /var/spool/mjes/mjes1
# rm /var/spool/mjes/mjes2

# rm /etc/mjes/mjes1
# rm /etc/mjes/mjes2

# rm /var/opt/FJSVstem/stemDB1 (*1)
# rm /var/opt/FJSVstem/stemDB2 (*1)
```

      *1: Required only if the Master Schedule Management function is enabled.

3. Copy resources back from the shared disk to the local disks

   Move the resources that were moved to the shared disk when the cluster system was created back to the local disks.

```
# mv /disk1/FHPjmcal/post/sys1 /opt/FHPjmcal/post/sys1
# mv /disk2/FHPjmcal/post/sys2 /opt/FHPjmcal/post/sys2

# mv /disk1/FHPJOBSCH/JOBDB1 /opt/FHPJOBSCH/db/JOBDB1
# mv /disk2/FHPJOBSCH/JOBDB2 /opt/FHPJOBSCH/db/JOBDB2

# mv /disk1/FHPMJS/var/spool/mjes1 /opt/FHPMJS/var/spool/mjes/mjes1
# mv /disk2/FHPMJS/var/spool/mjes2 /opt/FHPMJS/var/spool/mjes/mjes2

# mv /disk1/FHPMJS/etc/mjes1 /opt/FHPMJS/etc/mjes/mjes1
# mv /disk2/FHPMJS/etc/mjes2 /opt/FHPMJS/etc/mjes/mjes2

# mv /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
# mv /disk2/FJSVstem/stemDB2 /var/opt/FJSVstem/stemDB2 (*1)
```

   *1: Required only if the Master Schedule Management function is enabled.

4. Unmount the shared disk

   Unmount the shared disk using the *vgchange* HP-UX command.

```
# umount /disk1
# vgchange -a n /dev/vg01
# umount /disk2
# vgchange -a n /dev/vg02
```

5. Copy resources to the standby node

   Copy the resources that were moved back to the local disk on the active node over to the standby node.

   1. Delete symbolic links.

      On the standby node, delete the symbolic links that were created to the resources that were moved to the shared disk.

```
# rm /var/opt/FJSVfwseo/JM1
# rm /var/opt/FJSVfwseo/JM2

# rm /opt/FHPjmcal/post/sys1
# rm /opt/FHPjmcal/post/sys2

# rm /opt/FHPJOBSCH/db/JOBDB1
# rm /opt/FHPJOBSCH/db/JOBDB2

# rm /var/spool/mjes/mjes1
# rm /var/spool/mjes/mjes2

# rm /etc/mjes/mjes1
# rm /etc/mjes/mjes2

# rm /var/opt/FJSVstem/stemDB1 (*1)
# rm /var/opt/FJSVstem/stemDB2 (*1)
```

      *1: Required only if the Master Schedule Management function is enabled.

   2. Copy resources

      Copy the resources that were moved back to the local disk on the active node to the standby node. In the following example, the command is entered from the active node and the name of the standby node is "hp02".

      Temporarily compress the spool directory for Job Execution Control before copying it. In the following example, this directory is compressed as "mjes.tar".

```
# rcp -r /opt/FHPJOBSCH/db/JOBDB1 hp02:/opt/FHPJOBSCH/db/JOBDB1
# rcp -r /opt/FHPJOBSCH/db/JOBDB2 hp02:/opt/FHPJOBSCH/db/JOBDB2
# cd /opt/FHPMJS/var/spool/mjes
# tar -cvf ./mjes1.tar mjes1
# tar -cvf ./mjes2.tar mjes2
# rcp /opt/FHPMJS/var/spool/mjes/mjes1.tar hp02:/opt/FHPMJS/var/spool/mjes/mjes1.tar
# rcp /opt/FHPMJS/var/spool/mjes/mjes2.tar hp02:/opt/FHPMJS/var/spool/mjes/mjes2.tar
# rcp -r /opt/FHPMJS/etc/mjes/mjes1 hp02:/opt/FHPMJS/etc/mjes/mjes1
# rcp -r /opt/FHPMJS/etc/mjes/mjes2 hp02:/opt/FHPMJS/etc/mjes/mjes2
# rm /opt/FHPMJS/var/spool/mjes/mjes1.tar
# rm /opt/FHPMJS/var/spool/mjes/mjes2.tar
# rcp -r /opt/FHPjmcal/post/sys1 hp02:/opt/FHPjmcal/post/sys1
# rcp -r /opt/FHPjmcal/post/sys2 hp02:/opt/FHPjmcal/post/sys2

# rcp -r /var/opt/FJSVstem/stemDB1 hp02:/var/opt/FJSVstem/stemDB1 (*1)
# rcp -r /var/opt/FJSVstem/stemDB2 hp02:/var/opt/FJSVstem/stemDB2 (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

Decompress the spool directory for Job Execution Control on the standby node.

```
# cd /opt/FHPMJS/var/spool/mjes
# tar -xvf mjes1.tar
# tar -xvf mjes2.tar
# rm mjes1.tar
# rm mjes2.tar
```

6. Restore the settings to start and stop daemons automatically

   On both nodes, return the automatic start/stop settings that were canceled in "2.2.3 Canceling the settings for starting and stopping daemons automatically" to the original state. Similarly, undo the changes to the process monitoring target.

7. Cancel the settings for automatic reflection

   1. Use the following command to cancel the security information settings:

      ```
      mpaclcls -u
      ```

   2. Use the following command to cancel the settings for automatically reflecting calendar and service/application startup information:

      ```
      /opt/FHPjmcal/bin/calsetcluster -d
      ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpaclcls command and calsetcluster command.

8. Delete cluster information

   Execute the *mpsetcluster* command with the "-d" option on both nodes to delete cluster information registered after Systemwalker Operation Manager was installed.

   ```
   # /opt/systemwalker/bin/mpsetcluster -d
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpsetcluster command.

9. Delete unnecessary directories from the shared disk.

   At this stage, Systemwalker Operation Manager will have been released from its application to the cluster system.

10. Uninstallation

    Uninstall Systemwalker Operation Manager on both nodes.

If Systemwalker Operation Manager is to be reinstalled, first uninstall it using the procedure above, and then perform a fresh installation on to the cluster system (at each node).

To perform an upgrade installation, release Systemwalker Operation Manager from its application to the cluster system by following steps 1 through to 9 above, perform the upgrade installation, and then reapply Systemwalker Operation Manager to the cluster system, starting from "2.2.3 Canceling the settings for starting and stopping daemons automatically."

Note

While uninstalling Systemwalker Operation Manager using the procedure above, be sure to cancel the calendar automatic reflection settings using the "/opt/FHPjmcal/bin/calsetcluster -d" command. Otherwise, the following symbolic file will remain and need to be deleted manually:

- /sbin/rc3.d/S28JMCAL

7.3 Starting and Stopping Daemons in the MC/ServiceGuard System

This section describes how to start and stop Systemwalker Operation Manager in the MC/ServiceGuard system.

Starting daemons

This section describes the procedure for starting the Systemwalker Operation Manager daemons.

1. On all servers on both the active and standby nodes, execute the *soperationmgr* command to start any Systemwalker Operation Manager daemons that are not registered with MC/ServiceGuard. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), the JobScheduler daemons and Job Execution Control daemons of subsystems that are not registered in cluster systems will also be started up.

```
# /opt/systemwalker/bin/soperationmgr
```

2. Start the Jobscheduler and Job Execution Control daemons registered with MC/ServiceGuard by starting the package.

```
# cmrunpkg -v -n node-name package-name
```

Example:

```
# cmrunpkg -v -n hp01 omgr
```

Stopping daemons

This section describes the procedure for stopping the Systemwalker Operation Manager daemons.

1. Stop the Jobscheduler and Job Execution Control daemons registered with MC/ServiceGuard by stopping the package.

```
# cmhaltpkg -v package name
```

Example:

```
# cmhaltpkg -v omgr
```

2. On all the servers on both the active and standby nodes, execute the *poperationmgr* command to stop any Systemwalker Operation Manager daemons that are not registered with MC/ServiceGuard. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), the JobScheduler daemons and Job Execution Control daemons of subsystems that are not registered in cluster systems will also be stopped.

```
# /opt/systemwalker/bin/poperationmgr
```

Note

- Do not move the current directory to the shared disk when executing the soperationmgr command or the poperationmgr command. Otherwise, a failover may not be performed correctly.

- Do not start or stop any services using the **Service control** section in the **Systemwalker Operation Manager Environment Setup** window.
- Any packages where the Systemwalker Operation Manager service has been registered must be stopped before Systemwalker Operation Manager is stopped (if Systemwalker Operation Manager has been registered with a cluster system).

  As a result, the shared disk and logical IP address registered with any such package will also stop, along with the Operation Manager service and any applications (such as Oracle or Interstage) registered with it.

Note

If the package is stopped and restarted, the "STATUS" and "STATE" of the cluster and package displayed with the *cmviewcl* command may become "down" or "halted", and the switching status may become "disabled". In such cases, switch the package status using the *cmmodpkg* command. Refer to "7.1.3 Starting and stopping the package" for details.

Chapter 8 Cluster Setup Procedure Specific to Systems Using HACMP

This chapter describes the cluster setup procedure specific to systems using HACMP (hereinafter referred to as HACMP system).

8.1 Registering Systemwalker Operation Manager with the HACMP System

This section describes how to register Systemwalker Operation Manager with the HACMP system in the following configuration.

Setting the Startup Order of Daemons at System Startup

Creating applications

Registering resource groups

8.1.1 Setting the Startup Order of Daemons at System Startup

This section describes how to change the startup order of daemons.

The Systemwalker Operation Manager daemons that are not registered with the HACMP system must be activated before cluster daemons.

Change the startup order of daemons as follows:

Changing the startup order of daemons

Modify /etc/inittab by describing operation99 in a line located before hacmp.

[Before]

```
hacmp:2:once...
operation99:2:wait...
```

[After]

```
operation99:2:wait...
hacmp:2:once...
```

Information

When choosing the **Start at system restart** option in the **Start Cluster Services** window, entry of hacmp:2 is added to the /etc/inittab file. Refer to the HACMP manual for details on SMIT.

8.1.2 Creating applications

Create the following applications to be registered with the HACMP system:

- Start script
- Stop script
- Monitor method

Create the above applications on each active node and standby node, placing them in the same directory path. Do not create them on the shared disk. After creating the applications, be sure to assign execution rights to them.

Examples of creating each application are explained and samples of each of these applications are provided.

Back up or copy these samples, and then modify them to match the environment.

8.1.2.1 Creating start scripts

Create a start script that activates the daemons of Jobscheduler and Job Execution Control. The following sample is provided for Systemwalker Operation Manager:

```
/opt/FAIXJMCMN/etc/script/hacmp/omgr_start.sh
```

This sample script is for 1:1 active/standby configuration (without subsystems).

Changes to the start script need to be made for the 1:1 active/standby configuration (with subsystems), the 1:1 active/standby configuration (with subsystems and partial cluster operation), and dual node mutual standby configurations.

After copying the sample, modify it to match your cluster environment. For 1:1 active/standby configuration (without subsystems), you can use this sample without modification after making its backup.

The following examples show how to modify the start script.

Example of how to modify the start script for 1:1 active/standby configurations (with subsystems) and 1:1 active/standby configurations (with subsystems and partial cluster operation)

In a system where multiple subsystems are running, start/stop the daemons of Jobscheduler and Job Execution Control on each subsystem.

The following examples show a 1:1 active/standby configuration (with subsystems), in which both subsystem 0 and subsystem 1 are running, and a 1:1 active/standby configuration (with subsystems and partial cluster operation), in which subsystem 0 is not operated in a cluster but subsystem 1 is.

1. Change the "SUBSYSTEM" variable to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), simply change the number for the subsystem that will be operated in the cluster.

   [Before]

   ```
   SUBSYSTEM="0"
   ```

   [After]

   1:1 active/standby configuration (with subsystems)

   ```
   PLU_SUBSYSTEM="0 1"
   ```

   1:1 active/standby configuration (with subsystems and partial cluster operation)

   ```
   PLU_SUBSYSTEM="1"
   ```

2. Add the for, do, and done statements to start Jobscheduler and Job Execution Control on each subsystem.

   [Before]

   ```
   # Starts Job Scheduler & Job Execution Control
   # - 1:1 standby, 2 nodes mutual standby
   /bin/sh /opt/FAIXMJS/usr/lib/mjes/S99MJS -sys $SUBSYSTEM
   /bin/sh /opt/FAIXJOBSC/bin/S99JOBSCH -sys $SUBSYSTEM
   ```

   [After]

   ```
   # Starts Job Scheduler & Job Execution Control
   # - 1:1 standby, 2 nodes mutual standby
   for SUBSYSTEM in $PLU_SUBSYSTEM
   do
   /bin/sh /opt/FAIXMJS/usr/lib/mjes/S99MJS -sys $SUBSYSTEM
   /bin/sh /opt/FAIXJOBSC/bin/S99JOBSCH -sys $SUBSYSTEM
   done
   ```

3. Add the for, do, done, and break statements to be able to check that the startup of the daemons of Jobscheduler and Job Execution Control has been completed on each subsystem.

   [Before]

```
# Sleep ....
/bin/sleep 5
status=0
# - 1:1 standby, 2 nodes mutual standby
MJES_STATUS=`$CHK_CMD mjsdaemon stop -sys $SUBSYSTEM`
if [ $MJES_STATUS = "DAEMON_STOPPED" ]
then
    status=1
fi
# - 1:1 standby, 2 nodes mutual standby
JOB_STATUS=`$CHK_CMD tskmnsrv stop -sys $SUBSYSTEM`
if [ $JOB_STATUS = "DAEMON_STOPPED" ]
then
     status=1
fi
```

   [After]

```
# Sleep ....
/bin/sleep 5
status=0
for SUBSYSTEM in $PLU_SUBSYSTEM
do
# - 1:1 standby, 2 nodes mutual standby
MJES_STATUS=`$CHK_CMD mjsdaemon stop -sys $SUBSYSTEM`
if [ $MJES_STATUS = "DAEMON_STOPPED" ]
then
     status=1
     break
fi
# - 1:1 standby, 2 nodes mutual standby
JOB_STATUS=`$CHK_CMD tskmnsrv stop -sys $SUBSYSTEM`
if [ $JOB_STATUS = "DAEMON_STOPPED" ]
then
     status=1
     break
fi
done
```

4. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), add the for, do, and done statements so that the security information will be reflected on each subsystem automatically.

   [Before]

```
# - 1:1 standby
       opt/FJSVfwseo/bin/mpaclcls
       /bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh
```

   [After]

```
# - 1:1 standby
for SUBSYSTEM in $PLU_SUBSYSTEM
        do
        /opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
        /bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
       done
```

Example of how to modify the start script for dual node mutual standby configuration

1. Copy the sample script and create a start script with the file name changed, and then change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Change the "- 1:1 standby" section to dual node mutual standby (change the position of "#").

   [Before]

```
# - 1:1 standby
/opt/FJSVfwseo/bin/mpaclcls
/bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh
# - 2 nodes mutual standby
#/opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
#/bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
# Starts Job Scheduler & Job Execution Control
```

   [After]

```
# - 1:1 standby
#/opt/FJSVfwseo/bin/mpaclcls
#/bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh
# - 2 nodes mutual standby
/opt/FJSVfwseo/bin/mpaclcls -s $SUBSYSTEM
/bin/sh /opt/FJSVfwseo/bin/jmacltrn.sh $SUBSYSTEM
# Starts Job Scheduler & Job Execution Control
```

3. Prepare another start script file with the same contents, rename the file, and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

   [After]

```
SUBSYSTEM="2"
```

4. Place the two start scripts on the active and standby nodes, using the same directory path each case.

   The following example shows how to place these files:

```
Active node1: /opt/FAIXJMCMN/etc/script/hacmp/omgr_start1.sh
  (Standby node2)/opt/FAIXJMCMN/etc/script/hacmp/omgr_start2.sh
Active node2: /opt/FAIXJMCMN/etc/script/hacmp/omgr_start2.sh
  (Standby node1)/opt/FAIXJMCMN/etc/script/hacmp/omgr_start1.sh
```

8.1.2.2 Creating stop scripts

Create a stop script that stops the daemons of Jobscheduler and Job Execution Control. The following sample is provided for Systemwalker Operation Manager:

```
/opt/FAIXJMCMN/etc/script/hacmp/omgr_stop.sh
```

This sample script is for 1:1 active/standby configuration (without subsystems).

Changes to the stop script need to be made for the 1:1 active/standby configuration (with subsystems), the 1:1 active/standby configuration (with subsystems and partial cluster operation), and dual node mutual standby configurations.

After copying the sample, modify it to match your cluster environment. For 1:1 active/standby configuration (without subsystems), you can use this sample without making changes after making its backup.

The following examples show how to modify the stop script.

Example of how to modify the stop script for 1:1 active/standby configurations (with subsystems) and 1:1 active/standby configurations (with subsystems and partial cluster operation)

The following examples show a 1:1 active/standby configuration (with subsystems), in which both subsystem 0 and subsystem 1 are running, and a 1:1 active/standby configuration (with subsystems and partial cluster operation), in which subsystem 0 is not operated in a cluster but subsystem 1 is.

1. Change the "SUBSYSTEM" variable to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), simply change the number for the subsystem that will be operated in the cluster.

   [Before]

   ```
   SUBSYSTEM="0"
   ```

   [After]

   1:1 active/standby configuration (with subsystems)

   ```
   PLU_SUBSYSTEM="0 1"
   ```

   1:1 active/standby configuration (with subsystems and partial cluster operation)

   ```
   PLU_SUBSYSTEM="1"
   ```

2. Add the for and do statements to stop Jobscheduler and Job Execution Control on each subsystem.

   [Before]

   ```
   # Job Execution Control Server
   MJSDAEMON=`/bin/ps -eo pid,args | /bin/grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | /bin/
   grep -v "grep" | /usr/bin/wc -l `
   ```

   [After]

   ```
   # Job Execution Control Server
   for SUBSYSTEM in $PLU_SUBSYSTEM
   do
   MJSDAEMON=`/bin/ps -eo pid,args | /bin/grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | /bin/
   grep -v "grep" | /usr/bin/wc -l `
   ```

3. Add the done statement after completing the daemon stop processing.

   [Before]

   ```
   # Stops Job Scheduler & Job Execution Control
   # - 1:1 standby, 2 nodes mutual standby
   /bin/sh /opt/FAIXJOBSC/bin/K00JOBSCH -sys $SUBSYSTEM
   /bin/sh /opt/FAIXMJS/usr/lib/mjes/K00MJS -r -sys $SUBSYSTEM
   /opt/FJSVstem/bin/stem_end -sys $SUBSYSTEM

   # Daemon Status Check
   ```

   [After]

   ```
   # Stops Job Scheduler & Job Execution Control
   # - 1:1 standby, 2 nodes mutual standby
   /bin/sh /opt/FAIXJOBSC/bin/K00JOBSCH -sys $SUBSYSTEM
   /bin/sh /opt/FAIXMJS/usr/lib/mjes/K00MJS -r -sys $SUBSYSTEM
   /opt/FJSVstem/bin/stem_end -sys $SUBSYSTEM
   done
   ```

```
# Daemon Status Check
```

4. Add the for, do, done, and break statements to be able to check that the stop of the daemons of Jobscheduler and Job Execution Control has been completed on each subsystem.

   [Before]

```
# Sleep ....
/bin/sleep 1
status=0
# - 1:1 standby, 2 nodes mutual standby
MJES_STATUS=`$CHK_CMD mjsdaemon stop -sys $SUBSYSTEM`
if [ $MJES_STATUS = "DAEMON_RUNNING" ]
then
     status=1
fi
# - 1:1 standby, 2 nodes mutual standby
JOB_STATUS=`$CHK_CMD tskmnsrv stop -sys $SUBSYSTEM`
if [ $JOB_STATUS = "DAEMON_RUNNING" ]
then
     status=1
fi
```

   [After]

```
# Sleep ....
/bin/sleep 1
status=0
for SUBSYSTEM in $PLU_SUBSYSTEM
do
# - 1:1 standby, 2 nodes mutual standby
MJES_STATUS=`$CHK_CMD mjsdaemon stop -sys $SUBSYSTEM`
if [ $MJES_STATUS = "DAEMON_RUNNING" ]
then
     status=1
     break
fi
# - 1:1 standby, 2 nodes mutual standby
JOB_STATUS=`$CHK_CMD tskmnsrv stop -sys $SUBSYSTEM`
if [ $JOB_STATUS = "DAEMON_RUNNING" ]
then
     status=1
     break
fi
done
```

Example of how to modify the stop script for dual node mutual standby configuration

1. Copy the sample script and create a stop script with the file name changed, and then change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Prepare another stop script with the same contents, rename the file, and change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

[After]

```
SUBSYSTEM="2"
```

3. Place the two stop scripts on the active and standby nodes, using the same directory path in each case.

   The following example shows how to place these files:

```
Active node1: /opt/FAIXJMCMN/etc/script/hacmp/omgr_stop1.sh
 (Standby node2) /opt/FAIXJMCMN/etc/script/hacmp/omgr_stop2.sh
Active node2: /opt/FAIXJMCMN/etc/script/hacmp/omgr_stop2.sh
 (Standby node1) /opt/FAIXJMCMN/etc/script/hacmp/omgr_stop1.sh
```

8.1.2.3 Creating monitor methods

Creating and registering a monitor method enables you to monitor the Systemwalker Operation Manager daemons running on a cluster system and notify the trigger of a failover to the cluster system.

The following sample is provided for Systemwalker Operation Manager:

```
/opt/FAIXJMCMN/etc/script/hacmp/omgr_monitor.sh
```

This sample script is for 1:1 active/standby configuration (without subsystems). Changes to the monitor method need to be made for the 1:1 active/standby configuration (with subsystems), the 1:1 active/standby configuration (with subsystems and partial cluster operation), and dual node mutual standby configurations.

After copying the sample, modify it to match your cluster environment. For 1:1 active/standby configuration (without subsystems), you can use this sample without modification after making its backup.

The following examples show how to modify the monitor method.

Example of how to modify the monitor method for 1:1 active/standby configurations (with subsystems) and 1:1 active/standby configurations (with subsystems and partial cluster operation)

In a system where multiple subsystems are running, monitor the daemons on each subsystem. The following examples show a 1:1 active/standby configuration (with subsystems), in which both subsystem 0 and subsystem 1 are running, and a 1:1 active/standby configuration (with subsystems and partial cluster operation), in which subsystem 0 is not operated in a cluster but subsystem 1 is.

1. Change the "SUBSYSTEM" variable to "PLU_SUBSYSTEM" and its value to the subsystem numbers. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), simply change the number for the subsystem that will be operated in the cluster.

   [Before]

```
SUBSYSTEM="0"
```

   [After]

   1:1 active/standby configuration (with subsystems)

```
PLU_SUBSYSTEM="0 1"
```

   1:1 active/standby configuration (with subsystems and partial cluster operation)

```
PLU_SUBSYSTEM="1"
```

2. Add the for and do statements to monitor the daemons on each subsystem.

   [Before]

```
MJSDAEMON=`/bin/ps -eo pid,args | /bin/grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | /bin/
grep -v "grep" | /usr/bin/wc -l `
```

[After]

```
for SUBSYSTEM in $PLU_SUBSYSTEM
do
    MJSDAEMON=`/bin/ps -eo pid,args | /bin/grep "/usr/lib/mjes/mjsdaemon -sys $SUBSYSTEM" | /bin/
grep -v "grep" | /usr/bin/wc -l `
```

3. Add the done statement before "exit 0".

   [Before]

```
JOB_STATUS=`$CHK_CMD tskmnsrv stop -sys $SUBSYSTEM`
if [ $JOB_STATUS = "DAEMON_STOPPED" ]
then
        exit 1
fi

exit 0
```

   [After]

```
JOB_STATUS=`$CHK_CMD tskmnsrv stop -sys $SUBSYSTEM`
if [ $JOB_STATUS = "DAEMON_STOPPED" ]
then
        exit 1
fi
done

exit 0
```

Example of how to modify the monitor method for dual node mutual standby configuration

1. Change the value of the "SUBSYSTEM" variable to "1".

   [Before]

```
SUBSYSTEM="0"
```

   [After]

```
SUBSYSTEM="1"
```

2. Prepare another monitoring script with the same contents, rename the file, and then change the value of the "SUBSYSTEM" variable to "2".

   [Before]

```
SUBSYSTEM="1"
```

   [After]

```
SUBSYSTEM="2"
```

3. Place the two monitoring scripts on the active and standby nodes, using the same directory path in each case.

   The following example shows how to place there files:

```
Active node1: /opt/FAIXJMCMN/etc/script/hacmp/omgr_monitor1.sh
  (Standby node2) /opt/FAIXJMCMN/etc/script/hacmp/omgr_monitor2.sh
Active node2: /opt/FAIXJMCMN/etc/script/hacmp/omgr_monitor2.sh
  (Standby node1) /opt/FAIXJMCMN/etc/script/hacmp/omgr_monitor1.sh
```

8.1.3 Registering resource groups

Register resource groups by using the SMIT utility.

Refer to the HACMP manual for details on SMIT.

Register a resource group by using the following procedure:

1. Adding an application server
2. Setting up an application monitor
3. Registering a resource group
4. Setting details on the resource group registered
5. Synchronizing cluster definitions

The following shows registration flows for each cluster configuration.

[1:1 active/standby]

Register a resource group with the active node. Synchronize it with the standby node.

[Dual node mutual standby]

Register two types of resource groups. Synchronize them on both nodes.

The following shows how to register a resource group with a cluster system.

Registration procedure

1. Adding an application server

   Add an application server by performing the following steps:

   1. On the active node, enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

   2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resources Configuration** >> **Configure HACMP Applications** >> **Configure HACMP Application Servers** >> **Add an Application Server**.

   3. In the fields displayed, enter the server name, start script and stop script.

   [Example]

   ```
   Server Name: omgr_ap
   Start Script: /opt/FAIXJMCMN/etc/script/hacmp/omgr_start.sh
   Stop Script: /opt/FAIXJMCMN/etc/script/hacmp/omgr_stop.sh
   ```

   - Before registering an application, check that execution rights have been granted to all the start script, stop script and monitor method created on the active and standby nodes.
   - Register the start script and stop script with their absolute path.

2. Setting up an application monitor

   Set up an application monitor by using the following steps:

   1. On the active node, enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

   2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resources Configuration** >> **Configure HACMP Applications** >> **Configure HACMP Application Monitoring** >> **Configure Custom Application Monitors** >> **Add a Custom Application Monitor**.

   3. In the **Monitor Name** field, enter the application monitor name.

4. In the **Application Server Name** field, enter the name of the Systemwalker Operation Manager's application server ("omgr_ap" in step 1 above).

5. In the **Monitor Method** field, enter the monitor method. Enter other values according to the system operation.

[Example]

```
Monitor Name:                   omgr_mon
Application Server Name:        omgr_ap
Monitor Mode:                   long-running monitoring
Monitor Method:                 /opt/FAIXJMCMN/etc/script/hacmp/omgr_monitor.sh
Stabilization Interval:         60
Restart Count:                  0
Action on Application Failure: fallover
```

Register the monitor method with its absolute path.

3. Registering a resource group

Register a resource group by performing the following steps:

1. On the active node, enter "smitty hacmp" to open a SMIT session.

```
#smitty hacmp
```

2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resource Group Configuration** >> **Add a Resource Group**.

3. In the fields displayed, enter the resource group name and participating node name. Enter other values according to the system operation.

[Example]

Participating node names are "node1" and "node2", and the resource group name to which the Systemwalker Operation Manager's application server is registered is "omgr_rg."

```
Resource Group Name:     omgr_rg
Participating Node Names:     node1 node2 (*1)
```

*1:

In the [Participating Node Names] field, enter the node with the highest priority first.
In this example, node1 is the home node of omgr_rg. Delimit node names with a space.

4. Setting details on the resource group registered

Set details on the resource group you registered by performing the following steps:

1. On the active node, enter "smitty hacmp" to open a SMIT session.

```
#smitty hacmp
```

2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resource Group Configuration** >> **Change/Show Resources and Attributes for a Resource Group**.

3. In the window that displays the list of resource groups, select the resource group added ("omgr_rg" is added in step 3 above).

4. In the fields displayed, enter the service IP label/address, application server, volume group and file system.

5. For dual node mutual standby configuration, register the other resource group by repeating steps 1 through 4.

[Example]

Service IP label is "srvip," application server name is "omgr_ap," the volume name of the shared disk is "datavg1," and the mount point to the shared disk is "/disk1"

```
Service IP Labels/Addresses: srvip
Application Servers:             omgr_ap
Volume Groups:               datavg1
Filesystems:                 /disk1
```

5. Synchronizing cluster definitions

   Synchronize the contents of the resource group registered with the active node with the standby node by performing the following steps:

   1. On the active node, enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

   2. In SMIT, select **Extended Configuration** >> **Extended Verification and Synchronization**.
   3. Synchronize the resource group.

      Refer to the HACMP manual for details on synchronization.

8.2 Uninstalling Systemwalker Operation Manager from the HACMP System

This section describes how to uninstall Systemwalker Operation Manager from the HACMP system.

8.2.1 For 1:1 active/standby configuration

This section describes how to uninstall Systemwalker Operation Manager from a cluster system with 1:1 active/standby configuration.

Use the following procedure to uninstall Systemwalker Operation Manager from the HACMP system.

1. Stopping the Systemwalker Operation Manager daemons registered with the HACMP system
2. Stopping Systemwalker Operation Manager
3. Deleting the resource group registered with the HACMP system
4. Deleting the application monitor
5. Deleting the application server
6. Synchronizing cluster definitions
7. Moving resources to the active node
8. Copying resources to the standby node
9. Restoring the settings to start and stop daemons automatically
10. Canceling the settings for automatic reflection
11. Deleting cluster information
12. Deleting unnecessary directories from the shared disk
13. Uninstalling Systemwalker Operation Manager

Deletion procedure

In the following example of deletion procedure, the resource group name of Systemwalker Operation Manager, the application server name and the application monitor name registered with the HACMP system are "omgr_rg", "omgr_ap" and "omgr_mon" respectively.

1. Stopping the Systemwalker Operation Manager daemons registered with the HACMP system

   Stop the Systemwalker Operation Manager daemons running on the cluster system. Refer to "8.3 Starting and Stopping Daemons in the HACMP System" for how to stop daemons.

2. Stopping Systemwalker Operation Manager

   On all nodes that configure the cluster system, stop Systemwalker Operation Manage by executing the poperationmgr command.

   ```
   # /opt/systemwalker/bin/poperationmgr
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the poperationmgr command.

3. Deleting the resource group registered with the HACMP system

   If only the application server of Systemwalker Operation Manager has been registered with the resource group, delete the resource group itself.

   If other application servers have been registered with the resource group, delete the application server of Systemwalker Operation Manager from the resource group.

   Depending on the operating environment, perform either of the following procedures:

   a. Deleting the resource group

      1. On the active node, enter "smitty hacmp" to open a SMIT session.

         ```
         #smitty hacmp
         ```

      2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **Extended Resource Group Configuration** >> **Remove a Resource Group**.

      3. In the window that displays the list of resource groups, select the resource group name of Systemwalker Operation Manager "omgr_rg" to delete it.

   b. Deleting the application server from the resource group

      1. On the active node, enter "smitty hacmp" to open a SMIT session.

         ```
         #smitty hacmp
         ```

      2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resource Group Configuration** >> **Change/Show Resources and Attributes for a Resource Group**.

      3. In the window that displays the list of resource groups, select the resource group name "omgr_rg."

      4. From the **Application Server Name** field, delete "omgr_ap."

      5. In addition, delete the service IP label/address, volume group and filesystem that have been registered as the resource of Systemwalker Operation Manager.

4. Deleting the application monitor

   1. On the active node, enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

   2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resources Configuration** >> **Configure HACMP Applications** >> **Configure HACMP Application Monitoring** >> **Define Custom Application Monitor** >> **Remove a Custom Application Monitor**.

   3. In the **Remove a Custom Application Monitor** window, select the application monitor name of Systemwalker Operation Manager "omgr_mon" to remove it.

5. Deleting the application server

   1. On the active node, enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

   2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resources Configuration** >> **Configure HACMP Applications** >> **Configure HACMP Application Servers** >> **Remove an Application Server**.

3. In the window that displays the list of application servers, select the application server name of Systemwalker Operation Manager "omgr_ap" to remove it.

6. Synchronizing cluster definitions

   Synchronize the contents of definition deleted on the active node to the standby node.

   1. On the active node, enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

   2. In SMIT, select **Extended Configuration** >> **Extended Verification and Synchronization**.

   3. Perform synchronization

      Refer to the HACMP manual for details on synchronization.

7. Moving resources to the active node

   Move resources that had been moved to the shared disk back to the active node.

   In the following example, the volume name of the shared disk is "datavg1" and the mount point to the shared disk is "/disk1".

   1. On the active node, activate the volume by executing the *varyonvg* command of AIX, and then mount the shared disk.

      ```
      # varyonvg datavg1
      # mount /disk1
      ```

   2. Deleting symbolic links

      On the active node, delete the symbolic links that were created for the resources that were moved to the shared disk.

      [1:1 active/standby configuration (without subsystems), 1:1 active/standby configuration (with subsystems)]

      ```
      # rm /var/opt/FJSVfwseo/JM
      # rm /opt/FAIXjmcal/post
      # rm /opt/FAIXJOBSC/db
      # rm /var/spool/mjes
      # rm /etc/mjes
      # rm /var/opt/FJSVstem (*1)
      ```

      ```
      *1: Required only if the Master Schedule Management function is enabled.
      ```

      [1:1 active/standby configuration (with subsystems and partial cluster operation)]

      ```
      # rm /var/opt/FJSVfwseo/JM1
      # rm /opt/FAIXjmcal/post/sys1
      # rm /opt/FAIXJOBSC/db/JOBDB1
      # rm /var/spool/mjes/mjes1
      # rm /etc/mjes/mjes1
      # rm /var/opt/FJSVstem/stemDB1 (*1)
      ```

      ```
      *1: Required only if the Master Schedule Management function is enabled.
      ```

   3. Moving resources from the shared disk to the local disk

      Move the resources that were moved to the shared disk at the configuration of the cluster system back to the local disk and restore the symbolic links.

      [1:1 active/standby configuration (without subsystems), 1:1 active/standby configuration (with subsystems)]

      ```
      # mv /disk1/FAIXjmcal/post /opt/FAIXjmcal/post
      # mv /disk1/FAIXJOBSC /opt/FAIXJOBSC/db
      # mv /disk1/FAIXMJS/var/spool/mjes /opt/FAIXMJS/var/spool/mjes
      # ln -s /opt/FAIXMJS/var/spool/mjes /var/spool/mjes
      # mv /disk1/FAIXMJS/etc/mjes /opt/FAIXMJS/etc/mjes
      # ln -s /opt/FAIXMJS/etc/mjes /etc/mjes
      # mv /disk1/FJSVstem /var/opt/FJSVstem (*1)
      ```

```
*1: Required only if the Master Schedule Management function is enabled.
```

[1:1 active/standby configuration (with subsystems and partial cluster operation)]

```
# mv /disk1/FAIXjmcal/post/sys1 /opt/FAIXjmcal/post/sys1
# mv /disk1/FAIXJOBSC/JOBDB1 /opt/FAIXJOBSC/db/JOBDB1
# mv /disk1/FAIXMJS/var/spool/mjes1 /opt/FAIXMJS/var/spool/mjes/mjes1
# mv /disk1/FAIXMJS/etc/mjes1 /opt/FAIXMJS/etc/mjes/mjes1
# mv /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

4. On the active node, unmount the shared disk, and then deactivate the volume by executing the AIX command *varyoffvg*.

```
# umount /disk1
# varyoffvg datavg1
```

8. Copying resources to the standby node

Copy the resources that have been moved back to the local disk on the active node over to the standby node.

1. Deleting symbolic links

On the standby node, delete the symbolic links that were created to the resources that were moved to the shared disk.

[1:1 active/standby configuration (without subsystems), 1:1 active/standby configuration (with subsystems)]

```
# rm /var/opt/FJSVfwseo/JM
# rm /opt/FAIXjmcal/post
# rm /opt/FAIXJOBSC/db
# rm /var/spool/mjes
# rm /etc/mjes
# rm /var/opt/FJSVstem (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

[1:1 active/standby configuration (with subsystems and partial cluster operation)]

```
# rm /var/opt/FJSVfwseo/JM1
# rm /opt/FAIXjmcal/post/sys1
# rm /opt/FAIXJOBSC/db/JOBDB1
# rm /var/spool/mjes/mjes1
# rm /etc/mjes/mjes1
# rm /var/opt/FJSVstem/stemDB1 (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

2. Copying resources

Copy the resources that have been returned to the local disk on the active node to the standby node, and restore the symbolic links.

Temporarily compress the spool directory for Job Execution Control before copying it. In the following example, this directory is compressed as "mjes.tar".

[1:1 active/standby configuration (without subsystems), 1:1 active/standby configuration (with subsystems)]

```
# cd /opt/FAIXMJS/var/spool
# tar -cvf ./mjes.tar mjes
# rcp /opt/FAIXMJS/var/spool/mjes.tar node2:/opt/FAIXMJS/var/spool/mjes.tar
# rm /opt/FAIXMJS/var/spool/mjes.tar
```

Copy the resources. In the following example, resources are copied from the "node1" active node to the standby node.

```
# rcp -r node1:/opt/FAIXJOBSC/db /opt/FAIXJOBSC/db
# cd /opt/FAIXMJS/var/spool
# tar -xvf mjes.tar
```

```
# rm /opt/FAIXMJS/var/spool/mjes.tar
# ln -s /opt/FAIXMJS/var/spool/mjes /var/spool/mjes
# rcp -r node1:/opt/FAIXMJS/etc/mjes /opt/FAIXMJS/etc/mjes
# ln -s /opt/FAIXMJS/etc/mjes /etc/mjes
# rcp -r node1:/opt/FAIXjmcal/post /opt/FAIXjmcal/post
# rcp -r node1:/var/opt/FJSVstem /var/opt/FJSVstem (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

[1:1 active/standby configuration (with subsystems and partial cluster operation)]

```
# cd /opt/FAIXMJS/var/spool/mjes
# tar -cvf ./mjes1.tar mjes1
# rcp /opt/FAIXMJS/var/spool/mjes/mjes1.tar node2:/opt/FAIXMJS/var/spool/mjes/mjes1.tar
# rm /opt/FAIXMJS/var/spool/mjes/mjes1.tar
```

Copy the resources. In the example, the resources are copied from the active node "node1" on the standby node.

```
# rcp -r node1:/opt/FAIXJOBSC/db/JOBDB1 /opt/FAIXJOBSC/db/JOBDB1
# cd /opt/FAIXMJS/var/spool/mjes
# tar -xvf mjes1.tar
# rm mjes1.tar
# rcp -r node1:/opt/FAIXMJS/etc/mjes/mjes1 /opt/FAIXMJS/etc/mjes/mjes1
# rcp -r node1:/opt/FAIXjmcal/post/sys1 /opt/FAIXjmcal/post/sys1
# rcp -r node1:/var/opt/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
```

```
*1: Required only if the Master Schedule Management function is enabled.
```

9. Restoring the settings to start and stop daemons automatically

   On each node, return the automatic start/stop settings that were canceled in "2.2.3 Canceling the settings for starting and stopping daemons automatically" to the original state. Similarly, undo the changes to the process monitoring target.

10. Canceling the settings for automatic reflection

    1. Cancel the security information settings by executing the following command:

       ```
       mpaclcls -u
       ```

    2. Cancel the settings for automatically reflecting calendar and service application startup information by executing the following command:

       ```
       /opt/FAIXjmcal/bin/calsetcluster -d
       ```

    Refer to the *Systemwalker Operation Manager Reference Guide* for details on the *mpaclcls* and *calsetcluster* commands.

11. Deleting cluster information

    On all nodes that configure the cluster system, execute the *mpsetcluster* command with the -d option specified to delete the cluster information registered after Systemwalker Operation Manager was installed.

    ```
    # /opt/systemwalker/bin/mpsetcluster -d
    ```

    Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpsetcluster command.

12. Deleting unnecessary directories from the shared disk

    Delete unnecessary directories from the shared disk.

    At this stage, Systemwalker Operation Manager will have been released from its application to the cluster system.

13. Uninstalling Systemwalker Operation Manager

    Uninstall Systemwalker Operation Manager from the HACMP system.

    If Systemwalker Operation Manager is to be reinstalled, first uninstall it using the procedure above, and then perform a fresh installation on to the cluster system (at each node).

To perform an upgrade installation, release Systemwalker Operation Manager from its application to the cluster system by following steps 1 through 12 above, perform the upgrade installation, and then reapply Systemwalker Operation Manager to the cluster system, starting from "2.2.3 Canceling the settings for starting and stopping daemons automatically."

8.2.2 For dual node mutual standby configuration

This section describes how to uninstall Systemwalker Operation Manager from a cluster system with dual node mutual standby configuration.

Use the following procedure to uninstall Systemwalker Operation Manager from the HACMP system.

1. Stopping the Systemwalker Operation Manager daemons registered with the HACMP system
2. Stopping Systemwalker Operation Manager
3. Deleting resource groups registered with the HACMP system
4. Deleting the application monitor
5. Deleting the application server
6. Synchronizing cluster definitions
7. Moving the resources to the active node
8. Copying the resources to the standby node
9. Restoring the settings to start and stop daemons automatically
10. Canceling the settings for automatic reflection
11. Deleting cluster information
12. Deleting unnecessary directories from the shared disk
13. Uninstalling Systemwalker Operation Manager

Deletion procedure

In the following example of deletion procedure, the resource group name of Systemwalker Operation Manager and the application server name registered with HACMP are "omgr_rg," and "omgr_ap" respectively.

1. Stopping the Systemwalker Operation Manager daemons registered with the HACMP system

   Stop the Systemwalker Operation Manager daemons running in the cluster system. Refer to "8.3 Starting and Stopping Daemons in the HACMP System" for how to stop daemons.

2. Stopping Systemwalker Operation Manager

   On both nodes, stop Systemwalker Operation Manager by executing the poperationmgr command.

   ```
   # /opt/systemwalker/bin/poperationmgr
   ```

   Refer to the *Systemwalker Operation Manager Reference Guide* for details on the poperationmgr command.

3. Deleting the resource groups registered with the HACMP system

   If only the application server of Systemwalker Operation Manager has been registered with the resource group, delete the resource group itself.

   If other application servers have been registered with the resource group, delete the application server of Systemwalker Operation Manager from the resource group.

   Depending on the operating environment, perform either of the following procedures:

   a. Deleting the resource group

      1. On the active node, enter "smitty hacmp" to open a SMIT session.

         ```
         #smitty hacmp
         ```

2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resource Group Configuration** >> **Remove a Resource Group**.
3. In the window that displays the list of resource groups, select the resource group name of Systemwalker Operation Manager "omgr_rg" to delete it.

b. Deleting the application server from the resource group

1. On the active node, enter "smitty hacmp" to open a SMIT session.

```
#smitty hacmp
```

2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resource Group Configuration** >> **Change/Show Resources and Attributes for a Resource Group**.
3. In the window that displays the list of resource groups, select the resource group name "omgr_rg."
4. From the **Application Server Name** field, delete "omgr_ap."
5. In addition, delete the service IP label/address, volume group and filesystem that have been registered as the resource of Systemwalker Operation Manager.

4. Deleting the application monitor

1. On the active node, enter "smitty hacmp" to open a SMIT session.

```
#smitty hacmp
```

2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resources Configuration** >> **Configure HACMP Applications** >> **Configure HACMP Application Monitoring** >> **Define Custom Application Monitor** >> **Remove a Custom Application Monitor**.
3. In the window displayed, select the application monitor name of Systemwalker Operation Manager to remove it.

5. Deleting the application server

1. On the active node, enter "smitty hacmp" to open a SMIT session.

```
#smitty hacmp
```

2. In SMIT, select **Extended Configuration** >> **Extended Resource Configuration** >> **HACMP Extended Resources Configuration** >> **Configure HACMP Applications** >> **Configure HACMP Application Servers** >> **Remove an Application Server**.
3. In the window that displays the list of application servers, select the application server name of Systemwalker Operation Manager "omgr_ap" to delete it.

6. Synchronizing cluster definitions

Synchronize the contents of definition deleted on the active node with the standby node.

1. On the active node, enter "smitty hacmp" to open a SMIT session.

```
#smitty hacmp
```

2. In SMIT, select **Extended Configuration** >> **Extended Verification and Synchronization**.
3. Perform synchronization

Refer to the HACMP manual for details on synchronization.

Repeat steps 3 through 6 with the other resource group.

7. Moving the resources to the active node

Move the resources that had been moved to the shared disk back to the active node.

1. On the active node, activate the volume by executing the *varyonvg* command of AIX, and then mount the shared disk.

   In the following example, the volume names of the shared disk are "datavg1" and "datavg2", and the mount points to the shared disk are "/disk1" and "/disk2".

```
# varyonvg datavg1
# mount /disk1
# varyonvg datavg2
# mount /disk2
```

2. Deleting symbolic links

   On the active node, delete the symbolic links that were created for the resources that were moved to the shared disk.

```
# rm /var/opt/FJSVfwseo/JM1
# rm /var/opt/FJSVfwseo/JM2

# rm /opt/FAIXjmcal/post/sys1
# rm /opt/FAIXjmcal/post/sys2

# rm /opt/FAIXJOBSC/db/JOBDB1
# rm /opt/FAIXJOBSC/db/JOBDB2

# rm /var/spool/mjes/mjes1
# rm /var/spool/mjes/mjes2

# rm /etc/mjes/mjes1
# rm /etc/mjes/mjes2

# rm /var/opt/FJSVstem/stemDB1 (*1)
# rm /var/opt/FJSVstem/stemDB2 (*1)
```

   *1: Required only if the Master Schedule Management function is enabled.

3. Moving the resources from the shared disk to the local disk

   Move the resources that were moved to the shared disk at the configuration of the cluster system back to the local disk and restore the symbolic links.

```
# mv /disk1/FAIXjmcal/post/sys1 /opt/FAIXjmcal/post/sys1
# mv /disk2/FAIXjmcal/post/sys2 /opt/FAIXjmcal/post/sys2

# mv /disk1/FAIXJOBSC/JOBDB1 /opt/FAIXJOBSC/db/JOBDB1
# mv /disk2/FAIXJOBSC/JOBDB2 /opt/FAIXJOBSC/db/JOBDB2

# mv /disk1/FAIXMJS/var/spool/mjes1 /opt/FAIXMJS/var/spool/mjes/mjes1
# mv /disk2/FAIXMJS/var/spool/mjes2 /opt/FAIXMJS/var/spool/mjes/mjes2

# mv /disk1/FAIXMJS/etc/mjes1 /opt/FAIXMJS/etc/mjes/mjes1
# mv /disk2/FAIXMJS/etc/mjes2 /opt/FAIXMJS/etc/mjes/mjes2

# mv /disk1/FJSVstem/stemDB1 /var/opt/FJSVstem/stemDB1 (*1)
# mv /disk2/FJSVstem/stemDB2 /var/opt/FJSVstem/stemDB2 (*1)
```

   *1: Required only if the Master Schedule Management function is enabled.

4. On the active node, unmount the shared disk, and then deactivate the volume by executing the AIX command *varyoffvg*.

```
# umount /disk1
# varyoffvg datavg1
# umount /disk2
# varyoffvg datavg2
```

8. Copying the resources to the standby node

   Copy the resources that have been moved back to the local disk on the active node over to the standby node.

   1. Deleting symbolic links

      On the standby node, delete the symbolic links that were created to the resources that were moved to the shared disk.

```
# rm /var/opt/FJSVfwseo/JM1
# rm /var/opt/FJSVfwseo/JM2

# rm /opt/FAIXjmcal/post/sys1
# rm /opt/FAIXjmcal/post/sys2

# rm /opt/FAIXJOBSC/db/JOBDB1
# rm /opt/FAIXJOBSC/db/JOBDB2

# rm /var/spool/mjes/mjes1
# rm /var/spool/mjes/mjes2

# rm /etc/mjes/mjes1
# rm /etc/mjes/mjes2

# rm /var/opt/FJSVstem/stemDB1 (*1)
# rm /var/opt/FJSVstem/stemDB2 (*1)
```

      *1: Required only if the Master Schedule Management function is enabled.

   2. Copying the resources

      Copy the resources on the active node that have been moved back to the local disk to the standby node, and then restore the symbolic links. In the following example, the standby node is "node2" and the command is entered on the active node. Temporarily compress the spool directory for Job Execution Control before copying it. In the following example, this directory is compressed as "mjes.tar"

```
# rcp -r /opt/FAIXJOBSC/db/JOBDB1 node2:/opt/FAIXJOBSC/db/JOBDB1
# rcp -r /opt/FAIXJOBSC/db/JOBDB2 node2:/opt/FAIXJOBSC/db/JOBDB2
# cd /opt/FAIXMJS/var/spool/mjes
# tar -cvf ./mjes1.tar mjes1
# tar -cvf ./mjes2.tar mjes2
# rcp /opt/FAIXMJS/var/spool/mjes/mjes1.tar
node2:/opt/FAIXMJS/var/spool/mjes/mjes1.tar
# rcp /opt/FAIXMJS/var/spool/mjes/mjes2.tar
node2:/opt/FAIXMJS/var/spool/mjes/mjes2.tar
# rcp -r /opt/FAIXMJS/etc/mjes/mjes1 node2:/opt/FAIXMJS/etc/mjes/mjes1
# rcp -r /opt/FAIXMJS/etc/mjes/mjes2 node2:/opt/FAIXMJS/etc/mjes/mjes2
# rm /opt/FAIXMJS/var/spool/mjes/mjes1.tar
# rm /opt/FAIXMJS/var/spool/mjes/mjes2.tar
# rcp -r /opt/FAIXjmcal/post/sys1 node2:/opt/FAIXjmcal/post/sys1
# rcp -r /opt/FAIXjmcal/post/sys2 node2:/opt/FAIXjmcal/post/sys2
# rcp -r /var/opt/FJSVstem/stemDB1 node2:/var/opt/FJSVstem/stemDB1 (*1)
# rcp -r /var/opt/FJSVstem/stemDB2 node2:/var/opt/FJSVstem/stemDB2 (*1)
```

      *1: Required only if the Master Schedule Management function is enabled.

      Restore the spool directory of Job Execution Control copied in compression format on the standby node.

```
# cd /opt/FAIXMJS/var/spool/mjes
# tar -xvf mjes1.tar
# tar -xvf mjes2.tar
# rm mjes1.tar
# rm mjes2.tar
```

9. Restoring the settings to start and stop daemons automatically

   On both nodes, return the automatic start/stop settings that were canceled in "2.2.3 Canceling the settings for starting and stopping daemons automatically" to the original state.

10. Canceling the settings for automatic reflection

    1. Cancel the security information settings by executing the following command:

       ```
       mpaclcls -u
       ```

    2. Cancel the settings for automatically reflecting calendar and service application startup information by executing the following command:

       ```
       /opt/FAIXjmcal/bin/calsetcluster -d
       ```

       Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpaclcls and calsetcluster commands.

11. Deleting cluster information

    On both nodes, execute the *mpsetcluster* command with the -d option specified to delete the cluster information registered after Systemwalker Operation Manager was installed.

    ```
    # /opt/systemwalker/bin/mpsetcluster -d
    ```

    Refer to the *Systemwalker Operation Manager Reference Guide* for details on the mpsetcluster command.

12. Deleting unnecessary directories from the shared disk

    Delete unnecessary directories from the shared disk.

    At this stage, Systemwalker Operation Manager will have been released from its application to the cluster system.

13. Uninstalling Systemwalker Operation Manager

    Uninstall Systemwalker Operation Manager from both nodes.

    If Systemwalker Operation Manager is to be reinstalled, first uninstall it by using the procedure above, and then perform a fresh installation on to the cluster system (at each node).

    To perform an upgrade installation, release Systemwalker Operation Manager from its application to the cluster system by following steps 1 through to 12 above, perform the upgrade installation, and then reapply Systemwalker Operation Manager to the cluster system, starting from "2.2.3 Canceling the settings for starting and stopping daemons automatically."

8.3 Starting and Stopping Daemons in the HACMP System

This section describes how to start and stop Systemwalker Operation Manager in the HACMP system.

Starting daemons

This section describes the procedure for starting the Systemwalker Operation Manager daemons.

1. Start the Systemwalker Operation Manager daemons that are not registered with the HACMP system by executing the *soperationmgr* command on all the servers on both the active and standby nodes. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), the JobScheduler daemons and Job Execution Control daemons of subsystems that are not registered in cluster systems will also be started up.

   ```
   # /opt/systemwalker/bin/soperationmgr
   ```

2. Start cluster services if they are not started. If they are already started, go to step 3 to start the resource group.

   [Starting cluster services]

   1. Enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

      Refer to the HACMP manual for details on SMIT.

2. Select **System Management (C-SPOC)**] >> **Manage HACMP Services** >> **Start Cluster Services**.

3. In the **Start Cluster Services** window, enter the field values for nodes on which cluster services are started.

3. Bring the resource groups registered with the cluster system online to start the Systemwalker Operation Manager daemons registered with the cluster system.

   [Starting resource groups]

   1. Enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

      Refer to the HACMP manual for details on SMIT.

   2. Select **System Management (C-SPOC)** >> **HACMP Resource Group and Application Management** >> **Bring a Resource Group Online**.

   3. In the window that displays the list of resource groups, select the resource group of Systemwalker Operation Manager.

   4. Select the node in the **Select an Online Node** window.

Stopping daemons

This section describes the procedure for stopping the Systemwalker Operation Manager daemons.

1. Bring the resource groups registered with the cluster system off line to stop the Systemwalker Operation Manager daemons registered with the cluster system.

   1. Enter "smitty hacmp" to open a SMIT session.

      ```
      #smitty hacmp
      ```

      Refer to the HACMP manual for details on SMIT.

   2. Select **System Management (C-SPOC)** >> **HACMP Resource Group and Application Management** >> **Bring a Resource Group Offline**.

   3. In the window that displays the list of resource groups, select the resource group of Systemwalker Operation Manager.

   4. Select a node in the **Select an Online Node** window.

2. Stop the Systemwalker Operation Manager daemons that are not registered with HACMP by executing the *poperationmgr* command. In the case of the 1:1 active/standby configuration (with subsystems and partial cluster operation), the JobScheduler daemons and Job Execution Control daemons of subsystems that are not registered in cluster systems will also be stopped.

- Do not move the current directory to the shared disk when executing the *soperationmgr* or *poperationmgr* commands. Otherwise, a failover may not be performed correctly.
- Do not start or stop any services using the **Service control** section in the **Systemwalker Operation Manager Environment Setup** window.
- Any resource groups where the Systemwalker Operation Manager application has been registered must be stopped before Systemwalker Operation Manager is stopped (if Systemwalker Operation Manager has been registered with a cluster system).
  As a result, the shared disk and logical IP address registered with any such resource group will also stop, along with the Operation Manager application and any applications (such as Oracle or Interstage) registered with it.