

# **FUJITSU Software**

## **Interstage Information Integrator**

### **V11.0.0**

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

## **Setup Guide**

Windows/Solaris/Linux

B1X1-0294-02ENZ0(00)  
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# Preface

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This document deals with the following products:

- Interstage Information Integrator Standard Edition V11.0.0

Additionally, the optional products listed below are also included.

- Interstage Information Integrator Agent V11.0.0

## Purpose of This Document

This document explains the setup tasks performed after installation of Interstage Information Integrator (hereafter abbreviated as "Information Integrator").

## Intended Readers

This document is intended for the following readers:

- Users who set up Information Integrator

The following knowledge is required to read this document:

- General knowledge about operating systems
- General knowledge about the internet
- General knowledge about database functions and how to use them
- General knowledge about public clouds
- General knowledge about forms

## Structure of This Document

### Chapter 1: Overview of Setup Operations

This chapter presents an overview of the setup tasks for Information Integrator.

### Chapter 2: Setting up an Environment for Creating Definitions

This chapter explains how to set up an environment for creating design sheets.

### Chapter 3: Setting up an Environment for Registering Definitions of Process Flow

This chapter explains how to set up an environment for registering definitions using the III Studio or design sheets.

### Chapter 4: Setting up an Environment for the Server

This chapter explains how to define an operating environment and create a management area.

### Chapter 5: Registering the Definitions of Process Flow

This chapter explains how to register the definitions of Process Flow.

The procedures for registering Process Flow definitions are explained.

### Chapter 6: Setting Up an Environment for Sending and Receiving Files

This chapter explains how to set up an environment for sending and receiving files.

### Chapter 7: Setting up an Operation Management Environment

This chapter explains how to set up an operation management environment.

### Chapter 8: Starting and Stopping the System

This chapter explains how to start and stop the system.

### Chapter 9: Changing the Setup Information

This chapter explains how to change the setup information.

## Chapter 10: Setup for Cluster Systems

This chapter explains the setup method for using a cluster system.

## Appendix A: Supplementary Information

This appendix presents supplementary information for setting up Information Integrator.

## Appendix B: Notes Regarding Setup when Using the Information Integrator Server

This appendix presents some points to note regarding setup when using the Information Integrator Server.

## Appendix C: Certificate Management Package Commands

This appendix presents the commands used in the certificate management package.

## Positioning of This Document

### FUJITSU Software Interstage Information Integrator Structure and Overview of Manuals

This document lists the manual structure for Information Integrator, as well as which manuals should be referred to for different user purposes and objectives.

### FUJITSU Software Interstage Information Integrator System Design Guide

This document presents an overview of Information Integrator functions, as well as information about system configurations and design issues.

### FUJITSU Software Interstage Information Integrator Setup Guide [this document]

This document explains how to create an environment after Information Integrator has been installed.

### FUJITSU Software Interstage Information Integrator Operation Guide

This document explains how to operate Information Integrator.

### FUJITSU Software Interstage Information Integrator Command Reference

This document explains the commands provided by Information Integrator.

### FUJITSU Software Interstage Information Integrator Transfer Accelerator Setup Guide

This document explains the outline, the environmental construction method, and operation procedure of III Transfer Accelerator.

### FUJITSU Software Interstage Information Integrator Message Guide

This document lists the messages output by Information Integrator.

### FUJITSU Software Interstage Information Integrator Glossary

This document is a glossary of the terms used in the Information Integrator manuals.

### FUJITSU Software Symfoware Server Message Guide

This guide explains lists the messages output by Symfoware Server.

## Conventions Used in This Document

### Manual titles

The manual titles listed in this document are abbreviated as below.

### Information Integrator manual

| Abbreviation                      | Official title   |
|-----------------------------------|--|
| Structure and Overview of Manuals | FUJITSU Software Interstage Information Integrator Structure and Overview of Manuals |
| System Design Guide               | FUJITSU Software Interstage Information Integrator System Design Guide               |
| Setup Guide (This document)       | FUJITSU Software Interstage Information Integrator Setup Guide                       |
| Operation Guide                   | FUJITSU Software Interstage Information Integrator Operation Guide                   |

| Abbreviation                     | Official title  |
|----------------------------------|---|
| Command Reference                | FUJITSU Software Interstage Information Integrator Command Reference                |
| Transfer Accelerator Setup Guide | FUJITSU Software Interstage Information Integrator Transfer Accelerator Setup Guide |
| Message Guide                    | FUJITSU Software Interstage Information Integrator Message Guide                    |
| Glossary                         | FUJITSU Software Interstage Information Integrator Glossary                         |

#### Related manual

| Abbreviation            | Official title                                  |
|-------------------------|---|
| Symfoware Message Guide | FUJITSU Software Symfoware Server Message Guide |

#### Abbreviations

The product names listed in this document are abbreviated as below.

Note that system names and product names in this document are not followed by trademark symbols such as ® or ®.

| Abbreviation   | Official title   |
|--|--|
| Windows  | Microsoft® Windows Server® 2012 Foundation               |
|  | Microsoft® Windows Server® 2012 Essentials               |
|  | Microsoft® Windows Server® 2012 Standard                 |
|  | Microsoft® Windows Server® 2012 Datacenter               |
|  | Microsoft Windows Server 2008 Foundation                 |
|  | Microsoft Windows Server 2008 Standard                   |
|  | Microsoft Windows Server 2008 Enterprise                 |
|  | Microsoft Windows Server 2008 Datacenter                 |
|  | Microsoft Windows Server 2008 Standard without Hyper-V   |
|  | Microsoft Windows Server 2008 Enterprise without Hyper-V |
|  | Microsoft Windows Server 2008 Datacenter without Hyper-V |
|  | Microsoft Windows Server 2008 R2 Foundation              |
|  | Microsoft Windows Server 2008 R2 Standard                |
|  | Microsoft Windows Server 2008 R2 Enterprise              |
|  | Microsoft Windows Server 2008 R2 Datacenter              |
|  | Microsoft Windows Server 2003, Standard Edition          |
|  | Microsoft Windows Server 2003, Enterprise Edition        |
|  | Microsoft Windows Server 2003, Datacenter Edition        |
|  | Microsoft Windows Server 2003, Standard x64 Edition      |
|  | Microsoft Windows Server 2003, Enterprise x64 Edition    |
|  | Microsoft Windows Server 2003, Datacenter x64 Edition    |
|  | Microsoft Windows Server 2003 R2, Standard Edition       |
|  | Microsoft Windows Server 2003 R2, Enterprise Edition     |
|  | Microsoft Windows Server 2003 R2, Datacenter Edition     |
| Microsoft Windows Server 2003 R2, Standard x64 Edition   |  |
| Microsoft Windows Server 2003 R2, Enterprise x64 Edition |  |

| Abbreviation        | Official title   |
|---------------------|--|
|                     | Microsoft Windows Server 2003 R2, Datacenter x64 Edition |
|                     | Windows@8  |
|                     | Windows@8 Pro  |
|                     | Windows@8 Enterprise                                     |
|                     | Windows@7 Home Premium                                   |
|                     | Windows@7 Professional                                   |
|                     | Windows@7 Enterprise                                     |
|                     | Windows@7 Ultimate                                       |
|                     | Windows@ Vista Home Basic                                |
|                     | Windows@ Vista Home Premium                              |
|                     | Windows@ Vista Business                                  |
|                     | Windows@ Vista Ultimate                                  |
|                     | Windows@ Vista Enterprise                                |
|                     | Windows@ XP Home Edition                                 |
|                     | Windows@ XP Professional                                 |
| Windows@ XP         |  |
| Windows XP          | Windows@ XP Home Edition                                 |
|                     | Windows@ XP Professional                                 |
| Windows Vista       | Windows@ Vista Home Basic                                |
|                     | Windows@ Vista Home Premium                              |
|                     | Windows@ Vista Business                                  |
|                     | Windows@ Vista Ultimate                                  |
|                     | Windows@ Vista Enterprise                                |
| Windows 7           | Windows@7 Home Premium                                   |
|                     | Windows@7 Professional                                   |
|                     | Windows@7 Enterprise                                     |
|                     | Windows@7 Ultimate                                       |
| Windows 8           | Windows@8  |
|                     | Windows@8 Pro  |
|                     | Windows@8 Enterprise                                     |
| Windows Server 2003 | Microsoft Windows Server 2003, Standard Edition          |
|                     | Microsoft Windows Server 2003, Enterprise Edition        |
|                     | Microsoft Windows Server 2003, Datacenter Edition        |
|                     | Microsoft Windows Server 2003, Standard x64 Edition      |
|                     | Microsoft Windows Server 2003, Enterprise x64 Edition    |
|                     | Microsoft Windows Server 2003, Datacenter x64 Edition    |
|                     | Microsoft Windows Server 2003 R2, Standard Edition       |
|                     | Microsoft Windows Server 2003 R2, Enterprise Edition     |
|                     | Microsoft Windows Server 2003 R2, Datacenter Edition     |

| Abbreviation                  | Official title   |
|-------------------------------|--|
|                               | Microsoft Windows Server 2003 R2, Standard x64 Edition   |
|                               | Microsoft Windows Server 2003 R2, Enterprise x64 Edition |
|                               | Microsoft Windows Server 2003 R2, Datacenter x64 Edition |
| Windows Server 2008           | Microsoft Windows Server 2008 Foundation                 |
|                               | Microsoft Windows Server 2008 Standard                   |
|                               | Microsoft Windows Server 2008 Enterprise                 |
|                               | Microsoft Windows Server 2008 Datacenter                 |
|                               | Microsoft Windows Server 2008 Standard without Hyper-V   |
|                               | Microsoft Windows Server 2008 Enterprise without Hyper-V |
|                               | Microsoft Windows Server 2008 Datacenter without Hyper-V |
|                               | Microsoft Windows Server 2008 R2 Foundation              |
|                               | Microsoft Windows Server 2008 R2 Standard                |
|                               | Microsoft Windows Server 2008 R2 Enterprise              |
|                               | Microsoft Windows Server 2008 R2 Datacenter              |
| Windows Server 2012           | Microsoft Windows Server 2012 Foundation                 |
|                               | Microsoft Windows Server 2012 Essentials                 |
|                               | Microsoft Windows Server 2012 Standard                   |
|                               | Microsoft Windows Server 2012 Datacenter                 |
| Failover Clusters             | Windows Server 2008 Failover Clusters                    |
|                               | Microsoft Cluster Service                                |
| Excel                         | Microsoft® Excel   |
| Word                          | Microsoft® Word  |
| SQL Server                    | Microsoft® SQL Server™                                   |
| Oracle                        | Oracle® Enterprise Edition                               |
|                               | Oracle® Database Standard Edition                        |
|                               | Oracle® Database Standard Edition One                    |
|                               | Oracle® Database Enterprise Edition                      |
| Solaris                       | Oracle Solaris   |
| Linux                         | Red Hat Enterprise Linux                                 |
| UNIX                          | Solaris  |
|                               | Linux  |
| XL-DATA/MV                    | XL DATA MOVER  |
|                               | Softek XL DATA MOVER                                     |
|                               | ETERNUS SF XL-DATA/MV                                    |
|                               | OSIV MSP XL-DATA/MV                                      |
| Interstage Application Server | Interstage® Application Server Standard-J Edition        |
|                               | Interstage® Application Server Enterprise Edition        |
| Shunsaku                      | Interstage® Shunsaku Data Manager Enterprise Edition     |
| Data Effector                 | Interstage® Data Effector Standard Edition               |

| Abbreviation     | Official title  |
|------------------|---|
| Charset Manager  | Interstage® Charset Manager   |
| Linkexpress      | Linkexpress   |
|                  | Linkexpress Advanced Edition  |
|                  | Linkexpress Standard Edition  |
|                  | Linkexpress Enterprise Edition                                      |
| Symfoware Server | Symfoware® Server Standard Edition                                  |
|                  | Symfoware® Server Enterprise Edition                                |
|                  | Symfoware® Server Enterprise Extended Edition                       |
| DB2              | IBM® DB2 9.7 for Linux, UNIX and Windows, Express Edition           |
|                  | IBM® DB2 9.7 for Linux, UNIX and Windows, Workgroup Server Edition  |
|                  | IBM® DB2 9.7 for Linux, UNIX and Windows, Enterprise Server Edition |

## Note

In this manual, please read **Start** menu of Windows in a different way as **Start Window** or **All Apps Window** when you use Windows 8 or Windows Server 2012.

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| October 2013: First Edition |
|-----------------------------|

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# Chapter 1 Overview of Setup Operations

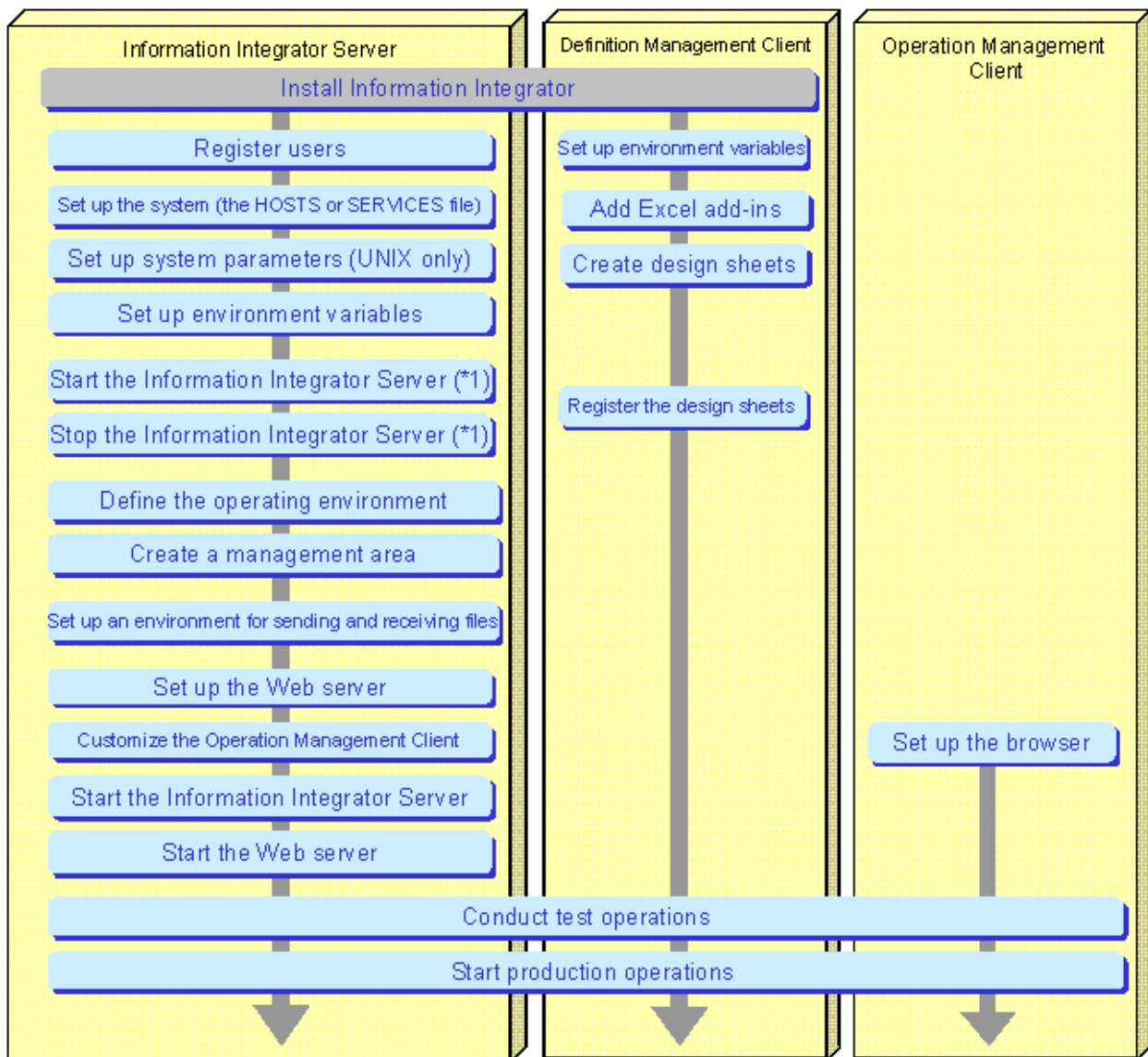
This chapter presents an overview of the setup tasks for Information Integrator.

## 1.1 Overview of Setup Tasks

This section describes the tasks required to set up Information Integrator. These set up tasks are performed using a standard system configuration.

Refer to "1.1.1 System Configuration" for information on what is considered a standard system configuration.

Figure 1.1 Overview of setup tasks



 : Explained within this manual     : Refer to the Software Release Note

\*1: Perform these steps when starting and stopping the Information Integrator Server in order to register a design sheet before creating the Information Integrator environment.

## Point

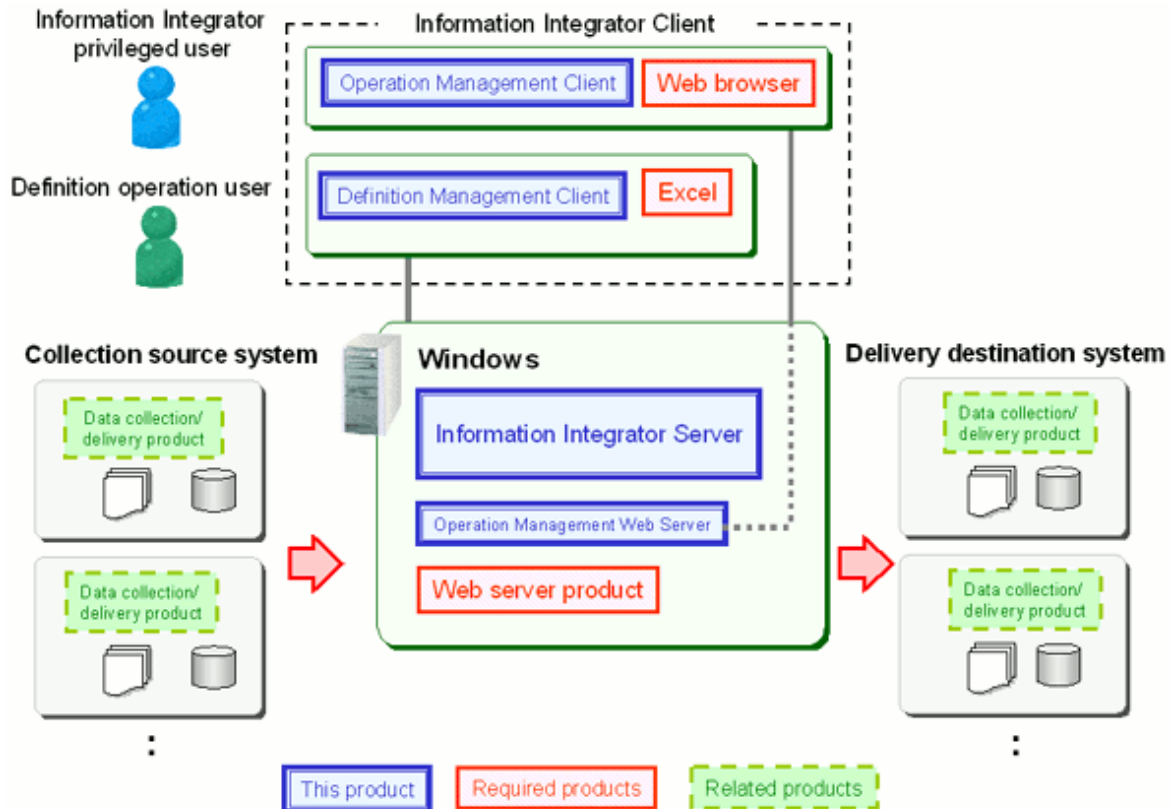
Finish installing all of the software used by the system before performing this procedure.

Refer to the *Software Release Note* or the *Installation Guide* for information on how to install and uninstall the software.

### 1.1.1 System Configuration

This document explains setup operations assuming the following system configuration:

Figure 1.2 System configuration



## See

Refer to the *System Design Guide* for information on the system configuration.

## 1.2 Setting up the III Agent

This section explains the procedure for setting up the III Agent. The setup procedure for the III Agent is the same as the setup procedure for the Information Integrator Server.

Refer to "1.1 Overview of Setup Tasks" for information on the setup procedure.

Refer to the setup procedures described in chapter 2 and beyond for information about each procedure. Where appropriate, the information provided for Information Integrator Server may also be used for the III Agent.

When the Information Integrator Server and the III Agent are to be used in combination, the design information for Process Flows is created and managed in definitions on the Information Integrator Server. The definitions used in the III Agent are created on the Information Integrator Server and then delivered to the III Agent.

Refer to "[Appendix B Notes Regarding Setup when Using the Information Integrator Server](#)" for information on how to deliver Process Flow definitions to the III Agent from the Information Integrator Server.

## 1.3 Simple Setup

Simple setup involves performing the basic setup for installation of the Information Integrator Server and III Agent. This setup can be used to configure a basic environment at an early stage such as when performing an operation check prior to the operation design.

Simple setup cannot be used if detailed tuning is required to suit business requirements (i.e., setup to suit the number of jobs run daily or the number of days job data is retained).

Refer to the *Software Release Note* or the *Command Reference* for information on simple setup.

Part of the setup for the Information Integrator Server is performed during simple setup. The following describes some points to note for setup procedures for the Information Integrator Server beyond "[Chapter 2 Setting up an Environment for Creating Definitions](#)".

Table 1.1 Relationships between the setups for the Information Integrator Server

| The different setups for Information Integrator Server | Simple Setup |      | Points   |
|--|--------------|------|--|
|  | Windows      | UNIX |  |
| <a href="#">Registering Users</a>                      | Y            | Y    | The following are set as privileged users or operators so this setup procedure may be skipped: <ul style="list-style-type: none"> <li>- Windows<br/>"Administrator"</li> <li>- UNIX<br/>"root"</li> </ul>  |
| <a href="#">Setting Up the System</a>                  | N            | N    | For Windows, when linking with the collection source system or delivery destination system, the system setting " <a href="#">Setting Up the HOSTS File</a> " is required.<br><br>" <a href="#">Setting Up the HOSTS File</a> " and " <a href="#">Setting Up the SERVICES File</a> " are required for UNIX. |
| <a href="#">Setting Up System Parameters</a>           | N            | N    | System parameter settings are not required for Windows.<br><br>For UNIX, "Setting up System Parameters [UNIX Only]" is required.   |
| <a href="#">Setting Up Environment Variables</a>       | P            | N    | For Windows, the system environment variables "PATH" and "RDBNAME" will be set. Other parameters should be set to suit the business requirements.<br><br>For UNIX, "Setting up Environment Variables" is required.   |
| <a href="#">Defining the Operating Environment</a>     | P            | P    | The following key settings or defaults are used in the operating environment   |

| The different setups for Information Integrator Server    | Simple Setup |      | Points  |
|---|--------------|------|---|
|   | Windows      | UNIX |   |
|   |              |      | <p>file for simple setup. Behavior may not be correct if these keys are changed: (*1)</p> <ul style="list-style-type: none"> <li>- stk_path</li> <li>- dbms_name</li> <li>- recordterm</li> <li>- exctterm</li> <li>- procrecnum</li> <li>- trnexecnum</li> <li>- cnvexecnum</li> </ul> <p>Keys other than this may require editing to suit business requirements. Do not copy from the provided sample, but rather edit the operating environment file directly.</p> <p>The operating environment file edited during simple setup is located in the following directory:</p> <ul style="list-style-type: none"> <li>- Windows<br/> <i>"InformationIntegratorServerInstall Directory\etc"</i></li> <li>- UNIX<br/>           /opt/FJISVifisv/etc</li> </ul> |
| Creating a Management Area                                | Y            | Y    | The management area is created in the UNIX file system during simple setup.   |
| Setting Up an Environment for Sending and Receiving Files | N            | N    | -   |
| Setting Up the Operation Management Environment           | N            | N    | -   |
| Starting the Servers                                      | Y            | N    | <p>For Windows, the Information Integrator Server will be running when simple setup is completed. Stop it before going any further.</p> <p>For UNIX, the Information Integrator Server will be stopped when simple setup is completed.</p> <p>Use cold start for the first start up of the Information Integrator Server.</p>   |
| Starting the Web server                                   | N            | N    | -   |
| Changing the Setup Information                            | -            | -    | If the management area is to be changed, first delete the Information Integrator environment with the ifisysunsetup command, then execute the ifisyssetup command to perform simple setup.  |

| The different setups for Information Integrator Server | Simple Setup |      | Points   |
|--|--------------|------|--|
|  | Windows      | UNIX |  |
|  |              |      | Refer to the <i>Command Reference</i> for information on these commands. |
| <a href="#">Setup for Cluster Systems</a>              | N            | N    | Simple setup is not possible for cluster systems.                        |

Y: Setup required

P: Partial setup required

N: No setup required

\*1: When modifying, check the points listed in "Changing the Setup Information".



### Note

#### Procedures not setup in simple setup

For procedures not setup with simple setup, perform the appropriate setup procedures separately.

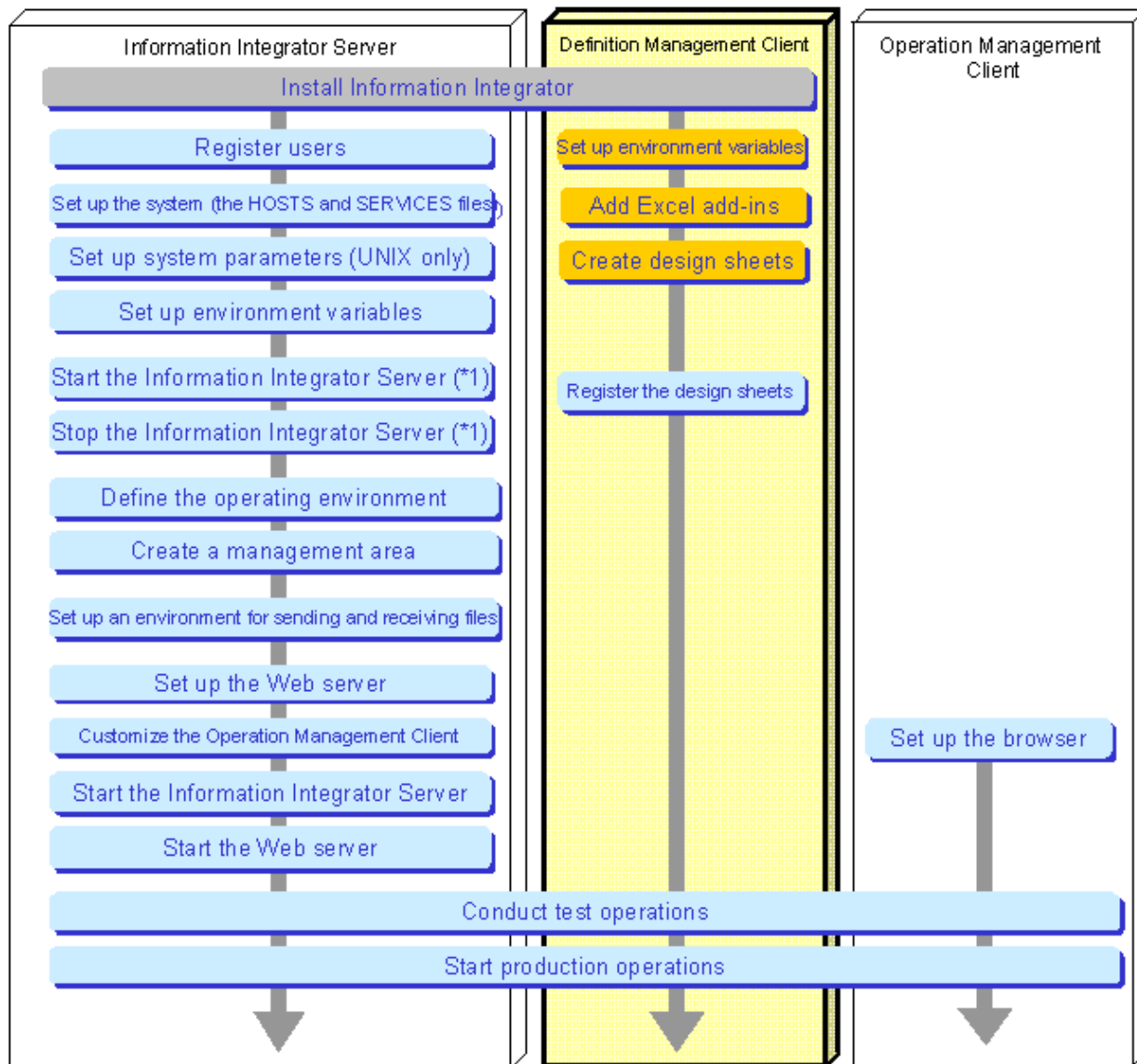


# Chapter 2 Setting up an Environment for Creating Definitions

This chapter explains the procedure for setting up an environment for creating Process Flow definitions with III Studio.

The following setup procedure needs to be performed only once after installing the client:

Figure 2.1 Procedure for setting up an environment for creating Process Flow definitions



  : Explained within this manual 
   : Explained within this chapter 
   : Refer to the Software Release Note  
 \*1: Perform these steps when starting and stopping the Information Integrator Server in order to register design sheets before creating an Information Integrator environment.

## 2.1 Setting up Environment Variables

Environment variables must be set up to use the following:

- Salesforce metadata collection
- Commands to compress or decompress data with the process plug-in

Table 2.1 Environment variable settings

| Variable name | Description                                | Setting         |
|---------------|--|-----------------|
| PATH          | The path to the Java execution environment | %JAVA_HOME%\bin |

 **Point**

.....  
**%JAVA\_HOME%**

"%JAVA\_HOME%" refers to the installation directory for the JDK or the JRE.

Example:

|                    |
|--------------------|
| C:\Interstage\JDK5 |
|--------------------|

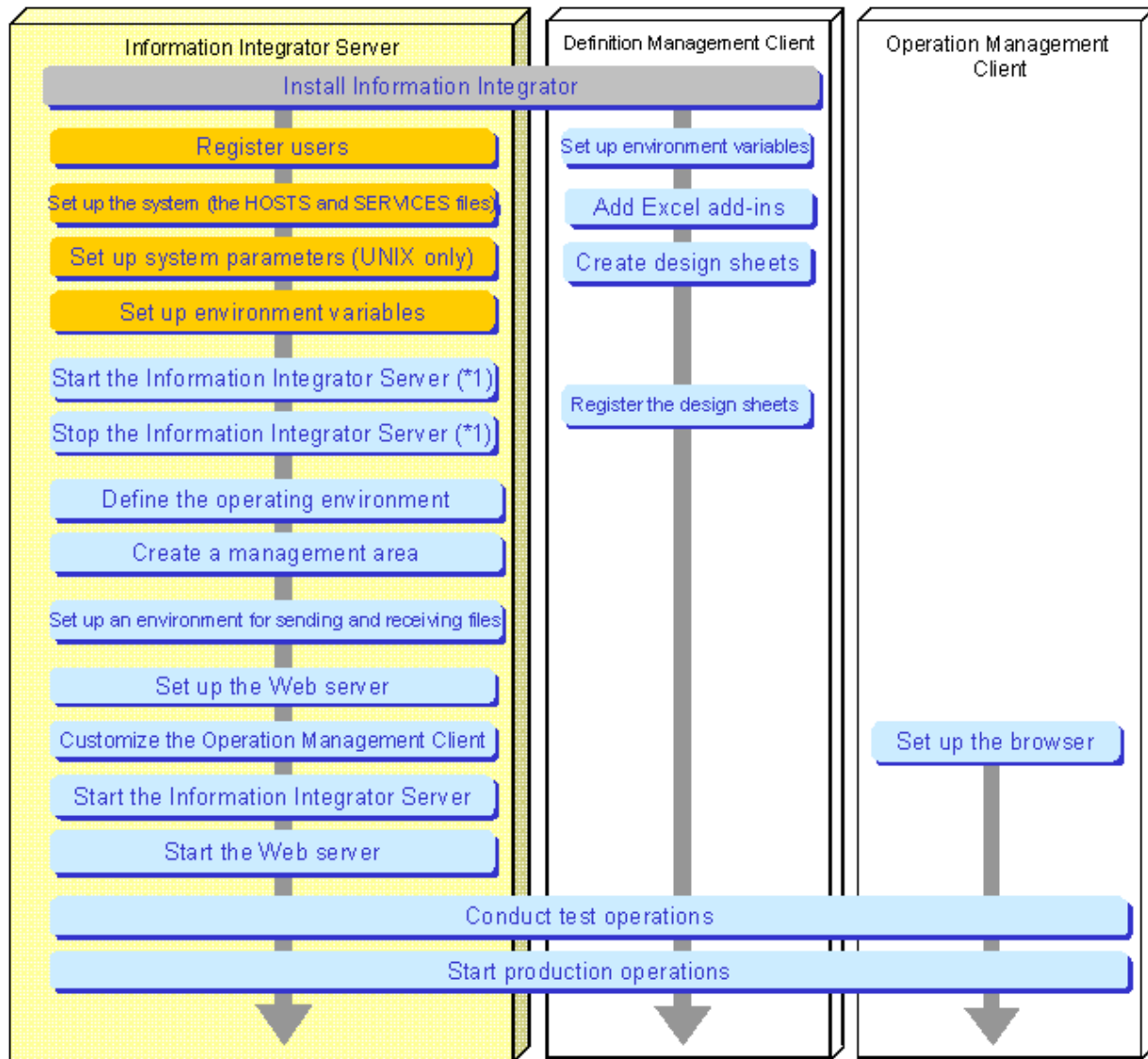
.....

# Chapter 3 Setting Up an Environment for Registering Definitions of Process Flow

This chapter explains how to set up an environment for registering definitions of Process Flow using III Studio.

Use the following procedure to set up an environment for registering definitions of Process Flow using III Studio.

Figure 3.1 Procedure for setting up an environment for registering definitions of Process Flow using III Studio



  : Explained within this manual  
   : Explained within this chapter  
   : Refer to the Software Release Note

\*1: Perform these steps when starting and stopping the Information Integrator Server in order to register design sheets before creating the Information Integrator environment.

## 3.1 Registering Users

This section explains how to register the users that use Information Integrator.

## 3.1.1 User Types

---

Resources can be protected by setting up user privileges within Information Integrator for the resources (definitions and data) managed by Information Integrator and then performing authentication for each resource operation.

The types of users that use Information Integrator are as follows:

- Information Integrator privilege user
- Information Integrator operation user

Each of these user types is explained below.

### Information Integrator privilege user

This is the only user that can perform all resource operations for Information Integrator. Hereafter, this type of user is called a "privilege user". privilege users must meet the following conditions.

For Windows

- Must belong to the Administrators group
- Must have the following operating system permissions:
  - **Act as part of the operating system**
  - **Increase quotas (Adjust memory quotas for a process)**  
Note: This permission is granted by default if the user is a member of the Administrators group.
  - **Log on as a service**
  - **Create a token object**
  - **Replace a process level token**

The procedure for granting permissions is as follows:

1. Select **Start >> Control Panels >> Administrative Tools >> Local Security Policies**.
2. Select the desired policy under **Security Settings >> Local Policies >> User Rights Assignment**, and then add a user ID.

For UNIX

Specify the root user.

### Information Integrator operation user

This is a general user who can log in to the server operating system to perform various operations such as registering design sheets and using the Operation Management Client and the commands provided by Information Integrator.

The permissions granted to operation users (which operations can be performed on which resources) follow the settings that have been specified by the privilege user beforehand.

For UNIX

Operation users must belong to a group that is specified during installation.

For cluster operations, Information Integrator must always be installed by specifying the same group for both the active system and the standby system. Ensure that these systems have the same group ID (a number) rather than the same group name (such as "sys" or "iii").

- For Solaris  
Check that the "gid" (primary group) and "groups" (secondary groups) in the output results for "/usr/bin/id -a" are the same.
- For Linux  
Check that the "gid" (primary group) and the current group (secondary group) in the output results for "/usr/bin/id -a" are the same.

#### Example

---

When the group specified during installation is "iii" (gid=7002)

The following examples explain whether users can be used as Information Integrator operation users, according to different output results for the "/usr/bin/id -a" command.

Note that the following output examples vary slightly from actual output. This is because only the content that is necessary for the explanation above has been extracted from the actual output.

- When the user can be used as an operation user

The user can be used as an operation user because the "gid" is the same.

```
uid=6001(iiiuser) gid=7002(iii) groups=7002(iii),7003(apgrp)
```

- When the user cannot be used as an operation user

The user cannot be used as an operation user because the "gid" is not the same.

```
uid=6002(iiiuser2) gid=7003(apgrp) groups=7002(iii),7003(apgrp)
```

---

### 3.1.2 Registering Users

---

This section explains how to register the users that use Information Integrator.

#### Registration method

- Privilege user

- For Windows

Define the user as the following key name in the operating environment file.

"admuser"

If this key is omitted, the "Administrator" user will become the privilege user. The privilege user can also be changed when Information Integrator is installed.

- For UNIX

No specification is required. The superuser becomes the Information Integrator privilege user.

- Operation user

- Definition operations

- Create and register definitions of Process Flow using III Studio

Define the user as the following key name in the operating environment file.

"defuser"

- Look up definitions of Process Flow using III Studio

Define the user as the following key name in the operating environment file.

"defreaduser"



A sample operating environment file is available, so make definitions by reusing this sample file.

Refer to "[4.1.1 Editing the Operating Environment File](#)" for details on the sample operating environment file and how to edit it.

- Operating integration processes

- Execute integration processes and perform monitoring operations

For each "process group" defined in the process definition sheet, specify which users can operate integration processes.

Use the ifuserctl (user privilege manipulation) command to specify these users. Refer to the *Command Reference* for details on this command.

## Definition example for the operating environment file

A definition example for the operating environment file is shown below.

```
# Copyright FUJITSU LIMITED 2009-2011
.....
admuser=Administrator      #Information Integrator privilege user
defuser=tanaka,Suzuki     #Operation users (when definitions are created and
registered by two people)
.....
```

## Trigger for the operating environment file to take effect

The content of the operating environment file takes effect when the Information Integrator Server is restarted.

If the information for these key names in the operating environment file is changed, the changes will take effect after the Information Integrator Server is restarted.



### Point

.....

If the Information Integrator privilege user and operation user are the same user, the operating environment file can be left unchanged with the default values.

.....

## 3.2 Setting Up the System

---

The HOSTS and SERVICES files need to be set up for the Information Integrator Server. Set up the HOSTS file for the Information Integrator Client if necessary. In this case, specify the IP address of the Information Integrator Server in the HOSTS file.



### Note

.....

For Windows Server 2008, these operations must always be performed with Administrator privileges.

.....

### 3.2.1 Setting Up the HOSTS (hosts) File

---

This section explains the settings for the HOSTS (hosts) file.



### Note

.....

These settings are not required if names are resolved using DNS. Specify the IP address for the DNS server.

.....

#### 3.2.1.1 For Windows

##### Settings

Specify the following settings in the HOSTS (hosts) file.

- Information about the connection destination, either the collection source (system) or the delivery destination (system)
  - Server name (host name)
  - IP address

## Point

For systems that assume mutual connectivity between IPv6 and IPv4, specify both the IPv6 network address and the IPv4 network address. Refer to the *System Design Guide* for IPv6 environments and related issues.

If more connection destination systems (either collection source (systems) or delivery destination (systems)) are added after operations have started, add information about the new servers to the HOSTS file.

Note that when the Information Integrator Server is installed, both the local IP address and the local server name are automatically set up in the HOSTS (hosts) file.

### File storage location

```
<Installation directory for the Windows system>\SYSTEM32\DRIVERS\ETC\HOSTS
```

### Definition example

```
.....
192.168.200.1   Sys1   #local system (already set up automatically during
installation)
192.168.200.2   SYSB     #Collection source (system) 1
192.168.200.3   sys3     #Collection source (system) 2
192.168.200.4   SYS4     #Delivery destination (system) 1
.....
```

## 3.2.1.2 For UNIX

### Settings

Specify the following settings in the HOSTS (hosts) file.

- Local information
  - IP address
  - Server name
- Information about the connection destination, either the collection source (system) or the delivery destination (system)
  - Server name (host name)
  - IP address

## Point

For systems that assume mutual connectivity between IPv6 and IPv4, specify both the IPv6 network address and the IPv4 network address. Refer to the *System Design Guide* for IPv6 environments and related issues.

If more connection destination systems (either collection source (systems) or delivery destination (systems)) are added after operations have started, add information about the new servers to the HOSTS (hosts) file.

### File storage location

- For IPv4

```
/etc/hosts
```

- For IPv6
  - For Solaris

```
/etc/inet/ipnodes
```

- For Linux

```
/etc/hosts
```

### Definition example

- For IPv4

```
.....
192.168.200.1   Sys1       #Local system
192.168.200.2   SYSB       #Collection source (system) 1
192.168.200.3   sys3       #Collection source (system) 2
192.168.200.4   SYS4       #Delivery destination (system) 1
.....
```

- For IPv6

```
.....
2::9255:a00:20ff:fe78:f37c   Sys1       #Local system
fe80::a00:20ff:fe78:f37c   SYSB       #Collection source (system) 1
2::9256:a00:20ff:fe87:fe12   sys3       #Collection source (system) 2
fe80::a00:20ff:fe87:fe12   SYS4       #Delivery destination (system)
.....
```

## 3.2.2 Setting Up the SERVICES (services) File

This section explains the settings for the SERVICES (services) file.



### Note

- In Windows environments, these settings are not required if "It edits it at the same item as setting it up." was selected for "Edit of system file" during installation.
- The following ports are used during data conversion processing. However, there is no need to specify these ports in the SERVICES (services) file.
  - Port number: 9460
  - Port number: 9461
  - Port number: 9462

### Settings

Specify the following settings in the SERVICES (services) file.

Specify each of these settings in the following order: <service name>, <port number>/<protocol>.

- Settings for communications between clients and servers

```
ifitnc 9463/tcp
```



The recommended port number is "9463".

- Settings for the communication protocol(s)
  - Settings for FTP+, FTP or FTPM

ifitrf 9464/tcp

The recommended port number is "9464".

### Note

#### Port numbers:

Refer to "[6.1.2 Notes on Using FTP as the Communication Protocol\(s\)](#)" for notes on the port numbers to be specified.

- Settings for HTTP

ifitrh 9465/tcp

The recommended port number is "9465".

- Settings for HTTPS

ifitrhs 9466/tcp

The recommended port number is "9466".

### Note

#### Port numbers:

Refer to "[6.1.3 Notes on Using HTTP or HTTPS as the Communication Protocol\(s\)](#)" for notes on the port numbers to be specified when the communications protocol is HTTP.

- Settings for HISPD

ifitrns 9467/tcp

ifitrns 9467/udp

The recommended port number is "9467".

ifitrhspd 9468/tcp

The recommended port number is "9468".

### Note

- Do not specify the "aliases" item.
- The "service name" and "protocol" items are fixed. Do not specify other strings.

## File storage location

- For Windows

<Installation directory for the Windows system>\SYSTEM32\DRIVERS\ETC\SERVICES

- For UNIX

/etc/services

### Definition example

```

.....
ifitrnc    9463/tcp    #For communications between Information Integrator
Clients and servers
ifitrnf    9464/tcp    #When the communications protocol is FTP+, FTP or FTPM
ifitrnh    9465/tcp    #When the communications protocol is HTTP
ifitrnhs   9466/tcp    #When the communications protocol is HTTPS
ifitrnsc   9467/tcp    #When the communications protocol is HISPD
ifitrnsc   9467/upd   #When the communications protocol is HISPD
ifitrnhspd 9468/tcp    #When the communications protocol is HISPD
.....

```

## 3.2.3 Setting Up System Parameters [UNIX Only]

This section explains the system parameters that must be set when Information Integrator is installed on Solaris or Linux systems. There are no system parameters that must be set when Information Integrator is installed on Windows systems.

Refer to the operating system manual for details on how to set up the system parameters.

### 3.2.3.1 For Solaris

Adjust the following system parameters. The following system parameter values are required for the Information Integrator Server to run. For the overall system, you also need to consider the system parameter values used by user applications and middleware products other than Information Integrator.

The locations of the system parameter settings are shown in the following table. Restart the system after specifying the settings.

#### For Solaris 9

Set the following system parameters for the "system" and "user.root" entries in the "/etc/project" file.

Table 3.1 IPC parameters for Solaris 9

| Item No. | Parameter               | Default value | Value required by Information Integrator (recommended value) | Characteristics (*1) | Meaning  |
|----------|-------------------------|---------------|--|----------------------|--|
| 1        | msginfo_msgmni (MSGMNI) | 50            | 512  | Addition             | Number of message queue identifiers  |
| 2        | msginfo_msgmnb (MSGMNB) | 4096          | (*2)   | Maximum              | Maximum size of messages that can be held in a single message queue<br><br>This parameter is related to the total number of both the process definitions that can be executed simultaneously by the Information Integrator Server and the transfer requests from commands. |
| 3        | msginfo_msgtql (MSGTQL) | 40            | (*3)<br>(22252 or more)                                      | Addition             | Number of system message headers<br><br>This parameter is related to the total number of both the process definitions that can be executed simultaneously by the Information Integrator Server and the transfer requests from commands.                                    |

| Item No. | Parameter               | Default value | Value required by Information Integrator (recommended value) | Characteristics (*1) | Meaning  |
|----------|-------------------------|---------------|--|----------------------|--|
| 4        | msginfo_msgmax (MSGMAX) | 2048          | 8192 or more   | Maximum              | Maximum size of messages                                       |
| 5        | msginfo_msgmni (MSGMNI) | 50            | 1032   | Addition             | Number of message queue identifiers                            |
| 6        | seminfo_semmni (SEMMNI) | 10            | 10760  | Addition             | Number of semaphore identifiers                                |
| 7        | seminfo_semmns (SEMMNS) | 60            | 36136  | Addition             | Number of semaphores within the system                         |
| 8        | seminfo_semmsl (SEMMSL) | 25            | 4096   | Maximum              | Maximum number of semaphores per id                            |
| 9        | seminfo_semmnu (SEMMNU) | 30            | (*4) + 4096  | Addition             | Number of "undo" structures within the system                  |
| 10       | seminfo_semume (SEMUME) | 10            | 4096   | Maximum              | Maximum number of "undo" entries per process                   |
| 11       | seminfo_semopm (SEMOPM) | 10            | 256  | Maximum              | Maximum number of operations per semaphore call                |
| 12       | shminfo_shmmax          | 8388608       | 107374182 or more  | Maximum              | Maximum segment size for shared memory                         |
| 13       | rlim_fd_max             | 65535         | 65535  | Maximum              | Maximum number of files that can be opened simultaneously (*5) |
| 14       | rlim_fd_cur             | 256           | 2816   | Maximum              | (*5)   |

- \*1: For IPC-related parameters, determine the value to be specified for the entire system based on the recommended values and specified values that are indicated for each software product.

- Addition: Add the recommended/specified values for Information Integrator and for each of software products other than Information Integrator to the default values for the system.

- Maximum: Specify the largest value among the default values for the system and the recommended/specified values for Information Integrator and for each of software products other than Information Integrator.

- \*2: Maximum number of bytes for messages (MSGMNB)

Use the following formula to calculate the value for MSGMNB.

$$(<number\ of\ simultaneous\ transfer\ requests\ to\ the\ Information\ Integration\ Server> \times 64) + (<number\ of\ files\ that\ can\ be\ simultaneously\ transferred\ by\ the\ Information\ Integration\ Server> \times 380) + 9,216 \leq MSGMNB$$

Number of simultaneous transfer requests:

This is the sum total of the number of file transfer definitions for the data collection definitions and data delivery definitions within process definitions as well as all of the transfer requests based on the number of commands executed.

Number of files that can be simultaneously transferred:

This is the value specified for the "scale" item in the operating environment file. If the "scale" item has been omitted, use "256" in the calculation.

- \*3: Number of system message headers

Use the following formula to calculate the value for MSGTQL.

MSGMNB/10 <= MSGTQL

## Note

If MSGTQL is 22252 or less, specify "22252".

- \*4: If HICS is used for the protocol, specify a value that is at least double the number of data source definitions. However, there is no need to specify this item if there are less than 15 data source definitions.
- \*5: Specify both "rlim\_fd\_max" and "rlim\_fd\_cur". If these items are not set up using system parameters, execute one of the following commands before using the Information Integrator start command.
  - csh example  
# limit descriptors 2816
  - sh example  
# ulimit -n 2816
  - ksh example  
# ulimit -n 2816

## For Solaris 10

Set the following system parameters for the "system" and "user.root" entries in the "/etc/project" file.

The resource control type for each of the following system parameters is "privileged". Set parameters by adding the recommended value to the default value or the value that has already been set by the system and by specifying "privileged" for the resource control type.

Table 3.2 IPC parameters for Solaris 10

| Item No. | Resource control         | Default value          | Value required by Information Integrator (recommended value) | Characteristics (*1) | Meaning   |
|----------|--------------------------|------------------------|--|----------------------|---|
| 1        | project.max-shm-memory   | 1/4 of physical memory | 1073741824 or more   | Addition             | Maximum segment size for shared memory  |
| 2        | project.max-msg-ids      | 128                    | 1544   | Addition             | Number of message queue identifiers   |
| 3        | process.max-msg-qbytes   | 65536                  | (*2)   | Maximum              | Maximum size of messages that can be held in a single message queue.<br><br>This parameter is related to the total number of both the process definitions that can be executed simultaneously by the Information Integrator Server and the transfer requests from commands. |
| 4        | process.max-msg-messages | 8192                   | (*3)<br>(22252 or more)                                      | Addition             | Number of system message headers.<br><br>This parameter is related to the total number of both the process definitions that can be  |

| Item No. | Resource control            | Default value | Value required by Information Integrator (recommended value) | Characteristics (*1) | Meaning   |
|----------|-----------------------------|---------------|--|----------------------|---|
|          |                             |               |  |                      | executed simultaneously by the Information Integrator Server and the transfer requests from commands. |
| 5        | project.max-sem-ids         | 128           | 10760  | Addition             | Number of semaphore identifiers   |
| 6        | process.max-sem-nsems       | 512           | 4096   | Maximum              | Maximum number of semaphores per id   |
| 7        | process.max-file-descriptor | 256           | 2816   | Maximum              |   |

- \*1: For IPC-related parameters, determine the value to be specified for the entire system based on the recommended values and specified values that are indicated for each software product.
  - Addition: Add the recommended/specified values for Information Integrator and for each of software products other than Information Integrator to the default values for the system.
  - Maximum: Specify the largest value among the default values for the system and the recommended/specified values for Information Integrator and for each of software products other than Information Integrator.
- \*2: Maximum number of bytes for messages (process.max-msg-qbytes)

Use the following formula to calculate the value for process.max-msg-qbytes.

$$(\langle \text{number of simultaneous transfer requests to the Information Integration Server} \rangle \times 64) + (\langle \text{number of files that can be simultaneously transferred by the Information Integration Server} \rangle \times 380) + 9,216 \leq \text{process.max-msg-qbytes}$$

Number of simultaneous transfer requests:

This is the sum total of the number of file transfer definitions for the data collection definitions and data delivery definitions within process definitions as well as all of the transfer requests based on the number of commands executed.

Number of files that can be transferred simultaneously:

This is the value specified for the "scale" item in the operating environment file. If the "scale" item has been omitted, use "256" in the calculation.

- \*3: Number of system message headers

Use the following formula to calculate the value for process.max-msg-messages.

$$\text{process.max-msg-qbytes}/10 \leq \text{process.max-msg-messages}$$



If process.max-msg-messages is 22252 or less, specify "22252".

### 3.2.3.2 For Linux

The following table shows the system parameters that need to be adjusted and how to set them. The following system parameter values are required for the Information Integrator Server to run. For the overall system, you also need to consider the system parameter values used by user applications and middleware products other than Information Integrator.

Table 3.3 Linux parameters

| Parameter     | Entry  | Default value | Recommended value  | Meaning   | Remarks  |
|---------------|--------|---------------|--------------------|---|----------|
| kernel.shmmax |        | 33554432      | 1073741824 or more | Maximum segment size for shared memory (*1)           | Maximum  |
| kernel.msgmnb |        | 16384         | 6273024            | Maximum capacity for message queues                   | Maximum  |
| kernel.msgmni |        | 16            | 1544               | Number of message queue identifiers                   | Addition |
| kernel.sem    | semmsl | 250           | 4096               | Maximum number of semaphores per semaphore identifier | Maximum  |
|               | semmns | 32000         | 36016              | Number of semaphores within the system                | Addition |
|               | semopm | 32            | 256                | Number of semaphores that can be acquired at once     | Maximum  |
|               | semmni | 128           | 10248              | Number of semaphore identifiers                       | Addition |

For system parameters other than the ones above, the Information Integration Server will run with the default values for the operating system. When changing system parameters other than the ones above, do not specify values smaller than the default values for the operating system.

### 3.2.4 Setting Up Environment Variables

Set up the environment variables that are required to operate Information Integrator. This section explains which environment variables to set, and how to set them.

#### 3.2.4.1 Content of the Environment Variables (Linux)

The following table shows the environment variables that need to be set.

##### Point

- \$ORACLE\_HOME

"\$ORACLE\_HOME" is the home directory for Oracle.

For example, if Oracle 10.2 has been installed in "/ora10", a specification example will be as below.

```
/ora10/app/oracle/product/10.2.0
```

- \$JAVA\_HOME

"\$JAVA\_HOME" refers to the installation directory for the JDK or the JRE.

A specification example is as follows:

```
/opt/FJSVawjkb/jdk5
```

Table 3.4 Environment Variable Settings (Linux)

| Variable name | Description     | Setting         | Notes on conditions and values for settings   |
|---------------|-----------------|-----------------|---|
| RDBNAME       | RDB system name | RDB system name | For the "RDBNAME" environment variable, specify up to eight alphanumeric characters. Values are not case-sensitive. Do not specify an |

| Variable name   | Description                             | Setting  | Notes on conditions and values for settings   |
|-----------------|---|--|---|
|                 |   |  | existing RDB system name. Normally, specify "ifirdb".<br>Specify "ifirdb" when you do simple setup.   |
| PATH            | Command search path                     | /opt/FJSVrdb2b/bin   |   |
|                 |   | /opt/FJSVifisv/bin   |   |
|                 |   | /opt/FJSVifisv/lnk/bin   |   |
|                 |   | /opt/FJSVifisv/hscnv/usr/bin   |   |
|                 |   | \$ORACLE_HOME/bin  | Specify this value to use Oracle for database extraction and storage.   |
|                 | /opt/FJSVifisv/enabler/bin              | Specify this value to perform either of the following operations:<br>- Extracting and storing Salesforce objects |   |
|                 | Path to the Java execution environment  | \$JAVA_HOME/bin  | Specify this value to perform either of the following operations:<br>- To perform the following data conversion and editing using Information Integrator<br>- To convert data in ticket format<br>- To convert data in XML format<br>- To convert data that contains variable iterative items<br>- Extracting and storing Salesforce objects<br>- Collection and delivery BLOB<br>- Collection and delivery by high-speed file transfer (*) |
| JAVA_HOME       | Java home directory                     | \$JAVA_HOME  |   |
| LD_LIBRARY_PATH | Library search path                     | /opt/FJSVrdb2b/lib   |   |
|                 |   | /opt/FJSVifisv/lib   |   |
|                 |   | /opt/FJSVifisv/de/lib  |   |
|                 |   | /opt/FJSVifisv/lnk/bin   |   |
|                 |   | /opt/FJSVifisv/hscnv/lib   |   |
|                 |   | \$ORACLE_HOME/lib  | Specify this value to use Oracle for database extraction and storage.<br>If Information Integrator runs in a 32-bit environment, specify the library path for 32-bit applications.<br>If Information Integrator runs in a 64-bit environment, specify the library path for 64-bit applications.   |
|                 | The directory that contains "libjvm.so" | Specify this value to perform data conversion and editing.   |   |
| LANG            | Language                                | ja_JP.UTF-8  |   |
| ORACLE_HOME     | Oracle home directory                   | \$ORACLE_HOME  | Specify this value to use Oracle for database extraction and storage.   |

| Variable name | Description                | Setting  | Notes on conditions and values for settings  |
|---------------|----------------------------|--|--|
| NLS_LANG      | Language                   | Japanese_Japan.JA16E<br>UC   | Specify this value to use Oracle for database extraction and storage.<br><br>The value shown to the left is an example for when EUC is used as the character encoding for the database.  |
| CLASSPATH     | jar file installation path | - /opt/FJSVxmlfl/<br>FJSVxmlflSchema<br>Validator.jar<br><br>- /opt/FJSVfdtsv/lib/<br>F5FCFlsvdicc.jar | - Specify this variable to perform the following data conversion and editing with Information Integrator.<br><br>- To convert data in ticket format<br><br>- To convert data in XML format<br><br>- To convert data that contains variable iterative items |

\*) Specify JDK6.0 or JRE6.0.

### 3.2.4.2 Content of the Environment Variables (Solaris)

The following table shows the environment variables that need to be set.

#### Point

- \$ORACLE\_HOME

"\$ORACLE\_HOME" is the home directory for Oracle.

For example, if Oracle 10.2 has been installed in "/ora10", a specification example will be as below.

```
/ora10/app/oracle/product/10.2.0
```

- \$JAVA\_HOME

"\$JAVA\_HOME" refers to the installation directory for the JDK or the JRE.

A specification example is as follows:

```
/opt/FJSVawjbc/jdk5
```

Table 3.5 Environment variable settings (Solaris)

| Variable name | Description         | Setting                          | Notes on conditions and values for settings   |
|---------------|---------------------|----------------------------------|---|
| RDBNAME       | RDB system name     | RDB system name                  | For the "RDBNAME" environment variable, specify up to eight alphanumeric characters. Values are not case-sensitive. Do not specify an existing RDB system name. Normally, specify "ifirdb".<br><br>Specify "ifirdb" when you do simple setup. |
| PATH          | Command search path | /opt/FSUNrdb2b/bin               |   |
|               |                     | /opt/FJSVifisv/bin               |   |
|               |                     | /opt/FJSVifisv/lnk/bin           |   |
|               |                     | /opt/FJSVifisv/<br>hscnv/usr/bin |   |



| Variable name   | Description                            | Setting   | Notes on conditions and values for settings   |
|-----------------|--|---|---|
|                 |  | \$ORACLE_HOME/bin   | Specify this value to use Oracle for database extraction and storage.   |
|                 |  | /opt/FJSVifisv/enabler/bin  | Specify this value to perform either of the following operations:<br>- Extracting and storing Salesforce objects  |
|                 | Path to the Java execution environment | \$JAVA_HOME/bin   | Specify this value to perform either of the following operations:<br>- To perform the following data conversion and editing using Information Integrator<br>- To convert data in ticket format<br>- To convert data in XML format<br>- To convert data that contains variable iterative items<br>- Extracting and storing Salesforce objects<br>- Collection and delivery BLOB<br>- Collection and delivery by high-speed file transfer (*) |
| JAVA_HOME       | Java home directory                    | \$JAVA_HOME   |   |
| LD_LIBRARY_PATH | Library search path                    | /opt/FSUNrdb2b/lib  |   |
|                 |  | /etc/opt/FSUNiconv/lib  |   |
|                 |  | /opt/FJSVifisv/lib  |   |
|                 |  | /opt/FJSVifisv/lnk/bin  |   |
|                 |  | /opt/FJSVifisv/hscnv/lib  |   |
|                 |  | \$ORACLE_HOME/lib   | Specify this value to use Oracle for database extraction and storage. Set the library path for 32-bit applications here as well.  |
|                 |  | The directory that contains "libjvm.so"                                       | Specify this value to perform data conversion and editing.  |
| LANG            | Language                               | - For EUC<br>ja<br>- For Shift-JIS<br>ja_JP.PCK<br>- For UTF-8<br>ja_JP.UTF-8 |   |
| ORACLE_HOME     | Oracle home directory                  | \$ORACLE_HOME   | Specify this value to use Oracle for database extraction and storage.   |
| NLS_LANG        | Language                               | Japanese_Japan.JA16EUC  | Specify this value to use Oracle for database extraction and storage.<br><br>The value shown to the left is an example when EUC is used as the character encoding for the database.   |

| Variable name | Description                | Setting  | Notes on conditions and values for settings  |
|---------------|----------------------------|--|--|
| CLASSPATH     | jar file installation path | <ul style="list-style-type: none"> <li>- /opt/FJSVxmlfl/FJSVxmlflSchemaValidator.jar</li> <li>- /opt/FJSVfdtsv/lib/F5FCFlsvdicc.jar</li> </ul> | <ul style="list-style-type: none"> <li>- Specify this variable to perform the following data conversion and editing with Information Integrator.</li> <li>- To convert data in ticket format</li> <li>- To convert data in XML format</li> <li>- To convert data that contains variable iterative items</li> </ul> |

\*) Specify JDK6.0 or JRE6.0.

### 3.2.4.3 Content of the Environment Variables (Windows)

The following table shows the environment variables that need to be set.



#### %JAVA\_HOME%

"%JAVA\_HOME%" refers to the installation directory for the JDK or the JRE.

A specification example is as follows:

C:\Interstage\JDK5

Table 3.6 Environment variable settings (Windows)

| Variable name | Description                                | Setting         | Notes on conditions and values for settings   |
|---------------|--|-----------------|---|
| RDBNAME       | RDB system name                            | RDB system name | <p>Specify this value using up to eight alphanumeric characters. Values are not case-sensitive. Do not specify an existing RDB system name. Normally, specify "ifirdb".</p> <p>The RDB System of the database that another product/user uses on the same System exists, and when they use system environment variable "RDBNAME", Specify RDB system name of the Information Integrator Server for user environment variable "RDBNAME". In that case, it is necessary to add the "dbms_name" key to the operating environment file, and to add as needed "dbms_code" key. Refer to <a href="#">"4.1.1.2 Key Names and Parameter Values in the Operating Environment File"</a> for details.</p> <p>"ifirdb" is set to system environment variable "RDBNAME" when you do simple setup. Do not modify it.</p> |
| PATH          | The path to the Java execution environment | %JAVA_HOME%\bin | <p>Specify these variables to perform either of the following operations:</p> <ul style="list-style-type: none"> <li>- To perform the following data conversion and editing using Information Integrator</li> <li>- To convert data in ticket format</li> <li>- To convert data in XML format</li> </ul>  |
| JAVA_HOME     | Java home directory                        | %JAVA_HOME%     |   |

| Variable name | Description                | Setting   | Notes on conditions and values for settings   |
|---------------|----------------------------|---|---|
|               |                            |   | <ul style="list-style-type: none"> <li>- To convert data that contains variable iterative items</li> <li>- Extracting and storing Salesforce objects</li> <li>- Collection and delivery BLOB</li> <li>- Collection and delivery by high-speed file transfer (*)</li> </ul>  |
| NLS_LANG      | Language                   | Japanese_Japan.AL32UTF8   | Specify this value to use Oracle for database extraction and storage when necessary. The value shown to the left is an example when UTF8 is used as the character encoding for the database.  |
| CLASSPATH     | jar file installation path | <ul style="list-style-type: none"> <li>- Installation directory for Formatmanager<br/> \5FCXMLV\jar\5FCSchemaValidator.jar</li> <li>- Installation directory for Formatmanager<br/> \5FCflsv\lib\5FCFlsvdicc.jar</li> </ul> | <ul style="list-style-type: none"> <li>- Specify this variable to perform data conversion and editing.</li> <li>- If the Formatmanager that comes bundled with Information Integrator is used, the installation directory for Formatmanager will be <i>&lt;Information Integrator installation directory&gt;</i>\FMSV.</li> </ul> |

\*) Specify JDK6.0 or JRE6.0.

### 3.2.4.4 How to Set Up Environment Variables

Set up environment variables.

Ensure that the environment variables set up here take effect not only when Information Integrator is installed, but also when various definition operations for Information Integrator are performed, and when the Information Integrator Server is started, stopped and operated.

- For Solaris

A specification example for environment variables is shown below.

```
RDBNAME=ifirdb ##### default
export RDBNAME

PATH=$PATH:/opt/FSUNrdb2b/bin:/opt/FJSVifisv/bin:/opt/FJSVifisv/lnk/bin:/opt/FJSVifisv/hscnv/usr/bin
export PATH
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/FSUNrdb2b/lib:/opt/FJSVifisv/de/lib:/etc/opt/FSUNiconv/lib:/opt/FJSVifisv/lib:/opt/FJSVifisv/lnk/bin:/opt/FJSVifisv/hscnv/lib
export LD_LIBRARY_PATH
LANG=ja ##### EUC->ja SJIS->ja_JP.PCK
export LANG
```

- For Linux

A specification example for environment variables is shown below.

```
RDBNAME=ifirdb ##### default
export RDBNAME

PATH=$PATH:/opt/FJSVrdb2b/bin:/opt/FJSVifisv/bin:/opt/FJSVifisv/lnk/bin:/opt/FJSVifisv/hscnv/usr/bin
export PATH
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/FJSVrdb2b/lib:/opt/FJSVifisv/de/lib:/opt/FJSVifisv/lib:/opt/
```

```
FJSVifisv/lnk/bin:/opt/FJSVifisv/hscnv/lib
export LD_LIBRARY_PATH
LANG=ja_JP.UTF-8
export LANG
```

- For Windows Server 2008

Use the following procedure to open the window for registering environment variables, and then enter a value for the "RDBNAME" environment variable.

- a. Select **Control Panel**.
- b. Select **System**.
- c. Select **Advanced System**.
- d. Select the **Environment Variables** button on the **Advanced** tab.
- e. Set values for the system environment variables.

- For Windows Server 2003

Use the following procedure to open the window for registering environment variables, and then enter a value for the "RDBNAME" environment variable.

- a. Select **Control Panel**.
- b. Select **System**.
- c. Select the **Environment Variables** button on the **Advanced** tab.
- d. Set values for the system environment variables.



#### Note

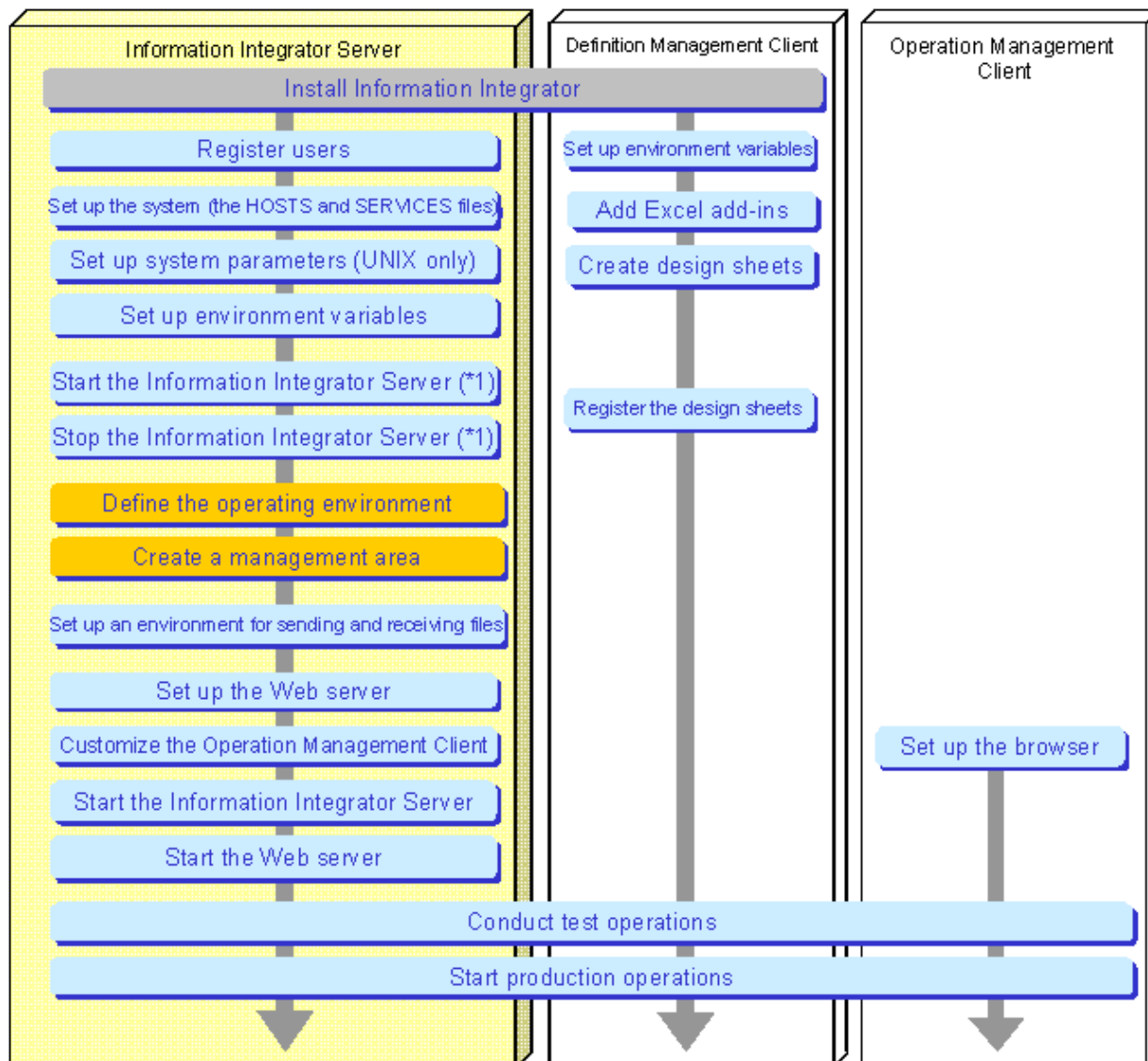
For Windows, ensure that no command prompts are open while setting the environment variables.

# Chapter 4 Setting up an Environment for the Server

This chapter explains how to create an environment for the Information Integrator Server.

Use the following procedure to create an environment for the Information Integrator Server:

Figure 4.1 Procedure for setting up the server environment



  : Explained within this manual  
   : Explained within this chapter  
   : Refer to the Software Release Note

\*1: Perform these steps when starting and stopping the Information Integrator Server in order to register design sheets before creating the Information Integrator environment.

## Note

### For Windows Server 2008

- If Information Integrator has been installed on the drive where the Windows system has been installed, be sure to use admin rights when editing and copying (placing) files.
- To execute commands and batch files, first give admin rights to the execution user. Select **Run as administrator** when opening the command prompt. Refer to the Windows Help and Support Center for information on how to run commands as an administrator.

## For UNIX

- Be sure to execute commands and batch files as a superuser.
- 

## 4.1 Defining the Operating Environment

---

Define the operating environment for the Information Integrator Server.

Define the operating environment for the Information Integrator Server in the operating environment file and the adapter definition file.

- Operating environment file

Define the operating environment for the Information Integrator Server.

- Adapter definition file

To use the following features, define the operating environment for the Information Integrator Server as necessary:

- Extract and store objects for Salesforce
- Collection and delivery BLOB

The operating environment that has been defined will take effect when the Information Integrator Server starts.

### 4.1.1 Editing the Operating Environment File

---

Use the following procedure to edit the operating environment file:

1. A sample operating environment file is provided in the following directory during installation:

- For Windows

```
InformationIntegratorServerInstallDirectory\sample\ifireg.00.ini
```

- For UNIX

```
/opt/FJSVifisv/sample/ifireg.00.ini
```

2. Edit the sample operating environment file according to the operating conditions for the system. To do so, first copy the sample operating environment file to an arbitrary folder, and then edit it using a text editor. Before starting the Information Integrator Server, specify common parameter values in the operating environment file for the sequence of collection, conversion, delivery and other processes.
3. Note that samples are not copied when simple setup is used. Directly edit the files shown in step 3.
4. Once editing the operating environment file has been completed, place it in the following directory:

- For Windows

```
InformationIntegratorServerInstallDirectory\etc\ifireg.00.ini
```

- For UNIX

```
/opt/FJSVifisv/etc/ifireg.00.ini
```



- Before starting the Information Integrator Server, ensure that the file "ifireg.00.ini" exists in the following directory:
- 

- For Windows

```
InformationIntegratorServerInstallDirectory\etc
```

- For UNIX

/opt/FJSVifisv/etc

- The Information Integrator Server must be restarted if the parameter settings are changed and enabled while the Information Integrator Server is running.
- For cluster operations in Windows environments, place the edited operating environment file in the following location:

```
InformationIntegratorOperationResourcesDir\etc\ifireg.00.ini
```

Refer to "10.3 Disk Allocation for Operation Resources" for information on disk allocation during cluster operations.

#### 4.1.1.1 Syntax for the Operating Environment File

The following table shows the syntax for the execution parameters defined in the operating environment file:

Table 4.1 Syntax for the operating environment file

| Syntax rules                                      | Description  |
|---|--|
| Maximum number of characters per line             | No more than 1,022 characters (bytes) (including comments)   |
| Key name  | Must start from the start of the line.   |
| Parameters for each key name                      | Entered after the equals sign (=).   |
| Parameter specification                           | <p>Unless otherwise specified, use the following characters:</p> <ul style="list-style-type: none"> <li>- Letters: Uppercase A to Z, lowercase a to z, #, -, @, and _</li> <li>- Numbers: 0 to 9</li> <li>- Alphanumeric characters: Letters and numbers</li> <li>- Japanese: Text made up of double-byte <i>kanji</i>, <i>hiragana</i>, <i>katakana</i>, letters and numbers</li> </ul> <p>Use the following characters for directory names:</p> <ul style="list-style-type: none"> <li>- Alphanumeric characters, spaces, commas ( , ), periods ( . ), parentheses "(" and ")", single quotes ( ' ), back slashes ( \ ) and colons ( : ).</li> </ul> |
| Spaces and tabs                                   | Any consecutive spaces or tabs before or after the definition labels, key names and parameters will be ignored.  |
| Listing specific parameters                       | Specific parameters can be listed by separating them with commas ( , ).  |
| Comment   | <p>If a semicolon ( ; ) is entered, the rest of the line is treated as a comment.</p> <p>If a hash symbol ( # ) is entered, the rest of the line is treated as a comment.</p>  |
| Entering execution parameters over multiple lines | It is not possible to enter a single definition over multiple lines.   |

#### 4.1.1.2 Key Names and Parameter Values in the Operating Environment File

The following table shows the key names and parameter values in the operating environment file:



#### Note

Of the following key names in the operating environment file, "stk\_path" and "admuser" cannot be omitted. Be sure to specify these keys. Of the following key names in the operating environment file, "proc\_rollback" cannot be omitted when using inputting to the service bus of the Service Integrator.


Table 4.2 Key names and parameter values in the operating environment file

| Category                               | Key name    | Description   | Specification format (*1)(*2)   | Optional |
|--|-------------|---|---|----------|
| Keys that relate to the overall system | msglvl      | Specify the output level for messages.<br><br>Note that the setting for this key does not take effect for messages that are output by utility commands.   | Specify the key in the following format:<br>i: Indicates "information". All messages will be output.<br>e: Indicates an error. All messages other than "INFO" messages will be output.<br><br>Default value: i  | Yes      |
|  | admuser     | Specify the privileged user for Information Integrator resource operations. This user can perform all Information Integrator operations. The Information Integrator privileged user can perform "Lock" and "Unlock" operations on the definitions that have already been acquired by other users.   | Specify the user name (using no more than 20 characters (bytes)).<br><br>- For Windows<br><br>Specify the local user. (Do not specify a domain user.) The user must be a local operating system user.<br><br>- For UNIX<br><br>Specify "root".  | No       |
|  | defuser     | Specify the users that execute definition operations using III Studio or design sheets.<br><br>Users specified in this key can manipulate the following definitions:<br><br>- Reference<br>- Register<br>- Acquire<br>- Cancel acquisition<br>- Delete  | Specify the user name (using no more than 20 characters (bytes)). For Windows servers, specify the local user. (Do not specify a domain user.) The user must be a local operating system user.<br><br>Multiple user names can be specified by separating them with commas ( , ).<br><br>Default value: The Information Integrator privileged user | Yes      |
|  | defreaduser | Specify the users that refer to definitions using III Studio or design sheets.<br><br>Users specified in this key can only "reference" the definitions.<br><br>If user names specified in the "defuser" key are specified in this key, they can only "reference" the definitions.<br><br>Specify a different user name to the user name specified in "defuser". | Specify the user name (using no more than 20 characters (bytes)). For Windows servers, specify the local user. (Do not specify a domain user.) The user must be a local operating system user.<br><br>Multiple user names can be specified by separating them with commas ( , ).  | Yes      |
|  | logfilesize | Specify the maximum size of the file that stores start/stop logs, definition operations logs, and Process Flow execution logs for Information Integrator. The units are in megabytes.<br><br>The logs are stored in the following locations:<br><br>- For Windows<br><br><i>InformationIntegratorServerInstall Directory\log</i>                                | Specify a number between 1 and 20.<br><br>Default value: 5 (MB)   | Yes      |




| Category                      | Key name         | Description   | Specification format (*1)(*2)  | Optional |
|-------------------------------|------------------|---|--|----------|
|                               |                  | - For UNIX<br>/var/opt/FJSVifisv/LOG  |  |          |
|                               | logfilenum       | Specify the maximum number of files that store start/stop logs, definition operations logs, and Process Flow execution logs for Information Integrator.   | Specify a number between 2 and 50.<br>Default value: 5   | Yes      |
|                               | resettime        | Specify the day change time. When the time specified here is reached, management ledgers and data will be deleted according to the values specified for the service status storage periods and the various data storage periods.  | Specify the hour and minute in the following format:<br>HH:MM<br>(HH = a value between 0 and 23, MM = a value between 00 and 59)<br>Default value: 00:00 (midnight)  | Yes      |
|                               | msg_subsinf_type | Specify the display format of additional information in relation to the output format of messages.  | Specify using the following format:<br>nrm: Display normal additional information.<br>add: Display more detailed information along with the normal additional information.<br>Default: nrm<br>Refer to the <i>Message Guide</i> for information on additional information. | Yes      |
|                               | ursc_chk<br>(*8) | Specify whether resource use monitoring is to be used.  | Specify using the following format:<br>yes: Used<br>no: Not used<br>Default: no  | Yes      |
|                               | ursc_chk_rate    | Specify a monitoring threshold for resource use.<br>This is valid only when "yes" is specified in "ursc_chk".<br>If the resource usage exceeds the value specified, a warning is output to the event log (or syslog on UNIX).<br>If 0 is specified, a warning is not output. Only the log is output.  | Specify using a number.<br>The following shows the specifiable range:<br>0 £ resource monitoring threshold (%)<br>£ 90<br>Default: 70<br>Specify a value between 70 and 80.  | Yes      |
| Keys that relate to processes | recordterm       | When a process execution request from a user is received, it is stored in the management ledger as information. Specify the time period for storing this information as the number of days since the process has finished executing. This allows process execution information to be looked up even after the process has finished executing. Once the time that has elapsed since the process finished executing exceeds the storage period specified by this key, | Specify a number for this key.<br>The specification range is as follows:<br>1 £ management ledger storage period<br>£ 31 (days)<br>Default value: 10   | Yes      |

| Category | Key name   | Description   | Specification format (*1)(*2)  | Optional |
|----------|------------|---|--|----------|
|          |            | <p>information will be deleted from the management ledger when the day change time for the system has been reached.</p> <p>If Information Integrator is not running at the day change time, any process information for which the specified period has passed will be deleted next time Information Integrator starts.</p>  |  |          |
|          | exccterm   | <p>Specify the storage period for the information that accumulates in the local DataBox, using either the number of days that have elapsed since data was transmitted for delivery destination systems or the number of days that have elapsed since data was extracted for collection source systems.</p> <p>Once the storage period has passed, files will be deleted when the day change time for the system has been reached.</p> <p>If Information Integrator is not running at the day change time, any files for which the specified period has passed will be deleted next time Information Integrator starts.</p> <p>This key is effective for both sent files and received files.</p> | <p>Specify a number for this key.</p> <p>The specification range is as follows:<br/>1 £ extracted data storage period £ 31 (days)</p> <p>Default value: 10</p>                           | Yes      |
|          | procrecnum | <p>Specify the maximum number of concurrent processes that can be accepted.</p>   | <p>Specify a number for this key.</p> <p>The specification range is as follows:<br/>1 £ maximum reception concurrency of processes £ 9999</p> <p>Default value: 256</p>                  | Yes      |
|          | trnexecnum | <p>Specify the maximum number of data collection, data delivery and plug-in Process Functions that can execute simultaneously.</p> <p>Refer to the <i>System Design Guide</i> for information on designing the simultaneous execution concurrency level for the data collection, data delivery, and plug-in Process Functions.</p>  | <p>Specify a number for this key.</p> <p>The specification range is as follows:<br/>1 £ maximum execution concurrency of transfer Process Functions £ 512</p> <p>Default value: 20</p>   | Yes      |
|          | cnvexecnum | <p>Specify the maximum number of conversion and data filtering Process Functions that can execute simultaneously.</p> <p>Refer to the <i>System Design Guide</i> for information on designing the simultaneous execution concurrency level for the data conversion Process Functions.</p>   | <p>Specify a number for this key.</p> <p>The specification range is as follows:<br/>1 £ maximum execution concurrency of conversion Process Functions £ 512</p> <p>Default value: 20</p> | Yes      |

| Category | Key name   | Description   | Specification format (*1)(*2)  | Optional |
|----------|------------|---|--|----------|
|          | workdir    | <p>Specify the work directory required for the process to execute. For the directory specified for this key, allocate enough disk space to temporarily store all of the input data that is handled when processes execute simultaneously.</p> <p>When this key is specified, the user must create the directory beforehand and give rights for reading, writing, and executing to the Information Integrator Server startup user and group.</p> | <p>Specify the absolute path to the directory, using no more than 80 characters (bytes):</p> <p>Default value:</p> <ul style="list-style-type: none"> <li>- For Windows<br/><i>InformationIntegratorServerInstallDirectory\temp</i></li> <li>- For UNIX<br/><i>/opt/FJSVifisv/temp</i></li> </ul> <p> <b>Note</b></p> <p>.....</p> <p>The files and directories in this directory will be deleted when Information Integrator Server is started. Do not put user resources in this directory.</p> <p>.....</p>  | Yes      |
|          | stk_path   | <p>This is the area for storing data that is managed using generations. The user must create this directory in advance, and grant read, write and execution rights to the startup users and groups for the Information Integrator Server.</p> <p>For the directory specified for this key, allocate enough disk space to store data for the number of days specified for the "exccterm" key.</p>  | <p>Specify the absolute path to the directory, using no more than 128 characters.</p> <p>Be sure to specify this key, as it cannot be omitted.</p>   | No       |
|          | systemname | <p>If the following operations are being performed on the local system, specify a name for identifying the IP address of the local system:</p> <ul style="list-style-type: none"> <li>- Using an active/standby cluster system</li> <li>- Using two or more LAN boards</li> <li>- Using either HTTP or HTTPS, HISPD, or SAN for the communication protocol(s)</li> </ul>  | <p>Specify the following names using up to 31 alphanumeric characters (bytes):</p> <ul style="list-style-type: none"> <li>- Operations involving cluster systems: The host name that corresponds to the takeover IP address</li> <li>- Operations that use two or more LAN boards: The host name that corresponds to the LAN board (IP address) used for file transfer</li> <li>- Operation with HTTP, HTTPS or HISPD: A host name identifying the local system</li> <li>- Operations that use SAN: The local system name that was specified using the initialization utility for XL DATA/MV (KJUAFMT). In this case only, specify the name using up to 15 alphanumeric characters (bytes).</li> </ul> | Yes      |

| Category | Key name        | Description  | Specification format (*1)(*2)  | Optional |
|----------|-----------------|--|--|----------|
|          |                 |  | Note that the value specified for this key must have been defined as a host name in the hosts file.<br><br>Default value: The active IP address  |          |
|          | sch_workingtime | The times to execute the schedule for processes that execute repeatedly at regular intervals and processes that execute event monitoring can be set up in advance.<br><br>For example, set this key in situations such as when Information Integrator has a process that executes every 60 minutes and a process for executing collection monitoring, and both processes are to be set to start executing between 9:00 AM and 5:00 PM. | Specify the starting time and finishing time in the following format:<br><br>HH:MM-hh:mm<br><br>"HH:MM" indicates the starting time.<br><br>"hh:mm" indicates the finishing time.<br><br>If the value specified for the starting time is earlier than the finishing time, this indicates that the finishing time is for the following day.<br><br>(Both HH and hh indicate the hour (between 00 and 23) and MM and mm indicate the minute (between 00 and 59).)<br><br>Default value: No restriction on the schedule execution time span (processes can be executed at any time) | Yes      |
|          | optsync         | If there are multiple delivery processes within a Process Flow, specify whether to coordinate the starts of the delivery processes.<br><br>This parameter is only valid for Process Flows without recovery points.   | Specify the key in the following format:<br><br>yes: Coordinates starts.<br><br>no: Does not coordinate starts.<br><br>Default value: no   | Yes      |
|          | progrp_userctl  | Specify this key to operate Information Integrator by determining which users perform operations for each process group.<br><br>Use the ifuserctl command (user privilege manipulation command) to set up the users that perform operations for each process group. Refer to the <i>Command Reference</i> for details.   | Specify the key in the following format:<br><br>yes: Controls which users can use each process group.<br><br>no: Does not perform user control for each process group.<br><br>Default value: yes   | Yes      |
|          | monitordir      | Specify the directory to be monitored in event monitoring (when a directory is monitored).<br><br>When this key is specified, the user must create the directory beforehand and give rights for reading, writing, and executing to the Information Integrator Server startup user and group.   | Specify a directory name using an absolute path within 128 characters (bytes).<br><br>Event monitoring (when a directory is monitored) is not performed if this is not specified.  | Yes      |
|          | monitorexcept   | Specify how files that are not to be monitored should be treated in event monitoring (when a directory is monitored).<br><br>This parameter is valid only when "monitordir" is specified.  | Specify using the following format:<br><br>del: Deletes the files.<br><br>move: Files backed up to the backup directory.<br><br>Default: del   | Yes      |

| Category | Key name             | Description  | Specification format (*1)(*2)  | Optional |
|----------|----------------------|--|--|----------|
|          |                      |  |  <b>Point</b><br>.....<br>The file name after backing up is the original file name (the file name generated in the monitored directory) with the date and a serial number appended. This means that the files can be distinguished even if multiple files with the same name exist.<br><div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px 0;"> \$<br/> {fileName}_YYYYMMDDhhmmssnn<br/> nnnnnnnn </div> File name: Original file name<br>YYYYMMDDhhmmss: execution date and time<br>nnnnnnnnnn: A serial number starting at 000000001<br>.....   |          |
|          | monitorbacku<br>pdir | Specify the backup directory for files that are not to be monitored in event monitoring (when a directory is monitored).<br><br>This parameter is valid only when "move" is specified in "monitorexcept".<br><br>The backup directory for files not to be monitored is created in the monitored directory. | Specify using no more than 16 alphanumeric characters:<br><br>Default: .BakUpDir   | Yes      |
|          | proc_rollback        | When a Process Flow execution ends in an error, specify the way that data in this Process Flow is rolled back.<br><br>When a Process Flow ends in an error, it is possible to match the response to the operation, for example by re-executing the Process Flow with data that has been restored.          | Specify using the following format:<br><br>none: Do not restore data. The status of the data in the Process Flow is the status when the Process Flow ended in an error.<br><br>in: The status of data for a collection Process Function is returned to "Stored". However, if the error occurred in a deliver Process Function, the data for the collection Process Function is not restored, but rather the data for the deliver Process Function is returned to "Stored". If the Service Integrator input to the service bus is to be used as the data collection Process Function of the Process Flow, this value must be specified as "in".<br><br>exct: All of the data for this Process Flow will be given the status "Extracted". This is applied only to the statuses of data from Process Functions that ended in an error. The status of data | Yes      |

| Category                           | Key name           | Description  | Specification format (*1)(*2)  | Optional |
|------------------------------------|--------------------|--|--|----------|
|                                    |                    |  | of Process Functions whose status is either retrying or aborted will become "Stored".<br>Default: none   |          |
|                                    | tmpdboxdel<br>(*7) | Specify the trigger for deleting the temporary DataBox.  |  | Yes      |
|                                    | tmpdboxdelrm       | Specify the conditions for deleting in temporary DataBox process executions.<br><br>This is valid only when "proc" is specified in "tmpdboxdel".   | Specify using the following format:<br>any: Deleted every time.<br>normal: Deleted only when the process ends normally.<br>Default: any  | Yes      |
|                                    | procmsg            | Specify whether messages and logs are output at the start and end of process executions.<br><br>The log is stored in the following location:<br><br>- For Windows<br><i>InformationIntegratorServerInstall</i><br><i>Directory</i> \log<br><br>- For UNIX<br><br><i>/var/opt/FJSVifisv/LOG</i> | Specify using the following format:<br>yes: Output.<br>no: Not output.<br>Default: yes   | Yes      |
| Keys that relate to the RDB system | dbms_name<br>(*9)  | Specify the Symfoware Server database and system name (RDB system name).<br><br>Specify when a database/system name separate to environment variable RDBNAME is to be used.<br><br>Note that either environment variable RDBNAME or this key must be specified.                                | Specify using no more than 8 alphanumeric characters.<br><br>- For Windows<br>Not case sensitive.<br><br>- For UNIX<br>Case sensitive.<br>Default: Follows user environment variable "RDBNAME".  | Yes      |
|                                    | dbms_code          | Specify the Symfoware Server locale.<br><br>Specify if the locale specified when Information Integrator Server was installed is different to the locale on the Symfoware Server.   | Specify using the following format:<br><br>- SJIS: Shift-JIS.<br>- EUC_S90: EUC (S90).<br>- UNICODE: Unicode.<br>Default:<br><br>- For Windows<br>SJIS<br><br>- For UNIX<br><br>Locale specified when Information Integrator Server was installed. | Yes      |

| Category                          | Key name                        | Description  | Specification format (*1)(*2)  | Optional |
|-----------------------------------|---------------------------------|--|--|----------|
| Keys that relate to file transfer | scale<br>(*3)                   | Specify the maximum multiplicity of file transfer for the local system.  | Specify a number for this key.<br><br>The specification range is as follows:<br><br>1 £ maximum number of files that can be transferred simultaneously £ 256<br><br>Default value: 256   | Yes      |
|                                   | dport<br>(*3)                   | Specify the source port number for requests to establish data connections when FTP is used for the communication protocol(s) and the local system acts as the responder side.  | Specify a number for this key.<br><br>The specification range is as follows:<br><br>20, 1024 £ data connection port number £ 65535<br><br>The value specified for this key is invalid if "PASV" has been specified as the connection mode for data connections.<br><br>Default value: An indeterminate value that is 1024 or greater | Yes      |
|                                   | proxy_url<br>(*3)(*5)           | Specify this key when HTTP or HTTPS is used for the communication protocol(s) and a proxy server is used.<br><br>Specify the name of the proxy server using URL notation.  | Specify this key using up to 120 alphanumeric characters (bytes).<br><br>The syntax is as below (RFC1738).<br><br><i>hostName.domainName:portNumber</i><br><br>Default value: Does not use a proxy server  | Yes      |
|                                   | no_proxy_do<br>main<br>(*3)(*5) | Specify the domain name part when there is a remote system that the server connects to without going through a proxy server in a network configuration that uses proxy servers.  | Specify this key using up to 255 alphanumeric characters (bytes).<br><br>To specify multiple domain names, separate domain name parts using colons ( : ).<br><br>Default value: Routes all HTTP or HTTPS connections via proxy servers   | Yes      |
|                                   | encryption<br>(*10)             | Specify whether to do the encryption communication when HISPDP is used for the communication protocol.<br><br>This key becomes effective only at the responder operation. Moreover, Specify the same value with initiator and responder.   | Specify using the following format:<br><br>yes: Encrypted<br><br>no: Not encrypted<br><br>Default: no  | Yes      |
|                                   | linemargin                      | Specify whether to secure empty bandwidth that can be used besides this communication when HISPDP is used for the communication protocol.<br><br>Empty bandwidth of communications other than HISPDP can be secured by specifying the line availability of HISPDP, and installing the upper bound in use bandwidth of HISPDP.<br><br>Specify the value of less than 100 when you secure empty bandwidth other than this communication. | Specify a number for this key.<br><br>The specification range is as follows:<br><br>1 £ network bandwidth usage rate £ 100 (%)<br><br>Default: 80  | Yes      |

| Category  | Key name                | Description   | Specification format (*1)(*2)   | Optional |
|---|-------------------------|---|---|----------|
|   | maximumspeed            | Specify maximum bandwidth that can be used between communication servers when HISPD is used for the communication protocol.<br><br>Maximum bandwidth of an actual HISPD communication becomes the one that a specified value of "linemargin" key was multiplied by this specification of key value.<br><br>This key does not guarantee the speed of the communication. It is not because the transmission rate of maximum bandwidth that can be used is secured without fail. | Specify a number for this key.<br><br>The specification range is as follows:<br>1 £ bandwidth £ 500 (Mbps)<br><br>Default: 100  | Yes      |
|   | recvtime<br>(*3)        | Specify a value between 0 and 60 for the monitoring time (in minutes) between sending a request to a remote system and receiving the response to that request.  | Specify a number for this key.<br><br>The specification range is as follows:<br>0 £ monitoring time for the remote system £ 60 (minutes)<br><br>Default value: 3  | Yes      |
| Keys that relate to object extraction and storage | proxy_url<br>(*5)       | Specify this key if a proxy server is to be used. Specify the name of the proxy server in URL notation.   | Specify this key using up to 120 alphanumeric characters (bytes).<br><br>The syntax is as below (RFC1738).<br><i>hostName.domainName:portNumber</i><br>Default value: Does not use a proxy server                             | Yes      |
|   | no_proxy_domain<br>(*5) | Specify the domain name part when there is a remote system that the server connects to without going through a proxy server in a network configuration that uses proxy servers.   | Specify this key using up to 255 alphanumeric characters (bytes).<br><br>To specify multiple domain names, separate domain name parts using colons ( : ).<br><br>Default value: Routes all HTTP connections via proxy servers | Yes      |
| Keys that relate to BLOB collection and delivery  | proxy_url<br>(*5)       | Specify when using a proxy. Specify the proxy server name using a URL.  | Specify a string of no more than 120 alphanumeric characters.<br><br>The syntax is as follows (RFC1738):<br><i>hostName.domainName:portNumber</i><br>Default: Proxy server not used   | Yes      |
|   | no_proxy_domain<br>(*5) | In a network configuration that uses a proxy, specify the domain name part of the remote system if it is to be connected without passing through the proxy.   | Specify a string of no more than 255 alphanumeric characters.<br><br>When multiple domain names are to be specified, separate each domain name with a colon ( : ).<br><br>Default: All HTTP passed through a proxy            | Yes      |



| Category                             | Key name            | Description   | Specification format (*1)(*2)  | Optional |
|--------------------------------------|---------------------|---|--|----------|
| Keys that relate to data conversion  | errdatamode<br>(*4) | Specify whether to output data to a file if an error occurs with that data during data conversion.  | Specify the key in the following format:<br>yes: Outputs the data to a file.<br>no: Does not output the data to a file.<br>Default value: yes  | Yes      |
|                                      | errmax              | Specify the maximum number of error data items to be output. Processing will be interrupted when the number of error data items reaches the maximum limit specified by this key.  | Specify a value within the following range:<br>1 £ maximum number of error data items to be output £ 2147483647<br>Default value: 1000   | Yes      |
| Keys that relate to process plug-ins | plglog_putmsg       | Specify the trigger for outputting the Information Integrator process plug-in log to a message (*6).<br><br>This log consists of information from the standard output and standard error output as designed in the application to be output to character strings when the process plug-in (when implemented to wait for something to end) is executed, with that character string displayable in the Operation Management Client or output to be included in messages when there is an error. | Specify using the following format:<br>error: Output when a plug-in ends with an error.<br>any: Output whenever a plug-in is run, whether the result is normal or an error.<br>none: Not output.<br>Default: error | Yes      |

| Category  | Key name     | Description   | Specification format (*1)(*2)  | Optional |
|---|--------------|---|--|----------|
| Keys that relate to the Information Integrator Server | gen_oschk_lv | OS specific checks are performed on the Information Integrator Server when definitions are manipulated with the III Studio or a design sheet. Specify the level with this key.<br>Note that this key should be specified only when using the Information Integrator Server and the III Agent together. In any other case, do not specify. | Specify using a number.<br><br>1: Checks are performed if different operating systems are used on the Information Integrator Server and at least one of the III Agents, and at least one is using Windows.<br><br>0: Checks not performed.<br><br>Default value: 0 | Yes      |

\*1: For cluster operations, some resources need to be placed on the shared disk. Refer to "[10.3 Disk Allocation for Operation Resources](#)" for details.

\*2: If a value that does not match the specification format is specified for a key that is optional, Information Integrator will run using the default value.

\*3: This key does not need to be specified if HULFT is used for the communication protocol(s). The value specified will not be applied even if this key is specified.

\*4: This definition element is used during data conversion.

\*5: The "proxy\_url" and "no\_proxy\_domain" keys affect the following:

File send and receive

- Object extraction and storing
- BLOB collection and delivery

\*6: Output to messages with the ID "IF13305" or "IF23305".

\*7: The data treated as a temporary DataBox and the management ledgers are deleted at regular intervals. The delete trigger is the day change time and the data is that which has been processed at least one day before.

If "tmpdboxdel" is not specified or if "proc" is specified, the data managed in the temporary DataBox (\*1) is deleted, but the deletion of the data management information is deleted regularly at the day change time (\*2). This can be viewed in the following ways:

- Data number properties in the Operation Management Client
- Specify -d parameter with the ifidisp command

\*1: This is managed in the directory specified in "stk\_path".

\*2: The time specified in "resetttime".

Note that the following functionality will not be available with temporary DataBoxes whose data has been deleted:

- Download from the data number properties in the Operation Management Client
- Data extraction with the ifirexct command

\*8: The resource use of the Information Integrator Server is automatically monitored between the time the Information Integrator Server has completed starting up and the time it is stopped. Note that resources indicate the "management area of the Information Integrator Server". Refer to "[4.2.4 Creating a Management Area](#)" for information on the management area.

Refer to the *Operation Guide* for information on using the resource use monitoring feature.

\*9: Do not change this value if simple setup was used. It is possible to make the following values smaller, however:

- recordterm
- exctterm
- procrecnum
- trnexecnum
- cnvexecnum

\*10: There is a possibility that the performance falls by the encryption processing.

### 4.1.1.3 Specification Examples for the Operating Environment File

Specification examples for the operating environment file are shown below.

- For Windows

```
# Copyright FUJITSU LIMITED 2009-2012
msglvl=i
admuser=administrator
logfilesize=5
logfilenum=5
resetttime=00:00
recordterm=10
exctterm=10
procrecvnum=256
trnexecnum=20
cnvexecnum=20
stk_path= c:\iii_stk_path
optsync=no
scale=256
recvtime=3
errdatamode=yes
errmax=1000
procgrp_userctl=yes
```

- For UNIX

```
# Copyright FUJITSU LIMITED 2009-2012
msglvl=i
admuser=root
logfilesize=5
logfilenum=5
resetttime=00:00
recordterm=10
exctterm=10
procrecvnum=256
trnexecnum=20
cnvexecnum=20
stk_path=/iii_stk_path
optsync=no
scale=256
recvtime=3
errdatamode=yes
errmax=1000
procgrp_userctl=yes
```

## 4.1.2 Editing the Adapter Definition File

---

Use the procedure below to edit the adapter definition file.



Information Integrator Server must be restarted if the parameter settings are changed and enabled while the Information Integrator Server is running.

### Windows

1. An adapter definition file is provided in the following directory during installation:

```
InformationIntegratorServerInstallDirectory\etc\ifiadpt.ini
```

2. Edit the adapter definition file as necessary.

## UNIX

1. An adapter definition file is provided in the following directory during installation:

```
/opt/FJSVifisv/etc/ifiadpt.ini
```

2. Edit the adapter definition file as necessary.

### 4.1.2.1 Syntax for the Adapter Definition File

The syntax for the execution parameters defined in the adapter definition file is shown below.

```
#<comment>
[definitionLabel]
{keyName =} {specificKeyParameter}
{keyName =} {specificKeyParameter}{, specificKeyParameter}
```

- Parameters enclosed in braces { } are optional.
- If a key name has been omitted, you cannot specify the specific parameters for that key.
- Each key can be specified only once within each label.
- The specific parameters can be specified in parallel (separated by commas), but only for keys that allow parallel specifications.
- Use the same character encoding as is used for the LANG setting for the operating system.

Follow the rules below when specifying the content of this file:

Table 4.3 Syntax rules for the adapter definition file

| Syntax rules                          | Description  |
|---------------------------------------|--|
| Maximum number of characters per line | No more than 1,023 bytes (including comments).   |
| Definition labels                     | Start the specification from the start of the line, and enclose the label name in square brackets [ ].<br><br>Label name: CRTADADP<br><br>A "section" is a part of the definition file that starts with the line containing a definition label and ends with either the line before the next definition label (if there is another definition label after the current definition label) or the last line of the file (if the current definition label is the last definition label). |
| Key name                              | Must start from the start of the line.   |
| Parameters for each key               | Entered after the equals sign (=).   |
| Parameter specification               | Use the following characters:<br><ul style="list-style-type: none"> <li>- Letters: Uppercase A to Z, lowercase a to z, #, -, @, and _</li> <li>- Numbers: 0 to 9</li> <li>- Alphanumeric characters: Letters and numbers</li> <li>- Japanese: Text made up of double-byte <i>kanji</i>, <i>hiragana</i>, <i>katakana</i>, letters and numbers</li> </ul>   |
| Spaces and tabs                       | Any consecutive spaces or tabs before or after the definition labels, key names and parameters will be ignored.  |
| Listing specific parameters           | Specific parameters can be listed by separating them with commas ( , ).  |
| Comment                               | If a hash symbol ( # ) is entered, the rest of the line is treated as a comment.   |

| Syntax rules                                      | Description  |
|---|--|
|   | Lines that start with the hash symbol ( # ) are treated as comments, but hash symbols are treated as normal characters if they appear anywhere other than the first character of a line. |
| Entering execution parameters over multiple lines | It is not possible to enter a single definition over multiple lines.   |

#### 4.1.2.2 Key Names and Parameter Values in the Adapter Definition File

The following indicates the key names and parameter values in the adapter definition file, as used with the different Process Functions. Make the settings for each of the Process Functions used.

- When extracting or storing a Salesforce object  
Refer to "[4.1.2.2.1 When Extracting or Storing a Salesforce Object](#)".
- When collecting or delivering BLOB  
Refer to "[4.1.2.2.3 When Collecting or Delivering BLOB](#)".
- When high-speed file transfer  
Refer to "[4.1.2.2.4 When high-speed file transfer](#)".

##### 4.1.2.2.1 When Extracting or Storing a Salesforce Object

Table 4.4 When extracting or storing a Salesforce object

| Key name | Description   | Specified format  | Requirement |
|----------|---|---|-------------|
| name     | Specify the name of the targets of data collection and data delivery.     | Specify using the following format:<br>sfdc             | Required    |
| reqmulti | Specify the concurrency for targets of data collection and data delivery. | Specify a value between 0 and 128.<br>Default value: 20 | Optional    |

##### 4.1.2.2.2 When Extracting or Storing a Salesforce Object

Table 4.5 When extracting or storing a Salesforce object

| Key name | Description   | Specified format  | Requirement |
|----------|---|---|-------------|
| name     | Specify the name of the targets of data collection and data delivery.     | Specify using the following format:<br>sfdc             | Required    |
| reqmulti | Specify the concurrency for targets of data collection and data delivery. | Specify a value between 0 and 128.<br>Default value: 20 | Optional    |

##### 4.1.2.2.3 When Collecting or Delivering BLOB

Table 4.6 When collecting or delivering BLOB

| Key name | Description   | Specified format                           | Requirement |
|----------|---|--|-------------|
| name     | Specify the name of the targets of data collection and data delivery. | Specify using the following format:<br>azr | Required    |

| Key name | Description   | Specified format  | Requirement |
|----------|---|---|-------------|
| reqmulti | Specify the concurrency for targets of data collection and data delivery. | Specify a value between 0 and 128.<br>Default value: 20 | Optional    |

#### 4.1.2.2.4 When high-speed file transfer

Table 4.7 When high-speed file transfer

| Key name | Description   | Specified format   | Requirement |
|----------|---|--|-------------|
| name     | Specify the name of the targets of data collection or data delivery.                  | Specify using the following format:<br>hsft  | Required    |
| reqmulti | Specify the concurrency for targets of data collection or data delivery as initiator. | Specify the number of simultaneous high-speed file transfer as initiator.<br>Specify a value between 0 and 128.<br>Default value: 20   | Optional    |
| indmulti | Specify the concurrency for targets of data collection or data delivery as responder. | Specify the number of simultaneous high-speed file transfer as responder.<br>Specify a value between 0 and 128.<br>A necessary resource is secured at least for the operation as responder, and the number of concurrency multiplicity operates as one when 0 is specified.<br>Default value: 20 | Optional    |

#### 4.1.2.3 Specification Example for the Adapter Definition File

Specification examples for the adapter definition file are shown below.

The following example shows how to specify Salesforce objects as data collection and data delivery targets:

```
# Copyright FUJITSU LIMITED 2009-2012

[CRTADADP]

name=sfdc

reqmulti=20

#[CRTADADP]

#name=lc

#reqmulti=20

#[CRTADADP]

#name=azr

#reqmulti=20

#[CRTADADP]

#name=isi

#reqmulti=20
```

## 4.2 Creating a Management Area

---

Create an area (hereafter referred to as the "management area") for managing information about the data and processes to be operated by the Information Integrator Server.

### 4.2.1 Creating Raw Devices [UNIX Only]

---

For UNIX, raw devices are required to create a management area. A raw device is unnecessary if the management area is to be created in the file system. However, when operating in a cluster system, you must have 6 raw devices prepared and create the management area in these raw devices.

Table 4.8 Required raw devices

| Usage   | Remarks                           |
|---|-----------------------------------|
| Area for creating dictionaries for Symfoware Server         | Required                          |
| Area for creating temporary logs for Symfoware Server       | Required                          |
| Area required to store management information for processes | Required                          |
| Area required to manage Process Functions                   | Required                          |
| Area required to store management information for data      | Required                          |
| Area for creating directories for Symfoware Server          | Only required for cluster systems |

Estimate the space required for each area, and then allocate approximately 10% extra space as a buffer. Refer to ["4.2.3 Creating Scripts"](#) for information on how to estimate the space required for each area.

#### 4.2.1.1 For Solaris

- Do not specify cylinder 0 when creating raw devices.
- Do not use slice 2 as a raw device as it represents the entire disk.
- Do not use raw devices that have been created using the "format" utility. Do not create links to raw devices.
- To use multipath disks or PRIMECLUSTER GDS, use the character special file name created by the multipath disk control or PRIMECLUSTER GDS. Do not create links to these character special file names.
- When partitions are carved out using operating system utilities, the size specified with the utility may differ slightly from the size that is actually carved out. Similarly, if multiple partitions are carved out, the actual size of each partition that is carved out may vary slightly even if the same size is specified for each partition with the operating system utility. For this reason, use an operating system utility to check the actual size of the partitions that have been carved out.

#### 4.2.1.2 For Linux

Create raw devices by carving out partitions of the requisite sizes from the disk. Raw devices can be used by setting up symbolic links to block devices. If PRIMECLUSTER GDS is used, GDS block devices will be used directly. The procedure for creating raw devices is as follows:

1. Use the following features to create a partition or volume:

- The parted command of the operating system
- PRIMECLUSTER GDS

If PRIMECLUSTER GDS is used, this completes the creation of the raw device.

Perform the following steps if PRIMECLUSTER GDS is not used.

2. Identify the udev block device name corresponding to the partition on the disk.

The udev block devices have a "by-id" name and a "by-path" name, and which device name is used depends on the disk device that the Information Integrator Server is connected to. It is recommended that you create a table indicating the correspondences between the udev block devices that have been identified and the disk partitions.

- To create raw devices on ETERNUS disks:

Use the "by-id" name.

- To create raw devices on non-ETERNUS disks:

Use the "by-path" name.

**Example**

The following example shows how to identify the udev block device names for a non-ETERNUS disk (/dev/sda5). Note that the udev block device name for "/dev/sda5" is "/dev/disk/by-path/pci-0000:00:10.0-scsi-0:0:0:0-part5".

```
$ cd /dev/disk/by-path
$ ls -l
lrwxrwxrwx 1 root root 9 December 17 10:42 pci-0000:00:10.0-scsi-0:0:0:0 -> ../../sda
lrwxrwxrwx 1 root root 10 December 17 10:42 pci-0000:00:10.0-scsi-0:0:0:0-part1 -> ../../sda1
lrwxrwxrwx 1 root root 10 December 17 10:42 pci-0000:00:10.0-scsi-0:0:0:0-part2 -> ../../sda2
lrwxrwxrwx 1 root root 10 December 17 10:42 pci-0000:00:10.0-scsi-0:0:0:0-part3 -> ../../sda3
lrwxrwxrwx 1 root root 10 December 17 10:42 pci-0000:00:10.0-scsi-0:0:0:0-part4 -> ../../sda4
lrwxrwxrwx 1 root root 10 December 17 10:42 pci-0000:00:10.0-scsi-0:0:0:0-part5 -> ../../sda5
lrwxrwxrwx 1 root root 10 December 17 10:42 pci-0000:00:10.0-scsi-0:0:0:0-part6 -> ../../sda6
lrwxrwxrwx 1 root root 10 December 17 10:42 pci-0000:00:10.0-scsi-0:0:0:0-part7 -> ../../sda7
```

3. Create a symbolic link to the udev block device

First create a directory called "/dev\_symfoware" and then create a symbolic link that points to "/dev\_symfoware".

For access rights to the "/dev\_symfoware" directory, use the chown command and the chmod command to set up access rights so that superusers and the users that belong to the group that was specified during installation can access this directory.

**Example**

The following example shows how to create a symbolic link ("raw1") to the udev block device (/dev/disk/by-path/pci-0000:00:10.0-scsi-0:0:0:0-part5). Note that "/dev\_symfoware/raw1" is referred to as the raw device name:

```
$ cd /dev_symfoware
$ ln -s /dev/disk/by-path/pci-0000:00:10.0-scsi-0:0:0:0-part5 raw1
$ ls -l
lrwxrwxrwx 1 root root 10 December 17 10:42 raw1 -> pci-0000:00:10.0-scsi-0:0:0:0-part5
```

There is no need to initialize raw devices.



When partitions are carved out using operating system utilities, the size specified with the utility may differ slightly from the size that is actually carved out. Similarly, if multiple partitions are carved out, the actual size of each partition that is carved out may vary slightly even if the same size is specified for each partition with the operating system utility. For this reason, use an operating system utility to check the actual size of the partitions that have been carved out.

For information on the parted command, udev, the chown command and the chmod command, refer to the documentation provided by the vendor of the system being used.



Refer to the PRIMECLUSTER GDS manual for information on PRIMECLUSTER GDS.

## Setting up access rights

This section explains how to set up access rights.

- When PRIMECLUSTER GD is used

Set up access rights by referring the PRIMECLUSTER GDS manual.

- When PRIMECLUSTER GD is not used

Enter setup rules for the access rights to the raw disk.

Enter the setup rules by creating "/etc/udev/rules.d/99-ifidb.rules".

Create separate rules for each raw device.

- To set up rules for ETERNUS disks

The following example shows how to set up access rights (owner: root; group: ifi; access rights: 0660) for "/dev/disk/by-id/scsi-SFUJITSU\_MAN3367MC\_UFD8P2602PTJ-part1":

```
KERNEL=="*[1]", ENV{ID_BUS}=="scsi",
ENV{ID_SERIAL}=="SFUJITSU_MAN3367MC_UFD8P2602PTJ", OWNER="root", GROUP="ifi",
MODE="0660"
```

- To set up rules for non-ETERNUS disks

The following example shows how to set up access rights (owner: root; group: ifi; access rights: 0660) for "/dev/disk/by-path/pci-0000:00:10.0-scsi-0:0:0:0-part5":

```
KERNEL=="*[5]", ENV{ID_PATH}=="pci-0000:00:10.0-scsi-0:0:0:0", OWNER="root", GROUP="ifi",
MODE="0660"
```

Refer to the documentation provided by the vendor of the system being used for information on udev.

## 4.2.2 Editing the Tuning Parameter File

---

Estimate the size of the management area required for the Information Integrator Server.

Use the tuning parameter file to define the information required to create a management area.

### For Windows

1. A sample tuning parameter file is provided in the following directory:

```
InformationIntegratorServerInstallDirectory\sample\ifimksdef.ini
```

2. Copy the sample file to any directory (such as "C:\III") and then edit it.

```
C:\III\ifimksdef.ini
```

### For UNIX

1. A sample tuning parameter file is provided in the following directory:

```
/opt/FJSVifisv/sample/ifimksdef.ini
```

2. Copy the sample file to any directory (such as "/III") and then edit it.

```
/III/ifimksdef.ini
```

### 4.2.2.1 Elements in the Calculation of Tuning Parameter Values

Tuning parameter values are influenced by such elements as the amount of data in the Information Integrator Server. There are two types of tuning parameter; those related to processes during operation and those related to data.

### 4.2.2.2 Syntax for the Tuning Parameter File

The following table shows the syntax for the execution parameters defined in the tuning parameter file:

Table 4.9 Syntax for the tuning parameter file

| Syntax rules                          | Description  |
|---------------------------------------|--|
| Maximum number of characters per line | No more than 1,022 characters (bytes) (including comments).  |
| Key name                              | Must start from the start of the line.   |
| Parameters for each key name          | Entered after the equals sign ("=").   |
| Parameter specification               | Unless otherwise specified, use the following characters:<br>- Letters: Uppercase A to Z, lowercase a to z, #, -, @, and _<br>- Numbers: 0 to 9<br>- Other symbols: / : \ . \$<br>Do not use Japanese text or spaces in directory names. |
| Spaces and tabs                       | Any consecutive spaces or tabs before or after key names and parameters will be ignored.   |
| Comment                               | If a semicolon ( ; ) is entered, the rest of the line is treated as a comment.<br>If a hash symbol ( # ) is entered, the rest of the line is treated as a comment.   |

### 4.2.2.3 Key Names and Parameter Values in the Tuning Parameter File

The following table shows the key names and parameter values in the tuning parameter file:

 **Point**

**Design the system with future expansion in mind**

It is necessary to set values in the tuning parameter file to take into account future expansion according to the system design. If there is insufficient allowance for expansion during the design phase, the management area will need to be expanded each time a job is added.

**For Windows**

Table 4.10 Tuning parameter file

| Key name                    | Description   | Specification format   | Optional? | Related key in the operating environment file |
|-----------------------------|---|--|-----------|---|
| SYSTEM.os                   | This is the operating system type for the server. Do not change the value in the sample file.   | -  | No        | -   |
| SYSTEM.output_dir           | Enter the name of the directory where the scripts for creating a management area will be output.  | Specify the absolute path to the directory, using no more than 128 characters (bytes). Create this directory beforehand. | No        | -   |
| ESTIMATE.retent_period      | Specify the number of days to store execution information for processes.<br>Use the operating environment file to specify the timing of when data is actually deleted.<br>Specify a value that is at least as large as the value specified for the "recordterm" item in the operating environment file.   | Specify a number for this key.<br>1 to 31 (Units: Days)<br>Default value: 31   | Yes       | recordterm                                    |
| ESTIMATE.data_retent_period | Specify information about extracted data and the number of days to store the data in DataBoxes.<br>Use the operating environment file to specify the timing of when data is actually deleted.<br>Specify a value that is at least as large as the value specified for the "exccterm" item in the operating environment file.                      | Specify a number for this key.<br>1 to 31 (Units: Days)<br>Default value: 31   | Yes       | exccterm                                      |
| ESTIMATE.prc_in_day         | Specify the number of times processes are executed per day. Specify a value that is greater than the total number of times processes are executed during the retention period for process execution information (ESTIMATE.retent_period) divided by the number of days in the retention period for process execution information.                 | Specify a number for this key.<br>1 to 10000 (Units: Times per day)<br>Default value: 1000                               | Yes       | -   |
| ESTIMATE.func_in_day        | Specify the number of times Process Functions are executed per day. Specify a value that is greater than the total number of times Process Functions are executed during the retention period for process execution information (ESTIMATE.retent_period) divided by the number of days in the retention period for process execution information. | Specify a number for this key.<br>1 to 110000 (Units: Times per day)<br>Default value: 5000                              | Yes       | -   |

| Key name                | Description  | Specification format   | Optional? | Related key in the operating environment file |
|-------------------------|--|--|-----------|---|
| ESTIMATE.indtran_in_day | <p>Specify the number of times files are sent (as responder) per day.</p> <p>Specify a value that is greater than the total number of times that files are transferred (as responder) during the retention period for process execution information (ESTIMATE.retent_period) divided by the number of days in the retention period for process execution information.</p> <p>Specify "1" if file transfer is not to be initiated as responder.</p>   | <p>Specify a number for this key.<br/>1 to 110000 (Units: Times per day)<br/>Default value: 1000</p>                 | Yes       | -   |
| ESTIMATE.data_in_day    | <p>Specify the number of data items handled per day.</p> <p>Specify a value that is greater than the total of the below items that are dealt with in the retention period for extracted data information and data retained in the DataBox (ESTIMATE.data_retent_period), divided by the expiry date of the DataBox store information.</p> <ul style="list-style-type: none"> <li>- Number of Process Functions</li> <li>- Number of times that files will be stored with the data store command (ifirstor command)</li> </ul> <p>Refer to the <i>Command Reference</i> for information on the data store command (ifirstor command).</p> <p>The number of addressees when files are sent (as initiator) and "broadcast delivery" is performed where the same data is delivered to multiple delivery destination systems.</p> | <p>Specify a number for this key.<br/>1 to 220000 (Units: Data items per day)<br/>Default value: 5000</p>            | Yes       | -   |
| ESTIMATE.bundle_data    | <p>Specify the number of data items processed by a single Process Function. Obtain the maximum number of input and output files for each type of Process Function, and specify a value greater than that.</p> <p>The following describes how to obtain the maximum number of input and output files for each type of Process Function.</p> <ul style="list-style-type: none"> <li>- For data filtering Process Functions: the number of filters +1</li> </ul>  | <p>Specify a number for this key.<br/>1 to 10000 (Units: Data items per Process Function)<br/>Default value: 100</p> | Yes       | -   |

| Key name           | Description  | Specification format  | Optional? | Related key in the operating environment file |
|--------------------|--|---|-----------|---|
|                    | For Process Functions other than the above: preceding Process Functions +1   |   |           |   |
| ESTIMATE.databox   | <p>Specify the total number of DataBoxes.</p> <p>Specify a value greater than the value obtain by adding the following value to the number of Process Functions.</p> <ul style="list-style-type: none"> <li>- Number of DataBoxes that will store files with the data store command (ifirstor command)</li> </ul> <p>Refer to the <i>Command Reference</i> for information on the data store command (ifirstor command).</p> <p>The number of addressees when files are sent (as initiator) and "broadcast delivery" is performed where the same data is delivered to multiple delivery destination systems.</p> | <p>Specify a number for this key.</p> <p>1 to 200000 (Units: Number of DataBoxes)</p> <p>Default value: 5000</p>                | Yes       | -   |
| ESTIMATE.prc_multi | <p>Specify the maximum number of processes that can execute simultaneously.</p> <p>Specify a value that is at least as large as the value specified for the "procexecnum" item in the operating environment file.</p>  | <p>Specify a number for this key.</p> <p>1 to 20</p> <p>Default value: 20</p>   | Yes       |   |
| DBMS.name          | <p>This is the database system name for Symfoware Server.</p> <p>Specify the system name (such as "ifirdb") specified by the "RDBNAME" environment variable.</p> <p>Refer to <a href="#">"3.2.4 Setting Up Environment Variables"</a> for information on how to set up the RDBNAME environment variable.</p>   | -   | No        | -   |
| DBMS.resource      | <p>This is the resource type for the database. Do not change the value in the sample file.</p>   | -   | No        | -   |
| DBMS.dir           | <p>Specify the area where the following resources related to the database will be created:</p> <ul style="list-style-type: none"> <li>- Area for creating dictionaries for Symfoware Server</li> <li>- Area for creating directories and files for Symfoware Server</li> <li>- Area for creating temporary logs for Symfoware Server</li> </ul>  | <p>Specify the absolute path to the directory, using no more than 115 characters (bytes). Create this directory beforehand.</p> | No        | -   |

| Key name | Description  | Specification format | Optional? | Related key in the operating environment file |
|----------|--|----------------------|-----------|---|
|          | <ul style="list-style-type: none"> <li>- Area required to store management information for processes</li> <li>- Area required to manage Process Functions</li> <li>- Area required to store management information for data</li> </ul> |                      |           |   |

Note: For cluster operations, some resources need to be placed on the shared disk. Refer to "[10.3 Disk Allocation for Operation Resources](#)" for details.

## For UNIX

Table 4.11 Tuning parameter file

| Key name                    | Description  | Specification format   | Optional? | Related key in the operating environment file |
|-----------------------------|--|--|-----------|---|
| SYSTEM.os                   | This is the operating system type for the server. Do not change the value in the sample file.  | -  | No        | -   |
| SYSTEM.output_dir           | Enter the name of the directory where the scripts for creating a management area will be output.   | Specify the absolute path to the directory, using no more than 128 characters (bytes). Create this directory beforehand. | No        | -   |
| ESTIMATE.retent_period      | Specify the number of days to store execution information for processes. Use the operating environment file to specify the timing of when data is actually deleted. Specify a value that is at least as large as the value specified for the "recordterm" item in the operating environment file.                      | Specify a number for this key.<br>1 to 31 (Units: Days)<br>Default value: 31   | Yes       | recordterm                                    |
| ESTIMATE.data_retent_period | Specify information about extracted data and the number of days to store the data in DataBoxes. Use the operating environment file to specify the timing of when data is actually deleted. Specify a value that is at least as large as the value specified for the "exctterm" item in the operating environment file. | Specify a number for this key.<br>1 to 31 (Units: Days)<br>Default value: 31   | Yes       | exctterm                                      |
| ESTIMATE.prc_in_day         | Specify the number of times processes are executed per day. Specify a value that is greater than the total number of times processes are executed during the retention period for process execution information (ESTIMATE.retent_period) divided   | Specify a number for this key.<br>1 to 10000 (Units: Times per day)<br>Default value: 1000                               | Yes       | -   |

| Key name                | Description   | Specification format   | Optional? | Related key in the operating environment file |
|-------------------------|---|--|-----------|---|
|                         | by the number of days in the retention period for process execution information.  |  |           |   |
| ESTIMATE.func_in_day    | Specify the number of times Process Functions are executed per day. Specify a value that is greater than the total number of times Process Functions are executed during the retention period for process execution information (ESTIMATE.retent_period) divided by the number of days in the retention period for process execution information.   | Specify a number for this key. 1 to 110000 (Units: Times per day) Default value: 5000      | Yes       | -   |
| ESTIMATE.indtran_in_day | Specify the number of times files are sent (as responder) per day. Specify a value that is greater than the total number of times that files are transferred (as responder) during the retention period for process execution information (ESTIMATE.retent_period) divided by the number of days in the retention period for process execution information. Specify "1" if file transfer is not to be initiated as responder.   | Specify a number for this key. 1 to 110000 (Units: Times per day) Default value: 1000      | Yes       | -   |
| ESTIMATE.data_in_day    | Specify the number of data items handled per day. Specify a value that is greater than the total of the below items that are dealt with in the retention period for extracted data information and data retained in the DataBox (ESTIMATE.data_retent_period), divided by the expiry date of the DataBox store information.<br>- Number of Process Functions<br>- Number of times that files will be stored with the data store command (ifirstor command)<br>Refer to the <i>Command Reference</i> for information on the data store command (ifirstor command).<br>The number of addressees when files are sent (as initiator) and "broadcast delivery" is performed where the same | Specify a number for this key. 1 to 220000 (Units: Data items per day) Default value: 5000 | Yes       | -   |

| Key name             | Description  | Specification format   | Optional? | Related key in the operating environment file |
|----------------------|--|--|-----------|---|
|                      | data is delivered to multiple delivery destination systems.  |  |           |   |
| ESTIMATE.bundle_data | <p>Specify the number of data items processed by a single Process Function. Obtain the maximum number of input and output files for each type of Process Function, and specify a value greater than that.</p> <p>The following describes how to obtain the maximum number of input and output files for each type of Process Function:</p> <ul style="list-style-type: none"> <li>- For data filtering Process Functions: The number of filters +1</li> </ul> <p>For Process Functions other than the above: Preceding Process Functions +1</p>  | <p>Specify a number for this key.</p> <p>1 to 10000 (Units: Data items per Process Function)</p> <p>Default value: 100</p> | Yes       | -   |
| ESTIMATE.databox     | <p>Specify the total number of DataBoxes.</p> <p>Specify a value greater than the value obtain by adding the following value to the number of Process Functions:</p> <ul style="list-style-type: none"> <li>- Number of DataBoxes that will store files with the data store command (ifirstor command)</li> </ul> <p>Refer to the <i>Command Reference</i> for information on the data store command (ifirstor command).</p> <p>The number of addressees when files are sent (as initiator) and "broadcast delivery" is performed where the same data is delivered to multiple delivery destination systems.</p> | <p>Specify a number for this key.</p> <p>1 to 200000 (Units: Number of DataBoxes)</p> <p>Default value: 5000</p>           | Yes       | -   |
| ESTIMATE.prc_multi   | <p>Specify the maximum number of processes that can execute simultaneously.</p> <p>Specify a value that is at least as large as the value specified for the "procexecnum" item in the operating environment file.</p>  | <p>Specify a number for this key.</p> <p>1 to 20</p> <p>Default value: 20</p>  | Yes       |   |
| DBMS.name            | <p>This is the database system name for Symfoware Server.</p> <p>Specify the system name (such as "ifirdb") specified by the "RDBNAME" environment variable.</p> <p>Refer to <a href="#">"3.2.4 Setting Up Environment Variables"</a> for information on how to</p>  | -  | No        | -   |



| Key name          | Description  | Specification format   | Optional? | Related key in the operating environment file |
|-------------------|--|--|-----------|---|
|                   | set up the RDBNAME environment variable.   |  |           |   |
| DBMS.resource     | This is the resource type for the database.  | Specify using the following format:<br>raw: The management area is to be created in a raw device.<br>file: When the management area is to be created in the file system. | No        | -   |
| DBMS.dictionary   | Specify the area for creating dictionaries for Symfoware Server when the management area is to be created in a raw device. Do not specify if the management area is to be created in the file system (delete the relevant line).           | Specify a raw device.  | Yes       | -   |
| DBMS.user_control | Specify the area for creating dictionaries and files for Symfoware Server when the management area is to be created in a raw device. Do not specify if the management area is to be created in the file system (delete the relevant line). | Specify the absolute path to the directory, using no more than 128 characters (bytes). Create this directory beforehand.   | Yes       | -   |
| DBMS.log1         | Specify the area for creating temporary log files for Symfoware Server when the management area is to be created in a raw device. Do not specify if the management area is to be created in the file system (delete the relevant line).    | Specify a raw device.  | Yes       | -   |
| PRC.db_space      | Specify the area required to store management information for processes when the management area is to be created in a raw device. Do not specify if the management area is to be created in the file system (delete the relevant line).   | Specify a raw device.  | Yes       | -   |
| FUNC.db_space     | Specify the area required to manage Process Functions when the management area is to be created in a raw device. Do not specify if the management area is to be created in the file system (delete the relevant line).                     | Specify a raw device.  | Yes       | -   |
| STK.db_space      | Specify the area required to store management information for data when the management area is to be created in a raw device. Do not specify if the management area is to be created in the file system (delete the relevant line).        | Specify a raw device.  | Yes       | -   |

| Key name | Description   | Specification format  | Optional? | Related key in the operating environment file |
|----------|---|---|-----------|---|
| DBMS.dir | <p>When the management area is to be created in the file system, specify the directory where the management area is to be created.</p> <p>Do not specify when the management area is to be created in a raw device.</p> | Specify directory name using an absolute path within 128 characters (bytes). Create the directory beforehand. | Yes       | -   |

Note: For cluster operations, some resources need to be placed on the shared disk. Refer to "[10.3 Disk Allocation for Operation Resources](#)" for details.

#### 4.2.2.4 Specification Example for the Tuning Parameter File

Specification examples for the tuning parameter file are shown below.

- For Windows

```
# Copyright FUJITSU LIMITED 2009-2011
#
# $CATEGORY.$key=($value)
#
#   $CATEGORY: CATEGORY (in uppercase)
#   $key      : keyName (in lowercase)
#   $value   : specifiedValue

SYSTEM.os=win
SYSTEM.output_dir=Z:\IIIDB\OUTPUT

ESTIMATE.retent_period=31
ESTIMATE.data_retent_period=31
ESTIMATE.prc_in_day=1000
ESTIMATE.func_in_day=5000
ESTIMATE.indtran_in_day=1000
ESTIMATE.data_in_day=5000
ESTIMATE.bundle_data=100
ESTIMATE.databox=5000
ESTIMATE.prc_multi=20

DBMS.name=ifirdb
DBMS.resource=file

DBMS.dir=Z:\IIIDB\DIR
```

- For Solaris (when the management area is to be created in a raw device)

```
# Copyright FUJITSU LIMITED 2009-2011
#
# $CATEGORY.$key=($value)
#
SYSTEM.os=unix
SYSTEM.output_dir=/IIIDB/OUTPUT

ESTIMATE.retent_period=31
ESTIMATE.data_retent_period=31
```

```

ESTIMATE.prc_in_day=1000
ESTIMATE.func_in_day=5000
ESTIMATE.indtran_in_day=1000
ESTIMATE.data_in_day=5000
ESTIMATE.bundle_data=100
ESTIMATE.databox=5000
ESTIMATE.prc_multi=20

DBMS.name=ifirdb
DBMS.resource=raw

DBMS.dictionary=/dev/rdisk/cXtXdXs1

DBMS.user_control=/IIIDB/RBBDIR

DBMS.log1=/dev/rdisk/cXtXdXs4

PRC.db_space=/dev/rdisk/cXtXdXs5

FUNC.db_space=/dev/rdisk/cXtXdXs6

STK.db_space=/dev/rdisk/cXtXdXs7

```

- For Linux (when the management area is to be created in a raw device)

```

#
# $CATEGORY.$key=($value)
#
#   $CATEGORY: CATEGORY (in uppercase)
#   $key      : keyName (in lowercase)
#   $value    : specifiedValue

SYSTEM.os=unix
SYSTEM.output_dir=/IIIDB/OUTPUT

ESTIMATE.retent_period=31
ESTIMATE.data_retent_period=31
ESTIMATE.prc_in_day=1000
ESTIMATE.func_in_day=5000
ESTIMATE.indtran_in_day=1000
ESTIMATE.data_in_day=5000
ESTIMATE.bundle_data=100
ESTIMATE.databox=5000
ESTIMATE.prc_multi=20

DBMS.name=ifirdb
DBMS.resource=raw

DBMS.dictionary=/dev/raw/rawX1

DBMS.user_control=/IIIDB/RBBDIR

DBMS.log1=/dev/raw/rawX3

PRC.db_space=/dev/raw/rawX4

FUNC.db_space=/dev/raw/rawX5

STK.db_space=/dev/raw/rawX6

```

- For Linux (when the management area is to be created in the file system)

```
#
# $CATEGORY.$key=($value)
#
#   $CATEGORY: CATEGORY (in uppercase)
#   $key      : keyName (in lowercase)
#   $value   : specifiedValue

SYSTEM.os=unix
SYSTEM.output_dir=/IIIDB/OUTPUT

ESTIMATE.retent_period=31
ESTIMATE.data_retent_period=31
ESTIMATE.prc_in_day=1000
ESTIMATE.func_in_day=5000
ESTIMATE.indtran_in_day=1000
ESTIMATE.data_in_day=5000
ESTIMATE.bundle_data=100
ESTIMATE.databox=5000
ESTIMATE.prc_multi=20

DBMS.name=ifirdb
DBMS.resource=file

DBMS.dir=/IIIDB/DBMSDIR
```

## 4.2.3 Creating Scripts

Execute the ifimks command to have the Information Integrator Server estimate the size of the management area based on the values in the tuning parameter file and create scripts for creating a management area.

Once you have defined the tuning parameter file, execute the ifimks command specifying the tuning parameter file.

- For Windows

In the following example, the tuning parameter file has been placed in an arbitrary directory (in this case "C:\III"):

- Estimation execution example

```
ifimks -m CAL -f C:\III\ifimksdef.ini
```

- Estimation output example

```
C:\>ifimks -m CAL -f C:\III\ifimksdef.ini

DBMS.dictionary=(Z:\IIIDB\DIR\RDBDIC)#40M

DBMS.user_control=(Z:\IIIDB\DIR\RDBDIR)#40M

DBMS.log1=(Z:\IIIDB\DIR\RDBLOG)#940M

FUNC.db_space=(Z:\IIIDB\DIR\FUNC)#4566M

STK.db_space=(Z:\IIIDB\DIR\STK)#946M

PRC.db_space=(Z:\IIIDB\DIR\PROC)#378M

### ifimks has done.
```

The folder specified for "DBMS.dir" must have at least as much capacity as the total of the sizes displayed.

- Example of executing script creation

```
ifimks -m CRT -f C:\III\ifimksdef.ini
```

The scripts for creating a management area will be output to the folder specified by "SYSTEM.output\_dir".

- For UNIX

In the following example, the tuning parameter file has been placed in an arbitrary directory (in this case "/III"):

- Estimation execution example

```
/opt/FJSVifisv/bin/ifimks -m CAL -f /III/ifimksdef.ini
```

- Estimation output example

```
# /opt/FJSVifisv/bin/ifimks -m CAL -f /III/ifimksdef.ini  
  
DBMS.dictionary=(/dev/rdisk/c0t0d0s1)#40M  
  
DBMS.user_control=(/III/DB/RDBDIR)#40M  
  
DBMS.log1=(/dev/rdisk/c0t0d0s4)#940M  
  
FUNC.db_space=(/dev/rdisk/c0t0d0s6)#4566M  
  
STK.db_space=(/dev/rdisk/c0t0d0s7)#946M  
  
PRC.db_space=(/dev/rdisk/c0t0d0s5)#378M  
  
### ifimks has done.
```

When the management area is to be created in the file system, a volume greater than the total size displayed is required in the directory specified in "DBMS.dir".

- Example of executing script creation

```
/opt/FJSVifisv/bin/ifimks -m CRT -f /III/ifimksdef.ini
```

The scripts for creating a management area will be output to the directory specified by "SYSTEM.output\_dir".

If the ifimks command terminates abnormally, correct the error and then re-execute the command.

Refer to the *Command Reference* for information on the ifimks command. Refer to "[A.1 Correcting Errors with the ifimks Command](#)" for information on how to correct errors when the ifimks command terminates abnormally,

### Note

If the value of "DBMS.log1" is 32 GB or more when estimation is executed using the ifimks command, review the values specified for the following keys in the tuning parameter file so that the result of the estimation is no more than 31 GB:

- ESTIMATE.bundle\_data
- ESTIMATE.prc\_multi

## Scripts that are generated

When the ifimks command is executed, the following scripts are output so that the management area can be created. Use these scripts to set up the Information Integrator Server.

Table 4.12 List of script files that are generated (Windows)

| Directory                | File name           | Content   |  |
|--------------------------|---------------------|---|--|
| Output directory<br>(*1) | ifirdbsetup.bat     | Batch file for creating an RDB dictionary environment   |  |
|                          | ifirdbdel.bat       | Batch file for deleting an RDB dictionary environment   |  |
|                          | ifi_createrdb00.bat | Batch file for creating a work database   |  |
|                          | ifi_droprdb00.bat   | Batch file for deleting a work database   |  |
|                          | ifi_grantrdb00.bat  | Batch file for granting access rights to the work database (this is executed from another batch file) |  |
|                          | buffer              | ifi_createbuf00.bat   | Batch file for creating a shared buffer                          |
|                          |                     | ifi_deletebuf00.bat   | Batch file for deleting a shared buffer                          |
|                          | Env                 | <i>RDBsystemName.cfg</i> (*2)   | RDB configuration parameter file                                 |
|                          |                     | fssqlenv  | Operating environment file for the RDB system                    |
|                          |                     | rdbbuf  | Shared buffer definition file                                    |
|                          | sql                 | _ifi_createdb00.sql   | DDL for database and database space definitions                  |
|                          |                     | _ifi_createtbl00.sql  | DDL for table, DSO and DSI definitions                           |
|                          |                     | _ifi_droprdb00.sql  | DDL for database, database space, table, DSO and DSI definitions |
|                          |                     | _ifi_grant00.sql  | Definition file for granting access rights                       |

\*1: Scripts are output to the folder specified for the "SYSTEM.output\_dir" key in the tuning parameter file.

\*2: The RDB system name specified for the "DBMS.name" key in the tuning parameter file

Table 4.13 List of script files that are generated (UNIX)

| Directory                | File name          | Content   |   |
|--------------------------|--------------------|---|---|
| Output directory<br>(*1) | ifirdbsetup.sh     | Shell script for creating an RDB dictionary environment   |   |
|                          | ifirdbdel.sh       | Shell script for deleting an RDB dictionary environment   |   |
|                          | ifi_createrdb00.sh | Shell script for creating a work database   |   |
|                          | ifi_droprdb00.sh   | Shell script for deleting a work database   |   |
|                          | ifi_grantrdb00.sh  | Shell script for granting access rights to the work database (this is executed from another shell script) |   |
|                          | buffer             | ifi_createbuf00.sh  | Shell script for creating a shared buffer       |
|                          |                    | ifi_deletebuf00.sh  | Shell script for deleting a shared buffer       |
|                          | env                | <i>RDBsystemName.cfg</i> (*2)   | RDB configuration parameter file                |
|                          |                    | fssqlenv  | Operating environment file for the RDB system   |
|                          |                    | rdbbuf  | Shared buffer definition file                   |
|                          | sql                | _ifi_createdb00.sql   | DDL for database and database space definitions |
|                          |                    | _ifi_createtbl00.sql  | DDL for table, DSO and DSI definitions          |

| Directory | File name          | Content  |
|-----------|--------------------|--|
|           | _ifi_droprdb00.sql | DDL for database, database space, table, DSO and DSI definitions |
|           | _ifi_grant00.sql   | Definition file for granting access rights                       |

\*1: Scripts are output to the folder specified for the "SYSTEM.output\_dir" key in the tuning parameter file.

\*2: The RDB system name specified for the "DBMS.name" key in the tuning parameter file

## Copying scripts

Of the script files output by the ifimks command, be sure to copy the following files to the "Copy destination" in the following table:

Table 4.14 Where to place scripts (Windows)

| Directory | File name                | Copy destination   | Content                                 |
|-----------|--------------------------|--|---|
| env       | <i>RDBsystemName.cfg</i> | <i>InformationIntegratorServerInstallDirectory\SFWETC\RDB\ETC</i> (*1) | RDB configuration parameter file        |
| buffer    | ifi_createbuf00.bat      | <i>InformationIntegratorServerInstallDirectory\etc</i> (*2)            | Batch file for creating a shared buffer |
|           | ifi_deletebuf00.bat      |  | Batch file for deleting a shared buffer |

\*1: To use a version of Symfoware Server that has been purchased separately rather than the version of Symfoware Server that came bundled with Information Integrator, copy this script file to "*symfowareServer InstallDir\SFWETC\RDB\ETC*".

\*2: For cluster operations, copy this file to "*informationIntegratorOperationResourcesDir\etc*".

Refer to "[10.3 Disk Allocation for Operation Resources](#)" for information on disk allocation during cluster operations.

Table 4.15 Where to place scripts (UNIX)

| Directory | File name                | Copy destination   | Content                                   |
|-----------|--------------------------|--|---|
| env       | <i>RDBsystemName.cfg</i> | - For Solaris<br><i>/opt/FSUNrdb2b/etc</i><br><br>- For Linux<br><i>/opt/FJSVrdb2b/etc</i> | RDB configuration parameter file          |
| buffer    | ifi_createbuf00.sh       | <i>/opt/FJSVifisv/etc</i>  | Shell script for creating a shared buffer |
|           | ifi_deletebuf00.sh       |  | Shell script for deleting a shared buffer |

## 4.2.4 Creating a Management Area

Use the following procedure to create a management area for the Information Integrator Server:

### 4.2.4.1 Creating an RDB Dictionary

Use the procedure below to create an RDB dictionary.

#### For Windows

1. Move the current directory to the output directory specified for the "SYSTEM.output\_dir" key.

2. Create an RDB dictionary by executing the batch file for creating an RDB dictionary environment (one of the scripts generated by the ifimks command):

```
cmd /c .\ifirdbsetup.bat
```

### Information

If the batch file terminates abnormally, follow the procedure described in "[A.2 Correcting Errors with Creating a Management Area](#)" and then re-execute the batch file.

## For UNIX

1. Move the current directory to the output directory specified for the "SYSTEM.output\_dir" key.
2. Create an RDB dictionary by executing the following file (the shell script for creating an RDB dictionary environment) generated by the ifimks command:

```
./ifirdbsetup.sh
```

### Information

If the shell script terminates abnormally, follow the procedure described in "[A.2 Correcting Errors with Creating a Management Area](#)" and then re-execute the shell script.

## 4.2.4.2 Registering the RDB System [Windows Only]

For Windows, use the following procedure to register the service using the database system setup GUI. This procedure is not necessary for UNIX:

1. Move the current directory to "*InformationIntegratorServerInstallDirectory*\bin".
2. Execute the following startup batch file:

```
cmd /c .\ifidbsysset.bat
```

### See

#### If Symfoware Server has been purchased separately

To use a version of Symfoware Server that has been purchased separately rather than the version of Symfoware Server that came bundled with Information Integrator, perform the setup by referring to the Symfoware Server manual.

3. Select the RDB system name, and click **Register**.
4. For **Data storage location**, enter "*TuningParameterFileDBMS.dirDir*\RDBDIR", and then click **OK**.
5. A confirmation message will be output, click **Yes**.  
Messages about the modification of the value of configuration parameters will be output, click **No**.
6. The next window will be displayed. Click **Skip**.  
A dialog box for requesting dictionary creation will be output, click **OK** to continue.
7. The next window will be displayed. Remote databases are not supported, so click **Cancel**.



8. The registration is complete if the checkbox to the left of the RDB system name is selected. Click **Close** to close the database system setup GUI.

### 4.2.4.3 Starting Symfoware Server

Start Symfoware Server. Execute the startup command shown below.

- For Windows

```
rdbstart
```

#### Information

##### Starting from the GUI

Symfoware Server can also be started by selecting **Start** then **Control Panel** followed by **Administrative Tools** and then **Services**.

- For Solaris

```
/opt/FSUNrdb2b/bin/rdbstart
```

- For Linux

```
/opt/FJSVrdb2b/bin/rdbstart
```

#### See

If Symfoware Server fails to start, eliminate the cause of the error by referring to the message that has been output and "[A.2 Correcting Errors with Creating a Management Area](#)", and then re-execute the command.

### 4.2.4.4 Creating a Work Database

Use the following procedure to create a work database:

#### For Windows

1. Move the current directory to the output directory specified for the "SYSTEM.output\_dir" key.
2. Create a work database by executing the batch file for creating a work database (one of the scripts generated by the ifimks command):

```
cmd /c .\ifi_createrdb00.bat
```

This completes the setup for the Information Integrator Server.

Start the Information Integrator Server to check that it operates normally. Refer to "[8.1 Starting the Servers](#)" for details.

#### See

If the batch file terminates abnormally, follow the procedure described in "[A.2 Correcting Errors with Creating a Management Area](#)" and then re-execute the batch file.

## For UNIX

1. Move the current directory to the output directory specified for the "SYSTEM.output\_dir" key.
2. Create a work database by executing the following file (the shell script for creating a work database) generated by the ifimks command:

```
./ifi_createrdb00.sh
```

This completes the setup for the Information Integrator Server.

Start the Information Integrator Server to check that it operates normally. Refer to "[8.1 Starting the Servers](#)" for details.



See

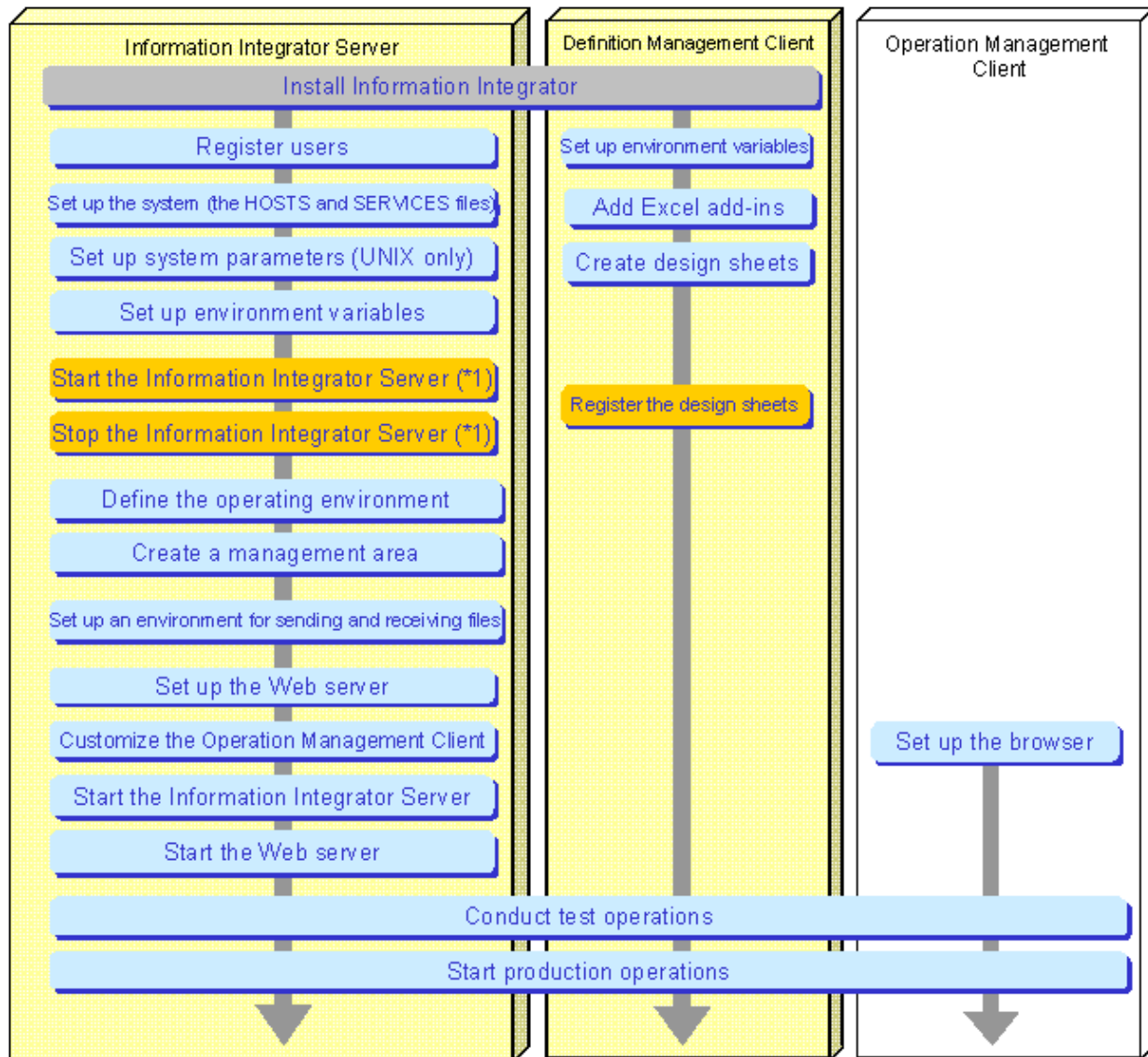
.....  
If the shell script terminates abnormally, follow the procedure described in "[A.2 Correcting Errors with Creating a Management Area](#)" and then re-execute the shell script.  
.....

# Chapter 5 Registering the Definitions of Process Flow

This chapter explains the procedure for registering definitions of Process Flow that have been created.

Use the following procedure to register definitions of Process Flow.

Figure 5.1 Procedure for registering the definitions of Process Flow



: Explained within this manual : Explained within this chapter : Refer to the Software Release Note

\*1: Perform these steps when starting and stopping the Information Integrator Server in order to register design sheets before creating the Information Integrator environment.

## Point

- When the Information Integrator Server and the III Agent are to be used in combination

The design information for Process Flows is created and managed in definitions on the Information Integrator Server. The definitions used in the III Agent are created on the Information Integrator Server and then delivered to the III Agent. Therefore, the registration of the definitions of Process Flow explained in this chapter is unnecessary in the III Agent server.

- Modifying and re-registering definitions of Process Flow that have already been registered

To re-register a design sheet by modifying any of the definitions included in a design sheet that has already been registered, first use the Definition Management Client to obtain the definitions to be modified, and modify the design sheet and then register it again.

---

## 5.1 Registering the Definitions of Process Flow

---

Register the definitions of Process Flow that have been created. This section explains the procedure for registering the definitions of Process Flow.

### 5.1.1 Starting the Information Integrator Server

---

Start the server function on the Information Integrator Server that is required to register definitions of Process Flow. Even before the Information Integrator Server is set up, you can start the server function that is required to register definitions of Process Flow. Refer to "8.1 Starting the Servers" for details.

### 5.1.2 Registering the definitions of Process Flow

---

Refer to *III Studio Help* for Registering the definitions of Process Flow.

### 5.1.3 Stopping the Information Integrator Server

---

Stop the Information Integrator Server.

Refer to the *Command Reference* for details on the ifistp command.

- For Windows

```
ifistp
```

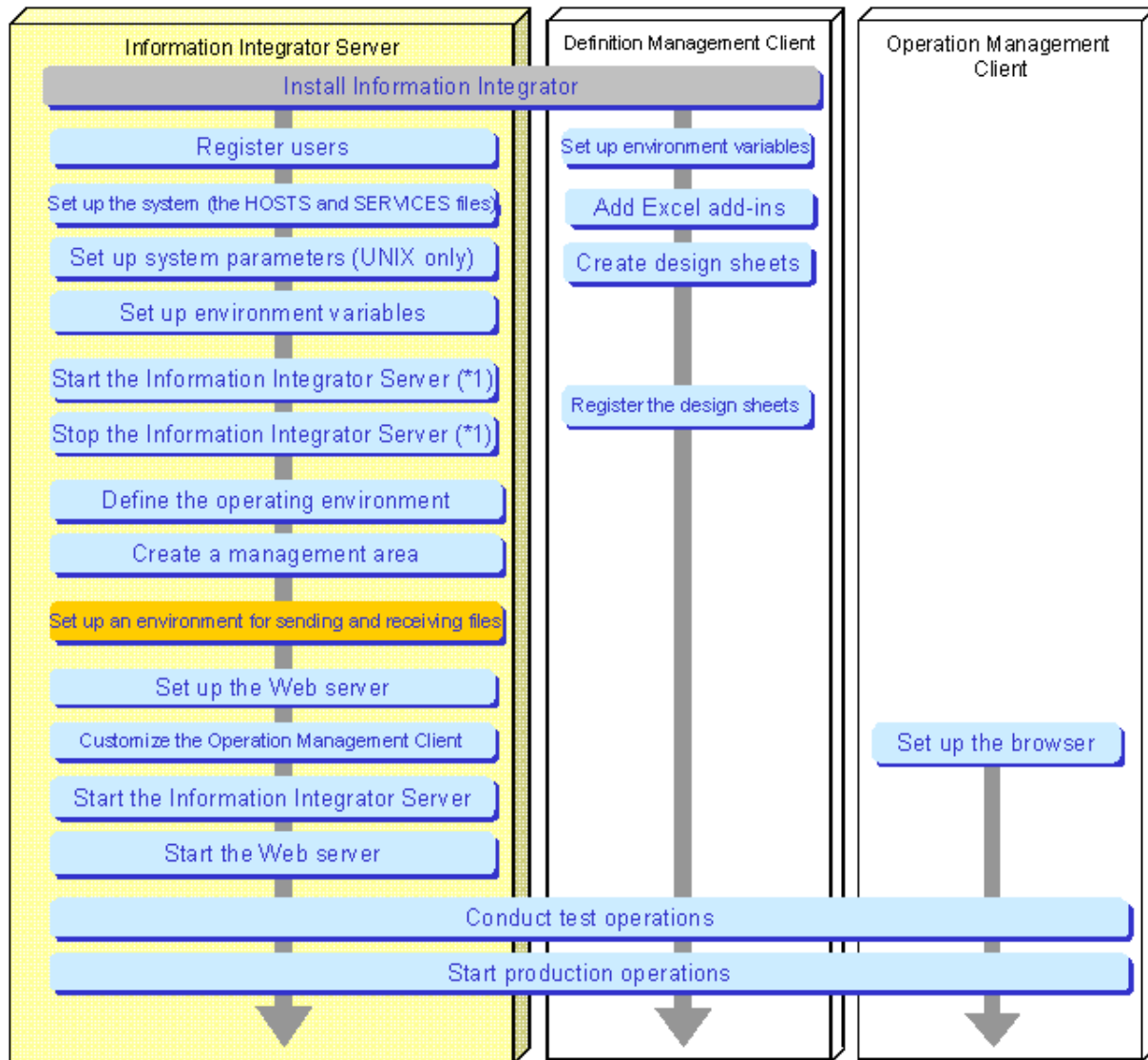
- For UNIX

```
/opt/FJSVifisv/bin/ifistp
```

# Chapter 6 Setting Up an Environment for Sending and Receiving Files

This chapter explains how to set up an environment for sending and receiving files when Information Integrator is connected to a destination system.

Figure 6.1 Procedure for setting up an environment for sending and receiving files



Blue box: Explained within this manual   Yellow box: Explained within this chapter   Grey box: Refer to the Software Release Note

\*1: Perform these steps when starting and stopping the Information Integrator Server in order to register design sheets before creating the Information Integrator environment.

## 6.1 When the Communication protocol(s) is TCP/IP or HISPD

This section explains how to set up an environment when TCP/IP or HISPD is used as the communication protocol(s).

## 6.1.1 Environment Setup when the Communication Protocol(s) is TCP/IP or HISPD

If TCP/IP or HISPD is used as the communication protocol(s), there is no need to install a Network product. For the TCP/IP environment settings (When the communication protocol is HISPD, the environmental setting of UDP/IP is included.), set up in the SERVICES (services) file the information required for the Information Integrator Server to run, and specify the IP address of the server in the HOSTS (hosts) file.

To use the Information Integrator Server, the port number of the Information Integrator Server must be entered in the SERVICES file in advance. Similarly, the names of the local server and the connection destination server for sending and receiving files (for TCP/IP connections) must be entered in the HOSTS file.

Customize the environment by referring to the locations and entry examples for the HOSTS file and the SERVICES file, shown below.

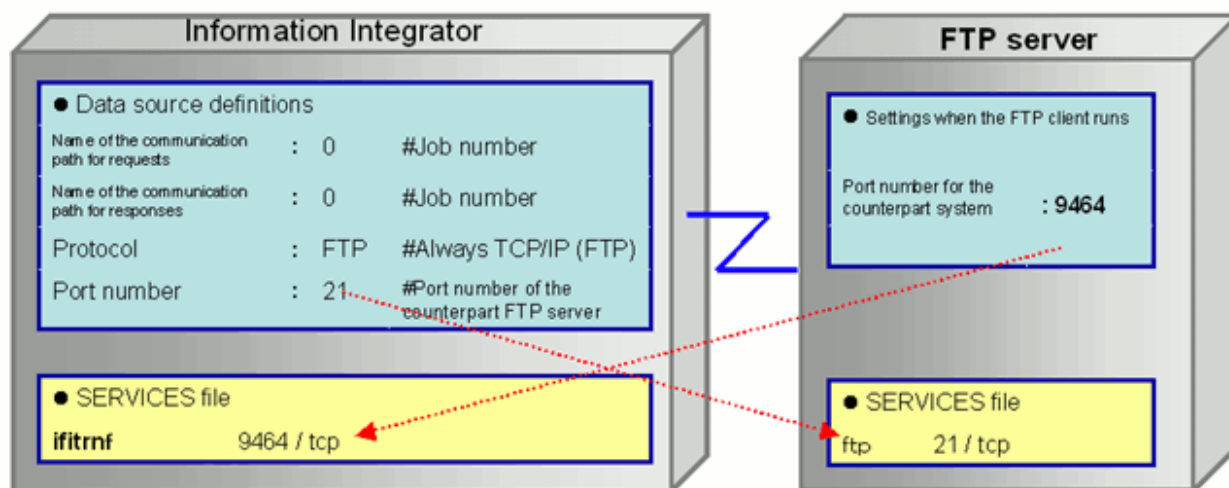


Refer to "3.2 Setting Up the System" for definition examples of the HOSTS file and the SERVICES file for the Information Integrator Server.

## 6.1.2 Notes on Using FTP as the Communication Protocol(s)

If the protocol for communicating with the destination system is FTP, the following values must be specified in the data source definitions.

Figure 6.2 When the communication protocol(s) is FTP



## 6.1.3 Notes on Using HTTP or HTTPS as the Communication Protocol(s)

If the protocol for communicating with the destination system is HTTP or HTTPS, the following values must be specified in the communication path definitions. The following example uses DNS to resolve names.

When HTTPS is used, it is necessary to set the SSL environment separately.

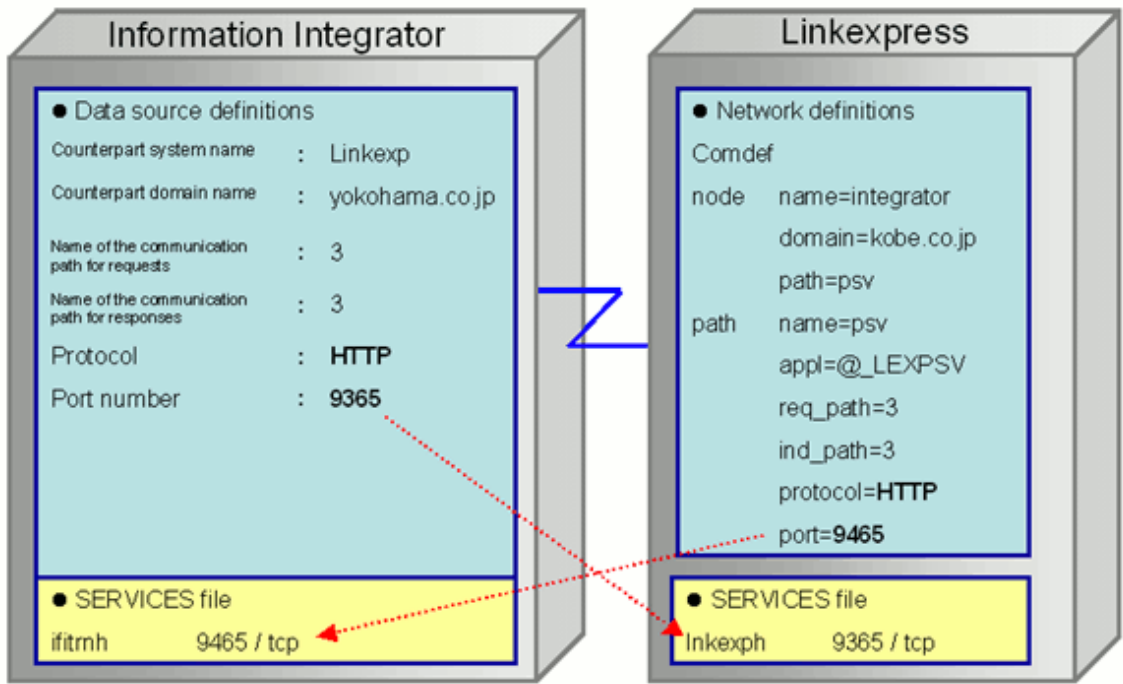
- [Connections between Information Integrator and Linkexpress](#)
- [Connections where the startup system is Information Integrator and the responder \(system\) is an HTTP server](#)

### Connections between Information Integrator and Linkexpress

For the responder (system), specify the port number for HTTP protocol communications in the SERVICES file.

For the startup system, specify the port number for HTTP protocol communications for the responder (system).

Figure 6.3 Connections between Information Integrator and Linkexpress

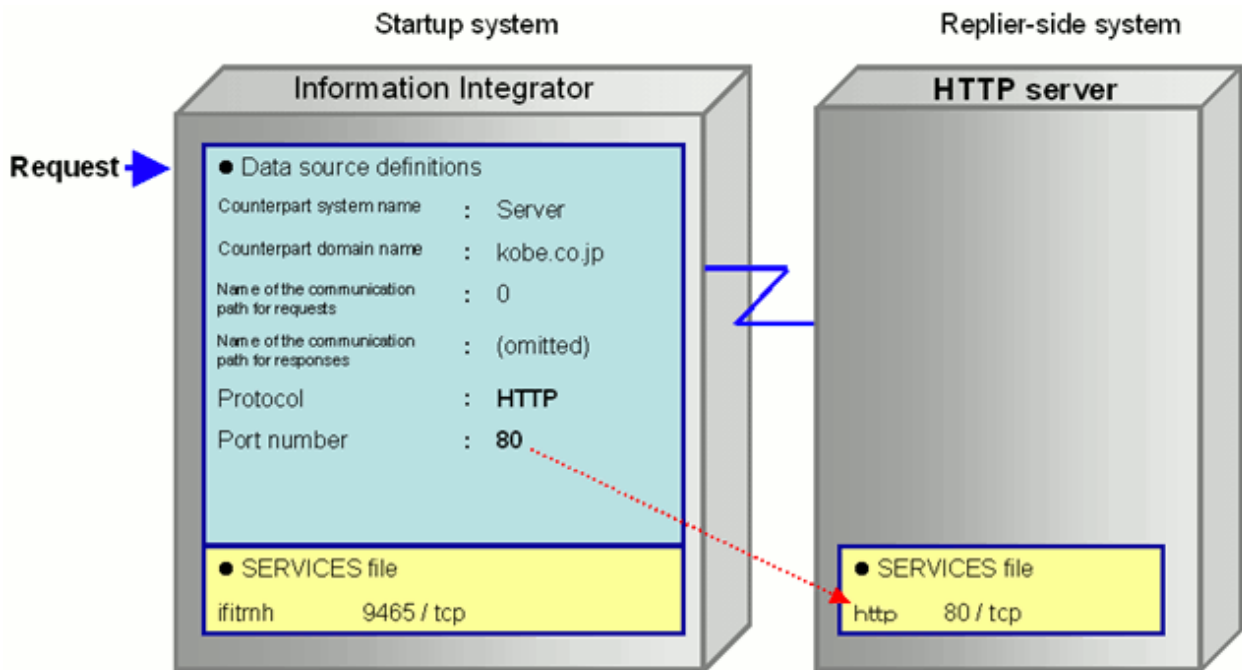


- The recommended port number specified by the ifitrnh service that Information Integrator uses for the HTTP protocol is 9465. Similarly, the recommended port number specified for the lnkexph service that Linkexpress uses for the protocol is 9365.
- If port numbers are replaced using the reverse proxy feature of the proxy server, specify the port number of the proxy server in the definitions for the startup system. Normally, this number is 80.

**Connections where the startup system is Information Integrator and the responder (system) is an HTTP server**

For Information Integrator on the startup system, specify the port number of the HTTP server for the port number in the data source definitions. Normally, this number is 80.

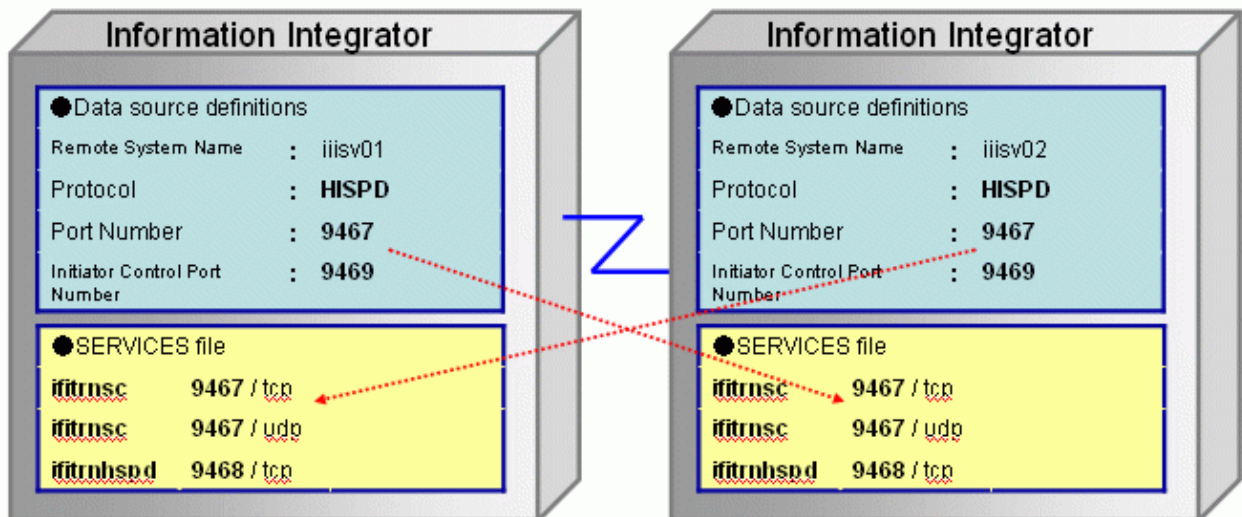
Figure 6.4 Connections where the startup system is Information Integrator and the responder (system) is an HTTP server



### 6.1.4 Notes on Using HISPD as the Communication Protocol(s)

If the protocol for communicating with the destination system is HISPD, the following values must be specified in the data source definitions.

Figure 6.5 When the communication protocol(s) is HISPD



- The recommended port number specified by the service that Information Integrator uses for the HISPD protocol is the following.
  - ifitrnsc: 9467
  - ifitrnhspd: 9468
- The value of ifitrnsc of the remote system is specified for "Port Number" of the data source definition. Moreover, a value unique in each remote system is specified for "Initiator Control Port Number".



## 6.2 When the Communication Protocol(s) is HULFT

This section explains how to set up an environment when HULFT is used as the communication protocol(s).

### 6.2.1 Support Range

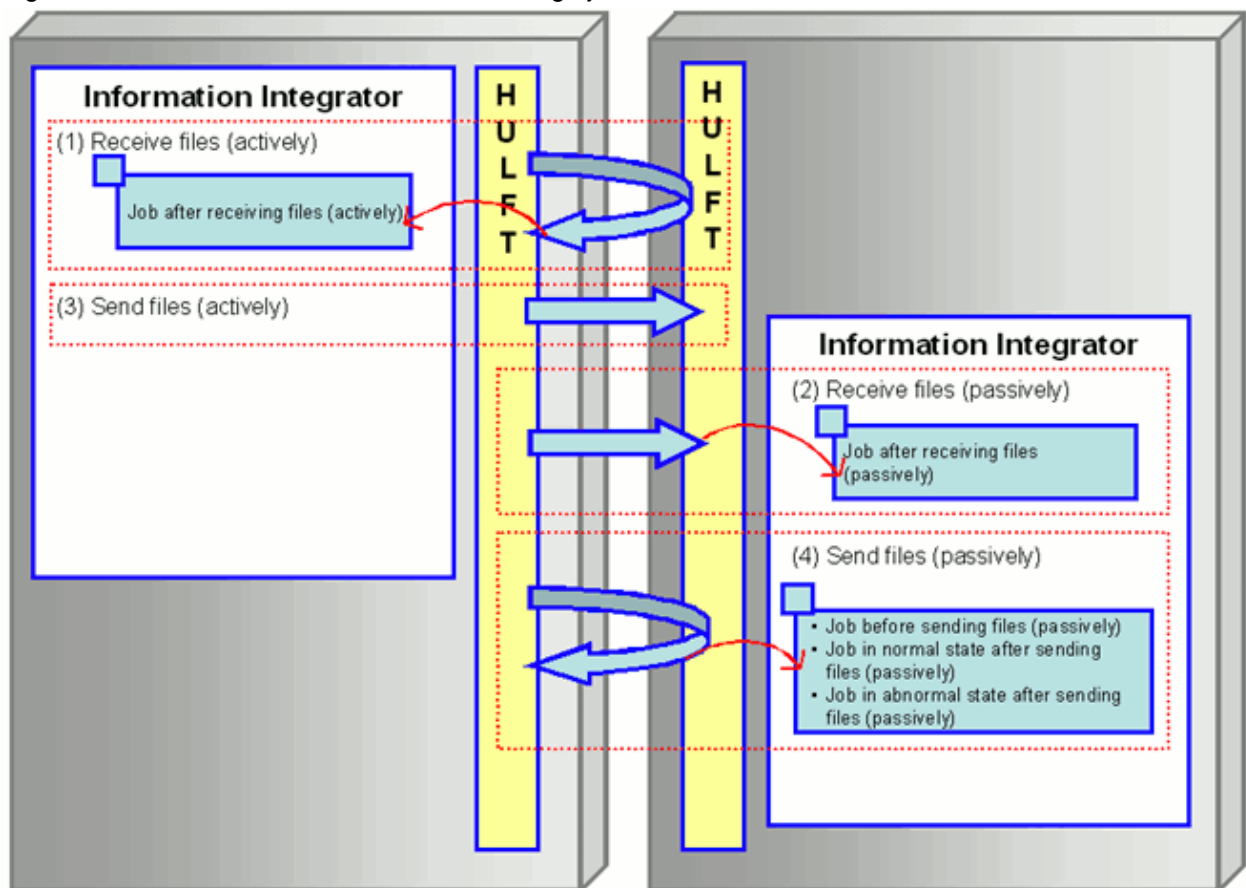
To use the HULFT linkage feature, the following products must be installed beforehand.

- For Windows or Solaris  
HULFT5 or higher
- For Linux  
HULFT6 or higher

### 6.2.2 Registering the HULFT Linkage Job Module

To use HULFT as a data collection/delivery product, a HULFT linkage job is required. Register a HULFT linkage job with HULFT according to the linkage method. The following diagram shows the correspondence between linkage methods and HULFT linkage jobs.

Figure 6.6 Functional overview of HULFT linkage jobs



Note: The numbers in the diagram correspond to the numbers shown in the table below ("Linkage methods and settings for HULFT linkage job startup information").

#### Storage location for the HULFT linkage job

Use the script stored at the following location.

- For Windows

<Information Integrator installation directory>\sample\hulftjob

- For Solaris or Linux

/opt/FJSVifisv/sample/hulftjob

## How to register HULFT linkage jobs

This section explains how to register HULFT linkage jobs. Whether a HULFT linkage job is used and the type of HULFT linkage job used vary depending on the linkage method.

The following table shows the linkage methods and the settings for HULFT linkage job startup information.

Table 6.1 Linkage methods and settings for HULFT linkage job startup information

| Item No. | Linkage method |   | Settings in the HULFT management window              |   |  |
|----------|----------------|---|--|---|--|
|          | Transfer type  | Operation type (specified by III Studio)              | HULFT linkage job set by the job startup information | Script file name (*1)   | Job ID settings for the reception/transmission management information  |
| (1)      | Receiving      | Startup   | Job after receiving files (actively)                 | req_rcvfile.XXX   | Register the job as a normal job in the reception management information. Specify "normal job completion" for the reception completion notification in the reception management information. |
| (2)      |                | Reply   | Job after receiving files (passively)                | ind_rcvfile.XXX   | Register the job as a normal job in the reception management information. Specify "normal job completion" for the reception completion notification in the reception management information. |
| (3)      | Sending        | Startup   | No registration is required.                         | -   | No registration is required.   |
| (4)      |                | Reply   | Job before sending files (passively)                 | ind_sndfile_before.XXX  | Register the job as a pre-transmission job in the transmission management information  |
|          |                |   | Job in normal state after sending files (passively)  | ind_sndfile_afterN.XXX  | Register the job as a normal job in the transmission management information.   |
|          |                | Job in abnormal state after sending files (passively) | ind_sndfile_afterE.XXX                               | Register the job as an abnormal job in the transmission management information. |  |

\*1: The "XXX" extension represents "bat" for Windows and "sh" for UNIX.

For those linkage methods that require that a HULFT linkage job be registered, register the job using the following procedure.

1. Use the job startup information in the HULFT management window to register the absolute path to the script for the HULFT linkage job.

2. Use the reception/transmission management information in the HULFT management window to specify the HULFT file ID as the job ID specified in the job startup information. Note that the HULFT file ID corresponds to the path ID to be used (specified by "path ID" in the data source definitions).

### Note

If the reception/transmission type is "receiving", use the reception management information in the HULFT management window to specify "normal job completion" for the reception completion notification for the target file ID.

## 6.2.3 User Permissions for Using HULFT

---

To use an instance of HULFT that has been started using permissions other than the Information Integrator privileged user for the data collection/delivery product, the permissions for HULFT and the permissions for the Information Integrator privileged user must be made the same.

For file transfer that uses HULFT, the parent directory for the reception file that is registered in the reception management information for HULFT must be set up so that the permissions for the Information Integrator privileged user allow that user to read from and write to that directory.

## 6.2.4 Notes on Setup

---

This section presents notes on setup when HULFT is used as the communication protocol(s).

- To use the HULFT linkage transmission function, the transmission command dynamic parameter specification ("dynparam") must be set to "1" (enabled) in the system operating environment file for HULFT ("hulenv"). Note also that dynamic parameter specification can also be performed from the management window with HULFT6.

The system operating environment file for HULFT is the following file. Refer to the HULFT manual for details on how to set up the file.

- For Windows: hulenv
- For UNIX: hulenv.conf
- As the execution environment for sending and receiving files, specify a directory under the HULFT installation directory for the "PATH" environment variable.
  - For Windows: binnt
  - For UNIX: bin
- For the utility response timeout in the system operating environment file for HULFT, specify a value that is longer than the time required for HULFT to send and receive files.
- Specify "K: Save" for the handling of sent files in the HULFT transmission management information.
- To execute concurrent (active) file transmissions using the same file ID, specify the following values for the reception management information for the system that (passively) sends the files.
  - Specify "Yes" for generation management
  - Specify "New Create" for the registration mode
- If the cancel command (ififcnc1) is requested while multiple transmissions are executing concurrently with the same file ID, all of the services that are executing will be canceled.
- To use the transmission/reception function for HULFT linkage, the file name must be registered in the HULFT management window (the transmission/reception management information) by specifying the absolute path to the file.
- Specify "normal job completion" for the reception completion notification in the reception management information for HULFT.
- If (active) file transmission is executed with a local file for the DataBox, an error will occur if an existing file is specified for the transmission file name in the HULFT transmission management information. Specify a new file with a valid file path.

- For Linux, HULFT is supported if the operating system character encoding for Information Integrator is UTF-8 and the character encoding for the HULFT management window is either EUC or SJIS. When transmission or reception linked to Information Integrator is performed from the HULFT management window, the messages output by Information Integrator may be garbled, but this does not affect operations. Refer to the messages output to the system log for the processing results of Information Integrator.

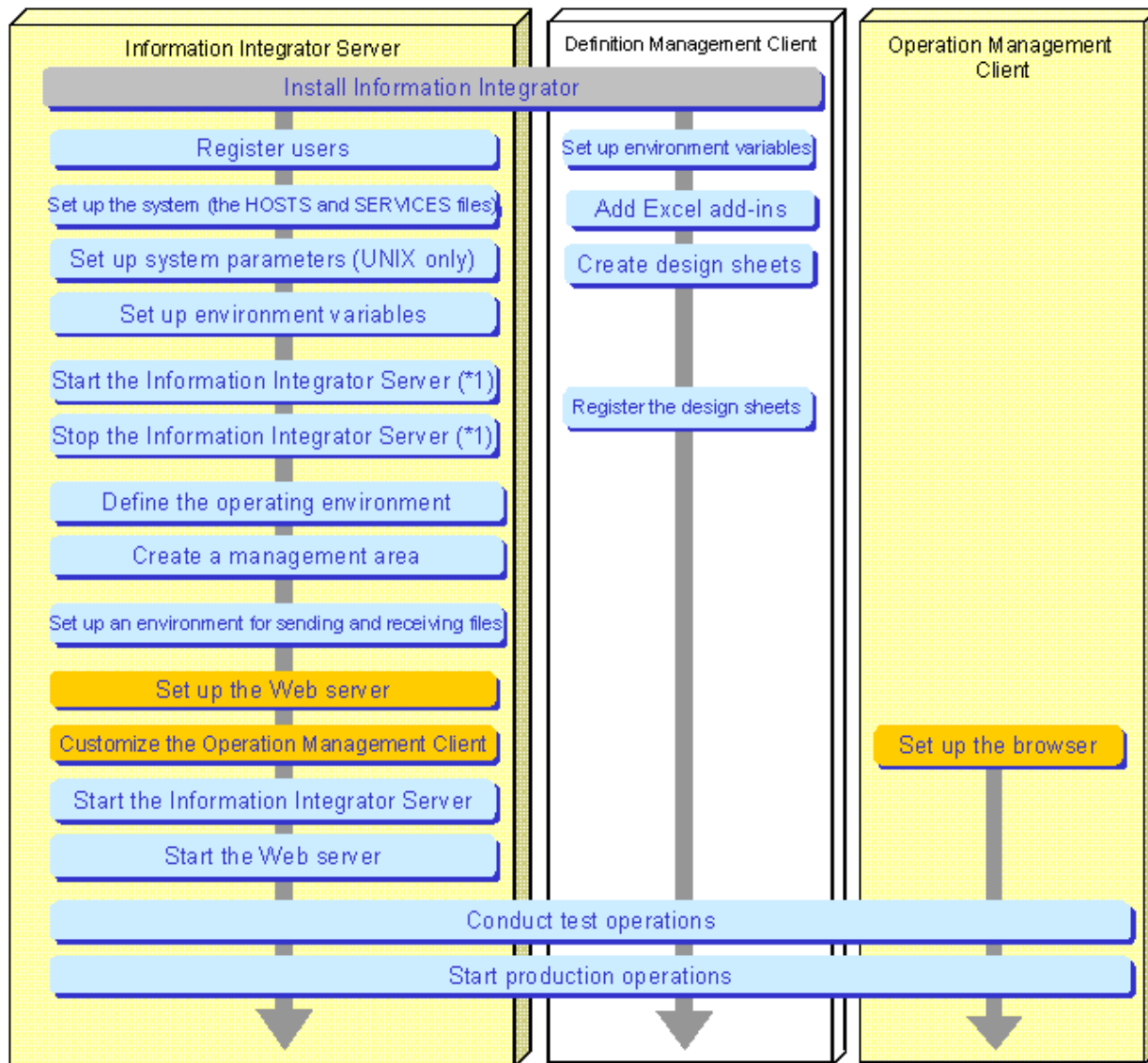
-

# Chapter 7 Setting Up the Operation Management Environment

This chapter explains how to set up the Operation Management Web Server and customize the Operation Management Client, as shown below.

Use the following procedure to set up the operation management environment.

Figure 7.1 Procedure for setting up the operation management environment



  : Explained within this manual  
   : Explained within this chapter  
   : Refer to the Software Release Note  
 \*1: Perform these steps when starting and stopping the Information Integrator Server in order to register design sheets before creating the Information Integrator environment.

## 7.1 Notes on Security

This section presents notes on using the Operation Management Client in systems that emphasize security.

## 7.1.1 Placing the Web Server

---

This section explains how to place and operate servers when the Operation Management Client is used.

- Place the Information Integrator Server and the Web server on the intranet, and specify settings for the connection with the internet zone so that unnecessary protocols are not allowed to pass through. (Allow only the HTTP protocol to pass through, for example.)
- Install a firewall and proxy server to separate the DMZ and the intranet zone from the Internet zone. Also, implement access control based on addresses, port numbers, communications protocols, and so on. It is recommended that a Reverse Proxy feature be used to conceal the private addresses within the intranet (the real names of Web servers).
- Apply security patches to the Web servers at regular intervals.

## 7.1.2 Setting Up the Web Server

---

This section explains operations regarding logging in to the Web server and setting up access rights.

- It is recommended that Web server authentication be set up to prohibit anonymous access for logging in to the Web server from a Web browser.
- It is also recommended that only the following permissions be granted for the virtual directory.
  - Log access permissions
  - Read permissions
  - Execution access permissions

The virtual directories for each operating system are as follows:

- For Windows: *InformationIntegrator.ServerInstallDirectory*/guibin/gui-root
  - For UNIX: /opt/FJSVifisv/guibin/gui-root
- It is recommended that "80" be used as the port number for the Web server in order to allow port monitoring at the network level.

## 7.1.3 Managing the Password

---

The password for the execution user that is specified when logging in to the Operation Management Client is authenticated using the basic authentication method for the operating system. It is recommended that a password that is difficult to guess be set up by combining at least eight alphanumeric characters (A to Z, a to z, 0 to 9) and symbols.

It is also recommended that the password be changed periodically according to the security policy for the system.

## 7.1.4 Measures for Preventing Data Leaks and Masquerading

---

Data leaks and masquerading can be prevented by encrypting communications between browsers and the Web server and by using electronic signatures. If necessary, use an SSL connection between browsers and the Web server.

## 7.1.5 DoS Countermeasures

---

It is recommended that a packet filtering feature be used with the Web server or firewall in order to prevent system abnormalities resulting from denial of service (DoS) attacks from over the network.

## 7.1.6 Auditing and Monitoring

---

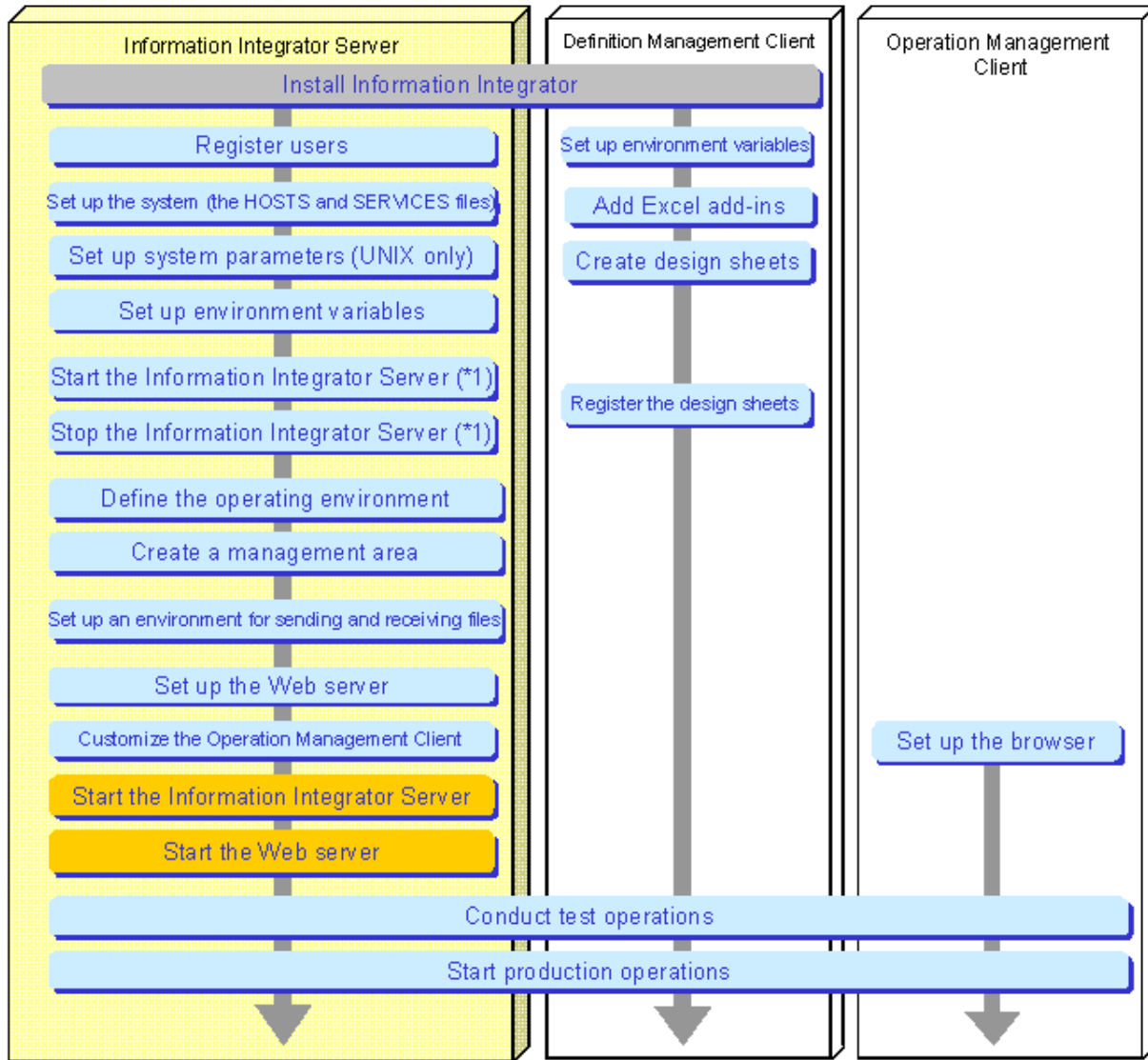
It is recommended that access logs or system logs for the Web server be collected to enable early detection of any security infringements (such as system information leaks, data falsification or program damage).

# Chapter 8 Starting and Stopping the System

This chapter explains how to start and stop the Information Integrator Server.

Use the following procedure to start the Information Integrator Server:

Figure 8.1 Setup procedure for starting the Information Integrator Server



■ : Explained within this manual   ■ : Explained within this chapter   ■ : Refer to the Software Release Note

\*1: Perform these steps when starting and stopping the Information Integrator Server in order to register design sheets before creating the Information Integrator environment.

## 8.1 Starting the Servers

Once the setup is complete, start the servers that make up Information Integrator in order.

### Start the Information Integrator Server

Use the following command to start the Information Integrator Server:

- Starting the server for the first time, or starting the server by initializing the processing status in which the server stopped last time

- For Windows

```
ifistr -m c
```

- For UNIX

```
/opt/FJSVifisv/bin/ifistr -m c
```

Use this command to check operations when the environment for the Information Integrator Server has been set up or after simple setup.

- Starting the server with the same processing status as the last time the server was stopped

- For Windows

```
ifistr
```

- For UNIX

```
/opt/FJSVifisv/bin/ifistr
```

### Note

- Symfoware Server must be running before the Information Integrator Server is started. If the setup has been performed in accordance with this manual, [4.2.4.3 Starting Symfoware Server](#) will have been completed during the procedure for creating the management area, and so there is no need to start Symfoware Server in this case.
- To execute commands and batch files in Windows Server 2008, first grant the user admin rights. Select **Run as administrator** when opening the command prompt. Refer to the Windows **Help and Support Center** for information on how to run commands as an administrator.

### See

Refer to the *Command Reference* for information on the ifistr command.

### Point

Refer to "[8.3 Automatically Starting and Stopping the Information Integrator Server \(UNIX\)](#)" for UNIX when the Information Integrator Server is to be automatically started and stopped when the system is started or stopped.

## Start the Web server

Start the Web server by referring to the appropriate Web server manuals being used (such as IIS or Interstage Application Server).

## 8.2 Stopping the Servers

---

Once the operation has finished, stop the servers that make up Information Integrator in order.

### Stop the Web server

Stop the Web server by referring to the appropriate Web server manuals being used (such as IIS or Interstage Application Server).



## Stop the Information Integrator Server

Use the following command to stop the Information Integrator Server:

- For Windows

```
ifistp
```

- For UNIX

```
/opt/FJSVifisv/bin/ifistp
```



See

Refer to the *Command Reference* for information on the ifistp command.



Point

- Stopping Symfoware

If necessary, stop Symfoware Server after the Information Integrator Server has stopped.

Use the following command to stop Symfoware Server:

- For Windows

```
rdbstop
```

- For Solaris

```
/opt/FSUNrdb2b/bin/rdbstop
```

- For Linux

```
/opt/FJSVrdb2b/bin/rdbstop
```

- Automatic stopping of the Information Integrator Server

Refer to "[8.3 Automatically Starting and Stopping the Information Integrator Server \(UNIX\)](#)" for UNIX when the Information Integrator Server is to be automatically started and stopped when the system is started or stopped.

## 8.3 Automatically Starting and Stopping the Information Integrator Server (UNIX)

The following describes the procedure when the Information Integrator Server is to be automatically started and stopped when the system is started or stopped.

This procedure must be executed as the superuser.

### 1. Customizing scripts

Customize the scripts based on the samples and place them in the correct location.

- Sample script storage location

```
/opt/FJSVifisv/sample/rcscript_FJSVifisv
```

- Deployment directory

```
/opt/FJSVifisv/lib/rcscript_FJSVifisv
```

Deployment example:

```
cp -p /opt/FJSVifisv/sample/rcscript_FJSVifisv /opt/FJSVifisv/lib
```

- Content to customize
  - When using Solaris 10, delete the "#" at the beginning of "/usr/bin/newtask -p system -c \$\$"

**Before:**

```
##----- newtask add -----  
  
#/usr/bin/newtask -p system -c $$
```

**After:**

```
##----- newtask add -----  
  
/usr/bin/newtask -p system -c $$
```

- Customizing environment variables

Refer to "3.2.4 Setting Up Environment Variables" for information on environment variables. Also configure the following environment variables to suit the mode of the user:

| Environment variable name | Settings content   |
|---------------------------|--|
| IFI_ID                    | Use the default "00" as is.  |
| HULPATH                   | Specify the HULFT environment settings file storage directory. Refer to "6.2.4 Notes on Setup" for information on the HULFT operating environment. |
| HULEXEP                   | Specify the HULFT execution module storage directory. Refer to "6.2.4 Notes on Setup" for information on the HULFT operating environment.          |

- To stop and start Symfoware, delete the "#" in the following range of the script:

```
##----- Symfoware ---from---  
##----- Symfoware ---to---
```

- Delete the "#" in the following range when the Information Integrator Server is to be automatically started and stopped when the system is started or stopped:

```
##----- Interstage Information Integrator ---from---  
##----- Interstage Information Integrator ---to---
```



**Customizing the mode of starting and stopping**

The initial state of the script is that the Information Integrator Server maintains its state between stopping and starting again. Also, when it is stopped and the system is stopped, Process Flow and Process Function requests are aborted and forcibly stopped.

Edit the indicated lines for starting and stopping as necessary.

**Starting**

To maintain the previous processing status when next started (initial setting)

```
/opt/$PRODUCT_KIND/bin/ifistr -m w 1>>$DEBUG 2>&1
```

To initialize the initial or previous processing status when next started

```
/opt/$PRODUCT_KIND/bin/ifistr -m c 1>>$DEBUG 2>&1
```

### Stopping

When there are Process Flow or Process Function requests being executed, they are aborted and the stop is forced (initial setting)

```
/opt/$PRODUCT_KIND/bin/ifistp -m f 1>>$DEBUG 2>&1
```

When there are Process Flow or Process Function requests being executed, they are first completed, and then stop is processed

```
/opt/$PRODUCT_KIND/bin/ifistp -m n 1>>$DEBUG 2>&1
```



## 2. Creating symbolic links

Create symbolic links in the correct directory. Symbolic link names are fixed.

- For Solaris

|              | Link source customization file        | Symbolic link name  |
|--------------|---------------------------------------|---------------------|
| For starting | /opt/FJSVifisv/lib/rcscript_FJSVifisv | /etc/rc2.d/Sa9ifisv |
| For stopping | /opt/FJSVifisv/lib/rcscript_FJSVifisv | /etc/rc0.d/K00ifisv |

Example:

```
ln -s /opt/FJSVifisv/lib/rcscript_FJSVifisv /etc/rc2.d/Sa9ifisv  
ln -s /opt/FJSVifisv/lib/rcscript_FJSVifisv /etc/rc0.d/K00ifisv
```

- For Linux

| Link source customization file        | Symbolic link name |
|---------------------------------------|--------------------|
| /opt/FJSVifisv/lib/rcscript_FJSVifisv | /etc/init.d/ifisv  |

Example:

```
ln -s /opt/FJSVifisv/lib/rcscript_FJSVifisv /etc/init.d/ifisv
```

## 3. Registering scripts (for Linux only)

Register the script using the chkconfig command provided by the OS.

- Example of script registration

```
/sbin/chkconfig --add ifisv
```

# Chapter 9 Changing the Setup Information

This chapter explains how to change the information defined during setup after Information Integrator has started operating.

## 9.1 Changing the Information Integrator Server Environment

This section explains how to change the Information Integrator Server environment in the following ways.

- Adding, changing and deleting users
- Changing the operating environment
- Changing the management area

### 9.1.1 Adding, Changing and Deleting Users

This section explains how to add, change and delete the following users that use Information Integrator.

- Information Integrator privilege users that have already been registered
- Information Integrator operation users (the users that create, register or look up definitions)
- Information Integrator operation users (the users that operate Process Flow)

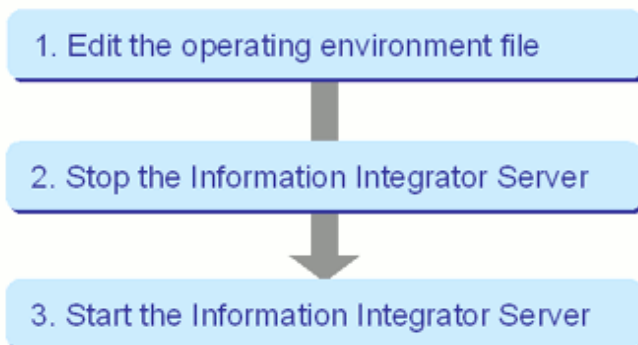
#### Privilege users and operation users (the users that create, register or look up definitions)

Edit the following keys in the operating environment file.

- admuser
- defuser
- defreaduser

Use the following procedure to add, change or delete users.

Figure 9.1 Procedure for adding, changing and deleting users



 : Operations with the Information Integrator Server

Refer to "[4.1.1 Editing the Operating Environment File](#)" for details on the operating environment file.

Refer to "[Chapter 8 Starting and Stopping the System](#)" for details on how to start and stop the Information Integrator Server.



## Note

Before stopping or starting the Information Integrator Server, use the Operation Management Client to check the status of processes so as to perform these operations when the impact on business activities will be minimal.

### Operation users (the users that operate Process Flow)

To operate Information Integrator by determining which users perform operations for each process group (by enabling "procgrp\_userctl" in the operating environment file), the users that perform operations for each process group can be added, changed or deleted using the ifuserctl command (the user privilege manipulation command). Refer to the *Command Reference* for details.

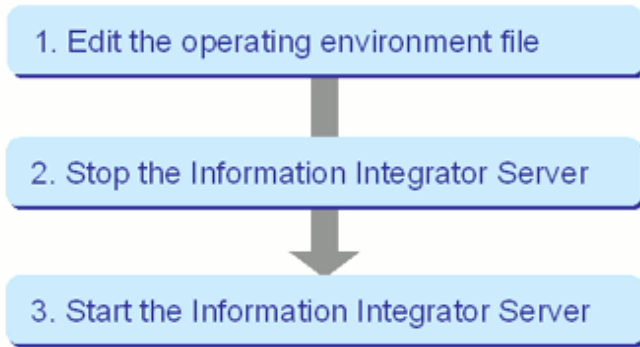
Refer to "[4.1.1 Editing the Operating Environment File](#)" for details on the operating environment file.

## 9.1.2 Changing the Operating Environment

Sometimes there is a need to change the operating environment for the server after operations commence, such as changing the execution concurrency of processes, or the size of start stop logs, definition operations logs or Process Flow execution logs. In such cases, change the content of the definitions in the operating environment file.

Use the following procedure to change the operating environment.

Figure 9.2 Procedure for changing the operating environment



: Operations with the Information Integrator Server

Refer to "[4.1.1 Editing the Operating Environment File](#)" for details on the operating environment file.

Refer to "[Chapter 8 Starting and Stopping the System](#)" for details on how to start and stop the Information Integrator Server.



## Note

Before stopping or starting the Information Integrator Server, use the Operation Management Client to check the status of processes so as to perform these operations when the impact on business activities will be minimal.

## 9.2 Changing the Destination System

Once operations have commenced, it will be necessary to change the settings for the destination system if connection destination systems (collection source (system) and delivery destination (system)) are changed or added, or if the communication protocol(s) is changed.

Refer to "[Chapter 6 Setting Up an Environment for Sending and Receiving Files](#)" for details on the setting items for destination systems and how to specify these settings.

# Chapter 10 Setup for Cluster Systems

Information Integrator can be operated on cluster systems. This chapter explains how to set up an environment required for Information Integrator to run on cluster systems and how to operate Information Integrator on cluster systems.

## 10.1 Overview of Cluster Systems

This section explains the cluster systems where Information Integrator is running.

### Supported cluster systems

Information Integrator runs on the following cluster systems:

- For Windows
  - Microsoft Cluster Service (MSCS)
  - Failover Cluster
- For UNIX
  - PRIMECLUSTER (active/standby node configurations)

### Support range

Information Integrator supports the following operation configurations as cluster standby operations:

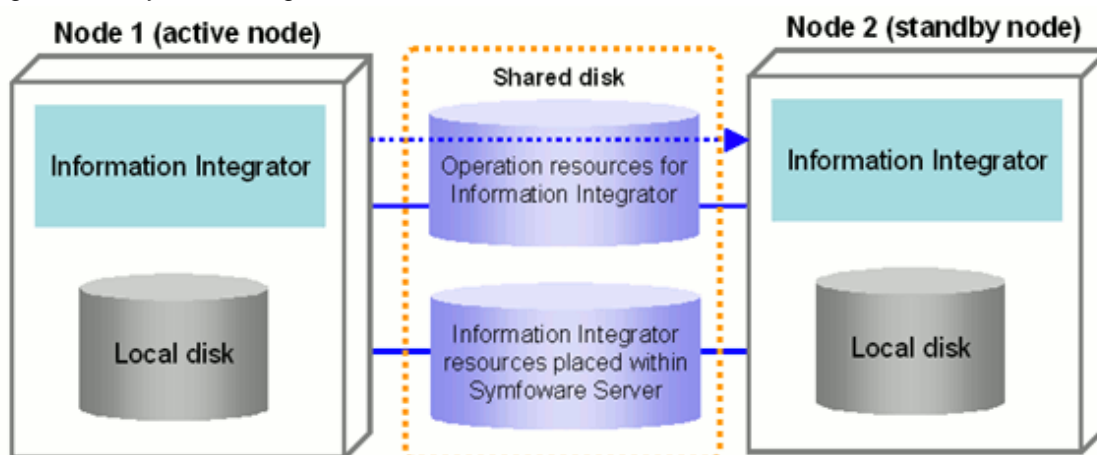
- 1:1 active/standby

## 10.2 Cluster System Configurations

The figure below shows the system configuration where Information Integrator is installed on a cluster system.

Note that Failover Cluster and MSCS do not have the concept of "active node" and "standby node", but hereafter the node where the resource group that contains the generic service resources for Information Integrator is active is referred to as "the active node", while the node where that resource group is inactive is referred to as the "standby node".

Figure 10.1 System configuration for Failover Cluster



### Shared disks

Use the shared disk to place operation resources for Information Integrator and the Information Integrator resources that have been placed within Symfoware Server.

Refer to "[10.3 Disk Allocation for Operation Resources](#)" for information on the operation resources that may need placing on the shared disk.

### Local disks

The local disk is the disk where Information Integrator has been installed.

On the local disk, place only the RDB configuration parameter file for Symfoware Server that is used by Information Integrator.

Refer to "[10.3 Disk Allocation for Operation Resources](#)" for details.

## 10.3 Disk Allocation for Operation Resources

For cluster operations, consider disk allocation for operation resources so that jobs can be inherited from the active node to the standby node.

During installation, specify a shared disk as the location of the folder where Information Integrator operation resources are placed so that the resources that Information Integrator generates automatically will be placed on the shared disk.

The directories for the resources in the following table are specified by the user during setup. Take note of where these resources are placed.

Table 10.1 Disks where each resource is placed

| Setup tasks                            | Resource name   | Details  | Local disk | Shared disk |
|--|---|--|------------|-------------|
| Creating Process Flow definitions      | Process Flow definition<br>(Definitions created using III Studio or a design sheet) | Any directory  | ü          |             |
| Editing the operating environment file | Operating environment file  | - For Windows<br><i>informationIntegratorOperationResourcesInstallDir\etc\ifireg.00.ini</i><br>- For UNIX<br><i>/opt/FJSVifisv/etc/ifireg.00.ini</i> |            | ü (*1)      |
|  | The area for storing data that is managed using generations                         | Specified by the "stk_path" item in the operating environment file   |            | ü           |
|  | The work directory required for processes to execute                                | Specified by the "workdir" item in the operating environment file  |            | ü           |
|  | The directory to be monitored in event monitoring (when a directory is monitored)   | Specify with "monitordir" in the operating environment file  |            | ü           |
| Editing the adapter definition file    | Adapter definition file   | - For Windows<br>Information Integrator operation resources directory (\etc\ifiadpt.ini) specified during installation                               |            | ü (*1)      |

| Setup tasks                       | Resource name  | Details  | Local disk | Shared disk |
|-----------------------------------|--|--|------------|-------------|
|                                   |  | - For UNIX<br><br>/opt/FJSVifisv/etc/ifiadpt.ini   |            |             |
| Editing the tuning parameter file | Tuning parameter file  | Any directory  | ü          |             |
|                                   | Output folder for the script file for creating a management area | Specified by the "SYSTEM.output_dir" item in the tuning parameter file   | ü          |             |
|                                   | Area for creating the resources associated with the database     | - For Windows<br><br>Specified by the "DBMS.dir" item in the tuning parameter file<br><br>- For UNIX<br><br>Specified by the following keys in the tuning parameter file:<br><br>- DBMS.dictionary<br><br>- DBMS.log1<br><br>- PRC.db_space<br><br>- FUNC.db_space<br><br>- STK.db_space |            | ü           |
|                                   |  | - For UNIX<br><br>Specified by the following key in the tuning parameter file:<br><br>- DBMS.user_control  | ü          |             |
| Creating scripts                  | RDB configuration parameter file                                 | A file " <i>RDBSystemName.cfg</i> " generated by the ifimks command  | ü          |             |
|                                   | Batch file for creating a shared buffer                          | A batch file generated by the ifimks command   |            | ü (*1)      |
|                                   | Batch file for deleting a shared buffer                          | A batch file generated by the ifimks command   |            | ü (*1)      |

\*1: For UNIX, these files are automatically placed on the shared disk when the Information Integrator resources are registered.

ü: Indicates the disk where the resource is placed.

## 10.4 Setup Procedure

### 10.4.1 Setup Procedure for Windows

This section explains the procedure for setting up Information Integrator on Failover Cluster.

- New installation (1:1 active/standby)



Equivalent cluster terminology



The explanation in this chapter is mainly focused on Failover Cluster.  
 To use MSCS, replace the following terms with their equivalents as appropriate.

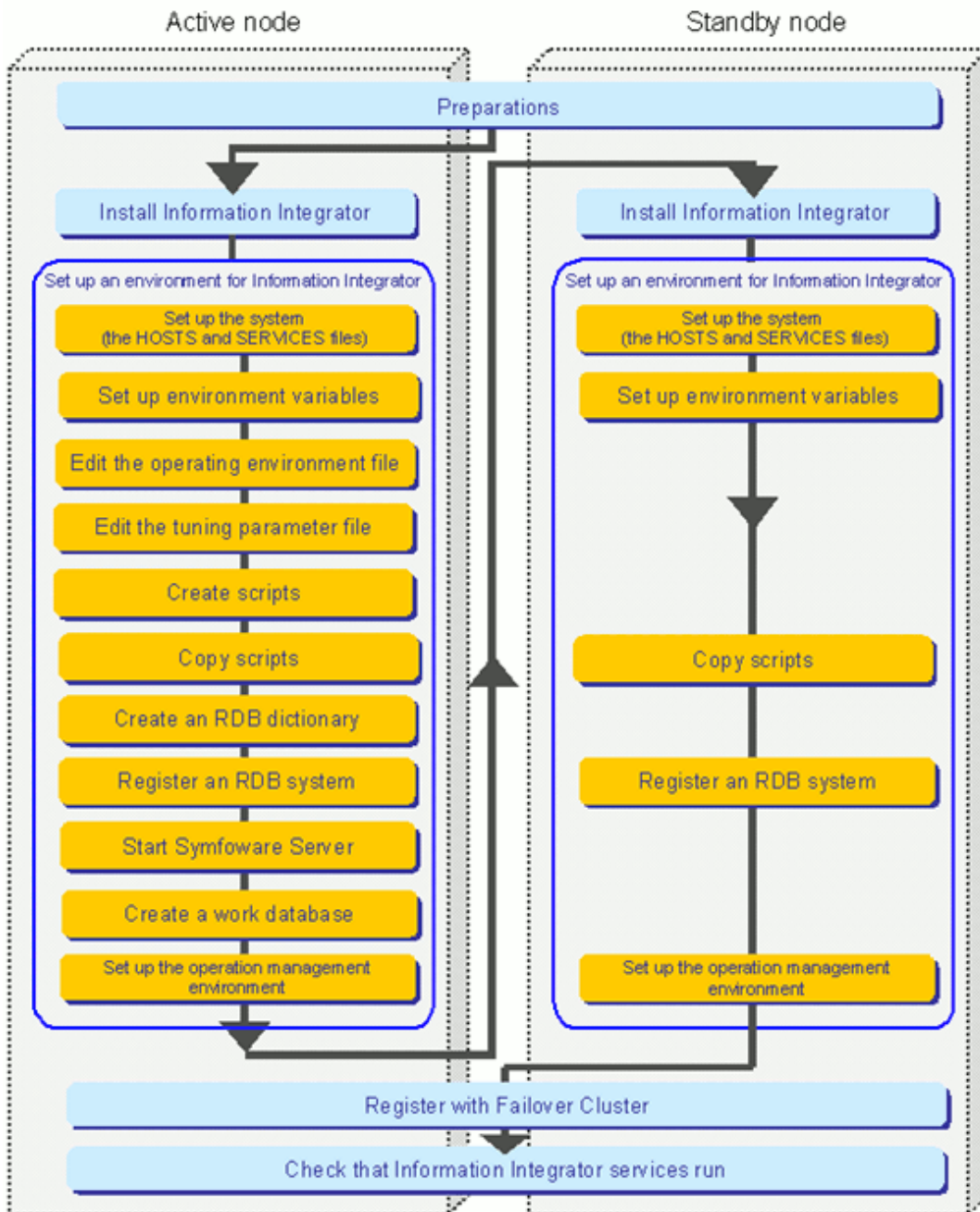
Table 10.2 Correspondence between cluster system names and feature names

| Cluster system name | Feature name                     |
|---------------------|----------------------------------|
| Failover Cluster    | Failover Cluster Management tool |
| MSCS                | Cluster Administrator            |

**New installation (1:1 active/standby)**

For 1:1 active/standby configurations, use the following procedure:

Figure 10.2 Procedure for setting up the cluster environment



: The details of these operations are explained in other chapters.

#### 1. Preparation

Allocate the resources for Information Integrator to run on the cluster system.

#### 2. Install Information Integrator (active node)

Install Information Integrator on the active node.

#### 3. Set up an environment for Information Integrator (active node)

Set up an environment for Information Integrator on the active node.

#### 4. Install Information Integrator (standby node)

Install Information Integrator on the standby node.

#### 5. Set up an environment for Information Integrator (standby node)

Set up an environment for Information Integrator on the standby node.

#### 6. Register with Failover Cluster

Register Information Integrator with Failover Cluster.

#### 7. Check that Information Integrator services run

Check that the Information Integrator services that have been registered with Failover Cluster can run.

### 10.4.1.1 Preparation

Before installing Information Integrator on Failover Cluster, allocate the resources listed below as an operating environment for Failover Cluster. Refer to the Failover Cluster manual for details.

- On the shared disk device, prepare the physical disks for storing Information Integrator operation resources and for storing the resources placed within Symfoware Server that are used by Information Integrator.
- Prepare an IP address for Failover Cluster.

### 10.4.1.2 Installing Information Integrator

The procedure for installing Information Integrator on Failover Cluster is slightly different from the normal installation procedure. Use the following procedure to install Information Integrator on Failover Cluster:

#### - Active node

Install Information Integrator on the disk for the active node. Place the operation resources for Information Integrator on the shared disk.

Note that it is necessary to enable the active node to write to the shared disk beforehand. Use the Failover Cluster Management tool to bring the physical disk resource online.

If the shared disk for the installation directory has not been registered as a resource with Failover Cluster, stop the standby node before performing the installation.

#### - Standby node

Install Information Integrator on the disk for the standby node. Place the operation resources for Information Integrator on the same drive and folder of the same shared disk as that for the active node.

Note that it is necessary to enable the standby node to write to the shared disk beforehand. Use the Failover Cluster Management tool to move the group and modify the physical disk resource online.

If the shared disk for the installation directory has not been registered as a resource with Failover Cluster, stop the active node before performing the installation.

### 10.4.1.3 Setting up an Environment for Information Integrator

Custom environment settings are required to operate Information Integrator with Failover Cluster.

Perform the following procedure:

- [Tasks on the active node](#)

- [Tasks on the standby node](#)

## Tasks on the active node

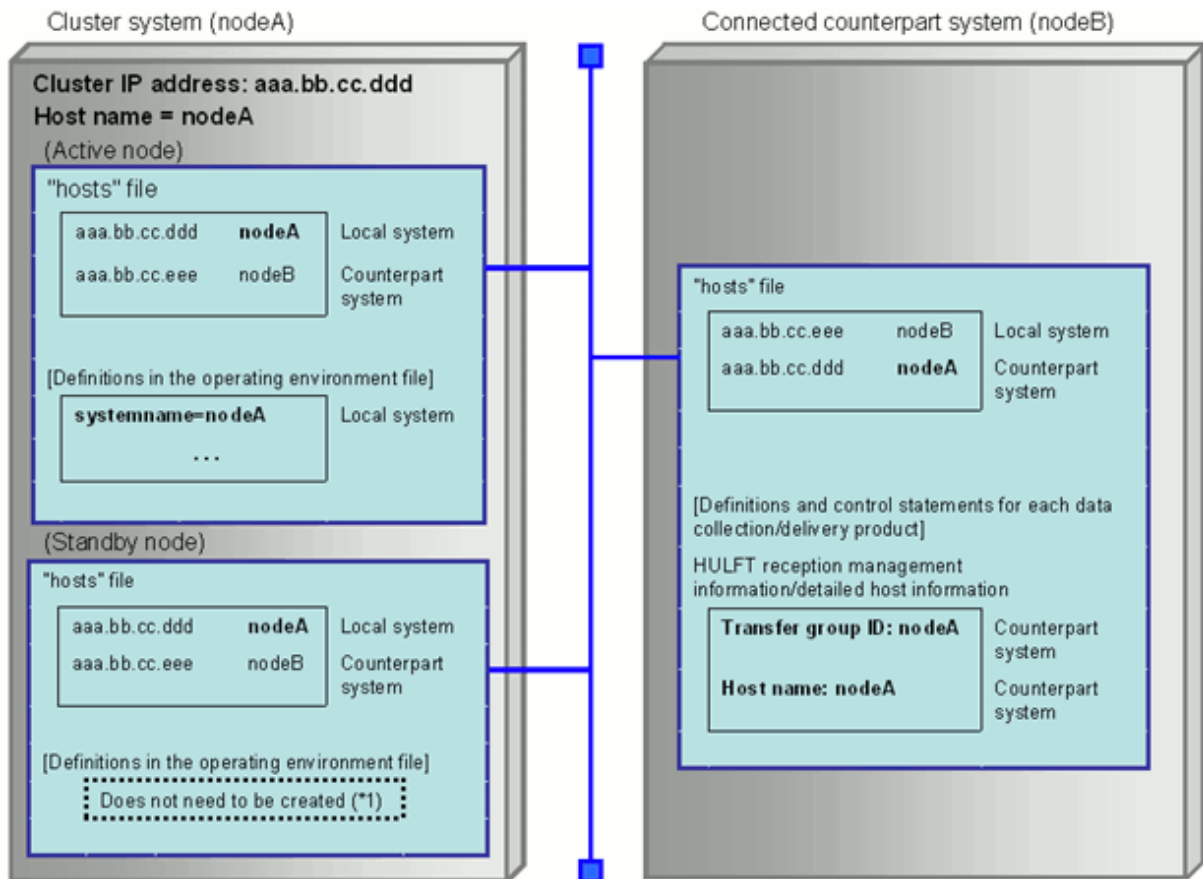
1. Set up the system (the HOSTS and SERVICES files)

Set up the HOSTS file and the SERVICES file. Refer to "[3.2 Setting Up the System](#)" for details.

The figure below shows the relationship between the cluster IP address and the definition settings for Information Integrator, using a 1:1 active/standby configuration as an example.

In this example, the host name "nodeA" is using the cluster IP address "aaa.bbb.ccc.ddd". To connect to Information Integrator from a remote system, specify the host name for the Failover Cluster IP address ("nodeA").

Figure 10.3 Relationship between the cluster IP address and the definition settings for Information Integrator



\*1: There is no need to create these definitions because the definitions for the active node are used.

2. Set up environment variables

Set up environment variables. Refer to "[3.2.4 Setting Up Environment Variables](#)" for details.

Also, set the "APSTPMODE" system environment variable to "f", so that Information Integrator will be stopped forcibly when it stops.

3. Edit the operating environment file

Use the active node to edit the operating environment file. This resource is placed on the shared disk, so this task only needs to be performed on the active node. Refer to "[4.1.1 Editing the Operating Environment File](#)" for details.

4. Edit the adapter definition file

Use the active node to edit the adapter definition file. This resource is placed on the shared disk, so this task only needs to be performed on the active node. Refer to "[4.1.2 Editing the Adapter Definition File](#)" for details.

5. Edit the tuning parameter file

Use the active node to edit the tuning parameter file. Refer to "[4.2.2 Editing the Tuning Parameter File](#)" for details.

6. Create scripts

Create scripts using the tuning parameter file. Refer to "[4.2.3 Creating Scripts](#)" for details.

7. Copy scripts

Copy the scripts that have been created to the specified directories. Refer to "[4.2.3 Creating Scripts](#)" for details.



**Take care when placing resources on disks**

- The RDB configuration parameter file is placed on the local disks.
- The batch files for creating and deleting shared buffers are placed on the shared disk.

8. Create an RDB dictionary

Create an RDB dictionary by executing the appropriate batch file (one of the scripts). This resource is placed on the shared disk, so this task only needs to be performed on the active node. Refer to "[4.2.4.1 Creating an RDB Dictionary](#)" for details.

9. Register the RDB system

Register the RDB system. Refer to "[4.2.4.2 Registering the RDB System \[Windows Only\]](#)" for details.



In the RDB system setup for Symfoware Server, select **MSCS** and **Active system**.

10. Start Symfoware Server

Start Symfoware Server on the active node. Refer to "[4.2.4.3 Starting Symfoware Server](#)" for details.

11. Create a work database

Create a work database by executing the appropriate batch file (one of the scripts). This resource is placed on the shared disk, so this task only needs to be performed on the active node. Refer to "[4.2.4.4 Creating a Work Database](#)" for details.

12. Set up the operation management environment

Set up the Web server and the Operation Management Client. Refer to "[Chapter 7 Setting Up the Operation Management Environment](#)" for details.

**Tasks on the standby node**

1. Set up the system (the HOSTS and SERVICES files)

Set up the HOSTS file and the SERVICES file. Refer to "[3.2 Setting Up the System](#)" for details.

2. Set up environment variables

Set up environment variables. Set up the same environment variables as for the active node. Refer to "[3.2.4 Setting Up Environment Variables](#)" for details.

Set the "APSTPMODE" system environment variable to "f", so that Information Integrator will be stopped forcibly when it stops.

3. Copy scripts

Copy the scripts that have been created to the specified directories. Refer to "[4.2.3 Creating Scripts](#)" for details.



The RDB configuration parameter file is placed on the local disks.

The batch files for creating and deleting shared buffers have already been handled as part of the tasks on the active node, so there is no need to perform this work on the standby node.

#### 4. Register an RDB system

Register the RDB system. Refer to "[4.2.4.2 Registering the RDB System \[Windows Only\]](#)" for details.

#### 5. Set up the operation management environment

Set up the Web server and the Operation Management Client. Refer to "[Chapter 7 Setting Up the Operation Management Environment](#)" for details.

### 10.4.1.4 Registering with Failover Cluster

Register with Failover Cluster the resource groups required for Information Integrator to run. Use the Failover Cluster Management tool to create groups with the following resource configurations:

- [Failover Cluster](#)
- [MSCS](#)

#### Failover Cluster

Register the following resource groups:

- Physical disks
- Client access points
- Generic services (Information Integrator and other products)
- JDBC naming service

To use database linkage with Symfoware Server, register the JDBC naming service as a generic application. Refer to the Failover Cluster manual for details.

Specify the following items when registering resource groups:

- For the service name for Information Integrator, select "Interstage Information Integrator SV".
- The dependency relationships for the generic services should be as follows:
  1. Physical disks
  2. Client access points
  3. Symfoware Server
  4. Information Integrator

Execute the following command after registering the resource groups:

- Cluster Resource "Interstage Information Integrator SV" /priv StartupParameters=""

#### MSCS

Register the following resource groups:

- Physical disks
- IP addresses
- Network names
- Generic services (Information Integrator and other products)

- JDBC naming service

To use database linkage with Symfoware Server, register the JDBC naming service as a generic application. Refer to the MSCS manual for details.

Specify the following items when registering resource groups:

- Specify IP addresses for the dependency relationships for network names.
- For the service name for Information Integrator, specify "Interstage Information Integrator SV".
- The dependency relationships for the generic services should be as follows:
  1. Symfoware Server
  2. Information Integrator

#### 10.4.1.5 Checking that Information Integrator Services Can Run

Use the Failover Cluster Management tool to bring the resource group (containing the generic service resources for Information Integrator) online, and check whether Information Integrator has started normally.

### 10.4.2 Setup Procedure for UNIX

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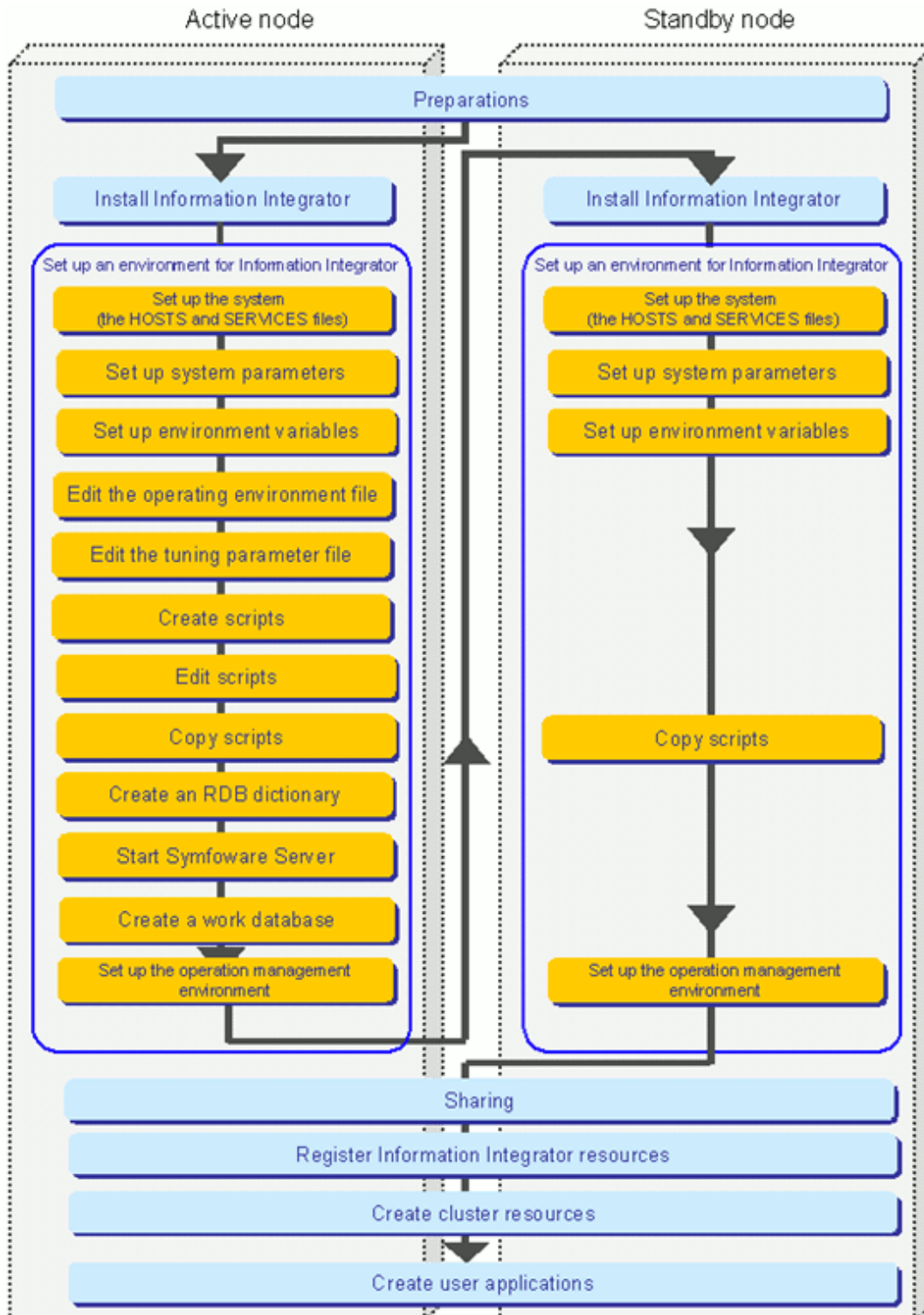
This section explains the procedure for setting up Information Integrator on PRIMECLUSTER.

- New installation (1:1 active/standby)

#### **New installation (1:1 active/standby)**

For 1:1 active/standby configurations, use the following procedure:

Figure 10.4 Procedure for setting up the cluster environment



1. Preparation

Allocate the resources for Information Integrator to run on the cluster system.

2. Install Information Integrator (active node)

Install Information Integrator on the active node.



3. Set up an environment for Information Integrator (active node)

Set up an environment for Information Integrator on the active node.

4. Install Information Integrator (secondary node)

Install Information Integrator on the secondary node.

5. Set up an environment for Information Integrator (standby node)

Set up an environment for Information Integrator on the standby node.

6. Sharing

Prepare Information Integrator to run as a cluster system by sharing the environment and definitions created above between the active node and the standby node.

7. Register Information Integrator resources

Set up environment variables in the state transition procedure.

8. Create cluster resources

Create the database and other product resources as resources managed by PRIMECLUSTER.

9. Create user applications

Create a user application to link the resources that have been created.

### 10.4.2.1 Preparation

Before installing Information Integrator on the cluster system, secure the resources listed below as an operating environment for the cluster system. Refer to the PRIMECLUSTER manual for details.

- On the shared disk device, prepare the physical disks for storing Information Integrator operation resources and for storing the resources placed within Symfaware Server that are used by Information Integrator.
- Prepare IP addresses for the cluster system.

### 10.4.2.2 Installing Information Integrator

The procedure for installing Information Integrator on a cluster system is slightly different from the normal installation procedure. Use the following procedure to install Information Integrator on the cluster system:

- Install Information Integrator on the active node and the standby node.
- Specify the same installation directory for all nodes.
- Set up the installation directory on a local disk.
- Be sure to use the same group ID when installing Information Integrator on the active node and the standby node.

Take particular care that the group ID (numeric value) is the same, however the group name such as "sys" or "iii" can be different.

If Information Integrator is installed on the active node and the standby node using different group IDs, there is a risk that it may not be possible to execute jobs after the cluster fails over.

For this reason, think carefully about which group ID to use before starting the installation. Check that the same group ID has been allocated to both the active node and the standby node, or add an identical group ID if necessary, and then start the installation.

### 10.4.2.3 Setting up an Environment for Information Integrator

Custom environment settings are required to operate Information Integrator with Failover Cluster.

Perform the following procedure:

- [Tasks on the active node](#)
- [Tasks on the standby node](#)



## Tasks on the active node

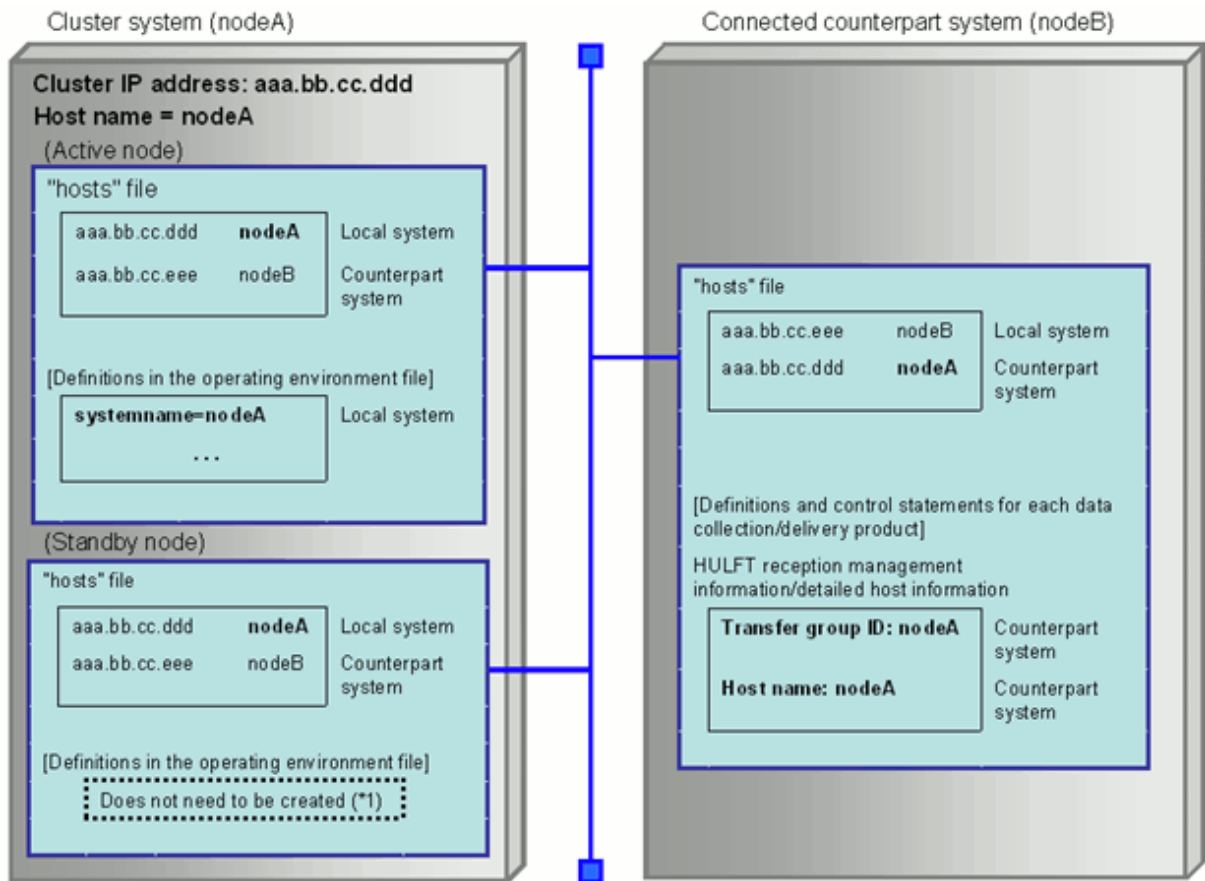
1. Set up the system (the HOSTS and SERVICES files)

Set up the HOSTS file and the SERVICES file. Refer to ["3.2 Setting Up the System"](#) for details.

The figure below shows the relationship between the failover cluster IP address and the definition settings for Information Integrator, using a 1:1 active/standby configuration as an example.

In this example, the host name "nodeA" is using the failover cluster IP address "aaa.bbb.ccc.ddd". To connect to Information Integrator from a remote system, specify the host name for the Failover Cluster IP address ("nodeA").

Figure 10.5 Relationship between the failover cluster IP address and the definition settings for Information Integrator



\*1: There is no need to create these definitions because the definitions for the active node are used.

2. Set up system parameters

Set up system parameters. Refer to ["3.2.3 Setting Up System Parameters \[UNIX Only\]"](#) for information on the setup method.

3. Set up environment variables

Set up environment variables. Refer to ["3.2.4 Setting Up Environment Variables"](#) for details.

4. Edit the operating environment file

Use the active node to edit the operating environment file. This resource is placed on the shared disk, so this task only needs to be performed on the active node. Refer to ["4.1.1 Editing the Operating Environment File"](#) and ["10.3 Disk Allocation for Operation Resources"](#) for details.

### Note

#### Specifications in the operating environment file

- Be sure to specify the "workdir" item. Specify a directory on the shared disk.

- For "systemname", specify the host name corresponding to the takeover IP address.
- The "stk\_path" must be specified. Specify a directory on the shared disk.
- When using event monitoring (when a directory is monitored), specify a directory on the shared disk in "monitordir".

#### 5. Editing the adapter definition file

Use the active node to edit the adapter definition file in the active node. This resource is placed on the shared disk, so this task only needs to be performed on the active node. Refer to "4.1.2 Editing the Adapter Definition File" and "10.3 Disk Allocation for Operation Resources" for details.

#### 6. Edit the tuning parameter file

Use the active node to edit the tuning parameter file. Refer to "4.2.2 Editing the Tuning Parameter File" and "10.3 Disk Allocation for Operation Resources" for details.

#### 7. Create scripts

Create scripts using the tuning parameter file. Refer to "4.2.3 Creating Scripts" for details.

#### 8. Edit scripts

##### a. Editing the RDB configuration parameter file ("*RDBSystemName.cfg*")

Edit the following parameters:

- Parameters associated with the RDB directory space

Set "RDBDIRSPACE= *rawDeviceNameOnTheSharedDiskDevice* (for the directory creation area for Symfoware Server)", and delete both RDBDIRSPACE1 and RDBDIRSPACE2.

- Location for placing log management files (RDBLOGMANAGE)

Specify the name of the raw device that was specified for "DBMS.log1" in the tuning parameter file.

##### Modification example

- Before:

```
RDBDIRSPACE1=/IIIDB/RDBDIR/dir
RDBDIRSPACE2=/IIIDB/RDBDIR/dir
.....
.....
RDBLOGMANAGE=/IIIDB/RDBDIR
.....
.....
```

- After:

```
RDBDIRSPACE=/dev/rdisk/cXtXdXs3
.....
.....
RDBLOGMANAGE=/dev/rdisk/cXtXdXs4
.....
.....
```

##### b. Editing the "ifirdbsetup.sh" shell script for creating an RDB dictionary environment (for Linux only)

Delete the following section from the shell script for creating an RDB dictionary environment (ifirdbsetup.sh):

```
if [ ! -L "$DICDEV" ]
then
    echo ERROR:The device is not raw device for dictionary file. 1>&2
    exit 1
fi
if [ ! -L "$LOGDEV" ]
```

```

then
    echo ERROR:The device is not raw device for temporary log file. 1>&2
    exit 1
fi

```

- c. Editing the "ifi\_createrdb00.sh" shell script for creating a work database (for Linux only)

Delete the following section from the shell script for creating a work database (ifi\_createrdb00.sh):

```

if [ ! -L "${REQDIR}" ]
then
    echo ERROR:The device is not raw device for iap dbspace. 1>&2
    exit 1
fi

if [ ! -L "${RSMDIR}" ]
then
    echo ERROR:The device is not raw device for stk dbspace. 1>&2
    exit 1
fi

if [ ! -L "${ACTSVCDIR}" ]
then
    echo ERROR:The device is not raw device for act dbspace. 1>&2
    exit 1
fi

```

## 9. Copy scripts

Copy the scripts that have been created to the specified directories. Refer to ["4.2.3 Creating Scripts"](#) for details.



### Note

#### Take care when placing resources on disks

The RDB configuration parameter file is placed on the local disks.

## 10. Create an RDB dictionary

Create an RDB dictionary by executing the appropriate batch file (one of the scripts). This resource is placed on the shared disk, so this task only needs to be performed on the active node. Refer to ["4.2.4.1 Creating an RDB Dictionary"](#) for details.

## 11. Start Symfoware Server

Start Symfoware Server on the active node. Refer to ["4.2.4.3 Starting Symfoware Server"](#) for details.

## 12. Create a work database

Create a work database by executing the appropriate batch file (one of the scripts). This resource is placed on the shared disk, so this task only needs to be performed on the active node. Refer to ["4.2.4.4 Creating a Work Database"](#) for details.

After creating the work database, start Information Integrator in COLD start mode. After Information Integrator has started, stop both Information Integrator and Symfoware Server.

## 13. Set up the operation management environment

Set up the Web server and the Operation Management Client. Refer to ["Chapter 7 Setting Up the Operation Management Environment"](#) for details.

## Tasks on the standby node

1. Set up the system (the HOSTS and SERVICES files)

Set up the HOSTS file and the SERVICES file. Refer to ["3.2 Setting Up the System"](#) for details.

2. Set up system parameters

Set up system parameters. Set up the same system parameters as for the active node. Refer to "3.2.3 Setting Up System Parameters [UNIX Only]" for information on the setup method.

3. Set up environment variables

Set up environment variables. Set up the same environment variables as for the active node. Refer to "3.2.4 Setting Up Environment Variables" for details.

4. Create a directory

Create the directory that was specified for "DBMS.user\_control" in the tuning parameter file.

5. Copy scripts

Copy the following script files that have been created on the active node to the standby node:

| File name                | Storage location for the source files (on the active node) | Storage location for the copied files (on the standby node)              |
|--------------------------|--|--|
| <i>RDBSystemName.cfg</i> | <i>tuningParameterFileSYSTEM.output_dirDir/env</i>         | - For Solaris<br>/opt/FSUNrdb2b/etc<br>- For Linux<br>/opt/FJSVrdb2b/etc |
| fssqlenv<br>rdbbuf       | <i>tuningParameterFileSYSTEM.output_dirDir/env</i>         | The directory created in Step 4  |

6. Set up the operation management environment

Set up the Web server and the Operation Management Client. Refer to "Chapter 7 Setting Up the Operation Management Environment" for details.

### 10.4.2.4 Sharing

To perform this operation log in as a superuser.

Prepare Information Integrator to run as a cluster system by sharing the environment and definitions between the active node and the standby node.

This operation performs different processing on the active node and the standby node.

- Information Integrator

- Customize the state transition procedure (active node)

Before executing the ificl setup command, the state transition procedure must be customized according to the user operation mode. A sample state transition procedure is provided in the following directory:

```
/opt/FJSVifisv/sample/cluster/switch_FJSVifisv
```

Place this file in the following directory before customizing it:

```
/opt/FJSVifisv/etc/switch_FJSVifisv
```

- For Solaris 10, delete the "#" in front of "/usr/bin/newtask -p system -c \$\$" as below.

**Before**

```
##----- newtask add -----  
#/usr/bin/newtask -p system -c $$
```

## After

```
##----- newtask add -----  
  
/usr/bin/newtask -p system -c $$
```

- Customize the environment variables

Refer to "3.2.4 Setting Up Environment Variables" for information on the environment variables to be customized. Also, set up the following environment variables according to the operation mode for the user:

Table 10.3 Customizable items

| Environment variable | Settings  |
|----------------------|---|
| IFI_ID               | Use the default value "00".   |
| MONPROC_FLG          | To enable process monitoring, enter the default value "ON".<br>To disable process monitoring, enter "OFF".  |
| HULPATH              | Specify the directory for storing HULFT environment settings files. Refer to "6.2.4 Notes on Setup" for information on the operating environment for HULFT. |
| HULEXEP              | Specify the directory for storing HULFT execution modules. Refer to "6.2.4 Notes on Setup" for information on the operating environment for HULFT.          |

- Symfoware Server

Register the RDB system resource with PRIMECLUSTER. The resource name that is registered is the RDB system name that was specified for the "RDBNAME" environment variable.

Log in as a superuser to execute the command on both the active node and the standby node.

- For Solaris

```
/opt/FSUNrdb2b/bin/rdbhrscl -a -m standby
```

- For Linux

```
/opt/FJSVrdb2b/bin/rdbhrscl -a -m standby
```

## 10.4.2.5 Registering Information Integrator Resources

Register the state transition procedure with PRIMECLUSTER and then register the resources. Log in as a superuser to execute the shell script (ifclsetup) for registering the state transition procedure as a resource, in accordance with the procedure described below.

This shell script deletes files and directories and creates symbolic links. Execute this script on both the active node and the standby node (only once on each node).

The storage location for the shell script is as below.

```
/opt/FJSVifisv/bin/
```



### Note

Execute the shell script (ifclsetup) once on the active node and once on the standby node. Do not execute the shell script more than once on each node.

## Active node

1. Back up Information Integrator resources

Back up the resources for Information Integrator.

```
tar cvf userSpecifiedFileName_opt.tar /opt/FJSVifisv
tar cvf userSpecifiedFileName_var.tar /var/opt/FJSVifisv
tar cvf userSpecifiedFileName_etc.tar /etc/opt/FJSVifisv
```

## 2. Mount the shared disk

Mount the shared disk so that the disk can be referenced from the active node.

## 3. Register resources

To register resources, execute the shell script (ificlsetup). Specify the resource name "IFI" for the "-n" option. Note that any name can be specified for the mount point.

```
ificlsetup -m failoverDiskMountPoint -n IFI -M
```

Refer to "10.4.2.5.1 When the Command Terminates Abnormally" for information on command errors.



## Information

### Resource name

The "resource name" is the name for registering Information Integrator with the PRIMECLUSTER system.

## Standby node

### 1. Back up Information Integrator resources

Back up the resources for Information Integrator.

```
tar cvf userSpecifiedFileName_opt.tar /opt/FJSVifisv
tar cvf userSpecifiedFileName_var.tar /var/opt/FJSVifisv
tar cvf userSpecifiedFileName_etc.tar /etc/opt/FJSVifisv
```

## 2. Mount the shared disk

Mount the shared disk so that the disk can be referenced from the standby node.

## 3. Register resources

To register resources, execute the shell script (ificlsetup). For the "-n" option, specify the resource name specified on the active node.

```
ificlsetup -m failoverDiskMountPoint -n IFI-S
```

Refer to "10.4.2.5.1 When the Command Terminates Abnormally" for information on command errors.

## Execution example for the ificlsetup shell script

In the following example, the shell script is executed on the active node for standby operations:

```
# ./ificlsetup -m failoverDiskMountPoint -n IFI-M
60 <- The resource ID corresponding to the "-n" option is notified.
```

### 10.4.2.5.1 When the Command Terminates Abnormally

This section explains what to do if the ificlsetup command terminates abnormally.

Refer to the error message that was output when the ificlsetup command was executed, and take the following action:

- If the error message contains the string "clsetproc" or "claddprocrsc"
  1. Rectify the problem by using the information provided in the error message.

2. Execute the command below. Specify the registered resource name for the "-n" option.

```
ificlsetrsc -n IFI
```

Check that the resource ID corresponding to the "-n" option has had the change applied after the command is executed.

- For all other cases

1. Restore the environment.

- a. Execute the following command:

```
ificlsetup -r
```

- b. Restore the environment based on the Information Integrator resources backup prior to resource registration.

```
tar xvf userSpecifiedFileName_opt.tar  
tar xvf userSpecifiedFileName_var.tar  
tar xvf userSpecifiedFileName_etc.tar
```

2. Rectify the problem by using the information provided in the error message.
3. Re-execute the "ificlsetup" command.

## 10.4.2.6 Creating Cluster Resources

Create the database and create other product resources as "resources managed by PRIMECLUSTER".

The resources below will need to be created.

Refer to the PRIMECLUSTER manual for information on the tasks to be performed.

- RDB
- Information Integrator



### Note

For Linux, perform the procedure in "[10.4.2.7 Creating User Applications](#)" before creating cluster resources.

### For Solaris

Create the necessary resources in **Global Cluster Services** in the **Web-Based Admin View**. Refer to the PRIMECLUSTER manual for information on the procedure.

1. Stop RMS.
2. Register the resources below with the user application. Specify the following items when creating cluster resources:
  - RDB  
Resource type: "Symfoware"  
RDB system name: The name specified in the "RDBNAME" environment variable
  - Information Integrator  
Resource type: "Procedure"  
Resource name: "IFI"  
Procedure class: "BasicApplication"  
Procedure resource name: "IFI"

## For Linux

After stopping the RMS in **Global Cluster Services** in the **Web-Based Admin View**, create the necessary resources using the PRIMECLUSTER RMS Wizard. Refer to the PRIMECLUSTER manual for information on the procedure.

1. Stop RMS using **Global Cluster Services** in the **Web-Based Admin View**.
2. Execute the hvw command to start the RMS Wizard.
3. Select **Application-Edit** from the **Main RMS management** menu of the RMS Wizard.
4. Select the desired application from the **Application selection** menu.
5. Use the **turnkey wizard "STANDBY"** to register the following resources:
  - RDB
    1. Select **Symfoware**.
    2. Select **AdditionalResource**.
    3. Select the RDB system name.  
Select the same name as that specified in the "RDBNAME" environment variable  
Check that the name of the RDB system has been set for "ResourceName".
    4. Select **SAVE+EXIT**.
  - Information Integrator
    1. Select **Procedure:BasicApplication**.
    2. Select **AdditionalProcedureResource**.  
A list of cluster resources will be displayed.
    3. Select **IFI**.
    4. Select **SAVE+EXIT**.
6. Perform the "Generate" and "Activate" operations.
  - Select **Configuration-Generate** from the **Main RMS management** menu.
  - Select **Configuration-Activate** from the **Main RMS management** menu.

### 10.4.2.7 Creating User Applications

Create a user application to link the resources that have been created in "[10.4.2.5 Registering Information Integrator Resources](#)".

Refer to the PRIMECLUSTER manual for information on the tasks to be performed.

## For Solaris

Create the user applications to be linked to the created resources in **Global Cluster Services** in the **Web-Based Admin View**. Refer to the PRIMECLUSTER manual for information on the procedure.

1. Stop RMS.
2. Delete the user application.  
Select **userApplication** to delete only the user application.
3. Create user applications, specify the parameters, and configure to suit the operating environment. Setting examples are shown below. Refer to the PRIMECLUSTER manual for details.
  - AutoStartUp  
Yes
  - AutoSwitchOver  
No



- PersistentFault  
1
- OnlinePriority  
NONE
- ShutdownPriority  
No
- StandbyTransitions  
0
- HaltFlag  
Yes

## For Linux

After stopping the RMS in **Global Cluster Services** in the **Web-Based Admin View**, create the user applications to be linked to the created resources using the PRIMECLUSTER RMS Wizard. Refer to the PRIMECLUSTER manual for information on the procedure.

1. Stop RMS using **Global Cluster Services** in the **Web-Based Admin View**.
2. Execute the hvw command to start the RMS Wizard.
3. Use the RMS Wizard to create a user application.
  - To create a new user application, select **Application-Create** from the **Main RMS management** menu.
  - To utilize an existing user application, select **Application-Edit** from the **Main RMS management** menu and change the configuration.

Specify the attributes.

Setting examples are shown below. Configure to suit the operating environment. Refer to the PRIMECLUSTER manual for details.

- AutoStartUp  
yes
- AutoSwitchOver  
HostFailure|ResourceFailure
- PersistentFault  
1
- OnlinePriority  
0
- ShutdownPriority  
NONE
- StandbyTransitions  
StartUp|SwitchRequest
- HaltFlag  
Yes

## 10.5 Uninstallation

---

### 10.5.1 For Windows

---

To uninstall Information Integrator that has been installed on a cluster system, first delete the Information Integrator resources from the Failover Cluster. Then, bring the physical disk resource online to enable the shared disk to be used, and perform the uninstallation.

#### Deleting Information Integrator resources from Failover Cluster

Use the Failover Cluster Management tool to delete the generic service resources for Information Integrator from Failover Cluster.

#### Bringing the shared disk online and uninstalling

- Active node

Before uninstalling Information Integrator, bring the physical disk resource online so that it is possible to write to the shared disk using the Failover Cluster Management tool.

- Standby node

Before uninstalling Information Integrator, bring the physical disk resource for the standby node online by moving the group so that it is possible to write from the standby node to the shared disk using the Failover Cluster Management tool.

### 10.5.2 For UNIX

---

#### Deleting cluster resources

- For Solaris

1. Stop RMS.
2. Delete the user application and the cluster resources.

Select **userApplication** to delete only the user application.

When deleting cluster resources, the RDB and Information Integrator deletion sequence is unimportant.

- For Linux

1. Stop RMS using **Global Cluster Services** in the **Web-Based Admin View**.
2. Use the PRIMECLUSTER RMS Wizard to delete the user application and the cluster resources.

#### Deleting the active node

- Log in to the active node.
- Execute the following command and check the resource ID for the resource name "IFI":

```
/etc/opt/FJSVcluster/bin/clgettree
```

#### [Execution example]

```
Node 3 clsrv_01 ON
  SDX_DC 68 class0003 OFF-STOP
  SDX_DC 502 class2003 OFF-STOP
  Ethernet 52 hme0 UNKNOWN
    IP_Address 1562 hme0:1 UNKNOWN
  BasicApplication 1636 IFI OFF-STOP
  DISK 23 c0t0d0 UNKNOWN
  DISK 24 c0t1d0 UNKNOWN
  DISK 25 c1t1d0 UNKNOWN
```

In the example above, the resource ID for "IFI" is "1636".

1. Delete Information Integrator resources and the state transition procedure, and cancel sharing. Replace the resource ID with the resource ID for "IFI".

```
ificlsetup -r
/etc/opt/FJSVcluster/bin/cldelprocrsc -r resourceID
/etc/opt/FJSVcluster/bin/cldelproc -c BasicApplication switch_FJSVifisv
```

2. Symfoware Server

Delete the RDB system. Execute the command as a superuser.

Delete the resource for Symfoware Server beforehand. (Resource name: *RDBsystemName*)

Execute this command on both the active node and the standby node.

- For Solaris

```
/opt/FSUNrdb2b/bin/rdbhrsdc -d
```

- For Linux

```
/opt/FJSVrdb2b/bin/rdbhrsdc -d
```

3. Uninstall Information Integrator.

### Deleting the standby node

Log in to the standby node and perform the same operations as for the active node.

Note that the resource ID on the standby node is not the same as on the active node, so be sure to check.

## 10.6 Notes on Changing Definitions

---

To change the definitions for Information Integrator with Failover Cluster, use the Failover Cluster Management tool to bring the physical disk resource online so that it is possible to write to the shared disk. Similarly, be sure to bring the resource for the "Interstage Information Integrator SV" service online before changing the definitions.

## 10.7 Notes when a Failover Occurs

---

If a failover occurs during process execution on a Failover Cluster, perform the recovery procedure on the node to which operations switched. Refer to the *Operation Guide* for details.

## Appendix A Supplementary Information

This appendix presents supplementary information on the setup tasks for Information Integrator.

### A.1 Correcting Errors with the ifimks Command

If an error is detected when the ifimks command is executed, it may be due to the causes shown below.

Identify the cause of the error from the error message, and take the appropriate action.

Table A.1 Errors with the ifimks command and actions to take

| Error message   | Cause  | Action  |
|---|--|---|
| Specified output directory does not exist.  | The directory specified for "SYSTEM.output_dir" does not exist.  | Check whether the value specified for "SYSTEM.output_dir" is a directory that already exists.                             |
| Specified output directory access error.  | The directory specified for "SYSTEM.output_dir" cannot be accessed.  | Check whether the value specified for "SYSTEM.output_dir" is a directory that already exists.                             |
| It overlaps operand - operand.  | An operand (either "-m" or "-f") has been duplicated.  | Check the specified operands.   |
| There is an error with the specified value of the operand. - operand                                    | The value specified for an operand is incorrect.   | Check the operands specified when the command was executed.   |
| Specified file path is too long. - operand  | The specified file name is too long.   | Change the file name.   |
| A required operand is not specified.  | A required operand is missing.   | Check the specified operands.   |
| Specified file is not found.  | The tuning parameter file does not exist.  | Check the tuning parameter file.  |
| Specified file access error.  | The tuning parameter file cannot be accessed.  | Check the tuning parameter file.  |
| Specified file path is invalid.   | The specified file path is invalid.  | Check the tuning parameter file.<br>Also, check whether the directories entered in the tuning parameter file are correct. |
| Temporary resource access error.  | An error has occurred during area allocation.  | Re-execute the command.<br>If this error reoccurs, contact Fujitsu technical support.                                     |
| Failed to read the tuning parameter file.   | Reading the tuning parameter file has failed.  | Check the tuning parameter file.  |
| Tuning parameter file is 0 bytes.   | The size of the tuning parameter file is zero bytes.<br>Alternatively, no keys have been specified in the tuning parameter file.           | Check the tuning parameter file.  |
| An invalid value is specified. Key  | An invalid value has been specified.   | Check the value specified for the key.  |
| Specified value is too long. - key  | The specified value is too long.   | Check the value specified for the key.  |
| ESTIMATE key(retent_period or prc_in_day or indtran_in_day or func_in_day or databox) is not specified. | One of the following keys has not been specified:<br><br>- retent_period<br>- prc_in_day<br>- indtran_in_day<br>- func_in_day<br>- databox | Check the content of the tuning parameter file.   |

| Error message   | Cause   | Action  |
|---|---|---|
| ESTIMATE key(data_retent_period or data_in_day) is not specified. | One of the following keys has not been specified:<br>- data_retent_period<br>- data_in_day            | Check the content of the tuning parameter file.             |
| ESTIMATE key(bundle_data) is not specified.                       | The following estimation parameter has not been specified:<br>- bundle_data                           | Check the content of the tuning parameter file.             |
| Failed to estimate the DB capacity.                               | Estimating the database capacity has failed.  | Contact Fujitsu technical support.                          |
| An internal conflict occurred.                                    | An internal conflict has occurred.  | Contact Fujitsu technical support.                          |
| Failed to output the table ddl file.                              | Outputting the "table" DDL file has failed.   | Contact Fujitsu technical support.                          |
| Failed to output the dbms file.                                   | Outputting the "DBMS" file has failed.  | Contact Fujitsu technical support.                          |
| Failed to output the shell script or batch file.                  | Outputting the "SHELL" file has failed.   | Contact Fujitsu technical support.                          |
| Failed to output the ddl file.                                    | Outputting the "DDL" file has failed.   | Contact Fujitsu technical support.                          |
| Failed to output the buffer file.                                 | Outputting the "BUFFER" file has failed.  | Contact Fujitsu technical support.                          |
| ESTIMATE key(prc_multi or bundle_data) is not specified.          | Either of the following estimation parameters has not been specified:<br>- prc_multi<br>- bundle_data | Check the content of the tuning parameter file.             |
| Failed to output the iap file.                                    | Outputting the "IAP" file has failed.   | Contact Fujitsu technical support.                          |
| It overlaps key. - key  | The key value has been duplicated.  | Check the content of the tuning parameter file.             |
| An invalid key is specified. - key                                | An invalid key value has been specified.  | Check the key values in the tuning parameter file.          |
| An invalid operand is specified.                                  | An invalid operand has been specified.  | Check the operands specified when the command was executed. |
| A required key is not specified. - key                            | A required key is missing.  | Check the content of the tuning parameter file.             |
| A required key's value is not specified. - key                    | A required key value is missing.  | Check the content of the tuning parameter file.             |
| The number of the characters per line is too many.                | The number of characters per line is too many.  | Check the content of the tuning parameter file.             |

## A.2 Correcting Errors with Creating a Management Area

If an error is detected when a management area is being created, it may be due to the causes shown below.

Identify the cause of the error from the error message that is displayed, and take the appropriate action.

Table A.2 Errors with creating a management area and actions to take

| Cause  | Action   |
|--|--|
| An environment variable has not been set correctly.      | Review the environment variable settings by referring to " <a href="#">3.2.4 Setting Up Environment Variables</a> ". Re-execute the command after taking action. |
| A file has not been copied, or is not a current version. | Copy the file correctly by referring to " <a href="#">4.2.3 Creating Scripts</a> ". Re-execute the command after taking action.                                  |

| Cause  | Action   |
|--|--|
| A script for creating a management area does not exist in the current directory.                                 | Refer to "4.2.3 Creating Scripts". Re-execute the command after taking action.   |
| The current user does not have execution rights for a script for creating a management area.                     | Refer to "4.2.3 Creating Scripts" and "4.2.4 Creating a Management Area". Re-execute the command after taking action.  |
| The directory that should have been created does not exist.  | Use the message to identify the directory in question, and determine which of the following two problems applies: <ul style="list-style-type: none"> <li>- The directory in question has not been created<br/>Create the directory.</li> <li>- Input error in the tuning parameter file<br/>If there are differences between the estimated environment and the actual environment or if the directory in question has been deleted during the environment reconfiguration or migration as a result of business expansion, for example, an information inconsistency will occur. In this case, it may be time consuming to isolate the cause of the problem. For this reason, it is recommended to start again from editing the tuning parameter file.</li> </ul> |
| The actual amount of free space on the raw device or directory in the server is less than the estimation result. | Start again from editing the tuning parameter file, and recheck the server environment and the estimated values for the server before starting work. If there are differences between the estimated environment and the actual environment or if the directory in question has been deleted during the environment reconfiguration or migration as a result of business expansion, for example, an information inconsistency will occur. In this case, it may be time consuming to isolate the cause of the problem. For this reason, it is recommended to start again from editing the tuning parameter file.   |
| Symfoware Server is not running.   | Refer to "4.2.4 Creating a Management Area". Re-execute the command after taking action.   |
| The BI log area that was specified when the rdblog command was executed is too large.                            | Use the ifinks command to make estimates, and check whether the value of "DBMS.log" is more than 31 GB.<br><br>If the value is more than 31 GB, review the values specified for the following keys in the tuning parameter file so that the estimation result is 31 GB or less: <ul style="list-style-type: none"> <li>- ESTIMATE.bundle_data</li> <li>- ESTIMATE.prc_multi</li> </ul>   |

If an error is detected while a script for creating an environment is running, eliminate the cause of the error, execute the script for deleting the environment, and then re-execute the script where the error occurred.

The following table shows the correspondence between environment creation scripts and environment deletion scripts:

Table A.3 Correspondence between environment creation scripts and environment deletion scripts (for Windows)

| Script type                     |                 | File name           |
|---------------------------------|-----------------|---------------------|
| For RDB dictionary environments | Creation script | ifirdbsetup.bat     |
|                                 | Deletion script | ifirdbdel.bat       |
| For work databases              | Creation script | ifi_createrdb00.bat |
|                                 | Deletion script | ifi_droprdb00.bat   |

Table A.4 Correspondence between environment creation scripts and environment deletion scripts (for UNIX)

| Script type                     |                 | File name          |
|---------------------------------|-----------------|--------------------|
| For RDB dictionary environments | Creation script | ifirdbsetup.sh     |
|                                 | Deletion script | ifirdbdel.sh       |
| For work databases              | Creation script | ifi_createrdb00.sh |
|                                 | Deletion script | ifi_droprdb00.sh   |

**Execution example of the script for deleting an RDB dictionary environment**

- For Windows

```
cmd /c .\ifirdbdel.bat
```

- For UNIX

```
./ifirdbdel.sh
```

**Execution example of the script for deleting a database**

- For Windows

```
cmd /c .\ifi_droprdb00.bat
```

- For UNIX

```
./ifi_droprdb00.sh
```

 **Note**

When an environment deletion script is executed, an error message may be output. This happens because the environment deletion script attempts to delete all of the areas that should have been created, whereas in fact not all areas have been created because an error occurred midway through creating the environment.

This means that there is no need to take any action for the errors that are detected when an environment deletion script is executed.

# Appendix B Notes Regarding Setup when Using the Information Integrator Server

All III Agent definitions can be managed centrally by linking with the Information Integrator Server.

This appendix presents some points to note regarding setup when linking the Information Integrator Server and III Agent.

- Register Process Flow definitions using the III Agent

Definitions need to be registered on an Information Integrator Server with the Information Integrator Server installed (referred to as the Information Integrator Server hereafter), then the definitions need to be delivered to the III Agent in order for Process Flows to be run with the III Agent.

Refer to "B.1 Delivering Process Flow Definitions to the III Agent" for details.

- Create the environment required to register definitions in the III Agent

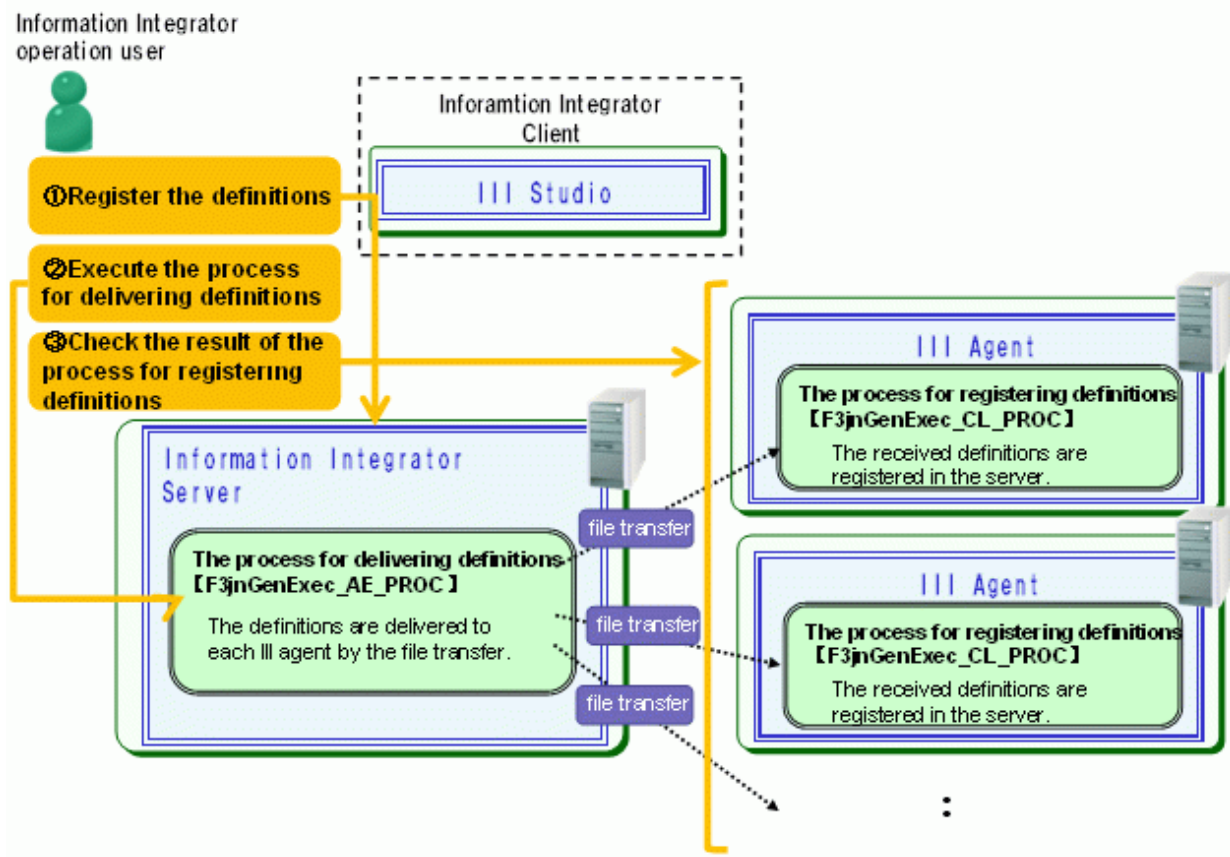
To register definitions in the III Agent, an environment that can deliver definitions from the Information Integrator Server needs to be created.

Refer to "B.2 Creating the Environment Required to Register Definitions in the III Agent" for details.

## B.1 Delivering Process Flow Definitions to the III Agent

When the Information Integrator Server and the III Agent are to be linked, Process Flow definitions for the III Agent are created and managed on the Information Integrator Server.

The procedure for delivering Process Flow definitions to the III Agent is as follows:



1. Register the definitions on the Information Integrator Server

Create the Process Flow definitions to be used on the III Agents and register the definitions in the Information Integrator Server.



2. Execute the process for delivering definitions (F3jnGenExec\_AE\_PROC), provided by the Information Integrator Server, on the Information Integrator Server. The process for delivering definitions (F3jnGenExec\_AE\_PROC), delivers all of the definitions registered on the Information Integrator Server to the III Agents.
3. The process for registering definitions (F3jnGenExec\_CL\_PROC) is automatically executed on the III Agents and registers all of the definitions. Check that the definitions have been correctly registered on each of the III Agents.
  - Registration is not performed if the process for registering definitions (F3jnGenExec\_CL\_PROC) ends with an error. Possible causes are as follows:
    - There is an error in the operating environment file of the III Agent
    - A Process Flow is being processed on the III Agent
    - The Information Integrator Server process for delivering definitions ended with an error, but recovery was not performed
    - If the character code of the Information Integrator Server OS and the character code of the III Agent OS are different, there is an error in the plug-in specified for matching the III Agent OS character code
  - If definition registration was not performed correctly, perform recovery with the III Agent that ended in an error (remove the cause of the error and delete the data in the collection DataBox "F3jnGenExec\_CL\_IPT\_BOX"), then perform steps 2 and 3 again.

 **Point**

- All of the definitions (definitions used by the Information Integrator Server and the III Agents) registered on the Information Integrator Server are delivered to the III Agents. By putting Process Flow definitions in process groups with unique names for each of the III Agents, it is possible to reference just those definitions applicable to each of the systems.
- If execution schedules have been defined for Process Flows, stop scheduled execution after performing step 3 so that Process Flows are not unexpectedly executed on the Information Integrator Server or III Agent.
- All of the definitions used by the Information Integrator Server and the III Agent are managed by the Information Integrator Server, so back up and restore definition resources on the Information Integrator Server. After restoring the definition resources, perform steps 2 and 3 to deliver the definitions to the III Agents.

## B.1.1 Adding, Changing, and Deleting Process Flow Definitions on the III Agent

---

When adding, changing, and deleting Process Flow definitions on the III Agent, after adding, changing, and deleting definitions on the Information Integrator Server, deliver the definitions (definitions used by the Information Integrator Server and the III Agents) registered on the Information Integrator Server to the III Agents.

Refer to "[B.1 Delivering Process Flow Definitions to the III Agent](#)" for details.

## B.2 Creating the Environment Required to Register Definitions in the III Agent

---

The following describes the procedure for creating the environment required to register definitions in the III Agent:

- When installing the Information Integrator Server and the III Agent for the first time  
Refer to "[B.2.1 When Installing a III Agent for the First Time](#)".
- When adding a new III Agent to an environment where the Information Integrator Server and III Agent are already linked  
Refer to "[B.2.2 When Adding a III Agent](#)".
- When deleting a III Agent from an environment where the Information Integrator Server and III Agent are already linked  
Refer to "[B.2.3 When Deleting the III Agent](#)".



- When the "HTTP" transfer protocol is used on the Information Integrator Server (cannot be used on the III Agent), set the "systemname" key in the operating environment file before starting the Information Integrator Server and III Agent. Refer to ["4.1.1.2 Key Names and Parameter Values in the Operating Environment File"](#) for information on operating environment files.
- If the OS of the Information Integrator Server and the OS of the III Agent are different and at least one of them is Windows, specify "1" in the "gen\_oschk\_lv" key in the operating environment files of the Information Integrator Server and all of the III Agents. Refer to ["4.1.1.2 Key Names and Parameter Values in the Operating Environment File"](#) for information on operating environment files. The system needs to be restarted if the operating environment file has been modified.

## B.2.1 When Installing a III Agent for the First Time

When the Information Integrator Server and the III Agent are linked for the first time, an environment needs to be created to deliver all of the definitions registered in the Information Integrator Server to the III Agent.

Performing the procedure on the Information Integrator Server

1. In the HOSTS file for the Information Integrator Server, set the host information for the III Agent to be connected. Refer to ["3.2.1 Setting Up the HOSTS \(hosts\) File"](#) for information on configuring the HOSTS file.
2. Create a process definition (sample definition) for delivering definitions to the III Agents.

First, register the sample definition provided by the Information Integrator Server to the Information Integrator Server. Execute the ifigenexec command (simple definition operation) on the Information Integrator Server to register the sample definitions on the Information Integrator Server. Stop Information Integrator Server before executing this command.

### Windows

```
ifigenexec.cmd ADD informationIntegratorServerInstallationDir\sample\defproc\defexecproc.xml
```

### UNIX

```
ifigenexec.cmd ADD /opt/FJSVifisv/sample/defproc/defexecproc.xml
```

Note that if messages starting with "IF" are output when the command is executed, processing may have failed due to the reasons shown below. Refer to the *Command Reference*, take the action recommended, and re-execute the command.

- The file name is not a full path.
  - An invalid file name was specified.
  - The user executing the command does not have administrator rights.
3. Start the Information Integrator Server.
  4. Edit the registered definition

Edit the sample definition registered on the Information Integrator Server to suit the III Agent environment.

- How to edit  
Use III Studio extract the definitions, then edit them.
- Name of definition to be acquired  
Data source definition ID "F3jnGenExec\_AE\_SRC" and "F3jnGenExec\_CL\_SRC"
- Content to edit

### F3jnGenExec\_AE\_SRC

This is the definition that enables communication (using the "FTP+" protocol) between the Information Integrator Server and the III Agent. Note that communication using the "FTP+" protocol also uses this definition. Edit the following:

- Remote system name (Host name of the Information Integrator Server)

- Remote system user (III Agent authentication)
- Remote system password (III Agent authentication)
- Local system user (Information Integrator Server authentication)
- Local system password (Information Integrator Server authentication)
- Communication path (set to correspond to F3jnGenExec\_CL\_SRC mentioned later)

### F3jnGenExec\_CL\_SRC

This is the definition that enables communication (using the "FTP+" protocol) between the III Agent and the Information Integrator Server. Note that communication using the "FTP+" protocol also uses this definition. Edit the following:

- Remote system name (Host name of the Information Integrator Server)
- Remote system user (Information Integrator Server authentication)
- Remote system password (Information Integrator Server authentication)
- Local system user (III Agent authentication)
- Local system password (III Agent authentication)
- Communication path (set to correspond to F3jnGenExec\_AE\_SRC mentioned earlier)

Furthermore, if the character code of the Information Integrator Server OS and the character code of the III Agent OS are different, with the process for delivering definitions (F3jnGenExec\_AE\_PROC), use the plug-in provided with the Information Integrator Server to match the character code of the III Agent OS, then deliver the data (deliver definitions). Specify the plug-in to be used in the process definition in accordance with the environment to be used. Ensure the definition executes the plug-in prior to the data being delivered.

| OS character code             |           | Name of plug-in to be used    |
|-------------------------------|-----------|-------------------------------|
| Information Integrator Server | III Agent |                               |
| EUC(S90)                      | Shift-JIS | F3jnGenExec_CNV_PLG_Euc2Sjis  |
| EUC(S90)                      | UTF-8     | F3jnGenExec_CNV_PLG_Euc2Utf8  |
| Shift-JIS                     | EUC(S90)  | F3jnGenExec_CNV_PLG_Sjis2Euc  |
| Shift-JIS                     | UTF-8     | F3jnGenExec_CNV_PLG_Sjis2Utf8 |
| UTF-8                         | EUC(S90)  | F3jnGenExec_CNV_PLG_Utf82Euc  |
| UTF-8                         | Shift-JIS | F3jnGenExec_CNV_PLG_Utf82Sjis |

5. Register the edited definition to the Information Integrator Server.

Register the edited definition to the Information Integrator Server. Register the definition using III Studio.

6. Perform the following on the Information Integrator Server:

Use the ifigenexec command (simple definition operation) to export registered definitions. Stop Information Integrator Server before executing this command.

```
ifigenexec.cmd EXP none export definition file
```

\* Specify the file name with a full path.

Note that if messages starting with "IF" are output when the command is executed, processing may have failed due to the reasons shown below. Refer to the *Command Reference*, take the action recommended, and re-execute the command.

- The file name is not a full path.
- An invalid file name was specified.
- The user executing the command does not have administrator rights.

7. Use an FTP tool to move the resources output in step 6 to the III Agent.

#### Performing the procedure on the III Agent

1. In the HOSTS file for the III Agent, set the host information for the Information Integrator Server. Refer to "[3.2.1 Setting Up the HOSTS \(hosts\) File](#)" for information on configuring the HOSTS file.
2. Perform the following on the III Agent:

Use the ifigenexec (simple definition operation) command to import the definitions exported on the Information Integrator Server. Stop Information Integrator Server before executing this command.

```
ifigenexec.cmd IMPF export definition file process results file
```

\* Specify the file name with a full path.

Furthermore, if the character code of the Information Integrator Server OS and the character code of the III Agent OS are different, first use the ificnvdat (text format character code conversion) command on the III Agent to convert the exported definition file to the character code of the III Agent OS. Refer to the *Command Reference* for information on commands.

Note that if messages starting with "IF" are output when the command is executed, processing may have failed due to the reasons shown below. Refer to the *Command Reference*, take the action recommended, and re-execute the command.

- The file name is not a full path.
- An invalid file name was specified.
- The user executing the command does not have administrator rights.
- The III Agent has never been started after installation.  
Use cold start when starting for the first time.

## B.2.2 When Adding a III Agent

---

The procedure for adding a III Agent is as follows. Refer to "[B.2.1 When Installing a III Agent for the First Time](#)" for the procedure for installing the III Agent for the first time.

#### Performing the procedure on the Information Integrator Server

1. In the HOSTS file for the Information Integrator Server, set the host information for the III Agent to be connected. Refer to "[3.2.1 Setting Up the HOSTS \(hosts\) File](#)" for information on configuring the HOSTS file.
2. Reference the data source definitions (definition IDs "F3jnGenExec\_AE\_SRC" and "F3jnGenExec\_CL\_SRC") used by the Process Flow provided by the Information Integrator Server.  
Save the referenced definition with a different name and then check.
3. Edit the data source definition to suit the III Agent to be connected.

- F3jnGenExec\_AE\_SRC

This is the definition that enables communication (using the "FTP+" protocol) between the Information Integrator Server and the III Agent. Note that communication using the "FTP+" protocol also uses this definition. Edit the following:

- Remote system name (Host name of the III Agent)
- Remote system user (III Agent authentication)
- Remote system pass(III Agent authentication)
- Local system user (Information Integrator Server authentication)
- Local system password (Information Integrator Server authentication)
- Communication path (set to correspond to F3jnGenExec\_CL\_SRC mentioned earlier)
- F3jnGenExec\_CL\_SRC

This is the definition that enables communication (using the "FTP+" protocol) between the III Agent and the Information Integrator Server. Edit the following. Note that send files and receive files using the "FTP+" protocol also uses this definition.

- Remote system name (Host name of the Information Integrator Server)
- Remote system user (III Agent authentication)
- Remote system password (III Agent authentication)
- Local system user (Information Integrator Server authentication)
- Local system password (Information Integrator Server authentication)
- Communication path (set to correspond to F3jnGenExec\_AE\_SRC mentioned earlier)

4. Register the definitions edited in step 3 with different ID names. The ID name can be user defined.

5. Edit the process definition (definition ID "F3jnGenExec\_AE\_PROC") for delivering definitions provided by the Information Integrator Server.

- a. Copy the data delivery definition "F3jnGenExec\_AE\_OPT\_A".
- b. Edit the copied data delivery definition.

After editing the **Data delivery group ID**, also edit the **DataBox** to suit the environment.

Furthermore, of the data source definitions registered in step 4, specify the definition that is used by the Information Integrator Server to communicate with the III Agents (original ID name "F3jnGenExec\_AE\_SRC").

- c. Add this data delivery definition to the process definition. For the process preceding the added data delivery definition, specify the plug-in definition "F3jnGenExec\_AE\_PLG01" as was done with the data delivery definition "F3jnGenExec\_AE\_OPT".
- d. If the character code of the Information Integrator Server OS and the character code of the III Agent OS are different, first use the following plug-in provided with the Information Integrator to match the character code of the III Agent OS. Specify the plug-in to be used in the process definition in accordance with the environment to be used. Ensure the definition executes the plug-in prior to the data being delivered.

| OS character code             |           | Name of plug-in to be used    |
|-------------------------------|-----------|-------------------------------|
| Information Integrator Server | III Agent |                               |
| EUC(S90)                      | Shift-JIS | F3jnGenExec_CNV_PLG_Euc2Sjis  |
| EUC(S90)                      | UTF-8     | F3jnGenExec_CNV_PLG_Euc2Utf8  |
| Shift-JIS                     | EUC(S90)  | F3jnGenExec_CNV_PLG_Sjis2Euc  |
| Shift-JIS                     | UTF-8     | F3jnGenExec_CNV_PLG_Sjis2Utf8 |
| UTF-8                         | EUC(S90)  | F3jnGenExec_CNV_PLG_Utf82Euc  |
| UTF-8                         | Shift-JIS | F3jnGenExec_CNV_PLG_Utf82Sjis |

6. Edit the process definition (definition ID "F3jnGenExec\_CL\_PROC") for registering definitions provided by the Information Integrator Server.

- a. In the data collection definition data source list, of the data source definitions registered in step 4, specify the definition that is used by the Information Integrator Server to communicate with the III Agents (original ID name "F3jnGenExec\_CL\_SRC").
- b. Specify "F3jn-Gen-ExData.\*" in "Notified file name".

7. Register the edited definition to the Information Integrator Server.

Register the edited definition to the Information Integrator Server. Register the definition using III Studio.

8. Perform the following on the Information Integrator:

Use the ifigenexec (simple definition operation) command to export registered definitions. Stop Information Integrator Server before executing this command.

```
ifigenexec.cmd EXP none export definition file
```

\* Specify the file name with a full path.

If the character code of the Information Integrator Server OS and the character code of the III Agent OS are different, use the ifcnvdat (text format character code conversion) command to convert the exported definition file to the character code of the III Agent OS. Refer to the *Command Reference* for information on commands.

Note that if messages starting with "IF" are output when the command is executed, processing may have failed due to the reasons shown below. Refer to the *Command Reference*, take the action recommended, and re-execute the command.

- The file name is not a full path.
- An invalid file name was specified.
- The user executing the command does not have administrator rights.

9. Use an FTP tool to move the resources output in step 8 to the III Agent.

#### Performing the procedure on the III Agent

1. In the HOSTS file for the III Agent, set the host information for the Information Integrator Server. Refer to "[3.2.1 Setting Up the HOSTS \(hosts\) File](#)" for information on configuring the HOSTS file.
2. Perform the following on the III Agent:

Use the ifigenexec (simple definition operation) command to import the definitions exported on the Information Integrator Server. Stop Information Integrator Server before executing this command.

```
ifigenexec.cmd IMPF export definition file process results file
```

\* Specify the file name with a full path.

If the character code of the Information Integrator Server OS and the character code of the III Agent OS are different, first use the ifcnvdat (text format character code conversion) command on the III Agent to convert the exported definition file to the character code of the III Agent OS. Refer to the *Command Reference* for information on commands.

Note that if messages starting with "IF" are output when the command is executed, processing may have failed due to the reasons shown below. Refer to the *Command Reference*, take the action recommended, and re-execute the command.

- The file name is not a full path.
- An invalid file name was specified.
- The user executing the command does not have administrator rights.
- The III Agent has never been started after installation.  
Use cold start when starting for the first time.

## B.2.3 When Deleting the III Agent

- When it is no longer necessary to link the Information Integrator Server with the III Agent and this type of operation is to be stopped, delete the definition for delivering definition using the procedure below.

#### Performing the procedure on the Information Integrator Server

Obtain the process definition for delivering definitions "F3jnGenExec\_AE\_PROC" and delete the delivery definition for the III Agent to be deleted from the process definition.

#### Note

- Do not delete the process definition while it is being used.
- Even if a delivery definition is deleted, the Process Flow definitions that have already been delivered to the III Agent are not deleted. When a Process Flow definition of a III Agent becomes unnecessary, first delete the Process Flow definition of the III Agent before deleting the delivery definition. Refer to "[B.1.1 Adding, Changing, and Deleting Process Flow Definitions on the III Agent](#)" for information on how to delete the Process Flow definitions for the III Agent.

# Appendix C Certificate Management Package Commands

This chapter explains the commands provided in the certificate management package.

## C.1 Location of the Commands

Certificate management package commands are stored in the following location:

- UNIX

```
/usr/bin
```

- Windows (32-bit)

```
windowsOSinstallDisk\Program Files\Common Files\Fujitsu Shared\F3FSSMEE
```

- Windows (64-bit)

```
windowsOSinstallDisk\Program Files (x86)\CommonFiles\Fujitsu Shared\F3FSSMEE
```

## C.2 Compatible Character Sets

The characters that can be used in the private keys, PINs, and other strings specified with the commands of the certificate management package are predetermined. Refer to the following table:

| Category: | Character  |
|-----------|--|
| Alphabet  | ABCDEFGHIJKLMNOPQRSTUVWXYZ<br>abcdefghijklmnopqrstuvwxyz |
| Numerals  | 123456789  |
| Symbols   | !"#\$%&'()*+,-./:;<=>?[\^_{}~                            |
| Spaces    | ' '  |

## C.3 mkslt (Generate Slot)

### Description

Creates the slot in the slot directory.

### Notes

- When entering a slot password, the characters are hidden.
- Refer to "[C.2 Compatible Character Sets](#)" for information on compatible characters for the slot password.
- The user must manage the slot password specified in this command and the slot ID that is returned by the command.

### Command format

```
mkslt -sd slotDir
```

### Operand

`-sd slotDir`

Specify the slot directory where the slot is to be created using a full path. The slot directory must have already been created.

## Command execution example (UNIX)

When the command is executed, enter a slot password into the dialog. Below is an example of the dialog when generating the slot. The slot directory is created in "/home/slot" in the following example:

```
Example# mkslt -sd /home/slot
Setting Slot-password.
Slot-password: <- (1) slotPwd
Retype: <- (2) Re-enter slotPwd
mkslt: Succeeded. New Slot-ID Is 1. <- (3) completionMessage
Example#
```

Enter the slot password in (1) and (2) using 6 to 128 characters. The slot password set with this command is used when executing `mktkn`. (3) The command execution results and the generated slot ID are displayed. In the above example, the slot ID is 1.

## C.4 mktkn (Generate Token)

---

### Description

Generates and attaches a token for the slot.

### Notes

- When entering a slot password, SO-PIN, and user PIN, the characters are hidden.
- The user must manage the SO-PIN and user PIN set with this command. Set the user PIN in the "token password" when using SSL communication with the Information Integrator Server.

### Command format

```
mktkn  -sd slotDir
        -sn slotID
        -tl tokenLabel
```

### Operand

`-sd slotDir`

Specify the slot directory using a full path.

`-sn slotID`

Specify the slot that will accept the token. Specify the slot ID notified by `mkslt`.

`-tl tokenLabel`

Specify a string of no more than 32 characters for the token label of the token to be generated. The token label specified is used to identify the token. Refer to "[C.2 Compatible Character Sets](#)" for information on compatible characters.

## Command execution example (UNIX)

When the command is executed, enter a slot password into the dialog. Below is an example of the dialog when generating the slot. The slot directory is created in "/home/slot" in the following example:

```
Example# mktkn -sd /home/slot/ -sn 1 -tl Token01
Slot-password: <- (1) slotPwd
Setting SO-PIN (also used as Token-password).
SO-PIN: <- (2) SO-PIN
```



```
Retype: <- (3) Re-enter SO-PIN
Setting User-PIN.
User-PIN: <- (4) userPIN
Retype: <- (5) Re-enter userPIN
Example#
```

(1) Enter the slot password set with `mkslt`.

Enter the SO-PIN in (2) and (3) using 6 and 128 characters. Refer to "[C.2 Compatible Character Sets](#)" for information on compatible characters that can be used.

Enter the user PIN in (4) and (5) using 6 and 128 characters. Refer to "[C.2 Compatible Character Sets](#)" for information on compatible characters.

## C.5 `cmmkenv` (Create Environment)

---

### Description

Creates the directories and performs the initial settings required to use the certificate and CRL management environment.

### Notes

- When specifying parameters in the `-fromdir` and `-todir` options, ensure that you separate with a comma (,).
- The directory specified for the `-todir` option for storing the certificates and for the CRL cannot be the same directory.

### Command format

```
cmmkenv  certificateManagementDir
         [-fromdir certificateDir, CRLdir]
         -todir  certificateDir, CRLdir
```

### Operand

*certificateManagementDir*

Specify the certificate management directory using a full path.

`-fromdir` *certificateDir, CRLdir*

Specify when a directory already exists, such as when moving the operation environment. Do not specify this option when creating a new management environment.

- Certificate directory

Specify the certificate directory using a full path.

- CRL directory

Specify the CRL directory using a full path.

`-todir` *certificateDir, CRLdir*

Specify the directory where the environment is to be created.

- Certificate directory

Specify the certificate directory using a full path.

- CRL directory

Specify the CRL directory using a full path.

## Command execution example (UNIX)

When this command is executed, enter a slot password into the dialog. Below is an example of the dialog when generating the slot. The slot directory is created in "/home/slot" in the following example.

```
Example#cmmkenv /home/sslcert -todir /home/sslcert/cert,/home/sslcert/crl
Example#
```

## C.6 cmsetenv (Set Environment)

---

### Description

Sets the Japanese character code to be used in the following directories:

- Slot directory (private key environment)
- Certificate management directory (public key environment)
- 

### Command format

```
cmsetenv  certificateManagementDir
          -sd slotDir
          -rs certificateValidityCheckingMode
          [-cs CRLsearch]
          [-po certificateAcceptancePolicy]
          [-ip]
          [-ie]
          [-ia]
          [-cm certificationPathLength]
          [-lh LDAPserverHostName]
          [-lp LDAPserverPortNumber]
          [-lw LDAPserverResponseWaitTime]
          [-lc HOPcount]
          [-oh OCSPserverOrCertificateValidationServerHostName]
          [-op proxyServerHostName]
          [-ow OCSPserverOrCertificateValidationServerResponseWaitTime]
          [-oa OCSPserverEncryptionAlgorithm]
          [-or certificateValidityCheckingMode]
```

### Operand

*certificateManagementDir*

Specify the certificate management directory using a full path.

-sd *slotDir*

Specify the slot directory using a full path.

-rs *certificateValidityCheckingMode*

Specify how the certificate validity is to be checked. The recommended value is 1. When the validity of the certificate is to be checked always from the same place, use the value that suits that operation.

0: Do not check validity

1: Follow the certificate settings (recommended)

2: Check validity with CRL

3: Check certificate validity with the OCSP (OCSP server)

4: Check certificate validity with the OCSP extension (certificate validation server)

5: Follow the certificate settings (use the environment settings for the address of the LDAP server)

**-cs *CRLsearch***

Specify the way CRLs used for certificate validation is to be found.

0: Use the first valid CRL found in the search (default)

1: Use the newest CRL after all CRLs have been searched

**-po *certificateAcceptancePolicy***

Specify the object identifier of the acceptance policy used when validating certificates. The object identifier specified here is used for determining whether a certificate is covered by the policy. The entry format is as shown below. Delimit with a comma (,) when specifying more than one. The default is 2.5.29.32.0 which indicates "any-policy".

To specify one policy: 1.2.8000

To specify two policies: 1.2.8001,1.2.8002

To specify *N* policies: 1.2.8001,1.2.8002,...,1.2.8052

**-ip**

Specify if policy mapping is not allowed in a certification path when validating certificates. In an environment where mutual verification occurs (GPKI for example), policy mapping is required so do not specify this.

**-ie**

Specify when at least one certificate acceptance policy is to be forced when validating certificates.

**-ia**

Specify when "any-policy" is not allowed in the policies of a certificate when validating certificates.

**-cm *certificationPathLength***

Specify the maximum length of the certification path (certification path length) to be created, between 0 and 100. When omitted or "0", there is no maximum limit.

**-lh *LDAPserverHostName***

Specify the host name or IP address of the LDAP server. The format is as follows:

Host name: LdapHost

IP address: 10.131.202.50

**-lp *LDAPserverPortNumber***

Specify the port number for the LDAP server. The system default port is used if this is omitted.

The format is as follows:

80

**-lw *LDAPserverResponseWaitTime***

Specify the response wait time for the LDAP server between 1 and 300 seconds. The default is 150 seconds.

**-lc *HOPcount***

Specify the HOP count from LDAP server to LDAP server when using referrals, between 0 and 100. If "0" is specified, there will be no limit to the HOP count. The default is 5.

**-oh *OCSFserverOrCertificateValidationServerHostName***

Specify the OCSP server or certificate validation server host name.

The format is as follows:

```
http://aaa.bbb.ccc:8000
https://aaa.bbb.ccc:8000
```

https can only be specified when '4' has been specified for the -rs option. An error will occur when validating certificates if an invalid scheme is specified (other than "http://" or "https://").

**-op proxyServerHostName**

Specify the host name of the proxy server used by OCSP or OCSP extension. The specified proxy server is also used when the CRL is searched using http when validating certificates. It is also used when "https://" is set with the -oh option.

The format is as follows:

```
http://aaa.bbb.ccc:8888
```

**-ow OCSPserverOrCertificateValidationServerResponseWaitTime**

Specify the response wait time for the OCSP server or certificate validation server between 1 and 600 seconds. The default is 150 seconds.

**-oa CSPserverEncryptionAlgorithm**

Specify the encryption algorithm used on the OCSP server. This is unrelated to the signature algorithm of the certificate.

0: SHA1 (default)

1: MD5

**-or certificateValidityCheckingMode**

If the OCSP server is operating as an agent rather than as the CA itself, specify how validity is to be checked for certificates used in signatures in the response to the OCSP.

0: Do not check validity (default)

1: Follow the certificate settings

### Command execution example (UNIX)

Below is an example of when this command is executed. In the following example, "/home/sslcert" is set as the certificate management directory and "/home/slot" is set as the slot directory.

```
Example# cmsetenv /home/sslcert -sd /home/slot
Example#
```

## C.7 cmmakecsr (Create Certificate Request)

---

### Description

A certificate request is created from the certificate request information specified and output to a file. The certificate request that is output is needed by the certificate authority to create the certificate.

### Notes

- When entering a user PIN, the characters are hidden.
- A new key pair is created if either of the kt or kb parameters is specified.
- Do not specify Japanese for the c, cn, o, ou, ea, t, tel, l, and s parameters.
- RSA algorithm encryption is an encryption algorithm for public keys developed by Rivest, Shamir, and Adleman that uses the problem of prime factorization. This product uses a realization of the algorithm unique to Fujitsu.
- When a key pair is deleted, it cannot be restored. For this reason, after creating a CSR with this command or after acquiring and registering a certificate, create a back up as necessary.
- Attribute information is not created with this command.
- For the kb parameter, all possible key lengths are displayed in USAGE. 3072 or 4096 cannot be specified for the kb parameter if using a key management environment created with mkslt/mktkn.
- For the sa parameter, all possible signature algorithms are displayed in USAGE. Specify SHA256, SHA384, or SHA512 for the sa parameter if using a key management environment created with mkslt/mktkn.

- If 512 is specified for the kb parameter, SHA384 and SHA512 cannot be specified for the sa parameter.
- If a label attached to a key with a key length of 512 is specified for the kl parameter, SHA384 and SHA512 cannot be specified for the sa parameter.

## Command format

```

cmmakecsr [-ed certificateManagementDir]
          -sd slotDir
          -tl tokenLabel
          -of outputFileName
          [-f {TEXT|NOHEAD|V2}]
          [-c country]
          [-cn name]
          [-o organization]
          [-ou organizationalUnit]
          [-ea emailAddress]
          [-t title]
          [-tel telephoneNumber]
          [-l cityOrLocality]
          [-s state]
          [-sa {SHA1|MD5|SHA256|SHA384|SHA512}]
          {-kl keyLabel | [-kt RSA] [-kb 512|768|1024|2048|3072|4096]}
          [-sf randomNumberFile]

```

## Operand

### -ed *certificateManagementDir*

Specify the certificate management directory using a full path. When this option is omitted, the directory specified for the "CMIPATH" environment variable is used.

### -sd *slotDir*

Specify the slot directory using a full path.

### -tl *tokenLabel*

Specify the token label where there is a key to be used or where a newly created key is to be registered.

### -of *outputFileName*

Specify the full path to the file name to output the certificate request.

### -f {TEXT|NOHEAD|V2}

Specify one of the following output formats for the certificate:

TEXT: Output in CSR format.

NOHEAD: Output without a header.

V2: Output in S/MIME format, with an application/pkcs10 header attached.

If this option is omitted, TEXT will be specified as the default value.

Specify NOHEAD if the CA issuing the certificate is InfoCA.

### -c *country*

Specify the country using alphanumerics.

### -cn *name*

Specify the name using alphanumerics. Specify the domain name when the certificate is for an SSL server.

### -o *organization*

Specify the organization using alphanumerics.

**-ou** *organizationalUnit*

Specify the organizational unit using alphanumerics.

**-ea** *emailAddress*

Specify the email address using alphanumerics.

**-t** *title*

Specify the title using alphanumerics.

**-tel** *telephoneNumber*

Specify the telephone number using alphanumerics.

**-l** *cityOrLocality*

Specify the city or locality using alphanumerics.

**-s** *state*

Specify the state using alphanumerics.

**-sa** {SHA1|MD5|SHA256|SHA384|SHA512}

Specify either SHA1 or MD5 as the signature algorithm for the certificate request. When omitted, a value of SHA1 is assumed.

**-kl** *keyLabel* | [-kt RSA] [-kb 512|768|1024|2048|3072|4096]

When the **-kl** option is specified, specify the label (using alphanumerics) for the key to be used or the new key to be created.

When the **-kt** option is specified, and a new key is to be created, specify the key type. Specify the following value:

RSA: Creates a key pair that uses RSA algorithm encryption.

When the **-kb** option is specified, and a new key is to be created, specify the key length in bits. Key length may be 512, 768, 1024, 2048, 3072, or 4096 bits. If this option is omitted, 2048 bits will be specified as the default value.

**-sf** *randomNumberFile*

Specify the full path to the file name that holds the random numbers to be used when a key pair (private key and public key) are to be created.

## Command execution example (UNIX)

An application for creating a new key is created in text format in `"/home/foo/myCertRequest"`.

```
Example# cmmakecsr -ed /home/sslcert -sd /home/slot -f NOHEAD -c jp -cn "foo" -o fujitsu -ea fujitsu.01.ab@jp.fujitsu.com -s
TOKYO -tl footoken -sa SHA512 -kb 4096 -of /home/foo/myCertRequest

ENTER TOKEN PASSWORD=> <- (1) tokenUserPIN

Example#
```

## C.8 cmentcert (Register Certificate)

---

### Description

The certificate is acquired from the certificate authority and registered in the local system.

### Notes

- The certificates must be registered in order starting with the root CA certificate.

Example: Root CA certificate -> Certificate authority certificate that was issued by the root CA -> ... -> Site certificate that was issued by the certificate authority

- Specify the **-ca** option if a CA certificate needs to be registered.

## Command format

```
cmentcert fileName
          -sn slotID
          [-ed certificateManagementDir]
          [-nv]
          [-ca | -own]
          [-nn nickname]
          [-ts]
          [-sn slotID]
          [-tl tokenLabel]
```

## Operand

*fileName*

Specify the full path to the file name to where the registered certificate is stored.

**-ed** *certificateManagementDir*

Specify the certificate management directory using a full path. When this option is omitted, the directory specified for the "CMIPATH" environment variable is used.

**-nv**

Specify when certificate verification is not required when registering certificates. Normally not specified.

**-ca | -own**

Specify the type of certificate to be registered. Specify **-ca** when registering the certificates of a certificate authority (CA). Specify **-own** when registering the certificates of the local system. If neither option is specified, it will be treated as a certificate that is for a system other than the local system and certificate authority.

**-nn** *nickname*

Specify a nickname for the certificate.

**-ts**

Specify this option to set the certificate being registered as a trust anchor.

**-sn** *slotID*

Specify the slot ID of the token where the certificate is to be registered. Omit this if the certificate is to be stored in the certificate management environment.

**-tl** *tokenLabel*

Specify the token label of the token where the certificate is to be registered. The command ends in an error if there is more than one token with the same label. Omit this if the certificate is to be stored in the certificate management environment.

## Command execution example (UNIX)

Register a certificate (/entdir/Jiro.cert) where the nickname "Jiro" is specified.

The message "normal end certid = ..." that is output in the example indicates that the certificate registration has finished normally. The string after "certid =" is the certificate identifier that has been given to this certificate.

```
Example# cmentcert /entdir/Jiro.cert -ed /home/sslcert -nn Jiro -own
normal end certid = vu5sdPOks1PpzzL+03FmybwPrmg=
Example#
```

## C.9 cmentcrl (Register CRL)

### Description

The CRL is acquired from the certificate authority and registered in the local system.

## Notes

- When registering the CRL, if a CRL previously issued by the same certificate authority exists, the old CRL is deleted.
- The CA certificate of the certificate authority that issued the CRL must be registered beforehand.

## Command format

```
cmentcrl fileName
        [-ed certificateManagementDir]
        [-nv]
```

## Operand

*fileName*

Specify the full path to the file name to where the CRL to be registered is stored.

**-ed *certificateManagementDir***

Specify the certificate management directory using a full path. When this option is omitted, the directory specified for the "CMIPATH" environment variable is used.

**-nv**

Specify when CRL verification is not required when registering the CRL. Normally not specified.

## Command execution example (UNIX)

Verify and register the CRL "/entdir/Jiro.crl".

The message "normal end CrlID = ..." that is output in the example indicates that the CRL registration has finished normally.

```
Example# cmentcrl /entdir/Jiro.crl -ed /home/sslcert
```

# C.10 cmlistcert (Display Certificate List)

## Description

The information for the certificates that correspond to the specified search keys uses standard output.

## Notes

- The certificates that can be displayed in the list are those certificates that are registered in the certificate directory.
- The command option names are used as the item names in the window display.
- Items are not displayed if information for options explained in "Operand" is not set.
- When the -c, -cn, -o, -ou, -ea, -ca, -own, and -nn options are all omitted, a list of all certificates is displayed.

## Command format

```
cmlistcert [-ed certificateManagementDir]
           [-c country]
           [-cn name]
           [-o organization]
           [-ou organizationalUnit]
           [-ea emailAddress]
           [-ic countryOfCertificateAuthority]
           [-icn nameOfCertificateAuthority]
           [-io organizationNameOfCertificateAuthority]
           [-iou organizationalUnitOfCertificateAuthority]
           [-iea emailAddressOfCertificateAuthority]
           [-ca]
```



```
[-own]
[-nn nickname]
[-su certificateType]
[-ts]
[-sn slotID]
[-tl tokenLabel]
```

## Operand

**-ed *certificateManagementDir***

Specify the certificate management directory using a full path. When this option is omitted, the directory specified for the "CMIPATH" environment variable is used.

**-c *country***

Specify the country using alphanumerics.

**-cn *name***

Specify the name using alphanumerics.

**-o *organization***

Specify the organization using alphanumerics.

**-ou *organizationalUnit***

Specify the organizational unit using alphanumerics.

**-ea *emailAddress***

Specify the email address using alphanumerics.

**-ic *countryOfTheCertificateAuthority***

Specify the country of the certificate authority using alphanumerics.

**-icn *nameOfCertificateAuthority***

Specify the name of the certificate authority using alphanumerics.

**-io *organizationNameOfTheCertificateAuthority***

Specify the organization of the certificate authority using alphanumerics.

**-iou *organizationalUnitOfTheCertificateAuthority***

Specify the organizational unit of the certificate authority using alphanumerics.

**-iea *emailAddressOfTheCertificateAuthority***

Specify the email address of the certificate authority using alphanumerics.

**-ca**

Specify when the certificates to be listed are those for a certificate authority.

**-own**

Specify when the certificates to be listed are those issued to you.

**-nn *nickname***

Specify the nickname.

**-su *certificateType***

Specify the certificate type.

1: All (default)

2: Certificate for data encryption

3: Public key certificate for the private key used for signing messages

4: Certificate for key encryption

-ts

Specify this option to display a list of trust anchor certificates.

-sn *slotID*

Specify the slot ID of the token where the certificate exists.

-tl *tokenLabel*

Specify the token label of the token where the certificate exists.

### Command execution example (UNIX)

Display a list of certificates that include the specified organization. Specify "/home/sslcert" as the certificate management directory, and "Fujitsu" as the organization name.

```
Example# cmlistcert -ed /home/sslcert -o Fujitsu
CertID=vu5sdPOks1PpzzL+03Fabvcpa=
c=jp,
o=Fujitsu,
ou=EC2,
cn=Taro Fujitsu,
ea=fujitsu.01.ab@en.fujitsu.com,
nn=Taro,
CertID=vu6sdPOks1PpzzL+04Fabvcpa=
c=jp,
o=Fujitsu,
ou=EC2,
cn=Hanako Fujitsu,
ea=fujitsu.02.cd@en.fujitsu.com,
nn=Hanako,
Example#
```

## C.11 cmdspcert (Display Certificate Content)

### Description

The specified certificate content is edited by item and output to standard output or to a file.

### Notes

- Specify at least one of the -id, -nn, or -fn options.
- Items for which identifiers are not set are not displayed.

### Command format

```
cmdspcert [-ed certificateManagementDir]
           {-id certificateIdentifier | -nn nickname | -fn certificateFileName}
           [-sl displayFormat]
           [-oc japaneseCodeSet]
           [-of fileName]
           [-sn slotID | -tl tokenLabel]
```

## Operand

**-ed *certificateManagementDir***

Specify the certificate management directory using a full path. When this option is omitted, the directory specified for the "CMIPATH" environment variable is used.

**-id *certificateIdentifier* | -nn *nickname* | -fn *certificateFileName***

Specify the certificate to be displayed. Select a way to specify from the following three types:

When the -id option is specified, a registered certificate is displayed. Specify the certificate identifier (the string shown after "CertID=") that was displayed with cmlistcert.

When the -nn option is specified, a registered certificate is displayed. Specify the nickname displayed when registering.

When the -fn option is specified, an unregistered certificate is displayed. Specify the certificate file name.

**-sl *displayFormat***

Specify one of the following display formats:

0: Display by item.

1: Display the key.

If this option is omitted, 0 (display by item) will be used as the default value.

**-oc *japaneseCodeSet***

Specify one of the following for the Japanese character code when outputting display results:

0: JIS

1: ShiftJIS

2: EUC

If this option is omitted, 1 (Shift JIS) will be specified as the default value.

**-of *fileName***

Specify the full path to the file name to output the display results.

If this option is omitted, standard output will be used.

**-sn *slotID* | -tl *tokenLabel***

When the -sn option is specified, specify the slot ID of the token where the certificate exists. This is valid only when -id or -nn is specified.

When the -tl option is specified, specify the token label of the token where the certificate exists. The command ends in an error if there is more than one token with the same label. Furthermore, this is valid only when -id or -nn is specified.

## Command execution example (UNIX)

Specify "/home/sslcert" as the certificate management directory, and display the content of certificates with "Jiro" specified as the nickname.

```
Example# cmdspcert -ed /home/sslcert -nn Jiro
CERTIFICATE:
VERSION: V1
SERIALNUMBER: 17
SIGNATURE ALGORITHM: SHA1WithRSAEncryption
ISSUERNAME:
COUNTRY: jp
STATE: Ishikawa Pref.
```

```
LOCALITY: Kanazawa City
ORGANIZATION: Fujitsu, Limited.
ORGANIZATIONALUNIT: Root CA Admin
NAME: Fujitsu Jiro
TITLE: Root
ADDRESS: fujitsu st.
POSTAL CODE: 111-1111
PHONE NO.: 03-1234-5678
EMAIL ADDRESS: fujitsu.01.ab@en.fujitsu.com
VALIDITY: 19980609000000-19990602235959
SUBJECTNAME:
COUNTRY: jp
STATE: Ishikawa Pref.
LOCALITY: Kanazawa City
ORGANIZATION: Fujitsu, Limited.
ORGANIZATIONALUNIT: CA Admin
NAME: CAINFRA
TITLE: nonTitle
ADDRESS: 1-choume, 2-3
POSTAL CODE: 999-9999
PHONE NO.: 076-123-4567
EMAIL ADDRESS: fujitsu.03.ef@en.fujitsu.com
PUBLIC KEY ALGORITHM: RSAEncryption
SIGNATURE ALGORITHM: SHA1WithRSAEncryption
SIGNATURE: 61AAA36B B5B17C44 EF7D18D1 58436FC6
08A4DCEF 0E6F5549 791C52FE 2918A009
4D2111C8 9A302A12 E44CB11C 886688E9
58D27A3A A85DED9F E4497B32 11660962
FINGERPRINT: C6 D5 71 87 0C 01 A3 58 4F 46 09 A2 B3 E8 22 1F
Example #
```

## C.12 cmlistcrl (Display CRL List)

---

### Description

The information for the CRLs that correspond to the specified search keys uses standard output.

### Notes

- Items for which identifiers are not set are not displayed.
- When the -c, -cn, -o, -ou, and -ea options are all omitted, a list of all CRLs is displayed.

## Command format

```
cmlistcrl [-ed certificateManagementDir]  
          [-c countryOfCertificateAuthority]  
          [-cn nameOfCertificateAuthority]  
          [-o organizationNameOfCertificateAuthority]  
          [-ou organizationalUnitOfCertificateAuthority]  
          [-ea emailAddressOfCertificateAuthority]
```

## Operand

**-ed *certificateManagementDir***

Specify the certificate management directory using a full path. When this option is omitted, the directory specified for the "CMIPATH" environment variable is used.

**-c *countryOfCertificateAuthority***

Specify the country of the certificate authority using alphanumerics.

**-cn *nameOfCertificateAuthority***

Specify the name of the certificate authority using alphanumerics.

**-o *organizationNameOfCertificateAuthority***

Specify the organization of the certificate authority using alphanumerics.

**-ou *organizationalUnitOfCertificateAuthority***

Specify the organizational unit of the certificate authority using alphanumerics.

**-ea *emailAddressOfCertificateAuthority***

Specify the email address of the certificate authority.

## Command execution example (UNIX)

Specify "/home/sslcert" as the certificate management directory, and display the list of CRLs that include "Fujitsu" in the organization name.

```
Example# cmlistcrl -ed /home/sslcert -o Fujitsu  
CrlID=e4GbxyzagpDwsEGea243Kn+Ufay  
c=jp,  
cn=Yokohama Fujitsu,  
o=Fujitsu,  
ou=EC2,  
ea=fujitsu.04.gh@en.fujitsu.com,  
CrlID=e5GbxyzagpDwsEGea123Ln+Nfay  
c=jp,  
cn=Kanazawa Fujitsu,  
o=Fujitsu,  
ou=EC2,  
ea=fujitsu.05.ij@en.fujitsu.com,  
Example#
```

## C.13 cmrmcert (Delete Certificate)

## Description

Deletes the specified certificate from the management environment in the local system.

## Command format

```
cmmrcert [-ed certificateManagementDir]  
          {-id certificateIdentifier | -nn nickname}  
          [-sn slotID | -tl tokenLabel]
```

## Operand

**-ed *certificateManagementDir***

Specify the certificate management directory using a full path. When this option is omitted, the directory specified for the "CMIPATH" environment variable is used.

**-id *certificateIdentifier* | -nn *nickname***

Specify the certificate to be deleted. Select a way to specify from the following two types:

When the -id option is specified, specify the certificate identifier.

When the -nn option is specified, specify the nickname of the certificate to be deleted.

**-sn *slotID* | -tl *tokenLabel***

When the -sn option is specified, specify the slot ID of the token where the certificate exists. Omit this if the certificate is registered in the certificate management environment.

When the -tl option is specified, specify the token label of the token where the certificate exists. The command ends in an error if there is more than one token with the same label.

## Command execution example (UNIX)

Deletes the certificate where the nickname "Jiro" is specified.

```
Example# cmmrcert -ed /home/sslcert -nn Jiro  
Example#
```

# C.14 initkn (Initialize Token)

---

## Description

The token is initialized. The private key of the token deleted when the token is initialized.

## Notes

- When entering a SO-PIN and user PIN, the characters are hidden.
- The user PIN specified in the dialog is required when Information Integrator Server performs SSL communication. This should be managed with care by the user.

## Command format

```
initkn -sd slotDir  
        -tl tokenLabel
```

## Operand

**-sd *slotDir***

Specify the slot directory using a full path.

`-tl tokenLabel`

Specify a string of no more than 32 characters for the token label to be set for the token to be initialized. Refer to "[C.2 Compatible Character Sets](#)" for information on compatible characters.

### Command execution example (UNIX)

A token whose token label is "Token01" is initialized.

```
Example# initkn -sd /home/slot/ -tl Token01
Setting SO-PIN.
SO-PIN: <- (1)
Retype: <- (2)
New Token label: Token02
initkn: Initialize token?(y/n) y <- (3)
Setting User-PIN.
User-PIN: <- (4)
Retype: <- (5)
Example#
```

- (1) Enter a SO-PIN between 6 and 128 characters.
- (2) Re-enter the SO-PIN entered in step (1).
- (3) A confirmation message for initializing the token will be displayed. Enter "y".
- (4) Enter a user PIN between 6 and 128 characters.
- (5) Re-enter the user PIN entered in step (4).

Refer to "[C.2 Compatible Character Sets](#)" for information on compatible characters.

## C.15 setpin (Change PIN)

---

### Description

Change the PIN of the token. Use to change the private key PIN because the token PIN was leaked, for example. `cmmkenv` and `cmsetenv` need to be executed before this command is executed.

### Notes

- When entering a SO-PIN and user PIN, the characters are hidden.
- The user PIN specified in the dialog is required when Information Integrator Server performs SSL communication. This should be managed with care by the user.

### Command format

```
setpin -ed certificateManagementDir
        -tl tokenLabel
        [-s]
```

### Operand

`-ed certificateManagementDir`

Specify the certificate management directory using a full path.

-tl *tokenLabel*

Specify the token whose user PIN is to be changed using the token label.

-s

Specify when changing the SO-PIN.

### Command execution example 1 (UNIX)

A user PIN of a token whose token label is "Token01" is changed.

```
Example# setpin -ed /home/sslcert/ -tl Token01
User-PIN for Token01: <- (1)
New User-PIN: <- (2)
Retype: <- (3)
Example#
```

(1) Enter the user PIN for Token01 before the change.

(2) Enter a new user PIN between 6 and 128 characters. Refer to "[C.2 Compatible Character Sets](#)" for information on compatible characters.

(3) Re-enter the user PIN entered in step (2).

### Command execution example 2 (UNIX)

The SO-PIN of a token whose token label is "Token01" is changed.

```
Example# setpin -ed /home/sslcert/ -tl Token01 -s
SO-PIN for Token01: <- (1)
New SOPIN: <- (2)
Retype: <- (3)
Example#
```

(1) Enter the SO-PIN for Token01 before the change.

(2) Enter a new SO-PIN between 6 and 128 characters. Refer to "[C.2 Compatible Character Sets](#)" for information on compatible characters.

(3) Re-enter the SO-PIN entered in step (2).

## C.16 Message

---

### C.16.1 Output Format

---

The message display format is shown below.

- UNIX

```
UX: commandName:ERROR:[messageID]:messageBodyText
```

Note: The message type will always be ERROR.

- Windows

```
[messageNumber]messageBody
```

*commandName*

The name of the certificate management package command.



*messageID*

Message information ID number.

*messageBodyText*

Body text of a message.

## C.16.2 Message Details

---

This section describes message numbers, message body, and message explanations.

### 0011

```
[0011]Parameter error:parameter
```

[Description]

A parameter error was detected when starting the command.

[Parameter description]

*parameter*: Indicates the parameter of the option (not applicable in some cases).

[Action]

Check the parameter when starting the command and then re-execute.

### 0022

```
[0022>Password not matched
```

[Description]

The password and its confirmation do not match.

[Action]

Specify the correct password, SO-PIN, or user PIN and then re-execute.

### 0024

```
[0024]Invalid token label
```

[Description]

There are invalid characters in the token label or its length is incorrect.

[Action]

Specify the correct token label and then re-execute.

### 0030

```
[0030]Token label already exists
```

[Description]

There is already a token with the same label.

[Action]

Specify a different token label.

### 0051

```
[0051]Certificate already exists
```

[Description]

An identical certificate has already been registered. Alternatively, a certificate has already been registered with the specified nickname.

[Action]

Display the list of certificates with `cmlistcert` and check if the specified nickname already exists. If the nickname already exists, specify a different nickname and then re-execute. There is no need to re-register if the same nickname does not exist.

## 0054

```
[0054]Invalid certification path
```

[Description]

The certification path is invalid and verification of the certification path failed. There three possible reasons, as follows:

- An upstream CA certificate has not been registered.
- The validity period for the certificate has expired.
- There is incorrect information in the certificate.

[Action]

Use the following procedure to check that the upstream CA certificates until the root CA certificates are all registered:

1. Display the content of registered certificates using `cmdspcert`.
2. Use the certificate authority information displayed (country, name, etc.) as the search keys (-cn, -o, -ou, -ea, and -ca) in `cmlistcert` and then execute.
3. Confirm that the searched certificate exists.

If the certificate exists, it may be that the information for the certificate has not been set correctly. Check the information below with the certificate content display command.

- Validity period for the certificate

If the validity period for the certificate has expired, delete it and re-register.

If there is no problem with the validity period for the certificate, contact the certificate authority.

## 0060

```
[0060]Certificate not found
```

[Description]

The specified certificate has not been registered.

[Action]

Specify a certificate identifier or nickname that has been registered. Check if the certificate has been registered with `cmlistcert`.

## 0065

```
[0065]File doesn't exist:fileName
```

[Description]

The file does not exist.

[Parameter description]

*fileName*: Indicates the file name.

[Action]

Specify the correct file name and then re-execute.

## 0075

[0075] Certificate with same Nickname already exists

### [Description]

A certificate with an identical nickname already exists

### [Action]

Check that the certificate file is correct.

## 0076

[0076] Cannot read contract certificate list file

### [Description]

A contract certificate list file does not exist in the specified location. Or, read permissions have not been granted.

### [Action]

Check the certificate file.

## 0077

[0077] pfx access error:*errcode1*,*errcode2*,*errcode3*

### [Description]

An error occurred while accessing pfx data.

### [Parameter description]

*errcode1*: Maintenance code 1

*errcode2*: Maintenance code 2

*errcode3*: Maintenance code 3

### [Action]

Take note of *errcode1*, *errcode2*, and *errcode3* and contact Fujitsu technical support.

## 0090

[0090] Already Exist Key

### [Description]

A key with the same label already exists.

### [Action]

Change the label and then re-execute.

## 0092

[0092] Invalid key

### [Description]

This is not a valid key or the key is corrupt.

### [Action]

Check that the specified file name is correct. If it is correct, the key may be corrupted so contact Fujitsu technical support.

## 0093

[0093] Unsupported key

[Description]

The key is not using the PKCS format generated by either InfoCA or SystemWalker/PkiMGR.

[Action]

Check the format and contact the supplier of the key file.

**0094**

[0094] Key not found

[Description]

A key with the specified label is not in the specified token.

[Action]

Specify the correct token label and key label and then re-execute.

**0095**

[0095] Invalid data

[Description]

The data is not valid. Alternatively, the content has been corrupted and processing is not possible.

[Action]

Check if there was a problem with how the data was obtained. Alternatively, contact the supplier of the data and obtain the data again.

**0096**

[0096] Already Exist Keydata

[Description]

An identical key has already been registered.

[Action]

Re-registration is not necessary.

**0097**

[0097] Invalid Key Label

[Description]

There are invalid characters in the key label. Or the string length is incorrect.

[Action]

Specify the correct key label and then re-execute.

**0101**

[0101]File permission denied:*fileName*

[Description]

There are no access rights set for the file.

[Parameter description]

*fileName*: Indicates the file name.

[Action]

Check the access rights for the file.

## 0102

[0102]Work area not allocated

### [Description]

The memory is insufficient.

### [Action]

Increase the usable memory and then re-execute.

## 0104

[0104]No space in disk

### [Description]

There is insufficient disk space available.

### [Action]

Extend the free disk space, and then re-execute.

## 0106

[0106]Logical error

### [Description]

An internal error has been detected in this product.

### [Action]

Contact Fujitsu technical support with details of the operations performed when the error occurred.

## 0110

[0110]DB connect error:code1,code2

### [Description]

Cannot connect to the certificate and CRL management environments.

### [Parameter description]

*code1*: Indicates error code 1.

*code2*: Indicates error code 2.

### [Action]

The directory for the certificate and CRL management environment may have been deleted or its name may have been changed. Check the certificate and CRL management environments. If the certificate and CRL management environment directory exists, contact Fujitsu technical support with error code 1 and code 2.

## 0111

[0111]DB access error:code1,code2,detail

### [Description]

An error occurred while accessing the certificate and CRL management environment.

### [Parameter description]

*code1*: Indicates error code 1.

*code2*: Indicates error code 2.

*detail*: Indicates error detail (not applicable in some cases).

[Action]

Contact Fujitsu technical support with error code 1 and code 2 and the error details.

**0113**

[0113]Environment file destroyed:*detail*

[Description]

The certificate and CRL management environments may have been corrupted.

[Parameter description]

*detail*: Indicates error details.

[Action]

Contact Fujitsu technical support with the error details.

**0115**

[0115]Cryptographic function detect error:*code1,code2*

[Description]

An error occurred during encryption processing.

[Parameter description]

*code1*: Indicates error code 1.

*code2*: Indicates error code 2.

[Action]

Contact Fujitsu technical support with error code 1 and code 2.

**0116**

[0116]System function detect error:*code1,code2*

[Description]

A system call error occurred during processing.

[Parameter description]

*code1*: Indicates error code 1.

*code2*: Indicates error code 2.

[Action]

Contact Fujitsu technical support with error code 1 and code 2.

**0120**

[0120]DB lock error

[Description]

The certificate and CRL management environments are being used exclusively.

[Action]

Wait, and then re-execute. If the problem persists, contact Fujitsu technical support.

**0121**

[0121]Directory doesn't exist:*directory*

[Description]

The directory has not been specified with a full path or the specified directory does not exist.

[Parameter description]

*directory*: Indicates the directory name.

[Action]

Specify the correct directory and then re-execute.

## 0200

```
[0200]Environment creating informations not found
```

[Description]

The information created with cmmkenv does not exist.

[Action]

Execute cmmkenv if cmmkenv has not been executed. If it has been executed, it is possible that the information created with cmmkenv has been deleted. Contact Fujitsu technical support.

## 0201

```
[0201]Environment setup informations not found
```

[Description]

The information created with cmsetenv does not exist.

[Action]

Execute cmsetenv if cmsetenv has not been executed. If it has been executed, it is possible that the information created with cmsetenv has been deleted. Contact Fujitsu technical support.

## 0205

```
[0205]Environment directory not found
```

[Description]

The specified directory is incorrect.

[Action]

Specify the correct certificate management directory and then re-execute. If there is no certificate management directory, create the certificate management directory and then re-execute.

## 0206

```
[0206]Environment file permission denied:detail
```

[Description]

The user does not have access rights to access the certificate and CRL management environment. It is possible that the executor of the command and the WWW server administrator are different users.

[Parameter description]

*detail*: Indicates error detail.

[Action]

Execute the command with WWW server admin rights.

## 0207

[0207]Certificate informations already exists

### [Description]

The certificate and CRL management environment cannot be created because one already exists.

### [Action]

Either use a certificate and CRL management environment that already exists as is, or delete the current environment and then create a new one.

## 0209

[0209]Specifying the same directory(DB) name is invalid

### [Description]

An identical directory name has been specified.

### [Action]

The same directory name cannot be specified for the certificate and CRL management environments, so specify a different directory name.

## 0300

[0300]Incorrect password

### [Description]

There is an error with the password, SO-PIN, or user PIN.

### [Action]

Specify the correct password, SO-PIN, or user PIN and then re-execute.

## 0301

[0301]Invalid password

### [Description]

There are invalid characters in the password, SO-PIN, or user PIN or the string length is incorrect.

### [Action]

Specify the correct password, SO-PIN, or user PIN and then re-execute.

## 0306

[0306]Slot not found

### [Description]

The slot does not exist or the slot specified is one for which a token has already been generated.

### [Action]

Either generate a slot or specify the slot ID of a slot for which a token has not been generated and then re-execute.

## 0307

[0307]Token not found

### [Description]

The token does not exist.



[Action]

Specify the correct token label and then re-execute.

**0315**

[0315]Token label duplicated

[Description]

There are multiple tokens with identical labels.

[Action]

Contact Fujitsu technical support.

**0316**

[0316]Slot directory not found

[Description]

The specified directory is not a slot directory.

[Action]

Specify the directory again or create a slot directory.

**0317**

[0317]Slot directory permission denied

[Description]

Access to the slot directory is denied.

[Action]

Check access rights.

**0318**

[0318]Token exclusive error

[Description]

Processing is not possible because the token is being used by another command or application.

[Action]

If being used elsewhere, wait for that command to finish, and then re-execute. If not being used elsewhere, wait and then re-execute.

**0506**

[0506]Date in certificate or CRL is out of supported period

[Description]

The validity period for the certificate or the update date for the CRL falls outside of the years 1950 and 2049 and cannot be processed.

[Action]

Check the validity period of the certificate or the update date for the CRL and then contact the supplier of the certificate or CRL.

**0507**

[0507]Unsupported certificate

[Description]

The CRL is not X.509 V1, 2, or 3 so processing was not possible. Alternatively, registration is not possible because there is an unsupported certificate extension item.

[Action]

Check the certificate version and information and then contact the supplier of the certificate.

**0509**

[0509]Unsupported signature algorithm

[Description]

Digital signature processing is possible only with MD2+RSA algorithm encryption, MD5+RSA algorithm encryption, and SHA1+RSA algorithm encryption.

[Action]

Contact the supplier of the certificate or CRL and acquire a certificate or CRL that uses the correct signature algorithms.

**0511**

[0511]Invalid certificate

[Description]

This is not a valid certificate or the certificate is corrupt and cannot be processed.

[Action]

Contact the supplier of the certificate and obtain the certificate again.

**0520**

[0520]Unsupported CRL

[Description]

The CRL is not X.509 V1 or 2 so processing was not possible. Alternatively, registration is not possible because there is an unsupported CRL extension item.

[Action]

Check the certificate version and information and then contact the supplier of the certificate.

**0521**

[0521]Invalid CRL

[Description]

CRL is invalid.

[Action]

This is not a valid CRL or the CRL is corrupt. Contact the supplier of the CRL and obtain the CRL again.

**0522**

[0522]CRL already exists

[Description]

An identical CRL has already been registered.

[Action]

Re-registration is not necessary.

**0523**

[0523]CRL number already exists

**[Description]**

When registering a delta CRL, a CRL with an identical CRL number has already been registered.

**[Action]**

Re-registration is not necessary.

**0524**

[0524] BASECRL not found

**[Description]**

When registering a delta CRL the base CRL of the delta CRL has not been registered.

**[Action]**

Contact the supplier of the delta CRL and obtain the base CRL of the delta CRL, and then re-execute.

**0525**

[0525]CRL issuer certificate not found

**[Description]**

The certificate for the CRL issuer is not registered.

**[Action]**

Obtain the certificate for the CRL issuer, register it, and then re-execute. Alternatively, if there is no need to verify the digital signature when registering the CRL, register the CRL without verification.