

Systemwalker Runbook Automation



Cluster Setup Guide

Windows/Linux

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Preface

Purpose of This Document

This document provides an overview of the functions for increasing the reliability of Systemwalker Runbook Automation V15.1.1 using cluster systems, as well as information on how to install and operate Systemwalker Runbook Automation on cluster systems.

Intended Readers

This document is intended for people who want to improve the reliability of administrative tasks by using the following clustering software to increase the reliability of Systemwalker Runbook Automation.

- Microsoft(R) Cluster Server or Microsoft(R) Cluster Service (hereafter referred to as "MSCS")
- Windows Server 2008 Failover Clustering (hereafter referred to as "Failover Clustering")

It is assumed that readers already have basic knowledge about the operating system and general GUI operations.

Abbreviations and Generic Terms Used

- The term "Windows(R) 8" refers to the following products:
 - Windows(R) 8 Pro(x86)
 - Windows(R) 8 Enterprise(x86)
 - Windows(R) 8 Pro(x64)
 - Windows(R) 8 Enterprise(x64)
- The term "Windows(R) 7" refers to the following products:
 - Windows(R) 7 Home Premium(x86)
 - Windows(R) 7 Professional(x86)
 - Windows(R) 7 Ultimate(x86)
 - Windows(R) 7 Enterprise(x86)
 - Windows(R) 7 Home Premium(x64)
 - Windows(R) 7 Professional(x64)
 - Windows(R) 7 Ultimate(x64)
 - Windows(R) 7 Enterprise(x64)
- The term "Windows Vista (R)" refers to the following products:
 - Windows Vista(R) Home Basic(x86)
 - Windows Vista(R) Home Premium(x86)
 - Windows Vista(R) Business(x86)
 - Windows Vista(R) Ultimate(x86)
 - Windows Vista(R) Enterprise(x86)
 - Windows Vista(R) Business(x64)
 - Windows Vista(R) Ultimate(x64)
- The term "Windows(R) XP" refers to the following products:
 - Microsoft(R) Windows(R) XP Professional x64 Edition
 - Microsoft(R) Windows(R) XP Professional

- Microsoft(R) Windows(R) XP Home Edition
- The term "Windows Server 2012" refers to the following products:
 - Microsoft(R) Windows Server(R) 2012 Standard(x64)
 - Microsoft(R) Windows Server(R) 2012 Datacenter(x64)
- The term "Windows Server 2008" refers to the following products:
 - Microsoft(R) Windows Server(R) 2008 R2 Standard(x64)
 - Microsoft(R) Windows Server(R) 2008 R2 Enterprise(x64)
 - Microsoft(R) Windows Server(R) 2008 R2 Datacenter(x64)
 - Microsoft(R) Windows Server(R) 2008 Standard(x86)
 - Microsoft(R) Windows Server(R) 2008 Enterprise(x86)
 - Microsoft(R) Windows Server(R) 2008 Standard(x64)
 - Microsoft(R) Windows Server(R) 2008 Enterprise(x64)
 - Microsoft(R) Windows Server(R) 2008 Datacenter(x64)
 - Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V(x86)
 - Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V(x86)
 - Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V(x64)
- The term "Windows Server 2003" refers to the following products:
 - Microsoft(R) Windows Server(R) 2003, Standard Edition
 - Microsoft(R) Windows Server(R) 2003, Enterprise Edition
 - Microsoft(R) Windows Server(R) 2003, Standard x64 Edition
 - Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition
 - Microsoft(R) Windows Server(R) 2003 R2, Standard Edition
 - Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition
 - Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition
 - Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition
- The Oracle Solaris Operating System may be referred to as Solaris, Solaris Operating System or Solaris OS.
- Microsoft (R) Cluster Server and Microsoft (R) Cluster Service are referred to as MSCS.
- The versions of Systemwalker Runbook Automation that run on Windows systems are referred to as the Windows version.
- The versions of Systemwalker Runbook Automation that run on Linux systems are referred to as the Linux version.

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This guide uses screenshots in accordance with Microsoft Corporation's guidelines.

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Contents

Chapter 1 High-Reliability Operations.....	1
1.1 High-Reliability Operations Using Cluster Systems.....	1
1.2 Supported Cluster Systems.....	2
1.3 Configuration of Systemwalker Runbook Automation on Cluster Systems.....	4
Chapter 2 Installation.....	6
2.1 Management Server Installation Procedure.....	6
2.2 Preparation for Creating the Management Server Environment.....	6
2.3 Installing the Management Server.....	7
2.3.1 Installing Systemwalker Runbook Automation.....	8
2.3.2 Setting up a Cluster Environment for Interstage Application Server.....	8
2.3.3 LDAP Environment Build and Settings.....	13
2.3.3.1 Building the Interstage Directory Service Environment.....	13
2.3.3.2 Building the Active Directory or OpenLDAP Environment.....	14
2.3.4 Setting up Systemwalker Runbook Automation (Primary Node).....	14
2.3.5 Setting up Systemwalker Runbook Automation (Secondary Node).....	30
2.3.6 Disabling Service Automatic Startup Settings.....	36
2.3.7 Setting up the Cluster Service.....	38
2.3.7.1 For MSCS or Failover Clustering.....	38
2.3.8 Starting the Cluster Service.....	41
2.3.8.1 For MSCS or Failover Clustering.....	41
2.4 Uninstalling the Management Server.....	41
2.4.1 Stopping the Cluster Service.....	41
2.4.1.1 For MSCS or Failover Clustering.....	41
2.4.2 Canceling the Cluster Service.....	41
2.4.2.1 For MSCS or Failover Clustering.....	41
2.4.3 Setup Cancellation.....	42
2.4.3.1 Deleting the Environment for Systemwalker Runbook Automation (Secondary Node).....	42
2.4.3.2 Deleting the Environment for Systemwalker Runbook Automation (Primary Node).....	45
2.4.4 Uninstallation.....	48
2.5 Linked Server Installation Procedure.....	48
2.5.1 Installing on the Linked Server.....	49
2.5.2 Setting up Agents in Systemwalker Centric Manager Environments (Primary Node).....	49
2.5.3 Setting up Agents in Systemwalker Centric Manager Environments (Secondary Node).....	50
2.6 Uninstalling the Linked Server.....	51
2.6.1 Canceling the Agent Settings in a Systemwalker Centric Manager Environment (Primary Node).....	51
2.6.2 Canceling the Setup for Agents in Systemwalker Centric Manager Environments (Secondary Node).....	52
2.6.3 Uninstalling from the Linked Server.....	53
Chapter 3 Operation.....	54
3.1 Starting and Stopping.....	54
3.1.1 Starting the Management Server [Windows].....	54
3.1.2 Stopping the Management Servers [Windows].....	54
3.2 Backup and Restoration.....	54
3.2.1 Backup.....	54
3.2.2 Restoration.....	58

Chapter 1 High-Reliability Operations

This chapter presents an overview of using cluster systems to achieve high reliability operations for Systemwalker Runbook Automation.

1.1 High-Reliability Operations Using Cluster Systems

With Systemwalker Runbook Automation, cluster systems can be used to achieve operation management in high-reliability environments.

This section explains the purpose and configurations of cluster systems

The purpose of cluster systems

A "cluster system" is a highly reliable system configuration that connects multiple servers in order to ensure high availability for the jobs running on those servers.

Redundant nodes are prepared in case faults occur during operations, so that these redundant nodes can re-execute jobs when faults occur with active nodes. (This transition action is referred to as a "failover".) This means that even if a job has stopped (due to node failure, for example), the failover allows the job to be rapidly re-executed.

In cluster systems, the node that is operating is referred to as the "active node", while the redundant nodes that are on standby in case a failure occurs are referred to as "standby nodes". Also, to distinguish the physical nodes, the node that is initially the active node is referred to as the "primary node", while the node that is initially the standby node is referred to as the "secondary node".

Operations that can be achieved with failovers

When a failover occurs, the processing progress of any automated operation processes that were executing on the active node can be inherited by the standby node.



When failovers occur, the processing progress of automated operation processes is not inherited if operation components or activities were executing these automated operation processes. In this case, recovery actions must be taken in order to re-execute the automated operation processes.

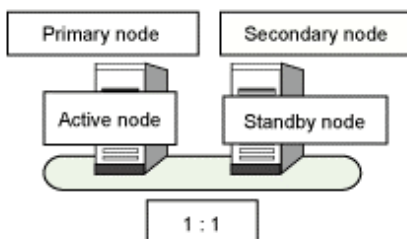
Refer to "Troubleshooting the Automatic Operation Processes" in the *Systemwalker Runbook Automation Troubleshooting Guide* for information on recovery actions.

The configuration of cluster systems

Systemwalker Runbook Automation allows cluster systems to be created for Management Servers and Linked Servers on which an Agent has been installed. Only the "1:1 active/standby configuration" is supported for cluster systems.

1:1 active/standby configurations

The following diagram shows a 1:1 active/standby configuration.



The standby node is on standby in case there is an error with the active node. If the cluster fails over and the standby node becomes the active node, the node that was formerly the active node will become the standby node when the error that occurred is resolved.



Linked Servers where Systemwalker Runbook Automation Agents have been installed run on servers where cluster systems have been created, but the Systemwalker Runbook Automation Agents do not fail over even if they fail. Inheriting the processing for linked products takes precedence.

1.2 Supported Cluster Systems

The following cluster systems are supported by Systemwalker Runbook Automation.

Management Servers

[Windows]

When Microsoft(R) Cluster Service (MSCS) or Microsoft(R) Failover Clustering is contained in the following:

- Microsoft(R) Windows Server(R) 2003, Enterprise Edition
- Microsoft(R) Windows Server(R) 2008 Enterprise
- Microsoft(R) Windows Server(R) 2012 Standard
- Microsoft(R) Windows Server(R) 2012 Datacenter

[Linux]

Cluster operations are not supported.

Linked Servers

[Windows]

When Microsoft(R) Cluster Service(MSCS) or Microsoft(R) Failover Clustering is contained in the following:

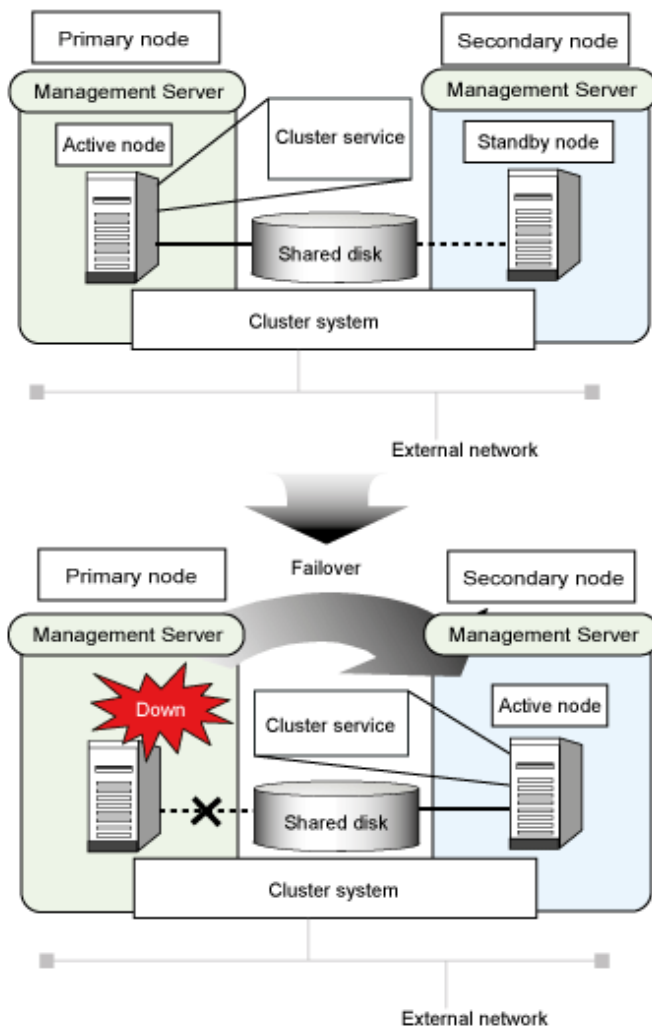
- Microsoft(R) Windows Server(R) 2003, Enterprise Edition
- Microsoft(R) Windows Server(R) 2008 Enterprise
- Microsoft(R) Windows Server(R) 2012 Standard
- Microsoft(R) Windows Server(R) 2012 Datacenter

[Linux]

- Fujitsu PRIMECLUSTER Enterprise Edition 4.1A20 or later
- Fujitsu PRIMECLUSTER HA Server 4.1A20 or later
- Fujitsu PRIMECLUSTER Clustering Base 4.1A20 or later

Overview of server operations on cluster systems

The following diagram illustrates server operations on cluster systems.



In this document, the nodes and processing on cluster systems are explained using the following terms.

Active node

This is the node that is currently operating.

Standby node

This is the node that is on standby to take over operations when necessary.

Failover

This is the act of transferring operations from the active node to the standby node when an error occurs.

Shared disk

The shared disk is a disk area that is shared by both the active node and the standby node in a cluster system.

Logical IP address

A logical IP address is a virtual IP address that is used by the cluster system and which is shared by both the active node and the standby node.

Physical IP address

Physical IP addresses are the specific IP address for each node.

The following terms are also used to physically distinguish the active node and the standby node.

Primary node

The active node when the cluster system first starts. Thereafter, the primary node alternately switches between the standby node and the active node every time a failover occurs.

Secondary node

The standby node when the cluster system first starts. Thereafter, the secondary node alternately switches between the active node and the standby node every time a failover occurs.

Failover trigger

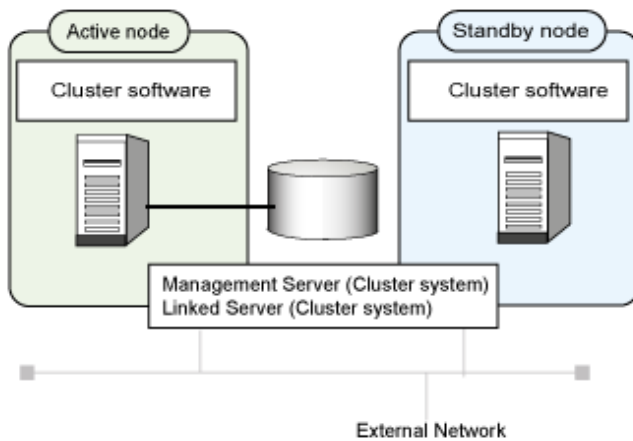
Failovers are triggered by errors with the resources that have been registered with the cluster system.

1.3 Configuration of Systemwalker Runbook Automation on Cluster Systems

Systemwalker Runbook Automation can be operated in cluster systems using the following configurations.

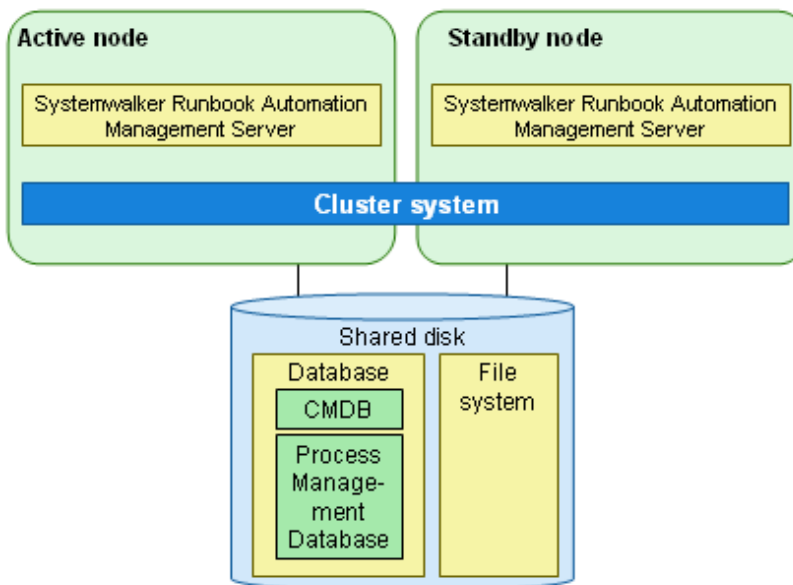
Using cluster configurations for the Management Servers and Linked Servers

The following diagram shows an overview of cluster configurations for the Management Servers and Linked Servers.



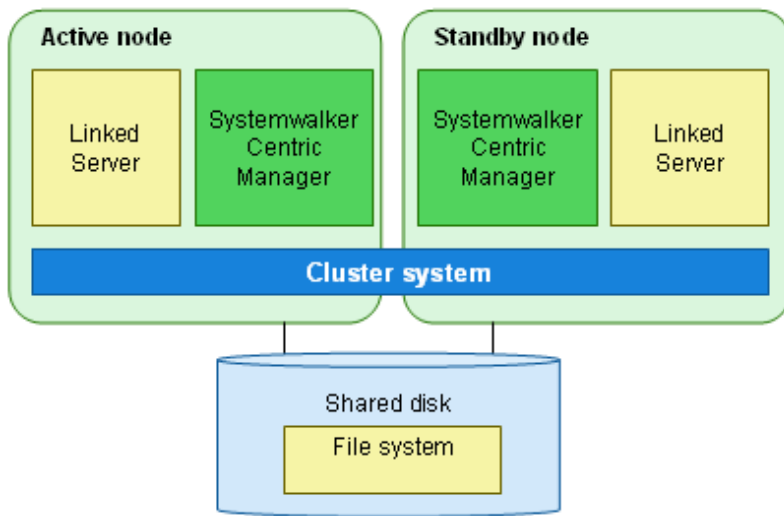
Internal product configuration for the Management Server

The following diagram shows the internal product configuration for Systemwalker Runbook Automation for when a cluster configuration is used for the Management Server.



Internal product configuration for Linked Servers

The following diagram shows the internal product configuration for Systemwalker Runbook Automation for when a cluster configuration is used for Linked Servers.



Refer to the Systemwalker Centric Manager manual for details on cluster configurations for Systemwalker Centric Manager.

Chapter 2 Installation

This chapter explains how to specify the settings for installing Systemwalker Runbook Automation on a cluster system.

2.1 Management Server Installation Procedure

This section describes the procedure for installing a server on a cluster system.

Refer also to the following manuals in the course of the installation.

- *Systemwalker Runbook Automation Technical Guide*
- *Systemwalker Runbook Automation Installation Guide*
- The manuals for MSCS and Failover Clustering

Perform all installation steps as a user that belongs to the administrators group.

2.2 Preparation for Creating the Management Server Environment

This section explains the preparation tasks before the server is installed on the cluster.

Determining the system configuration

The "1:1 active/standby configuration" is supported for Management Server cluster systems. Determine which servers will use a cluster configuration.

Preparing resources

Prepare the following resources.

- Shared disk

This is the disk for storing files that are shared by functions on the primary node and functions on the secondary node.

- Logical IP address

This is the unique IP address in the IPv4 format allocated to the network being used when operating Systemwalker Runbook Automation in a cluster system.

- Logical host name

This is the host name that corresponds to the logical IP address.

Estimating the space required for the shared disk

The shared disk will store the following resources, which are shared by the primary node and the secondary node. This means that it is necessary to estimate the required space.

- Database areas for Process Management
- Database areas for the CMDB Manager
- Directory for storing inherited files

Refer to the *Systemwalker Runbook Automation Technical Guide* for information on the required space.

Preparing the LDAP environment

The Systemwalker Runbook Automation cluster configuration is compatible with the LDAP environments shown below.

For this reason, prepare one of the following LDAP environments:

- Interstage Directory Service
- Active Directory

- OpenLDAP

Note that the cluster configuration is not compatible with the Interstage Single Sign-On and ServerView Operations Manager Single Sign-On environments.

Installing and setting up MSCS or Failover Clustering [Windows]

Before setting up Systemwalker Runbook Automation, install and set up MSCS or Failover Clustering. Refer to the MSCS or Failover Clustering manual for details.

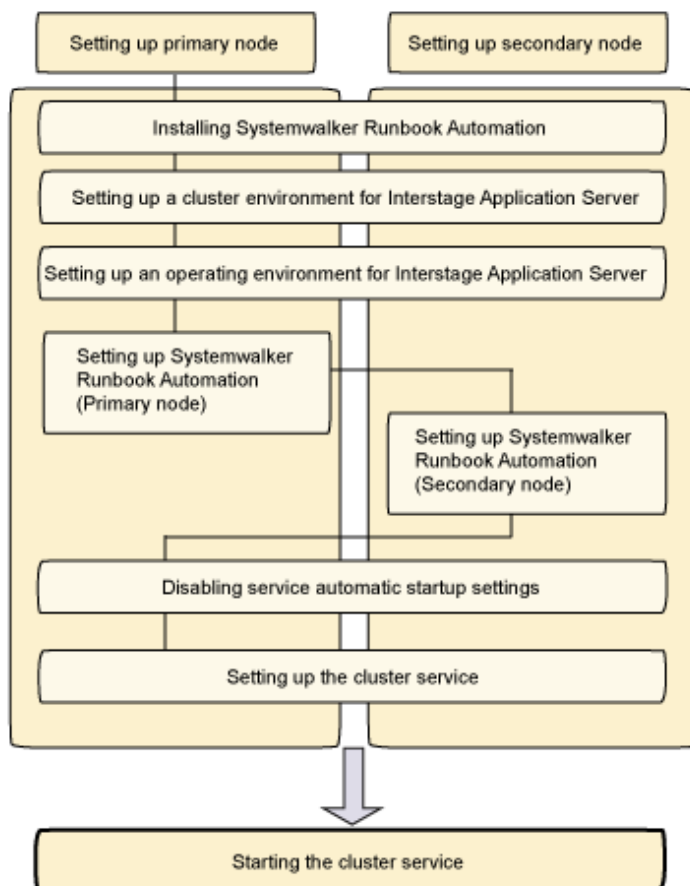
2.3 Installing the Management Server

This section explains how to install a Management Server on a cluster system.

If Systemwalker Runbook Automation is running, stop Systemwalker Runbook Automation on both nodes in the cluster configuration (both the primary node and the secondary node).

Management Server installation procedure

The procedure for installing a Management Server on a cluster system is as follows:



1. [Installing Systemwalker Runbook Automation](#)
2. [Setting up a Cluster Environment for Interstage Application Server](#)
3. [LDAP Environment Build and Settings](#)
4. [Setting up Systemwalker Runbook Automation \(Primary Node\)](#)
5. [Setting up Systemwalker Runbook Automation \(Secondary Node\)](#)
6. [Disabling Service Automatic Startup Settings](#)

7. [Setting up the Cluster Service](#)
8. [Starting the Cluster Service](#)

2.3.1 Installing Systemwalker Runbook Automation

Installing the Management Server

Install Systemwalker Runbook Automation on both nodes in the cluster system (both the primary node and the secondary node).

Use the following procedure to install Systemwalker Runbook Automation.

1. Place the shared disk online on the primary node.
2. Custom-install Systemwalker Runbook Automation on the primary node.
3. Place the shared disk offline on the primary node.
4. Place the shared disk online on the secondary node.
5. Custom-install Systemwalker Runbook Automation on the secondary node.
6. Place the shared disk offline on the secondary node.
7. Restart the primary node.
8. Restart the secondary node.
9. Place the shared disk online on the primary node.

Refer to "Installing on Management Servers", "Custom Installation" in the *Systemwalker Runbook Automation Installation Guide* for information on the installation procedure for Systemwalker Runbook Automation.



- Use the Custom Installation procedure for installing the System Walker Runbook Automation. If Standard Installation is used, the shared disk on the CMDB Manager database storage destination will not be configured.
- Specify a directory on the shared disk as the database storage directory for the CMDB Manager.
- For all other installation directories other than the database storage directory for the CMDB Manager, specify directories on the local disks rather than on the shared disk.
- Specify the same installation directories for both nodes.
- Specify the same port number for Systemwalker Runbook Automation on both nodes.

2.3.2 Setting up a Cluster Environment for Interstage Application Server

This section explains the procedure for setting up a cluster environment for Interstage Application Server that is used by Systemwalker Runbook Automation.

Refer to the *Interstage Application Server Reference Manual (Command Edition)* for details on the commands explained in this section.



The setup procedure in this section must be performed on both the primary node and the secondary node.

Specifying the IP address to take over

On both the primary node and the secondary node, specify the IP address to be embedded when object references are generated. For the IP address, specify the logical IP address that is taken over by the cluster service.

Execute the following command.

[Windows]

```
OD_set_env -n <Logical IP address>
```

Stopping Interstage

Stop Interstage on both the primary node and the secondary node.

Execute the following command.

[Windows]

```
isstop -f
```

Generating an Interstage system definition file

Generate an Interstage system definition file on both the primary node and the secondary node.

Execute the following command.

[Windows]

```
isgndef large
```

Registering the Interstage system definition file

Register the Interstage system definition file (that has been generated) on both the primary node and the secondary node.

Execute the following command.

[Windows]

```
Isregistdef
```

Initializing Interstage

Use the following procedure to initialize Interstage, first on the primary node and then on the secondary node.

1. Execute the following command on the primary node first.

[Windows]

```
isinit -f type1 ejb
```

2. When the initialization on the primary node has completed, fail the cluster over to the secondary node, and then execute the following command on the secondary node.

[Windows]

```
isinit -f -w type1 ejb
```

Changing settings of Interstage HTTP Server

Modify Interstage HTTP Server setting file, first on the primary node and then on the secondary.

Edit ServerName directive of the following file, and then set the name (the common host name or the logical IP address that is taken over by the cluster service) which registered in DNS (Domain Name Server).

```
[Install directory of Interstage Application Server]\F3FMihs\servers\FJapache\conf\httpd.conf
```

Example:

```
(abbr)
ServerName SWRBA
(abbr)
```

Starting Interstage

Start Interstage on both the primary node and the secondary node.

Execute the following command.

[Windows]

```
isstart && net start "Fjapache"
```

Stopping the Java EE Service

Stop the Java EE Service.

Stop the Java EE Service on the primary and secondary nodes.

1. As a user who has administrator privileges, use the following command to stop the Interstage Java EE Node Agent Service.

[Windows]

```
Ijnststop
```

2. As a user who has administrator privileges, use the following command to stop the Interstage Java EE DAS Service.

[Windows]

```
Ijdasstop
```

Java EE Settings

Use the procedure shown below to set the transition IP address and host name for the Interstage Application Server Java EE feature.

Execute the following procedure on both the primary and secondary nodes.

1. Edit das.properties

Use a text editor to open the following file, then change the agent.das.host value to the transition host name:

[Windows]

```
<Interstage Application Server Java EE common directory>\nodeagents\ijna\agent\config
\das.properties
```

Example:

To set the transition host name "SWRBA", edit the agent.das.host value as follows:

```
(Omitted)
agent.das.host=SWRBA
(Omitted)
```

2. Edit nodeagent.properties

Use a text editor to open the following file, then change the agent.client.host value to the transition host name:

[Windows]

```
<Interstage Application Server Java EE common directory>\nodeagents\ijna\agent\config
\nodeagent.properties
```

Example:

To set the transition host name "SWRBA", edit the agent.client.host value as follows:

```
(Omitted)
agent.client.host=SWRBA
(Omitted)
```

3. Edit sun-acc.xml

Use a text editor to open sun-acc.xml, then change the values shown below to the transition IP address:

[Windows]

```
<Interstage Application Server Java EE common directory>\domains\interstage\config\sun-acc.xml
```

[Edited items]

The name and address attributes of the target-server tag.

Example:

To set the transition host name "SWRBA", edit sun-acc.xml as follows:

```
(Omitted)
<client-container>
  <target-server name="SWRBA" address="SWRBA" port="23600"/>
  <log-service level="WARNING"/>
</client-container>
(Omitted)
```

4. Reissue a certificate

To reissue a certificate, specify the *<inherited host name>* and execute the command, as shown below.

[Windows]

```
keytool -delete -alias slas -keystore <Interstage Application Server Java EE common directory>
\domains\interstage\config\keystore.jks
keytool -genkeypair -keyalg RSA -keystore <Interstage Application Server Java EE common
directory>\domains\interstage\config\keystore.jks -alias slas -dname CN=<Inherited host name> -
validity 10950
```

Example:

If the inherited host name is SWRBA

```
keytool -delete -alias slas -keystore <Interstage Application Server Java EE common directory>
\domains\interstage\config\keystore.jks
keytool -genkeypair -keyalg RSA -keystore <Interstage Application Server Java EE common
directory>\domains\interstage\config\keystore.jks -alias slas -dname CN=SWRBA -validity 10950
```



The password for the keystore and trust store is "changeit". Do not change the password for the keystore, trust store or certificate.

5. Start the Interstage Java EE DAS Service

Execute the following command to start the Interstage Java EE DAS Service:

[Windows]

```
ijdasstart
```

6. Check the reissued certificate

Execute the following command to check a reissued certificate.

[Windows]

```
asadmin list-clusters
```


The information below will be displayed and the user will be prompted for a response. Enter "y".

Example:

```
[
[
  Version: V3
  Subject: CN=SWRBA
  Signature Algorithm: SHA1withRSA, OID = 1.2.840.113549.1.1.5

  Key:  Sun RSA public key, 1024 bits
  modulus:
15021559170003378592534724373310896469318950205734787978181628694283367693111225269012999656051
55183874016359873338727846318860239732097555791449494625547175683760614384658565650782214354569
43773222218832350016699924316651705252260811372661703305897795950948892653455772152918019363296
618453113006326696456261
  public exponent: 65537
  Validity: [From: Thu Nov 15 15:44:44 JST 2012,
            To: Sat Nov 08 15:44:44 JST 2042]
  Issuer: CN=SWRBA
  SerialNumber: [ 50a48f5c]
]
Algorithm: [SHA1withRSA]
Signature:
0000: 8D A7 3A B7 A5 45 6B FD   2E 44 60 C9 A2 4F 4E F4   ...Ek..D`.ON.
0010: 62 BE 1F F3 49 4E 58 6F   5B 0F E2 44 19 F5 81 79   b...INXo[...D...y
0020: EF C3 C1 62 CA E8 AF D8   CF 83 BA 6B 11 90 B0 92   ...b.....k....
0030: A3 B3 88 3A FD C4 E8 B9   C7 46 40 E1 CC 99 A2 62   ...:.....F@....b
0040: 90 AD 0B C3 30 0E 3D D2   D4 9A CF A6 31 5A 61 42   ....0.=.....1ZaB
0050: D5 7E 02 E5 F8 04 59 5B   90 CD 18 5A 0D 61 ED 1A   .....Y[...Z.a..
0060: 2B F2 AD 9C AE 4B 96 33   2A EA 5B 5A AD 75 6E A5   +....K.3*.[Z.un.
0070: B5 1F F2 7D 94 20 53 65   8D CC BA A3 39 AB 14 DB   .... Se....9...

]
Do you trust the above certificate [y|n] -->y
Command create-cluster executed successfully.
```

7. Change the host name of the various definition items

Execute the following command to set the transition host name:

```
asadmin set node-agent.ijna.jmx-connector.property.client-hostname=<transition host name>
asadmin set default-config.admin-service.jmx-connector.system.property.client-
hostname=<transition host name>
asadmin set server-config.admin-service.jmx-connector.system.property.client-
hostname=<transition host name>
asadmin set default-config.jms-service.jms-host.default_JMS_host.host=<transition host name>
asadmin set server.jms-service.jms-host.default_JMS_host.host=<transition host name>
asadmin set default-config.transaction-service.property.xa-servername=<transition host name>
asadmin set server.transaction-service.property.xa-servername=<transition host name>
```

Example:

When the transition host name is "SWRBA"

```
asadmin set node-agent.ijna.jmx-connector.property.client-hostname=SWRBA
asadmin set default-config.admin-service.jmx-connector.system.property.client-hostname=SWRBA
asadmin set server-config.admin-service.jmx-connector.system.property.client-hostname=SWRBA
asadmin set default-config.jms-service.jms-host.default_JMS_host.host=SWRBA
asadmin set server.jms-service.jms-host.default_JMS_host.host=SWRBA
asadmin set default-config.transaction-service.property.xa-servername=SWRBA
asadmin set server.transaction-service.property.xa-servername=SWRBA
```

Refer to the Interstage Application Server manuals for information on the asadmin command.

8. Change the IP address of the various definition items

Execute the following command to set the transition IP address:

```
asadmin set default-config.iiop-service.iiop-listener.orb-listener-1.address=<transition IP address>
asadmin set server.iiop-service.iiop-listener.orb-listener-1.address=<transition IP address>
```

Example:

When the transition IP address is 192.0.2.10, execute the following command:

```
asadmin set default-config.iiop-service.iiop-listener.orb-listener-1.address=192.0.2.10
asadmin set server.iiop-service.iiop-listener.orb-listener-1.address=192.0.2.10
```

Refer to the Interstage Application Server manuals for information on the asadmin command.

9. As a user who has administrator privileges, use the following command to start the Interstage Java EE Node Agent Service.

[Windows]

```
ijnastart
```

2.3.3 LDAP Environment Build and Settings

The procedure used to build the LDAP environment is explained in this section.

- [2.3.3.1 Building the Interstage Directory Service Environment](#)
- [2.3.3.2 Building the Active Directory or OpenLDAP Environment](#)

2.3.3.1 Building the Interstage Directory Service Environment

To use the Interstage Directory Service provided with Systemwalker Runbook Automation via LDAP authentication, use the following procedure to build the Interstage Directory Service environment.

Additionally, if you are using another LDAP type, refer to the manual of the LDAP that is used before building the LDAP environment.

1. On the active node, change the shared disk to online status.
2. On the active node, build the Interstage Directory Service environment.

Refer to "Creating an Environment for the Interstage Directory Service" in the *Systemwalker Runbook Automation Installation Guide* for information on how to build the environment.

Note that the following must be specified for the build.

- For **Simple Settings** >> **Database storage directory**: Specify the directory on the shared disk.
 - For **Access log settings** >> **Access log storage directory**: Specify the directory on the shared disk.
3. On the active node, execute the irepbacksys command to back up the repository information.

Example:

```
irepbacksys -d X:\Backup\irep\rep001_back -R rep001 -confonly
```

4. Transfer the backup obtained to the standby node using ftp, for example.
5. On the active node, change the shared disk to offline status.
6. On the standby node, change the shared disk to online status.
7. On the standby node, execute the ireprestsys command to restore the repository information.

Example:

```
ireprestsys -d X:\Backup\irep\rep001_back -R rep001 -confonly
```

8. On the standby node, change the shared disk to offline status.

2.3.3.2 Building the Active Directory or OpenLDAP Environment

To use Active Directory or OpenLDAP, refer to the respective manual before building the environment.

2.3.4 Setting up Systemwalker Runbook Automation (Primary Node)

This section explains the procedure for setting up Systemwalker Runbook Automation.

Register the users required for the setup with LDAP before setting up Systemwalker Runbook Automation.

Refer to "Registering Users, Groups and Organizational Units with the LDAP Directory" in the *Systemwalker Runbook Automation Installation Guide* for details.

Additionally, before Systemwalker Runbook Automation can be set up, the shared disk must be placed online on the primary node and Interstage, the Interstage Java EE DAS Service, and the Interstage Java EE Node Agent Service must be started.

Moreover, if the Interstage Directory Service provided with Systemwalker Runbook Automation is used, it must be started first.

The procedures for starting Interstage, the Interstage JMX Service, the Java EE Service, and the Interstage Directory Service are covered below.

Start Interstage [Windows]

Execute the isstart command as a user with administrator privileges.

```
isstart
net start "Fjapache"
```

Start Interstage JMX Service [Windows]

As a user with administrator privileges, use the **Services** feature of Windows to start the Interstage JMX Service.

1. Click **Start >> Control Panel >> Administrative Tools**, and then, double-click **Services**.
2. Select **Interstage Operation Tool**, and click the **Start** button.

Start Java EE Service [Windows]

1. As a user with administrator privileges, execute the following command to start the Interstage Java EE DAS Service.

```
ijdasstart
```

2. As a user with administrator privileges, execute the following command to start the Interstage Java EE Node Agent Service.

```
ijnastart
```

Start Interstage Directory Service

Execute the following command to start the Interstage Directory Service:

```
irepstart -R repository name
```

Example

If the repository name is rep001, execute the following command:

```
irepstart -R rep001
```

[Windows]



- Execute by user as administrator authority on local computer.
- During setup, stop services that are common to Systemwalker Operation Manager, and start the services after setup is completed. In addition, Systemwalker Operation Manager must be stopped before the setup.

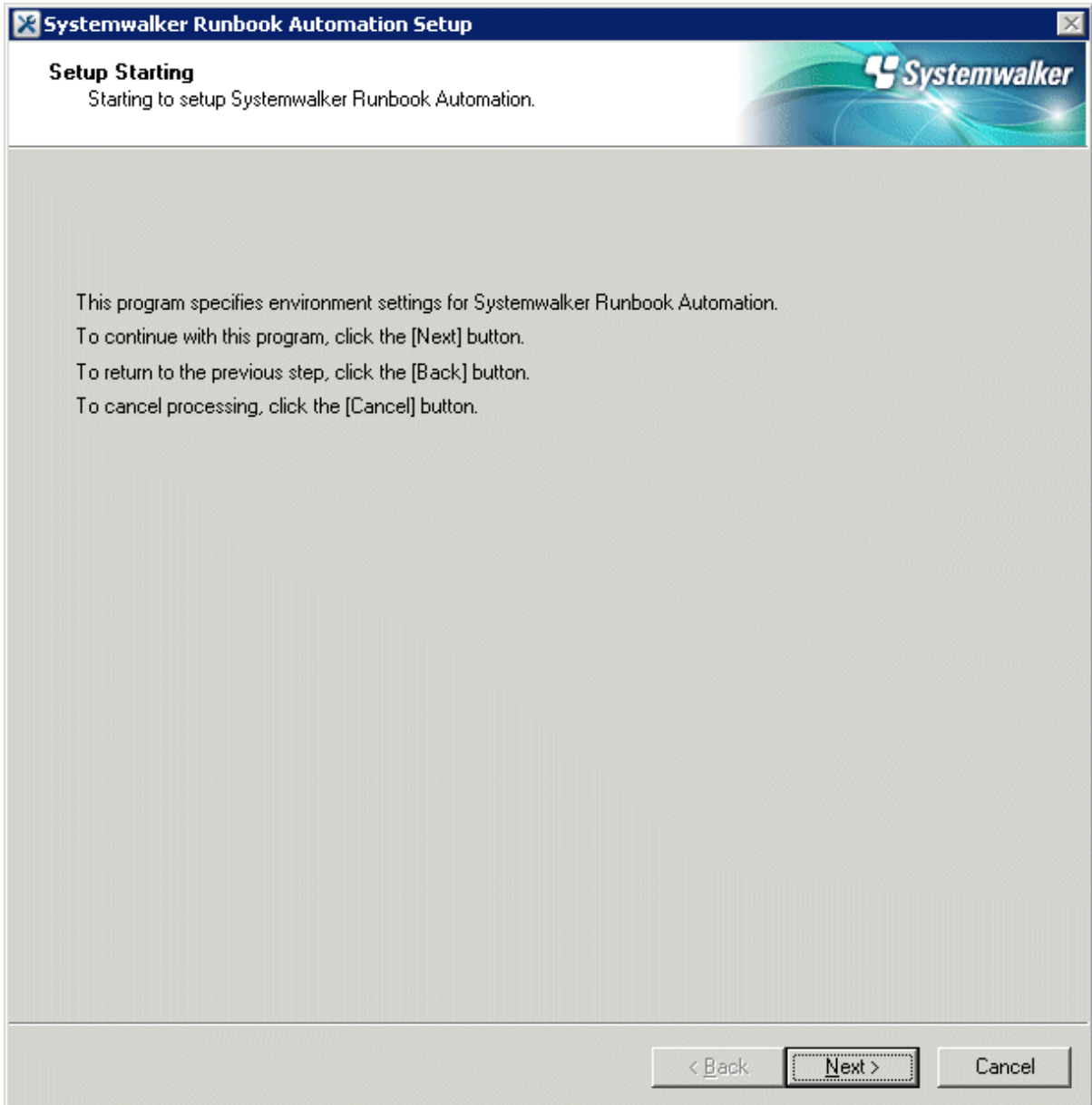
- If the setup fails for any reason, be sure to cancel the setup after restarting the system.

1. Log in as a user with administrator privileges for the server on the primary node.
2. Execute the following command to start the setup.

```
<Systemwalker Runbook Automation Management Server installation directory>\bin  
\swrba_setup-s
```

3. The Systemwalker Runbook Automation Setup Tool will start.

Check the settings that are displayed, and click the **Next** button.



4. Select the type of server to be created.

Enter each setting, and click the **Next** button.

Item name		Input value
Select the build server type		Select Standalone Server (Cluster operations - primary node) .
High-Reliability Environment Settings	Inherit File Storage Directory	Specify the directory that will store the files for inheriting information about the Management Server when a failover occurs. Specify the absolute path to a directory on the shared disk that can be accessed by both the primary node and the secondary node. Value can be up to 100 characters long.
	Primary Node Host Name	The primary node host name is displayed.

Item name	Input value
Secondary Node Host Name	Enter the host name corresponding to the secondary node physical IP address. (*1)

*1: Do not enter the logical host name (host name corresponding to the logical IP address).

- Set up the Process Management Database.

Enter each setting, and click the **Next** button.

The screenshot shows the 'Systemwalker Runbook Automation Setup' dialog box, specifically the 'Process Management Database Settings' section. The title bar reads 'Systemwalker Runbook Automation Setup'. Below the title bar, the text 'Process Management Database Settings' is displayed, followed by the instruction 'Configure the Process Management Database settings.' The Systemwalker logo is visible in the top right corner of the dialog.

The settings are as follows:

- Process Management Database Port Number:** (Default: 9657). The input field contains '9657'.
- Process Management Database Storage Directory:** (Default: [Inherit File Storage Directory]\FJSVswrbam\SWRBADB). The input field contains 'D:\SHAREDDIR\FJSVswrbam\SWRBADB'. A 'Browse...' button is located to the right of the input field.
- Process Management Database Access Account Settings:** (Default: swrbadb). This section is enclosed in a rounded rectangle and contains:
 - Process Management Database Access Account Settings:** (Default: swrbadb). The input field contains 'swrbadb'.
 - Process Management Database Access Account Password:** The input field is masked with asterisks.
 - Re-enter Password:** The input field is also masked with asterisks.

At the bottom of the dialog, there are three buttons: '< Back', 'Next >', and 'Cancel'.

Item name	Input value
Process Management Database Port Number	Specify the port number for accessing the Process Management Database.
Process Management Database Storage Directory	In 100 bytes or less, enter the absolute path of the directory in which the database will be stored. Specify the directory name using half-width alphanumeric characters, hyphens ("-"), underscores ("_") or half-width spaces.

Item name	Input value
	<p>Directories in "C:\Program Files" or "C:\Program Files (x86)" can also be specified.</p> <p>Paths or relative paths that begin with \\ cannot be specified.</p> <p>Note that read and write permissions for the directory specified in this step must be granted to the "Users" group.</p>
<p>Process Management Database access account password</p>	<p>Register a new account that will be required for Systemwalker Runbook Automation to access the Process Management Database.</p> <p>Specify this item using up to 18 alphanumeric characters starting with a letter.</p> <p>Note that the value specified for this item is required to directly manipulate the Process Management Database.</p>
<p>Process Management Database Access Account Password</p>	<p>Specify the password for the account for accessing the Process Management Database.</p> <p>Specify this item using up to 18 alphanumeric characters and symbols (*1).</p> <p>The value specified for this item is required to directly manipulate the Process Management Database, so save this value.</p> <p>*1: The following symbols can be used:</p> <p>! # % = ~ : ; _</p>
<p>Re-enter Password</p>	<p>Re-enter the password for the account for accessing the Process Management Database.</p>

6. Set up the environment for the authentication server.

Enter each setting, and click the **Next** button.

Systemwalker Runbook Automation Setup

Authentication Server Environment Settings
Set up the environment for the authentication server.

Select the authentication server type to be used:

LDAP server

Select the LDAP used:

Interstage Directory Service

Interstage Single Sign-on Environment Settings

Business System Name: (Default: Business001)

Business001

< Back Next > Cancel

Item name	Input value
Type of The Authentication Server to Use	Select the type of the authentication server to use, from the following options: - LDAP server
LDAP Used	Select the type of LDAP directory to use, from the following options: - Interstage Directory Service - Active Directory - OpenLDAP
Interstage Single Sign-On Environment Setting	For cluster operations, this item cannot be specified.

Item name	Input value
Business System Name	

7. Set up the environment for user authentication.

Enter each setting, and click the **Next** button.

Systemwalker Runbook Automation Setup

Environment settings for user authentication
Specify the following to configure the environment.

Host Name or IP Address: Port Number:

Key Name : format: directory name
< example > : ou=interstage,o=fujitsu,dc=com


Unit of Organization : format: ou = organization unit name
< example > : ou=Group when organization unit name is Group


Unit of Account Storage : format: ou = account storage unit name
< example > : ou=User when storage unit name is User

Administrator DN: format: cn=administrator DN name
< example > : cn=manager when the administrator DN name is manager

Password for Administrator DN

< Back Next > Cancel

Item name	Input value
Host Name or IP address	<p>Specify the host name or IP address for the LDAP server.</p> <p>The value can contain up to 64 characters.</p> <p> Note</p> <p>.....</p> <p>If an LDAP environment has been created on the Management Server, an IP address in the IPv6 format</p>

Item name	Input value
	cannot be specified for this item. In this case, specify a host name or an IP address in the IPv4 format.
Port Number	Specify the port number for the LDAP server. The value must be between 1 and 65535. Default: 389
Key Name	Specify a public directory. The value can contain up to 255 characters. Default: ou=interstage,o=fujitsu,dc=com  Note Separate public directory levels with commas(.). Example: If the public directory is ou=interstage,o=fujitsu,dc=com, specify "ou=interstage,o=fujitsu,dc=com".
Organizational Unit	Specify the name of the organizational unit using the following format: <i>ou=<Name of the organizational unit></i> The value can contain up to 255 characters. Default: ou=Group
Account Storage Unit	Specify the name of the account storage unit using the following format: <i>ou=<Name of the account storage unit></i> The value can contain up to 255 characters. Default: ou=User
Administrator DN	<ul style="list-style-type: none"> - Specify the distinguished name (DN) for the administrator of the LDAP repository in the DN format. - This item can be entered if OpenLDAP and the Interstage Directory Service have been specified for the LDAP directory. - Format: cn=<Administrator DN> Default: cn=manager If only the name is specified, the public directory will be added automatically.
Password for Administrator DN	Specify the password for the LDAP repository administrator.

 **Note**

Click the **Next** button to confirm authentication to the LDAP server.

An error message will be displayed if the authentication check with the LDAP server fails, so review the settings.

8. Specify user information.

Enter each setting, and click the **Next** button.

Item name	Input value
User for Process Control	Specify the user required for Systemwalker Runbook Automation to control processes. swrbaadmin is the recommended value, but any value can be specified. This user must have been registered in the LDAP directory.
Password for the User for Process Control	Specify the password for the process control user.
User for Schedule Startup	Specify the user who must start schedules in accordance with Systemwalker Runbook Automation schedules. swrbasch is the recommended value, but any value can be specified. This user must have been registered in the LDAP directory.

Item name	Input value
Password of User for Schedule Startup	Specify the password for the user for schedule startup.

 **Note**

Click the **Next** button to confirm authentication to the LDAP server. An error message will be displayed if the authentication check with the LDAP server fails, so review the settings. Also check the following.

- There may be an error with the LDAP server settings, so return to the previous window, and check whether the information has been set up correctly.
- Check whether there are any errors with the user information or group information that has been registered on the LDAP server.

9. Execute the SMTP server environment settings.

To perform email notification when the task is assigned in the Automated Operation Process, the SMTP server information must be registered on the Management Server.

Enter the various settings items, and click the **Next** button.

Item name	Input value
Host Name or IP Address	Set the host name or IP address of the SMTP server that will be used to send mail. <ul style="list-style-type: none"> - A maximum of 255 alphanumeric characters, periods ('.'), and hyphens ('-') can be used. - Default: localhost
Port Number	Specify the port number of the SMTP server that will be used to send mail. Default: 25
SMTP server user name	Specify the user name that will be used in SMTP server authentication when the mail is sent.

Item name	Input value
	This value is not required if SMTP server authentication will not be used when the mail is sent.
SMTP server user password	Specify the user password that will be used in SMTP server authentication when the mail is sent. This value is not required if SMTP server authentication will not be used when the mail is sent.
Mail sender	Specify the mail sender ('from' address) that will be assigned to the mail in mail address format. Note that, if a sent mail containing this item is returned because the recipient is unknown, then an error mail will be received from this 'from' address. Specify the address of a person in charge who can respond immediately to the problem.
Web console URL host name	Specify the Management Server host name that will be embedded in the Web console URL. The specified host name will be used in the URL that is defined in the text body when the mail is notified, in the following format: - http://Management Server host name:Management Server (Web server) port number/console/ Note that the URL that is specified must be accessible by the mail recipient. In particular, in environments which use Single Sign-on, the host name must be specified in FQDN format.

 **Note**

- If the SMTP server design is not yet complete, it is also possible to enter an interim value for the mail sender or Web console URL host name and then continue. In this case, when email notification is used, refer to "Changing the Mail Server Information Registered on the Management Server" in the *Systemwalker Runbook Automation Installation Guide*, and change the value to one that is valid.
- Refer to "Setting Up Email notification" in the *Systemwalker Runbook Automation Operation Guide* for information on email notification.

10. Configure the port number to be used by Systemwalker Runbook Automation.

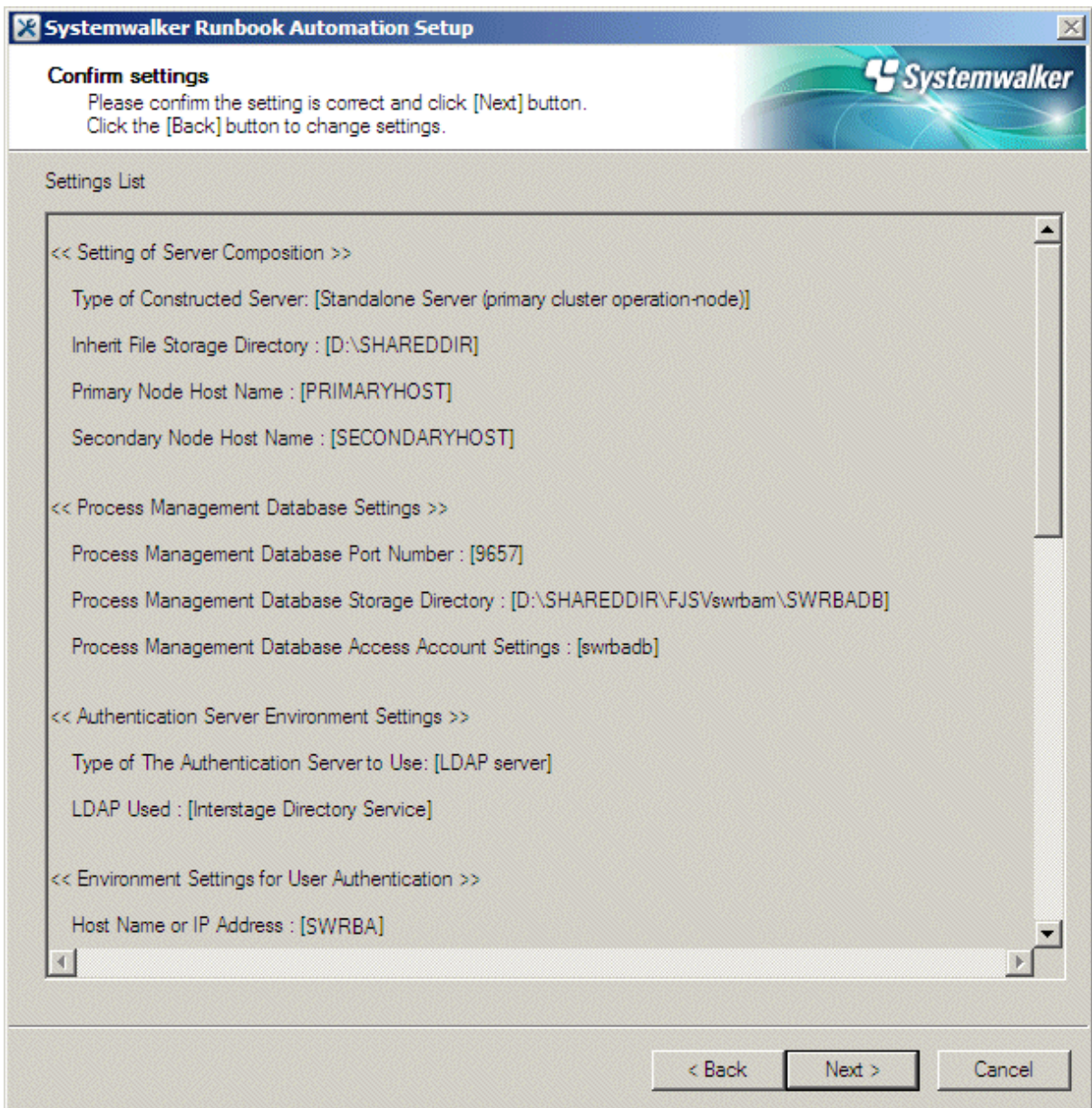
Enter relevant values, and click the **Next** button.

The screenshot shows a Windows-style dialog box titled "Systemwalker Runbook Automation Setup". The main heading is "Port number settings" with the instruction "Execute the port number settings." Below this, there are two input fields. The first is labeled "Port Number for Message Broker: (Default: 7676)" and contains the value "7676". The second is labeled "Port Number for Server Function: (Default: 23700)" and contains the value "23700". At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

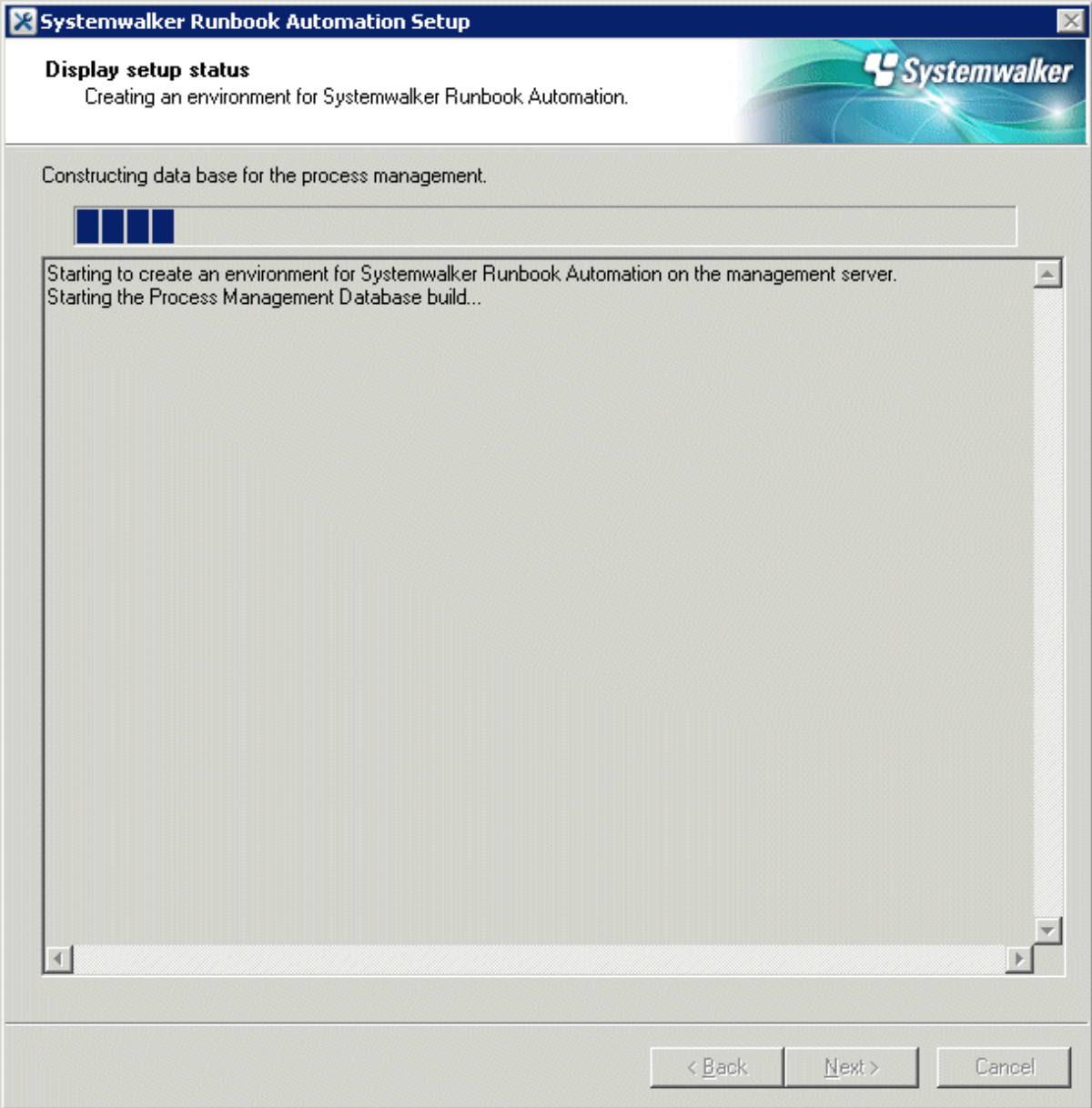
Item name	Input value
Port number for the message broker	Specify the port number required by Systemwalker Runbook Automation to use the Java EE feature.
Port number for server function	Specify the port number required to run the Systemwalker Runbook Automation server feature.

11. The settings will be displayed.

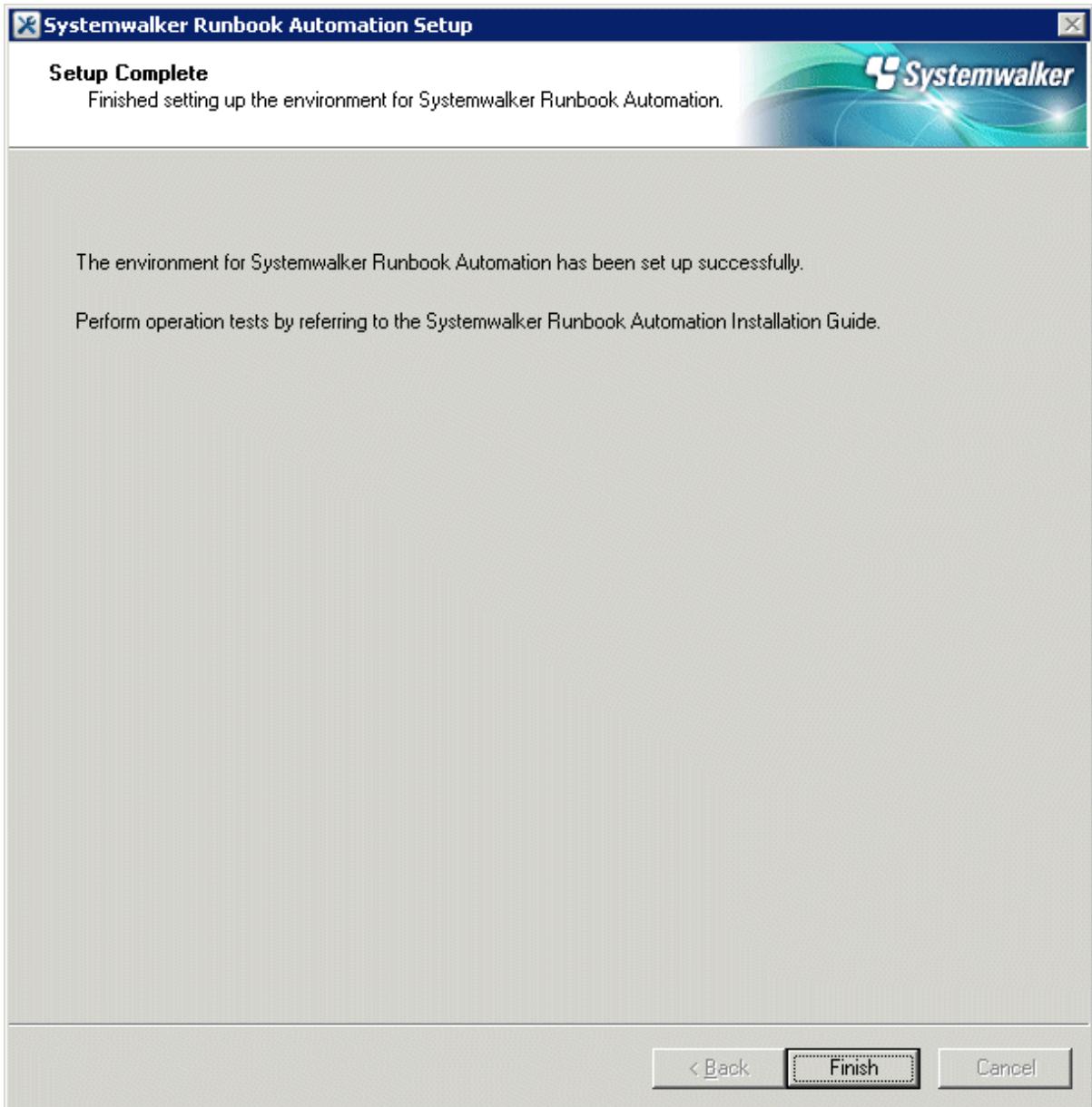
Check the displayed values are correct, and click the **Next** button. The setup will commence.



12. A window will be displayed indicating the setup progress.



13. If the setup completes normally, the settings will be displayed. Check the settings that are displayed, and click the **Finish** button.



 **Note**

If the setup fails for any reason, be sure to cancel the setup.

14. Execute the following command to stop Systemwalker Runbook Automation.

```
<Installation directory for Systemwalker Runbook Automation>\bin\swrba_stop
```

15. If the Interstage Directory Service has been used, execute the following command to stop the directory service.

```
irepstop -R repository name
```

Example

If the repository name is rep001, execute the following command:

```
irepstop -R rep001
```

2.3.5 Setting up Systemwalker Runbook Automation (Secondary Node)

This section explains the procedure for setting up Systemwalker Runbook Automation.

Before Systemwalker Runbook Automation can be set up, the shared disk must be placed online on the primary node and Interstage, the Interstage Java EE DAS Service, and the Interstage Java EE Node Agent Service must be started.

Additionally, if the Interstage Directory Service provided with Systemwalker Runbook Automation is used, it must be started first.

Refer to "2.3.4 Setting up Systemwalker Runbook Automation (Primary Node)" - "[Start Interstage \[Windows\]](#)", "[Start Interstage JMX Service \[Windows\]](#)", "[Start Java EE Service \[Windows\]](#)", and "[Start Interstage Directory Service](#)" for details about how to start Interstage, the Interstage JMX Service, the Java EE Service, and the Interstage Directory Service.

[Windows]

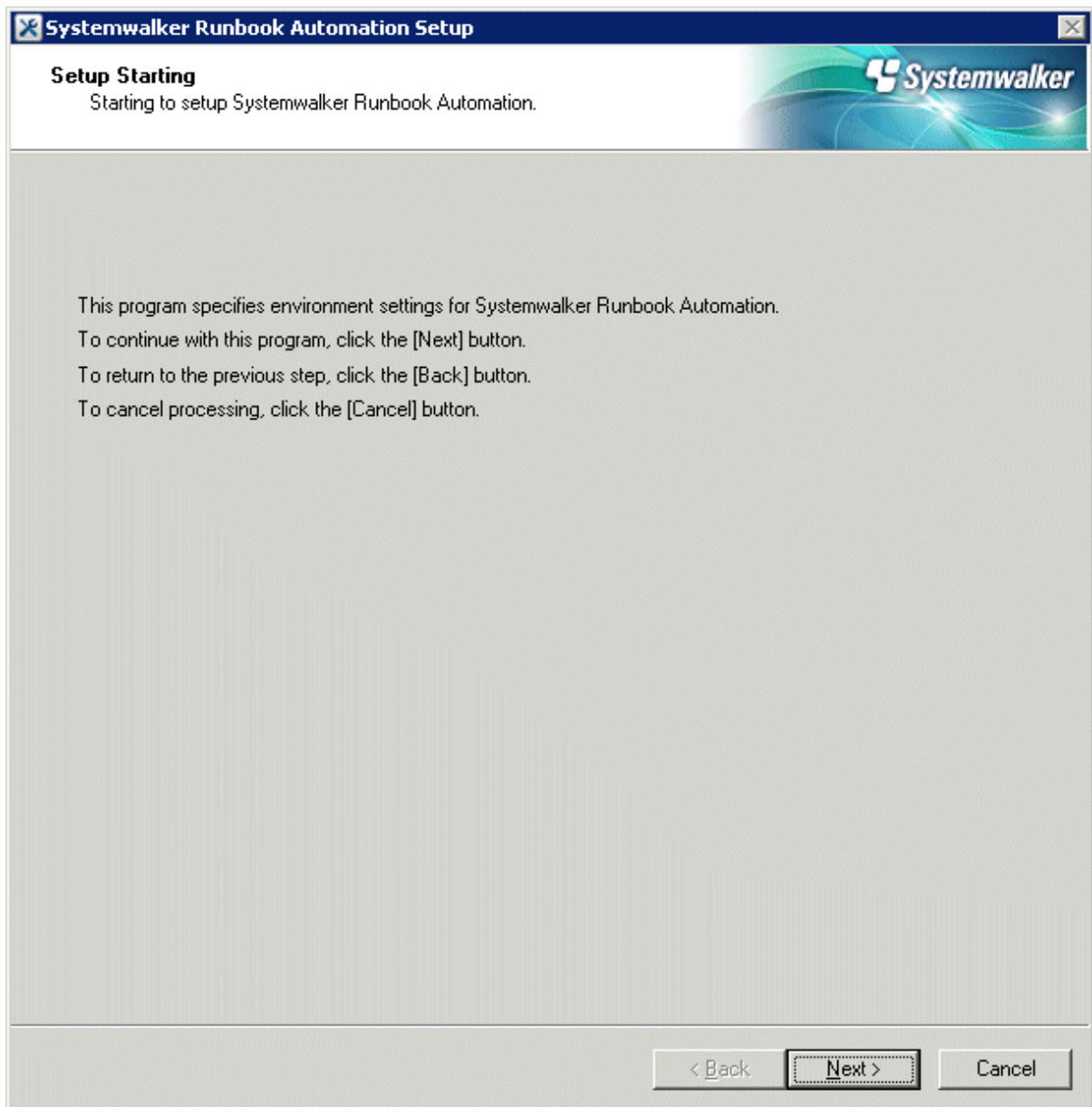


- Execute by user as administrator authority on local computer.
- During setup, stop services that are common to Systemwalker Operation Manager, and start the services after setup is completed. In addition, Systemwalker Operation Manager must be stopped before cancelling the setup.
- If the setup fails for any reason, be sure to cancel the setup after restarting the system..

1. Log in as a user with administrator privileges for the server on the secondary node.
2. Execute the following command to start the setup.

```
<Installation directory for Systemwalker Runbook Automation Management Server> \bin  
\swrba_setup-s
```

3. The Systemwalker Runbook Automation Setup Tool will start.
Check the settings that are displayed, and click the **Next** button.



4. Select the type of server to be created.

Enter each setting, and click the **Next** button.

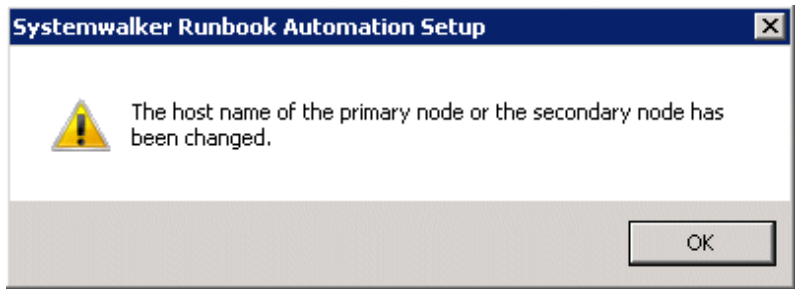
Item name		Input value
Select the build server type		Select Standalone Server (Cluster operations - secondary node) .
High-Reliability Environment Settings	Inherit File Storage Directory	Specify the inherited files storage directory for which the environment was created on the primary node. Be sure to specify a directory on the shared disk.
	Primary Node Host Name	Enter the host name corresponding to the primary node physical IP address. (*1) The primary node host name is displayed as the default.

Item name	Input value
	<p>Secondary Node Host Name</p> <p>Enter the host name corresponding to the secondary node physical IP address. (*1)</p> <p>The secondary node host name entered at the primary node is displayed as the default.</p>

*1: Do not enter the logical host name (host name corresponding to the logical IP address)

 **Note**

The following warning is displayed if the primary node host name or the secondary node host name has been changed from the default value:



If this warning is displayed, edit the file below at the primary node so that it matches the primary node host name and the secondary node host name entered at the secondary node:

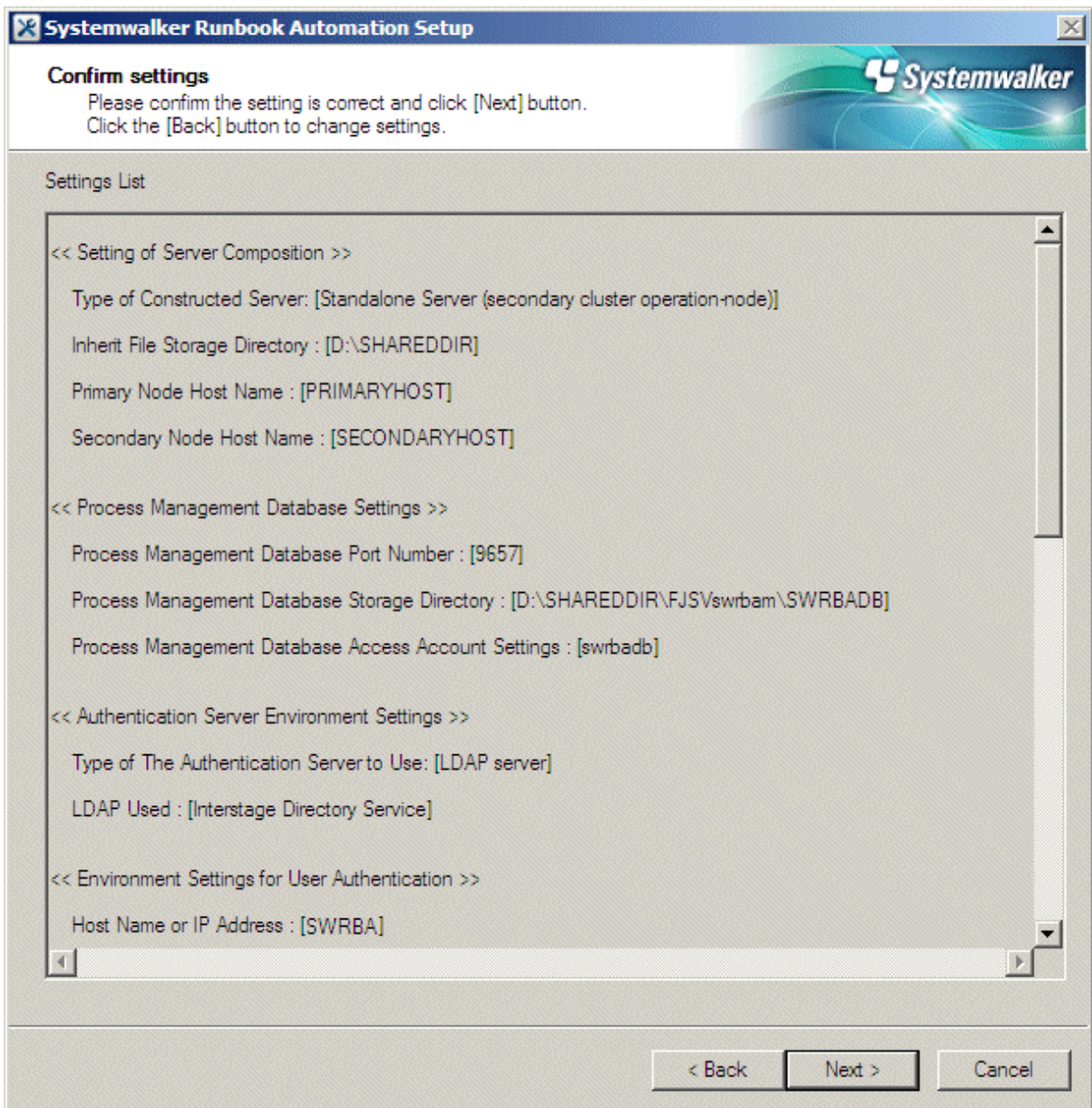
```
<Systemwalker Operation Manager installation destination directory>\MPWALKER.JM\mpjmc\etc
\calcpghost.def
```

[Example of editing]

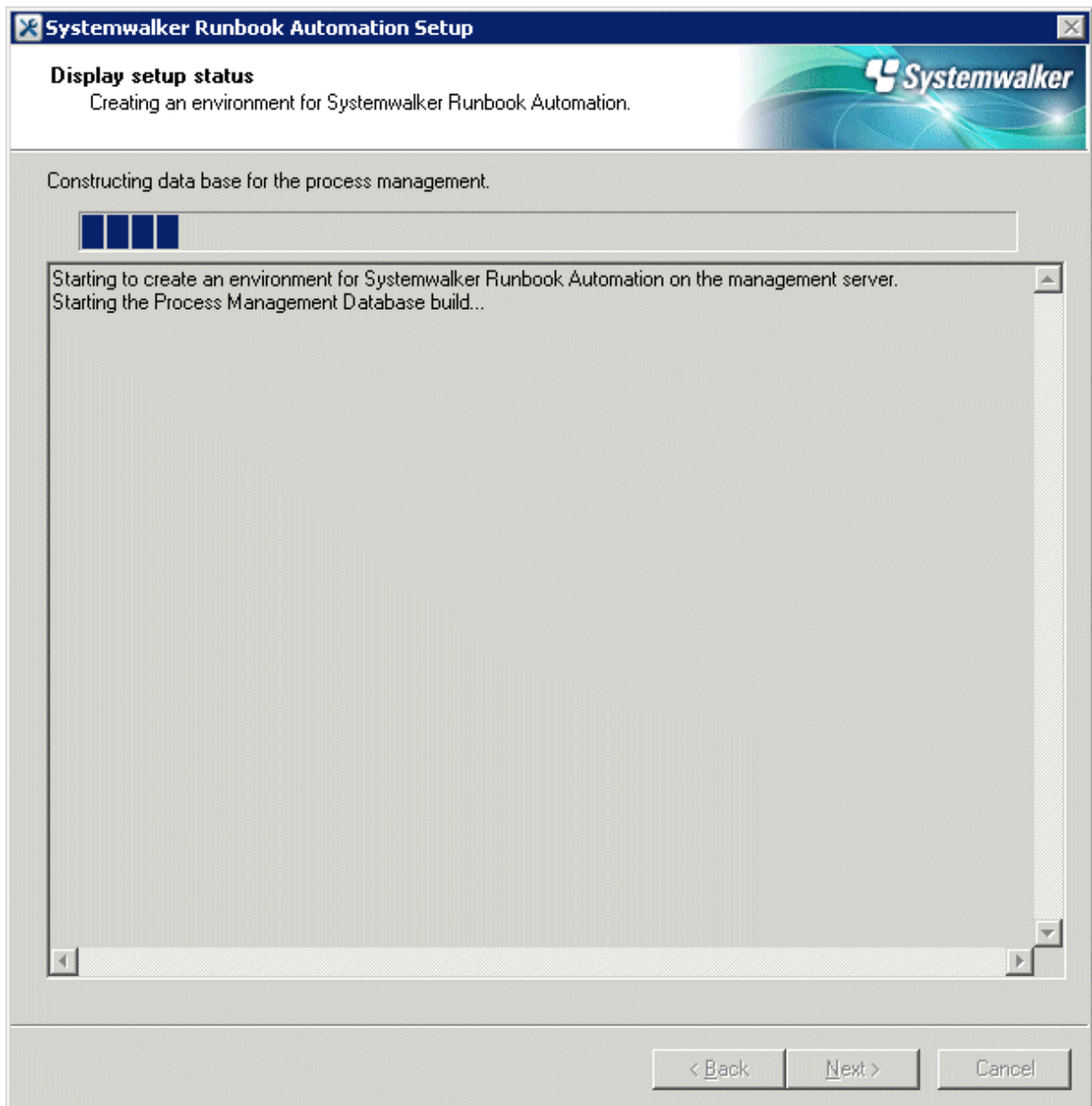
```
@V11L10
#Specify host names or IP addresses on the subsequent lines.
PRIMARYHOST
SECONDARYHOST
```

5. The settings will be displayed.

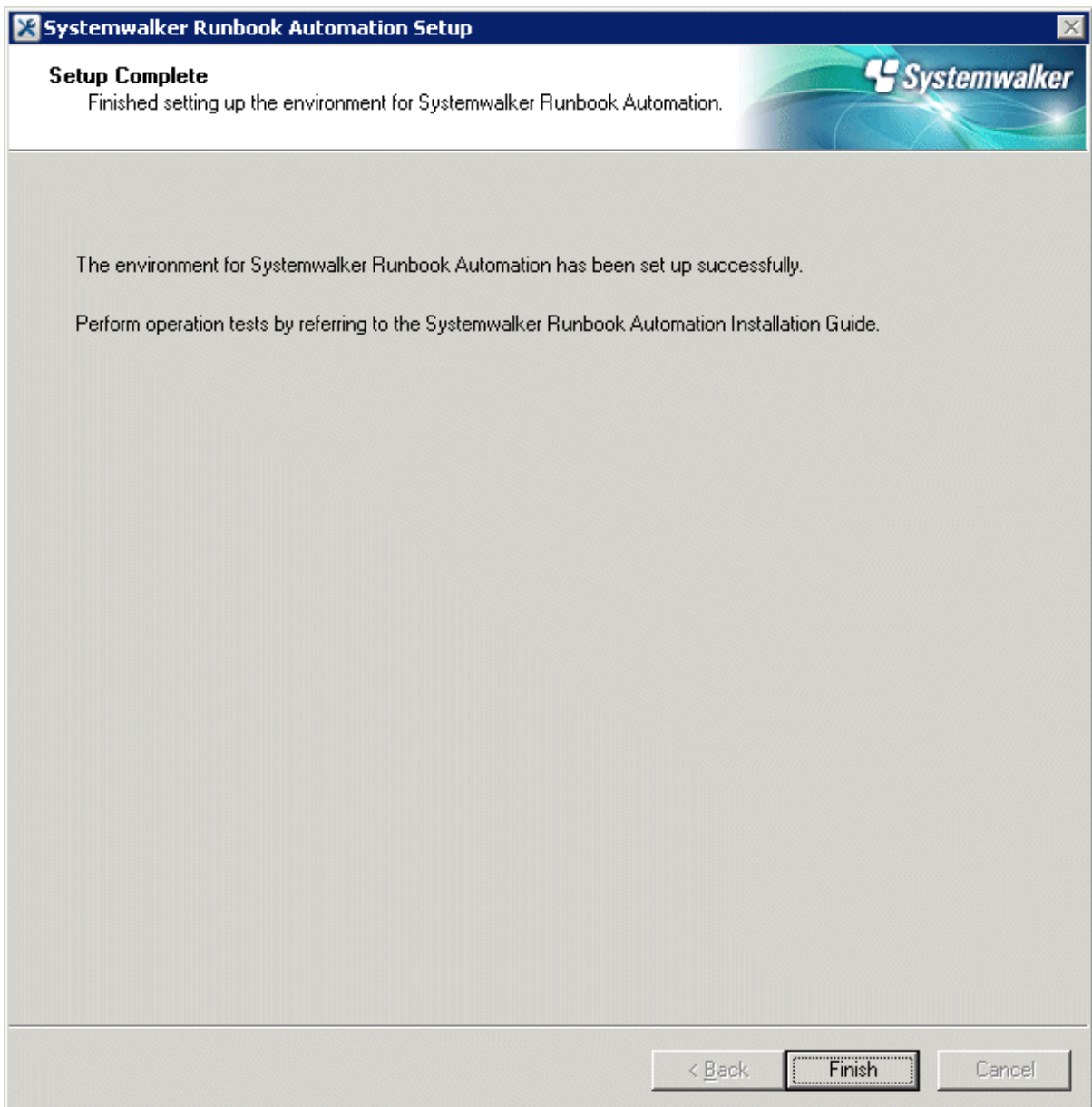
Check the displayed values are correct, and click the **Next** button. The setup will commence.



6. A window will be displayed indicating the setup progress.



7. If the setup completes normally, the settings will be displayed. Check the settings that are displayed, and click the **Finish** button.



8. Execute the following command to stop Systemwalker Runbook Automation.

```
<Installation directory for Systemwalker Runbook Automation Management Server> \bin  
\swrba_stop
```

9. If the Interstage Directory Service has been used, execute the following command to stop the directory service.

```
irepstop -R repository name
```

Example

If the repository name is rep001, execute the following command:

```
irepstop -R rep001
```

2.3.6 Disabling Service Automatic Startup Settings

Note

The setup procedure in this section must be performed on both the primary node and the secondary node.

In cluster environments, the cluster product will start Systemwalker Runbook Automation when the machine starts up, so the automatic startup settings for the following services must be disabled.

- Interstage Operation Tool
- OD_start
- Naming Service
- InterfaceRep_Cache Service
- InterfaceRep_Cache_e Service
- EventService
- TransactionDirector
- INTERSTAGE API
- FJapache
- Interstage Java EE DAS
- Interstage Java EE Node Agent
- Interstage Message Queue Broker
- Systemwalker CMDB Manager
- INTERSTAGE
- ObjectTransactionService
- Interstage Directory Service (repository name) (*1)
- Systemwalker MpMjes
- Systemwalker MpJobschn (*2)
- Systemwalker MpMjesn (*2)
- Symfoware JDBC NamingSystemwalker Runbook Automation DB Service
- Systemwalker Runbook Automation Manager

*1: If the Interstage Directory Service provided with Systemwalker Runbook Automation is used, it must be disabled.

*2: n is the subsystem number used by Systemwalker Runbook Automation (the default is 9).

Use the following procedure to disable these services. Perform this procedure on both the primary node and the secondary node.

1. Start the **Services** dialog box by selecting **Control Panel, Administrative Tools**, and then **Services** from the **Start** menu.
2. Select the name of the target service, and then open the **Properties** window.
3. If the **Startup type** is **Automatic**, change it to **Manual**.
4. Stop the service if it is running.

Note

If the environment is changed from a cluster environment to a non-cluster environment, the **Startup type** must be changed back to **Automatic**, so take note of which services have been changed to **Manual**.

2.3.7 Setting up the Cluster Service

This section explains the setup procedure for the cluster product.

2.3.7.1 For MSCS or Failover Clustering

Register the Systemwalker Runbook Automation service as an MSCS resource or a Failover Clustering resource.

Placing the shared disk online

Use Failover Cluster Management to obtain the ownership of the shared disk, and then place the shared disk online.

1. On the node, obtain the ownership of the group that contains the following resources. Refer to the clustering software manual for details on how to obtain ownership.
 - Quorum disks
 - Shared disk used by Systemwalker Runbook Automation

Registering resources

Use Cluster Administrator to register the resources for the services to be used, by referring to the list of resources in the following table.

Resource	Service name	Resource type	Dependency relationship (service on which the service depends)	Remarks
Business IP address	-	IP address	-	
Business network name	-	Network name	- Business IP address	
Shared disk	-	Physical disk	- Business network name	
Interstage JMX	Interstage Operation Tool	Generic service	- Shared disk	
OD_start	ODloader	Generic service	- Shared disk	
NamingService	Naming	Generic service	- OD_start service	
InterfaceRep_Cache Service	InterfaceRep_Cache_s	Generic service	- NamingService service	
InterfaceRep_Cache_e Service	InterfaceRep_e	Generic service	- NamingService service	
EventService	esdmnmain	Generic service	- InterfaceRep_Cache Service service	
TransactionDirector	TransactionDirector	Generic service	- InterfaceRep_Cache Service service - Shunsaku Conductor cmdbc	
Interstage API	Interstage API	Generic service	- TransactionDirector service	
Interstage HTTP Server	FJapache	Generic service	- Shared disk	
Interstage Directory Service (*1)	Interstage Directory Service (repository name)	Generic service	- Shared disk	
Interstage Java EE DAS	Interstage Java EE DAS	Generic service	- Shared disk	

Resource	Service name	Resource type	Dependency relationship (service on which the service depends)	Remarks
Interstage Java EE Node Agent	Interstage Java EE Node Agent	Generic service	- Interstage Java EE DAS	
Interstage Message Queue Broker	Interstage Message Queue Broker	Generic service	- Interstage Java EE Node Agent	
Communications infrastructure monitoring batch file	-	Generic application	- Shared disk	
File transfer infrastructure monitoring batch file	-	Generic application	- Shared disk	
Systemwalker Runbook Automation DB Service	Systemwalker Runbook Automation DB Service	Generic service	- Shared disk	
Shunsaku Conductor cmdbc	Shunsaku Conductor cmdbc	Generic service	- Shared disk - Shunsaku Director contents - Shunsaku Director metadata - Shunsaku Searcher cmdbs01 - Shunsaku Searcher cmdbs02 - Shunsaku Searcher cmdbs03 - Shunsaku Sorter cmdbo01	
Shunsaku Director contents	Shunsaku Director contents	Generic service	- Shared disk	
Shunsaku Director metadata	Shunsaku Director metadata	Generic service	- Shared disk	
Shunsaku Searcher cmdbs01	Shunsaku Searcher cmdbs01	Generic service	- Shared disk	
Shunsaku Searcher cmdbs02	Shunsaku Searcher cmdbs02	Generic service	- Shared disk	
Shunsaku Searcher cmdbs03	Shunsaku Searcher cmdbs03	Generic service	- Shared disk	
Shunsaku Sorter cmdbo01	Shunsaku Sorter cmdbo01	Generic service	- Shared disk	
Systemwalker Runbook Automation Manager	Systemwalker Runbook Automation Manager	Generic service	- Interstage Directory Service (*1) - Interstage Message Queue Broker	

Resource	Service name	Resource type	Dependency relationship (service on which the service depends)	Remarks
			<ul style="list-style-type: none"> - Interstage API Service - Systemwalker Runbook Automation DB Service - Shunsaku Conductor cmdbc 	
Systemwalker MpMjes <i>n</i> (*2)	Fujitsu MpWalker MpMjes <i>n</i> (*2)	Generic service	<ul style="list-style-type: none"> - Shared disk - Systemwalker Runbook Automation Manager 	Systemwalker MpMjes <i>n</i> (*2)
Systemwalker MpJobsch <i>n</i> (*2)	Systemwalker MpJobsch <i>n</i> (*2)	Generic service	<ul style="list-style-type: none"> - Shared disk - Fujitsu MpWalker MpMjes<i>n</i> (*2) 	Systemwalker MpJobsch <i>n</i> (*2)
Application for automatic reflection of security information	-	Generic application	<ul style="list-style-type: none"> - Shared disk - Business IP address 	Application for automatic reflection of security information

*1: This must be set if the Interstage Directory Service provided with Systemwalker Runbook Automation is used.

*2: *n* is the subsystem number used by Systemwalker Runbook Automation (the default is 9).

How to register the communications infrastructure monitoring batch file

Register the following communications infrastructure monitoring batch file as the generic application resource:

```
<Systemwalker Runbook Automation installation directory>\bin\swrba_mon_swnc.bat
```

How to register the file transfer infrastructure monitoring batch file

Register the following file transfer infrastructure monitoring batch file as the generic application resource:

```
<Systemwalker Runbook Automation installation directory>\bin\swrba_mon_link.bat
```

How to register the application for automatic reflection of security information

Register the following file application for automatic reflection of security information as a generic application resource:

```
<Systemwalker Operation Manager installation destination directory>\MPWALKER\mpaclmgr\bin\jmaclapp.exe
```

Note

- If any of the resources in the table above have already been registered as a resource for another group, register all of the resources with that group.
- Specify arbitrary strings for the resource names.
- For the owners that can execute the resources, specify the nodes in the cluster system.
- When registering generic services, specify the service names in the table.

- When registering a generic application, specify the full path including the command name in the "Command line" parameter, and specify the full path not including the command name in the "Current directory" parameter.
 - When the following services are registered, the start option may be set automatically by the Cluster Administrator or Failover Cluster Manager. Delete all start options that have been set automatically.
 - Systemwalker Runbook Automation DB Service
 - FJapache
 - The following services are not registered as Cluster Administrator or Failover Cluster Manager resources. Use the process monitoring function of Systemwalker Operation Manager to monitor these services for errors.
 - Systemwalker ACL Manager
 - Systemwalker MpJmCal
 - Systemwalker MpJmSrv
 - Systemwalker MpPmonO
-

2.3.8 Starting the Cluster Service

This section explains the procedure for starting the cluster service.

2.3.8.1 For MSCS or Failover Clustering

Refer to the "[3.1.1 Starting the Management Server \[Windows\]](#)" to start the cluster service.

2.4 Uninstalling the Management Server

This section explains the procedure for cancelling cluster operations for a Management Server, and how to uninstall the Management Server. In this section, the node where the settings are first canceled and Systemwalker Runbook Automation is first uninstalled is referred to as the "secondary node".

2.4.1 Stopping the Cluster Service

This section explains the procedure for stopping the cluster service.

2.4.1.1 For MSCS or Failover Clustering

Refer to the "[3.1.2 Stopping the Management Servers \[Windows\]](#)" to stop the cluster service.

2.4.2 Canceling the Cluster Service

This section explains the procedure for canceling the cluster service.

2.4.2.1 For MSCS or Failover Clustering

Deleting resources

1. Use Cluster Administrator to place the group for Systemwalker Runbook Automation (the group that registered Systemwalker Runbook Automation service) offline.
2. Delete the following cluster resources, which have been registered with the group for Systemwalker Runbook Automation (the group that registered Systemwalker Runbook Automation service).
 - Interstage JMX
 - OD_start
 - NamingService

- InterfaceRep_Cache Service
- InterfaceRep_Cache_e Service
- TransactionDirector
- Interstage API
- Interstage HTTP Server
- Interstage Directory Service (repository name) (*1)
- Interstage Java EE DAS
- Interstage Java EE Node Agent
- Interstage Message Queue Broker
- Communications infrastructure monitoring batch file
- File transfer infrastructure monitoring batch file
- Shunsaku Conductor cmdbc
- Shunsaku Director contents
- Shunsaku Director metadata
- Shunsaku Searcher cmdbs01
- Shunsaku Searcher cmdbs02
- Shunsaku Searcher cmdbs03
- Shunsaku Sorter cmdbo01
- Systemwalker Runbook Automation DB Service
- Systemwalker Runbook Automation Manager
- Systemwalker MpJobsch*n* (*2)
- Systemwalker MpMjes*n* (*2)
- Application for automatic reflection of security information

*1: If the Interstage Directory Service provided with Systemwalker Runbook Automation is used.

*2: *n* is the subsystem number used by Systemwalker Runbook Automation (the default is 9).

2.4.3 Setup Cancellation

This section explains how to cancel the setup.

2.4.3.1 Deleting the Environment for Systemwalker Runbook Automation (Secondary Node)

Cancel the setup for Systemwalker Runbook Automation on the secondary node.

Before canceling the setup, it is necessary to place the shared disk online on the secondary node and start Interstage, the Interstage JMX Service, and the Java EE Service.

If the Interstage Directory Service provided with Systemwalker Runbook Automation is used, it must be started first.

Refer to "[2.3.4 Setting up Systemwalker Runbook Automation \(Primary Node\)](#)" - "[Start Interstage \[Windows\]](#)", "[Start Interstage JMX Service \[Windows\]](#)", "[Start Java EE Service \[Windows\]](#)", and "[Start Interstage Directory Service](#)" for details about how to start Interstage, the Interstage JMX Service, the Java EE Service, and the Interstage Directory Service.

- During setup, stop services that are common to Systemwalker Operation Manager, and start the services after setup is completed. In addition, Systemwalker Operation Manager must be stopped before cancelling the setup.

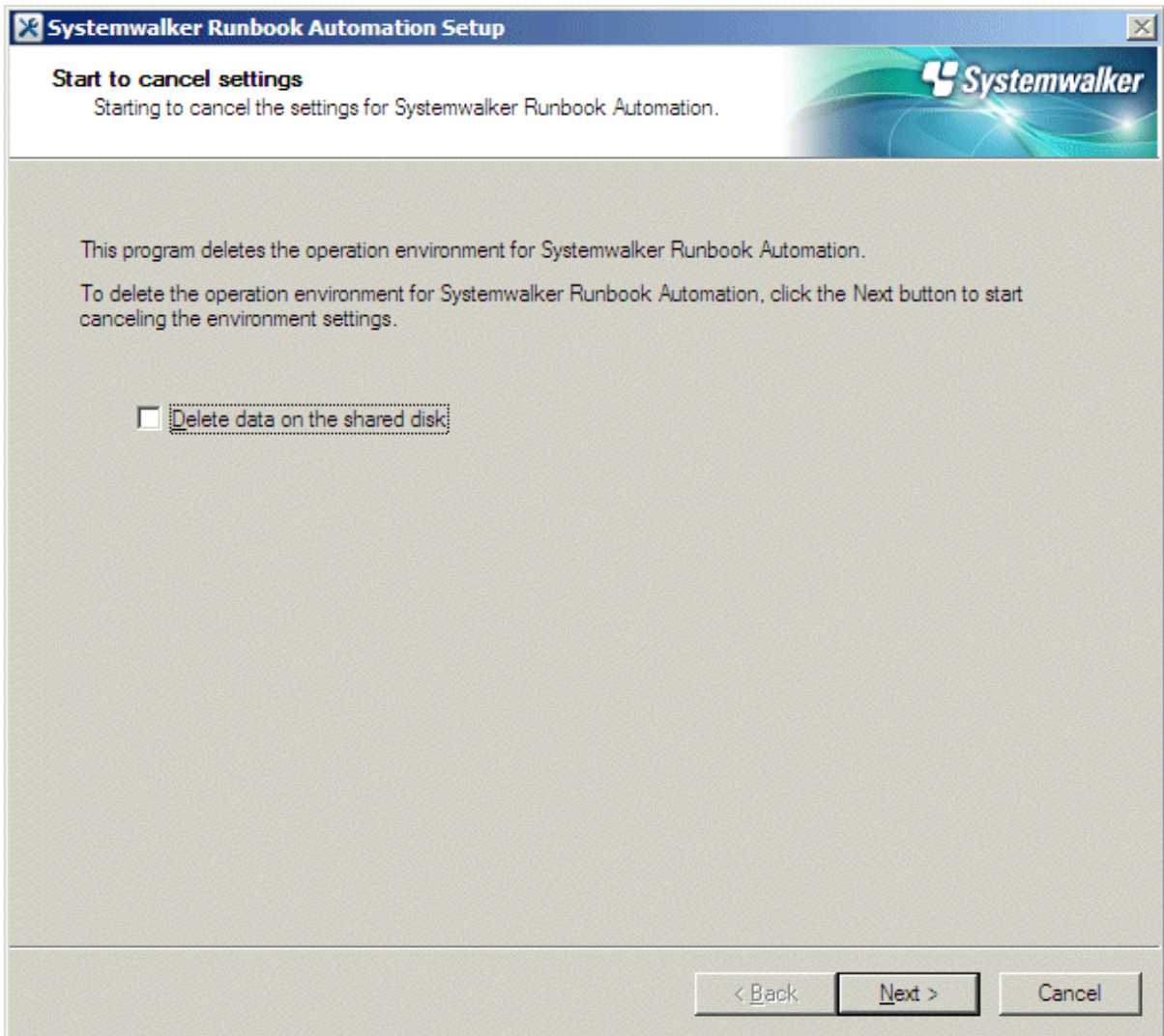
For Windows

Use the following procedure to delete Systemwalker Runbook Automation.

1. Log in to the Management Server as a user with administrator privileges.
2. Execute the following command to start the Systemwalker Runbook Automation Setup Cancellation Tool.

```
<Installation directory for Systemwalker Runbook Automation Management Server>\bin  
\swrba_setup -u
```

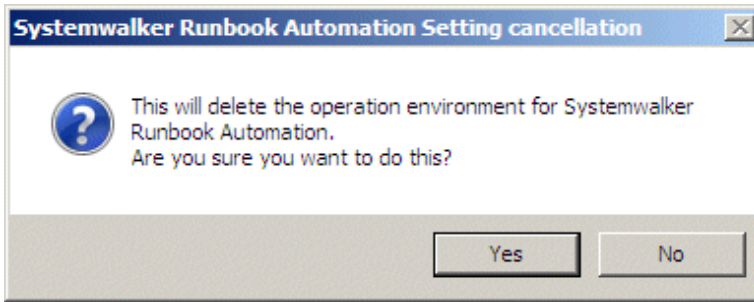
3. The Setup Cancellation Tool will start. To delete the operating environment for Systemwalker Runbook Automation, click the **Next** button to start canceling the setup.



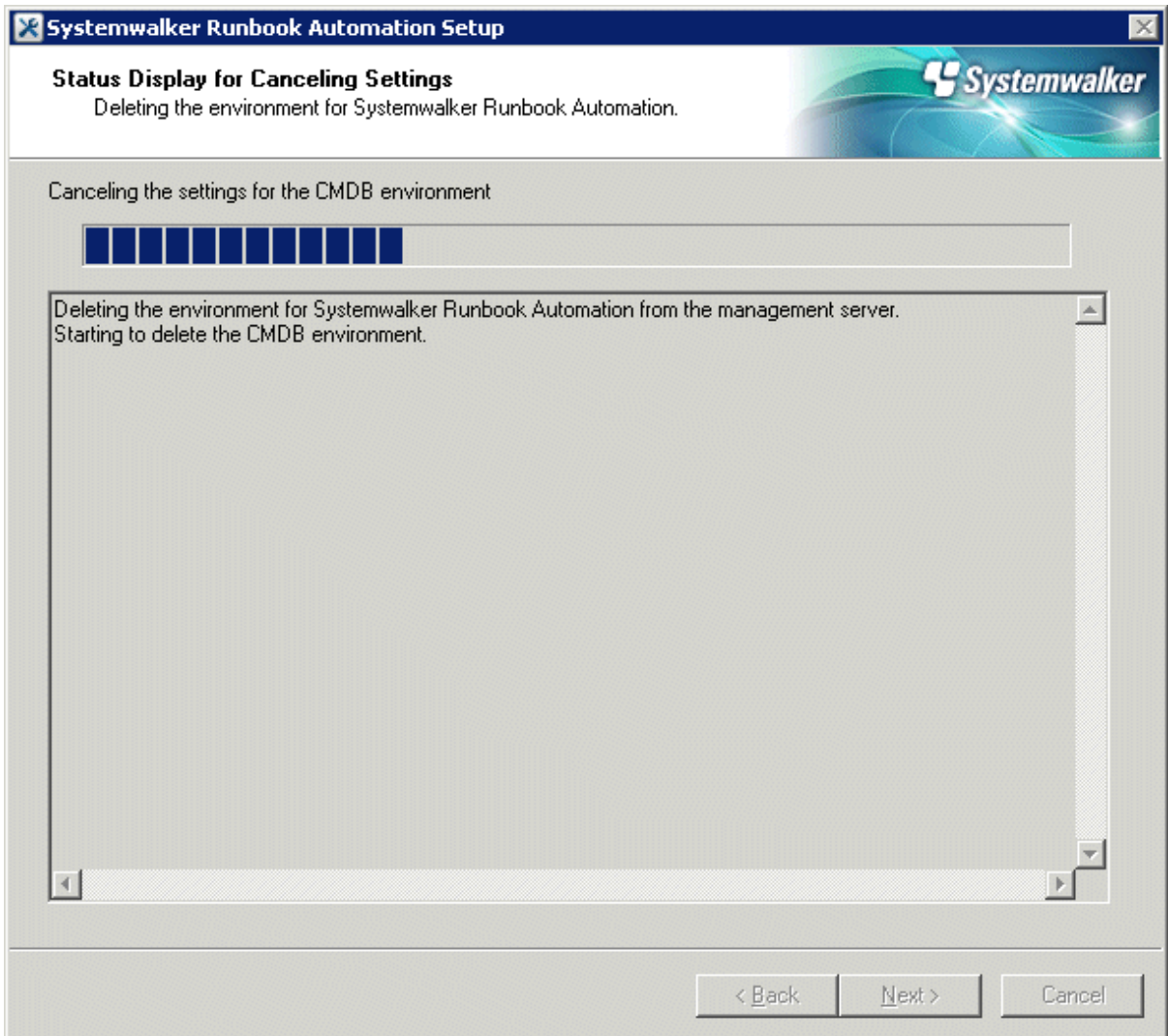
Note

If the **Delete data on the shared disk** check box is selected, the inherited files storage directory and the Process Management Database will be deleted. If this check box is selected when deleting the secondary node, clear the check box before canceling the settings.

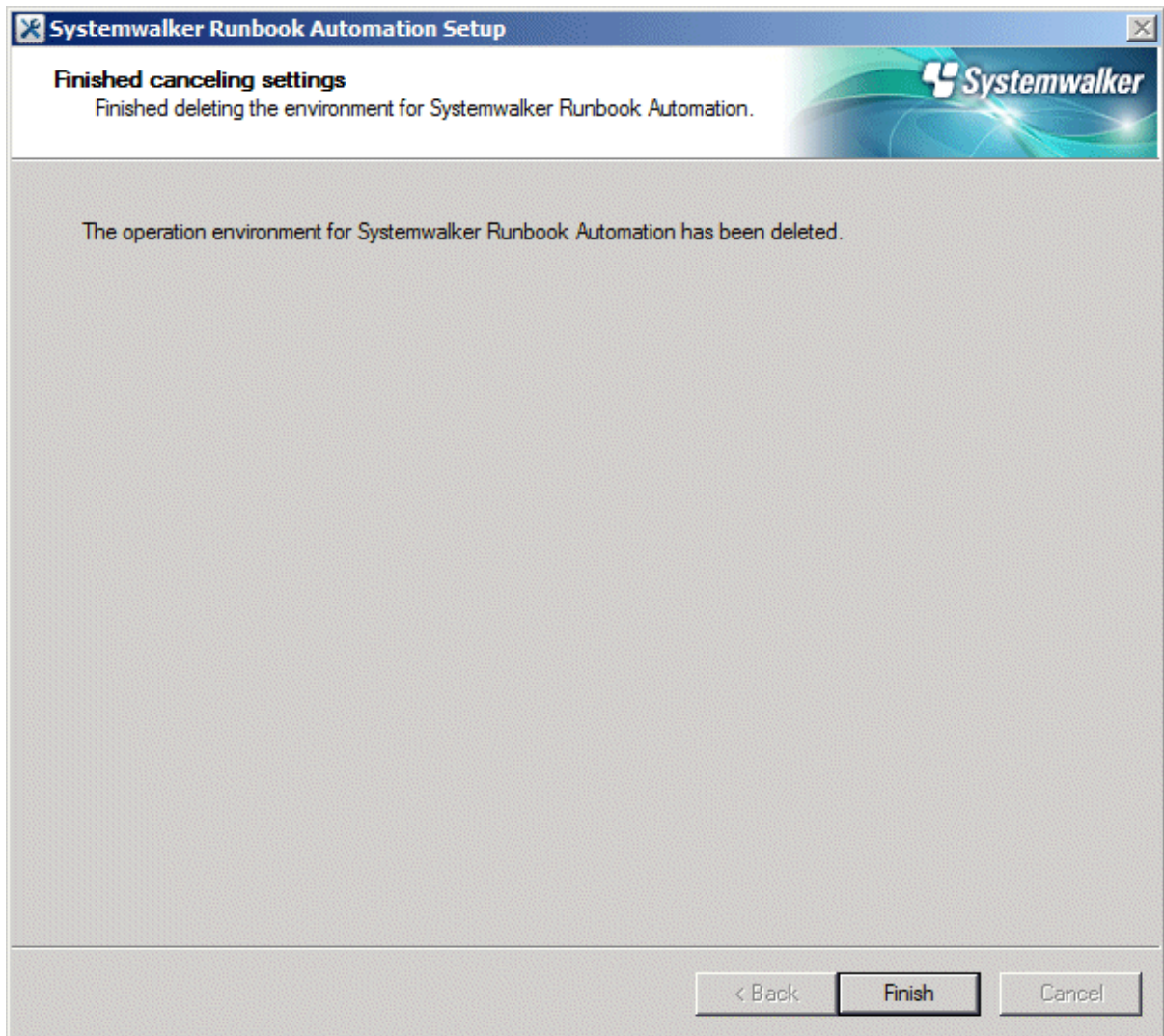
4. A confirmation window will be displayed. To delete the operating environment, click the **Yes** button to start the setup cancellation process. If **No** is clicked, the setup cancellation process will be canceled.



5. The setup cancellation process will be executed.



6. If the setup cancellation process terminates normally, the completion window will be displayed. Check the content of the display, and click the **Finish** button.



2.4.3.2 Deleting the Environment for Systemwalker Runbook Automation (Primary Node)

Cancel the setup for Systemwalker Runbook Automation on the primary node.

Before canceling the setup, it is necessary to place the shared disk online on the primary node and start Interstage, the Interstage JMX Service, and the Java EE Service.

If the Interstage Directory Service provided with Systemwalker Runbook Automation is used, it must be started first.

Refer to "[2.3.4 Setting up Systemwalker Runbook Automation \(Primary Node\)](#)", "[Start Interstage \[Windows\]](#)", "[Start Interstage JMX Service \[Windows\]](#)", "[Start Java EE Service \[Windows\]](#)", and "[Start Interstage Directory Service](#)" for details about how to start Interstage, the Interstage JMX Service, the Java EE Service, and the Interstage Directory Service.

- During setup, stop services that are common to Systemwalker Operation Manager, and start the services after setup is completed. In addition, Systemwalker Operation Manager must be stopped before cancelling the setup.

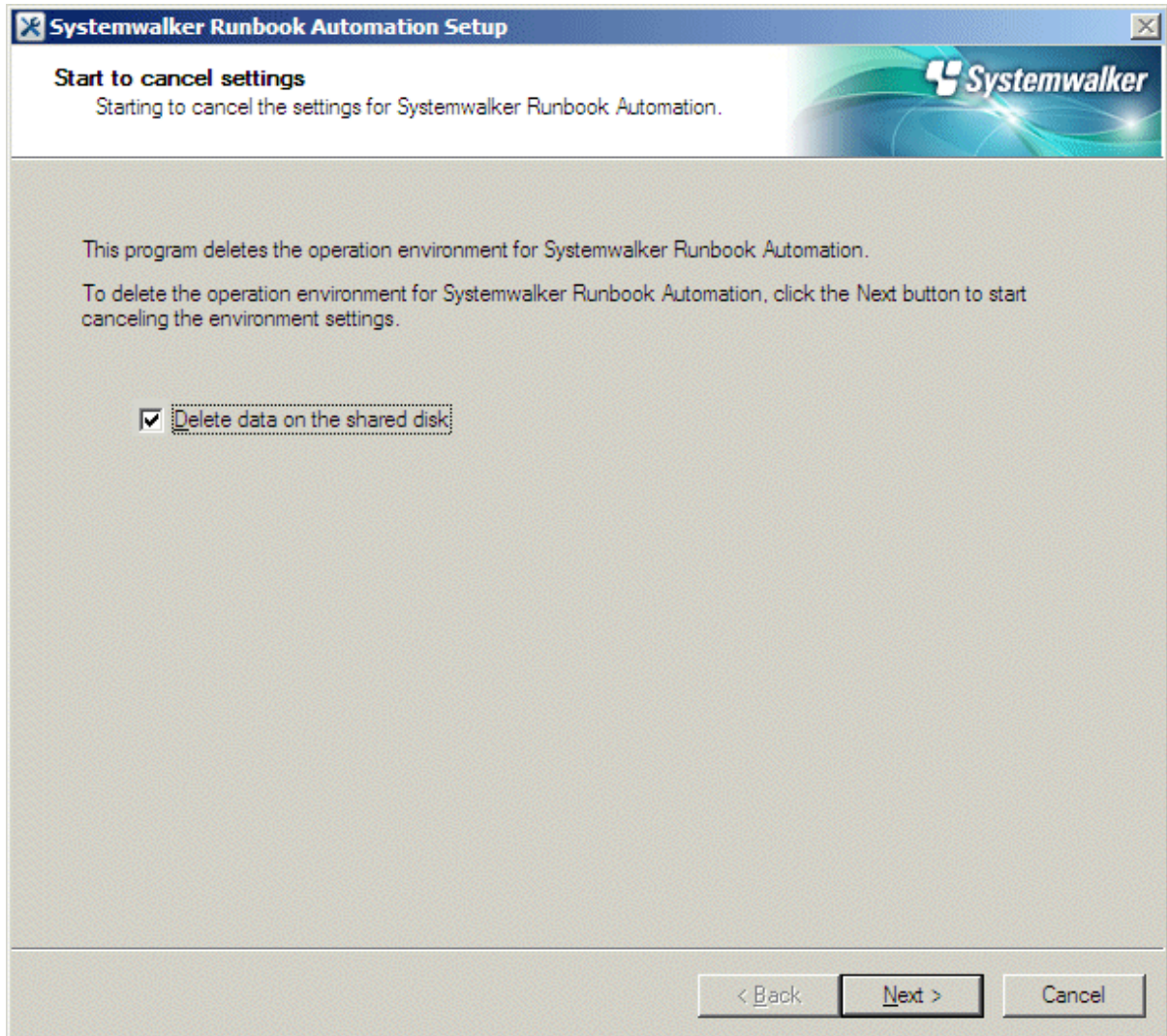
For Windows

Use the following procedure to delete Systemwalker Runbook Automation.

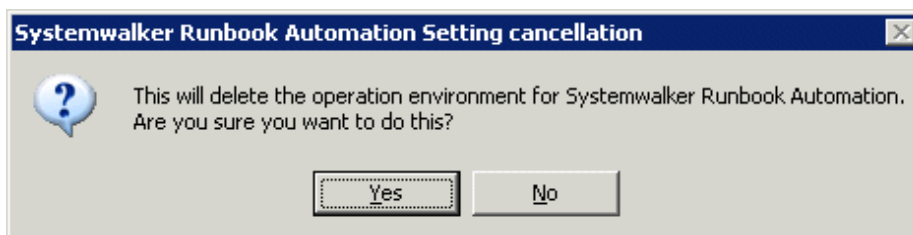
1. Log in to the Management Server as a user with administrator privileges.
2. Execute the following command to start the Systemwalker Runbook Automation Setup Cancellation Tool.

```
<Installation directory for Systemwalker Runbook Automation Management Server> \bin  
\swrba_setup-u
```

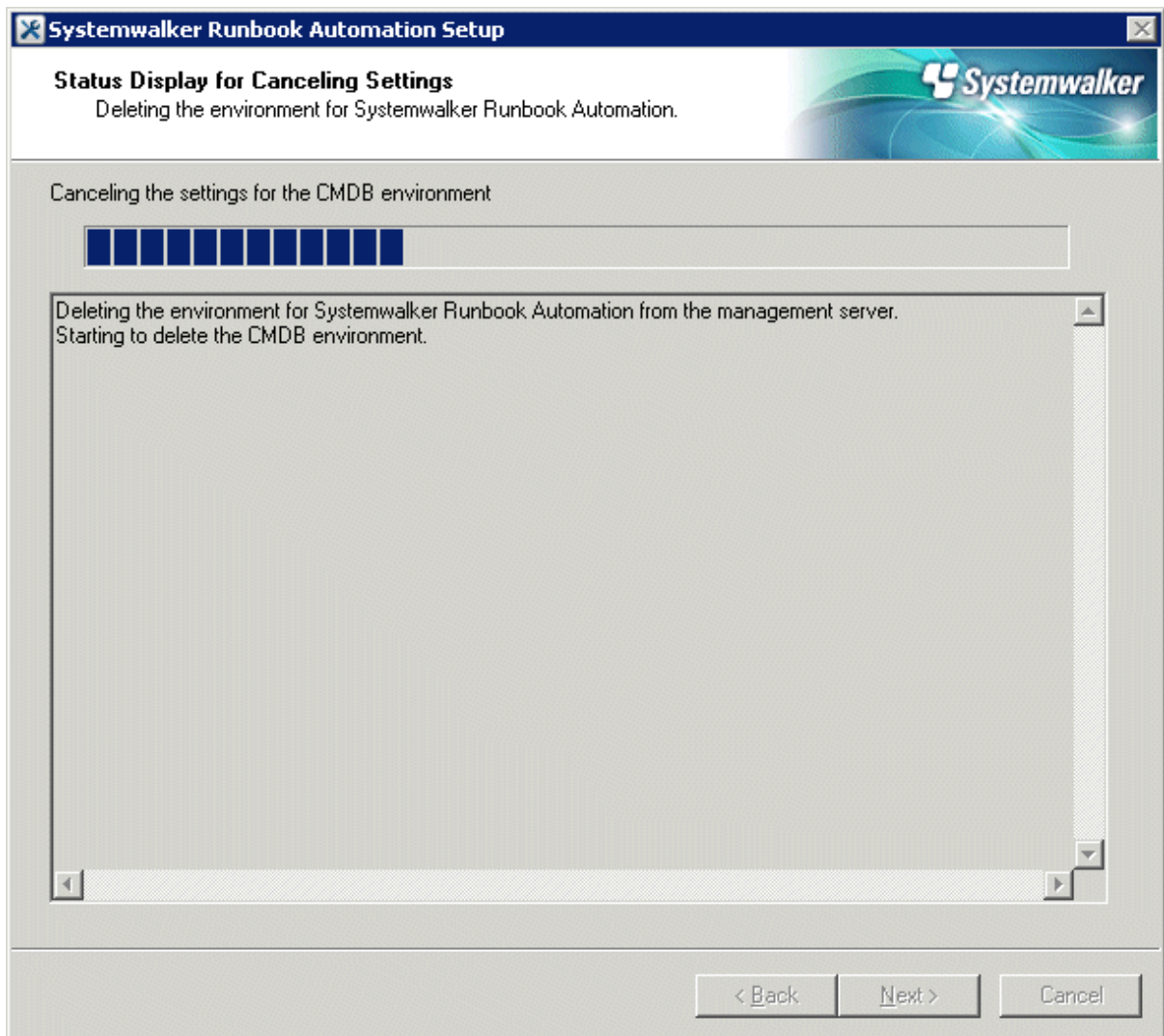
3. The Setup Cancellation Tool will start. To delete the operating environment for Systemwalker Runbook Automation, select the **Delete data on the shared disk** check box and click the **Next** button to start canceling the setup. When the setup is canceled, resources such as ticket histories are also deleted. It is recommended that resources be backed up before canceling the setup.



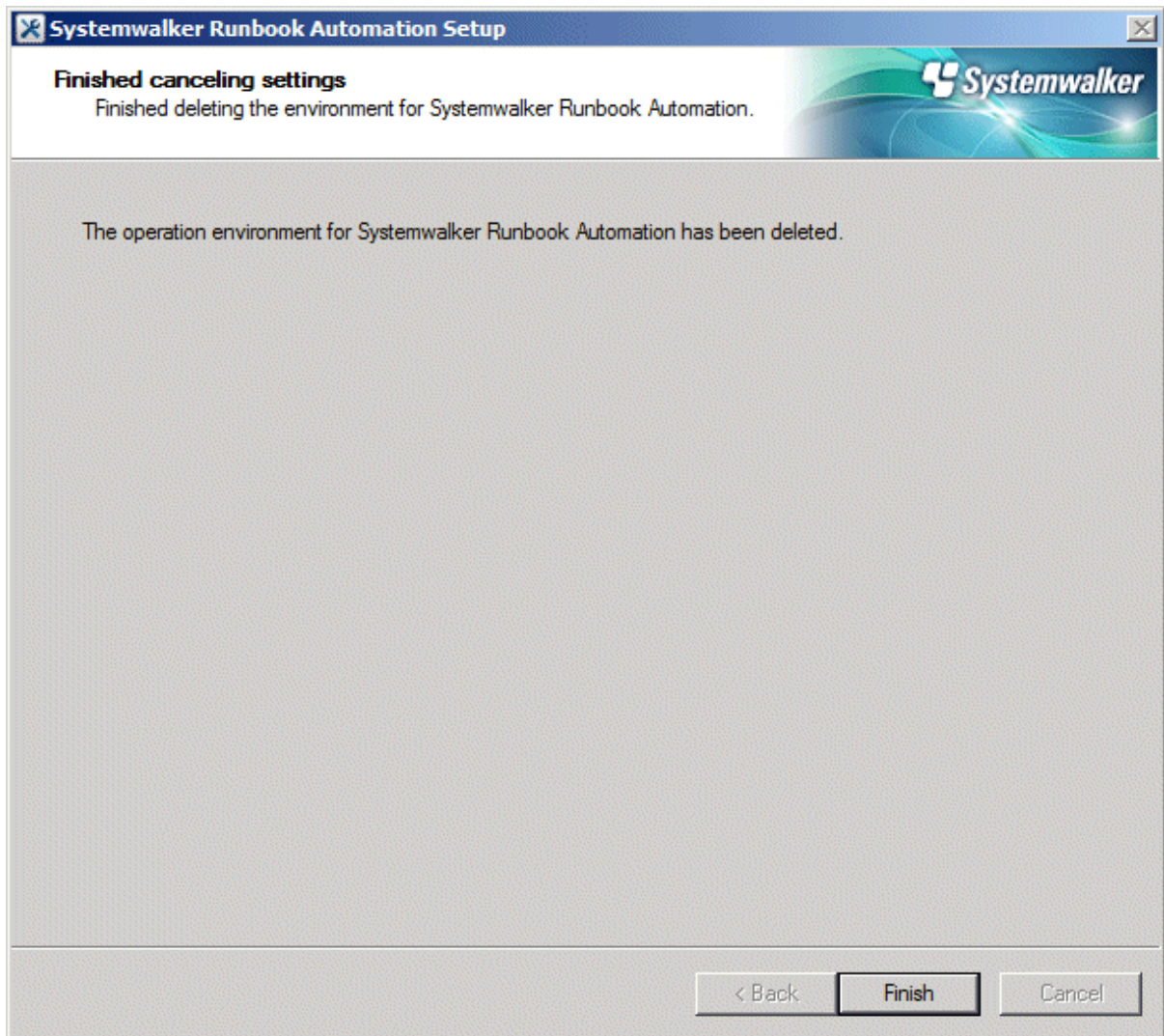
4. A confirmation window will be displayed. To delete the operating environment, click the **Yes** button to start the setup cancellation process. If **No** is clicked, the setup cancellation process will be canceled.



5. The setup cancellation process will be executed.



6. If the setup cancellation process terminates normally, the completion window will be displayed. Check the content of the display, and click the **Finish** button.



2.4.4 Uninstallation

Uninstall the server that is operating as a cluster on both nodes.



Note

To uninstall the server on the secondary node, place the shared disk offline before uninstalling.

To uninstall the server on the primary node, place the shared disk online before uninstalling.

The uninstallation method is the same as for non-cluster environments. Refer to the *Systemwalker Runbook Automation Installation Guide* for details.

2.5 Linked Server Installation Procedure

This section explains the procedure for installing Agents for linking with Systemwalker Centric Manager servers that are operating as cluster systems.

Refer also to the following manuals in the course of the installation.

- *Systemwalker Runbook Automation Technical Guide*
- *Systemwalker Runbook Automation Installation Guide*

Perform all installation steps as a user that belongs to the administrators group for Windows or the superuser account for Linux.

2.5.1 Installing on the Linked Server

Installing Agents

Install the Systemwalker Runbook Automation Agent (hereafter referred to simply as the Agent) on both nodes in the cluster configuration (both the primary node and the secondary node).

The installation method is the same as for non-cluster environments.

Refer to the *Systemwalker Runbook Automation Installation Guide* for details.

2.5.2 Setting up Agents in Systemwalker Centric Manager Environments (Primary Node)

Setup procedure for the primary node

1. Execute the following command to stop the Agent.

[Windows]

```
"%F4AN_INSTALL_PATH%\F4ANswnc\bin\swncctrl" stop
```

[Linux]

```
/opt/FJSVswnc/bin/swncctrl stop
```

2. Set up the Agent on the primary node by executing the following environment setup command.

[Windows]

```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbsetupenv.bat -k AGT_CENTINV  
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbsetupenv.bat -k AGT_CENTREP
```

[Linux]

```
/opt/FJSVcmdba/bin/cmdbsetupenv.sh -k AGT_CENTINV  
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbsetupenv.sh -k AGT_CENTREP
```

3. Execute the cluster setup command on the primary node.

The synopsis for the cluster setup command is shown below. For the primary node, specify "ACT" for the "-t" option. For the shared disk or the mount point for the shared disk device, specify a disk that is being used by Systemwalker Centric Manager cluster operations.

[Windows]

```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbagentclset.bat -t ACT -d <Shared disk> -a <Logical IP address>
```

- Example of how to specify a shared disk: D:\

[Linux]

```
/opt/FJSVcmdba/bin/cmdbagentclset.sh -t ACT -d <Mount point for the shared disk device> -a <Logical IP address>
```

4. Check whether the setup has completed normally.

If the creation of the cluster environment has completed normally, the following message will be output. If this message has not been output, review the command options and execute the command again.

```
Command successful!
```

5. Execute the following command to start the Agent.

[Windows]

```
"%F4AN_INSTALL_PATH%\F4ANswnc\bin\swncctrl" start
```

[Linux]

```
/opt/FJSVswnc/bin/swncctrl start
```

6. Execute the following command to update the observed record in CMDB. This operation results the recognition of this Agent for Management Server.

[Windows]

```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbrefresh.exe -q  
type=AGT_CENTREP  
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbrefresh.exe -q  
type=AGT_CENTINV
```

[Linux]

```
/opt/FJSVcmdba/bin/cmdbrefresh.sh -q type=AGT_CENTREP  
/opt/FJSVcmdba/bin/cmdbrefresh.sh -q type=AGT_CENTINV
```

2.5.3 Setting up Agents in Systemwalker Centric Manager Environments (Secondary Node)

Setup procedure for the secondary node

1. Execute the following command to stop the Agent.

[Windows]

```
"%F4AN_INSTALL_PATH%\F4ANswnc\bin\swncctrl" stop
```

[Linux]

```
/opt/FJSVswnc/bin/swncctrl stop
```

2. Set up the Agent on the secondary node by executing the following environment setup command.

[Windows]

```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbsetupenv.bat -k AGT_CENTINV  
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbsetupenv.bat -k AGT_CENTREP
```

[Linux]

```
/opt/FJSVcmdba/bin/cmdbsetupenv.sh -k AGT_CENTINV  
/opt/FJSVcmdba/bin/cmdbsetupenv.sh -k AGT_CENTREP
```

3. Execute the cluster setup command on the secondary node.

The synopsis for the cluster setup command is shown below. For the secondary node, specify "STB" for the "-t" option. For the shared disk or the mount point for the shared disk device, specify a disk that is being used by Systemwalker Centric Manager cluster operations.

[Windows]

```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbagentclset.bat -t STB -d <Shared disk> -a <Logical IP address>
```

- Example of how to specify a shared disk: D:\

[Linux]

```
/opt/FJSVcmdba/bin/cmdbagentclset.sh -t STB -d <Mount point for the shared disk device> -a <Logical IP address>
```

4. Check whether the setup has completed normally.

If the creation of the cluster environment has completed normally, the following message will be output. If this message has not been output, review the command options and execute the command again.

```
Command successful!
```

5. Execute the following command to start the Agent.

[Windows]

```
"%F4AN_INSTALL_PATH%\F4ANswnc\bin\swncctrl" start
```

[Linux]

```
/opt/FJSVswnc/bin/swncctrl start
```

2.6 Uninstalling the Linked Server

This section explains the procedure for uninstalling Systemwalker Runbook Automation from a Linked Server by canceling the linkage to Systemwalker Centric Manager with cluster configurations.

2.6.1 Canceling the Agent Settings in a Systemwalker Centric Manager Environment (Primary Node)

Procedure for canceling the settings on the primary node

1. Execute the following command to stop the Agent.

[Windows]

```
"%F4AN_INSTALL_PATH%\F4ANswnc\bin\swncctrl" stop
```

[Linux]

```
/opt/FJSVswnc/bin/swncctrl stop
```

2. Execute the cluster setup command on the primary node.

The entry format for the cluster setup command is shown below. To cancel the settings, specify the "-r" option. Also, for the primary node, specify "ACT" for the "-t" option.

[Windows]


```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmbagentclset.bat -t ACT -r
```

[Linux]

```
/opt/FJSVcmdba/bin/cmbagentclset.sh -t ACT -r
```

3. Check whether the canceling the settings has completed normally.

If the canceling the settings has completed normally, the following message will be output. If this message has not been output, review the command options and execute the command again.

```
Command successful!
```

4. Cancel the setup for the Agent on the primary node.

Execute the following environment setup cancellation command.

[Windows]

```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmbunsetupenv.bat -k ALL
```

[Linux]

```
/opt/FJSVcmdba/bin/cmbunsetupenv.sh -k ALL
```

2.6.2 Canceling the Setup for Agents in Systemwalker Centric Manager Environments (Secondary Node)

Procedure for canceling the settings on the secondary node

1. Execute the following command to stop the Agent.

[Windows]

```
"%F4AN_INSTALL_PATH%\F4ANswnc\bin\swncctrl" stop
```

[Linux]

```
/opt/FJSVcmdbaFJSVswnc/bin/cmbagentclset.sh -t ACT -rswncctrl stop
```

2. Execute the cluster setup command on the secondary node.

The entry format for the cluster setup command is shown below. To cancel the settings, specify the "-r" option. Also, for the secondary node, specify "STB" for the "-t" option.

[Windows]

```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmbagentclset.bat -t STB -r
```

[Linux]

```
/opt/FJSVcmdba/bin/cmbagentclset.sh -t STB -r
```

3. Check whether the setup cancellation has completed normally.

If the setup cancellation has completed normally, the following message will be output. If this message has not been output, review the command options and execute the command again.

```
Command successful!
```

4. Cancel the setup for the Agent on the secondary node.

Execute the following environment setup cancellation command.

[Windows]

```
<Agent installation directory>\CMDB\FJSVcmdba\bin\cmdbunsetupenv.bat -k ALL
```

[Linux]

```
/opt/FJSVcmdba/bin/cmdbunsetupenv.sh -k ALL
```

2.6.3 Uninstalling from the Linked Server

Uninstall the Agents from both nodes.

The uninstallation method is the same as for non-cluster environments.

Refer to the *Systemwalker Runbook Automation Installation Guide* for details.

Chapter 3 Operation

This chapter explains how to operate servers as cluster systems.

3.1 Starting and Stopping

This section explains how to start and stop the Management Server on cluster systems. Note that the procedures for starting and stopping Linked Servers in cluster environments are the same as for non-cluster environments. Refer to the *Systemwalker Runbook Automation Installation Guide*.

3.1.1 Starting the Management Server [Windows]

This section explains how to start the Management Server.

Starting the cluster service

Use the following procedure to start the services that have been registered with the cluster using Failover Cluster Management.

1. Obtain ownership of the shared disk.
 - On the node, obtain the ownership of the group that contains the following resources. Refer to the clustering software manual for details on how to obtain ownership.
 - Quorum disks
 - The shared disk used by Systemwalker Runbook Automation
2. Use Cluster Administrator to place the group for Systemwalker Runbook Automation (the group that registered Systemwalker Runbook Automation service) online.

Starting the cluster service also starts the Management Server.

3.1.2 Stopping the Management Servers [Windows]

This section explains how to stop the Management Server.

Stopping the cluster service

Use the following procedure to stop the services that have been registered with the cluster using Failover Cluster Management.

1. Use Cluster Administrator to place the group for Systemwalker Runbook Automation (the group that registered Systemwalker Runbook Automation service) offline.

Stopping the cluster service also stops the Management Server.

3.2 Backup and Restoration

This section explains how to back up and restore Management Server resources on cluster systems.



Systemwalker Runbook Automation operations must be stopped before starting a backup or restoration.

Refer to "Notes on Backup and Restoration" in the *Systemwalker Runbook Automation Installation Guide* for notes on backup and restoration.

3.2.1 Backup

This section describes the procedure for backing up server resources on a cluster system.

Backing up Interstage Directory Service resources

If the Interstage Directory Service provided with Systemwalker Runbook Automation is used, execute the following procedure to back up the directory service on the primary node.

Note that if the Active Directory or OpenLDAP is used for LDAP, you need to refer to the LDAP manual before performing the backup.

The following backup procedure assumes that the Interstage Directory Service is used and a standard database is used for the repository database. In this example, a repository, "rep001", is backed up to the X:\Backup\rep001 directory.

1. Stop the cluster service.

Refer to "3.1.2 Stopping the Management Servers [Windows]" for details.

2. Place the shared disk online on the primary node.
3. Execute the backup command. If the rep001 repository exists at X:\Backup, delete it. If rep001 is not deleted, the command execution will fail.

```
[Interstage Application Server installation directory]\bin\irepbacksys -d X:\Backup\rep001 -R rep001
```

4. Place the shared disk offline on the primary node.
5. Start the cluster service.

Refer to "3.1.1 Starting the Management Server [Windows]" for details.

Backing up Systemwalker Runbook Automation runtime environment

Use the following procedure to back up the Systemwalker Runbook Automation runtime environment. The backup procedure is the same as for a normal, non-cluster configuration.

1. Stop the cluster service.

Refer to "3.1.2 Stopping the Management Servers [Windows]" for details.

2. Place the shared disk online on the primary node.
3. To use the Interstage Directory Service provided with Systemwalker Runbook Automation, execute the following command to start the directory service on the primary node.

```
irepstart -R repository name
```

Example:

If the repository name is rep001, execute the following command:

```
irepstart -R rep001
```

4. Start the Interstage Java EE DAS Service on the primary node.

```
# ijdastart
```

5. Start the Interstage Java EE Node Agent Service on the primary node.

```
# ijnastart
```

6. Start the message broker on the primary node.

Use the Windows Services feature to start the message broker.

Click **Start** >> **Control Panel** >> **Administrative Tools**, and then, double-click **Services**. Next, select **Interstage Message Queue Broker** and click the **Start** button.

7. Start Interstage on the primary node.

```
# isstart
```

8. Stop the Systemwalker CMDB Manager service on the primary node.

```
[Systemwalker Runbook Automation Management Server install directory]\CMDB\FJSVcmdbm\bin\cmdbstop.bat
```

9. Start the following service on the primary node.

Start with using Windows(R) service function. From [**Control Panel**]-[**Management Tool**]-[**Service**], select the following service and click the [**Start**] button.

- Shunsaku Director contents
- Shunsaku Director metadata
- Shunsaku Searcher cmdbs01
- Shunsaku Searcher cmdbs02
- Shunsaku Searcher cmdbs03

10. Back up server resources on the primary node.

Refer to the *Systemwalker Runbook Automation Administration Guide* for details.

11. Stop Systemwalker Runbook Automation on primary node.

```
[Systemwalker Runbook Automation Management Server install directory]\bin\swrba_stop
```

12. Stop the following service on the primary node.

Stop with using Windows(R) service function. From [**Control Panel**]-[**Management Tool**]-[**Service**], select the following service and click the [**Stop**] button.

- Shunsaku Director contents
- Shunsaku Director metadata
- Shunsaku Searcher cmdbs01
- Shunsaku Searcher cmdbs02
- Shunsaku Searcher cmdbs03

13. Stop Interstage on the primary node.

```
# isstop -f
```

14. Stop the message broker on the primary node.

Use the Windows Services feature to stop the message broker.

Click **Start** >> **Control Panel** >> **Administrative Tools**, and then, double-click **Services**. Next, select **Interstage Message Queue Broker** and click the **Stop** button.

15. Stop the Interstage Java EE Node Agent Service on the primary node.

```
# ijnastop
```

16. Stop the Interstage Java EE DAS Service on the primary node.

```
# ijdastop
```

17. Stop the Interstage Directory Service on the primary node.

```
irepstop -R repository name
```

Example:

If the repository name is rep001, execute the following command:

```
irepstop -R rep001
```

18. Place the shared disk offline on the primary node.
19. Place the shared disk online on the secondary node.
20. Start the Interstage Directory Service on the secondary node. The procedure is the same as for the primary node.
21. Start the Interstage Java EE DAS Service on the secondary node.

```
# ijdasstart
```

22. Start the Interstage Java EE Node Agent Service on the secondary node.

```
# ijnastart
```

23. Start the message broker on the secondary node. The procedure is the same as for the primary node.
24. Start Interstage on the secondary node.

```
# isstart
```

25. Stop the Systemwalker CMDB Manager service on the secondary node.

```
[Systemwalker Runbook Automation Management Server install directory]\CMDB\FJSVcmdbm\bin\cmdbstop.bat
```

26. . Start the following service on the secondary node.

Start with using Windows(R) service function. From [**Control Panel**]-[**Management Tool**]-[**Service**], select the following service and click the [**Start**] button.

- Shunsaku Director contents
- Shunsaku Director metadata
- Shunsaku Searcher cmdbs01
- Shunsaku Searcher cmdbs02
- Shunsaku Searcher cmdbs03

27. Back up server resources on the secondary node.

Refer to the *Systemwalker Runbook Automation Installation Guide* for details.

28. . Stop Systemwalker Runbook Automation on primary node.

```
[Systemwalker Runbook Automation Management Server install directory]\bin\swrba_stop
```

29. Stop the following service on the secondary node.

Stop with using Windows(R) service function. From [**Control Panel**]-[**Management Tool**]-[**Service**], select the following service and click the [**Stop**] button.

- Shunsaku Director contents
- Shunsaku Director metadata
- Shunsaku Searcher cmdbs01
- Shunsaku Searcher cmdbs02
- Shunsaku Searcher cmdbs03

30. Stop Interstage on the secondary node.

```
# isstop -f
```

31. Stop the message broker on the secondary node. The procedure is the same as for the primary node.

32. Stop the Interstage Java EE Node Agent Service on the secondary node.

```
# ijnastop
```

33. Stop the Interstage Java EE DAS Service on the secondary node.

```
# ijdastop
```

34. Stop the Interstage Directory Service on the secondary node. The procedure is the same as for the primary node.
35. Place the shared disk offline on the secondary node.
36. Start the cluster service.

Refer to "3.1.1 Starting the Management Server [Windows]" for details.

3.2.2 Restoration

This section describes the procedure for restoring server resources that have been backed up.

Restoring Interstage Directory Service resources

If the Interstage Directory Service provided with Systemwalker Runbook Automation is used, execute the following procedure to restore the directory service on the primary node.

Note that if the Active Directory or OpenLDAP is used for LDAP, you need to refer to the LDAP manual before performing the restoration.

The following restoration procedure assumes that the Interstage Directory Service is used and a standard database is used for the repository database. In this example, a repository, "rep001", is restored from the X:\Backup\rep001 backup directory.

1. Stop the cluster service.

Refer to "3.1.2 Stopping the Management Servers [Windows]" for details.

2. Place the shared disk online on the primary node.
3. Execute the restore command on the primary node to restore the repository data that was backed up.

```
[Interstage Application Server installation directory]\bin\ireprestsys -d X:\Backup\rep001 -R rep001 -dataonly
```

4. Place the shared disk offline on the primary node.
5. Start the cluster service.

Refer to "3.1.1 Starting the Management Server [Windows]" for details.

Restoring Systemwalker Runbook Automation runtime environment

Use the following procedure to restore the Systemwalker Runbook Automation runtime environment. The restoration procedure is the same as for a normal, non-cluster configuration.

1. Stop the cluster service.

Refer to "3.1.2 Stopping the Management Servers [Windows]" for details.

2. Place the shared disk online on the primary node.
3. Start JMX service on primary node.

Use the Windows(R) Services function to start it.

Select "Interstage Operation Tool" in the **Services** dialog box (opened from **Administrative Tools** under **Control Panel**), and click the **Start** button.

4. To use the Interstage Directory Service provided with Systemwalker Runbook Automation, execute the following command to start the directory service on the primary node.

```
irepstart -R repository name
```

Example:

If the repository name is rep001, execute the following command:

```
irepstart -R rep001
```

5. Start the Interstage Java EE DAS Service on the primary node.

```
# ijdastart
```

6. Start the Interstage Java EE Node Agent Service on the primary node.

```
# ijnastart
```

7. Start the message broker on the primary node.

Use the Windows Services feature to start the message broker.

Click **Start >> Control Panel >> Administrative Tools**, and then, double-click **Services**. Next, select **Interstage Message Queue Broker** and click the **Start** button.

8. Start Interstage on the primary node.

```
# isstart  
# ihsstart -all
```

9. Restore server resources on the primary node.

Refer to the *Systemwalker Runbook Automation Installation Guide* for details

10. Stop Systemwalker Runbook Automation on primary node.

```
[Systemwalker Runbook Automation Management Server install directory]\bin\swrba_stop
```

11. Stop the following service on the secondary node.

Stop with using Windows(R) service function. From [**Control Panel**]-[**Management Tool**]-[**Service**], select the following service and click the [**Stop**] button.

- Shunsaku Director contents
- Shunsaku Director metadata
- Shunsaku Searcher cmdbs01
- Shunsaku Searcher cmdbs02
- Shunsaku Searcher cmdbs03

12. Stop Interstage on the primary node.

```
# isstop -f
```

13. Stop the message broker on the primary node.

Use the Windows Services feature to stop the message broker.

Click **Start >> Control Panel >> Administrative Tools**, and then, double-click **Services**. Next, select **Interstage Message Queue Broker** and click the **Stop** button.

14. Stop the Interstage Java EE Node Agent Service on the primary node.

```
# ijnastop
```

15. Stop the Interstage Java EE DAS Service on the primary node.

```
# ijdastop
```


16. Stop the Interstage Directory Service on the primary node.

```
irepstop -R repository name
```

Example:

If the repository name is rep001, execute the following command:

```
irepstop -R rep001
```

17. Stop JMX service on primary node.

Use the Windows(R) Services function to stop it.

Select "Interstage Operation Tool" in the **Services** dialog box (opened from **Administrative Tools** under **Control Panel**), and click the **Stop** button.

18. Place the shared disk offline on the primary node.

19. Place the shared disk online on the secondary node.

20. Start JMX service on secondary node.

Use the Windows(R) Services function to start it.

Select "Interstage Operation Tool" in the **Services** dialog box (opened from **Administrative Tools** under **Control Panel**), and click the **Start** button.

21. To use the Interstage Directory Service, start the directory service on the secondary node. The procedure is the same as for the primary node.

22. Start the Interstage Java EE DAS Service on the secondary node.

```
# ijdasstart
```

23. Start the Interstage Java EE Node Agent Service on the secondary node.

```
# ijnastart
```

24. Start the message broker on the secondary node. The procedure is the same as for the primary node.

25. Start Interstage on the secondary node.

```
# isstart  
# ihsstart -all
```

26. Restore server resources on the secondary node.

Refer to the *Systemwalker Runbook Automation Installation Guide* for details

27. Stop Systemwalker Runbook Automation on secondary node.

```
[Systemwalker Runbook Automation Management Server install directory]\bin\swrba_stop
```

28. Stop the following service on the secondary node.

Stop with using Windows(R) service function. From [**Control Panel**]-[**Management Tool**]-[**Service**], select the following service and click the [**Stop**] button.

- Shunsaku Director contents
- Shunsaku Director metadata
- Shunsaku Searcher cmdbs01
- Shunsaku Searcher cmdbs02
- Shunsaku Searcher cmdbs03

29. Stop Interstage on the secondary node.

```
# isstop -f
```

30. Stop the message broker on the secondary node. The procedure is the same as for the primary node.

31. Stop the Interstage Java EE Node Agent Service on the secondary node.

```
# ijnastop
```

32. Stop the Interstage Java EE DAS Service on the secondary node.

```
# ijdastop
```

33. Stop the Interstage Directory Service on the secondary node. The procedure is the same as the primary node.

34. Stop JMX service on primary node.

Use the Windows(R) Services function to stop it.

Select "Interstage Operation Tool" in the **Services** dialog box (opened from **Administrative Tools** under **Control Panel**), and click the **Stop** button.

35. Place the shared disk offline on the secondary node.

36. Start the cluster service.

Refer to "[3.1.1 Starting the Management Server \[Windows\]](#)" for details.