



Systemwalker Runbook Automation

Operation Guide

Windows/Linux

B1X1-0115-02ENZ0(00)
July 2012

Preface

Purpose of This Document

This document describes how to operation V15.1.0 Systemwalker Runbook Automation.

Intended Readers

This document targets such people who work following service with using Systemwalker Runbook Automation.

- Operation Administrator who design and manage Automated Operation System
- Developer who develop Automated Operation Process
- Operator who execute Automated Operation Process

This document assumes that readers already have the following knowledge:

- Windows(R)
- Linux
- Internet
- Relational databases
- Web servers
- LDAP
- Java

Abbreviations and Generic Terms Used

- The term "Windows 7" refers to the following products:
 - Microsoft(R) Windows(R) 7 Home Premium (x86)
 - Microsoft(R) Windows(R) 7 Professional (x86)
 - Microsoft(R) Windows(R) 7 Ultimate (x86)
 - Windows(R) 7 Home Premium (x64)
 - Windows(R) 7 Professional (x64)
 - Windows(R) 7 Ultimate (x64)
- The term "Windows Server 2008" refers to the following products:
 - Microsoft(R) Windows Server(R) 2008 R2 Standard (x64)
 - Microsoft(R) Windows Server(R) 2008 R2 Enterprise (x64)
 - Microsoft(R) Windows Server(R) 2008 R2 Datacenter (x64)
 - Microsoft(R) Windows Server(R) 2008 Standard (x86)
 - Microsoft(R) Windows Server(R) 2008 Enterprise (x86)
 - Microsoft(R) Windows Server(R) 2008 Standard (x64)
 - Microsoft(R) Windows Server(R) 2008 Enterprise (x64)
 - Microsoft(R) Windows Server(R) 2008 Datacenter (x64)
 - Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V (x86)

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

Export Restriction

If this document is to be exported or provided overseas, it is necessary to check Foreign Exchange and Foreign Trade Law, and take the necessary procedure according to these laws

Trademarks

ITIL(R) is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the US Patent and Trademark Office.

Linux is a registered trademark of Linus Torvalds.

Microsoft, Windows, Windows Server, and Microsoft Cluster Service are trademarks or registered trademarks of Microsoft Corporation in the United States and other countries.

Red Hat and all Red Hat-based trademarks and logos are trademarks or registered trademarks of Red Hat, Inc. in the United States and other countries.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

UNIX is a registered trademark of The Open Group in the United States and other countries.

VMware, the VMware "boxes" logo and design, Virtual SMP and VMotion are trademarks or registered trademarks of VMware, Inc. in the United States and other countries.

Other company names and product names are trademarks or registered trademarks of respective companies.

Adobe, Adobe Reader, and Flash are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

The company names, system names, product names and other proprietary names that appear in this document are not always accompanied by trademark symbols (TM or (R)).

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

July 2012

Revision history
March 2012: First edition
July 2012: Second edition

Copyright 2010-2012 FUJITSU LIMITED

Contents

Chapter 1 Overview.....	1
1.1 Operation Procedure Flow.....	1
1.2 An Overview of the Web Console.....	4
1.3 Installation of the Web Console.....	6
1.3.1 Web Browser Settings.....	6
1.4 Procedure for Login to the Web Console.....	8
1.5 Basic Knowledge Relating to Operations.....	11
1.5.1 Automated Operation Processes.....	11
1.5.2 Automated Operation Process Statuses.....	13
1.5.3 Schedule Definitions.....	17
1.5.4 Schedule Definition Statuses.....	18
Chapter 2 Preparing for Automated Operations.....	20
2.1 Procedure of preparing for Automated Operations.....	20
2.1.1 Determining User Authority.....	20
2.1.1.1 Relationship between users and groups.....	20
2.1.1.2 Determine Authority.....	21
2.1.2 Registering user in Directory Service.....	23
2.1.3 Deleting Directory Service Users.....	26
2.1.4 Creating Local Group.....	28
2.1.5 Deleting Local Groups.....	30
2.1.6 Collecting system configuration information from operation target servers.....	32
2.1.6.1 Collecting System Configuration Information Using Agent.....	33
2.1.6.2 Input Configuration Items via Commands.....	34
2.1.6.3 Output Configuration Items via Command.....	34
2.1.7 Registering Connection Information to Operation Target Servers.....	35
2.1.7.1 Managing connection information to server.....	35
2.2 Configuring the Operation Component Environment Settings (Developing an Operation Component using Perl).....	37
2.2.1 Defining the Component Execution Setup File.....	37
2.2.2 Registering the Component Execution Setup File.....	40
2.3 Design the Automated Operation Process.....	40
2.3.1 Deciding which Operation Tasks are Automated.....	40
2.3.2 Reusable Templates.....	40
2.3.3 Deciding on the Automated Start Schedule.....	41
Chapter 3 Developing Automated Operations.....	42
3.1 Development Flow.....	42
3.2 Developing Automated Operation Processes.....	43
3.2.1 Developing Automated Operation Processes that do not include human tasks.....	43
3.2.1.1 Creating an Application Project.....	46
3.2.1.2 Creating a Process Definition.....	50
3.2.1.3 Placing an Operation Component Node (Check that Service has Started).....	53
3.2.1.4 Placing an Operation Component Node (Send Emails).....	53
3.2.1.5 Placing an Exit Node.....	54
3.2.1.6 Using Arrows to Specify Routes.....	54
3.2.1.7 Setting the I/O Information.....	56
3.2.1.7.1 Operation Component Node (Check that the Service has Started).....	57
3.2.1.7.2 Operation Component Node (Send Emails).....	61
3.2.2 Developing Automated Operation Processes that Include Human Tasks.....	61
3.2.2.1 Placing an Activity (Approval).....	64
3.2.2.2 Placing an Operation Component Node (Stop the Server).....	65
3.2.2.3 Placing an Operation Component Node (Send Emails).....	65
3.2.2.4 Placing an Activity (Confirmation).....	66
3.2.2.5 Placing an Exit Node.....	67
3.2.2.6 Using Arrows to Specify Routes.....	67

3.2.2.7 Adding User Defined Attributes.....	71
3.2.2.8 Setting the I/O Information.....	71
3.2.2.8.1 Operation Component Node (Stop the Server).....	71
3.2.2.8.2 Operation Component Node (Send Emails).....	73
3.2.2.9 Creating the Form (Window).....	74
3.2.2.9.1 Creating an Application Form.....	74
3.2.2.9.2 Creating an Approval Form.....	83
3.2.2.9.3 Creating a Confirmation Form.....	90
3.2.3 Developing Advanced Automated Operation Processes.....	102
3.2.3.1 Specifying Multiple Parameters in the Input Information.....	102
3.2.3.1.1 Passing Multiple Parameters to the Command Line of an "Execute an Arbitrary Command" Operation Component Node.....	104
3.2.3.2 Filtering Output.....	106
3.2.3.2.1 Extracting Values for Specified Nodes Using XPath from the XML Format Output Information.....	106
3.2.3.2.2 Extracting from output lines containing a keyword.....	107
3.2.3.3 Connecting Multiple Automated Operation Processes.....	108
3.2.3.4 Automated Operation Processes That Will Start in Response to an Event.....	114
3.2.3.5 Automated Operation Processes that Transition According to Events.....	120
3.2.3.5.1 Creating Automated Operation Processes that Enable Node Transitions According to Events.....	121
3.2.3.5.2 Creating the Automated Operation Process for which the Node Transition Destination Changes as a Result of an Event.....	132
3.2.3.5.3 Using Various Event Notification Command Items.....	137
3.2.3.6 Automated Operation Processes That Will Change in Response to a Timer.....	139
3.2.3.7 Parallel Execution of Operation Components.....	141
3.2.3.8 Sending Email Periodically.....	143
3.2.3.9 Automated Operation Processes That Will Execute Multiple Same Operations.....	148
3.2.3.9.1 Repeatedly execute same operation.....	149
3.2.3.9.2 Repeatedly execute same operation within a fixed time.....	152
3.2.3.9.3 Batch Operations for Multiple Operation Targets.....	154
3.2.3.9.4 Multiple Execution of Automated Operation Process.....	155
3.2.3.10 Adding Help Button in Form.....	158
3.3 Diverting Development Resources.....	158
3.3.1 Downloading Operation Components.....	158
3.3.1.1 Downloading from Studio.....	159
3.3.1.2 Downloading from a Web Console.....	163
3.3.2 Downloading Automated Operation Processes.....	164
3.3.2.1 Downloading from Studio.....	165
3.3.2.2 Downloading from a Web Console.....	166
3.4 Developing Operation Components.....	167
3.4.1 Processing Flow of Operation Components.....	168
3.4.2 Composition Example of a Ruby Script.....	169
3.4.2.1 Script Details.....	170
3.4.2.2 About Logs of Operation Components.....	171
3.4.2.3 About Return Values of Operation Components.....	172
3.4.2.4 About Storage Locations and File Names of Operation Components.....	172
3.4.3 Composition Example of a Perl Script.....	172
3.4.3.1 Script Details.....	174
3.4.3.2 About Return Values of Operation Components.....	175
3.4.3.3 About Storage Locations and File Names of Operation Components.....	175
3.4.4 Creating Operation Component Projects.....	176
3.4.5 Importing Script Files.....	180
3.4.6 Registering Developed Operation Components in the Palette.....	181
Chapter 4 Registering Automated Operation Process.....	183
4.1 The flow of registering.....	183
4.2 Registering an Automated Operation Process.....	184
4.2.1 Registering from Studio.....	184

4.2.2 Registering from a Web Console.....	188
4.2.2.1 Exporting Workflow Application Projects.....	188
4.2.2.2 Creating Automated Operation Process Group Spaces.....	190
4.2.2.3 Updating Automated Operation Process Groups.....	192
4.3 Registering Operation Components.....	195
4.3.1 Registering from Studio.....	195
4.3.2 Registering from a Web Console.....	197
4.3.2.1 Exporting Operation Components.....	197
4.3.2.2 Importing Operation Components.....	197
4.4 Automated Operation Process Groups Online.....	198
Chapter 5 Testing an Automated Operation Process.....	200
5.1 Test Flow.....	200
5.2 Executing the Automated Operation Process.....	201
5.3 Checking the Execution Status of the Automated Operation Process.....	201
5.4 Publishing the Automated Operation Process.....	201
5.4.1 Publishing the Process Definition.....	201
Chapter 6 Scheduling Automated Operation Processes.....	204
6.1 Schedule Definition Creation Flow.....	204
6.2 Registering Holiday Calendars and Schedule Patterns.....	205
6.2.1 Registering Holiday Calendars.....	205
6.2.2 Registering Schedule Patterns.....	206
6.3 Creating Schedule Definitions.....	207
6.4 Checking Monthly Schedules.....	215
6.4.1 Checking Monthly Schedules of Specific Schedule Definitions.....	215
6.4.2 Checking the Monthly Schedule of Multiple Schedule Definitions.....	216
6.5 Checking Schedules and Daily Performance.....	217
6.6 Checking or Modifying Schedule Definitions.....	218
Chapter 7 Using Automated Operation Processes.....	223
7.1 The flow of Automated Operations.....	223
7.2 Checking the Schedules of Automated Operation Processes.....	224
7.3 Operating according to Schedule Definitions.....	225
7.3.1 Immediately Starting Automated Operation Processes for which Schedules have been Defined.....	225
7.3.2 Enabling Schedule Definitions.....	226
7.3.3 Disabling Schedule Definitions.....	229
7.3.4 Putting Schedule Definitions On Hold.....	230
7.4 Starting Automated Operation Processes.....	231
7.4.1 Starting an Automated Operation Process from the Web Console.....	232
7.4.1.1 Starting a new Automated Operation Process.....	232
7.4.1.2 Reusing a Process Instance to Start the Automated Operation Process.....	235
7.4.2 Starting an Automated Operation Process from an Event.....	238
7.4.3 Starting Automated Operation Processes from the REST Interface.....	240
7.5 Progress of Automated Operation Processes.....	242
7.5.1 Progress of Automated Operation Processes from Web console.....	242
7.5.2 Progress of Automated Operation Processes in Response to a Timer.....	244
7.6 Operations on Automated Operation Processes that are Running.....	245
7.6.1 Suspending Automated Operation Processes.....	245
7.6.2 Resuming Automated Operation Processes.....	247
7.6.3 Aborting Automated Operation Processes.....	250
7.6.4 Resuming Automated Operation Processes that have Ended Abnormally.....	254
7.7 Searching Automated Operation Processes.....	265
7.7.1 Searching Process Definitions.....	266
7.7.2 Searching Process Instances.....	268
7.8 Checking Automated Operation Processes.....	272
7.8.1 Checking execution status for Automated Operation Processes.....	273
7.8.2 Checking the Execution Status of the Automated Operation Process using a Gantt Chart.....	276

7.8.3 Checking Actual Results of Automated Operation Process Schedules.....	276
7.8.4 Confirming the Operation Component Execution Status/Execution Results.....	278
7.9 Attaching Files to Automated Operation Processes.....	281
Chapter 8 Managing Automated Operations.....	283
8.1 Managing Automated Operation Process Groups.....	283
8.1.1 Creating Automated Operation Process Group Spaces.....	283
8.1.2 Giving Automated Operation Process Groups Online Status.....	283
8.1.3 Giving Automated Operation Process Groups Offline Status.....	283
8.1.4 Updating Automated Operation Process Groups.....	284
8.1.5 Uninstalling Automated Operation Process Groups.....	284
8.1.6 Exporting Automated Operation Process Groups.....	284
8.2 Managing Process Definitions.....	284
8.2.1 Importing Process Definitions.....	285
8.2.2 Exporting Process Definitions.....	285
8.2.3 Updating Process Definitions.....	286
8.2.4 Deleting Process Definitions.....	286
8.2.5 Publishing Process Definitions.....	286
8.3 Managing Operation Components.....	286
8.3.1 Importing Operation Components.....	287
8.3.2 Updating Operation Components.....	287
8.3.3 Deleting Operation Components.....	287
8.3.4 Exporting Operation Components.....	287
8.4 Managing Schedule Definitions.....	288
8.4.1 Exporting a Schedule Definition.....	288
8.4.2 Importing a Schedule Definition.....	289
8.4.3 Deleting Schedule Definitions.....	289
8.5 Setting Up Email Notification.....	290
Chapter 9 Configuration Management	291
9.1 Starting Method and Window Layout.....	291
9.1.1 How to Open the Configuration Management Windows.....	291
9.2 CI View.....	292
9.2.1 Tree Display for Configuration Items.....	293
9.2.2 Searching for Configuration Items.....	294
9.2.3 Switching between Configuration Baselines.....	298
9.2.4 Detailed Display.....	300
9.2.5 Comparing Configuration Items.....	302
9.2.6 Comparing Expected Records with Observed Records.....	304
9.3 Registering, Updating and Deleting Configuration Items.....	305
9.3.1 Registering Configuration Items.....	306
9.3.2 Updating Configuration Items.....	308
9.3.3 Deleting Configuration Items.....	310
9.3.4 Importing Configuration Items.....	312
9.4 Comparing Configuration Baselines.....	312
9.4.1 List of Configuration Baselines Window.....	312
9.4.2 Results of Configuration Baselines Comparisons.....	313
9.4.3 Comparing Configuration Items Using the Configuration Baseline.....	314
Appendix A Window Reference.....	317
A.1 Scheduling.....	317
A.1.1 List of Windows.....	317
A.1.2 Create Schedule Definition Wizard (General Settings).....	317
A.1.3 Create Schedule Definition Wizard (User Defined Attributes Settings).....	320
A.1.4 Create Schedule Definition Wizard (Startup Days Settings).....	320
A.1.5 Create Schedule Definition Wizard (Startup Time Settings).....	324
A.1.6 Create Schedule Definition Wizard (Confirm).....	326
A.1.7 Schedule Definition List Window.....	327

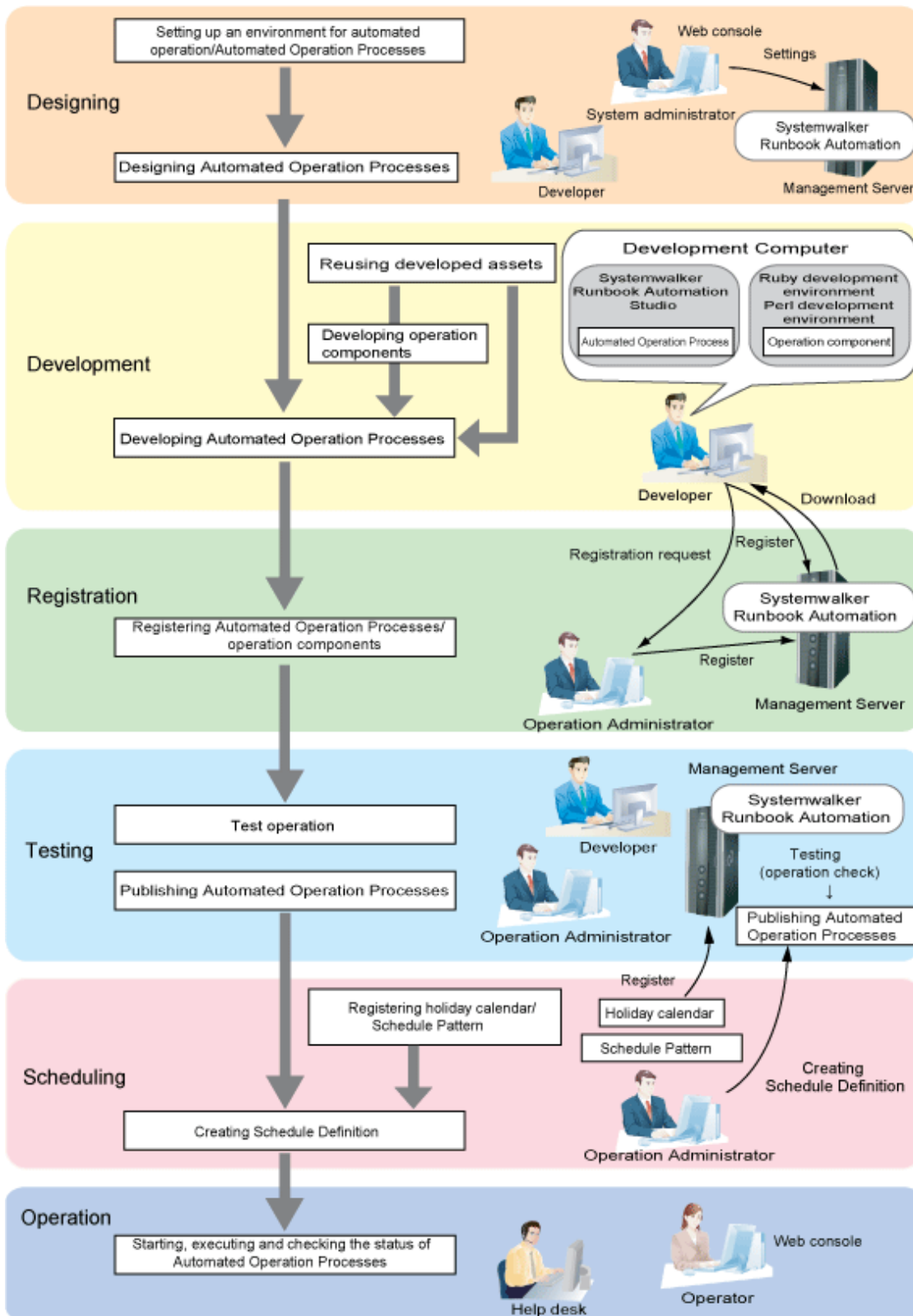
A.1.8 Schedule Definition List Window (Filter).....	328
A.1.9 Schedule Definition Details (Operation).....	329
A.1.10 Schedule Definition Details (Definition Information).....	331
A.1.11 Schedule Definition Details (Start History).....	334
A.1.12 Schedule Patterns List Window.....	336
A.1.13 Schedule Patterns List Window (Filter).....	337
A.1.14 Schedule Patterns Creation Window.....	337
A.1.15 Schedule Patterns Definition Information Window.....	339
A.1.16 Process Status List window (Gantt Chart).....	340
A.1.17 Process Status List window (List).....	345
A.1.18 Process Status List window (Filter).....	347
A.1.19 Scheduled Operation window.....	349
A.2 Managing Operation Component Execution History.....	351
A.2.1 Window List.....	351
A.2.2 Operation Component Execution Status/Execution Results Confirmation Window.....	351
A.2.3 Filter Execution Results Confirmation window.....	353

Chapter 1 Overview

This chapter provides an overview of automated operations using Systemwalker Runbook Automation and the Web console.

1.1 Operation Procedure Flow

The following figure shows the overall procedure, from developing Automated Operation Processes through to operating them.



Design

Automated Operation/Automated Operation Process environment settings

Register the user or group, or connection information for connection to the Managed Server, in order to execute automated operations in Systemwalker Runbook Automation. Additionally, collect the configuration information if necessary.

This task is performed by the system operation manager.

Automated Operation Process design

Analyze the operation task procedure, and decide which operations to automate using Systemwalker Runbook Automation.

Additionally, search for Automated Operation Processes registered in the Management Server that can be applied to operations that are to be automated, and decide how much to customize them to suit the operations. If there are no Automated Operation Process templates that can be applied, create a new Automated Operation Process.

This task is performed by the developer.

Development

Automated Operation Process development

Create the Automated Operation Process definition on the development computer using Systemwalker Runbook Automation Studio.

This task is performed by the developer.

Reuse of development resources

Download any Automated Operation Processes or operation components registered in the Management Server that can be reused. The downloaded Automated Operation Processes or operation components can be used as the basis for development.

This task is performed by the developer.

Operation component development

The operation components can be developed on the development computer or on another computer if necessary.

Operation components can be developed using either a text editor or a third-party Ruby or Perl development environment.

This task is performed by the developer.

Registration

Automated Operation Process/operation component registration

The Automated Operation Process/operation component that has been developed must be registered on the Management Server before it can be used.

This task is performed by the Operation Administrator or developer.

Testing

Test operations

To confirm that the Automated Operation Process that was created is the intended Automated Operation Process, its behavior must be checked by running a test operation.

Note that, in the Automated Operation Process test, the operation will actually be executed for the Managed Server. A separate testing environment must be prepared if there is any chance that the test could affect the system during operation.

This task is performed by the developer.

Automated Operation Process publishing

After confirming that there are no problems in the test operation, publish the Automated Operation Process so that the user can use it.

This task is performed by the Operation Administrator.

Schedules

Holiday calendar/Schedule Pattern registration

To execute the Schedule Definition, the Schedule Definition settings can be configured easily registering and using the following two definition types:

- Holiday calendar

Holidays can be set. Using a holiday calendar, if the Automated Operation Process startup day is a holiday, it is possible to defer the Automated Operation Process startup and start the Automated Operation Process on the previous or following day instead.

The holiday calendar is registered for the system, and can be used commonly for all Schedule Definitions.

The holiday calendar is registered by the Operation Administrator.

- Schedule Pattern

The date and time on which the Automated Operation Process will be started can be registered as a pattern.

When executing the Schedule Definition, the Automated Operation Process startup day can be set by selecting a Schedule Pattern that has already been registered.

The Schedule Pattern is registered for a system or an Automated Operation Process Group.

The Schedule Pattern is registered by the Operation Administrator.

Schedule Definition creation

For an already published Automated Operation Process, set the Schedule Definition, such as startup day or start time, by specifying a Schedule Pattern or by specifying the item directly.

This task is performed by the Operation Administrator or operator.

Operations

Automated Operation Process start, progress, and status confirmation

Using the Automated Operation Process definition registered/published in the Management Server, execute the system operation task processing.

Additionally, check the status of the executed Automated Operation Process, then check the task results and status.

The Automated Operation Process execution/status confirmation can be performed in the Web console that is provided in the Management Server.

This task is performed by the operator.

Additionally, management and investigation of problems that cannot be resolved by the operator are performed by the Help Desk.

1.2 An Overview of the Web Console

In the Web console, assigned tasks can be browsed and processes can be managed. The Web console is displayed after login to Systemwalker Runbook Automation. It is provided as an interface to Systemwalker Runbook Automation.



.....
The Web console management feature can only be used by users with administrator privileges ([AdminRole] group users).
.....

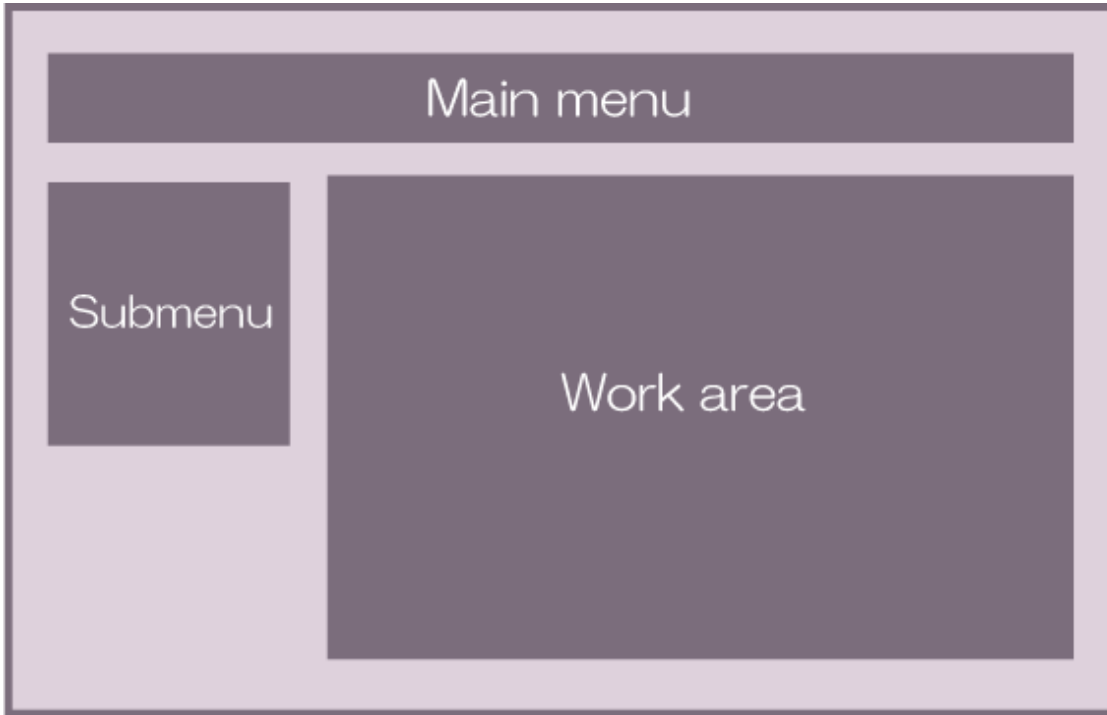
The various parts of the Web console are explained below.

Web console user interface

The Web console user interface is divided into the following sections:

- Main menu
- Submenu
- Work area

The layout of the Web console is shown below:



- Main menu: This is the main navigation menu of the Web console. There are tabs for the main features that are provided in the Web console. The submenu and work area content will change according to the tab that is selected in the main menu. The main menu contains the following tabs:
 - Task
 - Process Manager
 - System Manager (only displayed after login by a user with administrator privileges)
- Submenu: This is the secondary navigation menu of the Console. The submenu content will change according to the main menu selection. When the submenu link is clicked, the tab for the work area will be displayed.
- Work area: Information related to the link selected in the submenu is displayed.
 - The work area information is displayed in the work area tab.
 - When the submenu link is clicked, the tab will open in the work area.
 - Multiple tabs can be opened in the work area, however only one tab can be referenced at a time.

 Note

.....
 If only one tab is open in the work area, this will not close even if the [x] icon is clicked.

- The work area tabs are normally the list panel and the details panel. In the list panel, a list of items for the tab is displayed. In the details panel, details of the items selected in the list panel are displayed.
- The main menu tabs can be switched freely, and the work area tabs will change accordingly. While the main menu tabs are being switched, all the work area tabs of the previous main menu tabs will remain open behind the scenes, and will be displayed when the main menu tabs are selected again.

 Note

.....
 When the focus reverts to the previous main menu tabs, all the tabs that are already open in the work area will be reloaded. Information in the tabs that is not saved will be lost.

- Using the **Show/Hide Control** bar, the work area can be extended horizontally as far as the point where the submenus are hidden.

An example of the Web console window is shown below:

The screenshot shows the Systemwalker Web console interface. At the top, there is a header with the Systemwalker logo, the current process group 'proc001 Console', and navigation menus for 'Process Group', 'History', 'Favorites', 'Help', 'Preferences', 'User ID: swrbaadmin', and 'Logout'. On the left, there is a sidebar with 'PD Searches', 'Schedule Definitions', and 'Schedule Patterns'. The main area displays 'Process Filters: My Processes' and a table with 4 process instances found. Below the table, there are 'Process Instance Details' and 'BPMN' tabs. The BPMN diagram shows a flow starting with 'Start', followed by 'Arrow1' to a green 'Task Activity 1' box, then 'Arrow2' to a task box 'swrba Exe Execute an arb...', which branches into 'Failure' leading to 'Exit1' and 'Success' leading to 'Exit2'.

Process Instance No...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
SimpleFlow	1714	SimpleFlow	Jul, 26 2011	Running	8	swrbaad...	swrbaad...	
SimpleFlow	1732	SimpleFlow	Jul, 26 2011	Running	8	swrbaadmin	swrbaadmin	
SimpleFlow	1750	SimpleFlow	Jul, 26 2011	Running	8	swrbaadmin	swrbaadmin	
SimpleFlow	1768	SimpleFlow	Jul, 26 2011	Closed	8	swrbaadmin	swrbaadmin	

The other Web console page elements are as follows:

- Header: The header contains **History**, **Favorites**, **Preferences** and links to general features such as switches to other applications. The header also contains a list of user names that have logged into the Web console, online help, and logout links.
- Footer: The footer contains the **About** link that displays the version information for the Web console and connected servers.
- Automated Operation Process Group: At the top of the Web console, the name of the active Automated Operation Process Group is displayed before **Console**, which shows that the Web console is being used.

1.3 Installation of the Web Console

The procedure that is used to install the Web console is explained below.

1.3.1 Web Browser Settings

The Web browser must be configured in order to use the Web console in Systemwalker Runbook Automation.

This section explains how to configure the following Web browser settings:

- Screen resolution settings
- Text size settings
- Zoom settings
- Font settings
- Registration of trusted sites
- Interstage Single Sign-On settings

Refer to "Restrictions" in README when configuring Web browser settings.

Screen resolution settings

The minimum Web console window size is 1024x768 pixels. Use a larger size than that so that the buttons and icons are displayed appropriately.

Text size settings

Set **Medium** for the Internet Explorer text size. If **Medium** is not set for the text size, the window display may break up.

The procedure is explained below:

1. For **Text size** of the **View** or **Page** menus, select **Medium**.

Zoom settings

Set "**100%**" for the Internet Explorer page display percentage. If "**100%**" is not set for the page display percentage, the window display may break up.

The procedure is explained below:

1. For **Zoom** of the **View** or **Page** menus, select **100%**.

Font settings

Set **Arial** or **Times New Roman** as the Internet Explorer font. If **Arial** or **Times New Roman** is not set, the window display may break up.

The procedure is explained below:

1. Select **Internet Options** from the **Tools** menu of Internet Explorer.
2. Click **Fonts**, then set **Arial** or **Times New Roman** for **Webpage font**.

Registration of trusted sites

To satisfy the following conditions, configure the following Internet Explorer settings so that local files can be uploaded from the Web console.

Conditions

The security settings for the security zone (such as Internet or Local Intranet) that is used to connect to the Internet Explorer Web console are as follows:

- The **Include local directory path when uploading files to a server** option is **Disable**.

Settings

1. Select **Internet Options** from the **Tools** menu of Internet Explorer.
2. In the **Security** tab, select **Custom level** from the security level of the **Trusted sites** zone.
3. In the **Miscellaneous** category, select **Enable** for the **Include local directory path when uploading files to a server** option, then click **OK**.
4. In the **Security** tab, select the **Trusted sites** zone, then click the **Sites** button.
5. Add the Web console URL to the trusted sites.

Interstage Single Sign-On settings

The following settings are required in order to use Interstage Single Sign-On:

- Configuring the settings so that cookies are received.
 1. Select **Internet Options** from the **Tools** menu of Internet Explorer.
 2. In the **Privacy** tab, click **Advanced**.
 - a. Select the **Override automatic cookie handling** checkbox.
 - b. For **First-party Cookies**, select **Accept**.

- c. For **Third-party Cookies**, select **Accept**.
 - d. Select the **Always allow session cookies** checkbox, then click **OK**.
- 3. Click **OK**.
- Enabling Javascript.
 1. Select **Internet Options** from the **Tools** menu of Internet Explorer.
 2. In the **Security** tab, check that **Internet** is selected for the zone to view or change the security settings for.
 3. Click **Custom level**.
 4. For the **Active scripting** item, select **Enable**, then click **OK**.
 5. Click **OK**.
- Configuring the settings so that SSL 3.0 and TLS 1.0 are used.
 1. Select **Internet Options** from the **Tools** menu of Internet Explorer.
 2. Select the **Advanced** tab.
 - a. For the **Security** item, select **Use SSL 3.0**.
 - b. For the **Security** item, select **Use TLS 1.0**.
 3. Click **OK**.
- Configure one of the following Pop-up Blocker settings:
 - Turn off the Pop-up Blocker:
 1. Select **Internet Options** from the **Tools** menu of Internet Explorer.
 2. In the **Privacy** tab, clear the **Turn on Pop-up Blocker** checkbox.
 3. Click **Apply**.
 - Add the Systemwalker Runbook Automation Management Server to the Pop-up Blocker settings:
 1. Select **Internet Options** from the **Tools** menu of Internet Explorer.
 2. In the **Privacy** tab, click **Settings**.
 3. In **Address of website to allow**, enter the Systemwalker Runbook Automation Management Server FQDN name, then click **Add**.
 4. Click **Close**.
 5. Click **Apply**.

1.4 Procedure for Login to the Web Console

Log into the Web console to create a local group for automated operation environment settings or to start, advance, or check an Automated Operation Process.

The two Web console login methods are as follows:

- Normal login
- Login from email

Normal login

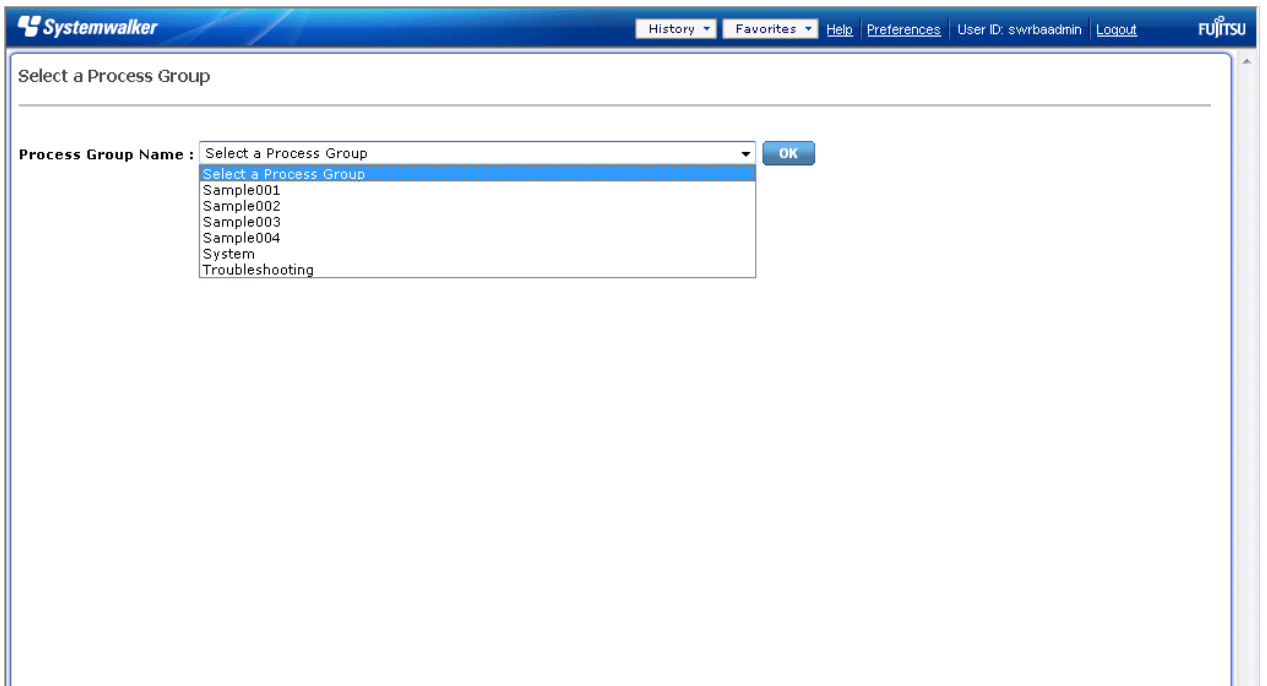
1. In the Web browser, open the Web console from the following URL, then enter a user name and password.
<http://<server name>:<port number>/console/Default/>

Note that, when the login is performed in a state where the **Remember Me** checkbox is selected, the user ID will be entered automatically at the time of the next login.

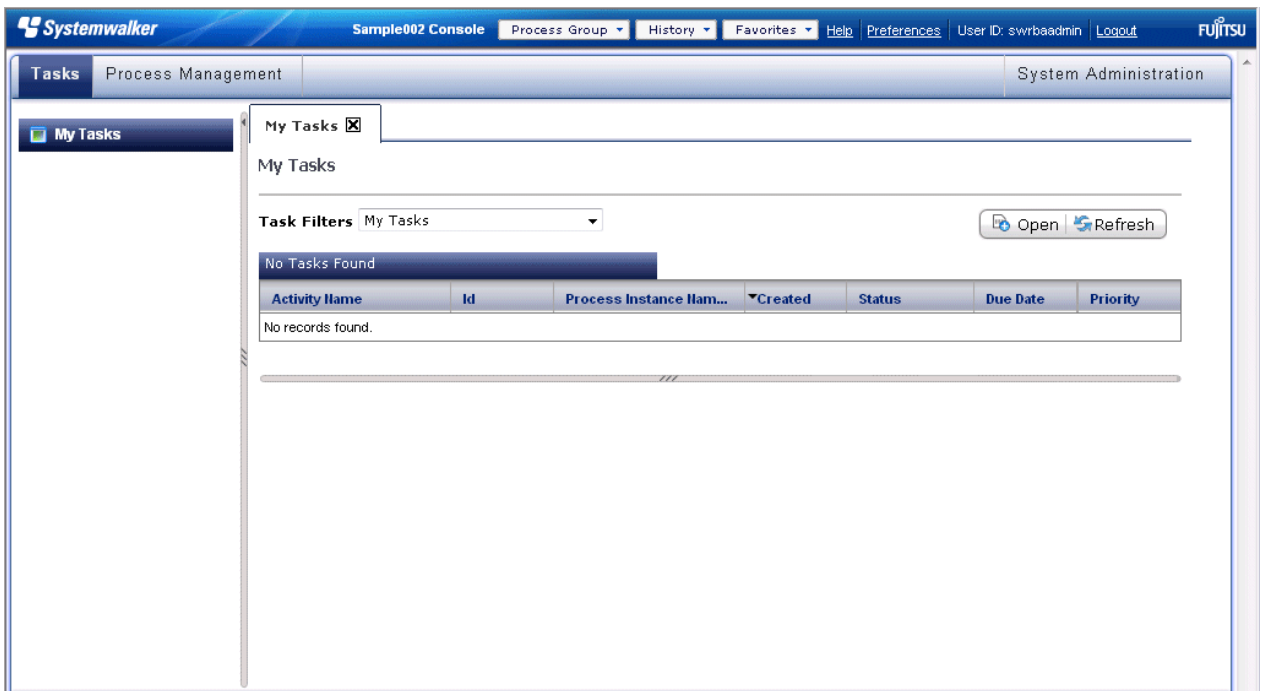


2. Select the Automated Operation Process for which the operation will be performed from the **Select a Process Group** drop-down menu.

In the drop-down menu, the Automated Operation Process Groups that are registered in the Management Server are displayed as a list.



- The tasks in the selected Automated Operation Process Group and the **Tools** menu for the processes are displayed.



Note that, to operate an Automated Operation Process Group that is different from the Automated Operation Process Group that was selected, the **Process Group** button can be selected to move to the other Automated Operation Process Group window.

Point

By specifying the following URL and then logging in, it is possible to omit the selection of the Automated Operation Process Group:

- `http://<server name>:<port number>/console/Default/<Automated Operation Process Group ID>/`

Example:

`http://www.example.com/console/Default/System/`

After the login, the window will be displayed in a state where the Automated Operation Process Group specified for <Automated Operation Process Group ID> is selected.

Note

When logout from the Web console is performed and Single Sign-on authentication was not used, the login window will be displayed using the URL shown below, and not the URL that was specified in "step 1".

Example: Logout in a state where the Sample process group process instance window is displayed

```
http://www.example.com/console/Default/Sample/getProcess.page#tab:~
```

This URL contains the information that shows which process group window was displayed immediately before the logout.

When login is performed using the login window that is displayed after the logout, the screen in which the operation immediately before the logout was performed is displayed again.

Note

Login when Remember Me is selected in the login window

When **Remember Me** is selected, the login user ID will be recorded at the time of the login. The recording of this login user ID will be performed for each process group contained in the URL that displays the login window.

For this reason, the following behavior will occur:

1. With **Remember Me** in a selected state, log into "http://www.example.com/console/Default/" as "UserA".
The login user ID (UserA) will be registered for the URL for which no process group is specified.
2. Select "System" in the process group selection window to display the System process group window, then log out.
3. The login window with the URL "http://www.example.com/console/Default/System/~" will be displayed.
The login user ID for the System process group URL is not recorded, therefore the **User ID** field will be empty.
4. With **Remember Me** in a selected state, log in as "UserB".
The login user ID (UserB) for the System process group URL is recorded.
5. Log out while the System process group window is still displayed.
6. The login window with the URL "http://www.example.com/console/Default/System/~" will be displayed.
The login user ID (UserB) that was recorded in "4." is displayed in the **User ID** field.
7. Specify "http://www.example.com/console/Default/" as the URL and display the login window again.
The login user ID (UserA) that was recorded in "1." is displayed in the **User ID** field.

Login from email

If the "8.5 Setting Up Email Notification" settings are configured in advance, an email confirming that the task has been assigned will be sent to the person in charge. When the person in charge receives the email and clicks the URL in the body of the email, the Web console login window will be displayed. If login is successful, the corresponding task window will be displayed.

1.5 Basic Knowledge Relating to Operations

This section provides the basic knowledge required to run Systemwalker Runbook Automation.

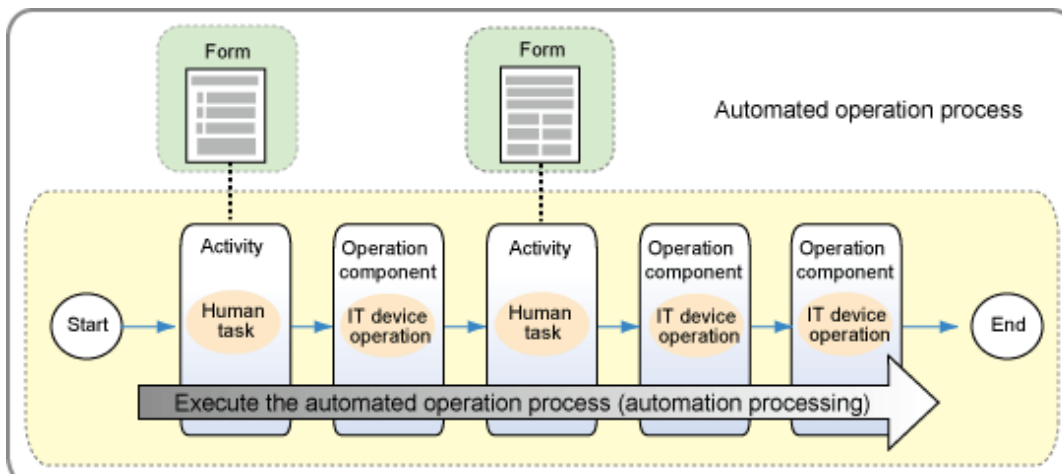
1.5.1 Automated Operation Processes

In Systemwalker Runbook Automation, the operation procedure is automated by the execution of the Automated Operation Process.

This section explains the Automated Operation Process, which forms the basis of automated operations.

What is an Automated Operation Process?

An Automated Operation Process consists of a process definition for a series of task procedures (a combination of human tasks and IT device operations) and a form (displayed in the Web Console) used for input and confirmation tasks.



The Automated Operation Process is identified by a process definition name on the management server and by the process definition file name in Studio.

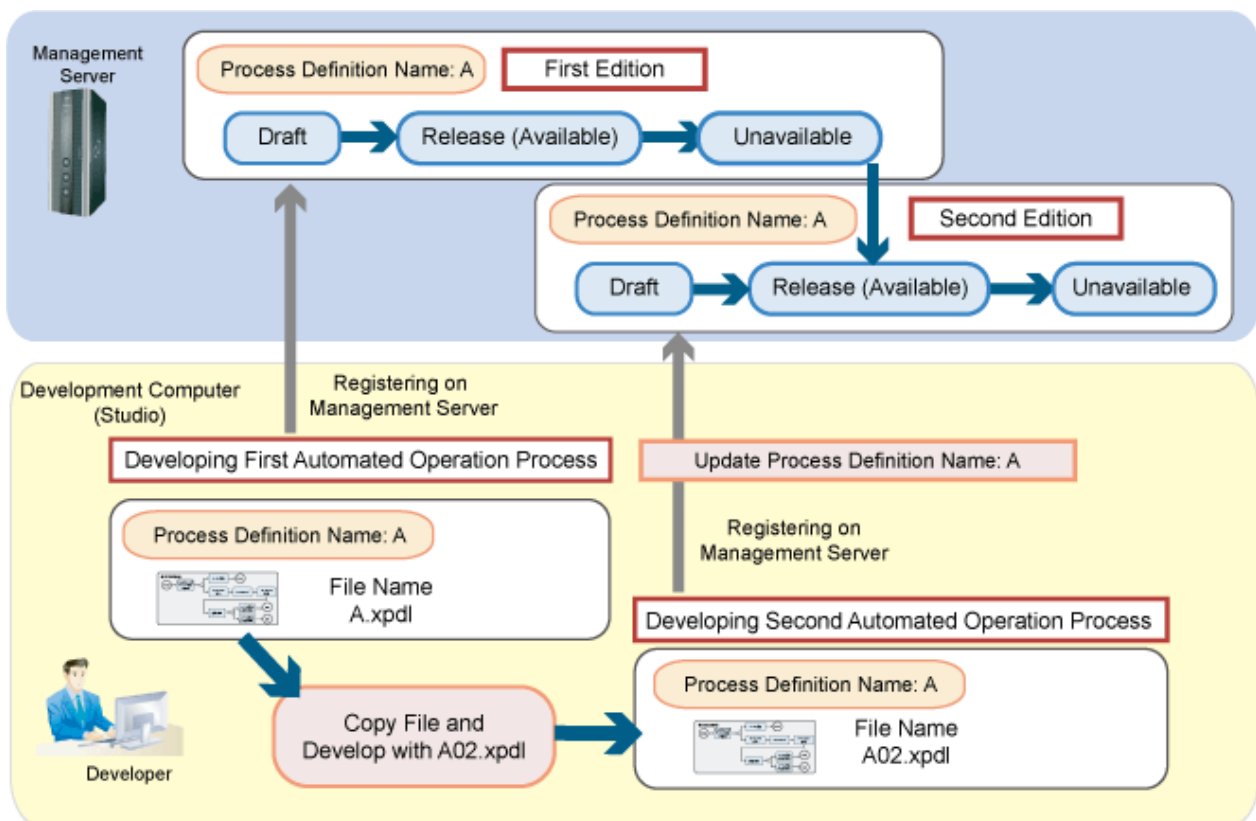
If Automated Operation Processes have different file names but the same process definition name, they will be treated as the same Automated Operation Process by the management server. If a process definition name with the same name already exists in the target Automated Operation Process Group when the process definition is registered on the management server, the Automated Operation Process will be updated.

If the existing Automated Operation Process is copied and a new Automated Operation Process is created and registered in the same Automated Operation Process Group, the process definition name must be changed.

Forms used in the Automated Operation Process will also be identified using the file name. They are managed using the file name in both the management server and in Studio.

If a form with the same file name already exists in the target Automated Operation Process Group when the form is registered on the management server, the form will be overwritten.

An example of the Automated Operation Process lifecycle is shown below.

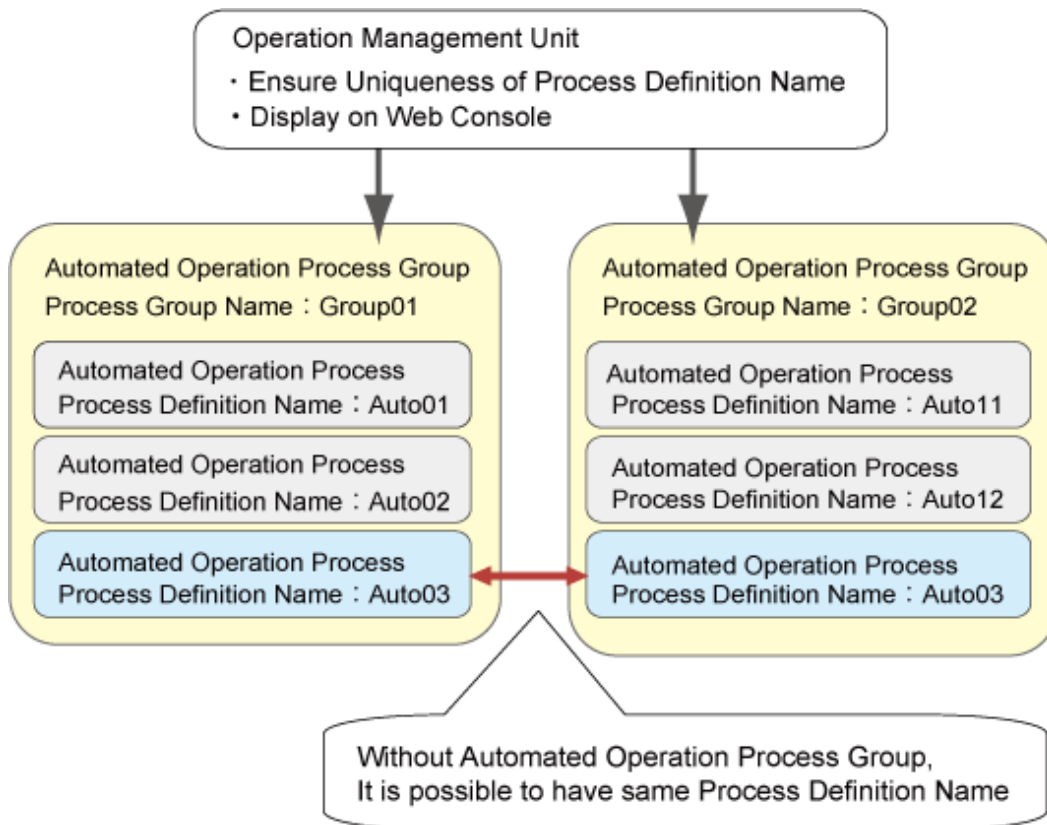


What is an Automated Operation Process Group?

The Automated Operation Process Group is the unit that manages Automated Operation Processes in the management server. The Automated Operation Process must belong to one Automated Operation Process Group.

In Systemwalker Runbook Automation, the Automated Operation Process Group is a unit that manages operations. When Automated Operation Processes are registered in the management server or displayed in the Web Console, these operations are therefore divided into Automated Operation Process units.

The Automated Operation Process Group is identified by the process group ID and process group name. The process group ID is used as identification information for management. The process group name is used as information that represents the process group on the Web Console. Note that, in Studio, the Automated Operation Process Group is represented as a "project". Names set as project names in Studio will be used as process group names.



1.5.2 Automated Operation Process Statuses

There are three Automated Operation Process status:

- Process instance
- Node
- Task

Each status is explained below.

Process instance

A process instance is generated when the Automated Operation Process is executed.

"Process instance" is the status from when the process is started until it either finishes or is aborted. It can be checked in the Web Console **Process Management** window.

- Running

The process is running normally.

- Paused

The process has been paused. When a user performs the **Pause** operation, the status changes to "paused". To change the status to "running" again, the user performs the **Resume** operation. In this status, only the **Resume** operation is possible.

- Error

An error has occurred in the process. This process has this status if the Java Action value that was set for the process definition or node, or the value that was set for the Activity node role, is invalid.

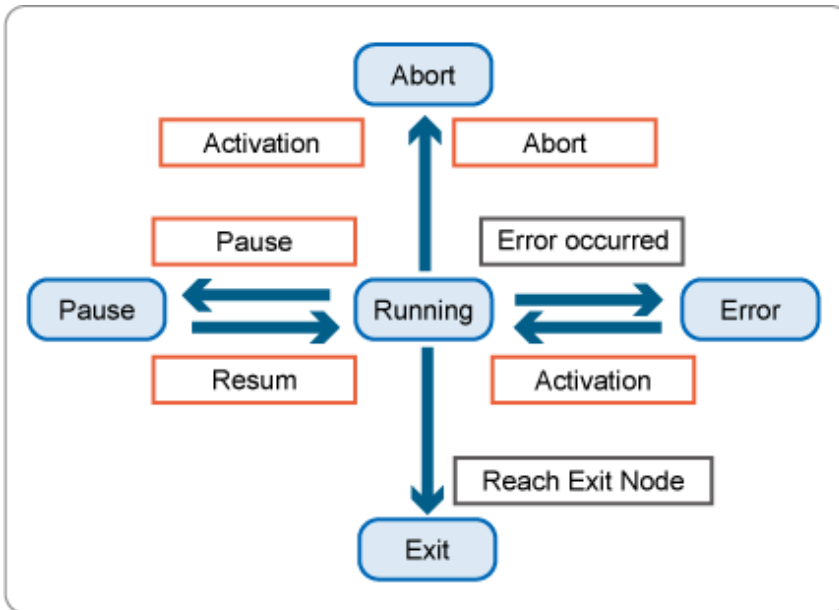
- Finished

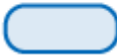


The Exit node is reached and the process finishes.

- Aborted

The process has been aborted. When a user performs the **Stop** operation, the status changes to "aborted".

The transit flow according to state of process instance and user operation are shown in the graphic below.



-  : Status of Process Instance
-  : Operation
-  : Developmental Event

Note

In the above graphic, the user operations that can be executed are restricted according to "process instance". Although other operations can be performed on the Console, the operation will result in an error.

Node

"Node" is the status of each individual node in the process instance. It can be checked in the Web Console **Process Management** window.

- Not started yet

The node has not been processed yet (it is waiting to be processed).

- Assigned

The node is currently being processed. In the case of an Activity node, the node is waiting to be processed by a human.

- Error

An error has occurred in the node.

- On standby

A subprocess is being processed, and the node is waiting until the subprocess finishes.

- Paused/Aborted

A node that was in "assigned" state when the process instance was paused or aborted.

- Finished

The node is finished.

Task

Processes in the process instance transit to the Activity node, and the status of the operation assigned to the user is called "task". It can be checked in the Web Console **Task Management** window.

- Active

The task is waiting to be accepted. If the task has been assigned to a group, all users that belong to the group can browse a task that is **Active**. To execute the task, the user performs the **Accept** operation. Alternatively, the task can also be executed while the status is **Active**.

- Accepted

The user has accepted the task. The user executes the task. Alternatively, the user can also perform the **Reject** operation and return the status to **Active** again.

- Reject

If a user performs the **Reject** operation after the task has been assigned to that user, the status of that task as seen by other users will be **Reject**.

- Inactive

If a user performs the **Accept** operation after the task has been assigned to multiple users, the status of that task as seen by other users will be **Inactive**.

- On standby

After the **Make Choice** operation, the status of the task will be **On standby** while the Compound Activity processing transition is in progress.

- Paused

The user has paused the task. When the user performs the **Resume** operation, the task is restarted.

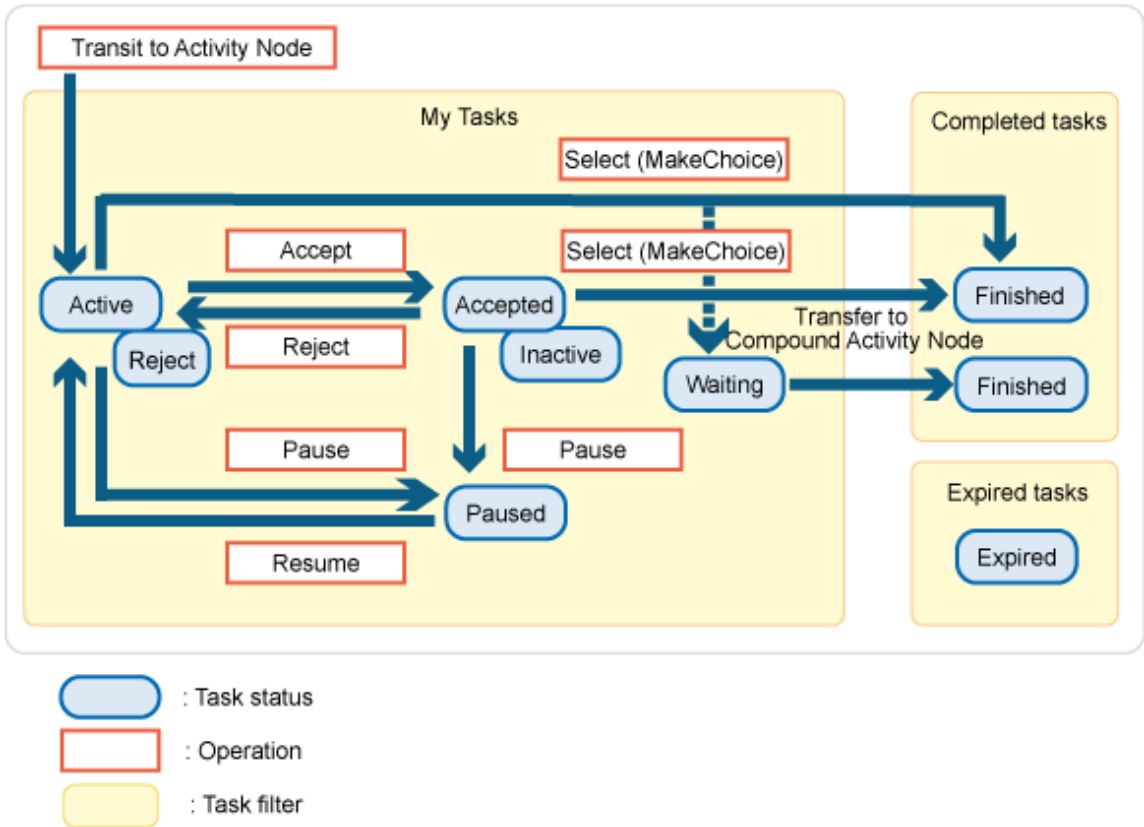
- Finished

The task is finished.

- Expired

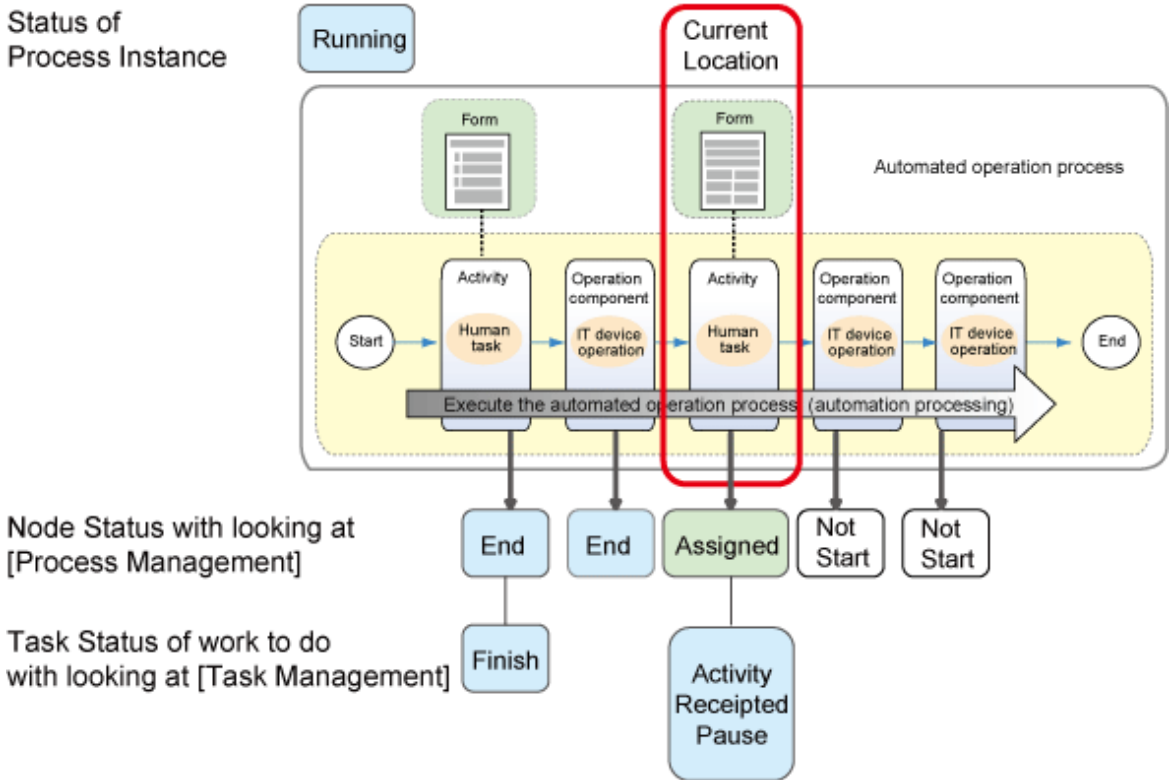
The execution period of the task has expired.

The transit flow according to State of task and user operation is shown in the graphic below.



Example of each status while the process is under execution

An example of each status while the process is under execution is shown in the graphic below.



1.5.3 Schedule Definitions

In Systemwalker Runbook Automation, an Automated Operation Process can be configured to start automatically at a date and time according to a schedule definition.

A schedule definition refers to a conditional definition that automatically starts an Automated Operation Process at a particular date and time. In a schedule definition, the holiday settings and the startup day settings are each set up separately and, once combined, these will determine the startup day. A setting that shifts a startup day back or forward by a pre-determined number of days is also available for when a startup day falls on a holiday.

Holiday settings

The holiday settings create and use a holiday calendar for determining holidays. An Operation Administrator uses commands to create and register the holiday settings.

The holiday settings can be commonly used within a Management Server.

Startup day settings

The following two methods are available for the startup day settings:

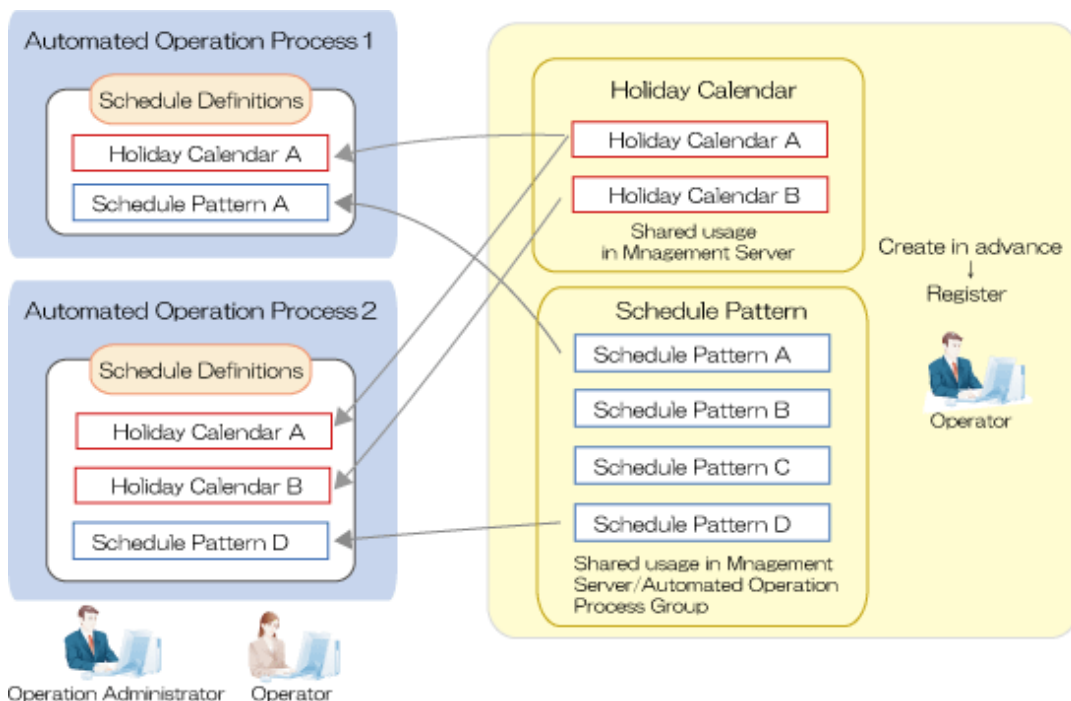
- Using a schedule pattern
Register in advance schedule patterns in which weekly or monthly startup days and times have been set up and then select which pattern is to be used for each process definition.
- Not using a schedule pattern
Directly set up a startup day for a process definition.

Combination of holiday settings and startup day settings

The startup day will be determined to combine holiday settings(holiday calendar) and startup day settings(schedule patterns or directly set up). The holiday calendar can be combined multiple holiday calendars.

Some examples of combination follow.

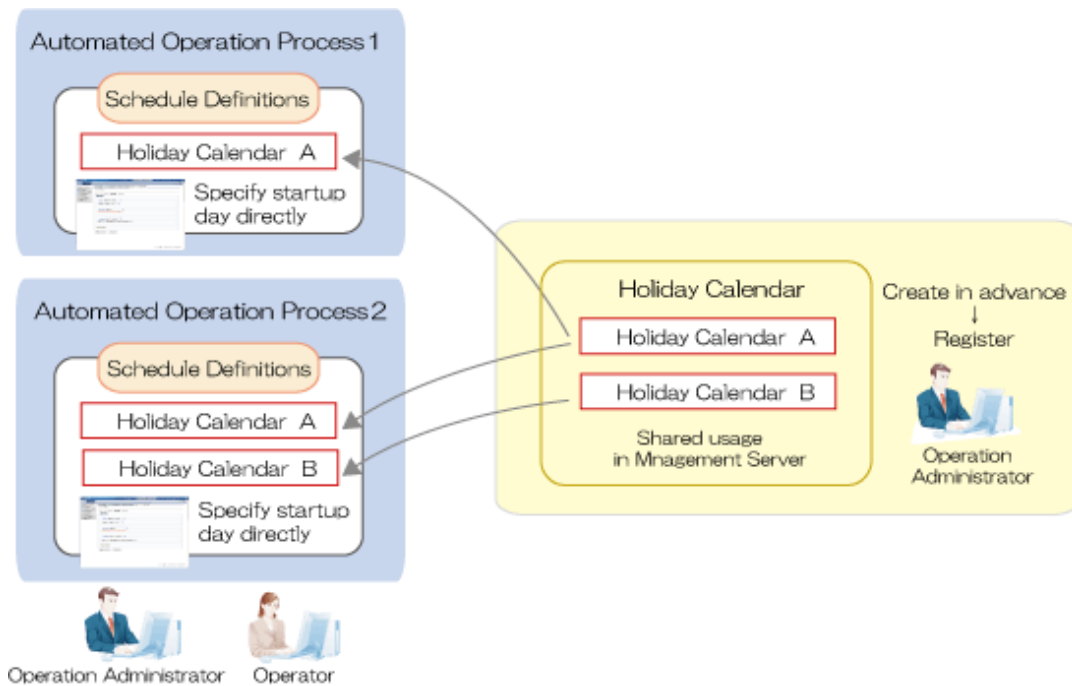
- The case of using a schedule pattern
Choose holiday and startup day each from holiday calendar and schedule patterns which created and registered in advance.
By this combination, schedule definition will be created and startup day will be determined.



- The case of not using a schedule pattern

Holidays are chosen from holiday patterns which created in advance. Startup day is specified set up directly.

By this combination, schedule definition will be created and startup day will be determined.



1.5.4 Schedule Definition Statuses

A schedule definition status refers to the status of a schedule definition that has been created.

You can view a schedule definition status by choosing the list of the **Schedule Definition** window or name of Schedule Definitions and by opening the **Definition Information** tab on the Web console. You can also check a schedule definition status from a Gantt Chart on the Web console.

The types of schedule definition statuses are as shown below.

- Enabled

The schedule definition is enabled.

The Automated Operation Process will be started according to the definition contents.

- Disabled

The schedule definition is disabled.

Even if the startup day or startup time conditions are satisfied, the Automated Operation Process will not be started. Disable the schedule definition if you want to suppress the scheduled start of an Automated Operation Process, for example due to a one-day modification to an operation plan.

- On hold

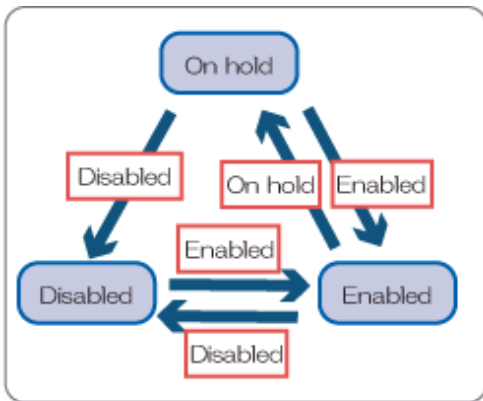
The start of the Automated Operation Process has been put on hold by the schedule definition.

Even if the startup day or startup time conditions are satisfied, the start of the Automated Operation Process is put on hold and the start of the Automated Operation Process will be delayed until the status of the schedule definition changes to enabled.

Put the schedule definition on hold if you want to delay the scheduled start of an Automated Operation Process, for example due to a delay in operations.

Note that even if the startup day or startup time conditions are satisfied multiple times in the on hold status, the number of times that the start of an Automated Operation Process can be performed after it is enabled is once. If its status has been changed from on hold to disabled, the scheduled start of an Automated Operation Process that has been put on hold will be discarded.

A schedule definition status and its transition due to a user operation are shown below.



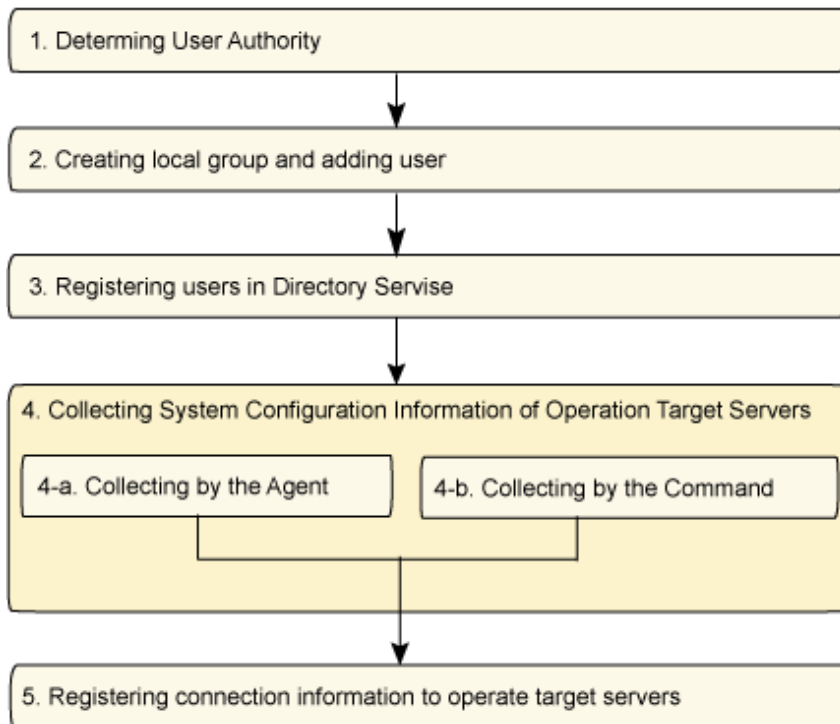
 : Schedule definition status
 : Operation

Chapter 2 Preparing for Automated Operations

This chapter explains the necessary preparations to run Automated Operations.

2.1 Procedure of preparing for Automated Operations

The procedure that is used to prepare for automated operations process is shown below.



1. Determining User Authority

Determine the authority given to user who will use this product.

2. Registering users in Directory Service

Register user who will use this product in Directory Service.

3. Creating local group and adding user

Group registered users based on given authority and role to use this product.

4. Collecting system configuration on operation target servers

To run automated operation of this product, collect system configuration information from operation target servers.

5. Registering connection information to operation target servers

To connect operation target servers and control for this product, Register connection information.

2.1.1 Determining User Authority

Determine the authority given to user who will use this product.

2.1.1.1 Relationship between users and groups

Users of this product must have the user information on the directory server which is used as the Systemwalker Runbook Automation Operation Management Server repository. Users must also belong to at least one group.

There are two types of groups as below. Groups are used to determine the person in charge of a task when a process is executed.

- Groups managed on the directory service
- Local groups managed on the Operation Management Server database.

Standard Groups used in Systemwalker Runbook Automation

Group Name	Description
IflowUsers	This is an external group that is managed on the directory service. Systemwalker Runbook Automation user accounts must belong to this group.
AdminRole	This group is also managed on the directory service. It is created when setting up management server. Users that belong to this group are assumed to be administrators.

Information

The user identity attribute (RDN) information on the directory server is used to login to Systemwalker Runbook Automation Console.

Note

Only alphanumeric, hyphens, and underscores ("_") can be used in user ID and group names. The at sign ("@") cannot be used at the start of user names or group names.

2.1.1.2 Determine Authority

There are two types of authorities given to each user, authorities determined by group and authorities which are independent of the group which user belongs to.

The Authority Determined by Group

There are four types of Authority determined by Group

- System Manager Authority

Members of AdminRole group have this authority.

Users with this authority can manage automated operation process such as registering/updating/deleting/publishing automated operation process groups and automated operation process and can manage basic setting for using schedule definition to startup automated operation process automatically on time such as schedule definition holiday calendar and such as registering/updating/deleting schedule pattern.

- Process Group Owner Authority

Members of Process Owner Group has this authority.

Users with this authority can manage operations such as registering/updating automated operation process to automated operation group.

- Process Execution Authority

Users who belong to process execution group specified in definition of automated operation process have this authority.

Automated operation processes with specified process execution groups can be executed the following operations only by users who belong to that group or by system manager.

- It's possible to start up Automated operation process.
- It's possible to register/update/delete schedule definitions for automated operation process

In addition, Automated operation process which does not have specified process execution group can be executed these operations by all users.

- Task Operator Authority

Users who belong to group specified in definition of Activity of automated operation process have this authority.

Task Operator can operate tasks and handle the progress of automated Process.

The Authorities which are Independent of the group

There are three types of authority which are independent of the group

- Process Definition Owner Authority

Users who register process definition in Management Server of Systemwalker Runbook Automation gain this authority.

Process Definition Owner and System Manager can change a process definition owner to another person.

Users who have this authority can execute automated process in draft situation.

- Schedule Definition Owner Authority

Users who register schedule definition in Management Server of Systemwalker Runbook Automation gain this authority.

Users who have this authority can update/delete/start directly/hold/validate/invalidate schedule definition.

Schedule Definition Owner Authority can not be changed owner to another person.

Users who have this authority can execute automated process in draft situation.

- Process Instance Owner Authority

Without using schedule definition, after executing automated operation process, Process Definition Owner will become the instance owner of automated operation process and have this authority.

With using schedule definition, after executing automated operation process, Schedule Definition Owner will become the instance owner of automated operation process and have this authority

Process Instance Owner and System Manager can change a process instance owner to another person.

Users who have this authority can confirm the status of their own automated operation process.

- Process Execution authority

Users who execute automation process have this authority.

Process Execution Operator can confirm the status of executed automation operation process.

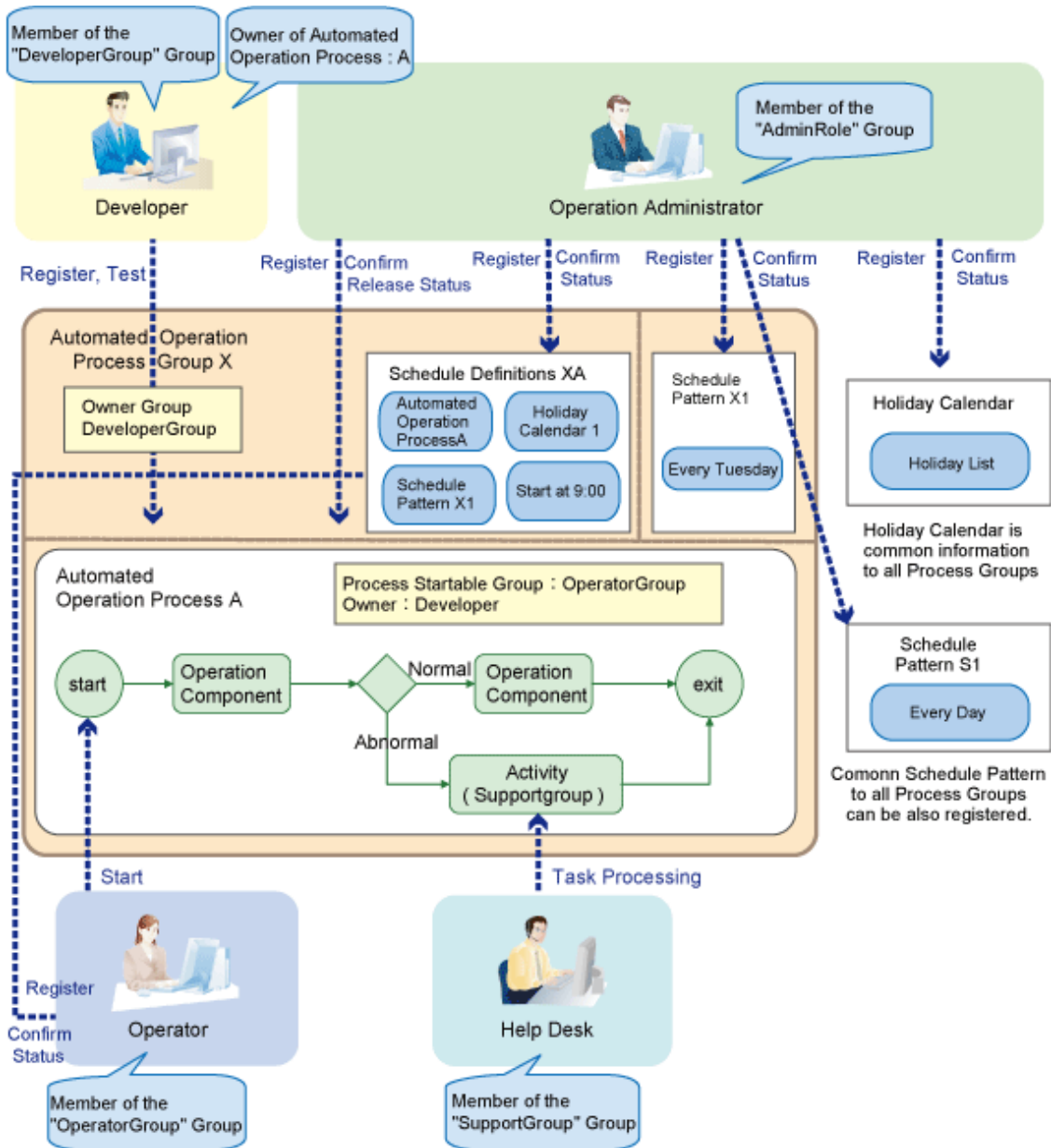
Examples of Authority given to users

Examples of authority which are given to each user:

User	Example of Users duty	Necessary Authority
Operation Administrator	<ul style="list-style-type: none"> - Registering holiday calendar - Managing Automated Operation Process - Publishing Automated Operation Process - Registering Automated Operation Process in Management Server - Confirming situation of Automated Operation Process - Registering schedule pattern - Registering schedule definition in Automated Operation Process 	System Management Authority
Developer	<ul style="list-style-type: none"> - Registering Automated Operation Process in Management Server 	Process Group Owner Authority

User	Example of Users duty	Necessary Authority
	- Testing Automated Operation Process(Executing Automated Operation Process)	Process Definition Owner Authority
Operator	- Executing Published Automated Operation Process - Registering schedule definition in Automated Operation Process - Confirming Automated Operation Process which is executed	Process Execution Authority
Help Desk	- Processing task in Automated Operation Process	Task Operator Authority

As above authority, show a following example of workload.



2.1.2 Registering user in Directory Service

User accounts are managed on the directory service. Users must be registered in directory service. During the setup you can choose the directory service to use.

The following services can be used as directory service

- Interstage Directory Service
- Active Directory
- OpenLDAP

In case of using Interstage directory service with authentication by LDAP, construct the environment of Interstage directory service using the following procedure.



See

For detail, refer to the "Interstage Application Server Directory Service Operation Guide".

In addition, user information registered in directory service is effective as of either timing as below.

- The timing of reading information from Directory Service that Systemwalker Runbook Automation execute regularly every 60 minutes (maximum of 60 minutes after registering information).
- The timing of login using user information registered in Directory Service.
- The timing of clicking **Update** from right click menu of **User** submenu in **System Management** tab in Web console.



Information

The user identity attribute (RDN) information on the directory server is used to login to Systemwalker Runbook Automation Console.



Note

Only alphanumeric, hyphens, and underscores ("_") can be used in user ID and group names. The at sign ("@") cannot be used at the start of user names or group names.

The procedure that is used to set and register a user is shown below.

1. Create LDIF file

Settings examples:

[LDIF for user registration]

```
dn: uid=user1,ou=%USER%,%DOMAIN%
changetype: add
objectclass: inetOrgPerson
objectclass: organizationalPerson
objectclass: person
objectclass: top
cn: swrbaadmin
sn: swrbaadmin
givenName: swrbaadmin
userPassword: systemwalker#1
uid: user1
```

[LDIF for IflowUsers group addition]

```
dn: cn=IflowUsers,ou=%GROUP%,%DOMAIN%
changetype: modify
add:member
member: uid=user1,ou=%USER%,%DOMAIN%
```

Replace the %-% parts in the above files according to the following replacement target list:

Replacement target list

Replacement target symbol	Settings value after replacement
%DOMAIN%	Build domain name ('dc=...' format) Example: ou=interstage,o=fujitsu,dc=com Note: When performing the setup after the LDAP build, this settings value must be specified for the LDAP key name at the time of the setup.
%USER%	Name of organizational unit (OU) used in Systemwalker Runbook Automation Example: User Note: When performing the setup after the LDAP build, ou=<%USER% settings value> must be specified for the organizational unit setting that stores the LDAP user at the time of the setup.
%GROUP%	Name of organizational unit (OU) used in Systemwalker Runbook Automation Example: Group Note: When performing the setup after the LDAP build, ou=<%GROUP% settings value> must be specified for the organizational unit setting that stores the LDAP group at the time of the setup.



Regarding the object class and attribute shown in example of setup, please refer to the "Object Class List " and "Attribute List" in the "Interstage Application Server Directory Service Operation Guide".

2. Register a user in Interstage Directory Service

The example of registering entry data by using ldapmodify command and LDIF file is shown below.

Example:

DN for Administrator: cn=admin,<'dc=...' domain name of format>

Password for Administrator DN: admin

Host name of repository: Host name of Interstage Directory Service

Port Number: 389

[Windows]

```
ldapmodify -H ldap:// <Host name of InterstageDirectory Service>:389 -D "cn=admin,<'dc=...' domain name of format>" -w admin -a -f <LDIF file name which is created>
```

[Linux]

```
/opt/FJVSvirepc/bin/ldapmodify -H ldap:// < Host name of InterstageDirectory Service >:389 -D" cn=manager,<'dc=...' domain name of format>" -w admin -a -f <LDIF file name which is created>
```



For more information on `ldapmodify` command, refer to "Interstage Directory Service Operation Command" in the "Interstage Application Server/Interstage Web Server Reference Manual (Command)".

2.1.3 Deleting Directory Service Users

If the Interstage Directory Service is used for authentication via LDAP, the following procedure is used to delete the Interstage Directory Service users.



Refer to the *Interstage Application Server Directory Service Operator's Guide* for details.

Use the following procedure to delete the user:

1. Use the `ldapsearch` command to check the information that is registered in LDAP.

The example below shows the `ldapsearch` command:

Example:

Administrator DN: `cn=manager,<'dc=...' format domain name>`

Password for Administrator DN: `password`

Repository host name: Interstage Directory Service host name

Port number: 389

[Windows]

```
ldapsearch -H ldap://<Interstage Directory Service host name>:389 -D "cn=manager,<'dc=...' format domain name>" -b "<'dc=...' format domain name>" -w password
```

[Linux]

```
/opt/FJSPVirepc/bin/ldapsearch -H ldap://<Interstage Directory Service host name>:389 -D "cn=manager,<'dc=...' format domain name>" -b "<'dc=...' format domain name>" -w password
```



Refer to "Interstage directory service operation command" in the *Interstage Application Server/Interstage Web Server Reference (Command)* for information on the `ldapsearch` command.

2. Create the LDIF file.

The following examples show the LDIF settings for the deletion of users and the LDIF file settings for the deletion of users from a group.

Settings examples:

[LDIF for user deletions]

```
dn: uid=user1,ou==%USER%,%DOMAIN%
changetype: delete
```

[LDIF for user deletions from a group]

```
dn: cn=IflowUsers,ou=%GROUP%,%DOMAIN%
```

```
changetype: modify
delete: member
member: uid=user1,ou=%USER%,%DOMAIN%
```

Replace the %-% parts in the above files according to the following replacement target list:

Replacement target list

Replacement target symbol	Settings value after replacement
%DOMAIN%	Build domain name ('dc=...' format) Example: ou=interstage,o=fujitsu,dc=com Note: When performing the setup after the LDAP build, this settings value must be specified for the LDAP key name at the time of the setup.
%USER%	Name of organizational unit (OU) used in Systemwalker Runbook Automation Example: User Note: When performing the setup after the LDAP build, ou=<%USER% settings value> must be specified for the organizational unit setting that stores the LDAP user at the time of the setup.
%GROUP%	Name of organizational unit (OU) used in Systemwalker Runbook Automation Example: Group Note: When performing the setup after the LDAP build, ou=<%GROUP% settings value> must be specified for the organizational unit setting that stores the LDAP group at the time of the setup.



Refer to *Object Classes List* and *Attributes List* in the *Interstage Application Server Directory Service Operator's Guide* for information on the object classes and attributes defined in the settings examples.

3. In the ldapmodify command, delete the user specified in the LDIF file from the group.

The following example shows the registration of the entry data that uses the ldapmodify command and the LDIF file.

Example:

Administrator DN: cn=manager,<'dc=...' format domain name>

Password for Administrator DN: password

Repository host name: Interstage Directory Service host name

Port number: 389

[Windows]

```
ldapmodify -H ldap://<Interstage Directory Service host name>:389 -D "cn=manager,<'dc=...' format domain name>" -w password -f <name of the LDIF file that was created>
```

[Linux]

```
/opt/FJISVirepc/bin/ldapmodify -H ldap://<Interstage Directory Service host name>:389 -D "cn=manager,<'dc=...' format domain name>" -w password -f <name of the LDIF file that was created>
```




Refer to "Interstage directory service operation command" in the *Interstage Application Server/Interstage Web Server Reference (Command)* for information on the ldapmodify command.

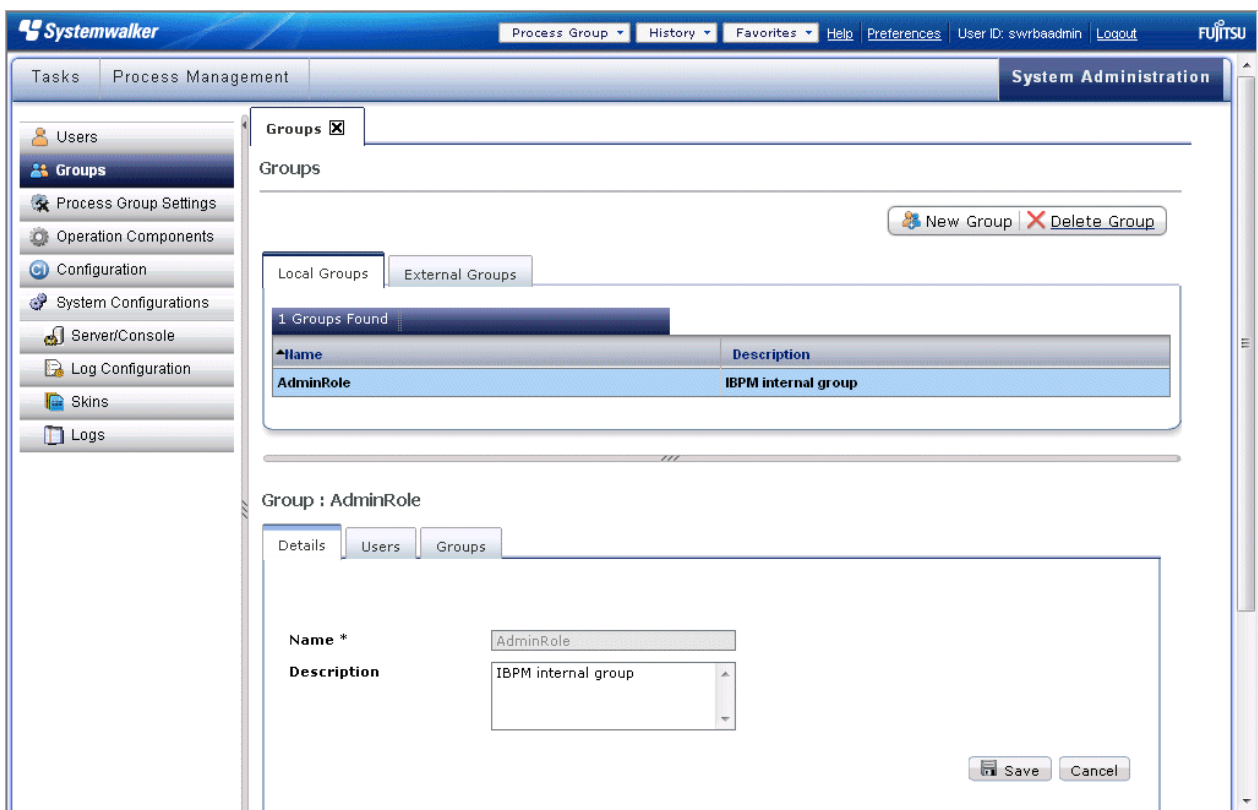
2.1.4 Creating Local Group

Local Group is used to determinate person in charge for each task when running automated operation process.

Create role and authority based on user's responsibility. Local groups are valid only for this product. Created local group and user affiliation are not reflected on directory service.

Local group management can be performed from the Systemwalker Runbook Automation Console.

The group information is displayed in the detail panel when the **Groups** submenu in the system Administration tab is selected. When a group is selected from the list panel, detailed information about the selected group will be displayed.



When the new button is clicked, the New Group dialog box that is used to create the local group will be displayed.

The screenshot shows a 'New Group' dialog box with the following content:

- Name ***: swrbaRole
- Description**: new group
- Users**
 - Available Users**: List containing 0001, swrbasch, 0002 (selected), swrbaadmin. Includes a search box and a Search button.
 - Assigned Users**: List containing 0001 (selected), 0002.
 - Navigation buttons: >>, >, <, <<
- Groups**
 - Available Groups**: List containing swrba_Exec, Role (selected), AdminRole. Includes a search box and a Search button.
 - Assigned Groups**: List containing Role.
 - Navigation buttons: >>, >, <, <<
- Buttons**: Save, Save & Add Another, Cancel

The following are displayed in the Local Group Details panel and New Group dialog box:

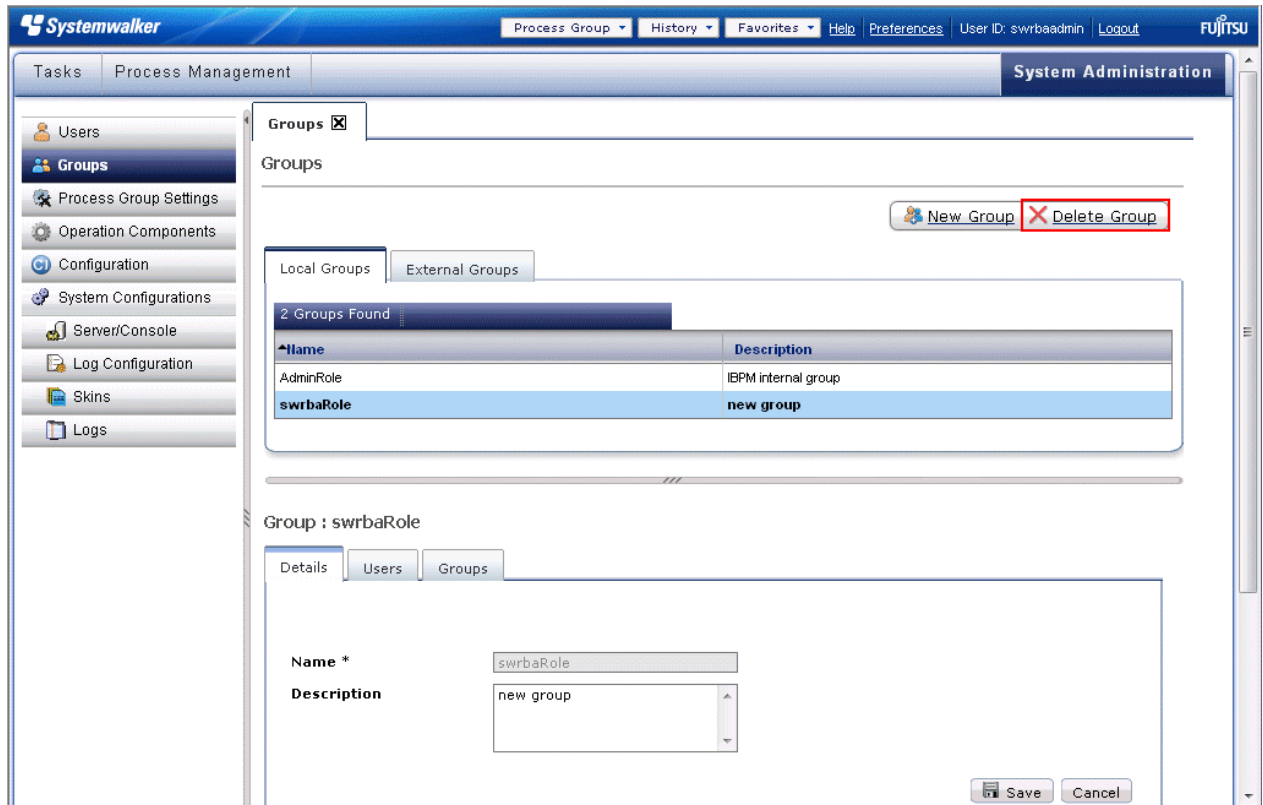
- Name
 - Local Group Details panel: For existing groups, the group name will be displayed and cannot be changed.
 - New Group: In case of creating a new group, enter a name for the group in this field.
- Description
 - Local Group Details panel: For existing groups, the group description will be displayed and can be changed.
 - New Group: In case of creating a new group, enter a description for the group in this field.
- User
 - Available Users: In this section, a list of the users that can be used is displayed.
 - Assigned Users: In this section, a list of the users in the selected group is displayed.
- Group
 - Available Users: In this section, a list of the groups that can be used is displayed.
 - Assigned Groups: In this section, a list of the groups that belong to the selected group is displayed. Using this, group nesting is possible. The administrator can nest groups, and as a result a nested group can become a member of a supergroup.

2.1.5 Deleting Local Groups

Local groups are deleted using the Web console.

When the **Group** submenu in the **System Administration** tab is selected, a list of the registered local groups will be displayed in the list panel.

- Select the role group to be deleted from the list panel. When the Delete Group button is clicked, the role group will be deleted.



The screenshot shows the Systemwalker web console interface. The top navigation bar includes 'Systemwalker', 'Process Group', 'History', 'Favorites', 'Help', 'Preferences', 'User ID: swrbaadmin', and 'Logout'. The main content area is titled 'System Administration' and contains a 'Groups' tab. The 'Groups' tab is active, showing a list of local groups. The 'swrbaRole' group is selected. The 'Delete Group' button is highlighted with a red box. Below the list, the details for the 'swrbaRole' group are shown, including the 'Name' field (swrbaRole) and the 'Description' field (new group). The 'Save' and 'Cancel' buttons are visible at the bottom right.

Name	Description
AdminRole	IBPM internal group
swrbaRole	new group

Group : swrbaRole

Name * swrbaRole

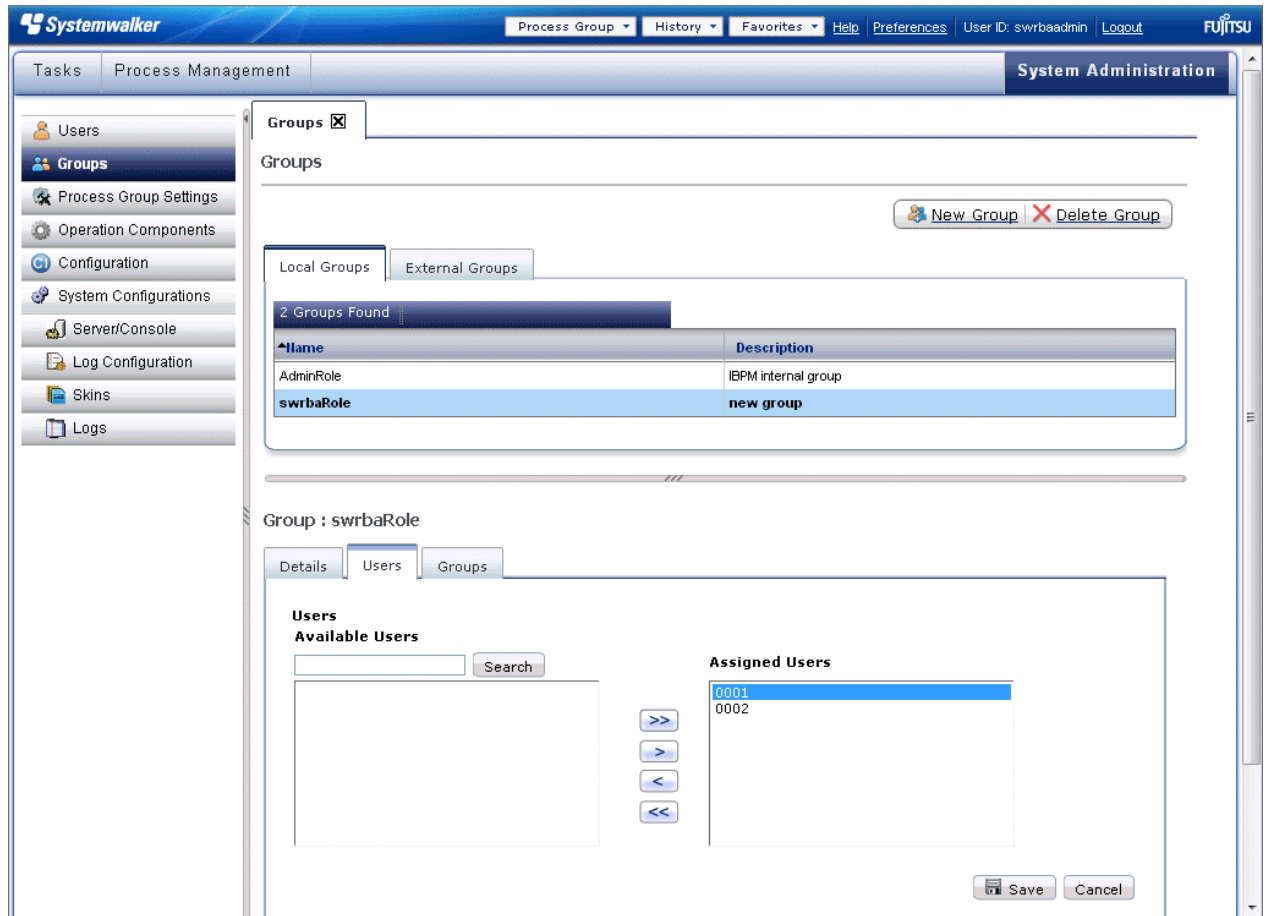
Description new group

Save Cancel

- Users and groups belonging to local groups can be deleted from the Local Groups Details panel.

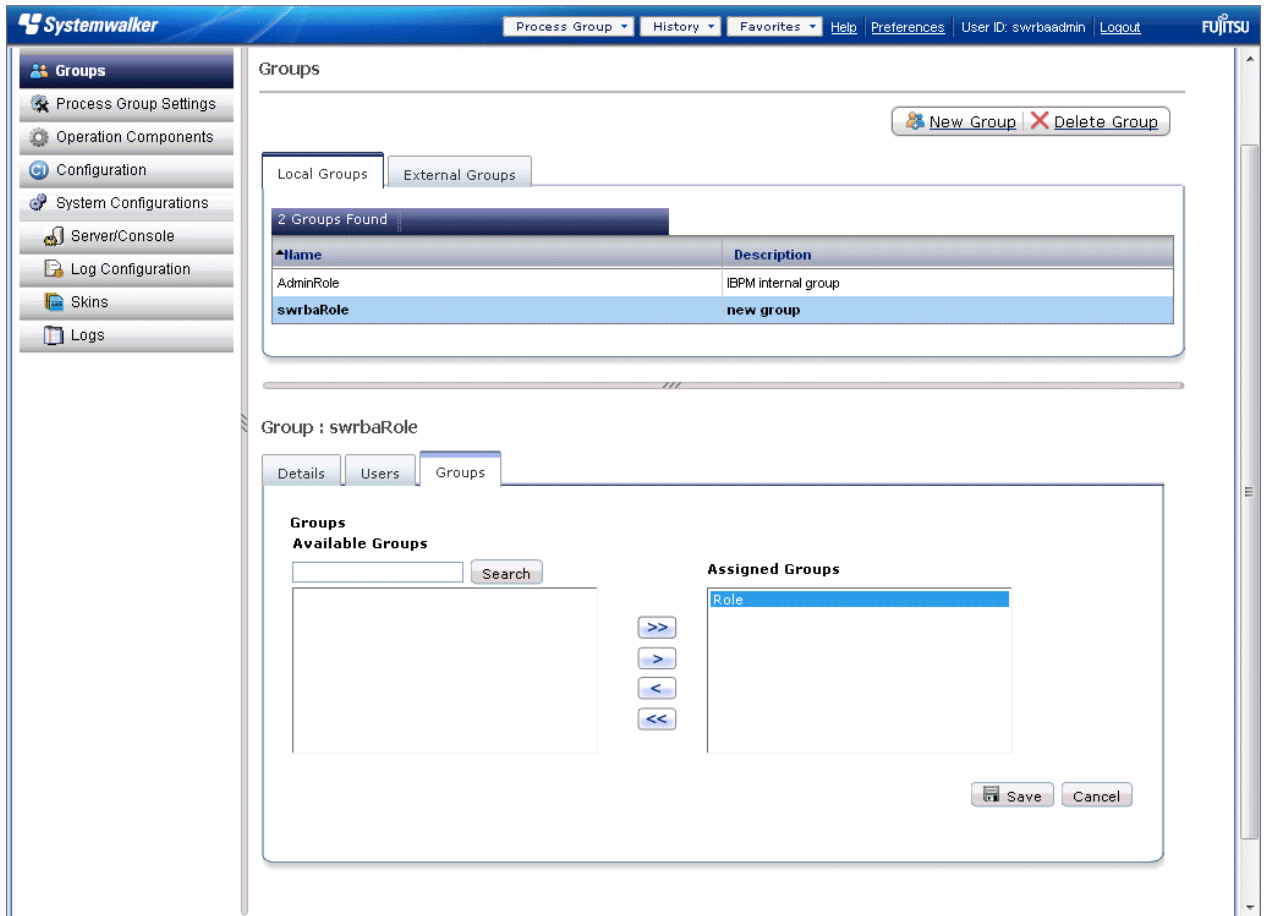
- Users

A user that has been assigned to a local group can be deleted by selecting that user from the assigned users list and then clicking the < or << button.



- Groups

A group that has been assigned to a local group can be deleted by selecting that group from the assigned groups list and then clicking the < or << button.

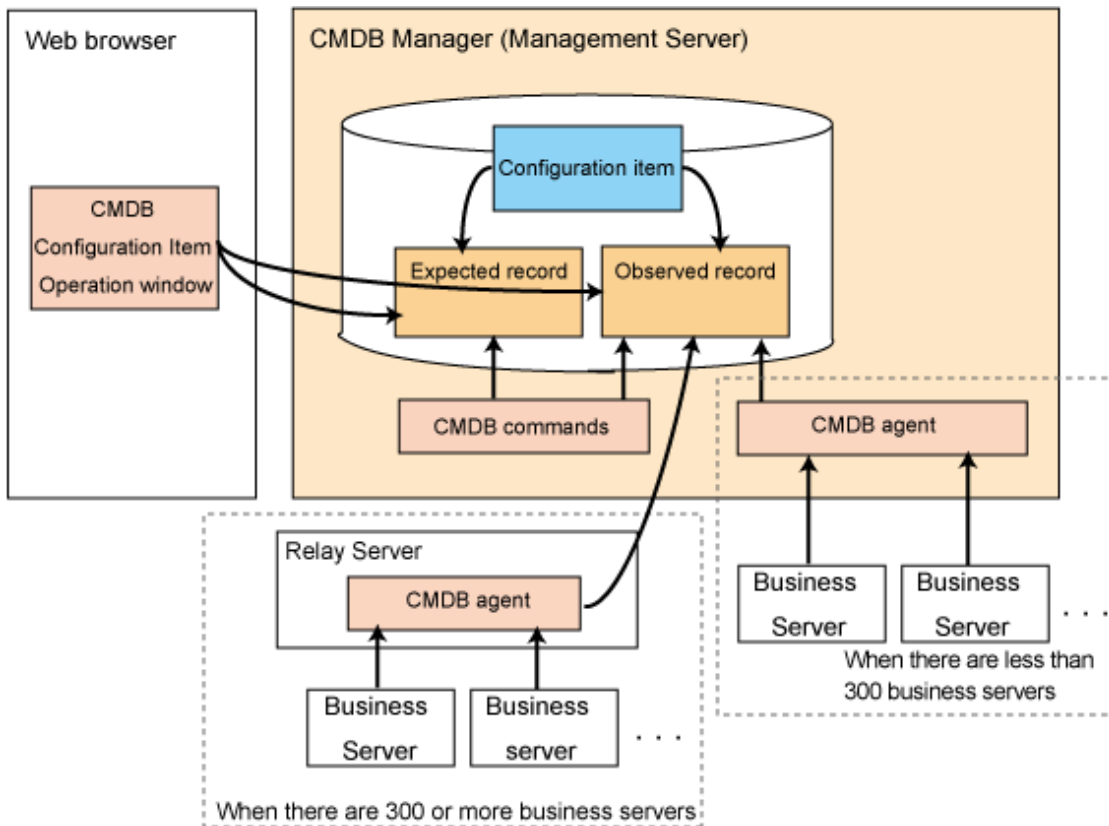


2.1.6 Collecting system configuration information from operation target servers

Operation components are executed on servers based on the information saved in CMDB.

The following figure shows the relationship between configuration items, expected records and observed records, as well as the relationships between the functions that this product provides. (Relationships are indicated by arrows.)

Collecting information from management server or relay server



There are two ways to save information in CMDB.

- Collecting Observed Records using the Agent
- I/O of System Configuration Information using CMDB Commands

This product provides a configuration management database (CMDB) as the infrastructure for managing configuration information. The CMDB is a database that manages the configuration information required to administer IT systems using a unit called a "configuration item". This database makes it possible to manage the components (attributes) for each configuration item and the relationships between configuration items.

Point

For Configuration Management Windows, Refer to the "Configuration Management".

2.1.6.1 Collecting System Configuration Information Using Agent

Systemwalker Runbook Automation periodically collects configuration information using the following methods.

- If linked products have been installed
Agents periodically collect information from linked products.
- If no linked products have been installed
On the Management Server or Relay Server, an automatic collection agent periodically collects configuration information from the Business Server.

The collected information is sent to the CMDB Manager on the Management Server, where it is managed as observed records.

See

To collect information from a linked product, an environment must have been created for the linked product, and operation settings must have been made. Refer to the following manuals and then make these settings.

- *Systemwalker Centric Manager User's Guide - Monitoring Functions*
- *Systemwalker Centric Manager User's Guide - Resource Distribution Functions*
- *Systemwalker Centric Manager Cluster Setup Guide for Windows*
- *Systemwalker Centric Manager Cluster Setup Guide for UNIX*

To collect configuration information for the Business Server from the agent on the Management Server or Relay Server, the operating environment for the Business Servers must have been set up beforehand.

Refer to Setting up Business Servers in the *Systemwalker Runbook Automation Installation Guide* to check and set up the operating environment.



Collection scheduling

Collection scheduling is saved in the configuration data collection schedule definition file during setup.

Regular data collection is scheduled automatically based on the data saved in the file.

Refer to "Definition File for Collection of Configuration Information" in the *Systemwalker Runbook Automation Reference Guide* for information on how to check the collection schedule or change definitions.

Immediate collection

In addition to scheduled collection, it is possible to collect actual records at any time, by using the observed record collection request command (refer to "cmdbrefresh" in the *Systemwalker Runbook Automation Reference Guide* for details).



Point



When using an automatic collection agent to collect configuration data, only node data will be collected in the first collection of data after a new Business Server is added, and IT resource data will not be collected.

The IT resource data for newly added Business Servers will be collected from the second data collection onwards, after the Business Servers have been set up (refer to "Setup" > "Setting up Business Servers" in the *Systemwalker Runbook Automation Installation Guide* for details).



2.1.6.2 Input Configuration Items via Commands

Import commands can be used to input configuration items in the CMDB Manager.

Import command

This command inputs configuration items into the CMDB. Below are the two data formats for input:

- CSV
- XML

XML is the format shown in "Configuration Item Format" in the *Systemwalker Runbook Automation Reference Guide*.

If inputting in CSV, it is necessary to indicate how data will be mapped to XML in accordance with the "Configuration Item Format" specifications in the *Systemwalker Runbook Automation Reference Guide*. Refer to "ciimport (configuration item import commands)" in the *Systemwalker Runbook Automation Reference Guide* for mapping methods and command specifications.

2.1.6.3 Output Configuration Items via Command

Export command

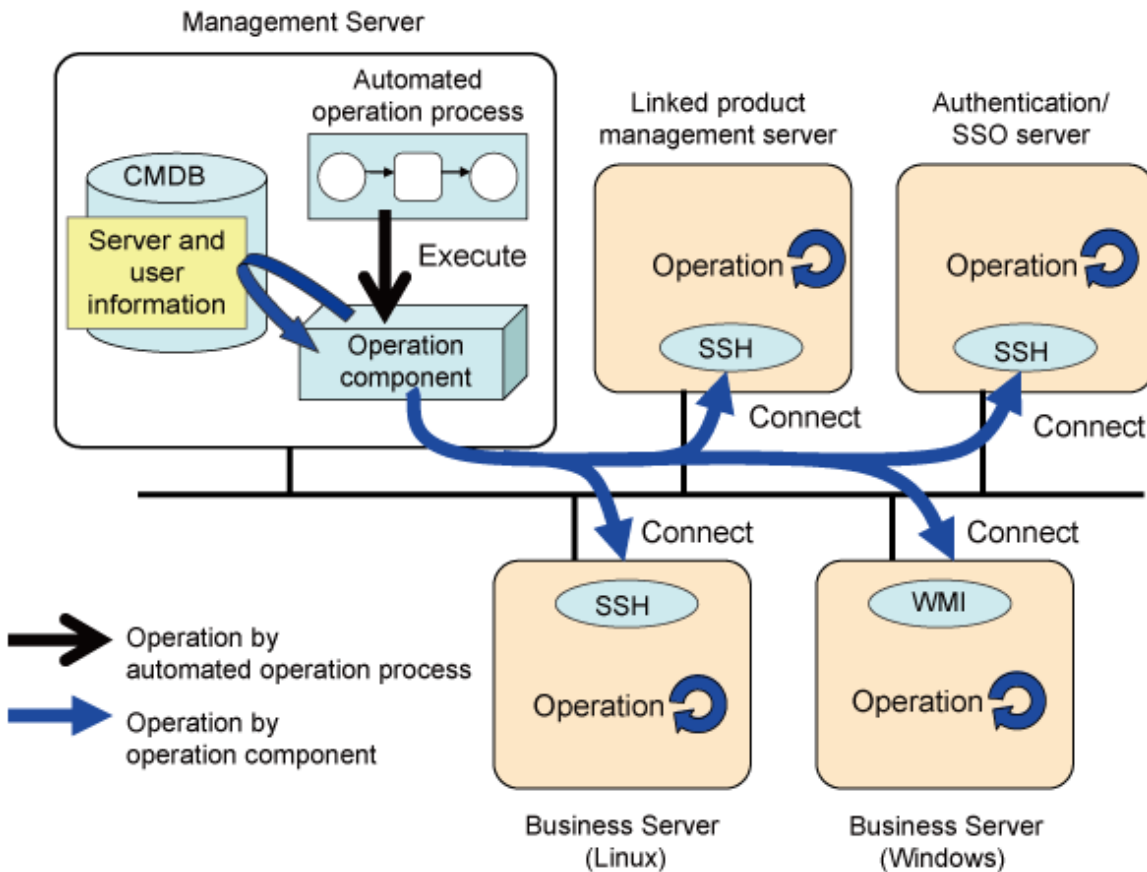
This command outputs configuration items from the CMDB. If output conditions are carried out via indicated parameters, the output will be in XML format.

Refer to "ciexport (Configuration Item Export Command)" in the *Systemwalker Runbook Automation Reference Guide* for command specifications.

2.1.7 Registering Connection Information to Operation Target Servers

Information for connecting to servers must be added to system configuration information which registered at Section 2.5

This product is able to automate operations by automated operations process and operation components. The operation components that are executed from automated operations process connect to the server on which the operation is to be performed, execute the commands specified in the operation components, and then return control. Also, the commands that can be executed by operation components are not limited to operating system commands, but also include commands for other software products that have been installed on the server.



Connecting to servers and executing commands

To operate the target servers, operation components require connection information (a user ID and password) for connecting to the server, as well as information about the user that will execute the command (the user ID and password).

This information is managed by the CMDB for the Management Server. Before operations start, register server information (such as IP addresses and operating system information) in the CMDB and set up the information that the operation component needs in order to connect to the server (the user ID and password).

Registering server information with the CMDB is performed by the Systemwalker Runbook Automation configuration management agent function.

Registering server connection information and user information with the CMDB is performed using the user information import command.

2.1.7.1 Managing connection information to server

To register connection information to server is using commands. The following information is required.

Item	Overview
IP address	Specify the server IP address
Authentication destination type	Select the operating system authentication. Only operating system authentication can be selected

Item	Overview
User	Specify the user ID.
Password	Specify the password.
Administrator user	To treat the user as a user with administrator privileges, specify Administration user For each authentication destination type on the server, only one user can be specified as an Administration
Server connection user	To treat the user as the user for connecting to the server, specify server connection user. Only one operating system authentication user can be specified as the server connection user.
Comment	Enter a comment.

Register/Change user information

You can register/change user information in files created in CSV format, by using the user information import command (refer to "swrba_uaimport" in the *Systemwalker Runbook Automation Reference Guide* for details) - the command allows data for several users to be processed in one batch.

Note that to use this command, the server that is the object of the CMDB must be registered again as the logic server.

Extract user information

You can obtain information in CSV format about users registered via swrba_uaimport (User Information Import Command), by using the user information export command (refer to "swrba_uexport" in the *Systemwalker Runbook Automation Reference Guide* for details)".



Note

The command exports the default password, and not the actual one.

Also, when importing user information, the password will not be modified if the password contains the default value in the data being imported.

Delete user information

You can delete user information, by using the configuration item deletion command (refer to "cidelete" in the *Systemwalker Runbook Automation Reference Guide* for details).

The conditional expression (xpath) is indicated as follows:

- Delete user information (UserAccount) on all servers

[Windows]

```
xpath=/%UserAccount
```

[Linux]

```
"xpath=/%UserAccount"
```

- Delete user information (UserAccount) for users whose server IP address is "xxx.xxx.xxx.xxx".

[Windows]

```
xpath=%UserAccount[./#expected/swcm:UserAccount/@ipAddress='xxx.xxx.xxx.xxx']
```

[Linux]

```
"xpath=%UserAccount[./#expected/swcm:UserAccount/@ipAddress='xxx.xxx.xxx.xxx']"
```

- Delete user information(UserAccount) for users whose server IP address is "xxx.xxx.xxx.xxx" and who are also connected.

[Windows]

```
xpath=%UserAccount[./#expected/swcm:UserAccount[(@ipAddress='xxx.xxx.xxx.xxx')and(@isDefaultUser='true')]]
```

[Linux]

```
"xpath=%UserAccount[./#expected/swcm:UserAccount[(@ipAddress='xxx.xxx.xxx.xxx')and(@isDefaultUser='true')]]"
```

- Delete user information (UserAccount) for users whose server IP address is "xxx.xxx.xxx.xxx" and who are also OS managers.

[Windows]

```
xpath=%UserAccount[./#expected/swcm:UserAccount[(@ipAddress='xxx.xxx.xxx.xxx')and(@authenticationType='OS')and(@isAdminUser='true')]]
```

[Linux]

```
"xpath=%UserAccount[./#expected/swcm:UserAccount[(@ipAddress='xxx.xxx.xxx.xxx')and(@authenticationType='OS')and(@isAdminUser='true')]]"
```

2.2 Configuring the Operation Component Environment Settings (Developing an Operation Component using Perl)

The environment settings that are required to execute operation components that have been developed in Perl are shown below.

To use this function, note that the Perl runtime environment must be installed on the Management Server separately.

Also, the extension of the operation component (Perl script file) that will be developed must be '.pl'.

2.2.1 Defining the Component Execution Setup File

The settings items that are required to execute Perl scripts using Systemwalker Runbook Automation are defined in the component execution setup file. This file must be edited in order to execute operation components that have been created using Perl.

The default values have been set for each item in this file. Use these default value formats as a reference when you edit the file. It is also recommended that you take a backup of the original file when you edit the file.

Storage Location of the Component Execution Setup File

File name: pl.xml

[Windows]

```
[Systemwalker Runbook Automation Management Server installation directory]\SWRBAM\etc\rbaope\opeparts\engine
```

[Linux]

```
/opt/FJSVswrbam/etc/rbaope/opeparts/engine
```

The setup file is stored in the above directory at the time of the Systemwalker Runbook Automation installation.

Do not change the file name.

Synopsis of the component execution setup file

XML code	Edit requirement	Number	Meaning and input value
<?xmlversion="1.0" encoding="UTF-8"?>	Not required	1	XML declaration
<opeparts>	Not required	1	XML element name
<command>component start command</command>	Tag content can be any value	1	Specify the command that starts the operation component (Perl script). Specify the full path to the directory. Environment variables can be specified.
<workingdirectory>working directory</workingdirectory>	Tag content can be any value	0-1	Specify the working directory. Specify the absolute path of a directory that already exists. If this is not specified, the default value will be used. (WUibpmsv current directory)
<parameters>	Not required	1	XML element name
<parameter>start command parameter</parameter>	Tag content can be any value	3-64	Set the component start command parameters one at a time. Environment variables can be specified. The string total must not exceed 2,047 bytes. Note that the following are reserved words and required parameters. Do not delete name duplication usages or parameters. @{SWRBA_SYS_PARTSPATH}: Component name (including the extension) @{SWRBA_SYS_INPUTDEF}: Input information file
<environments>	Not required	1	XML element name
<environment name="environment variable name" type="default">	Tag content can be any value	1-128	Environment variable that is set when the operation component starts. name: Environment variable name type: Environment variable type default Normal value (default) path Path Characters that can be used in environment variable names are alphanumerics, underscores ("_"), and at symbols ("@"). Note that numbers cannot be used as the first character. Specify a maximum of 64 bytes. Enter default or path as the environment variable type.
Environment variable value	Tag content can be any value		Value for the environment variable that is set when the operation component starts.
<environment name="environment variable name" type="path" mode="mode">	Tag content can be any value	1-128	Environment variable name (when path has been specified for the environment variable value). Characters that can be used in environment variable names are alphanumerics, underscores ("_"), and at symbols ("@"). Note

XML code	Edit requirement	Number	Meaning and input value
			<p>that numbers cannot be used as the first character. Specify a maximum of 64 bytes.</p> <p>Enter default or path as the environment variable type.</p> <p>When the environment variable type is path, the following values are effective:</p> <p>mode: Settings type</p> <p>overwrite Overwrite</p> <p>pushback Added to the end</p> <p>pushfront Added to the start (default)</p>
<pathelement>	Tag content can be any value	1-30	Path element. This is only effective when type="path".
Path element	Tag content can be any value		<p>Specify the path that is assigned to the environment variable.</p> <p>Specify a maximum of 255 bytes.</p>

Example of how to define the component execution setup file

[Windows]

```
<?xml version="1.0" encoding="UTF-8"?>
<opeparts>
  <command>C:\Perl\bin\perl</command>
  <parameters>
    <parameter>@{SWRBA_SYS_PARTSPATH}</parameter>
    <parameter>-input</parameter>
    <parameter>@{SWRBA_SYS_INPUTDEF}</parameter>
  </parameters>
  <environments>
    <environment name="PERLLIB" type="path" mode="overwrite">
      <pathelement>%SWRBA_HOME%\rbaope\bin\parts\lib\standard</pathelement>
      <pathelement>%SWRBA_HOME%\rbaope\bin\parts\guest\E0\lib</pathelement>
    </environment>
  </environments>
</opeparts>
```

[Linux]

```
<?xml version="1.0" encoding="UTF-8"?>
<opeparts>
  <command>/usr/bin/perl</command>
  <parameters>
    <parameter>@{SWRBA_SYS_PARTSPATH}</parameter>
    <parameter>-input</parameter>
    <parameter>@{SWRBA_SYS_INPUTDEF}</parameter>
  </parameters>
  <environments>
    <environment name="PERLLIB" type="path" mode="overwrite">
      <pathelement>/opt/FJSVswrbam/rbaope/bin/parts/lib/standard</pathelement>
      <pathelement>/opt/FJSVswrbam/etc/share/rbaope/bin/parts/guest/E0/lib</pathelement>
    </environment>
  </environments>
</opeparts>
```



Note

In the following cases, an error will occur when the Automated Operation Process is executed, and the Automated Operation Process status will change to **Aborted**.

- There is no file
- The component execution setup file is invalid
 - The XML syntax is invalid
 - The defined value is invalid (for example, non-existent path, limit exceeded, limit for number of appearances exceeded)
 - The same value (for example, an environment variable) is different to the multiple defined values

2.2.2 Registering the Component Execution Setup File

Register the component execution setup file according to the following procedure:

1. Stop Systemwalker Runbook Automation by executing the `swrba_stop` command.
2. If the Perl library has not been installed on the Management Server, then install it.
3. Edit the component execution setup file.
4. Start Systemwalker Runbook Automation by executing the `swrba_start` command.

2.3 Design the Automated Operation Process

This section explains the design of the Automated Operation Process.

2.3.1 Deciding which Operation Tasks are Automated

Analyze the procedures in the current system operations, and decide which of the operations that are performed regularly (either daily or periodically) should be automated using Systemwalker Runbook Automation.

After the automated operation tasks have been decided on, design the Automated Operation Process group as the unit that will manage the operation tasks, for example as a related business systems unit, or as a unit that is managed by an operations administrator or an operator. Confirmation of the Automated Operation Process start and execution results, or schedule can be performed in this unit.

2.3.2 Reusable Templates

The Automated Operation Process templates that can be applied can be searched in the locations where the operation tasks are automated.

Standard templates are provided with Systemwalker Runbook Automation. It is also possible to use Automated Operation Processes that are currently operating, or Automated Operation Processes that have been developed elsewhere.

After finding a template that can be applied, decide how much it needs to be customized to suit the operations.

The following items determine the scope of customization.

Reusable Automated Operation Processes

Decide which parts of the template to customize, and which parts to use unchanged. If steps need to be added to or removed from the operation procedure, the Automated Operation Process needs to be customized. If there are no Automated Operation Process templates that can be applied, the developer creates a new Automated Operation Process.

Reusable operation components

Determine whether the operation can be achieved using only standard operation components and existing operation components. If the operations flow cannot be created using only standard or existing operation components, create new ones.

2.3.3 Deciding on the Automated Start Schedule

To start the Automated Operation Process according to a pre-determined schedule, create an Automated Operation Process Schedule Definition.

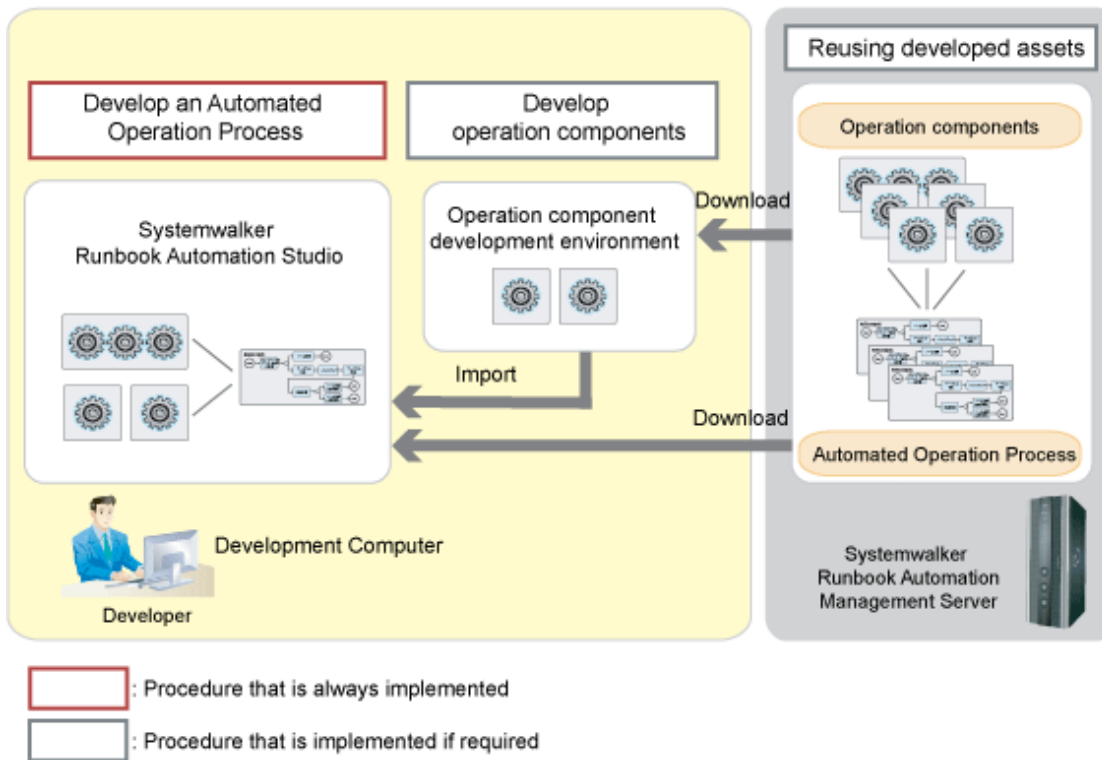
Decide on the automatic start schedule by combining holiday calendars and Schedule Patterns, and by setting individual startup days.

Chapter 3 Developing Automated Operations

This chapter explains how to develop Automated Operations.

3.1 Development Flow

The following diagram shows the flow of developing Automated Operations.



An outline of the tasks shown in this diagram is given below.

Developing an Automated Operation Process

In Systemwalker Runbook Automation Studio, create and save a process definition.

Diverting development resources

If there is development resource which can divert, you can create operation components and operation process with diverting existing operation components and operation process.

Downloading operation components

Use either of the following methods to download the operation components:

- Downloading from Studio

In Systemwalker Runbook Automation Studio:

1. Download the operation components of the Management Server.
2. Use the operation components in any operation component development environment by diverting them.

- Downloading from a Web console:

1. Export the operation components.

The operation components of the Management Server will be downloaded to the Development Computer.

2. Use the operation components in any operation component development environment by diverting them.

Downloading an Automated Operation Process

Use either of the following methods to download an Automated Operation Process:

- Downloading from Studio

In Systemwalker Runbook Automation Studio:

1. Download from the application project server.

The process definition of the Management Server will be downloaded to the Development Computer.

2. Use the process definition in Systemwalker Runbook Automation Studio by diverting it.

- Downloading from a Web console:

1. Export the Automated Operation Process.

2. Use the process definition in Systemwalker Runbook Automation Studio by diverting it.

Developing operation components

If you cannot develop an Automated Operation Process using operation components provided by the product or existing operation components, develop new operation components as follows:

1. Create operation components (script files) in any development environment.

2. In Systemwalker Runbook Automation Studio:

1. Create an operation component project.

2. Import a script file.

The developed operation components will be able to be used by Systemwalker Runbook Automation Studio.

3. Register the developed operation components in the palette.

4. Use the developed operation components to develop an Automated Operation Process.

3.2 Developing Automated Operation Processes

The procedure for developing Automated Operation Processes is explained under the following three headings:

- [3.2.1 Developing Automated Operation Processes that do not include human tasks](#)

This section explains how to develop Automated Operation Processes that do not include human tasks.

- [3.2.2 Developing Automated Operation Processes that Include Human Tasks](#)

This section explains how to develop Automated Operation Processes that include human tasks, such as input from a form or checking forms.

- [3.2.3 Developing Advanced Automated Operation Processes](#)

This section explains the methods for adding extra functionality to the Automated Operation Processes described above.

3.2.1 Developing Automated Operation Processes that do not include human tasks

An example showing the creation of the operation task procedure as an Automated Operation Process is shown below:

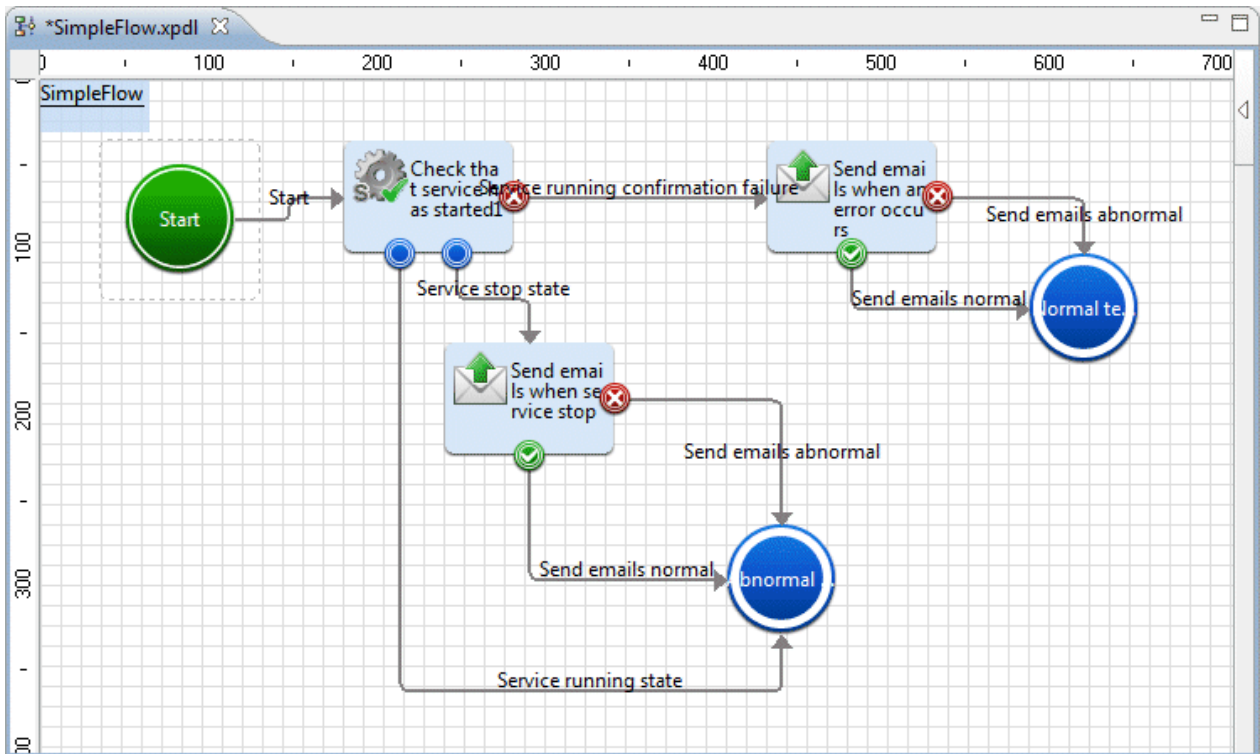
- Check whether the EventLog service is running.

Processing content for the Automated Operation Process

Whether the EventLog service is running or not is checked automatically.

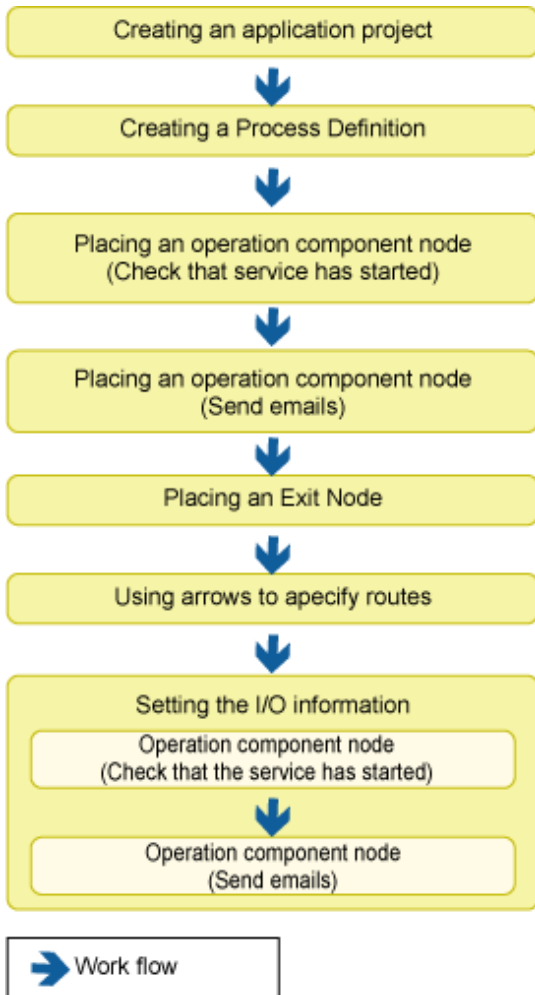
In this Automated Operation Process, processing is executed so that, after the Automated Operation Process is started, everything is automated until the process finishes. Human tasks, such as input from the form and checking the execution results in the form, are not included.

Image of the Automated Operation Process structure



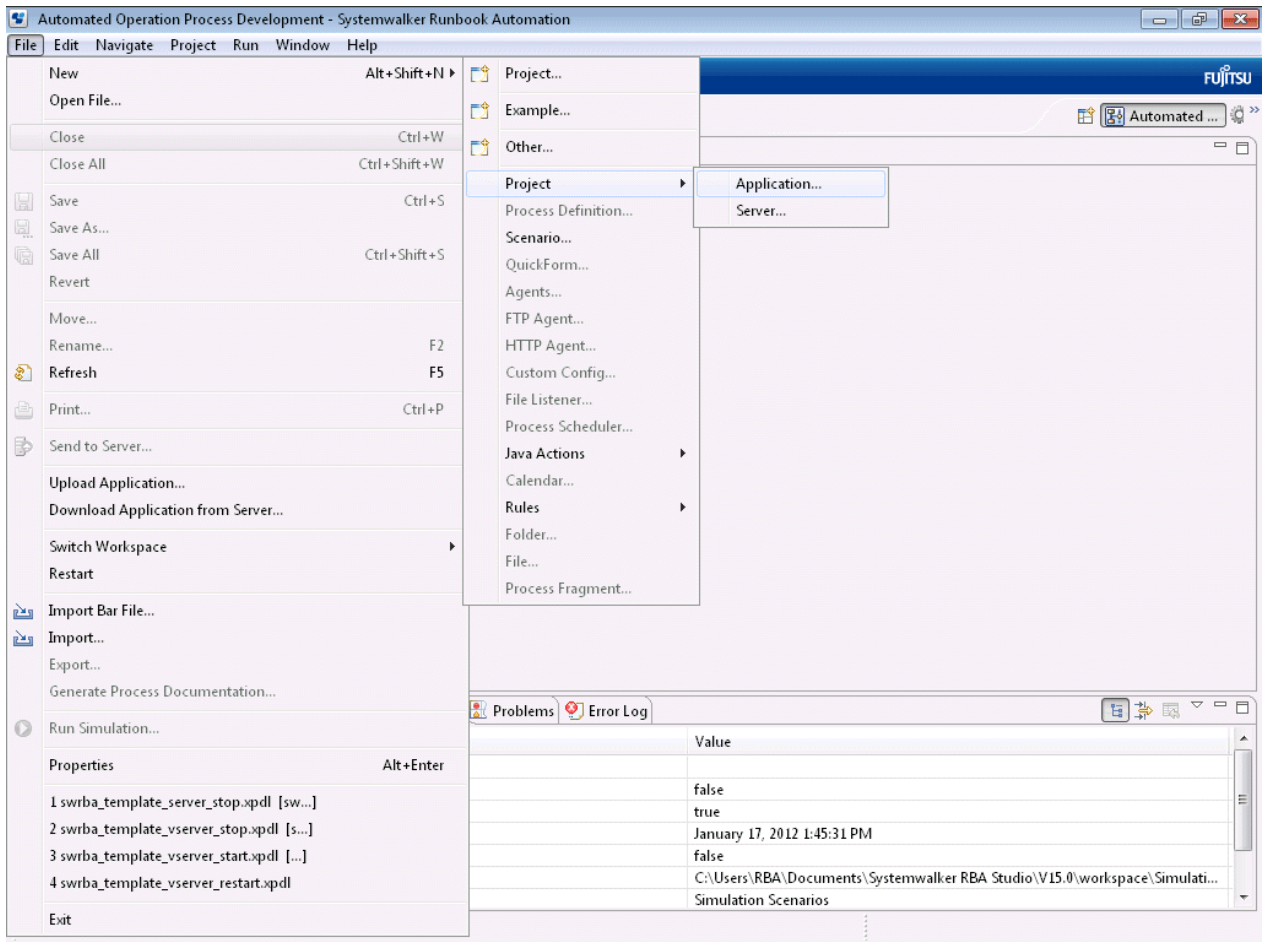
Procedure used to create the Automated Operation Process

The procedure that is used to create the Automated Operation Process is shown below.

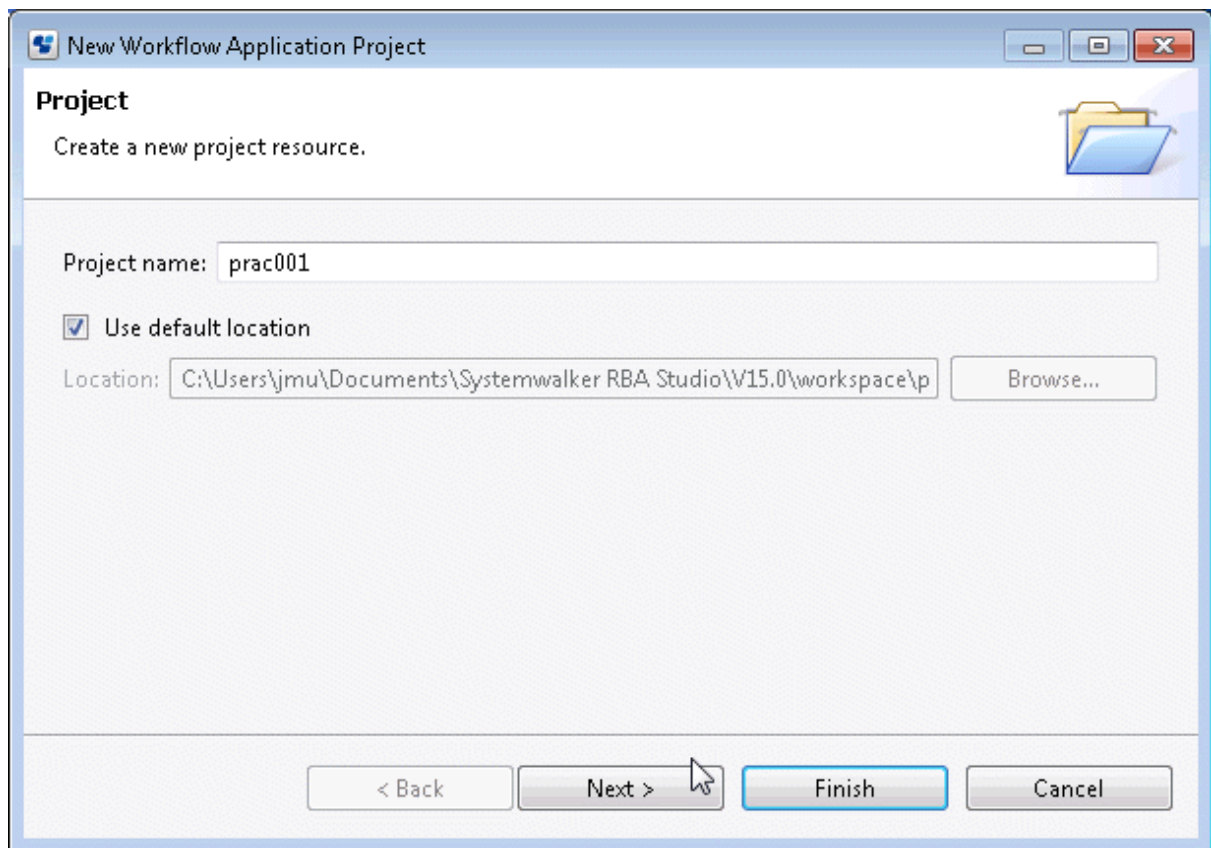


3.2.1.1 Creating an Application Project

1. Select **New, Project** and then **Application** from the **File** menu.



2. Enter the name of the project in the **Project name** field. "Prac001" is entered in this example.



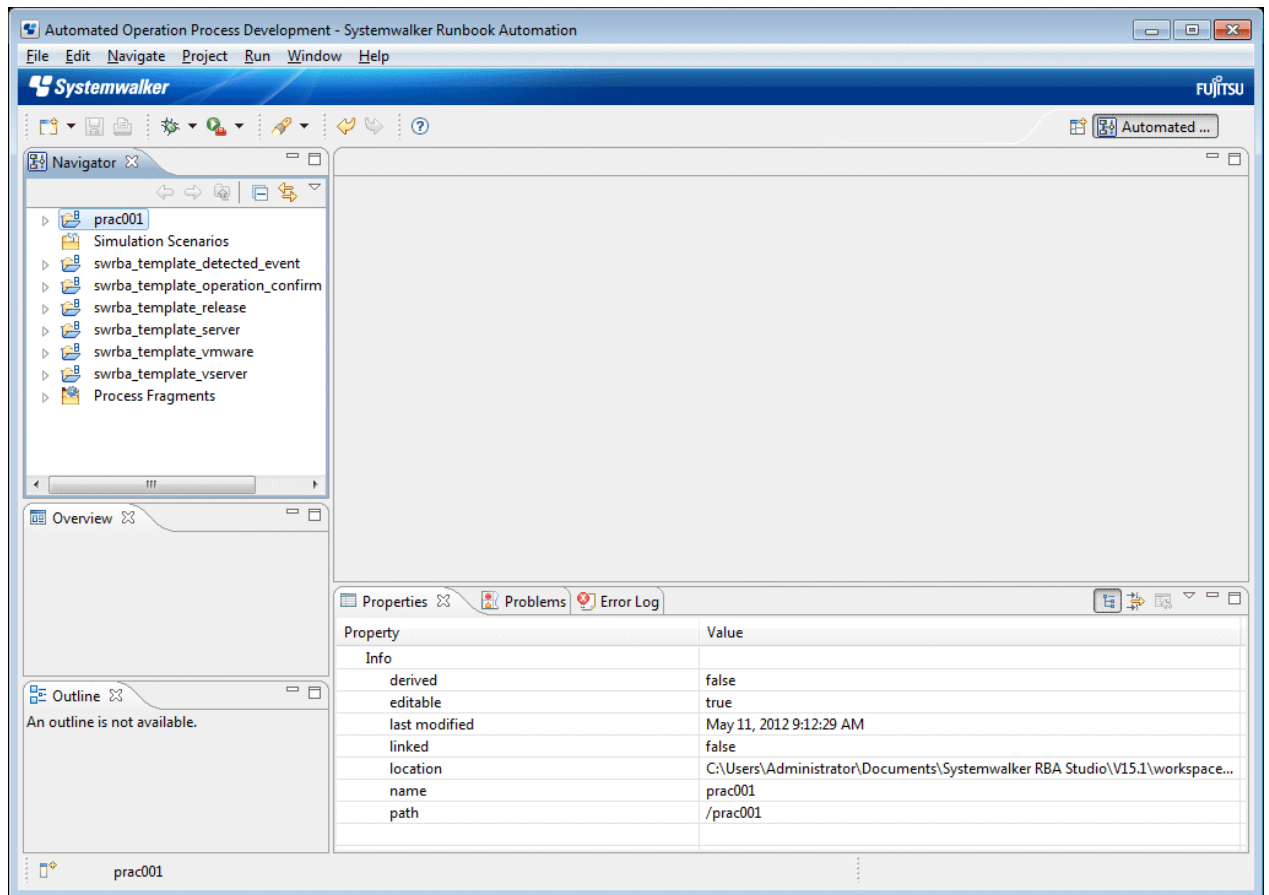
3. Click the **Next** button.

4. Enter the **Description** if necessary. There is no need to enter an **Owner Group**.

The image shows a Windows-style dialog box titled "New Workflow Application Project". The dialog has a standard title bar with minimize, maximize, and close buttons. Below the title bar, the word "Project" is displayed in bold, followed by the instruction "Enter the application project information." and a folder icon. The main area of the dialog contains two input fields: "Description:" with the text "SimpleFlow" and "Owner Group:" which is currently empty. At the bottom of the dialog, there are four buttons: "< Back", "Next >", "Finish", and "Cancel". The "Finish" button is highlighted with a blue border.

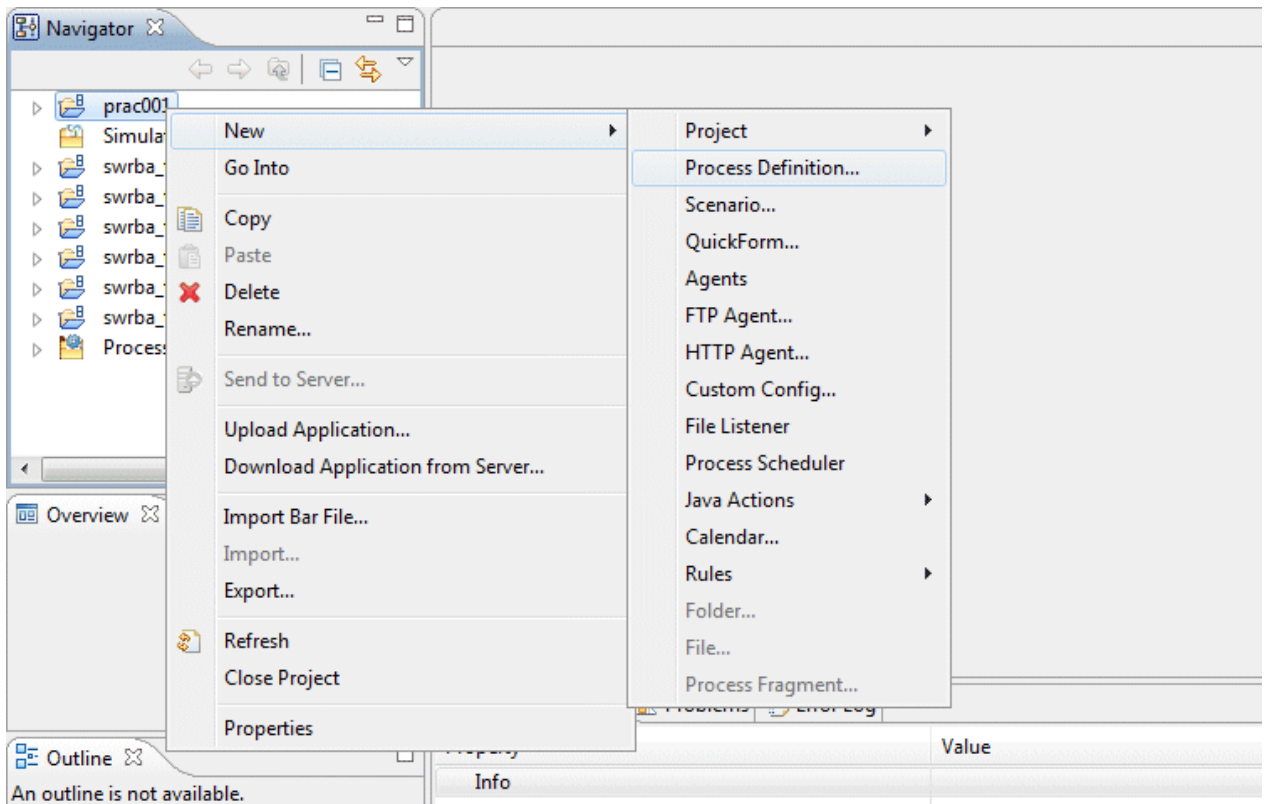
5. Click the **Finish** button.

The application project that has been created ("Prac001") will be added to the tree in the **Navigator** view on Systemwalker Runbook Automation Studio.



3.2.1.2 Creating a Process Definition

1. Select **Application Project "Prac001"** from the **Navigator** view. Then, in the menu displayed by right-clicking it, select **New** and then **Process Definition**.



2. In the **New Process Definition** dialog box, enter a name for the automated operation process in the **Name** field. In the **Description** field, enter a description.

Project: /Prac001 (Mandatory)

Name: SimpleFlow (Mandatory)

The name of project selected in **Navigator** view is displayed in **Project** as a default.

New Process Definition

Process Definition
Create a new process definition.

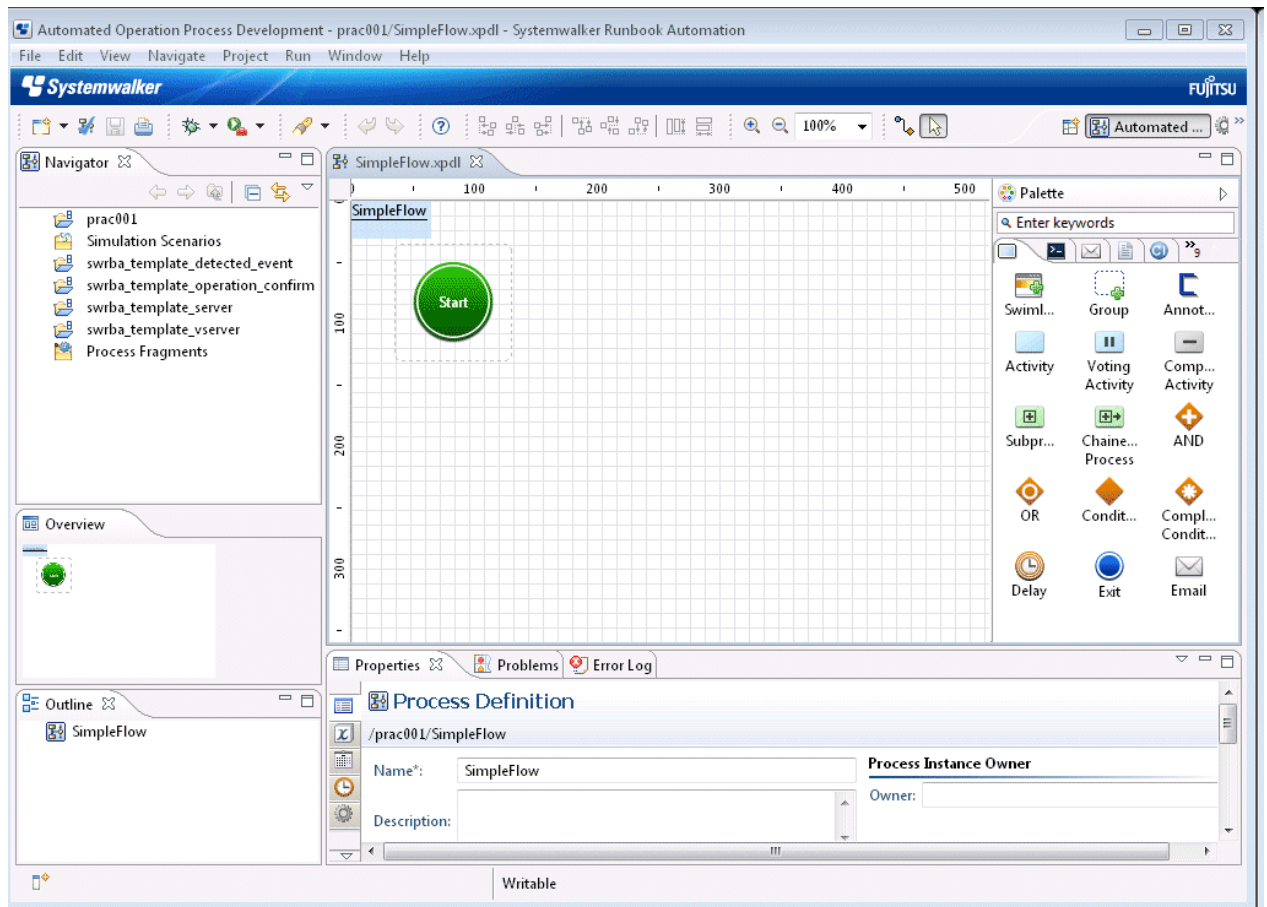
Project: /prac001

Name: SimpleFlow

Description:

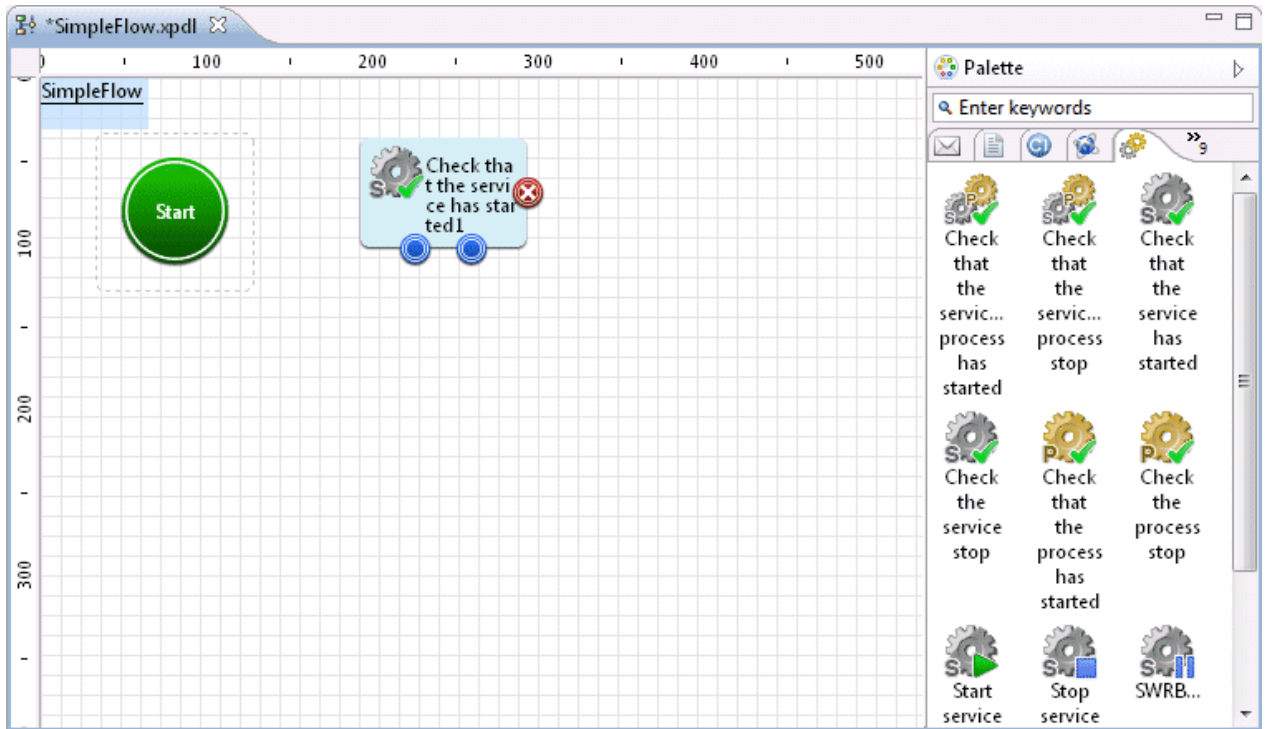
3. Click the **Finish** button.

The automated operation process that has just been created ("SimpleFlow") will be displayed in the **Navigator** view. When the Process Definition Editor is opened, a "Start" Node will be added automatically.



3.2.1.3 Placing an Operation Component Node (Check that Service has Started)

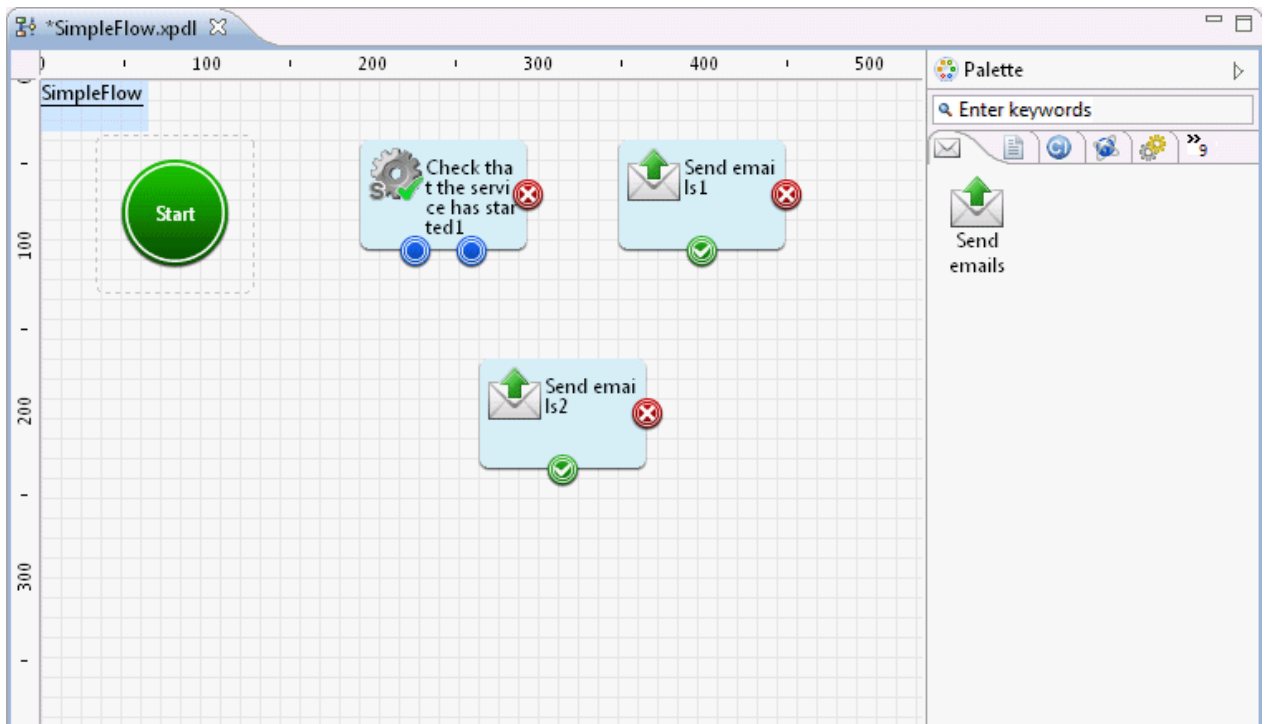
1. Select the **Check that service has started** of the **Service/Process Operations** tab in **Palette**. Move the cursor to the location where the operation component node will be placed on the Process Definition Editor, then click the mouse.



The operation component node (**Check that service has started**) is added.

3.2.1.4 Placing an Operation Component Node (Send Emails)

1. Select the **Send emails** of the **Send emails** tab in **Palette**. Move the cursor to the location where the operation component node will be placed on the Process Definition Editor, then click the mouse.



The operation component node (Send emails) is added.

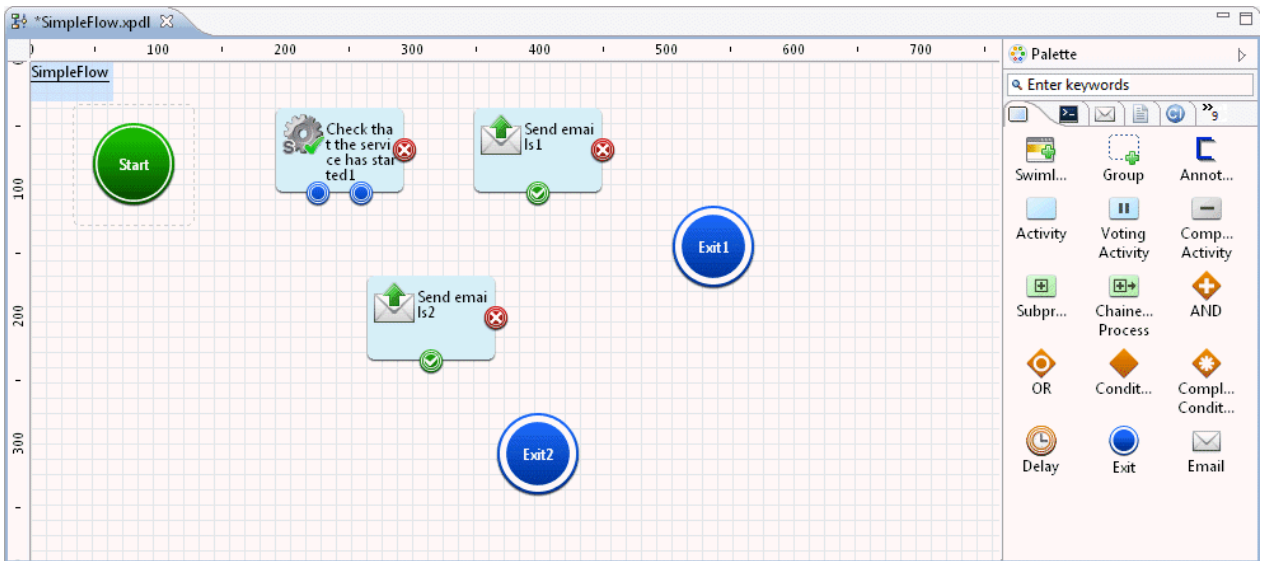
Here, two "Send emails" nodes are added so that an email will be sent when the service has stopped, and also when an error occurs during confirmation of the service's active status. Change the node names as follows:

Send emails 1	Send emails when an error occurs
Send emails 2	Send emails when service stop

3.2.1.5 Placing an Exit Node

Add an Exit Node that indicates the terminal point of the Automated Operation Process.

1. Select the **Exit** of the **Basic** tab in **Palette**. Move the cursor to the location where the operation component node will be placed on the Process Definition Editor, then click the mouse.



The Exit Node is added.

Here, two Exit Nodes are placed - one for normal exit, the other for abnormal exit. Change the node names as follows:

Exit1	Abnormal termination
Exit2	Normal termination

Information

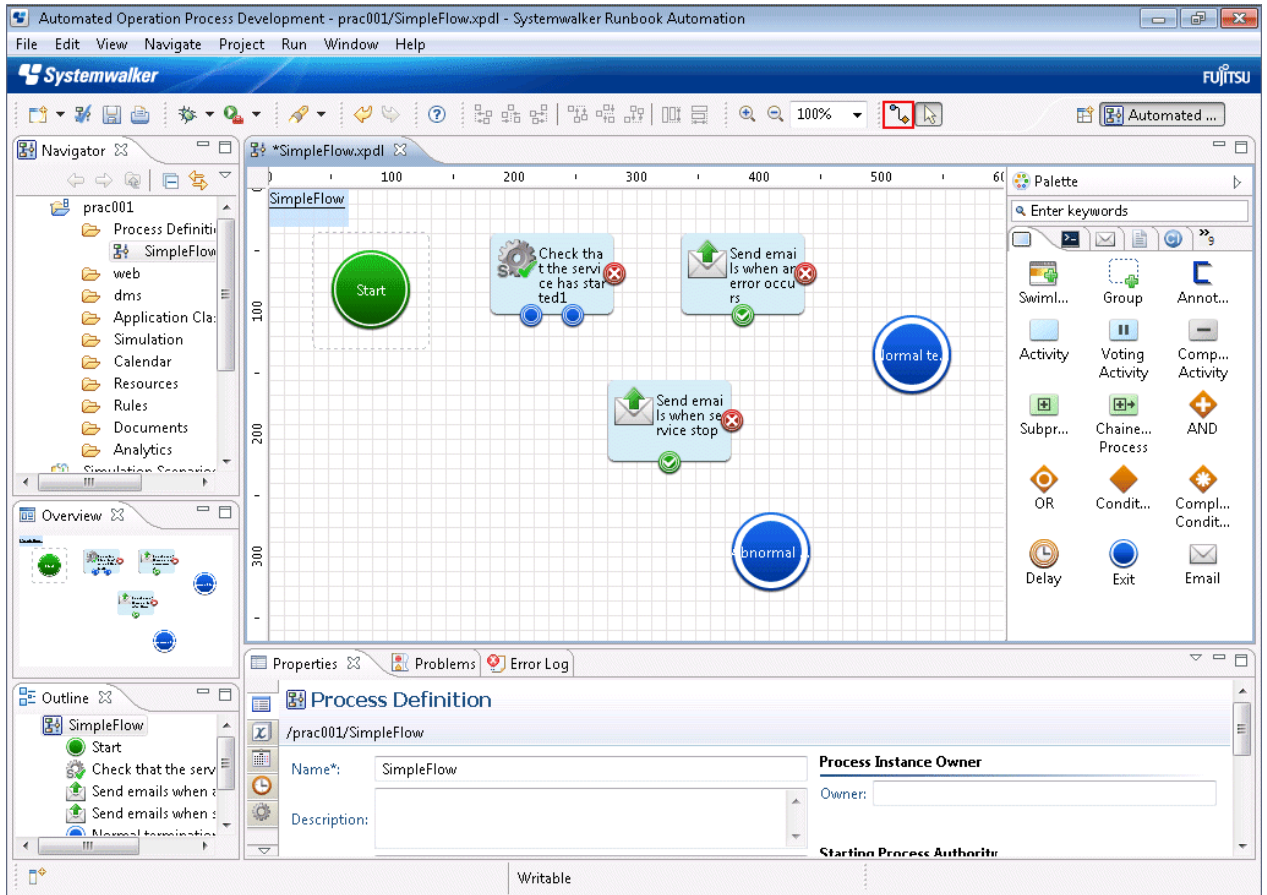
It is recommended you position at least one Exit Node at the end of the automated operation process.

By positioning two or more Exit Nodes, it is possible to distinguish whether the automated operation process ended by a normal route or by an erroneous route.

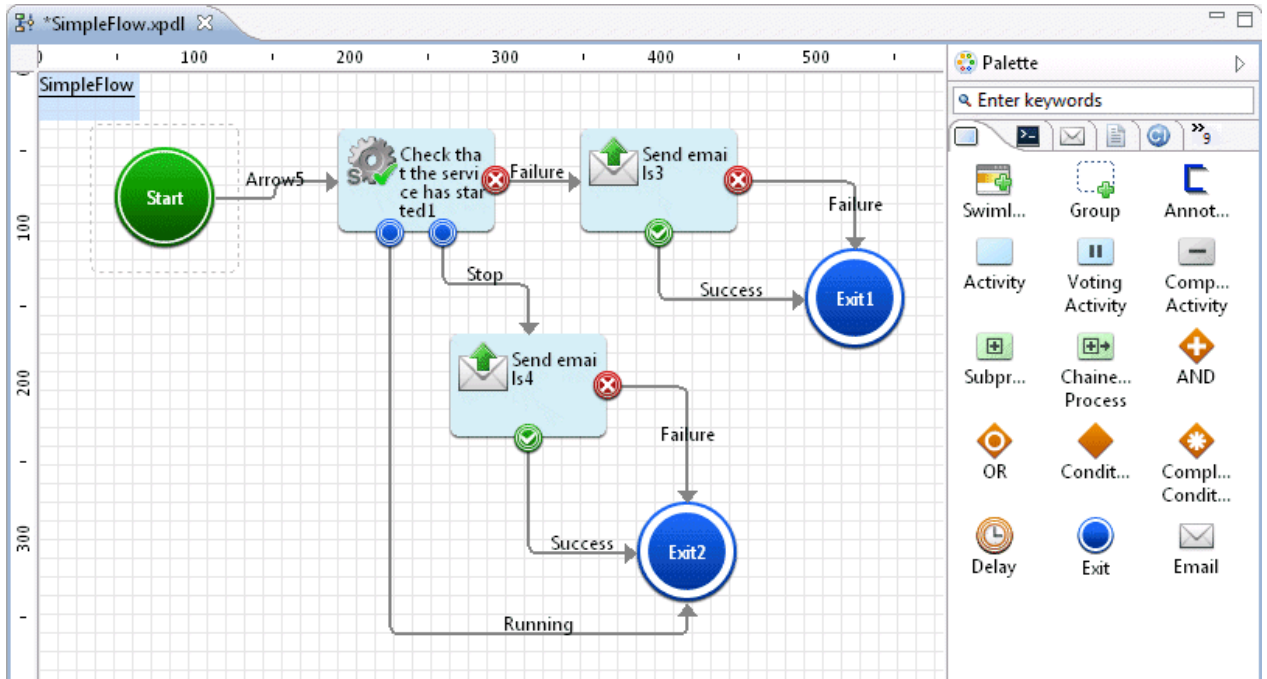
3.2.1.6 Using Arrows to Specify Routes

Arrows are used to link the nodes.

1. Click the Arrow icon.



2. Set the transition route of the automated operation process. Set the route by connecting nodes with arrows.



Change the arrow names as follows:

Node name	Arrow name before change	Arrow name after change
Start	Arrow1	Start
Check that service has started 1	Running	Service running state
	Stop	Service stop state
	Failure	Service running confirmation failure
Send emails when an error occurs	Successful	Send emails normal
	Failure	Send emails abnormal
Send emails when service stop	Successful	Send emails normal
	Failure	Send emails abnormal

- Do not specify only spaces for the arrow name.

Note

When an Automated Operation Process is designed using the AND and OR nodes with multiple operation component nodes, indicated by arrows in the following figure, the operation components will be executed as parallel processing. However, an inconsistency might occur between the values of the execution result stored in the UDA.

Note

If the arrow from the Start or OR nodes is branched and the Activity Nodes in the process definition are placed in parallel, transaction commit must not be executed for any of the nodes in the process definition.

If a node is selected in **Commit transaction after completion**, the error "Unable to find the work item" may occur when the process is executed.

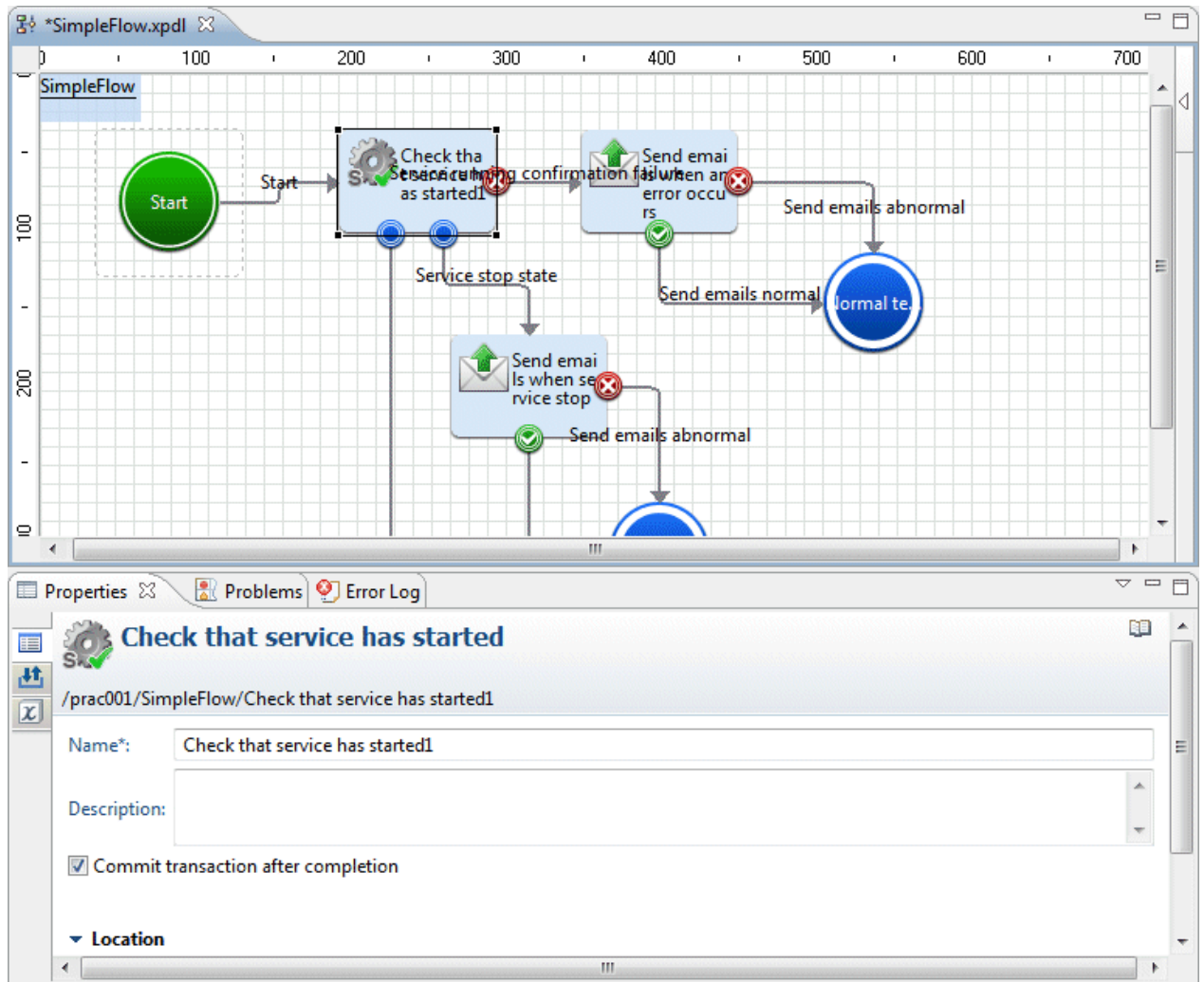
If you do not want to execute a transaction commit, clear the **Commit transaction after complete** check box on the **Properties >> General** tab.

3.2.1.7 Setting the I/O Information

Set the I/O information for the operation component that was positioned.

3.2.1.7.1 Operation Component Node (Check that the Service has Started)

1. Click the operation component node (Check that the service has started) on the Process Definition Editor.

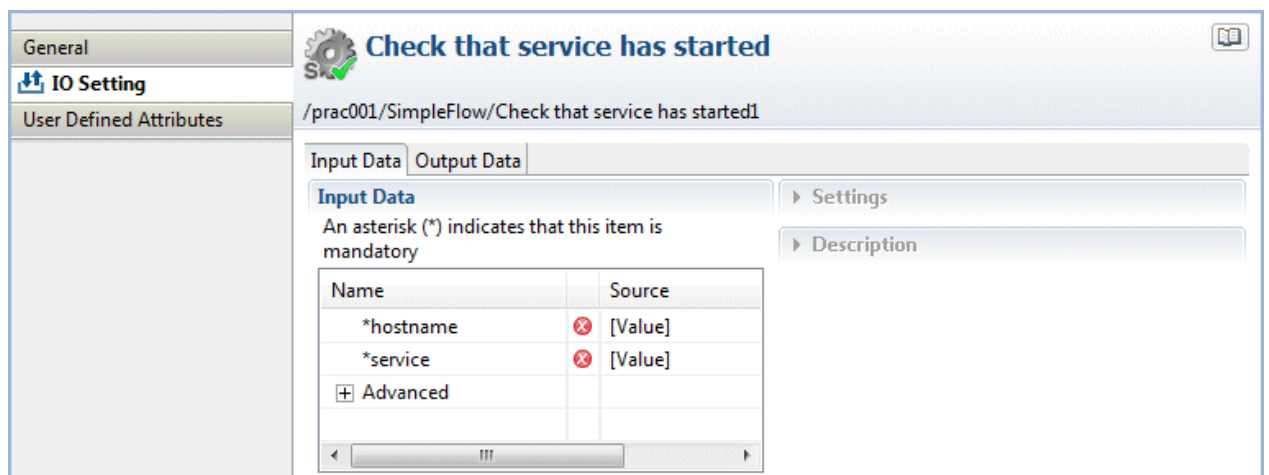


2. Click the **Properties >> IO Setting >> Input Data** tabs.

In the **Check that the service has started** component, specify the host name and the service name.

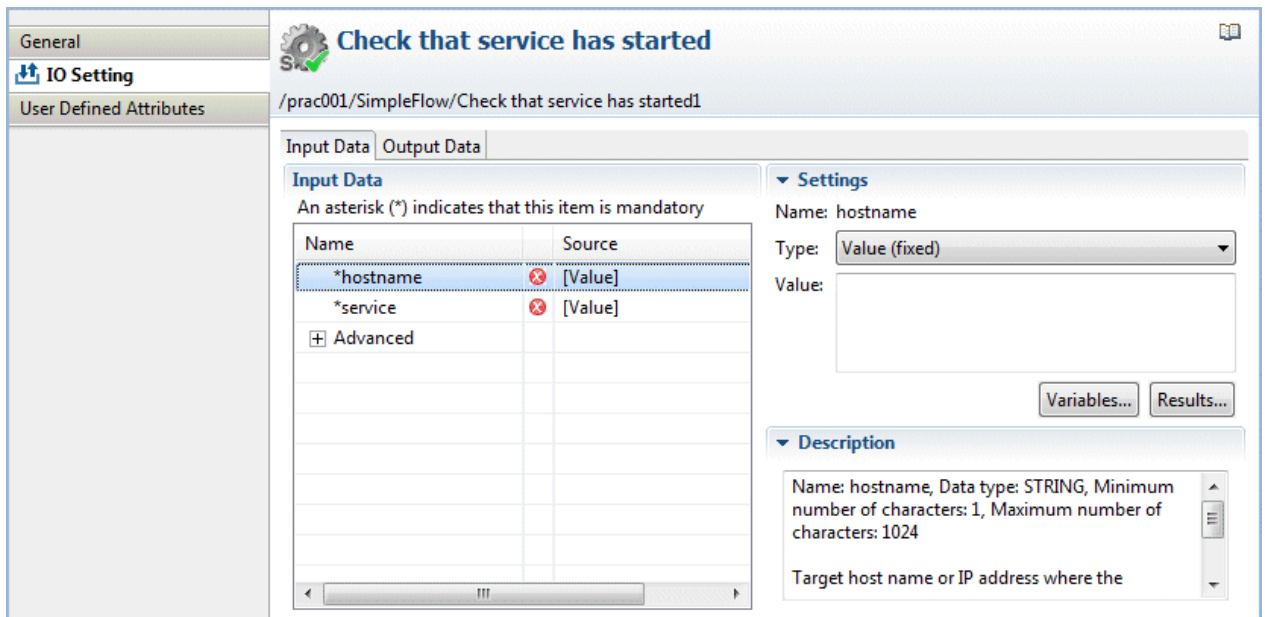
hostname: host name or IP address

service: Name of the service which start status is to be confirmed



- From the **Input Data** section list, select hostname.

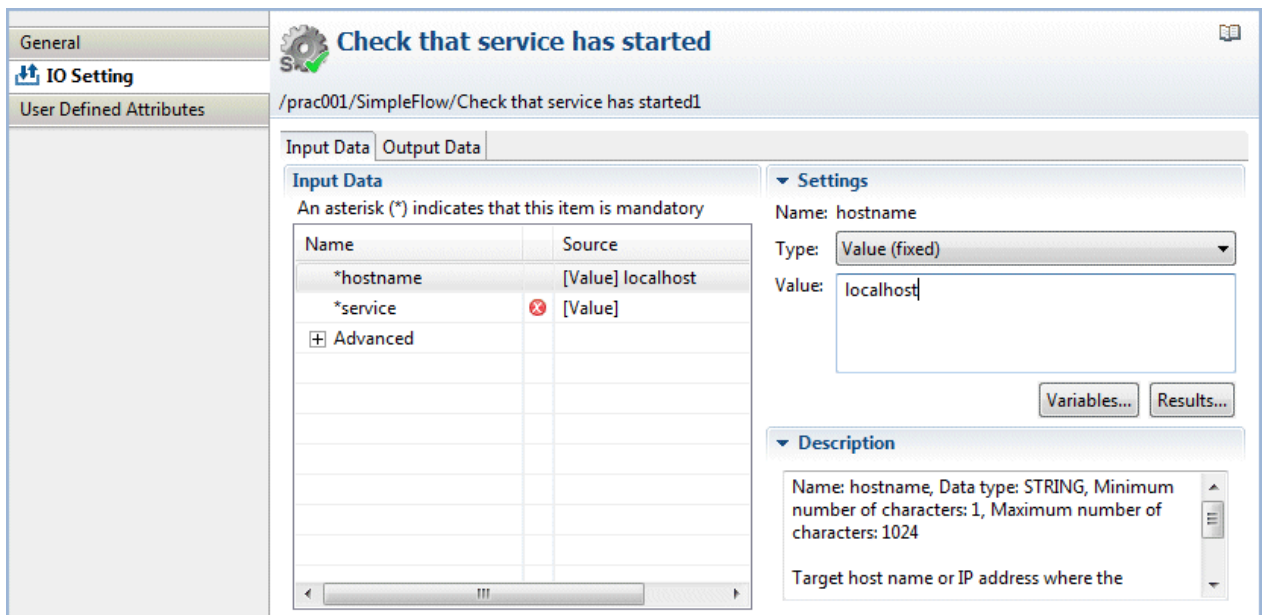
The Settings and **Description** sections will be displayed in the right half of the **Properties** view.



- From the **Type** combo-box, select **Value (fixed)** to enter the host name as the value. Here, "localhost" has been specified for hostname.

Type: fixed

Value: localhost



Select the method of input for the input information in **Type**. After selecting the **Type**, input or select the values corresponding to the input type:

Type	Description	Input Value
Value (fixed)	The character string entered in the Value field is passed as input information to the operation component.	In the Value field, enter the actual value that is required to execute the operation component. Example: 192.0.2.0

Type	Description	Input Value
	The value selected in the Value combo-box is passed as input information to the operation component.	If the Value combo-box is used, select the value that is passed to the operation component from the combo-box.
Variable (uda)	The character string held by the user-defined attribute (UDA) specified in the Variable list is passed as input information to the operation component.	<p>Select the name of the UDA from the list.</p> <p>Example: UDA_NAME</p> <p>Note: In the list, types added using the Properties >> User Defined Attributes tabs are displayed in the list of "STRING/INTEGER/BOOLEAN/DATE/XML" UDA names and types.</p> <p>The UDA types that are displayed in the list will depend on the input information data type:</p> <ul style="list-style-type: none"> - STRING STRING/INTEGER/BOOLEAN/DATE/XML type UDAs are displayed in the list. - INTEGER STRING/INTEGER type UDAs are displayed in the list. - PASSWORD STRING type UDAs are displayed in the list.
Execution results (result)	Other operation component execution results are passed as input information to the operation component.	<p>Select the name of the operation component node from the Node Name combo-box.</p> <p>Select the execution results from the Execution results list.</p>

Note

- The maximum size of process instances (except for execution results) is 4 MB. This size is the total of the process instance history information, number of placed nodes, number of UDAs, and stored values. If this size exceeds 4MB because large amounts of data are stored in the UDA while the process instance is being executed, the following message will be output to the custom message and the process instance will end abnormally.

```
FSP_SW/RB-A_BASE: [ERROR]: 03012: Cannot set data because data exceeds the limit.
```

If the process instance ends abnormally and the above error message is output, take the following action:

- Reduce the size of the value that is output to the UDA by the operation component.
- Use a subprocess to balance the processing that is executed in one process instance.
- The maximum size of each execution result is 4 MB. If the size exceeds this defined limit, the following error message will be output to the custom message and the process instance will terminate abnormally.

```
FSP_SW/RB-A_BASE: ERROR: 03055: The volume of data stored in the execution results has exceeded the upper limit.
```

If the process instance ends abnormally and the above error message is output, take the following action:

- Reduce the size of the value that is output to the UDA by the operation component.

Note

If the password information that can be set in the **Input Data** list, **Advanced** tree is a specified value for the input information of the automated operation process, this information can easily be accessed from the outside, and so from a security perspective it is not recommended to make password settings in this way.

It is recommended to omit this information as input information for the automated operation process, as information previously set on the Operation Management Server can safely be used even if password input is omitted.

In this product, the setting of the password has been made simple for use in test environments and other situations when security is not an issue.

5. Select **service** from the **Input Data** list, select **fixed** from the **Type** box, type the service name command in the **Value** box, and click the **Add** button.

Here, "Eventlog" has been specified for service.

Type: fixed

Value: Eventlog

General

IO Setting

User Defined Attributes

Check that service has started

/prac001/SimpleFlow/Check that service has started1

Input Data Output Data

Input Data

An asterisk (*) indicates that this item is mandatory

Name	Source
*hostname	[Value] localhost
*service	[Value] "Eventlog"
+ Advanced	

Settings

Name: service

Type: Value (fixed)

Value: Service name

Eventlog

Add

Batch edit...

Delete

Up

Down

Description

Name: service, Data type: STRING, Minimum number of characters: None, Maximum number of characters: None

Name of the service whose start status is to be

6. Check that the information has been entered as shown below.

Input Data Output Data

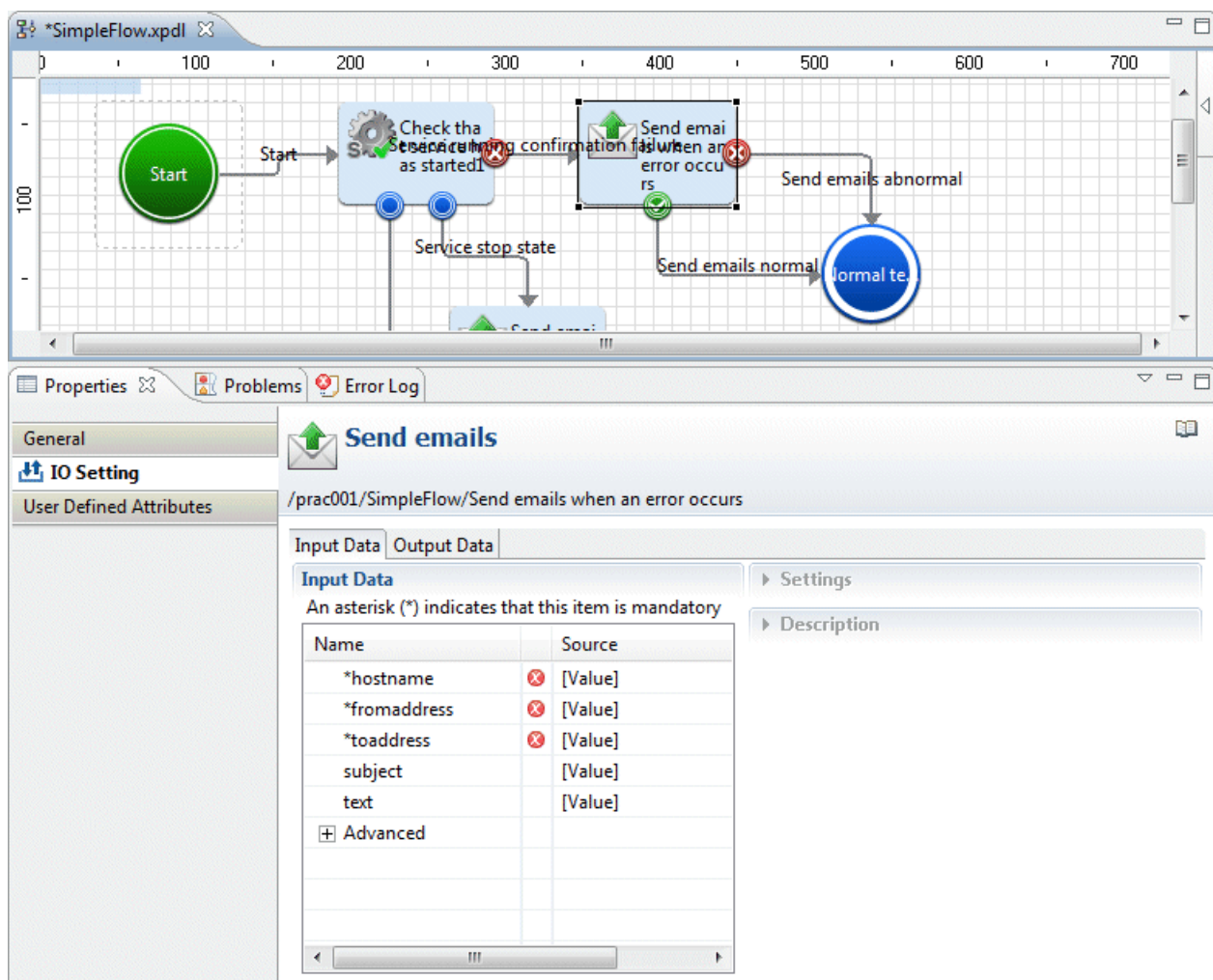
Input Data

An asterisk (*) indicates that this item is mandatory

Name	Source
*hostname	[Value] localhost
*service	[Value] "Eventlog"
+ Advanced	

3.2.1.7.2 Operation Component Node (Send Emails)

1. Click the operation component node (Send emails) on the Process Definition Editor, then click the **Properties >> IO Setting >> Input Data** tabs.



2. In the "Send emails" component, specify the following input information:

hostname: Host name or IP address of the (SMTP) server sending emails

fromaddress: Email sender's address

toaddress: Email recipient's address

subject: Email title

text: Email text body

This completes the creation of the Automated Operation Process without human tasks included.

3.2.2 Developing Automated Operation Processes that Include Human Tasks

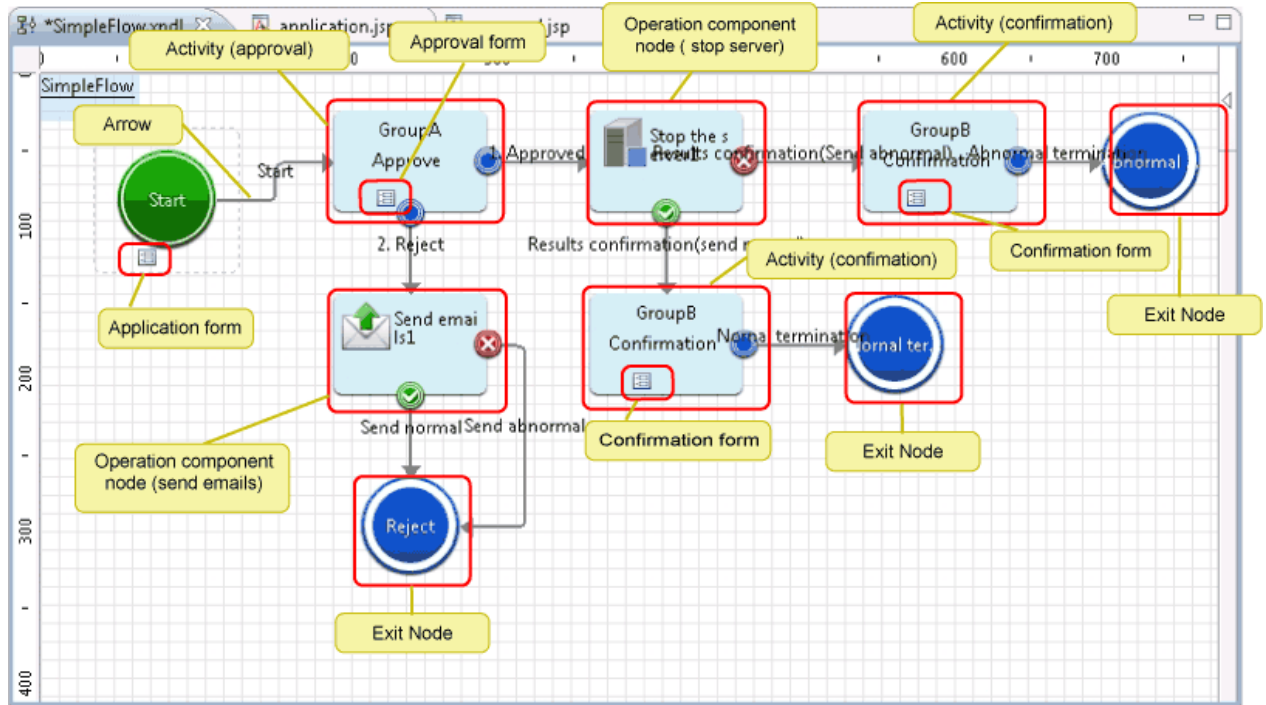
An example showing the creation of the operation task procedure as an Automated Operation Process is shown below:

- An application to stop the server is made, the approver checks the application content then either approves or rejects the application. If the application is approved and the server is stopped, the confirmer checks the results.

Processing content for the Automated Operation Process

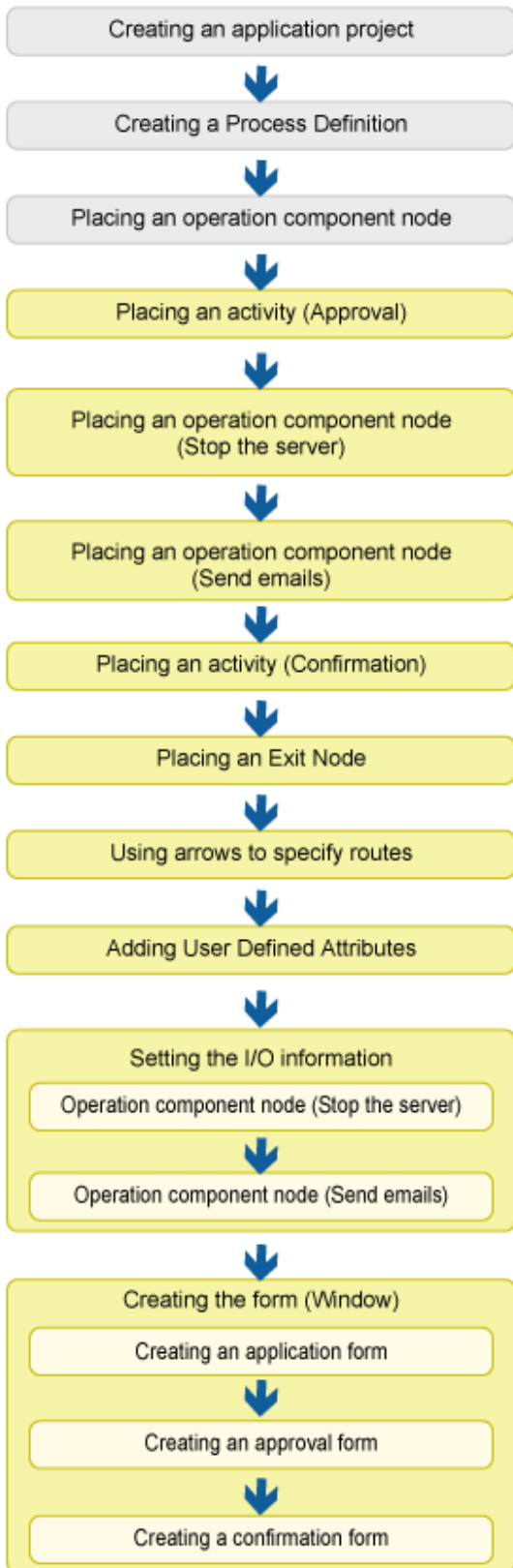
The applicant enters the host name or IP address of the server to be stopped, and the reason for the application, in an application form. Next, the approver checks the application content then approves the application if there are no problems with it. If there are problems with the application content, the approver rejects the application. If the application is approved, the server is stopped, the confirmer checks the execution results in a confirmation form, then selects processing for a normal or abnormal end. In this way, the transition of the Automated Operation Process occurs according to human decision making.

Image of the Automated Operation Process structure



Procedure used to create the Automated Operation Process

The procedure that is used to create the Automated Operation Process is shown below.



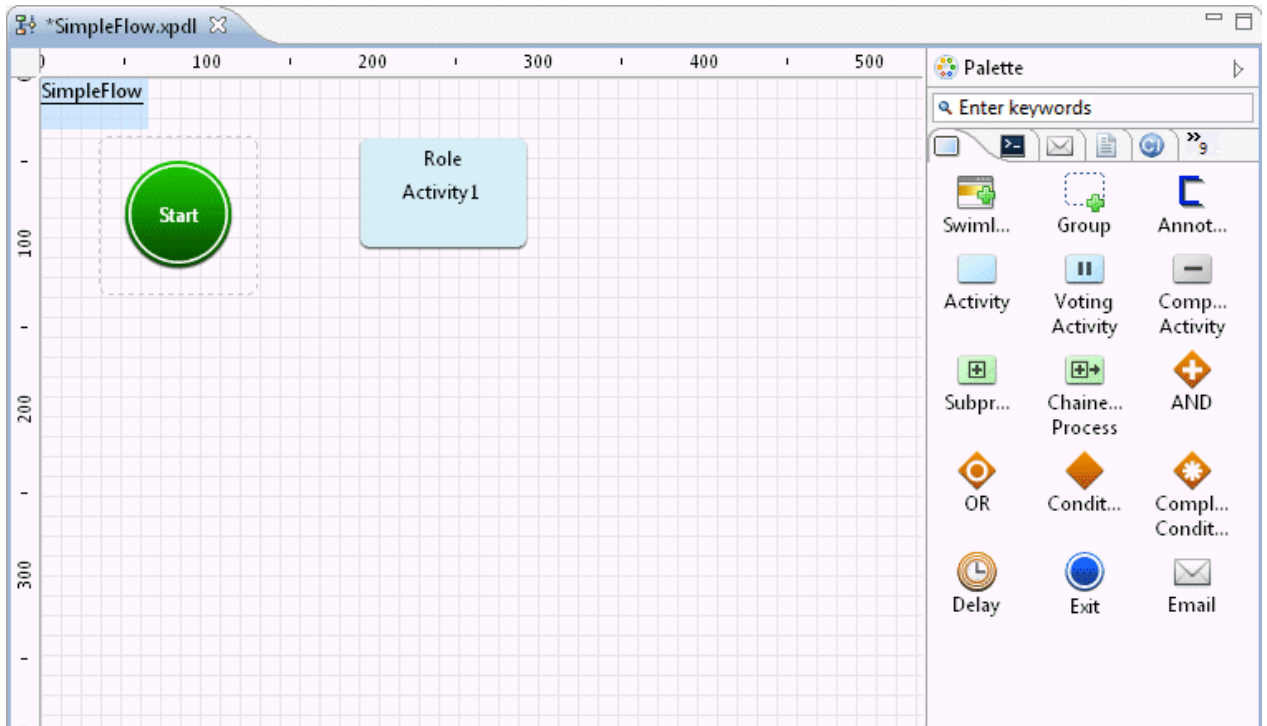
➔ Work flow

The procedure is the same as Section 3.2.1, "Developing Automated Operation Processes that do not include human tasks" .

3.2.2.1 Placing an Activity (Approval)

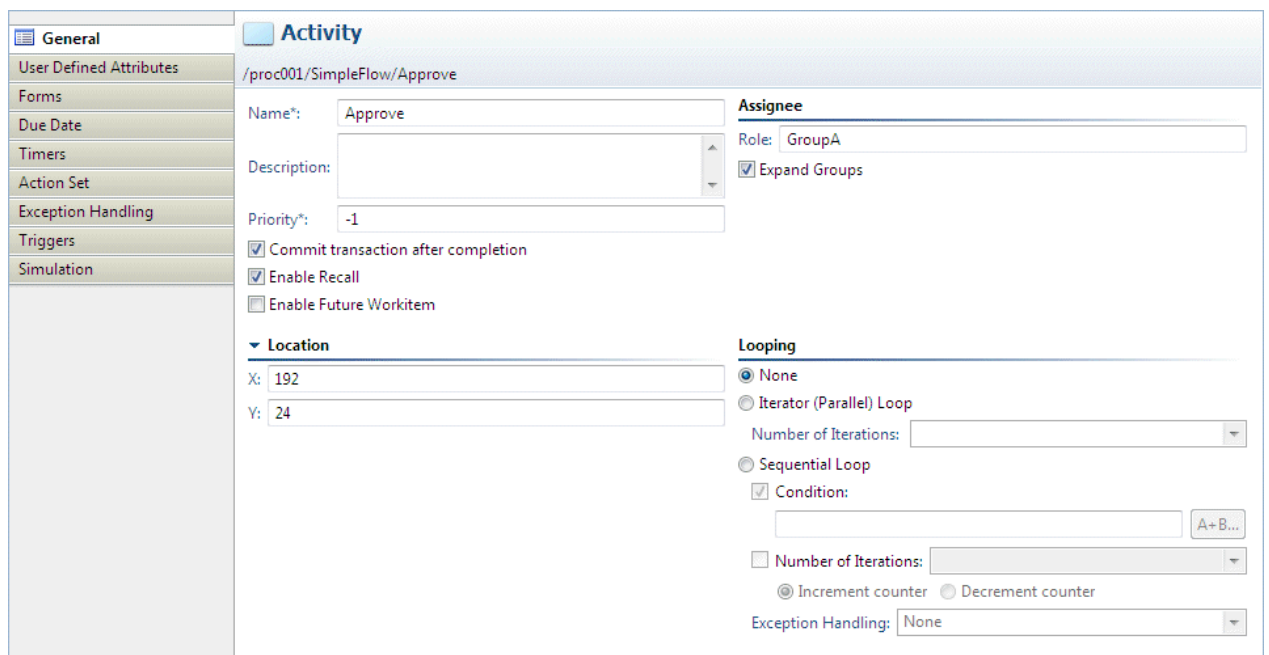
Check the application content, and add Activity to approve or reject.

1. Select **Activity** in the **Basic** tab in **Palette**. With the Process Definition Editor, add the activity by pointing and clicking in the area where it should be placed.



The Activity Node is added.

2. In the Process Definition Editor, click the activity, then click the **Properties** >> **General** tabs. The **Name** field value changes to "Approval". Additionally, in the **Person in charge** >> **Role** field, enter the group that the user that will operate (approve or reject application) the activity belongs to. Here, "GroupA" has been set.



Point

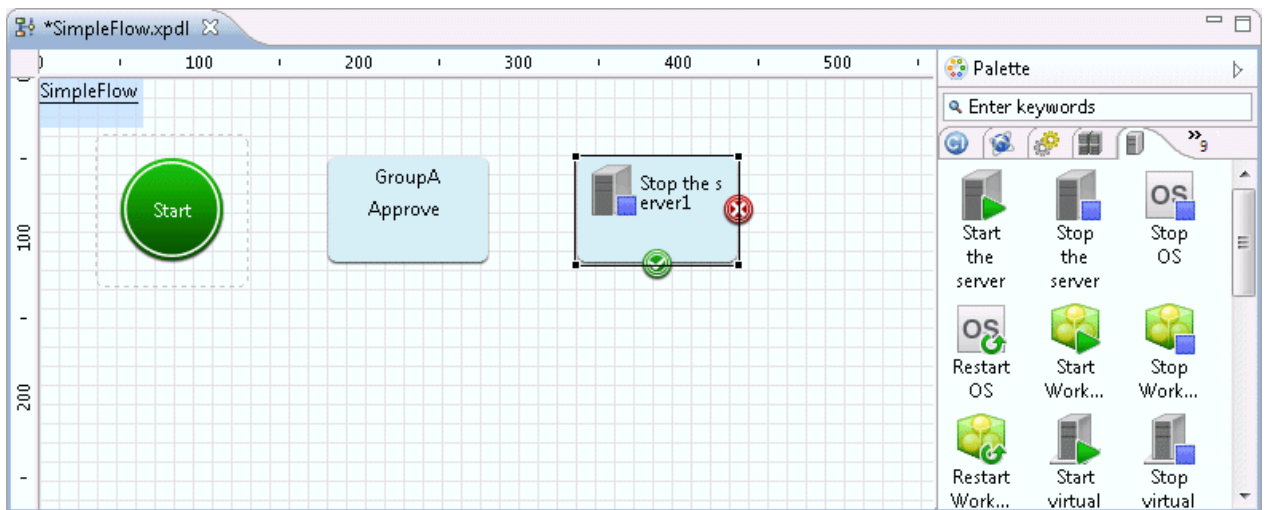
When the transition occurs for the processing of the activity that was placed here, the task will be assigned to the user belonging to the group set for **Person in charge** >> **Role** (here, this will be "GroupA").

It is possible to configure settings to send an email to notify the fact that the task has been assigned (this is a setting in the Web console). Refer to "[8.5 Setting Up Email Notification](#)" for information on the configuration method.

3.2.2.2 Placing an Operation Component Node (Stop the Server)

Add the operation component for stopping the server.

1. Select **Stop the server** in the **Server operations** tab in **Palette**. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.

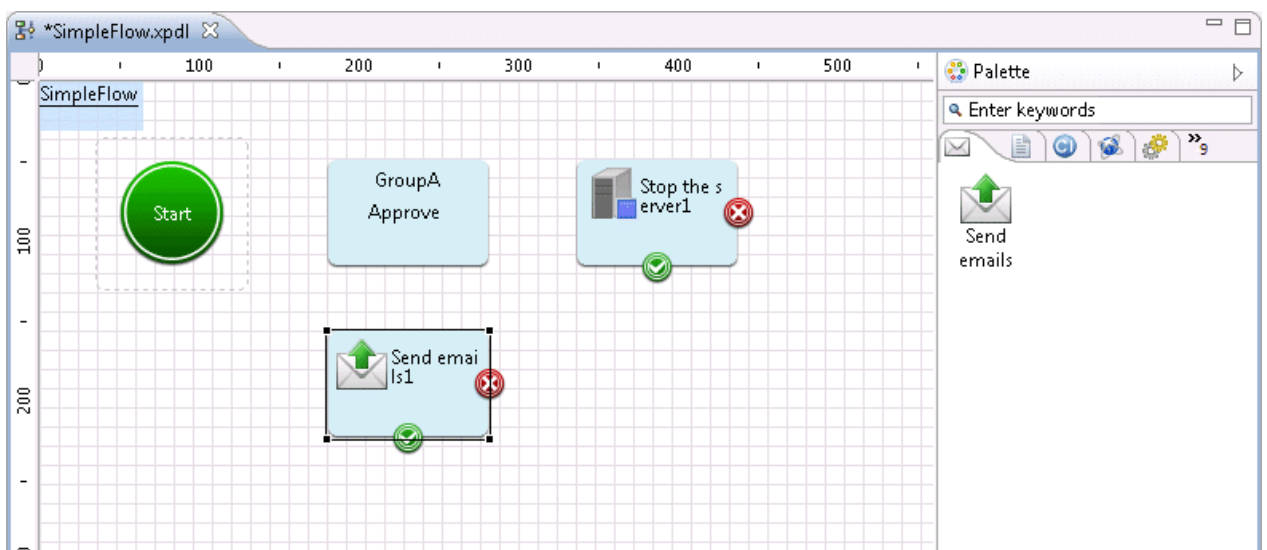


The operation component node (Stop the server) is added.

3.2.2.3 Placing an Operation Component Node (Send Emails)

If the application content is invalid, an operation component is added for an email that notifies the fact that the application was rejected.

1. Select the **Send emails** button in the **Email Operations** tab in **Palette**. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.

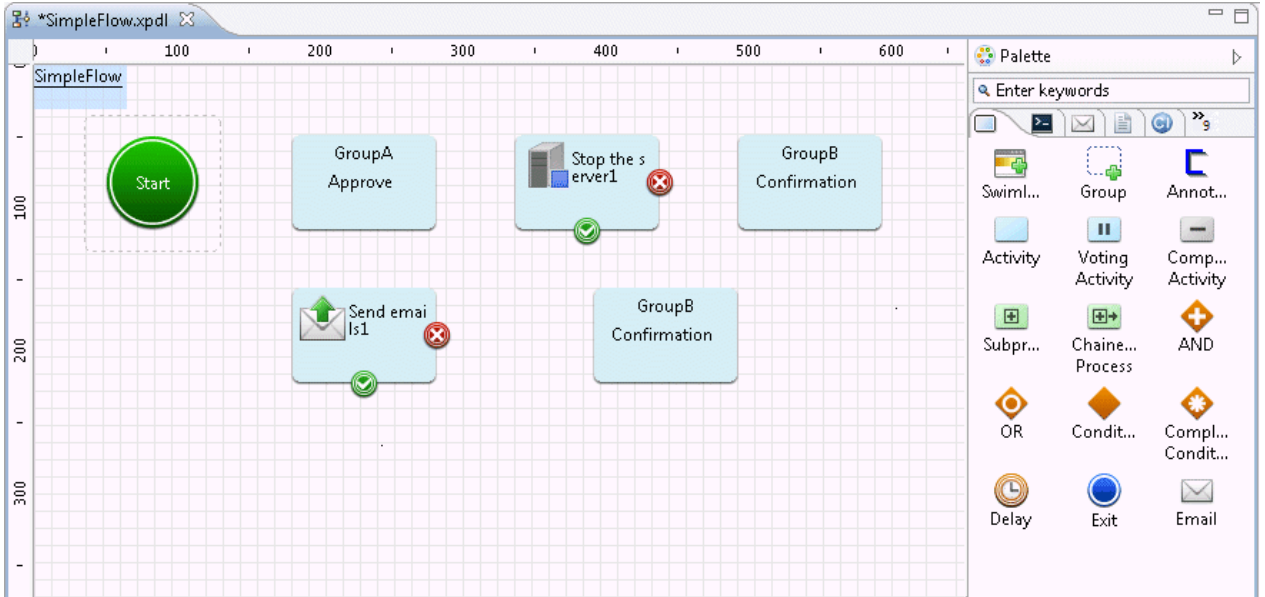


The operation component node (Send emails) is added.

3.2.2.4 Placing an Activity (Confirmation)

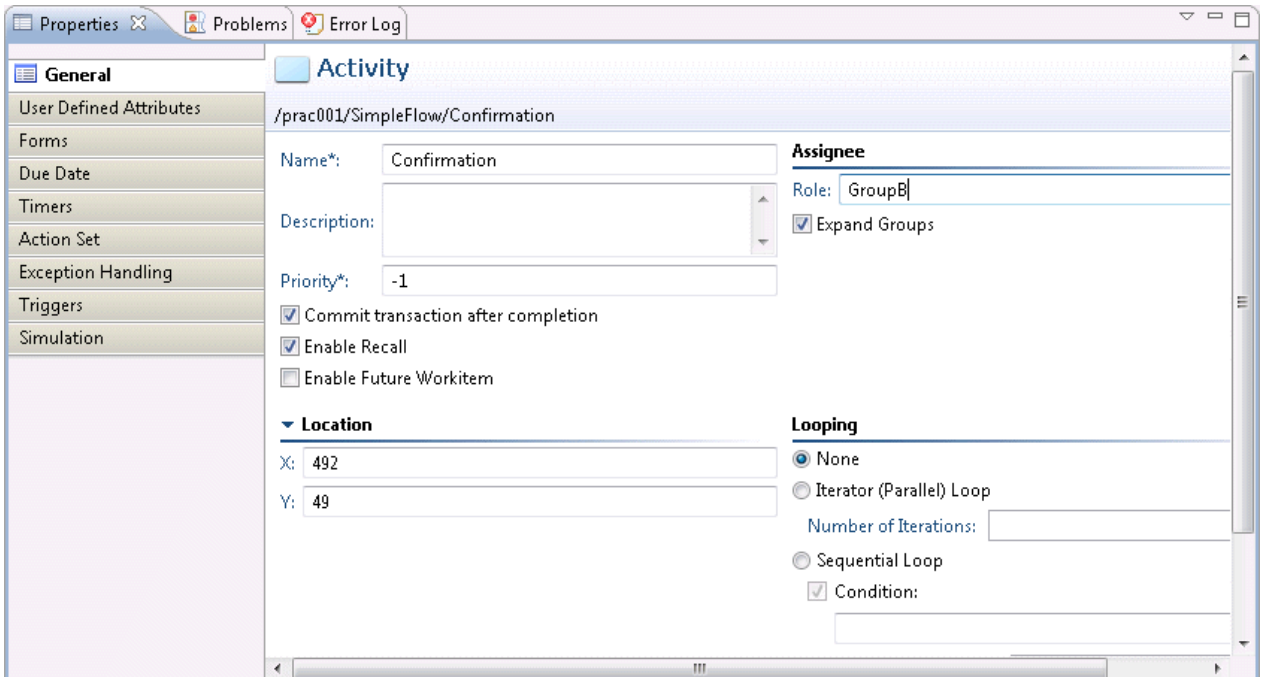
Add the activity for checking the operation component execution result.

1. Select **Activity** in the **Basic** tab in **Palette**. With the Process Definition Editor, add the activity by pointing and clicking in the area where it should be placed.



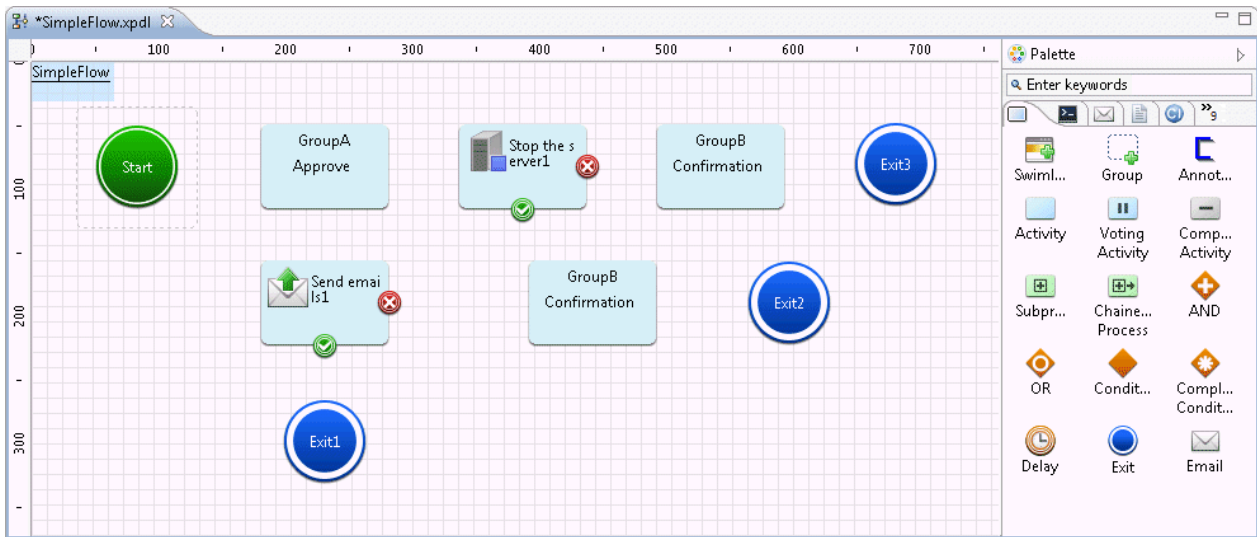
The Activity Node is added.

2. In the Process Definition Editor, click the activity, then click the **Properties** >> **General** tabs. The **Name** field value changes to "Confirmation". Additionally, in the **Person in charge** >> **Role** field, enter the group that the user that will operate (check the execution result) the activity belongs to. Here, "GroupB" has been set.



3.2.2.5 Placing an Exit Node

Add an Exit Node that indicates the terminal point of the Automated Operation Process.



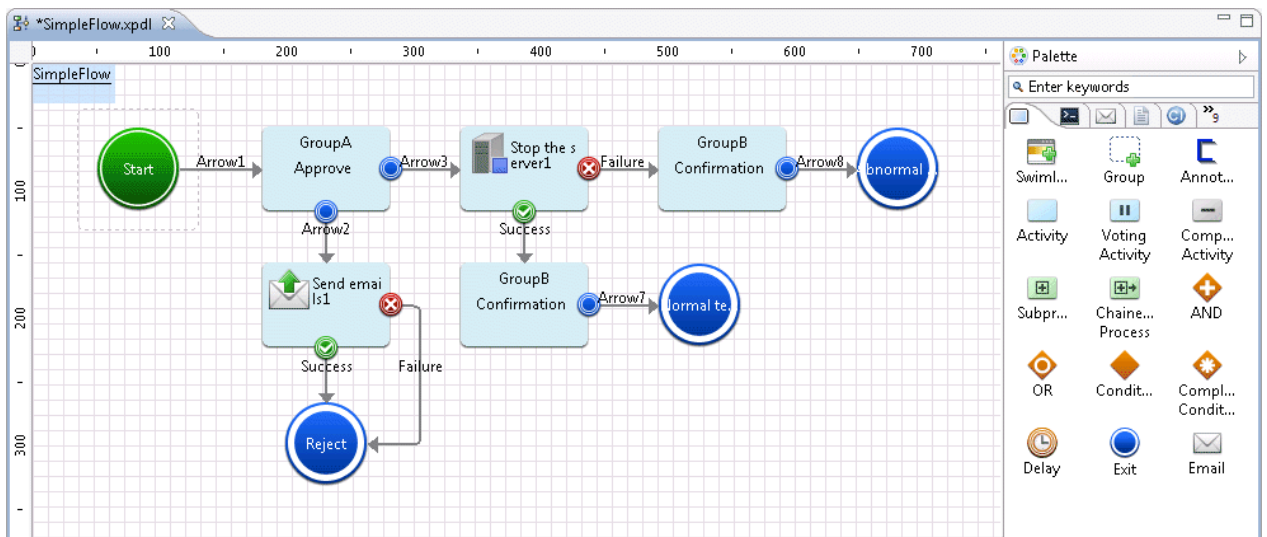
The Exit Node is added.

Here, two Exit Nodes are added - one for when the application was rejected, and one for when the operation component node execution results were normal or abnormal. Change the node names as follows:

Exit1	Reject
Exit2	Normal termination
Exit3	Abnormal termination

3.2.2.6 Using Arrows to Specify Routes

1. Each node is joined by an arrow.



Change the arrow names as follows:

Node name	Arrow name before change	Arrow name after change
Start	Arrow1	Start
Approvals	Arrow2	2: Reject

Node name	Arrow name before change	Arrow name after change
	Arrow3	1: Approved
Send emails 1	Successful	Send normal
	Failure	Send abnormal
Stop the server 1	Successful	Results confirmation(Normal)
	Failure	Results confirmation(Abnormal)
Confirm	Arrow7	Normal termination
Confirm	Arrow8	Abnormal termination

Display on the Web console

- The "Application" arrow from the Start Node appears as the **Start** button in the Web console. By clicking this **Start** button, the application to "Stop the server" is executed.

Form

application

Host name:

Application reason:

[Back to top](#)

Attachments

[Back to top](#)

Start

- The "1: Approved" and "2: Reject" arrows from the "Approvals" activity are displayed in the Web console as the **1: Approved** button and the **2: Reject** button. By clicking the **1: Approved** button, the application to "Stop the server" is approved and processing transition

occurs for the next operation component node ("Stop the server"). When the **2: Reject** button is clicked, processing transitions to the "Exit1" node by way of the "Send emails" and "Exit" nodes, and then, the process terminates.

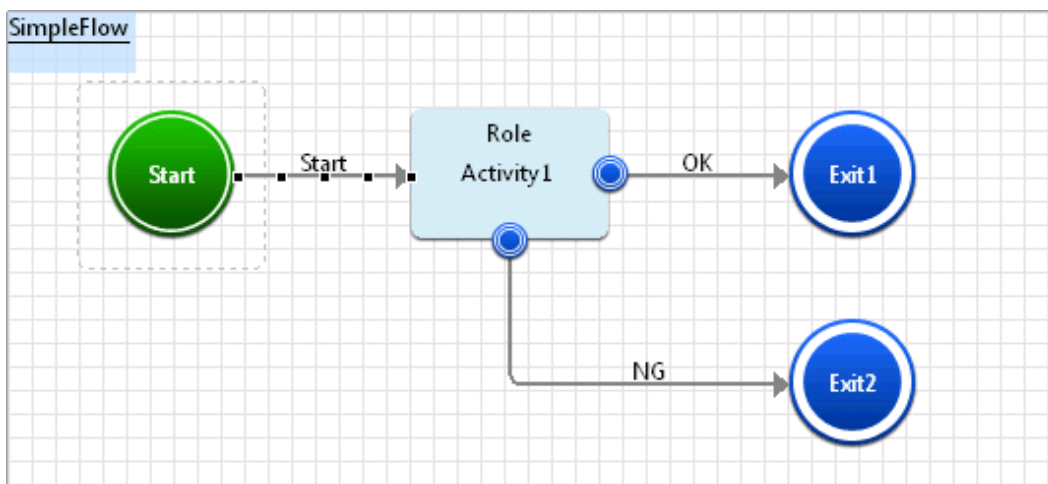


Point

Display order for buttons

The arrow name is used as the button name for the transition of status for activities on the Web console. When multiple arrows are drawn from the activity and the arrows are given names using alphabets, the button order will be displayed in the alphabetic order.

[Process definition]



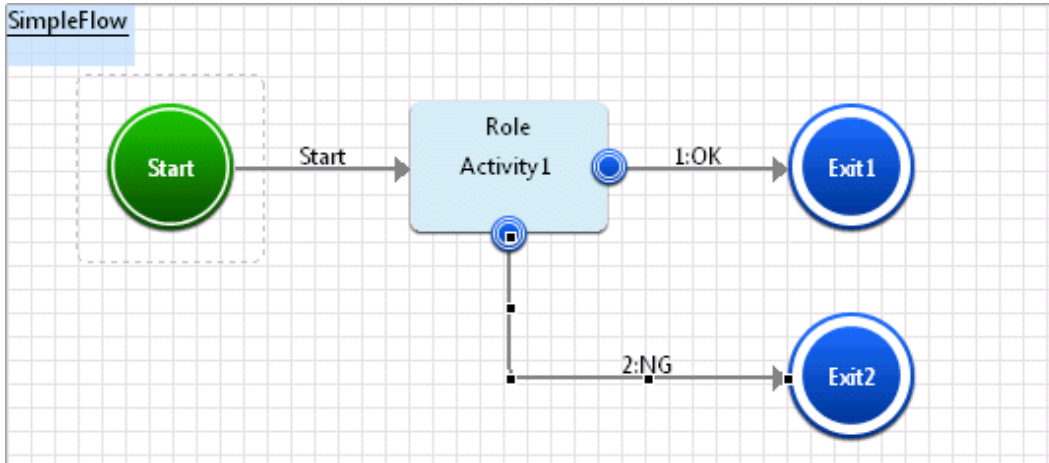
Consider the process definition displayed above. Here, if two arrows with the names **OK** and **NG** are drawn from the activity, the buttons will be displayed in the following order on the Web console.

[Display on the Web console]

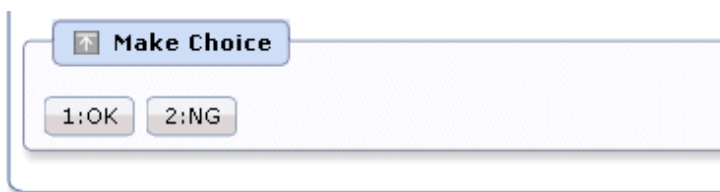


To change the order of buttons on the Web console, add a number at the beginning of the arrow names so that the buttons can be displayed in the ascending order .

[Process definition]

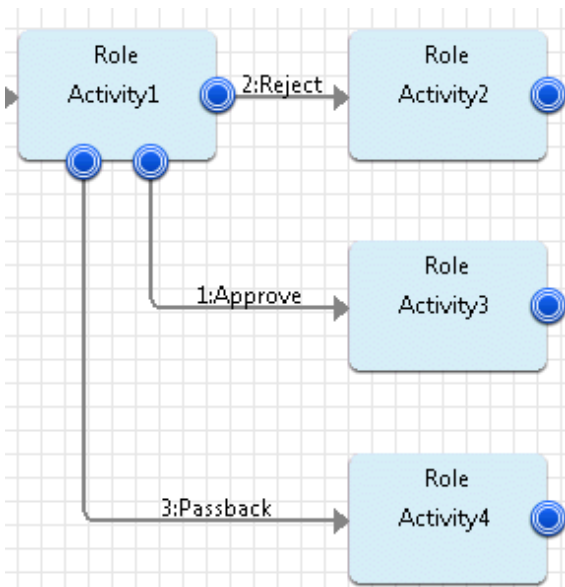


[Display on the Web console]

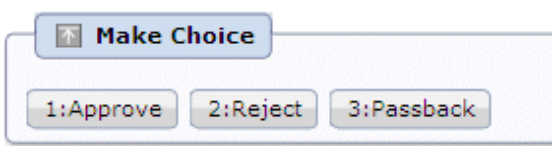


Similarly, if English is used for arrow names, add a number to the start of the arrow name so that the buttons can be displayed in the ascending order, as displayed below.

[Process definition]



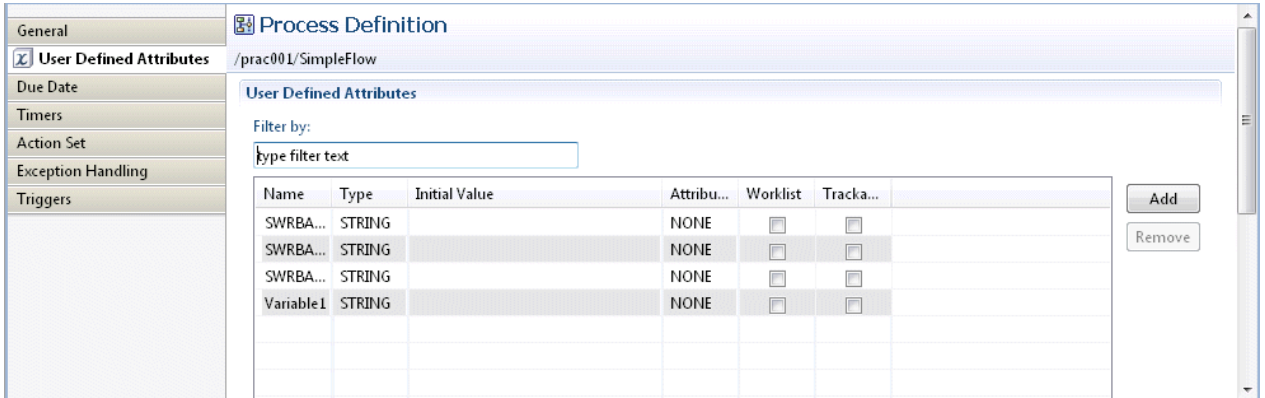
[Display on the Web console]



3.2.2.7 Adding User Defined Attributes

In this Automated Operation Process, input specifying the host name as the "Stop the server" operation component input information, and for the input of the reason for the application from form. Here, Create hostname entered from form, and variables(UDA) to store the reason for the application.

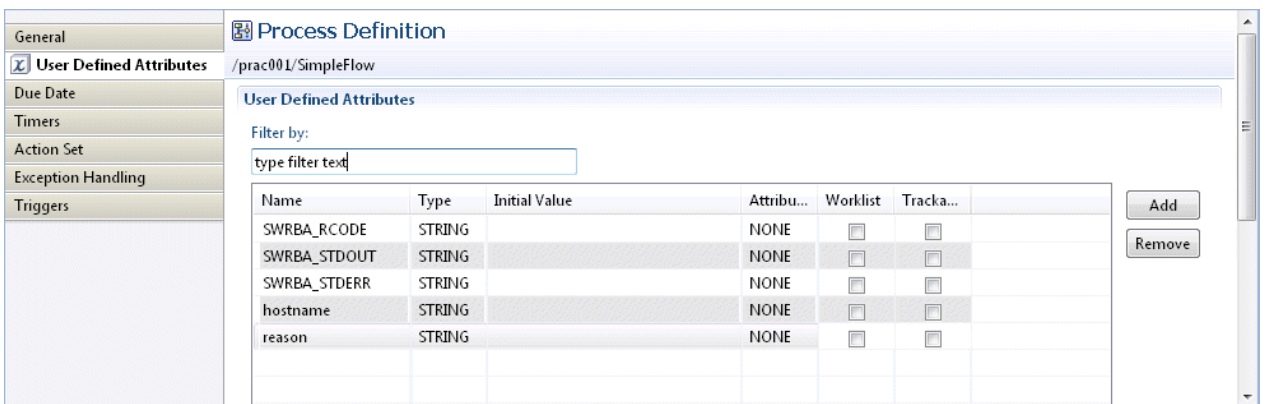
1. Click the **Properties >> User-Defined Attributes** tabs. Click the **Add** button to add the User-Defined Attribute (UDA).



2. Change the name of the User-Defined Attribute (UDA) that was added.

Click the **Add** button again to create the following types of User-Defined Attribute (UDA):

Name	Type	Initial Value
hostname	STRING	
service	STRING	



3.2.2.8 Setting the I/O Information

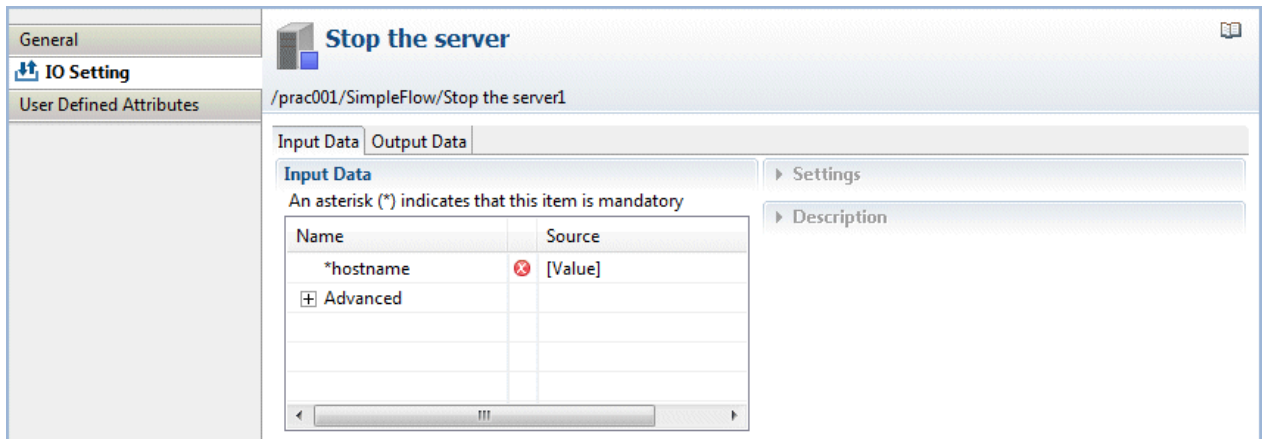
Set up the I/O information required to execute the operation component node placed.

3.2.2.8.1 Operation Component Node (Stop the Server)

1. Click the operation component node (Stop the server) on the Process Definition Editor. Click the **Properties >> IO Setting >> Input Data** tabs.

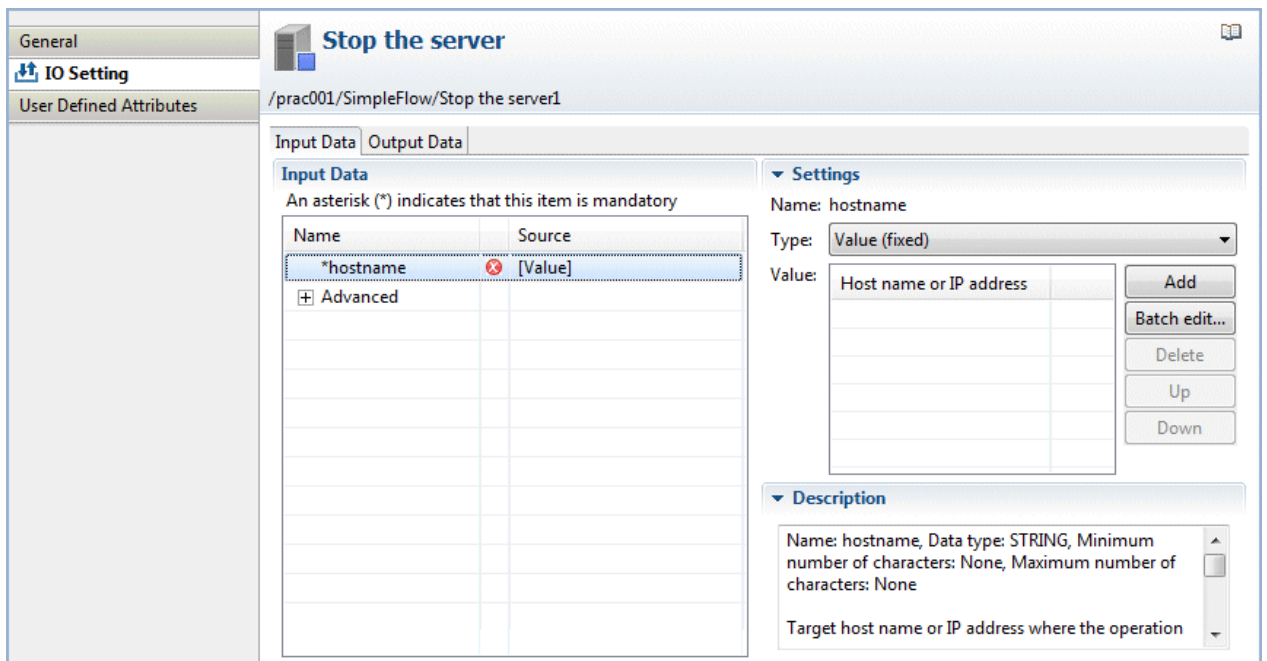
For the "Stop the server" component, specify the host name.

hostname: Host name of the server to be stopped



- From the **Input Data** section list, select hostname.

The **Settings** and **Description** fields will be displayed in the right half of the **Properties** view.



- From the **Type** combo-box, select **Variable** (uda), and from the **Variable** list, select the variable (UDA) that will receive the host name. Here, "hostname" is selected as the variable (UDA) that will receive the host name.

The UDA types that can be specified for the operation component input information will depend on the input information data type.

Refer to "3.2.1.7 Setting the I/O Information" for details.

Type: uda

Value: hostname

General

IO Setting

User Defined Attributes

/prac001/SimpleFlow/Stop the server1

Input Data Output Data

Input Data
An asterisk (*) indicates that this item is mandatory

Name	Source
*hostname	[Variable] hostname
Advanced	

Settings

Name: hostname

Type: Variable (uda)

Variable:

Name	Type
SWRBA_RCODE	STRING
SWRBA_STDOUT	STRING
SWRBA_STDERR	STRING
hostname	STRING
reason	STRING

Description

Name: hostname, Data type: STRING, Minimum number of characters: None, Maximum number of characters: None

Target host name or IP address where the operation

4. Check that the information has been entered as shown below:

Input Data Output Data

Input Data
An asterisk (*) indicates that this item is mandatory

Name	Source
*hostname	[Variable] hostname
Advanced	

3.2.2.8.2 Operation Component Node (Send Emails)

Set the I/O information for the operation component node that was positioned.

1. Click the operation component node (Send emails) on the Process Definition Editor. Click the **Properties >> IO Setting >> Input Data** tabs. In the "Send emails" component, specify the following input information:

hostname: Host name or IP address of the (SMTP) server sending emails

fromaddress: Email sender's address

toaddress: Email recipient's address

subject: Email title

text: Email text body



Note

The process instance upper limit size is 4MB. This size is the total of the process instance history information, number of placed nodes, number of UDAs, and stored values. If this size exceeds 4MB because large amounts of data are stored in the UDA while the process instance is being executed, the following message will be output to the custom message and the process instance will end abnormally.

```
FSP_SW/RB-A_BASE: [ERROR]: 03012: Cannot set data because data exceeds the limit.
```

If the process instance ends abnormally and the above error message is output, take the following action:

- Reduce the size of the value that is output to the UDA by the operation component.
 - Use a subprocess to balance the processing that is executed in one process instance.
-

3.2.2.9 Creating the Form (Window)

3.2.2.9.1 Creating an Application Form

Create the form for assigning the host name as the "Stop the server" operation component input information, and for the input of the reason for the application.

Display on the Web console

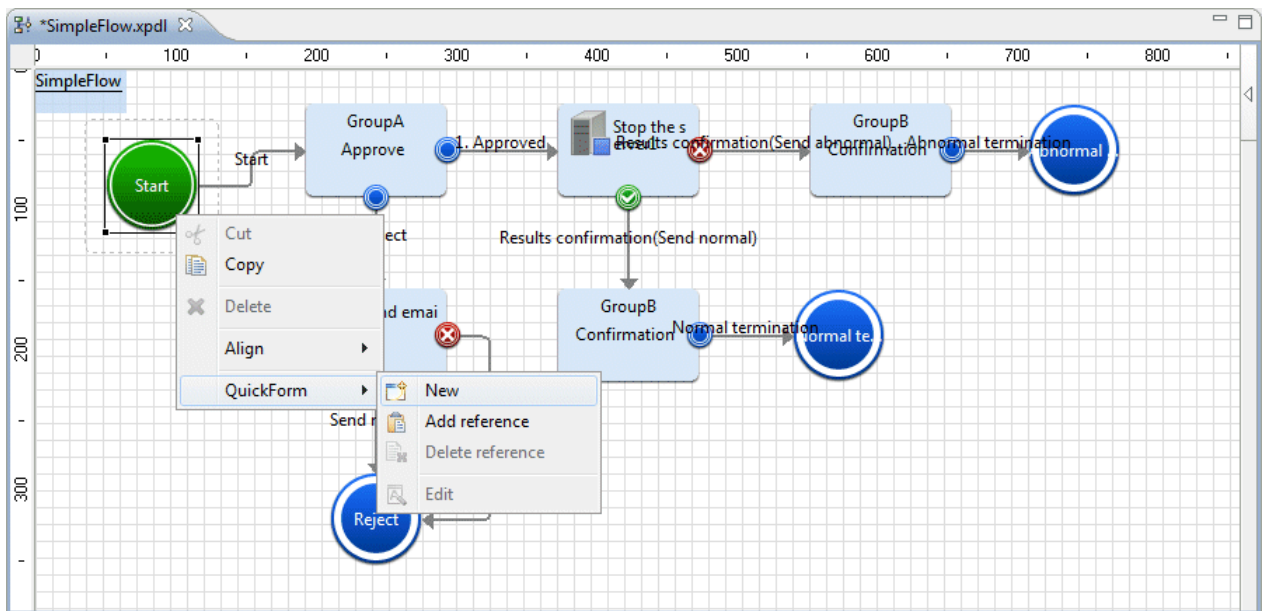
The input form created here will be displayed on the Web console as follows:

The screenshot shows a web console interface. At the top, there is a tab labeled "Form" with an upward-pointing arrow icon. Below the tab, the form content is displayed. It starts with a sub-tab labeled "application". Underneath, there are two input fields: "Host name:" followed by a text input box, and "Application reason:" followed by another text input box. Below the form area, there is a section titled "Attachments" with a downward-pointing arrow icon. At the bottom of the console, there is a "Start" button. Two "Back to top" links are visible on the right side of the form and attachments sections.

Refer to "Using Forms" in the *Systemwalker Runbook Automation Studio User's Guide*, and "Reference for QuickForm UI Widgets" in the *Systemwalker Runbook Automation Reference Guide* for information on QuickForm.

Operating procedure

1. Right-click the Start Node, and then select **QuickForm** >> **New** from the pop-up menu that is displayed.



2. In the **New QuickForm** dialog, enter a name for the form in the **Name** field.

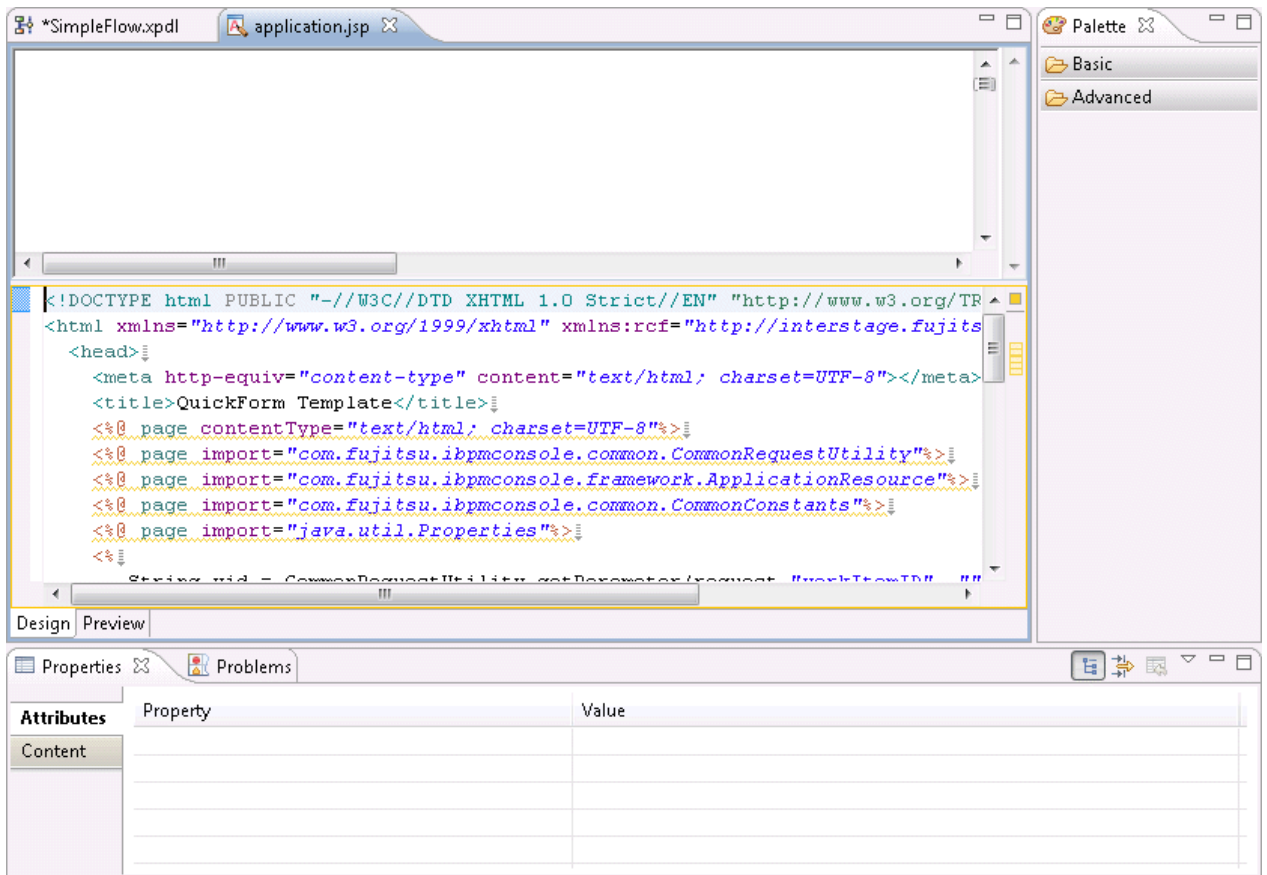
Project: /prac001/web (Required)

Name: application (Required)

The screenshot shows the 'New QuickForm' dialog box. The title bar reads 'New QuickForm'. The main area contains the text 'QuickForm' and 'Create a new QuickForm.' Below this, there are two input fields: 'Project:' with the value '/prac001/web' and a 'Browse...' button to its right, and 'Name:' with the value 'application'. At the bottom of the dialog, there are two buttons: 'Finish' and 'Cancel'.

3. Click the **Completed** button.

4. The QuickForm Design Editor will be displayed.

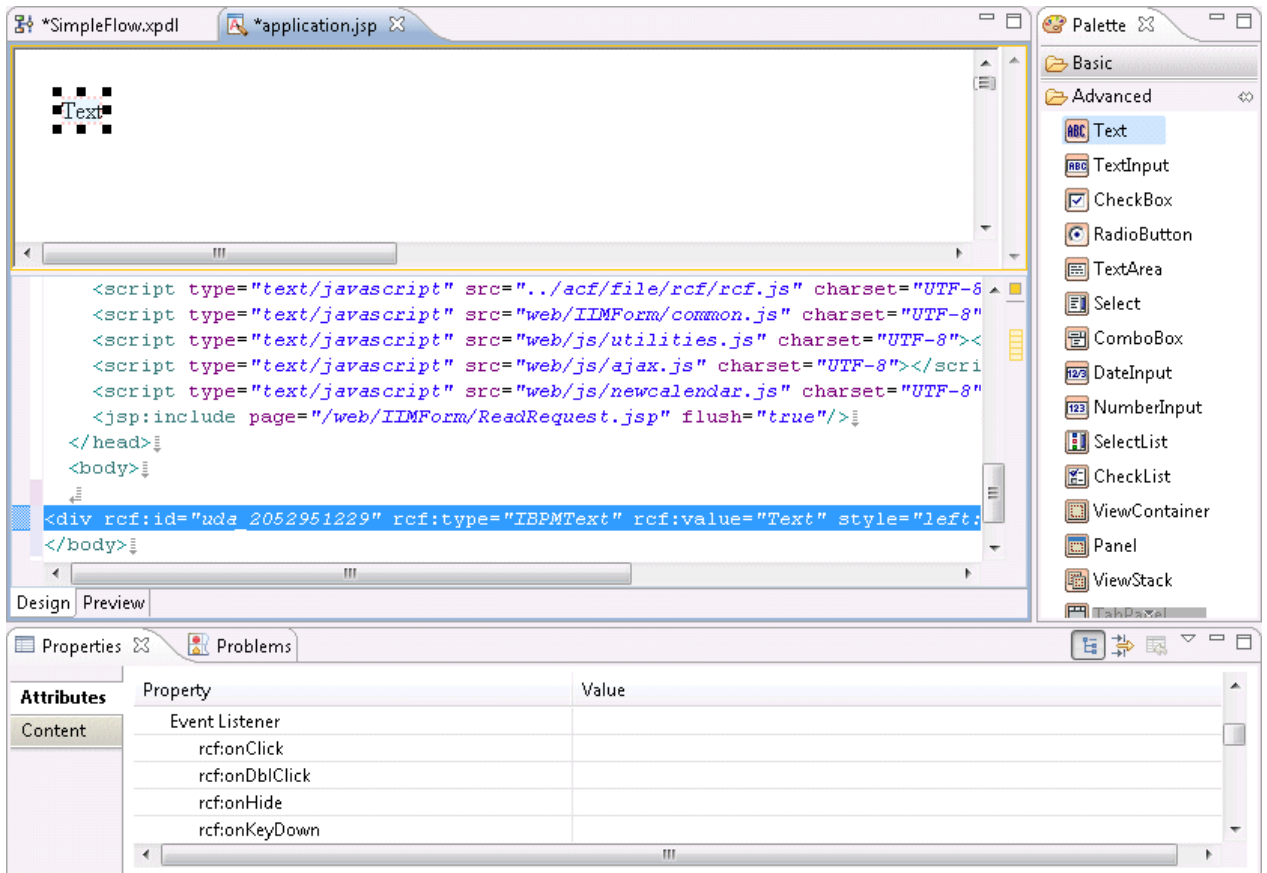


Point

Items of low user frequency in the palette displayed on the right of the QuickForm Design Editor can be hidden using the following steps:

1. Right-click **Palette**, then select **Customize** from the pop-up menu.
The **Customize Palette** dialog box will be displayed.
2. Select the item to be hidden from the tree on the left.
3. Select the **Hide** button on the right.
4. Click the **OK** button.

5. Select the **Text** item in the **Palette >> Advanced** folder. Click the location where you want to position the item on the Design Editor to add the **Text** item.



6. Select the **Properties >> Attributes** tabs, and enter the name of the label that will be displayed for the input form as the **Property >> rcf:value** value.

Here, enter "Host Name:" as the label of the input field for the host name that will be passed to the "Stop the server" operation component.

rcf:value: Host Name:

The screenshot shows an IDE interface with a design view and a properties view. The design view displays a text input field with the label "Host name". The properties view shows the following table:

Property	Value
Control Property	
rcf:labelProvider	
rcf:title	
rcf:value	Host name

7. The label for the field that is used to enter the reason for the application is added.

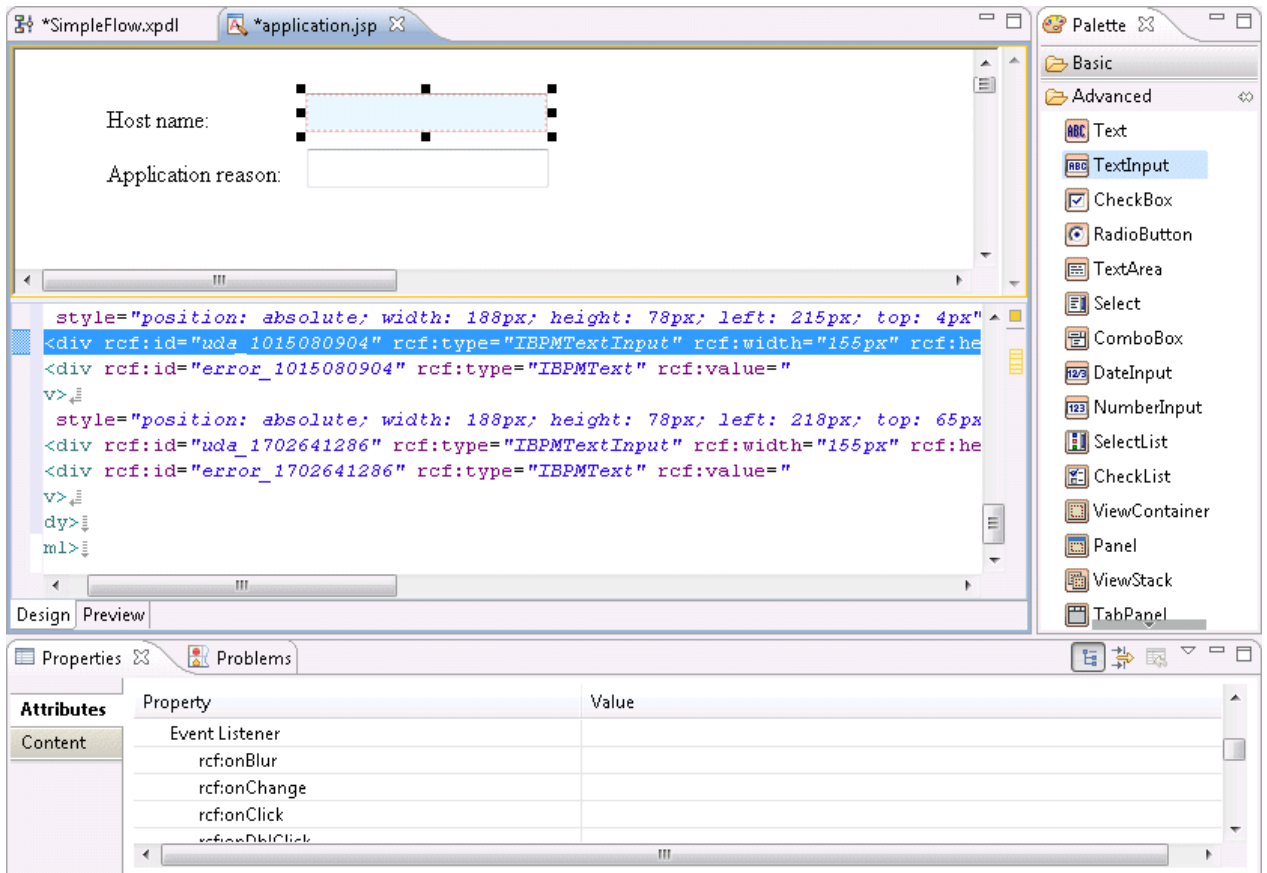
rcf:value: Application reason:

The screenshot displays an IDE with three main panels:

- Design View:** Shows a web form with two text input fields. The first field is labeled "Host name:" and the second is labeled "Application reason:". The second field is currently selected.
- Code View:** Shows the following HTML and JavaScript code:

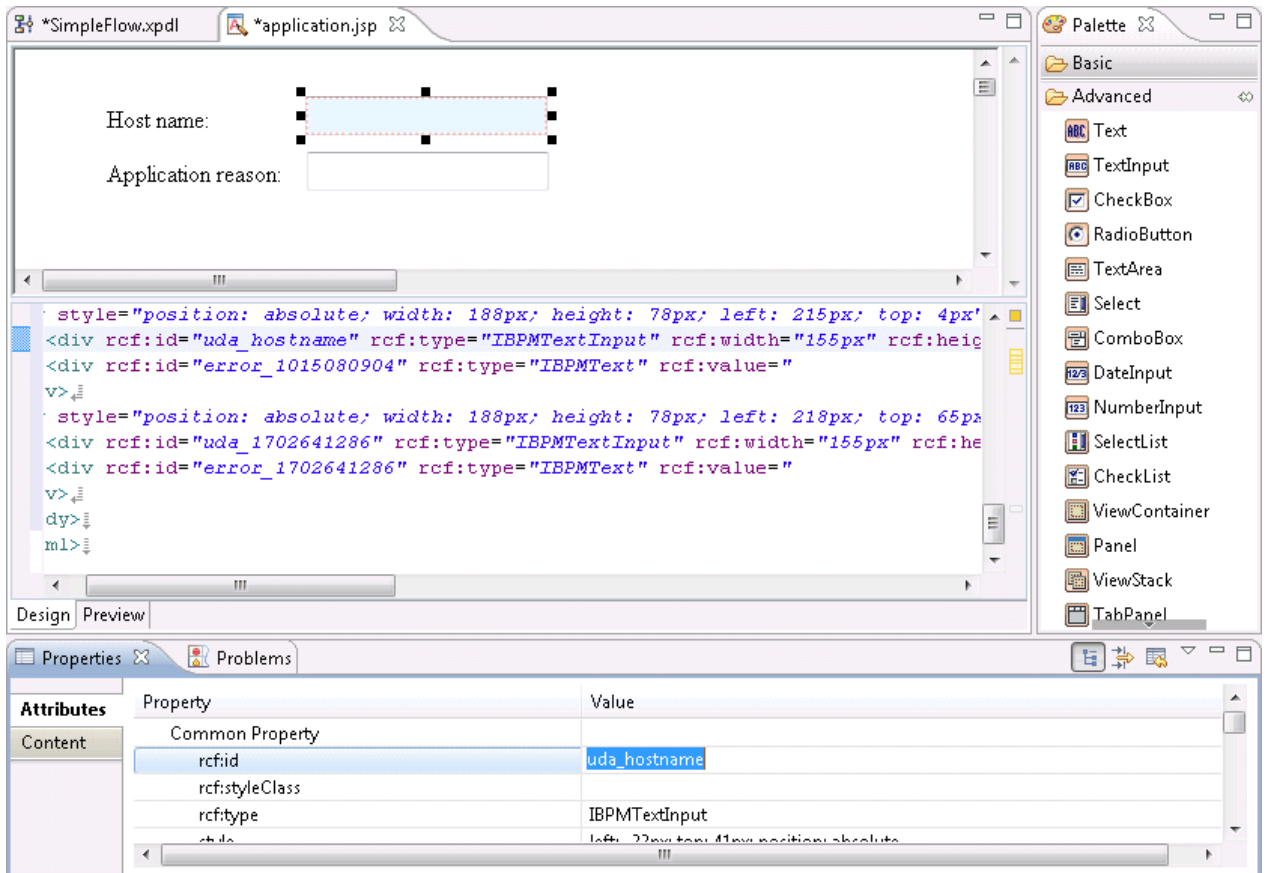
```
<script type="text/javascript" src="web/js/utilities.js" charset="UTF-8"><script type="text/javascript" src="web/js/ajax.js" charset="UTF-8"></script><script type="text/javascript" src="web/js/newcalendar.js" charset="UTF-8"></script><jsp:include page="/web/IIMForm/ReadRequest.jsp" flush="true"/></head><body><div rcf:id="uda_2052951229" rcf:type="IBPMTText" rcf:value="Host name:" style="width: 100%; height: 20px;"></div><div rcf:id="uda_1019540188" rcf:type="IBPMTText" rcf:value="Application reason:" style="width: 100%; height: 20px;"></div></body></html>
```
- Properties Window:** Shows the properties for the selected field. The "Attributes" tab is active, and the "Content" section is expanded to show the "Control Property" section. The "rcf:value" property is highlighted and set to "Application reason:".

8. Select the **TextInput** item in the **Palette >> Advanced** folder. Click the location where you want to position the item on the Design Editor to add the **TextInput** item.



9. Select the **Properties** >> **Attributes** tabs, and enter the user defined attribute ID that will be associated with the input field (**TextInput**) as the **Common Property** >> **rcf:id** value.

rcf:id: uda_hostname (The "uda_" part is required)

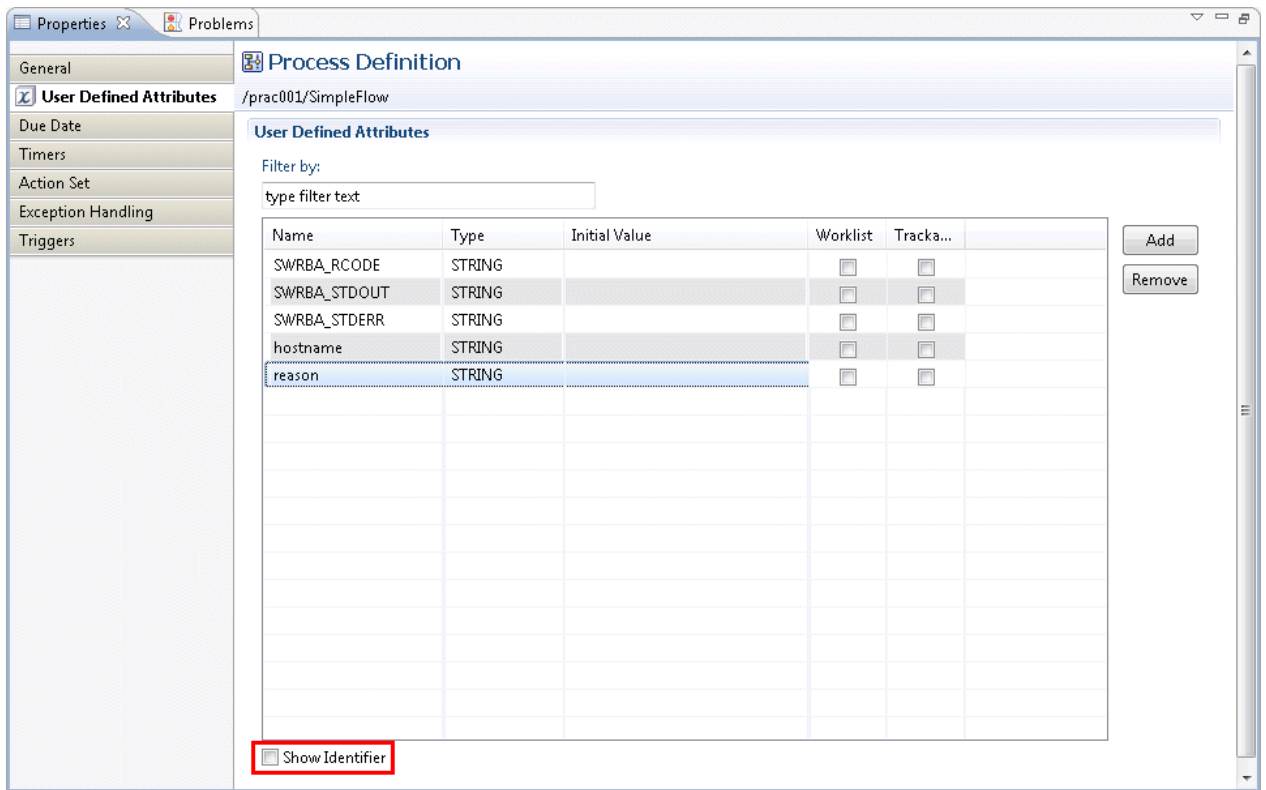


Note that the user defined attribute (UDA) ID can be referenced using the following procedure:

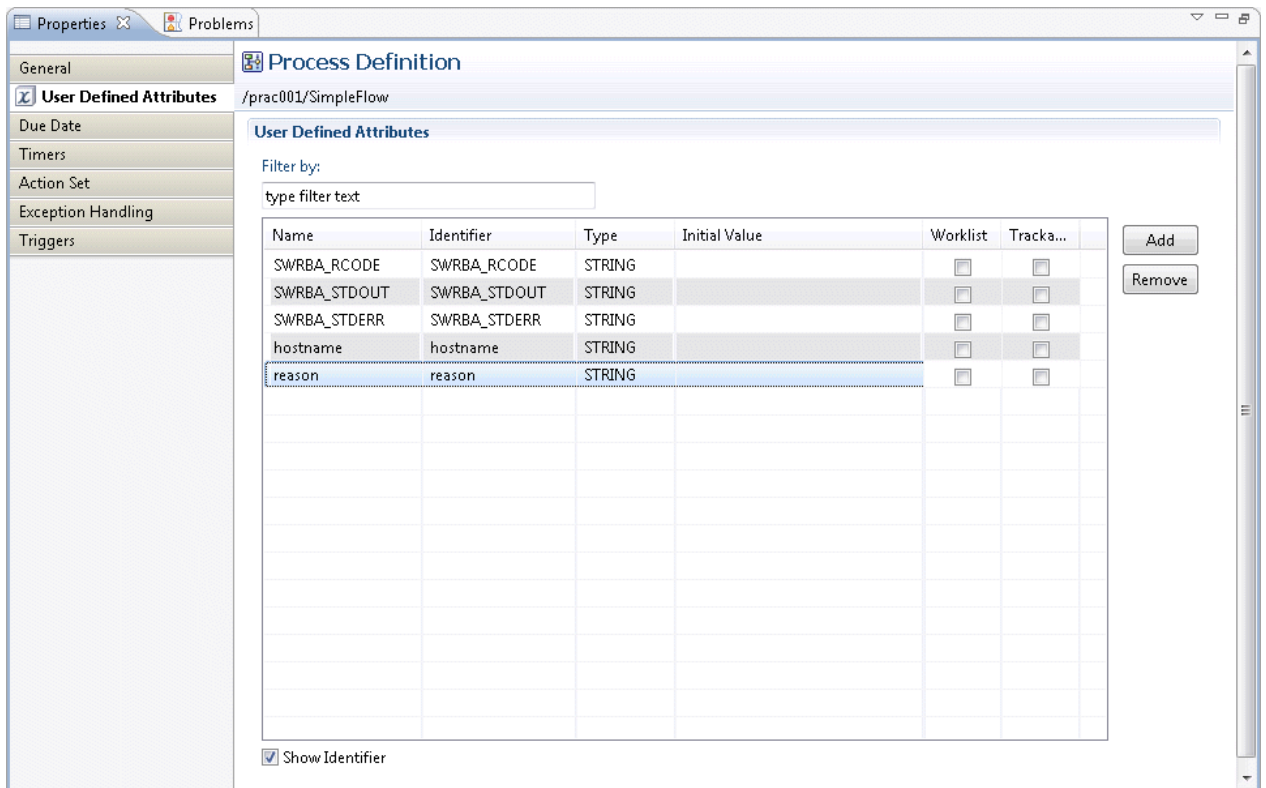
Referencing the user defined attribute (UDA) ID

- a. Display the Process Definition Editor.
- b. Select the **Properties** >> **User Defined Attributes** tabs.

c. Select the **Show Identifier** check box.

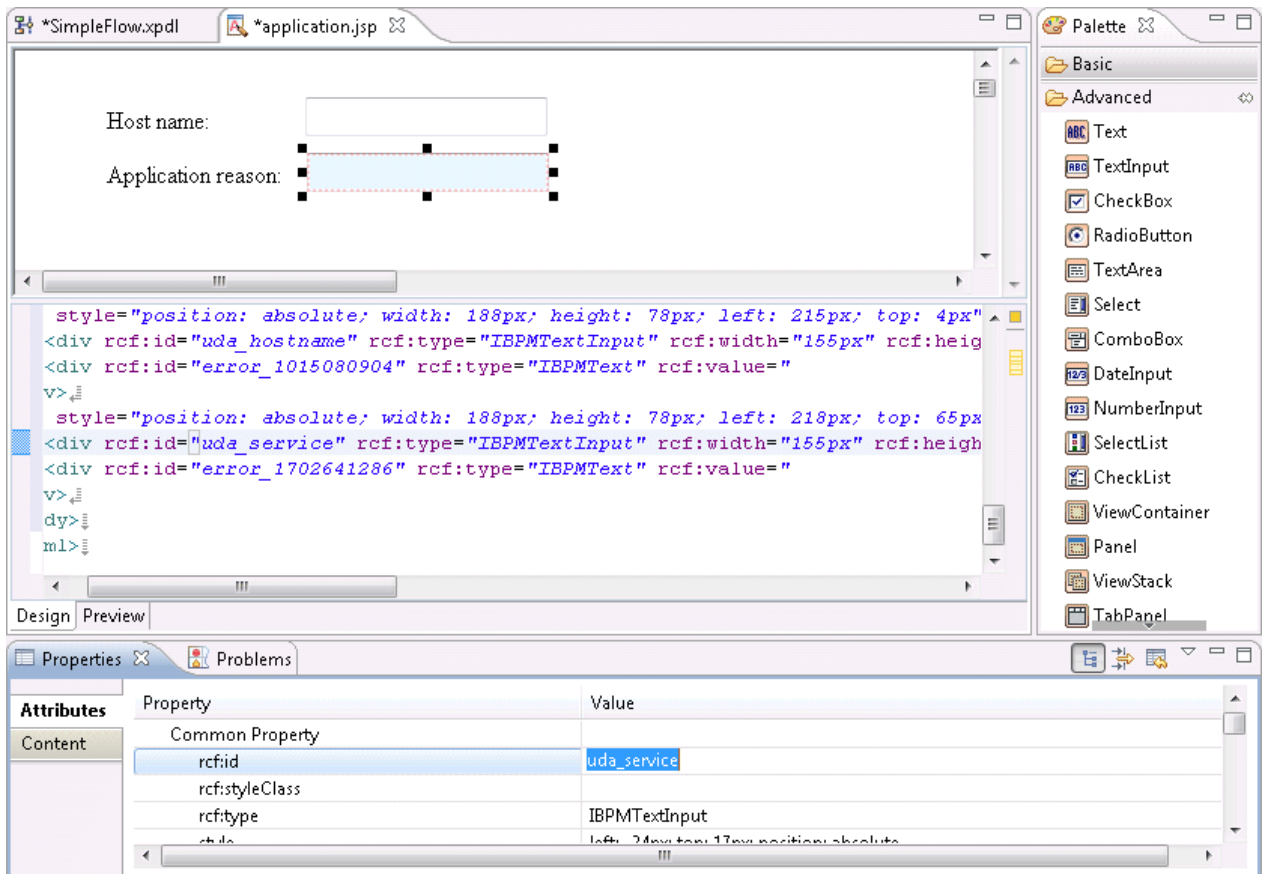


d. The **ID** column is displayed on the right of the **Name** column, so the user defined attribute IDs can be checked.



10. In the same way, the field that is used to enter the reason for the application is added.

rcf:id: uda_reason (The "uda_" part is required)



3.2.2.9.2 Creating an Approval Form

Create the approval form for the activity in the same way as for the application form. Create the approval form based on the application form.

Display on the Web console

The approval form created here will be displayed on the Web console as follows:

Form

approval

Host name:

Application reason:

[Back to top](#)

Attachments

[Back to top](#)

Comments

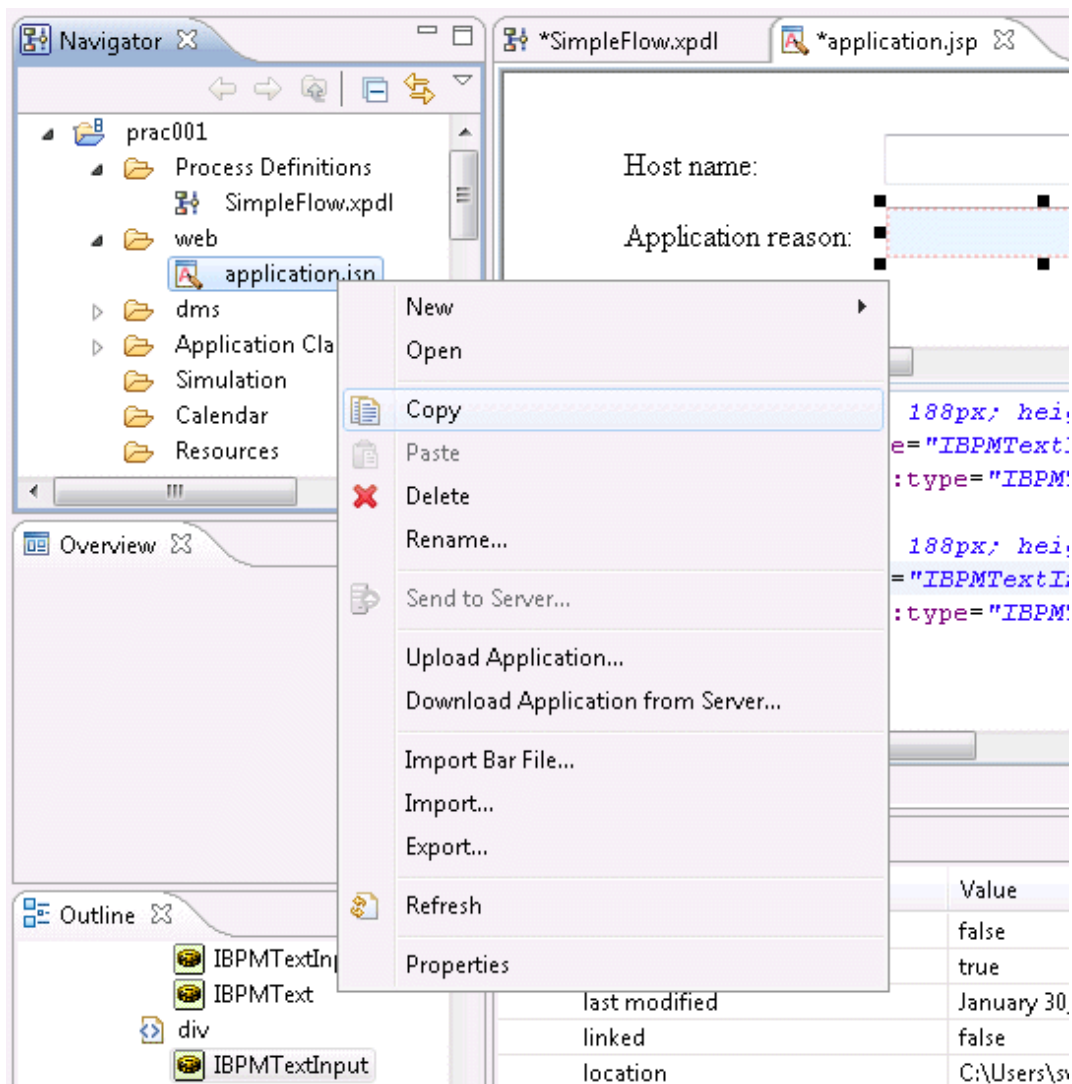
[Back to top](#)

Make Choice

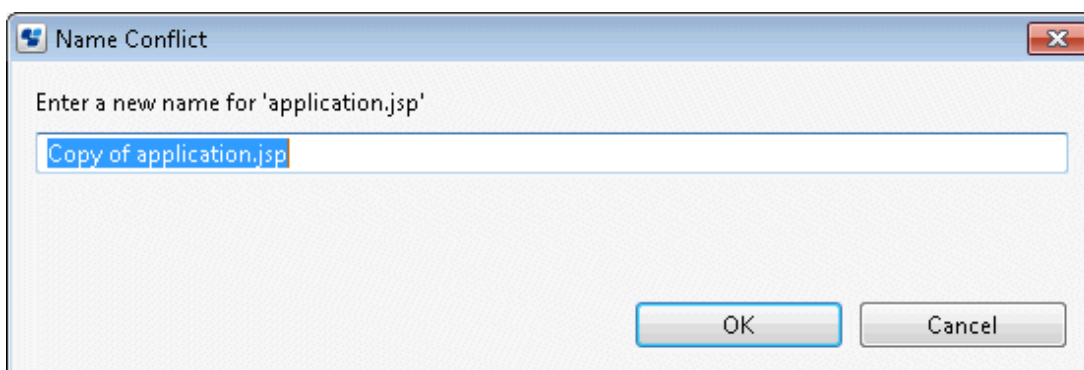
- 1. Approved
- 2. Reject

Operating procedure

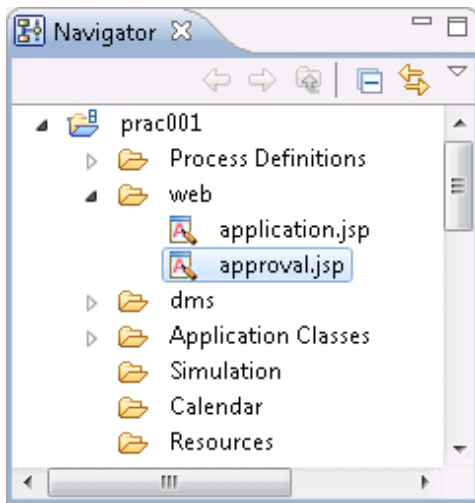
1. In the **Navigator** view, select and right-click application.jsp, then select **Copy** from the pop-up menu.



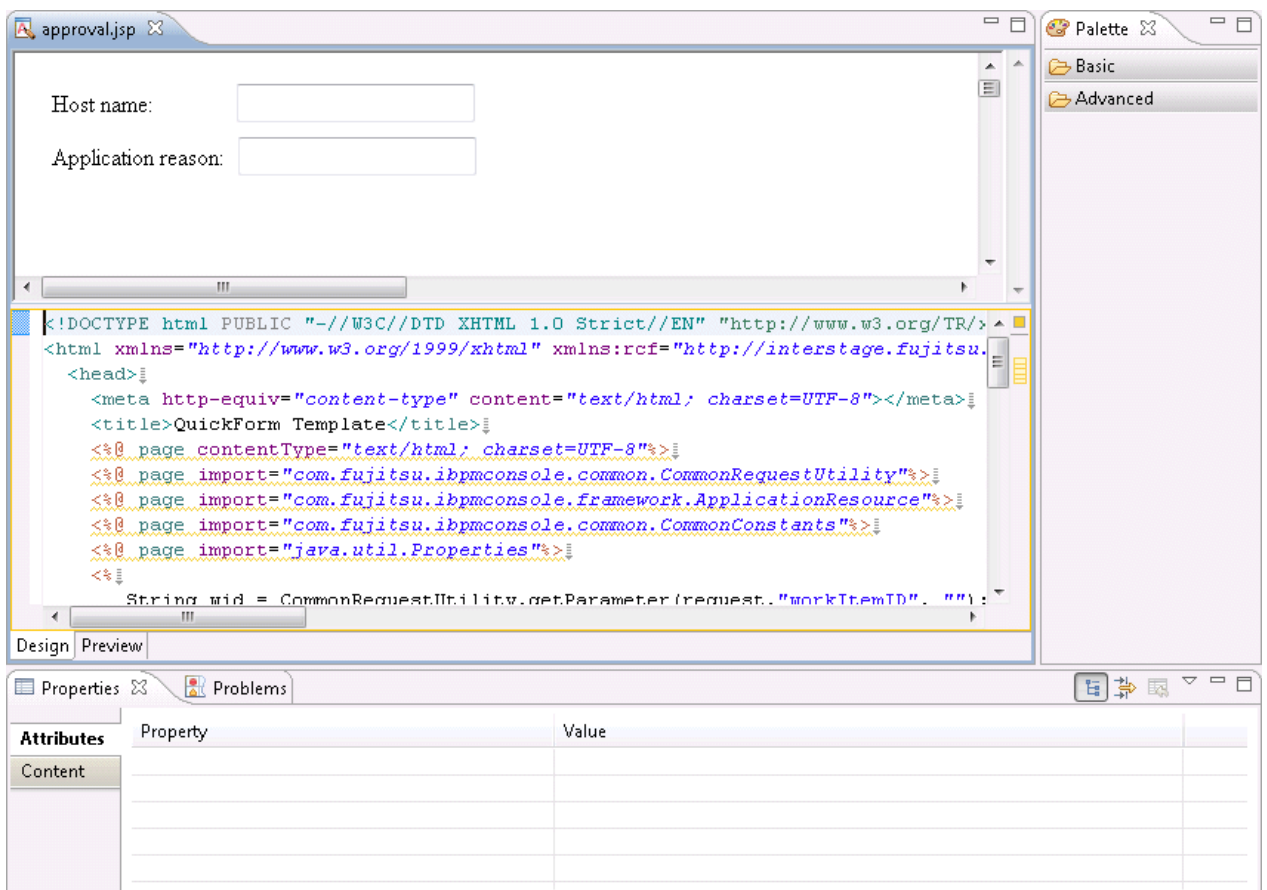
2. In the **Navigator** view, select and right-click the web folder, then select **Paste** from the pop-up menu.
The **Name Conflict** dialog box will be displayed.



3. Change the **Name Conflict** dialog box input field value to approval.jsp, then click the **OK** button.
approval.jsp is created under the web folder of the **Navigator** view.



4. In the **Navigator** view, select and right-click approval.jsp, then select **Open** from the pop-up menu.
The QuickForm Design Editor will be displayed.



5. Select the **Host Name** input field (**TextInput**).

The screenshot shows an IDE window titled 'approval.jsp'. The design view displays a form with two text input fields: 'Host name:' and 'Application reason:'. The 'Host name' field is selected, indicated by a dashed border and a blue highlight. The source view below shows the corresponding HTML code, with the following line highlighted:

```
<div rcf:id="uda_hostname" rcf:type="IBPMTextInput" rcf:width="155px" rcf:height="28px" style="position: absolute; width: 155px; height: 28px; left: 215px; top: 41px;"></div>
```

The Properties window at the bottom shows the 'Attributes' tab for the selected field. The 'Content' section lists several event listeners:

Property	Value
Event Listener	
rcf:onBlur	
rcf:onChange	
rcf:onClick	
rcf:onDbClick	
rcf:onFocus	

6. Select the **Properties** >> **Attributes** tabs, then specify true as the **Property** >> **rcf:readOnly** value. Additionally, specify false as the **Property** >> **rcf:enabled** value.

The screenshot shows an IDE window titled 'approval.jsp'. The design view displays a form with two text input fields: 'Host name:' and 'Application reason:'. The 'Host name' field is currently selected. Below the design view, the source code is visible, showing HTML tags for the form elements. The Properties window at the bottom is open to the 'Attributes' tab, showing a list of properties for the selected element. The 'rcf:readOnly' property is set to 'true', and the 'rcf:enabled' property is set to 'false'.

Property	Value
rcf:labelProvider	
rcf:maxLength	
rcf:password	
rcf:readOnly	true
rcf:tabIndex	true
rcf:title	false

Point

So that the approval form cannot be executed by editing the host name entered in the application form, setting true for the **Property** >> **rcf:readOnly** value will change this to a read-only field.

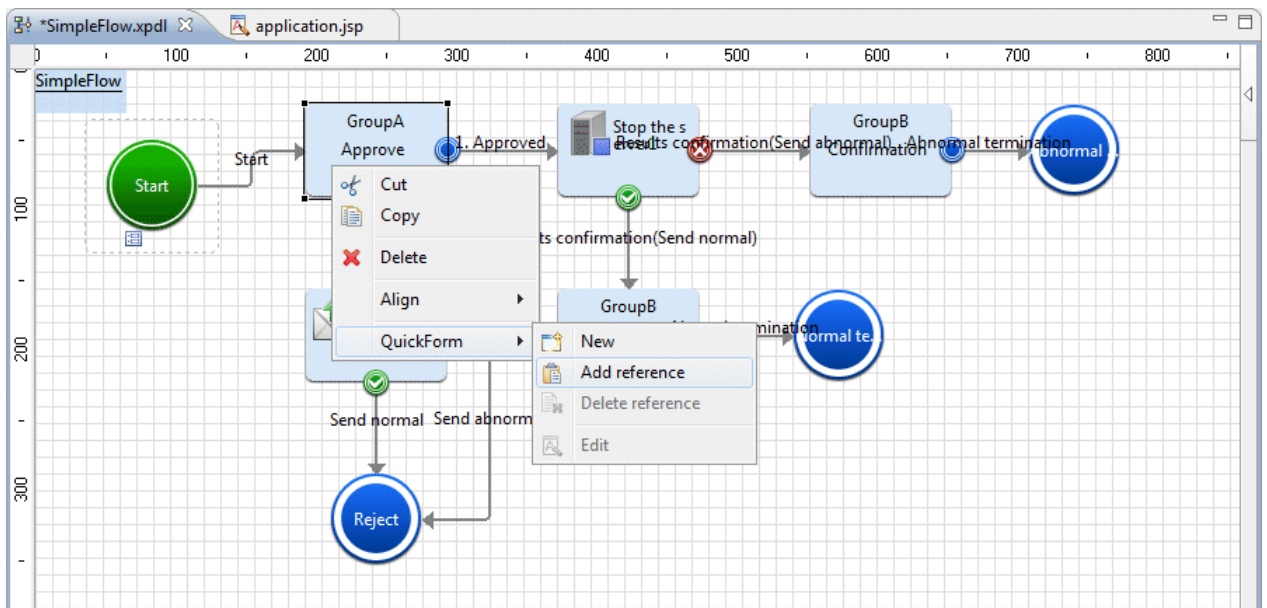
Additionally, by specifying false as the **Property** >> **rcf:enabled** value, there will be no focal point.

7. Select the **Application reason** input field (**TextInput**) and, in the same way as for the **Host Name** input field, specify true as the **Property** >> **rcf:readOnly** value. Specify false as the **Property**>> **rcf:enabled** value.

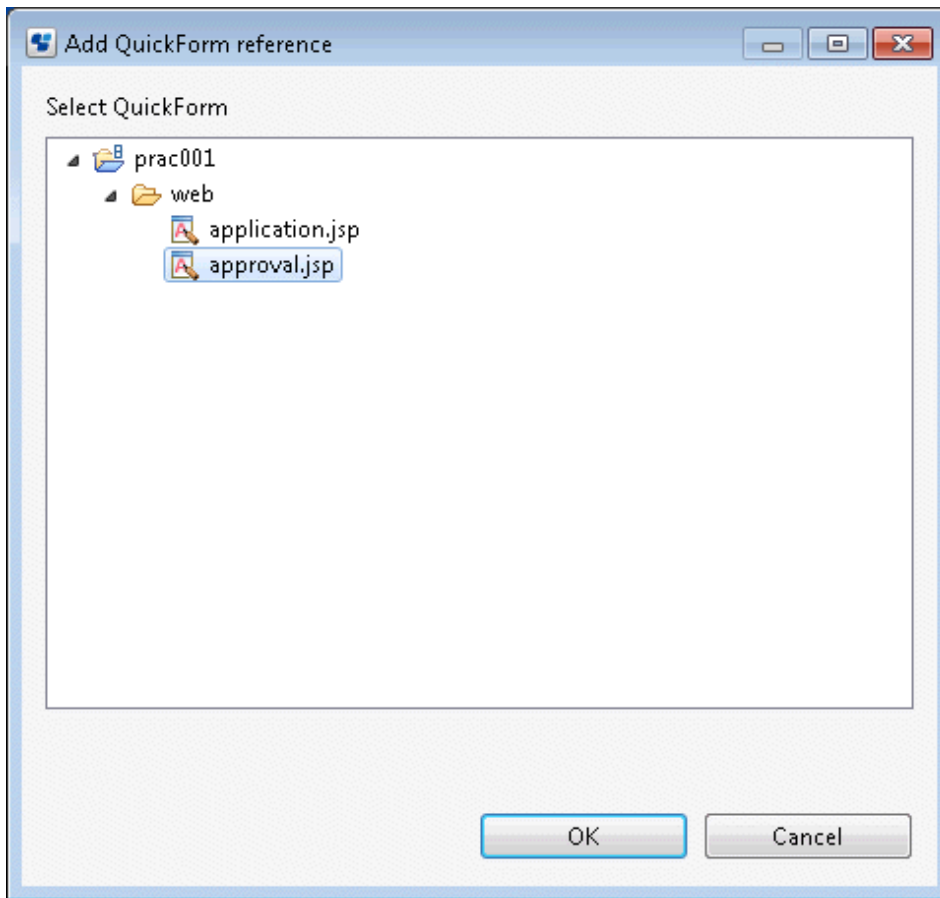
The screenshot shows a web form with two input fields: "Host name:" and "Application reason:". The "Application reason" field is selected. Below the form, the HTML code is visible, showing the configuration for the "uda_reason" input field. The Properties window is open, showing the following table:

Property	Value
rcf:labelProvider	
rcf:maxLength	
rcf:password	
rcf:readOnly	true
rcf:tabIndex	true
rcf:title	false

8. Select **File** >> **Save** to save the approval form.
9. In the Process Definition Editor, right-click the activity then select **QuickForm** >> **Add Node**.



10. Select approval.jsp from the tree in the **Add QuickForm reference** dialog box, then click the **OK** button.
The confirmation form (approval.jsp) is set for the activity.



3.2.2.9.3 Creating a Confirmation Form

Create the confirmation form for the activity in the same way as for the application/approval form. Create the confirmation form based on the approval form.

Display on the Web console

The confirmation form created here will be displayed on the Web console as follows:

Form

check

Host name:

Application reason:

Exit code:

Standard output:

Standard error output:

[Back to top](#)

Attachments

[Back to top](#)

Comments

[Back to top](#)

Make Choice

Operating procedure

1. In the **Navigator** view, select and right-click approval.jsp, then select **Copy** from the pop-up menu.
2. In the **Navigator** view, select and right-click the web folder, then select **Paste** from the pop-up menu.
The **Name Conflict** dialog box will be displayed.
3. Change the **Name Conflict** dialog box input field value to check.jsp, then click the **OK** button.
check.jsp is created under the web folder of the **Navigator** view.
4. In the **Navigator** view, select and right-click check.jsp, then select **Open** from the pop-up menu.
The QuickForm Design Editor will be displayed.

5. Select the **Text** item in the **Palette >> Advanced** folder. Click the location where you want to position the item on the Design Editor to add the **Text** item.

The screenshot displays an IDE window titled '*check.jsp'. The Design view shows a form with two input fields: 'Host name:' and 'Application reason:'. A 'Text' widget is being added to the form, indicated by a dashed box around the text 'Text' in the Design view. The Code view below shows the corresponding HTML markup:

```
<div rcf:id="uda_hostname" rcf:type="IBPMTextInput" rcf:width="155px" rcf:height="25px"></div>
<div rcf:id="error_1015080904" rcf:type="IBPMText" rcf:value=""></div>
<div style="position: absolute; width: 188px; height: 78px; left: 218px; top: 188px;">
  <div rcf:id="uda_reason" rcf:type="IBPMTextInput" rcf:width="155px" rcf:height="25px"></div>
  <div rcf:id="error_1702641286" rcf:type="IBPMText" rcf:value=""></div>
</div>
<div rcf:id="uda_1095239046" rcf:type="IBPMText" rcf:value="Text" style="left: 188px; top: 188px;"></div>
</body>
</html>
```

The Palette on the right shows the 'Text' widget selected under the 'Advanced' folder. The Properties window at the bottom shows the attributes for the selected text widget:

Property	Value
Event Listener	
rcf:onClick	
rcf:onClick	
rcf:onClick	

6. Select the **Properties** >> **Attributes** tabs, and enter the name of the label that will be displayed for the confirmation form as the **Property** >> rcf:value value. Here, enter **Exit code** as the label of the field that will display the "Stop the server" operation component execution results.

rcf:value: **Exit code**:

The screenshot shows an IDE window titled '*check.jsp'. The design view displays a form with three input fields: 'Host name:', 'Application reason:', and 'Exit code'. The 'Exit code' field is highlighted with a dashed border. Below the design view, the HTML code is visible, showing the following structure:

```
<div rcf:id="uda_hostname" rcf:type="IBPMTextInput" rcf:width="155px" rcf:height="25px"></div>
<div rcf:id="error_1015080904" rcf:type="IBPMText" rcf:value=""></div>
<div style="position: absolute; width: 188px; height: 78px; left: 218px; top: 118px;">
  <div rcf:id="uda_reason" rcf:type="IBPMTextInput" rcf:width="155px" rcf:height="25px"></div>
  <div rcf:id="error_1702641286" rcf:type="IBPMText" rcf:value=""></div>
</div>
<div rcf:id="uda_1095239046" rcf:type="IBPMText" rcf:value="Exit code" style="width: 155px; height: 25px;"></div>
</body>
</html>
```

The Properties window at the bottom shows the 'Attributes' tab for the selected 'uda_1095239046' component. The 'Content' section is expanded, and the 'rcf:value' property is set to 'Exit code'.

Property	Value
Control Property	
rcf:labelProvider	
rcf:title	
rcf:value	Exit code

7. Select the **TextInput** item in the **Palette >> Advanced** folder. Click the location where you want to position the item on the Design Editor to add the **TextInput** item.

The screenshot shows an IDE window titled '*check.jsp'. The design view displays a form with three input fields: 'Host name:', 'Application reason:', and 'Exit code:'. The 'Exit code:' field is currently selected, indicated by a dashed red border and black handles. To the right is a 'Palette' window with a tree view showing 'Basic' and 'Advanced' folders. Under 'Advanced', the 'TextInput' component is selected. Below the design view is a code editor showing the HTML source code. The selected component's code is highlighted in blue: `<div rcf:id="uda_0085340371" rcf:type="IBPMTextInput" rcf:width="155px" rcf:h`. At the bottom is a 'Properties' window with a table of attributes.

Property	Value
Event Listener	
rcf:onBlur	
rcf:onChange	
rcf:onClick	

8. Select the **Properties** >> **Attributes** tabs, and enter the user defined attribute ID that will be associated with the input field (**TextInput**) as the **Common Property** >> **rcf:id** value.

rcf:id: uda_SWRBA_RCODE (The "uda_" part is required)

The screenshot displays an IDE interface for a web application. The top window shows a design view of a form with three input fields: "Host name:", "Application reason:", and "Exit code:". The "Exit code:" field is highlighted with a blue border and a dashed red selection box. Below the design view is a code editor showing the HTML markup for the form. The code includes several `<div>` elements with attributes like `rcf:id`, `rcf:type`, and `rcf:value`. The `<div>` for the "Exit code:" field is highlighted in blue. The bottom window shows the **Properties** tab, specifically the **Attributes** section. The **Content** property is expanded, and the **rcf:id** attribute is selected, with its value set to `uda_SWRBA_RCODE`. The **rcf:type** attribute is also visible, set to `IBPMTextInput`.

```
<div style="position: absolute; width: 188px; height: 78px; left: 218px; top: 198px;">
  <div rcf:id="uda_reason" rcf:type="IBPMTextInput" rcf:width="155px" rcf:h
  <div rcf:id="error_1702641286" rcf:type="IBPMText" rcf:value=""
</div>
<div rcf:id="uda_1095239046" rcf:type="IBPMText" rcf:value="Exit code:" style
<div style="position: absolute; width: 188px; height: 78px; left: 201px; top:
> <div rcf:id="uda_SWRBA_RCODE" rcf:type="IBPMTextInput" rcf:width="155px"
  <div rcf:id="error_0085340371" rcf:type="IBPMText" rcf:value=""
</body>
</html>
```

Property	Value
Common Property	
rcf:id	uda_SWRBA_RCODE
rcf:styleClass	
rcf:type	IBPMTextInput

9. Select the **Text** item in the **Palette >> Advanced** folder. Click the location where you want to position the item on the Design Editor to add the **Text** item.

The screenshot displays an IDE window for a file named *check.jsp. The top section shows a design view with three text input fields labeled "Host name:", "Application reason:", and "Exit code:". Below the design view is a code editor showing the following HTML/JSF code:

```
<div style="position: absolute; width: 188px; height: 78px; left: 218px; top: 158px;">
  <div rcf:id="uda_reason" rcf:type="IBPMTextInput" rcf:width="155px" rcf:h
  <div rcf:id="error_1702641286" rcf:type="IBPMText" rcf:value=""
</div>
<div rcf:id="uda_1095239046" rcf:type="IBPMText" rcf:value="Exit code:" style
<div style="position: absolute; width: 188px; height: 78px; left: 201px; top:
> <div rcf:id="uda_SWRBA_RCODE" rcf:type="IBPMTextInput" rcf:width="155px"
  <div rcf:id="error_0085340371" rcf:type="IBPMText" rcf:value=""
  <div rcf:id="uda_1655392967" rcf:type="IBPMText" rcf:value="Text" style="left
</body>
</html>
```

The right-hand side of the IDE shows a **Palette** window with the **Advanced** folder expanded, and the **Text** component selected. The bottom of the IDE features a **Properties** window with the following content:

Property	Value
Control Property	
rcf:labelProvider	
rcf:title	
rcf:value	Text

10. Select the **Properties** >> **Attributes** tabs, and enter the name of the label that will be displayed for the confirmation form as the **Property** >> **rcf:value** value. Here, enter **"Standard output"** as the label of the field that will display the "Stop the server" operation component standard output.

rcf:value: Standard output:

The screenshot displays an IDE window for a file named *check.jsp. The top part shows a design view with three text input fields labeled 'Host name:', 'Application reason:', and 'Exit code:'. Below them is a text area labeled 'Standard output:'. The middle part shows the HTML source code for these elements. The bottom part shows the 'Properties' window with the 'Attributes' tab selected, where the 'rcf:value' property is set to 'Standard output'.

```
<div style="position: absolute; width: 188px; height: 78px; left: 218px; top: 218px;">
  <div rcf:id="uda_reason" rcf:type="IBPMTextInput" rcf:width="155px" rcf:h
  <div rcf:id="error_1702641286" rcf:type="IBPMText" rcf:value="
</div>
<div rcf:id="uda_1095239046" rcf:type="IBPMText" rcf:value="Exit code:" style
<div style="position: absolute; width: 188px; height: 78px; left: 201px; top:
  <div rcf:id="uda_SWREA_RCODE" rcf:type="IBPMTextInput" rcf:width="155px"
  <div rcf:id="error_0085340371" rcf:type="IBPMText" rcf:value="
<div rcf:id="uda_1655392967" rcf:type="IBPMText" rcf:value="Standard output"
</body>
</html>
```

Attributes	Property	Value
Content	Control Property	
	rcf:labelProvider	
	rcf:title	
	rcf:value	Standard output

11. Select the **TextArea** item in the **Palette >> Advanced** folder. Click the location where you want to position the item on the Design Editor to add the **TextArea** item.

The screenshot displays an IDE interface for designing a web form. The main design area shows a form with three input fields: "Application reason:", "Exit code:", and "Standard output:". A new text area is being added to the "Standard output:" field, indicated by a dashed red border and a light blue fill. The source view below the design area shows the corresponding HTML code. The palette on the right shows the "Advanced" folder selected, with "TextArea" highlighted. The properties view at the bottom shows the "Attributes" and "Content" sections.

```
<div rcf:id="uda_1095239046" rcf:type="IBPMText" rcf:value="Exit code:" style="position: absolute; width: 188px; height: 78px; left: 201px; top: 201px;"></div><div rcf:id="uda_SWRBA_RCODE" rcf:type="IBPMTextInput" rcf:width="155px" style="position: absolute; width: 155px; height: 28px; left: 201px; top: 281px;"></div><div rcf:id="error_0085340371" rcf:type="IBPMText" rcf:value="" style="position: absolute; width: 188px; height: 78px; left: 201px; top: 311px;"></div><div rcf:id="uda_1655392967" rcf:type="IBPMText" rcf:value="Standard output:" style="position: absolute; width: 188px; height: 78px; left: 201px; top: 341px;"></div><div rcf:id="uda_0023337723" rcf:type="IBPMTextArea" rcf:width="179px" style="position: absolute; width: 179px; height: 94px; left: 182px; top: 341px;"></div><div rcf:id="error_0023337723" rcf:type="IBPMText" rcf:value="" style="position: absolute; width: 188px; height: 78px; left: 201px; top: 371px;"></div></body></html>
```

Property	Value
Event Listener	
rcf:onBlur	
rcf:onChange	
rcf:onClick	

12. Select the **Properties** >> **Attributes** tabs, and enter the user defined attribute ID that will be associated with the input field (**TextArea**) as the **Common Property** >> **rcf:id** value.

rcf:id: uda_SWRBA_STDOUT (The "uda_" part is required)

The screenshot shows a web form with three input fields: "Application reason:", "Exit code:", and "Standard output:". The "Standard output:" field is a text area. Below the form, the source code is displayed, showing the HTML structure. The text area element is highlighted in blue, with the following code:

```
<div rcf:id="uda_SWRBA_STDOUT" rcf:type="IBPMTextArea" rcf:width="179px">
```

The Properties window at the bottom shows the Attributes tab for the selected text area. The table below represents the data in this window:

Property	Value
Common Property	
rcf:id	uda_SWRBA_STDOUT
rcf:styleClass	
rcf:type	IBPMTextArea

Information

The number of rows and columns for **TextArea** items can be specified by specifying values for the **rcf:rows** and **rcf:cols** properties under **Property**.

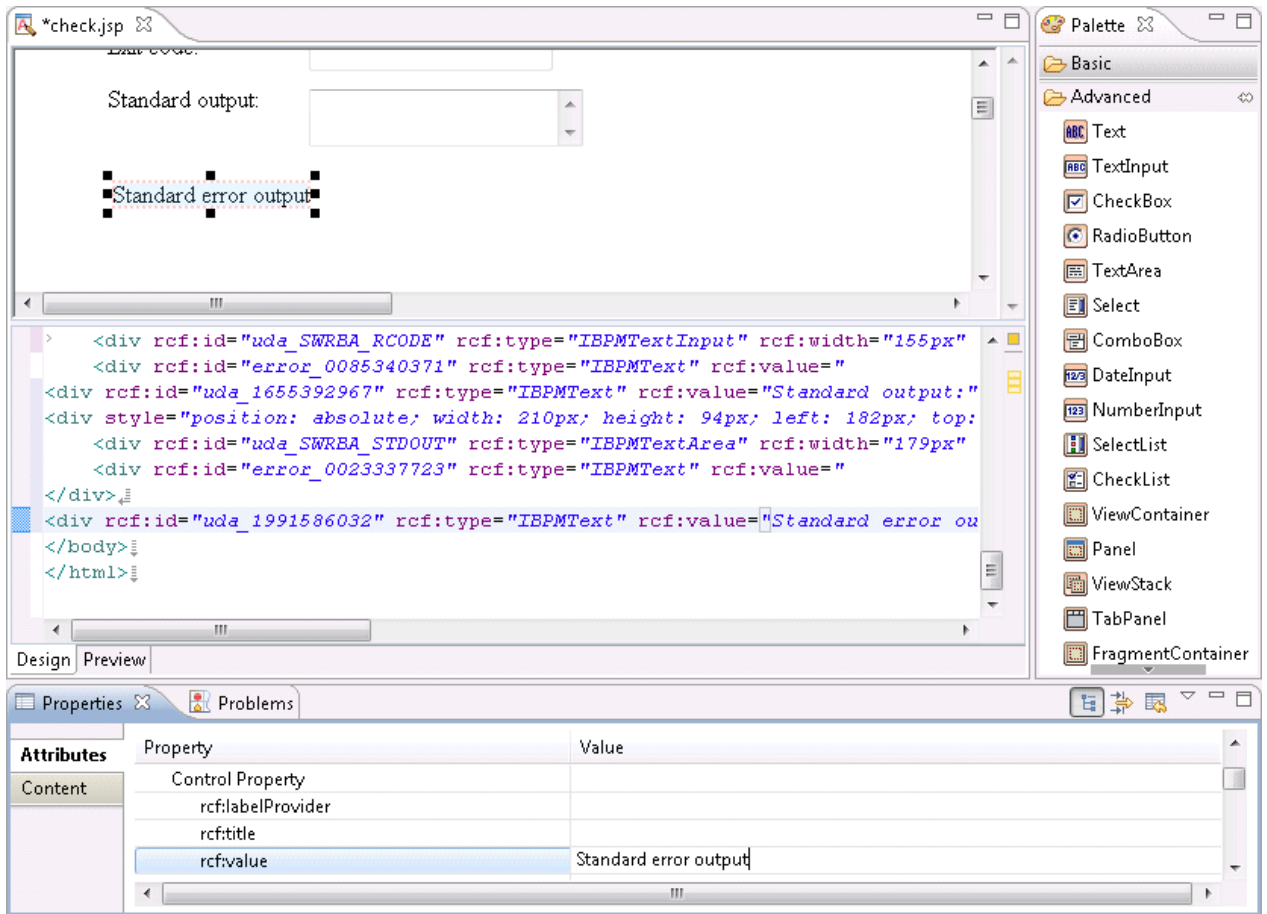
In the following example, 5 rows x 40 columns are set:

The screenshot shows the Properties window with the Attributes tab selected. The table below represents the data in this window:

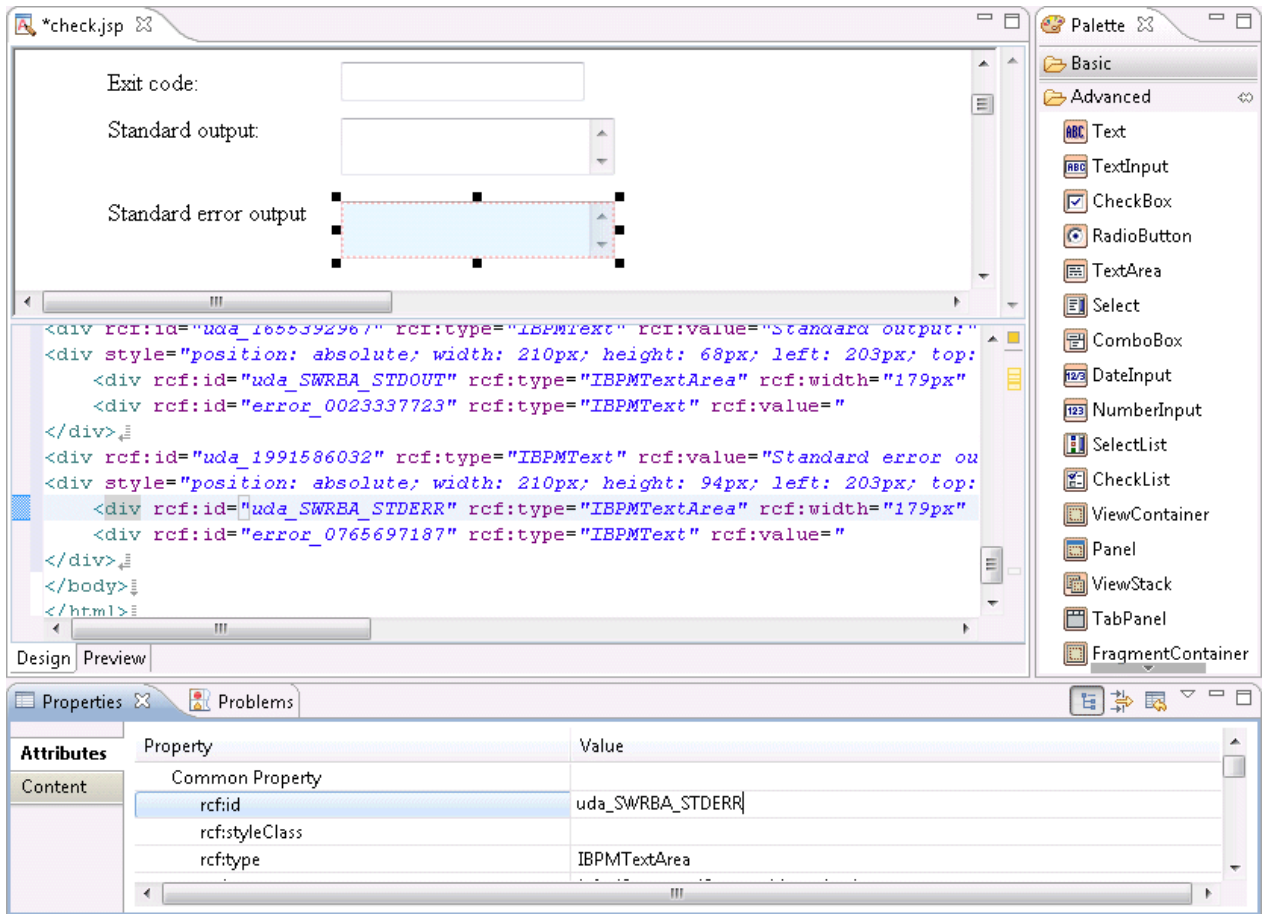
Property	Value
Common Property	
Control Property	
rcf:cols	40
rcf:enabled	
rcf:imeMode	
rcf:labelProvider	
rcf:readOnly	
rcf:rows	5
rcf:tabIndex	

13. Select the **Text** item in the **Palette** >> **Advanced** folder then place it on the Design Editor. Select the **Properties** >> **Attributes** tabs, and enter the name of the label that will be displayed for the confirmation form as the **Property** >> **rcf:value** value.

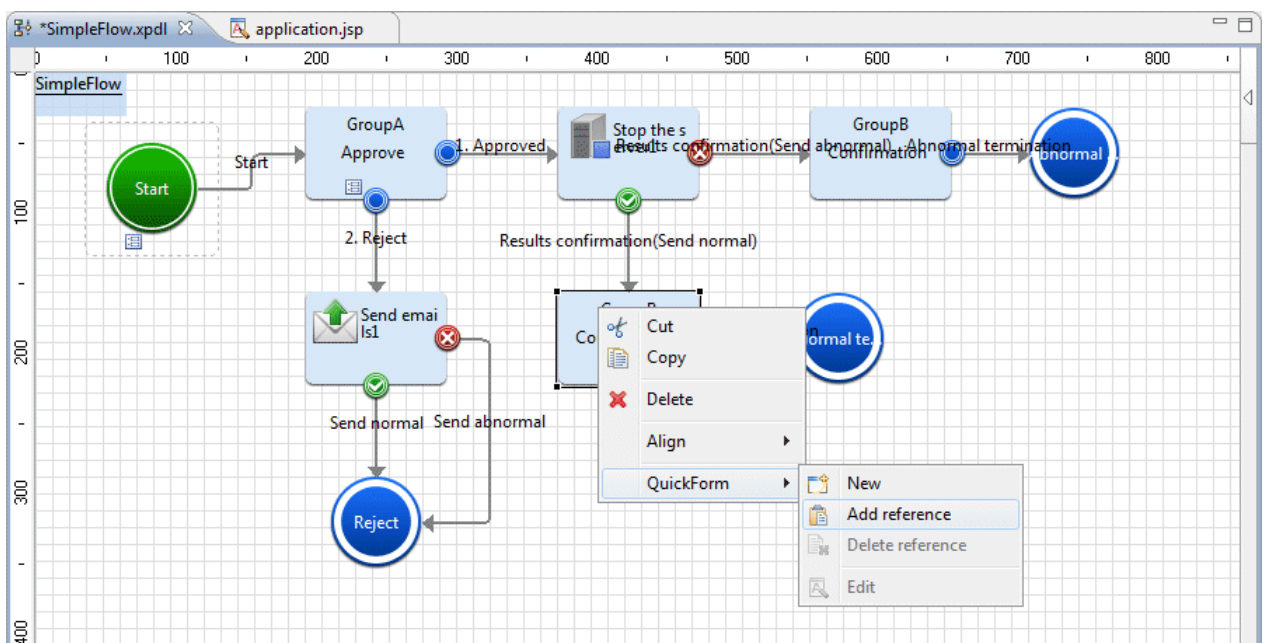
rcf:value: Standard error output



14. Select the **TextArea** item in the **Palette** >> **Advanced** folder and place it on the Design Editor. Select the **Properties** >> **Attributes** tabs, and enter the user defined attribute ID that will be associated with the input field (**TextArea**) as the **Property** >> **rcf:id** value.
rcf:id: uda_SWRBA_STDERR (The "uda_" part is required)

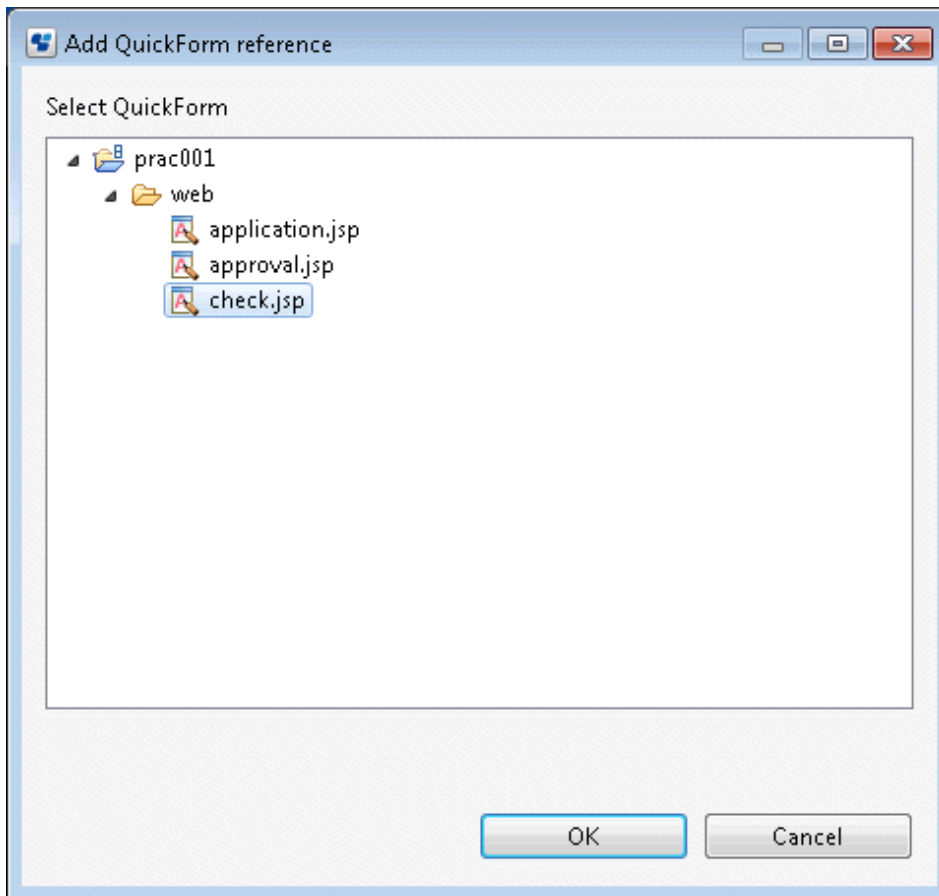


15. Select **File** >> **Save** to save the confirmation form.
16. In the Process Definition Editor, right-click the activity then select **QuickForm** >> **Add Node**.



17. Select check.jsp from the tree in the **Add QuickForm reference** dialog box, then click the **OK** button.

The confirmation form (check.jsp) is set for the activity.



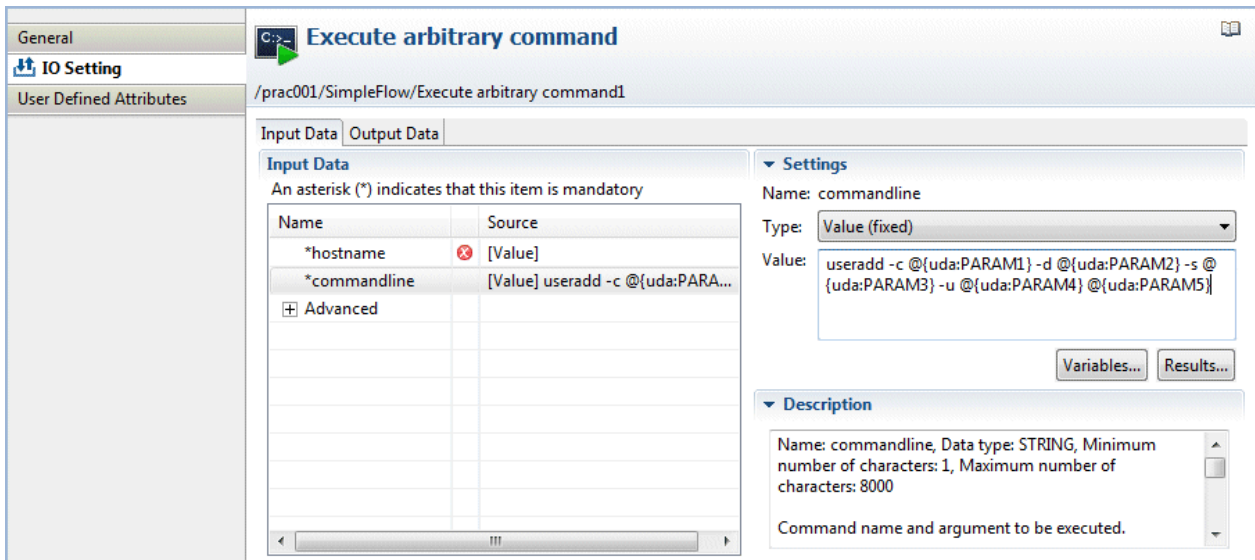
This completes the creation of the Automated Operation Process with human tasks included.

3.2.3 Developing Advanced Automated Operation Processes

3.2.3.1 Specifying Multiple Parameters in the Input Information

Multiple parameters can be passed to operation components as input information for the operation component when the operation component is executed. (The execution results for values stored in the UDA, or for another operation components, are referred to as "variable parameters")

Use of the variable parameter enables the execution results for values stored in multiple variables (UDAs) or other operation components to be passed to the input information (commandline) of the **Execute arbitrary command** operation component node, for example.



Variable parameters can be used for operation component nodes that have "fixed" as the input information type, and do not have the PASSWORD data type.

About variable parameter

Format	Description
@{uda:name}	The value held by the user-defined attribute (UDA) specified in <name> is passed as input information to the operation component node.
@{:node name:execution results}	The value for the execution results specified in <execution results> that is specified in <node name> is passed as input information to the operation component node. <node name> represents the name that was entered in the Name field of the General tab. <execution results> represents the name that can be selected from the Execution results combo-box of Settings after clicking the IO Setting >> Output Data tabs.

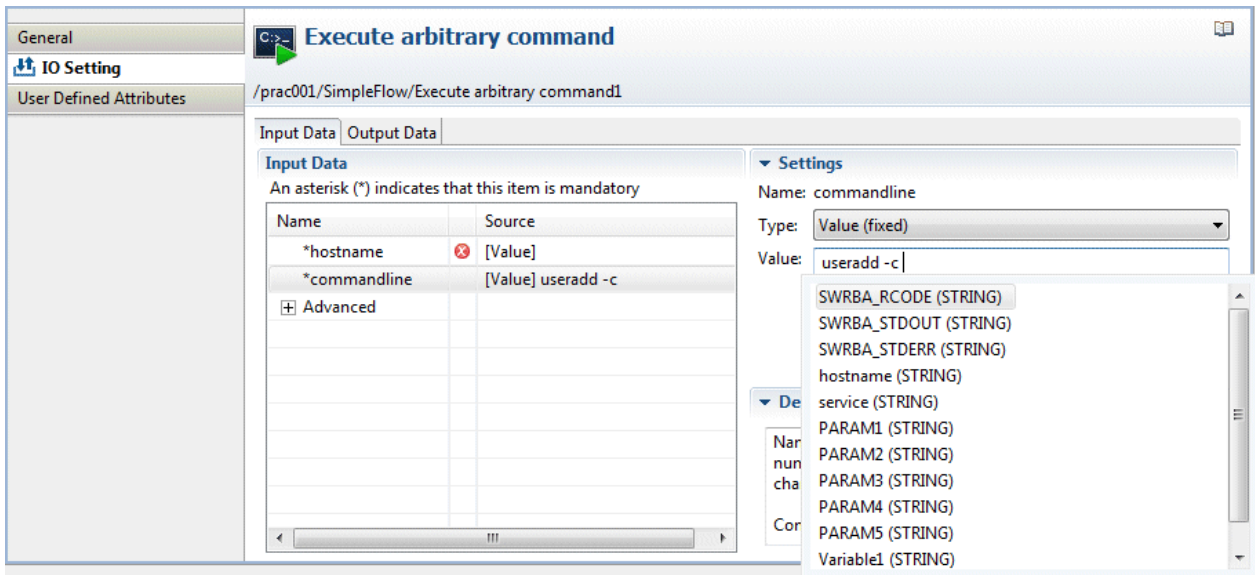
The variable parameters are interpreted based on the following rules:

- Items specified as @{uda: <name>} or @{:<node name>:<execution results>} are replaced with the variable parameter values.
- Consecutive @ characters are replaced with a single one.

The rules above are applied in the order in which they are described.

Variable parameter input compensation

By pressing the "Ctrl+Space" key in the **Value** field, it is possible to define the variable parameter easily. When the "Ctrl+Space" key is pressed, the list of UDAs will be displayed. When the UDA is selected from the list, it will be converted to "@{uda:UDA name}" notation and inserted in the **Value** field.



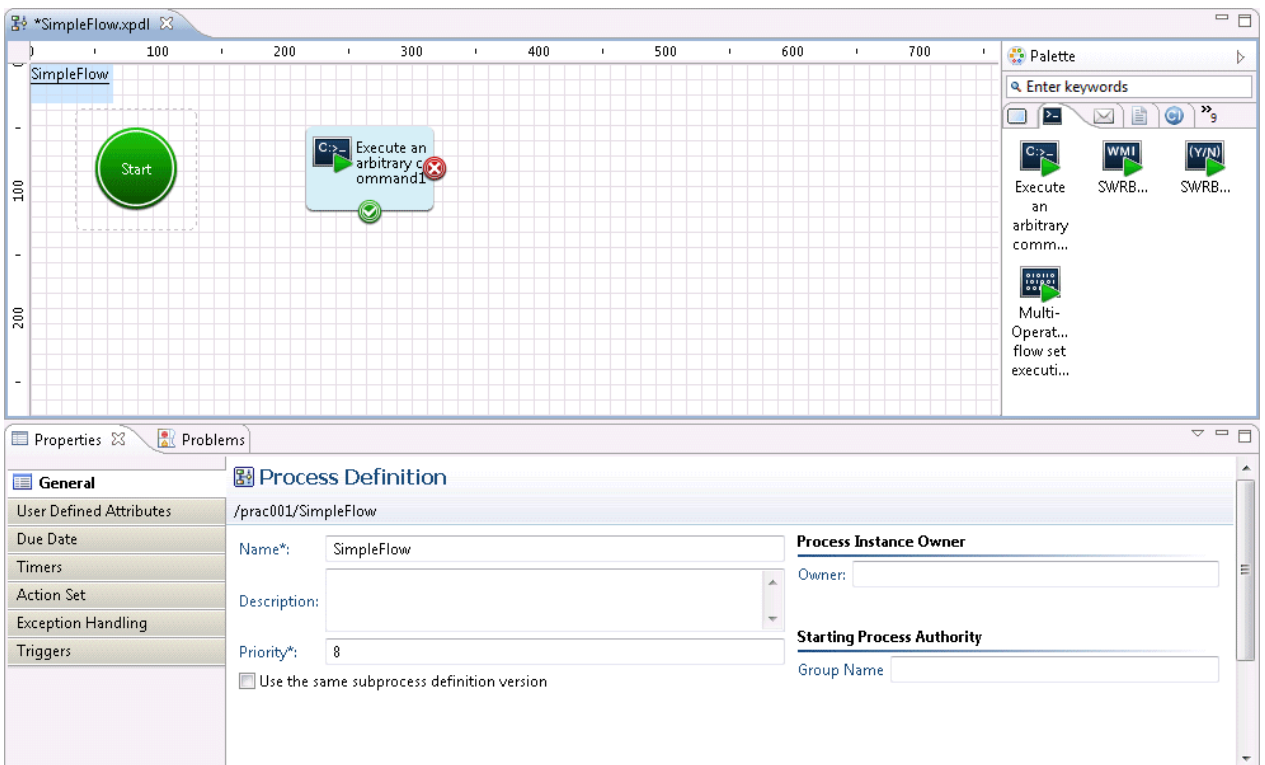
Note

When the **Value** field on the Studio contains a parameter format, the format is replaced with a blank character and its length is checked. When the operation component is executed, replace the variable parameter format with the actual value, and then verify whether this is within the maximum number of characters. In this case, if the result of the replacement of the variable parameter format with the actual value is a result that exceeds the maximum number of characters, an error will occur when the operation component is executed.

3.2.3.1.1 Passing Multiple Parameters to the Command Line of an "Execute an Arbitrary Command" Operation Component Node

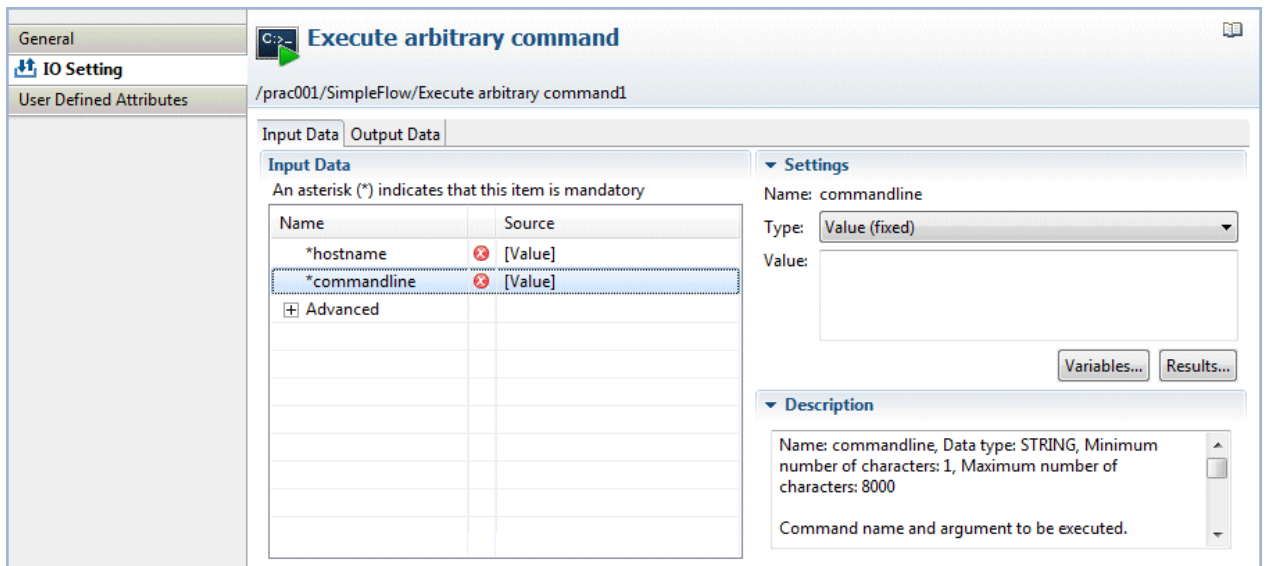
This section describes how to pass parameters to the command line of an "Execute an arbitrary command" operation component node.

1. Select the "Execute an arbitrary command" operation component node in the Process Definition Editor.

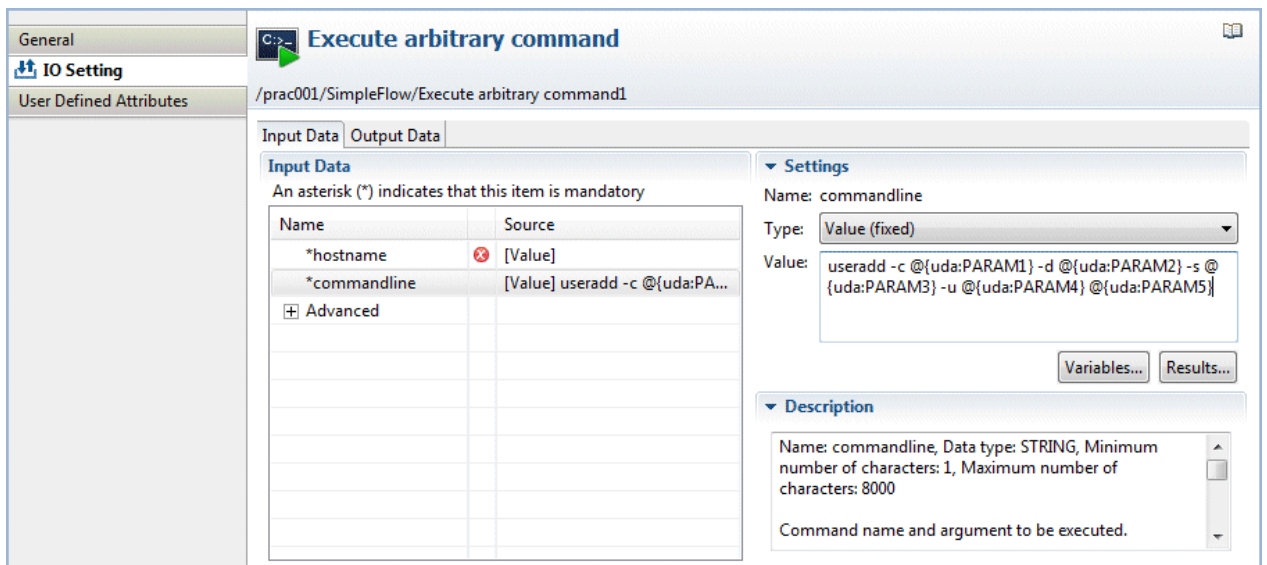


- From the **Input Data** section list, select "commandline".

The windowSettings Section) for setting the input information ("commandline") is shown on the right.



- From the **Settings >> Type** combo-box, select **Value (fixed)**.
- In the Settings >> **Value** field, define the input information that you want to be passed as "commandline". By defining the input information in the format "@{uda:<name>}", it can be replaced with the value stored in the variable (UDA) shown as <name> when the operation component is executed. Additionally, by defining content in the format "@{:<node name>:<execution results>}", when the operation component is executed it can be replaced by the <execution results> value for the operation component shown in <node name>.



Example of value settings:

```
useradd -c @{uda:PARAM1} -d @{uda:PARAM2} -s @{uda:PARAM3} -u @{uda:PARAM4} @{uda:PARAM5}
```

Assuming the UDA values during operation activity execution are as below:

PARAM1	"Taro Fujitsu"
PARAM2	/home/t-fujitsu
PARAM3	/bin/sh
PARAM4	30000

PARAM5	t-fujitsu
--------	-----------

commandline is replaced as follows, and passed as the operation component input information:

```
useradd -c "Taro Fujitsu" -d /home/t-fujitsu -s /bin/sh -u 30000 t-fujitsu
```

Information

- The variable parameter can be specified in the **Browse variables** dialog box, which is displayed by clicking the **Browse variables** button. When the variable is selected in the **Browse variables** dialog box and the **OK** button is clicked, "@{uda:<name>}" will be inserted in the cursor location of the **Value** field.
- The variable parameter can be specified in the **Browse execution results** dialog box, which is displayed by clicking the **Browse execution results** button. When the node name and execution results are selected in the **Browse execution results** dialog box and the **OK** button is clicked, "@{:<node name>:<execution results>}" will be inserted in the cursor location of the **Value** field.

Note

Parameters containing space characters must be enclosed by quotes (as is the case with PARAM1 in the example above), otherwise the space character will be identified as a parameter delimiter.

3.2.3.2 Filtering Output

Filter the operation component output (execution result, standard output, or standard error output) and pass it to the next operation component.

To filter the output, define the filter process with JavaScript.

3.2.3.2.1 Extracting Values for Specified Nodes Using XPath from the XML Format Output Information

Extract node values specified with XPath from the operation component output information (XML format) and use them as input to the succeeding operation component.

Refer to "Obtain configuration information" in "Reference for Operation Components" in the *Systemwalker Runbook Automation Reference Guide* for information on the operation component output information (XML format).

1. In the Process Definition Editor, select the operation component node.
The operation component node that is selected here will output the XML format information as standard output.
2. Select the **Properties >> IO Setting >> Output Data** tabs.
3. Click the **Add** button.
The new output data is added to the **Output Data** list.
4. From the **Output Data** list, select the new output data that was added.
The settings window will be displayed on the right.
5. From the **Settings >> Execution Result** combo-box, select "ci_get_result".
6. From the **Settings >> Variable** list, select the variable (UDA) that will store the filtered result. Here, "hostname" has been selected.
7. Click the **Settings >> Define Filter >> Add** button.
The **Filter settings** dialog box will be displayed.
8. From the **List of filters** list, select the **Extract XML attribute** filter, then click the **Add >>** button.
The filter is added to the **Filter to be applied** list, and the content set for the filter is displayed in the **Define Filter** field.

9. Enter the XPath expression in the **XPath** field.

Here, the following XPath expression is entered:

```
/entities/item/record/LogicalServer
```

10. Enter the name of the attribute that is to be extracted in the **Attribute name** field.

Here, the following name is entered:

```
hostname
```

11. Select the **Test** tab, and enter the test data in the **Input** field.

Here, the following data is entered as test data:

```
<?xml version="1.0" encoding="UTF-8"?>
<entities>
<cmdb:item id="xxxxx" type="LogicalServer" version="1" xmlns:cmdb="http://xxxxx">
<cmdb:record type="observed">
<ns0:LogicalServer hostname="server-A" id="xx.xx.xx.xx" ipAddress="xx.xx.xx.xx" name=""
nickname="xxxxx" status="unknown" vendorID="" xmlns:ns0="urn:xmlns-fujitsu-com:rcxml2004-05">
<ns0:LogicalServerConfiguration>
<ns0:LogicalPSU option=""/>
<ns0:LAN description=" " id="xxxxx" index="" ipAddress="xx.xx.xx.xx" macAddress="xx:xx:xx:xx:xx:xx"
netmask="xx.xx.xx.xx" netmaskAddress="xx.xx.xx.xx" speed=""/>
</ns0:LogicalServerConfiguration>
<ns0:SystemSettings>
<ns0:Network gateway="xx.xx.xx.xx" hostname="xxxxx" subnetAddress="xx.xx.xx.x"
subnetMask="xx.xx.xx.xx"/>
<ns0:OSSetting codeSet="UTF-8" name="LINUX"/>
<ns0:DHCP flag="0"/>
<ns0:NTDomain name=" "/>
<ns0:SNMP certifyProtocol="" community="public" description="" encryptionProtocol="" securityLevel=""
securityModel="None" userName=""/>
</ns0:SystemSettings>
</ns0:LogicalServer>
</cmdb:record>
<cmdb:instanceId>
<cmdb:mdrId>mdr000000000004</cmdb:mdrId>
<cmdb:localId>xx.xx.xx.xx</cmdb:localId>
</cmdb:instanceId>
<cmdb:instanceId>
<cmdb:mdrId>mdr000000000001</cmdb:mdrId>
<cmdb:localId>xxxxx</cmdb:localId>
</cmdb:instanceId>
</cmdb:item>
</entities>
```

12. Click the **Run test** button.

The filter test results will be displayed in the **Result** field. In this example, the following results are obtained:

```
server-A
```

13. Click the **OK** button to complete the filter settings.

3.2.3.2.2 Extracting from output lines containing a keyword

Lines containing a specific keyword can be extracted from the operation component output.

In the example shown below, the command that is executed using the **Execute arbitrary command** component extracts specific rows containing keywords from the results that are output to the standard output.

1. In the Process Definition Editor, select the operation component node.
2. Select the **Properties >> IO Setting >> Output Data** tabs.
3. Click the **Add** button.
The new output data is added to the **Output Data** list.
4. From the **Output Data** list, select the new output data that was added.
The settings window will be displayed on the right.
5. From the **Settings >> Execution Result** combo-box, select "command_stdout".
6. From the **Settings >> Variable** list, select the name of the variable (UDA) that will store the processed result. Here, "ipaddress" has been selected.
7. Click the **Settings >> Define Filter >> Add** button.
The **Filter settings** dialog box will be displayed.
8. From the **List of filters** list, select the **Extract lines** filter, then click the **Add >>** button.
The filter is added to the **Filter to be applied** list, and the content set for the filter is displayed in the **Define Filter** field.
9. From the **Line extraction method** combo-box, select **All lines containing the target string**.
10. In the **Target string** field, enter "IP Address".
11. Select the **Test** tab, and enter the test data in the **Input** field.

In this example, the following data is specified as the test data:

```

Ethernet adapter1:
    IP Address. . . . . : 192.168.238.1
    Subnet Mask . . . . . : 192.0.2.0
    Default Gateway . . . . . :

Ethernet adapter2:
    IP Address. . . . . : 192.168.187.102
    Subnet Mask . . . . . : 192.0.2.0
    Default Gateway . . . . . : 192.168.187.1
  
```

12. Click the **Run test** button.
The filter test results will be displayed in the **Result** field. In this example, the following results are obtained:

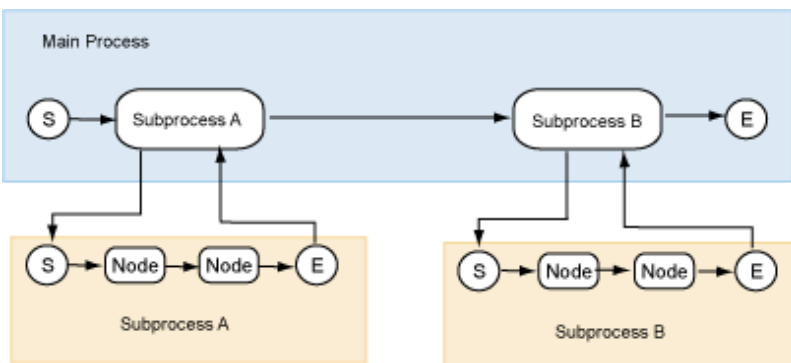
```

IP Address. . . . . : 192.168.238.1[Line feed]
IP Address. . . . . : 192.168.187.102[Line feed]
  
```

13. Click the **OK** button to complete the filter settings.

3.2.3.3 Connecting Multiple Automated Operation Processes

One automated operation process can be created by connecting multiple automated operation processes, as shown below.



The procedure where an automated operation process with human intervention and an automated operation process without human intervention are connected using a main automated operation process to form a single automated operation process is shown below.

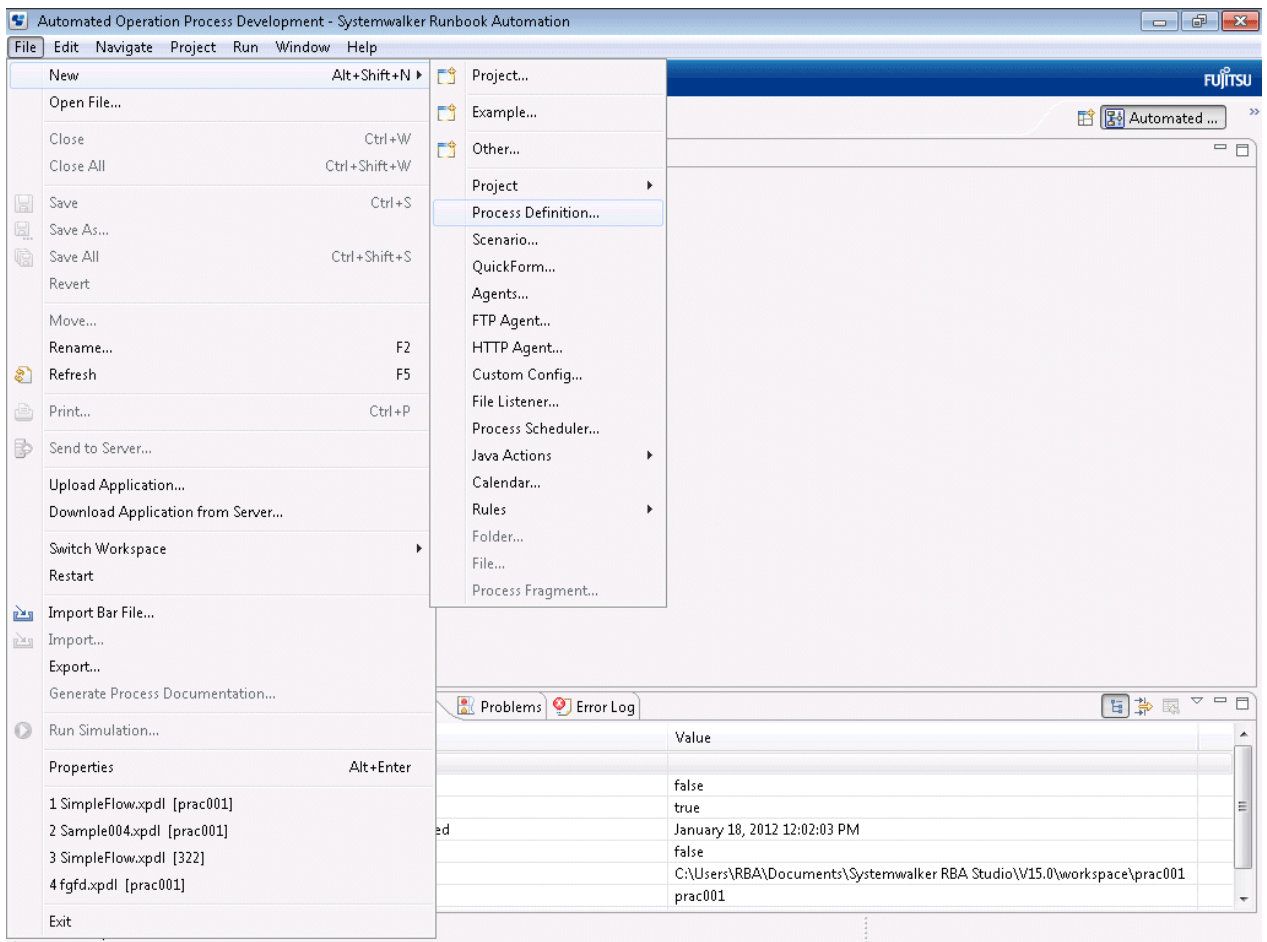
The explanation here assumes that the automated operation processes (called sub automated operation processes) that will be connected have already been created in the application project.

Note

Automated operation processes cannot be connected across different application projects.

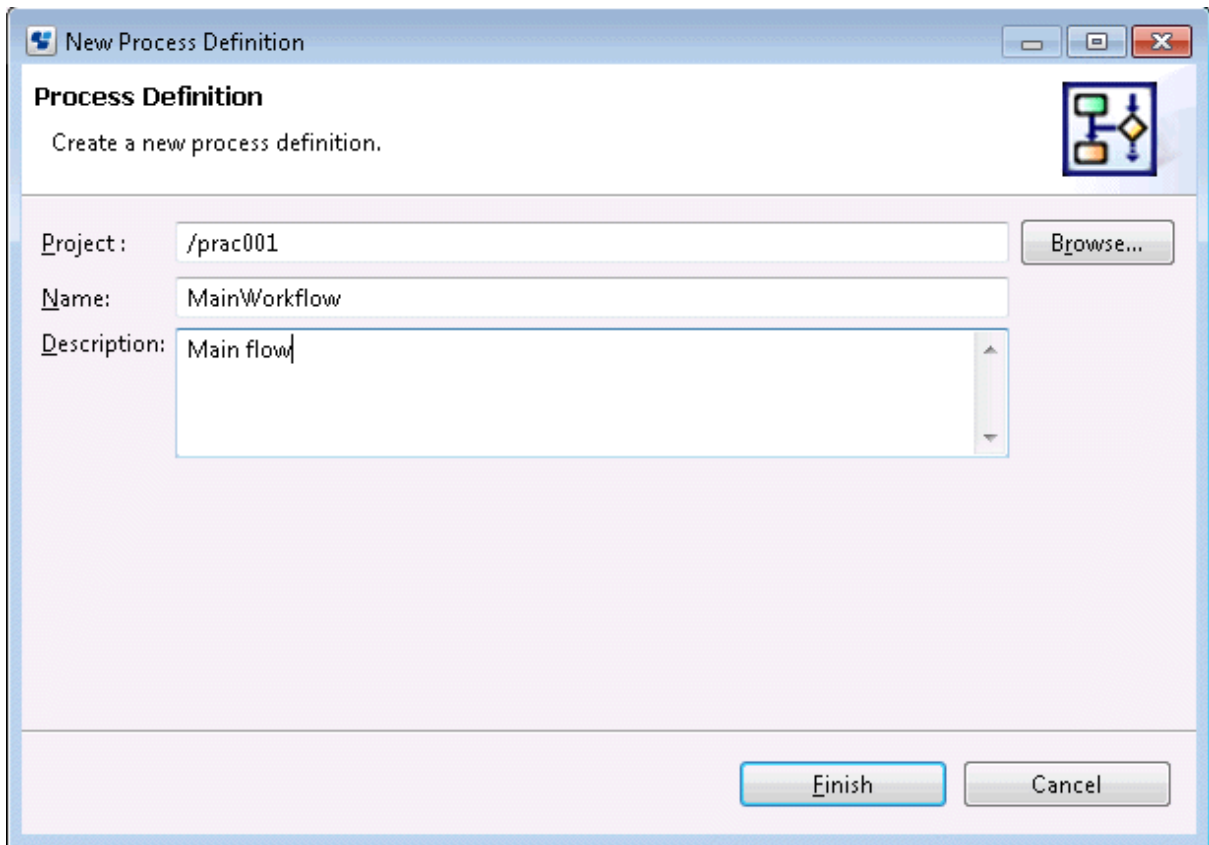
(1) Create the main automated operation process

1. Select New >> Process Definition from the **Files** menu.



2. Click **Browse** in the **New Process Definition** window. Select the project that was created earlier, then click the **OK** button.

3. Enter a name for the automated operation process in the **Name** field, and a description in the **Description** field. The name of the main automated operation process in this example will be "MainWorkflow".

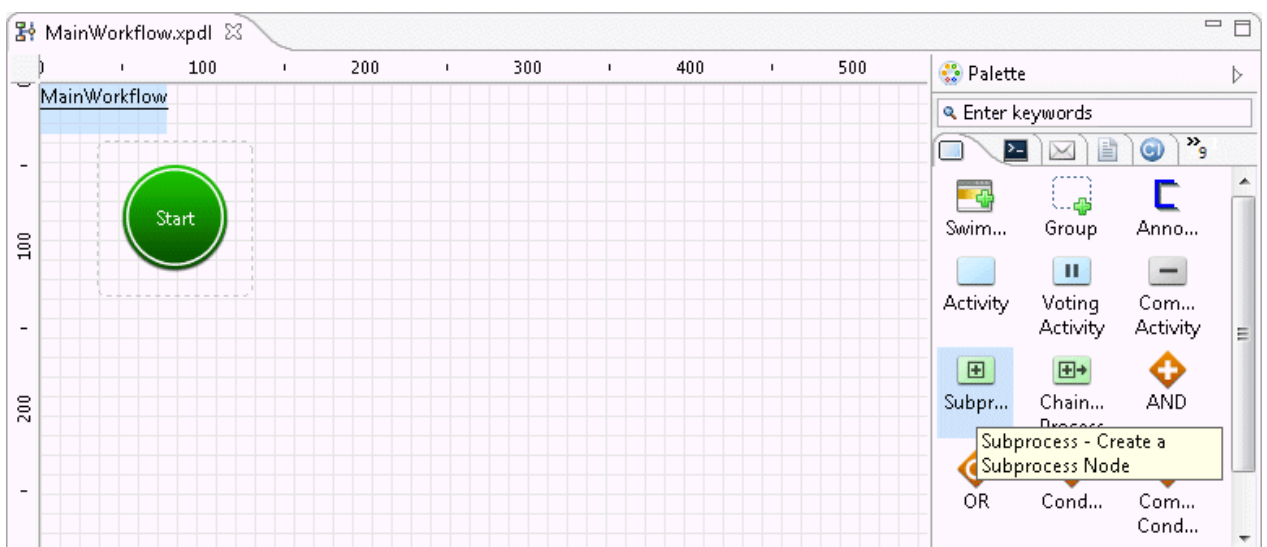


4. Click the **Finish** button.

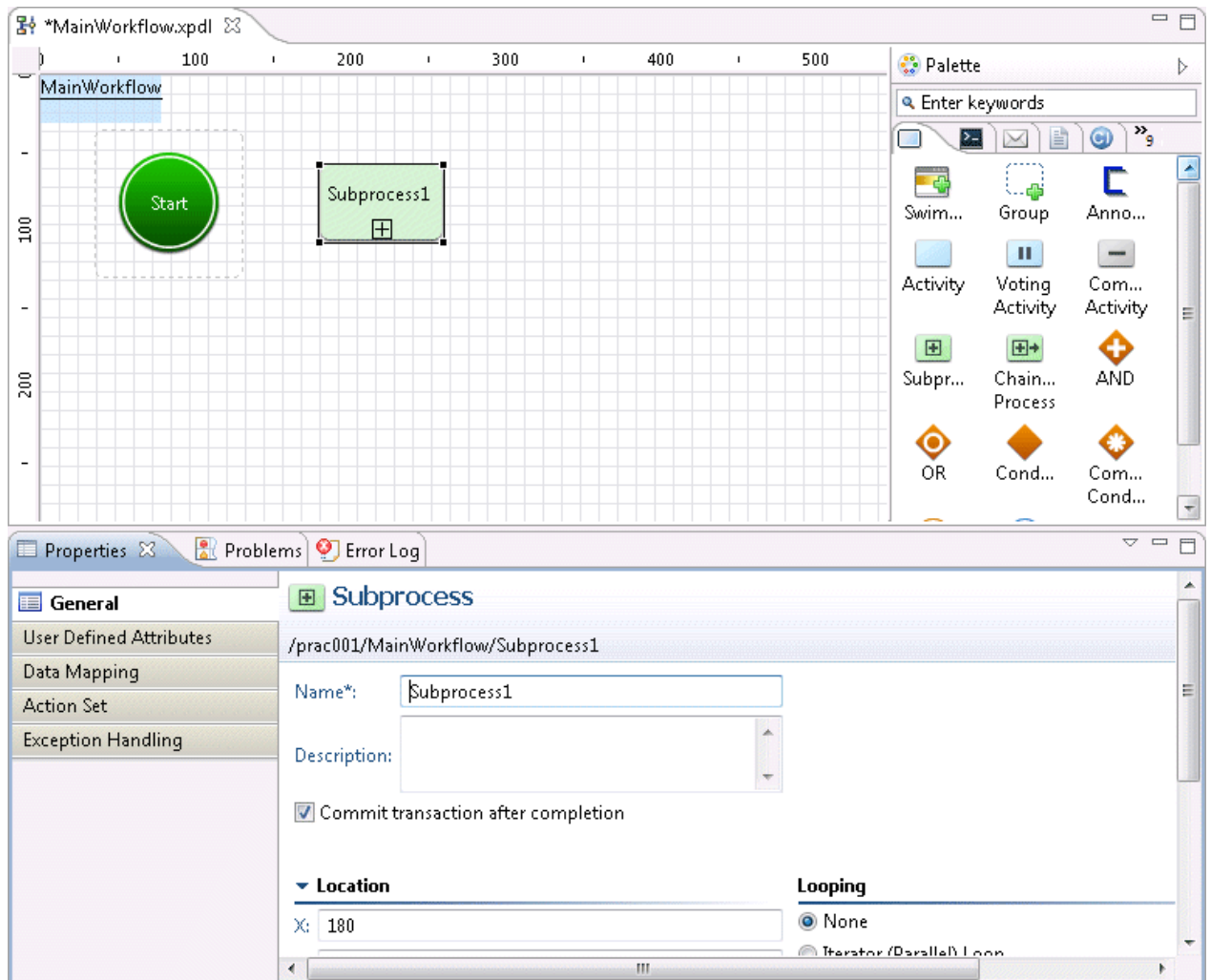
The automated operation process that has just been created will be displayed in the **Navigator** view. When the Process Definition Editor is opened, a "Start" Node will be added automatically.

(2) Position the Subprocess Node

1. Click the **Subprocess** in the **Basic** tab in **Palette**.



2. With the Process Definition Editor, add the Subprocess Node by pointing and clicking the area where it should be placed. If necessary, change the name and add an explanation.



- Set the transition route of the activity. Set the route by connecting activities with arrows.

Set the Subprocess Node

- Select the Subprocess Node using the mouse.

The screenshot shows the BPMN editor interface. The main canvas displays a workflow diagram with a green circular 'Start' node, followed by 'Arrow1' connecting to a green rounded rectangular 'Subprocess1' node, which is then connected by 'Arrow2' to another green rounded rectangular 'Subprocess2' node. A dashed box highlights the 'Start' node. On the right, a 'Palette' window contains various BPMN symbols like Swimlane, Group, Activity, Subprocess, etc. Below the canvas, the 'Properties' window is open to the 'Process Definition' tab, showing fields for Name (MainWorkflow), Description (Main flow), and Priority (8). It also includes sections for 'Process Instance Owner' and 'Starting Process Authority'.

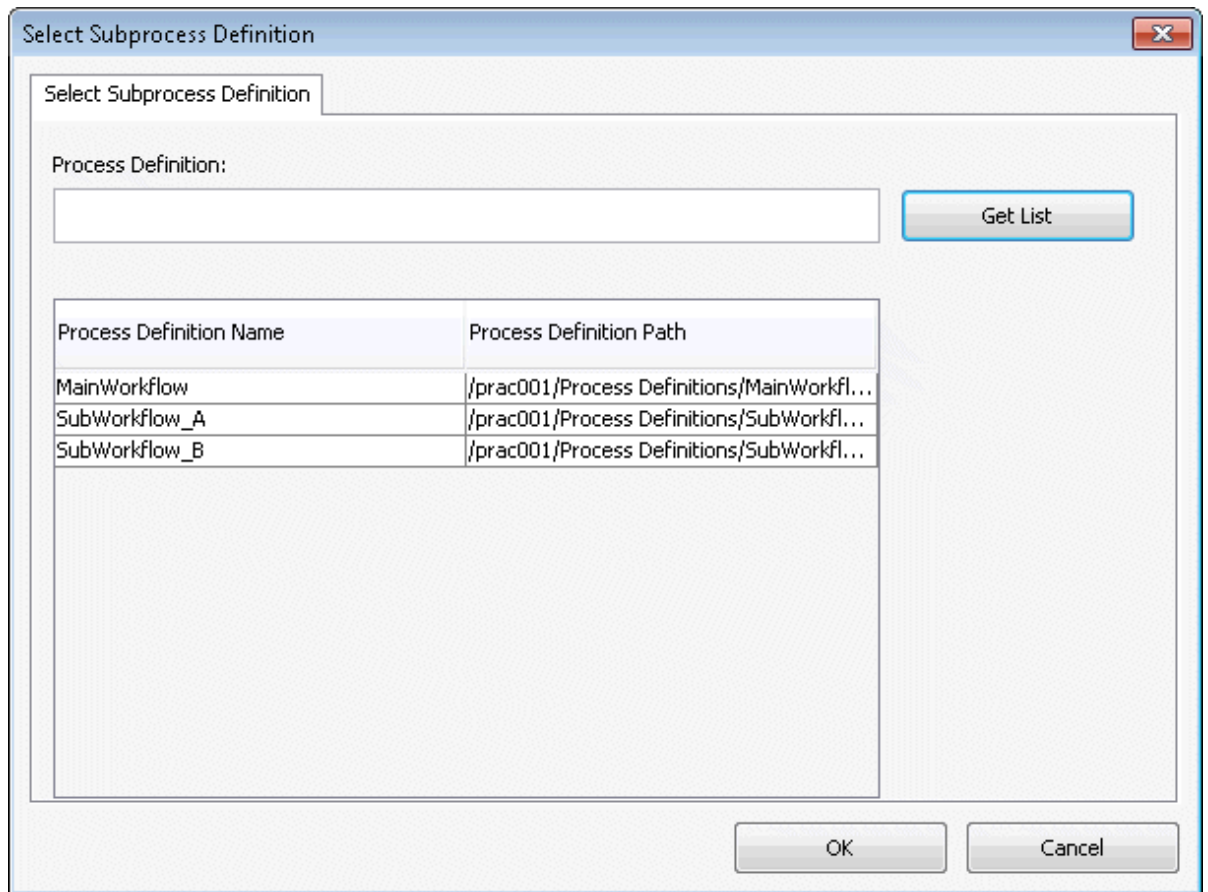
- Click the **Properties >> Data Mapping** tabs and click the **Browse** button in the Sub Process Definition field.

The **Select Subprocess Definition** dialog box will open.

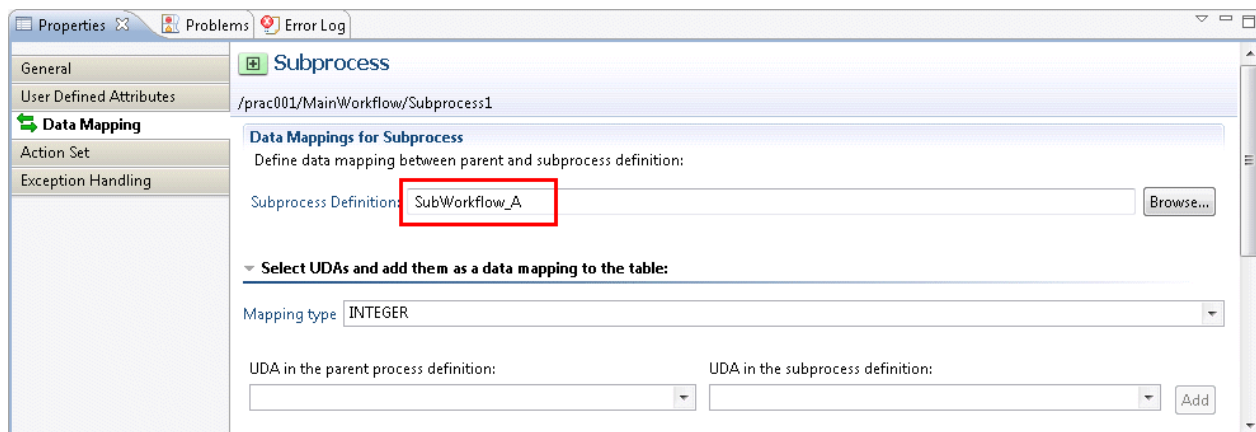
The screenshot shows the 'Properties' window with the 'Data Mapping' tab selected for the 'Subprocess' node. The path is '/prac001/MainWorkflow/Subprocess1'. The 'Data Mappings for Subprocess' section is active, with a 'Subprocess Definition' field and a 'Browse...' button. Below this, there is a section 'Select UDAs and add them as a data mapping to the table:' with a 'Mapping type' dropdown set to 'INTEGER'. At the bottom, there are two empty fields: 'UDA in the parent process definition:' and 'UDA in the subprocess definition:'.

- c. Click the Get List button.

A list of process definitions that can be selected will be displayed in the **Process Definition Name** list.



- d. Select the process definition that will be executed as the subprocess from the list, then click the **OK** button. "SubWorkflow_A" is selected as the subprocess definition in this example.
- e. The name of the subprocess definition that was selected in the Sub Process Definition field will be displayed.

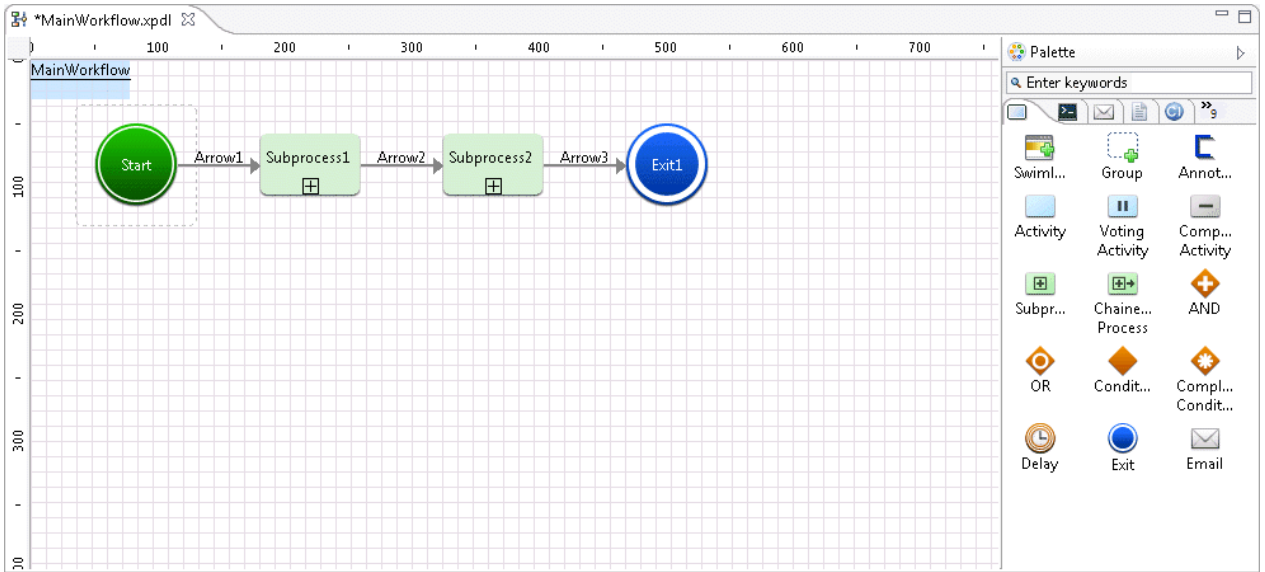


- 4. In the same way, place and configure the settings for the Subprocess Node for sub automated operation process B.

(3) Adding Exit Nodes

Add an Exit Node to the end of the automated operation process.

1. Add the Exit Node to the Process Definition Editor by clicking the **Exit** in the **Basic** tab in **Palette**.



This completes the procedure for creating an automated operation process.

3.2.3.4 Automated Operation Processes That Will Start in Response to an Event

The procedure that is used to create an automated operation process that will be started automatically according to an event that has occurred externally is shown below.

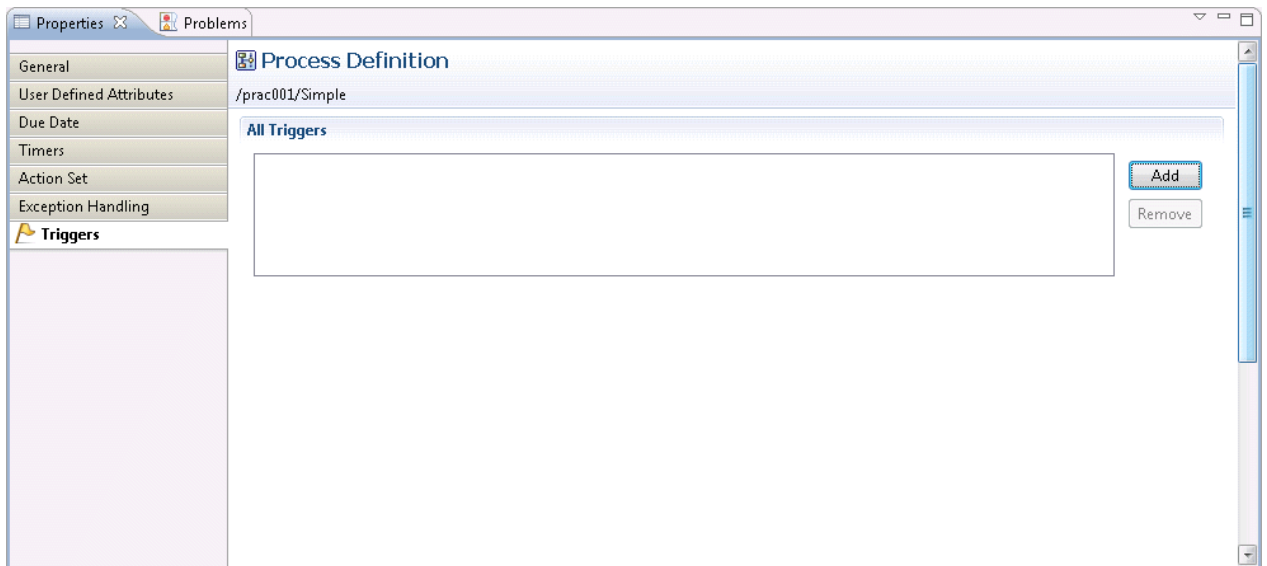
Here, the automated operation process will start when the XML data /RBAEvent/ID element value sent when an event occurs externally is "msg0001".

Note that the XML data is sent when the event notification command is executed using the event monitoring software.

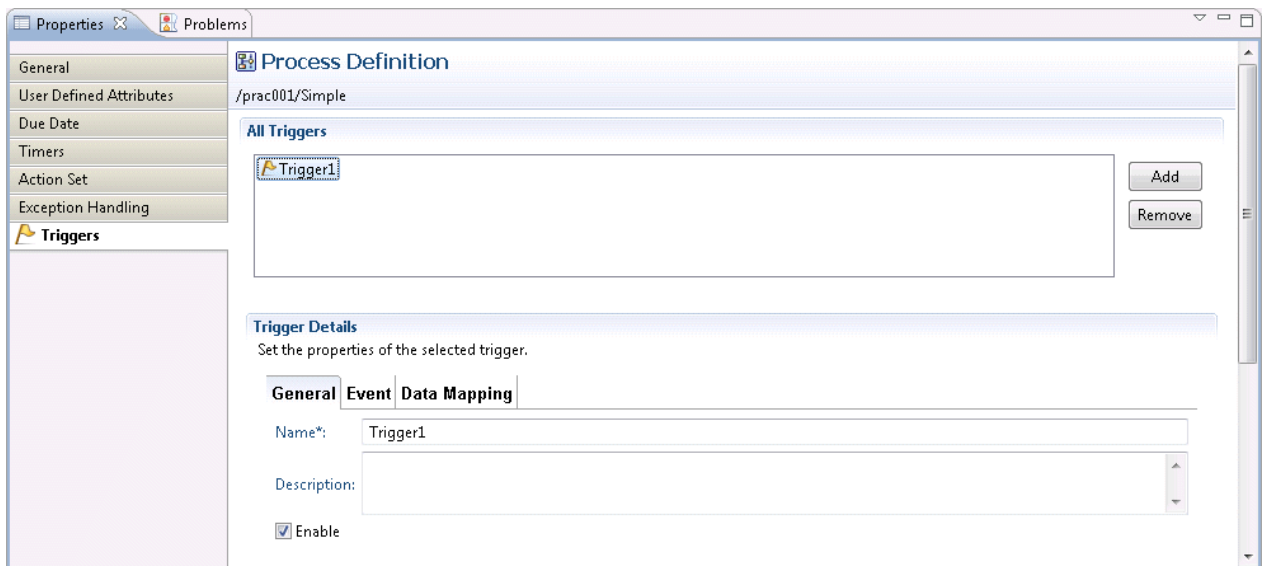
Refer to the following XML schema for information on the format of the XML data that is sent.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd=http://www.w3.org/2001/XMLSchema
targetNamespace=http://www.fujitsu.com/2007/systemwalker/itpm
xmlns:itpm=http://www.fujitsu.com/2007/systemwalker/itpm
attributeFormDefault="unqualified" elementFormDefault="qualified">
<xsd:element name="RBAEvent">
<xsd:sequence>
<xsd:element name="msgID" type="xsd:string" />
<xsd:element name="HostName" type="xsd:string" />
<xsd:element name="MessageKey" type="xsd:string" />
<xsd:element name="ApplicationName" type="xsd:string" />
<xsd:element name="Comment" type="xsd:string" />
</xsd:sequence>
</xsd:element>
</xsd:schema>
```

1. In the Process Definition Editor, click the **Properties >> Triggers** tabs.

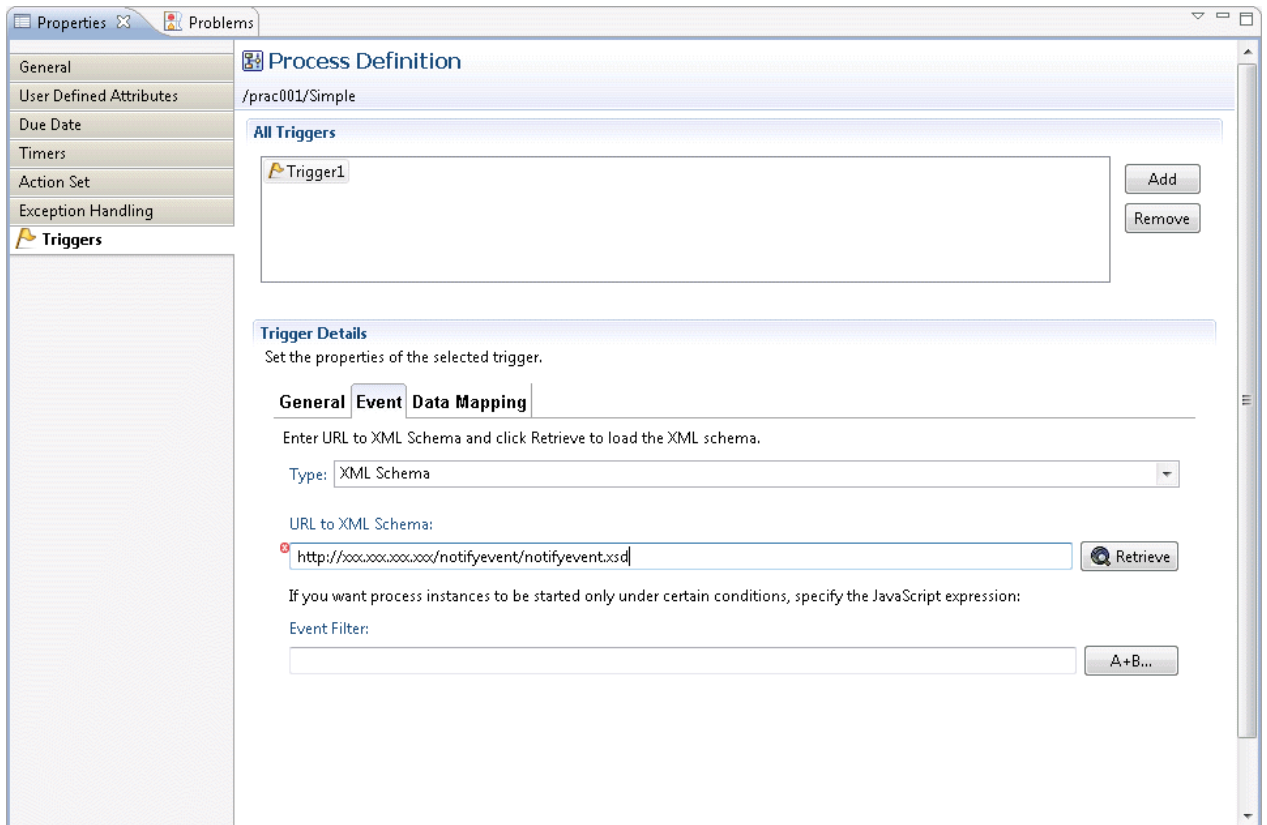


2. Click the **Add** button.
3. In the Trigger Details section, click the **General** tab, then select the **Enable** check box.



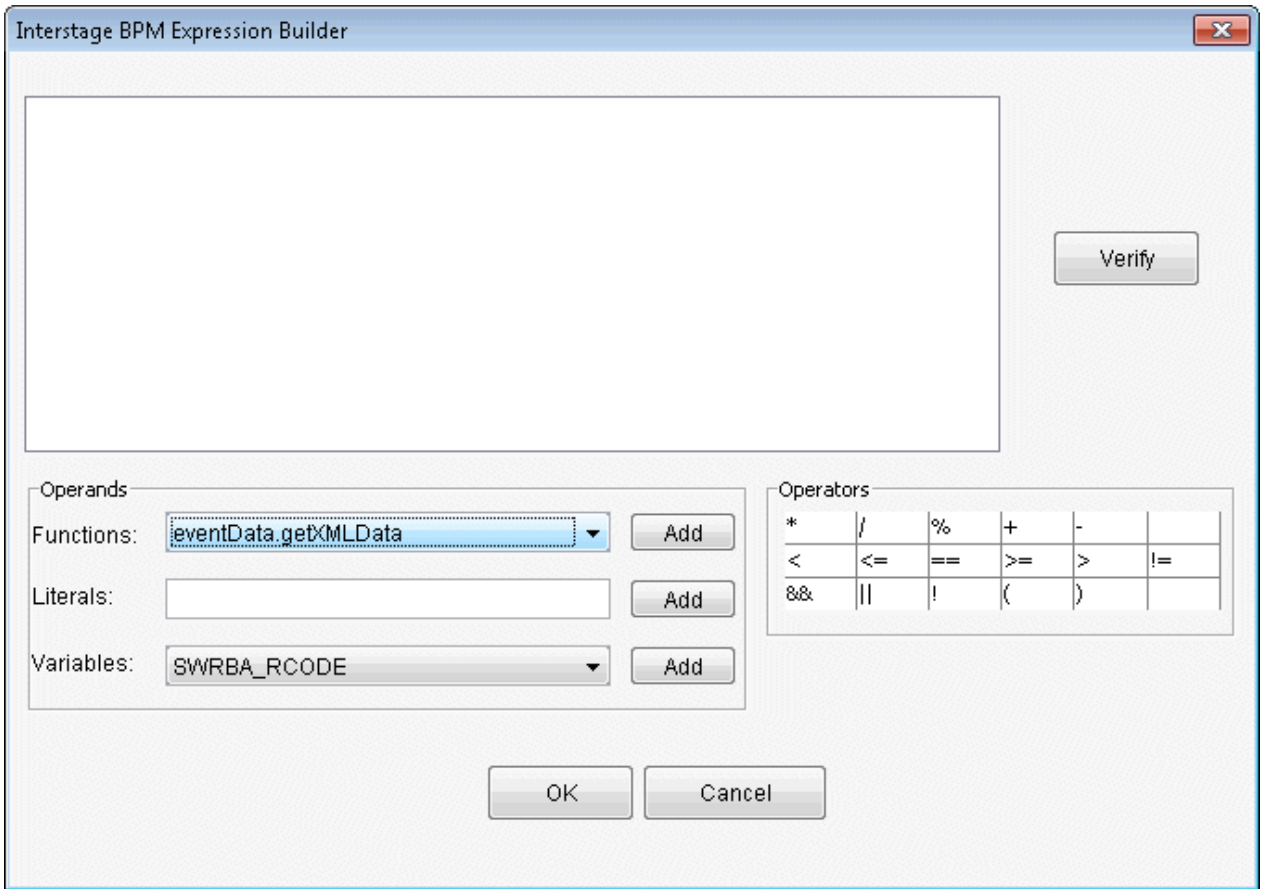
4. In the Trigger Details section, click the **Event** tab, then configure the following settings:
Type: XML schema

XML schema URL: `http://[IP address or host name of the Management Server]:[Port number of the Management Server (Web server)]/notifyevent/notifyevent.xsd`



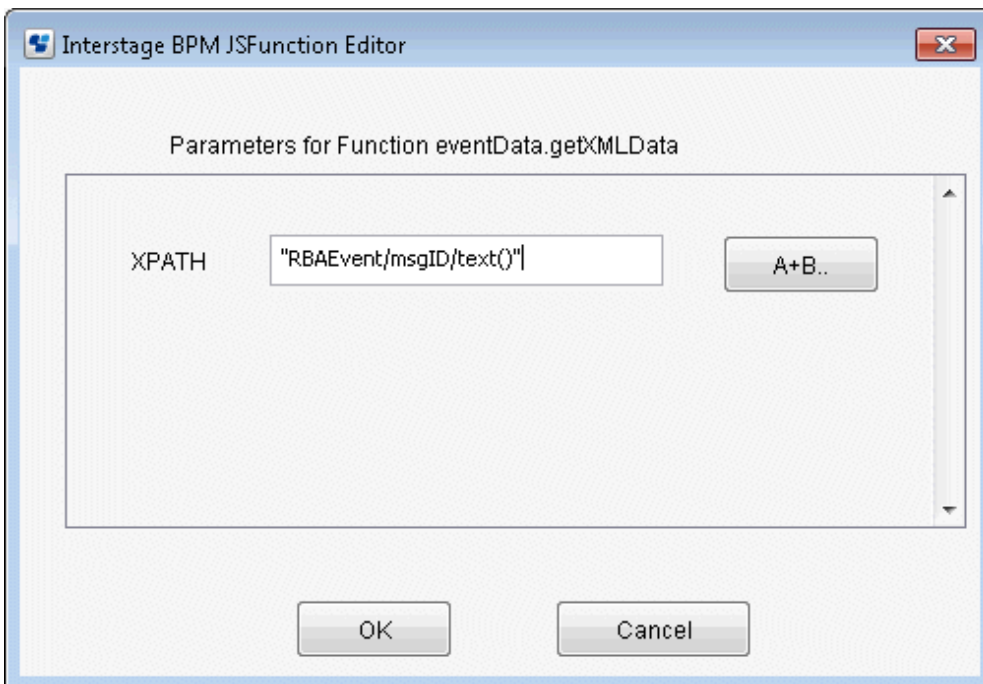
5. Click the Retrieve button.
6. Click the **A+B...** button to set the **Event Filter** (the startup condition for the automated operation process). The **Expression Builder** dialog box will be displayed.

- From the **Functions** combo box, select "eventData.getXMLData" then click the **Add** button. The JSFunction Editor dialog box will be displayed.

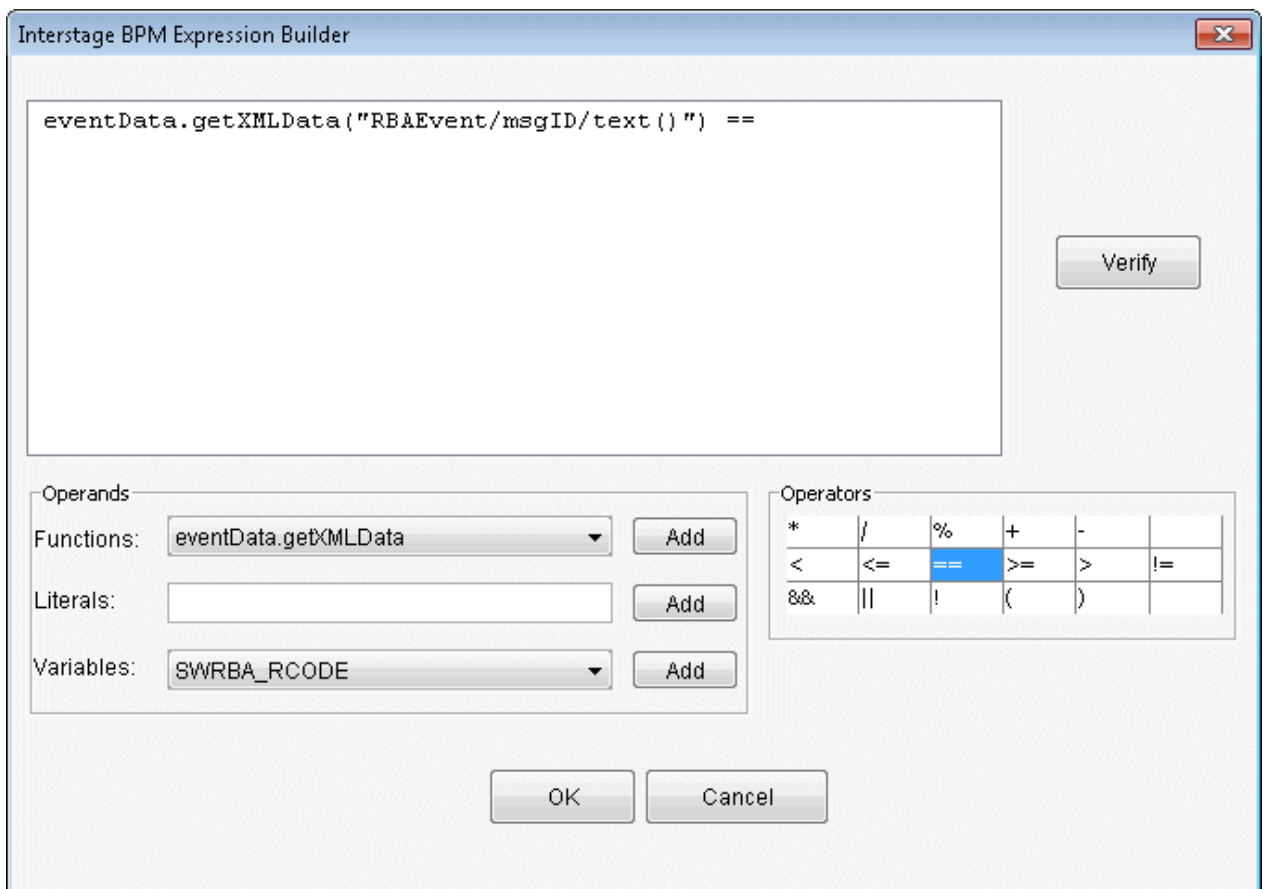


- In the **XPATH** field, enter the following XPath then click the **OK** button.

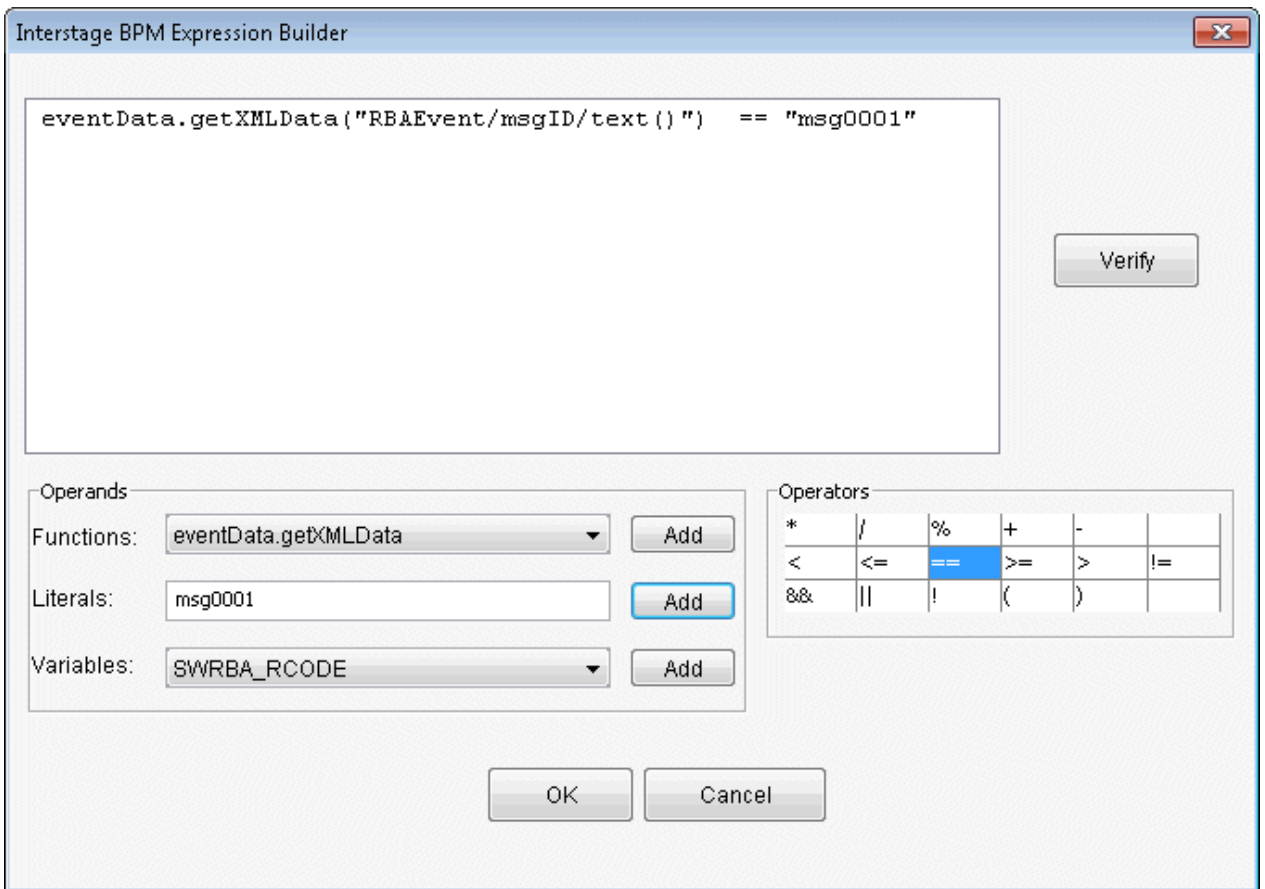
XPATH: "/RBAEvent/ID/text()"



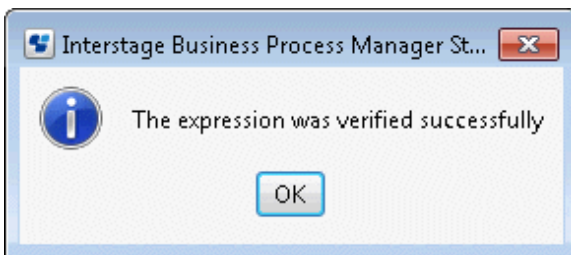
9. From Operator, click the comparison operator that will evaluate the condition. (Here, "==" has been specified)



10. In the Literals field, enter the condition then click the **Add** button. (Here, "msg0001" has been specified)

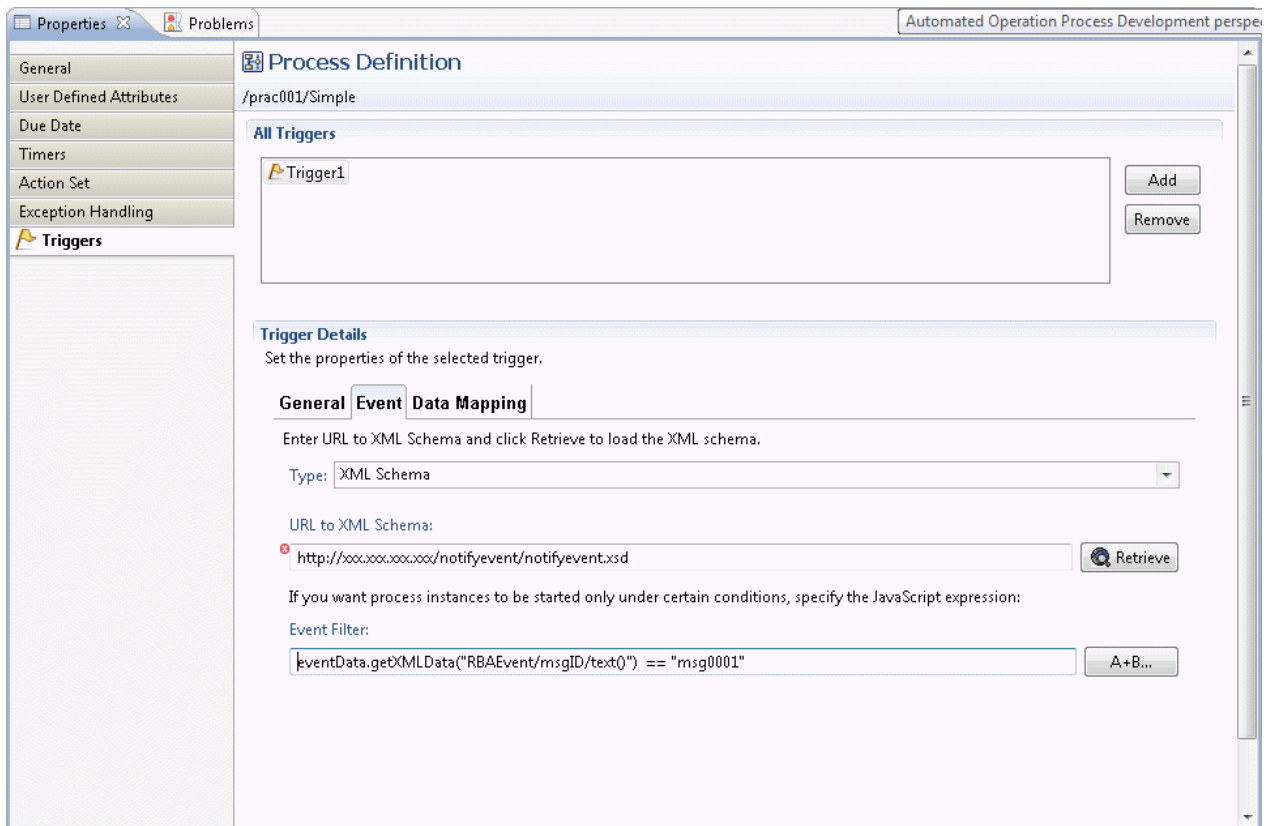


11. Click the **Verify** button to verify the expression content.
12. Click the OK button.



13. Click the **OK** button in the **Expression Builder** dialog box.

The content for the event filter that was created in the **Event Filter** field will be displayed.



Point

Specify the Automated Operation Process definition start conditions in the event filter.

The following items that are sent from the event notification command can be used as start conditions:

- Message ID
- Host name
- Comment

The evaluation results of these item values can be used as start conditions.

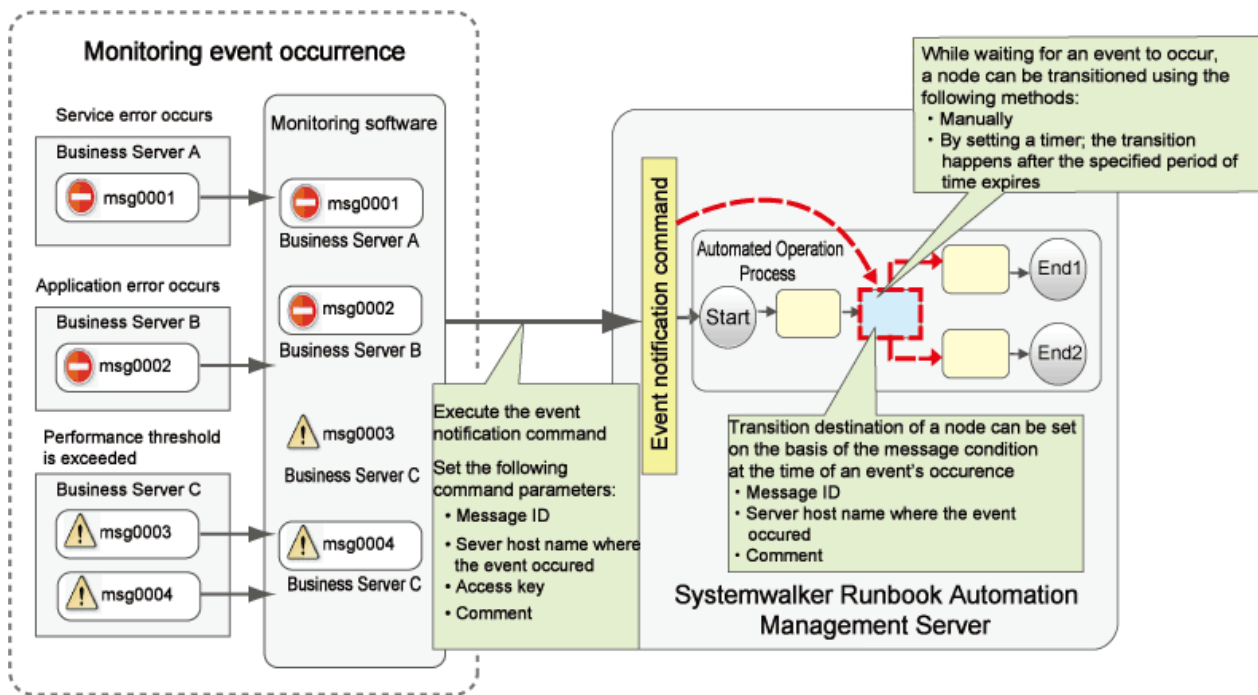
3.2.3.5 Automated Operation Processes that Transition According to Events

If the following types of events are discovered, transition of the Activity Nodes in the Automated Operation Process can occur by linking the monitoring software and the event notification command:

- Errors that have occurred on the Business Server
- Exceeding of thresholds for performance monitoring items

It is also possible to change the node transition destination automatically using the variable information contained in the event notification command.

The figure below shows the relationship between the event notification command and the monitoring software.



Note that automatic transition as a result of an event can only occur for the Activity Node.

Additionally, separate software for the monitoring of events is also required.

The procedures for node transition using the event notification command and the creation of the Automated Operation Process, for which the node transition destination changes as a result of an event, are explained in this section.

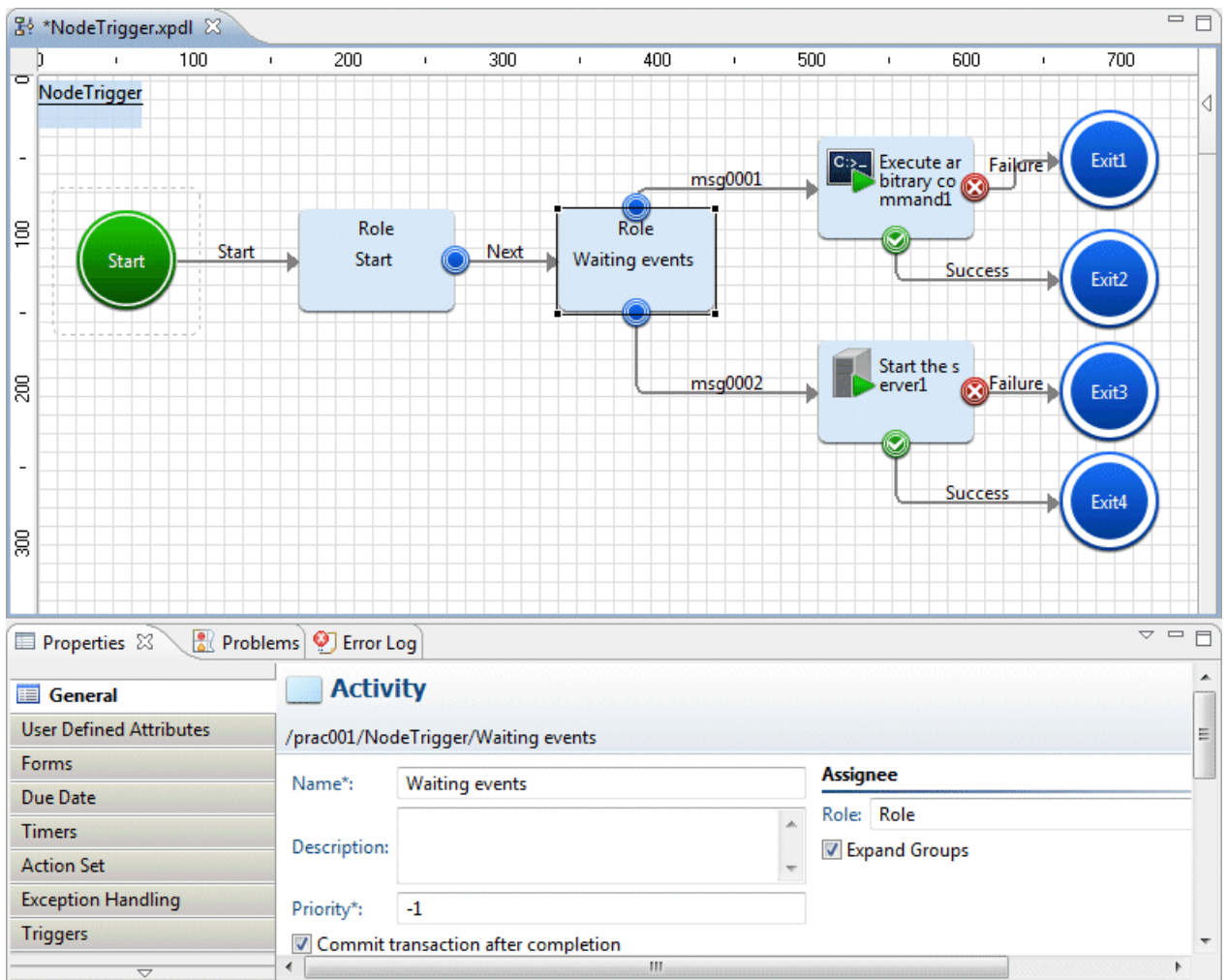
3.2.3.5.1 Creating Automated Operation Processes that Enable Node Transitions According to Events

The procedure for node transition using the event notification command is explained in this section.

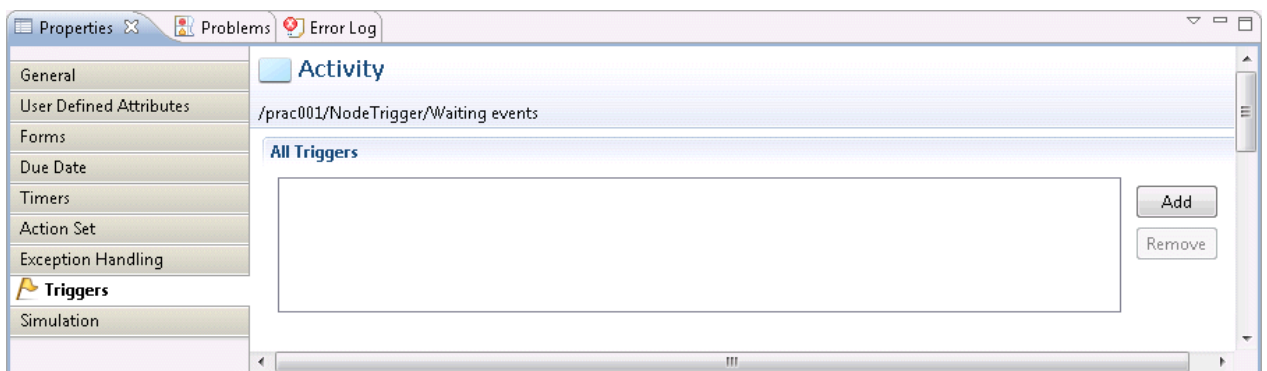
Note that, if this type of event occurs, configure the monitoring software settings so that the event notification command is executed on the Management Server using that monitoring software.

(1) Create the event filter

1. In the Process Definition Editor, create the process definition and select the automatic transition target Activity Node.

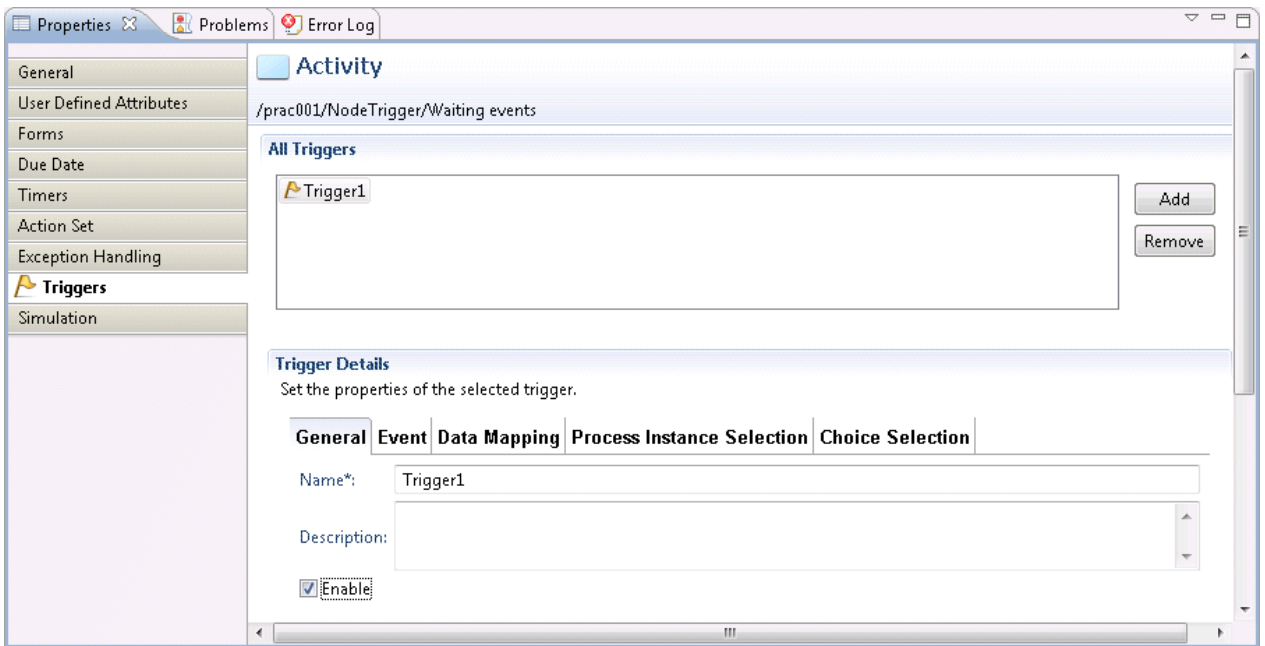


2. Click **Properties >> Triggers**.



3. Click the **Add** button.

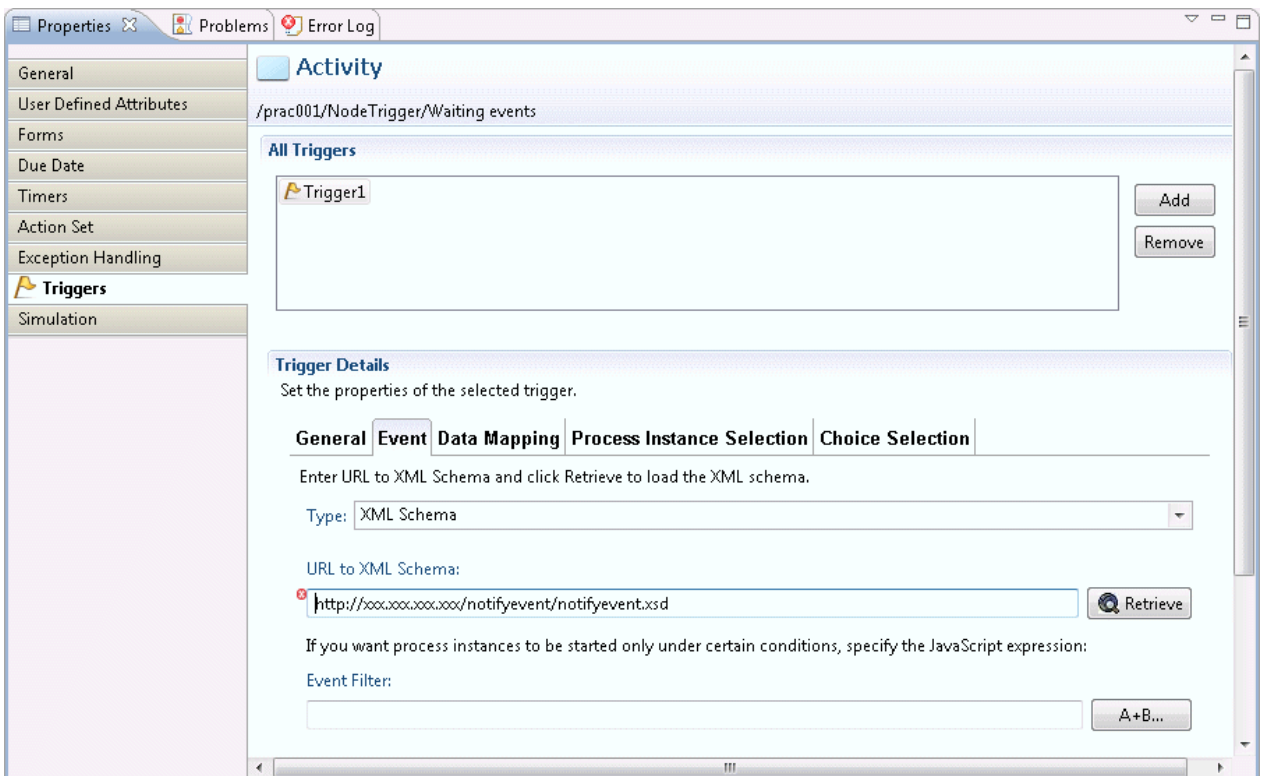
4. In the **All Triggers** section, click the **General** tab and select the **Enable** check box.



5. Click the **Event** tab, and configure the following settings:

Type: XML schema

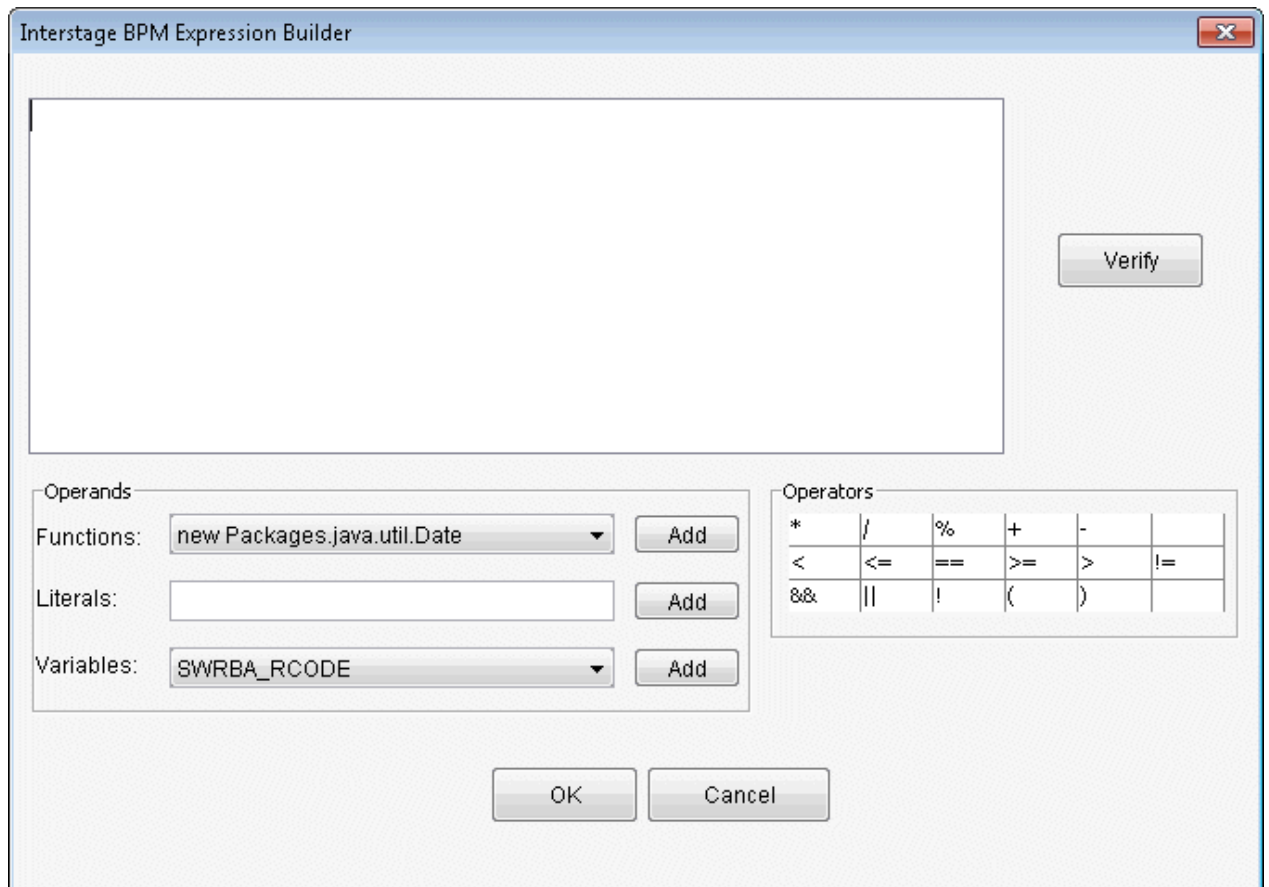
XML schema URL: `http://[IP address or host name of the Management Server]:[Port number of the Management Server (Web server)]/notifyevent/notifyevent.xsd`



6. Click the **Retrieve** button.

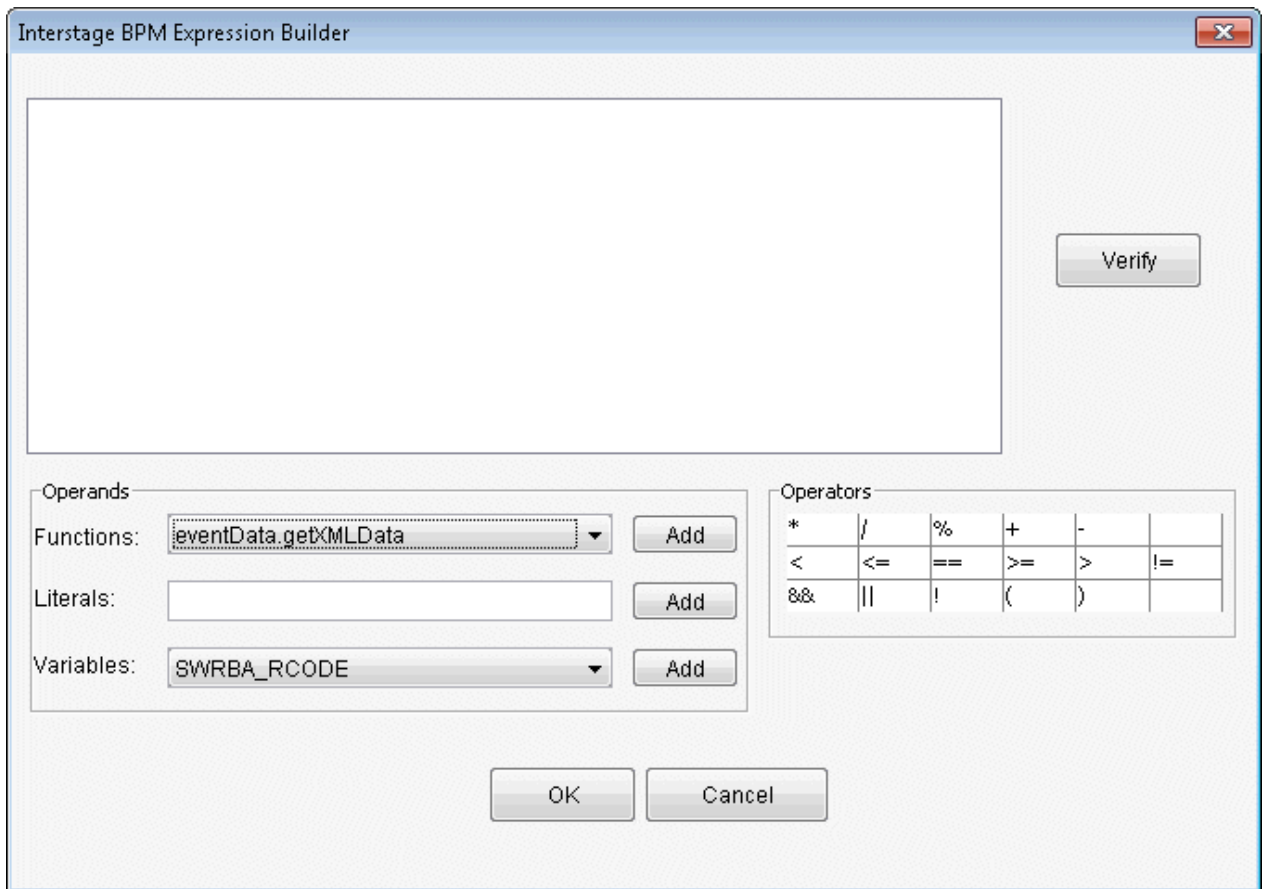
7. Click the **A+B** button to set the Activity Node transition condition for the **Event Filter**.

The **Expression Builder** dialog box will be displayed.



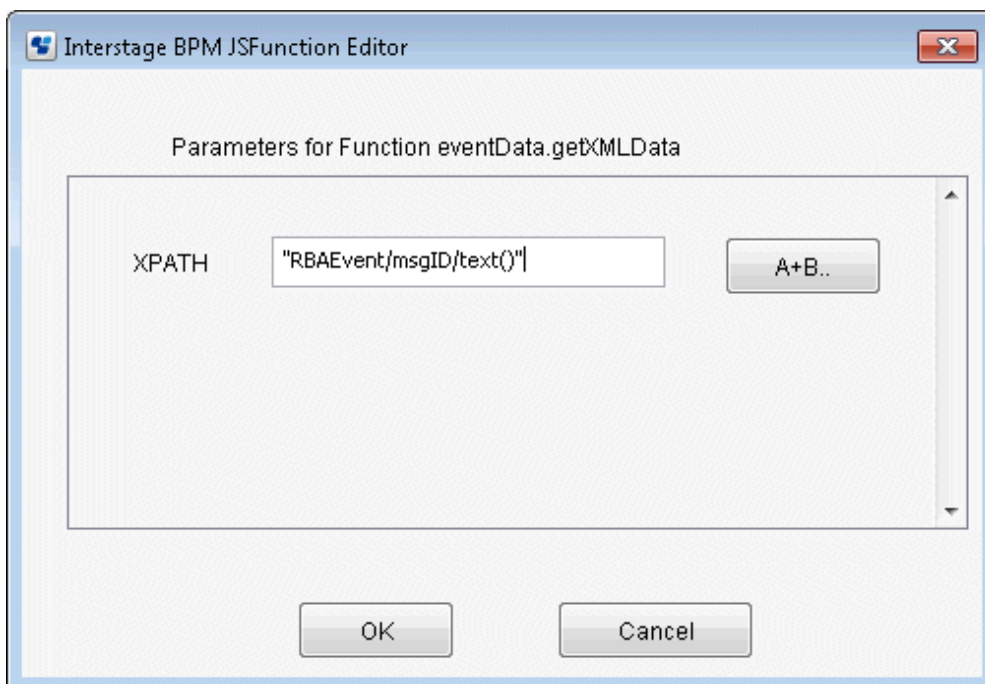
- From the **Functions** combo-box, select **eventData.getXMLData** and click the **Add** button.

The **Interstage BPM Expression Builder** dialog box will be displayed.

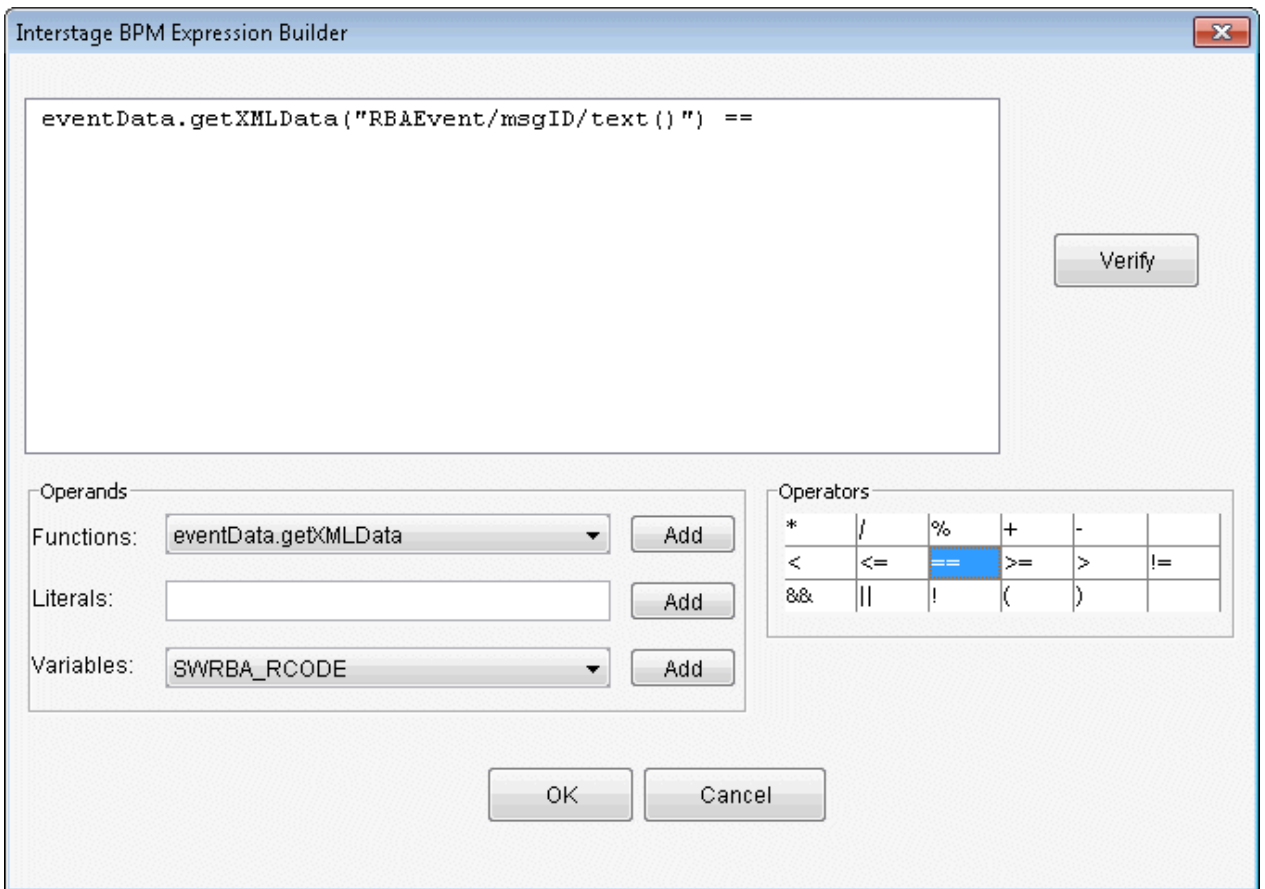


- In the **XPATH** field, type the following XPath and click the **OK** button.

XPATH: "RBAEvent/msgID/text()"

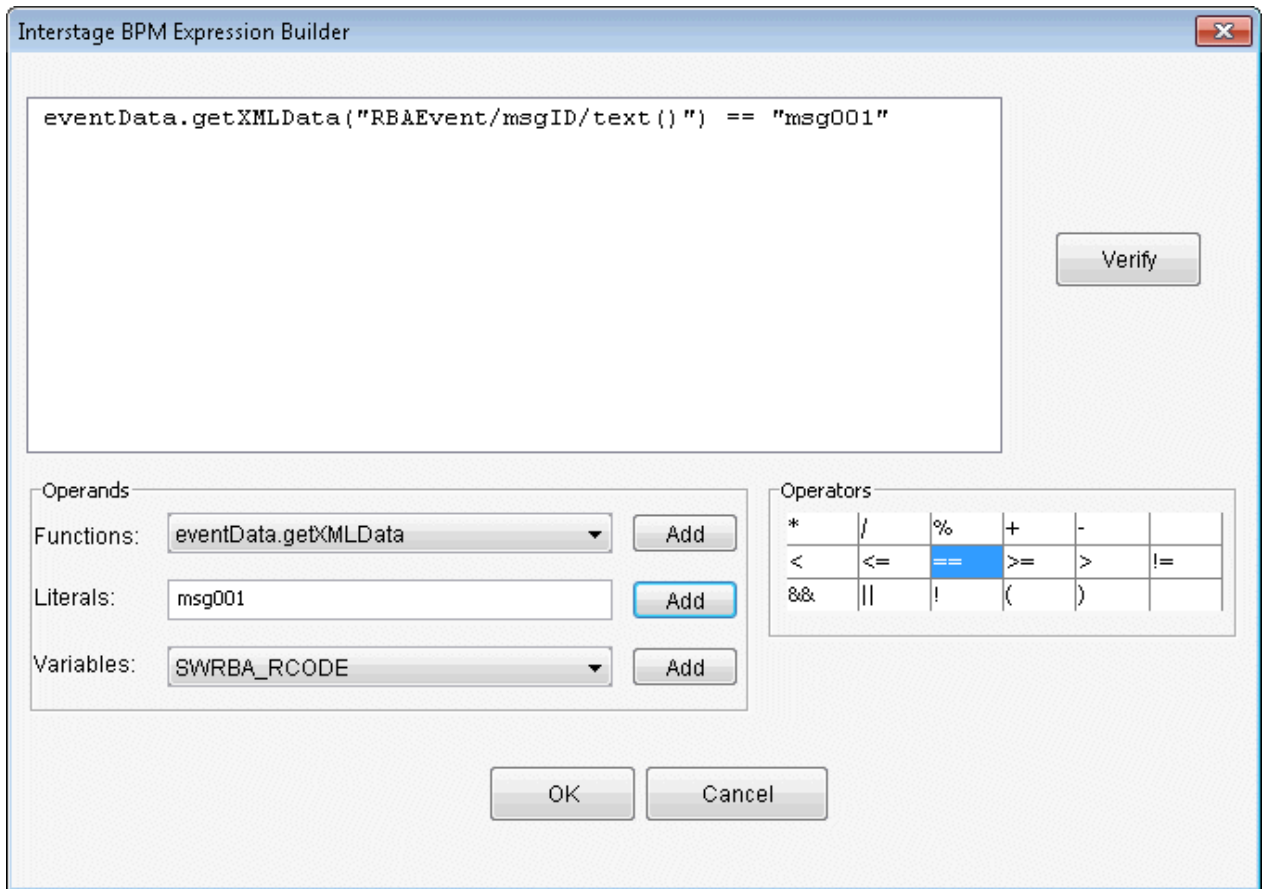


10. From **Operators**, click the inequality sign that will evaluate the condition. (Here, "==" has been specified.)

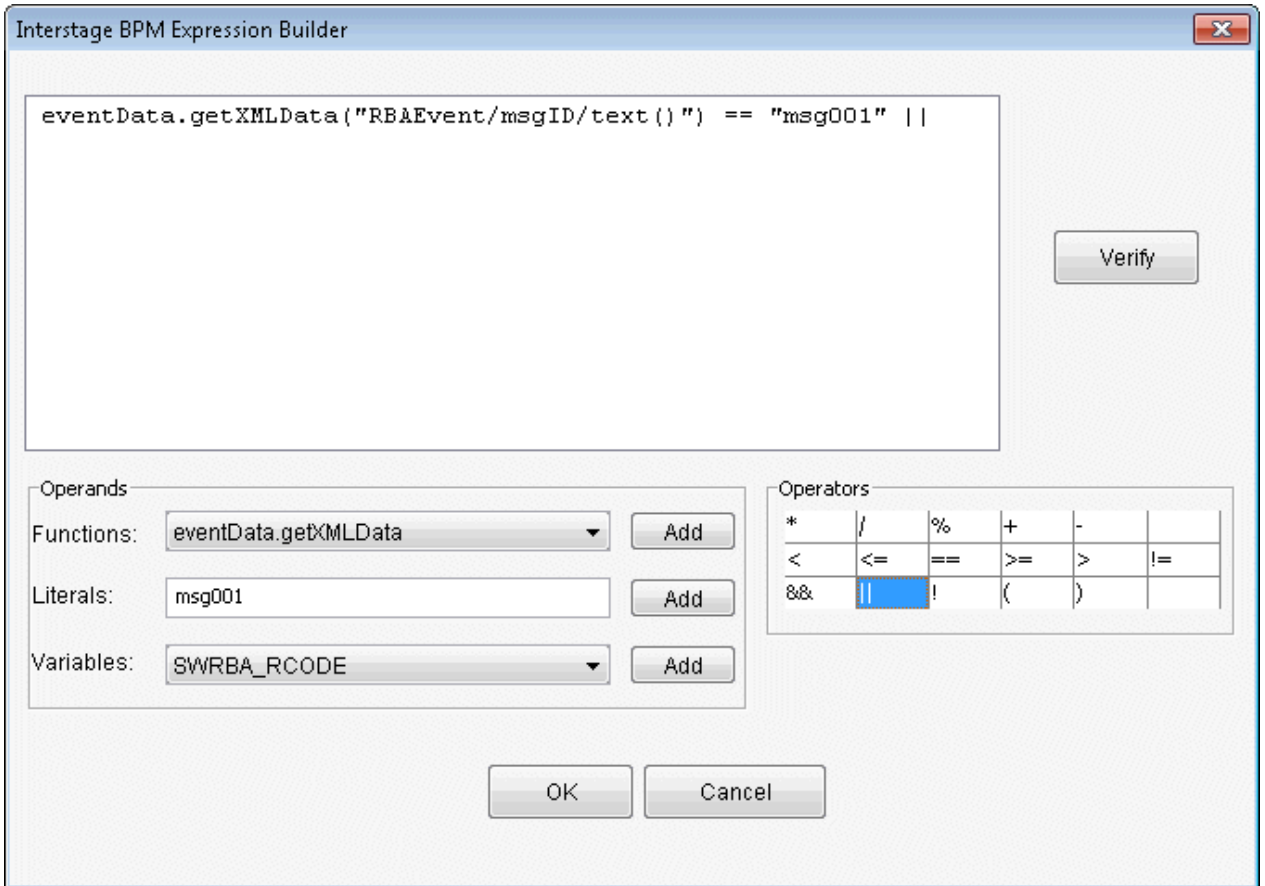


11. In the **Literals** field, type the condition and click the **Add** button. (Here, "msg0001" has been specified.)
If the following characters are used in the condition, use the \" escape sequence.

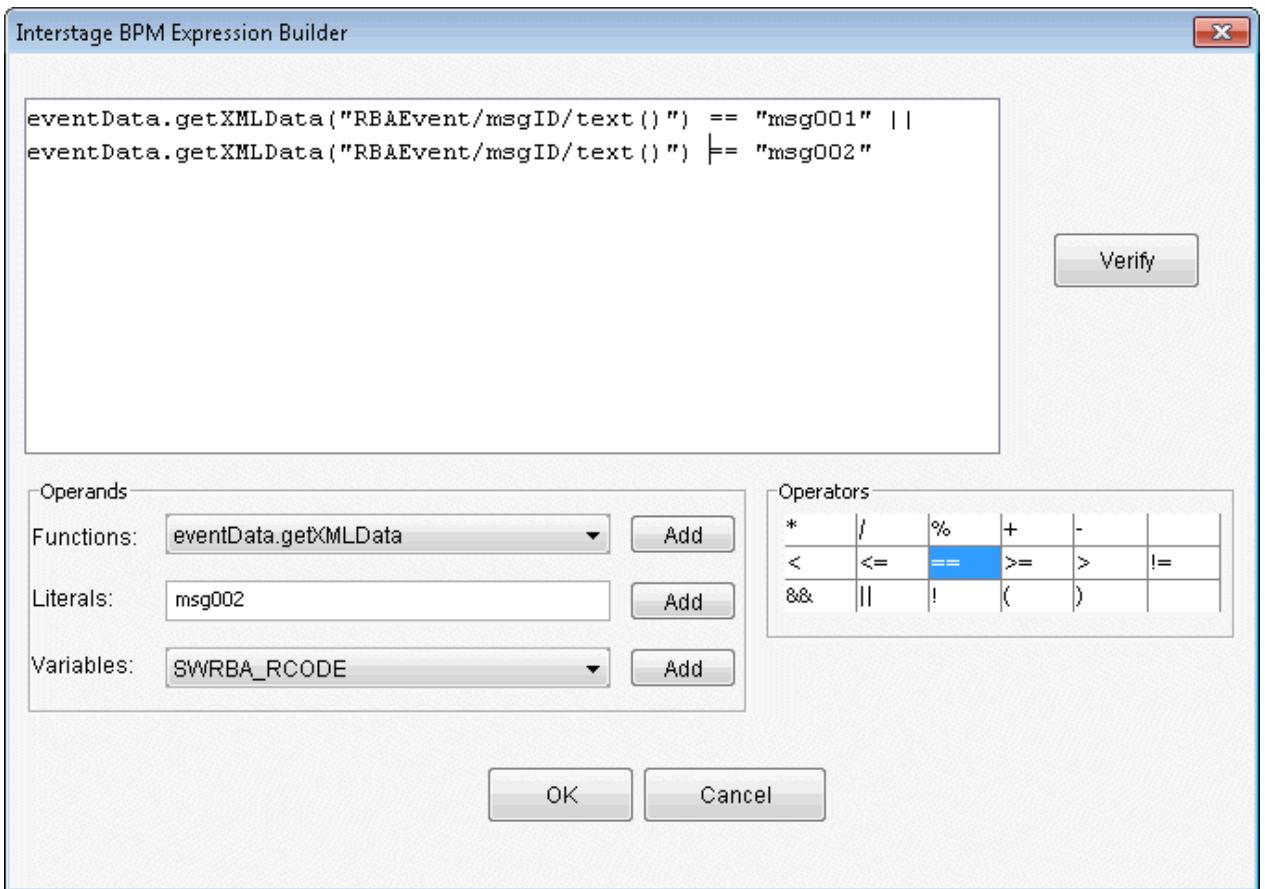
\",'



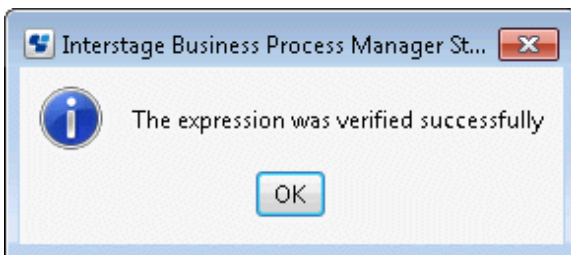
12. Add operator to the expression that was created, and click the "||" operator that will evaluate the condition from **Operators**.



- Using the same procedure as for the msg0001 expression, add the msg0002 condition expression.

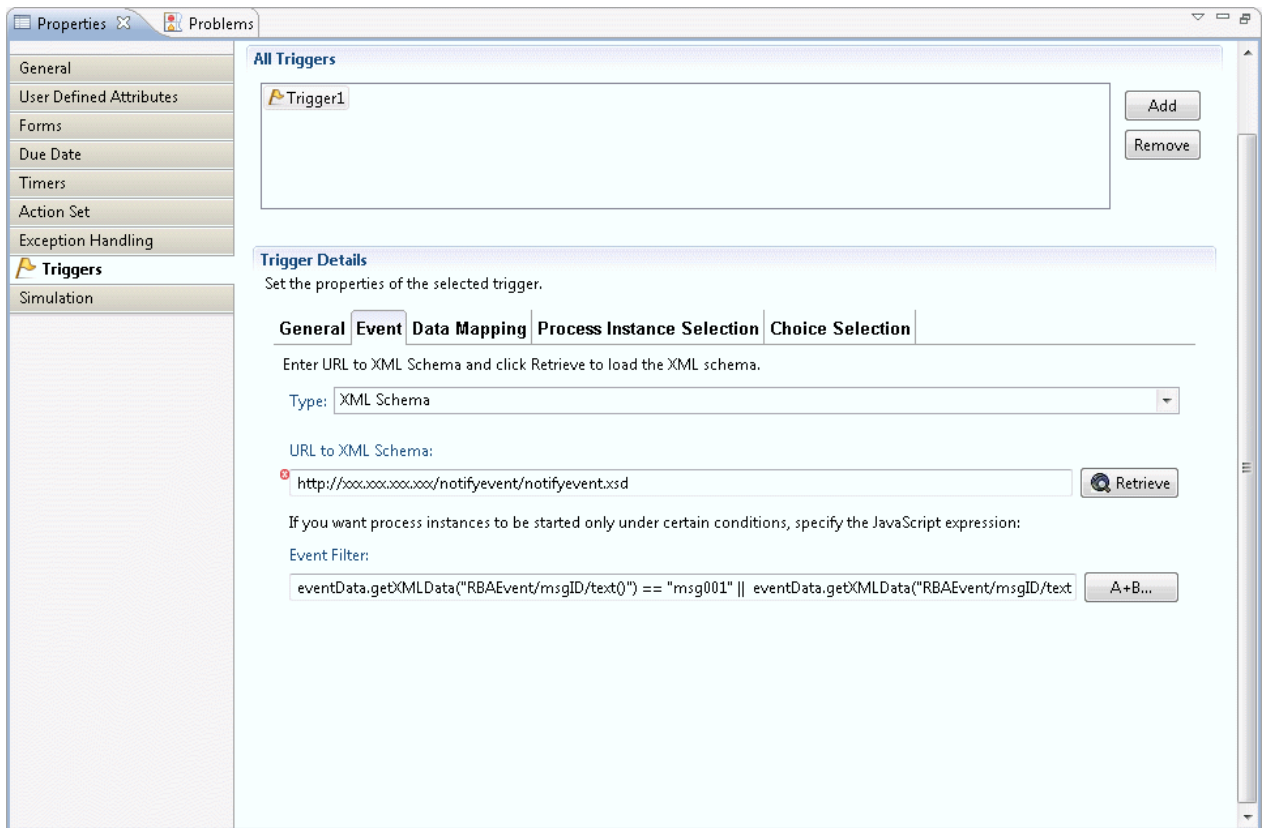


- Click the **Verify** button to verify the expression.
- Click the **OK** button.



16. Click the **OK** button in the **Expression Builder** dialog box.

The content for the event filter that was created in the **Event Filter** field will be displayed.



Point

Specify the Automated Operation Process definition start conditions in the event filter.

The following items that are passed from the event notification command can be used as start conditions:

- Message ID
- Host name
- Comment

The evaluation results of these item values can be used as start conditions.

(2) Node transition

1. From the Automated Operation Process Group list displayed in **System Administration >> Process Group Settings** of the Web console, select the Automated Operation Process Group containing the Automated Operation Process to transit.

The screenshot shows the 'System Administration' interface. On the left is a navigation menu with 'Process Group Settings' selected. The main area displays a table of 15 process groups. The 'NodeTrigger' group is highlighted. Below the table, the 'Details' tab for 'NodeTrigger' is open, showing fields for State (Offline), Name (NodeTrigger), Description (This is NodeTrigger application), and Owner Group (AdminRole). At the bottom of the details panel, there are several action buttons including 'Access Key'.

Id	Name	Owner Group	State
NodeTrigger	NodeTrigger	AdminRole	Offline
prac001	prac001	AdminRole	Online
RESTTest	RESTTest	AdminRole	Online
System	System	AdminRole	Online
TestApp	TestApp	AdminRole	Online

2. Click **Access Key** in the **Details** tab of the Automated Operation Process group and obtain the access key.
The access key is information that identifies the Automated Operation Process that is to be started from an event.

The dialog box titled 'Access Key For Process Group:NodeTrigger' shows the following information:

Access Key will expire on : July, 12 2012 18:07:32

```
**BEGIN_KEY--{{ezsGjLOinOSbrr7HJD65ksBT2o7X2vXhCp7f2iqAqhnboFDfj5le+Y6A1c/YBUaSo6M/IXYNdHA5
N4Pvd6NI69OYtw9XrefsuB7y1GpjGoPrZKUzdsFXrYI4kb6msLMdrkjVKTxh4Dj/+16z2yX/w==
}}--END_KEY**
```

Buttons: Copy To Clipboard, Close

P Point

The expiry for the access key is one year from the day on which the process group was registered in the Management Server.
When the access key expires, a user with administrator privileges should obtain a new access key from the Web console.

- Configure the message ID, host name, and access key as the event notification command parameters so that the event notification command is executed on the Management Server, using the monitoring software, when the monitored event occurs.

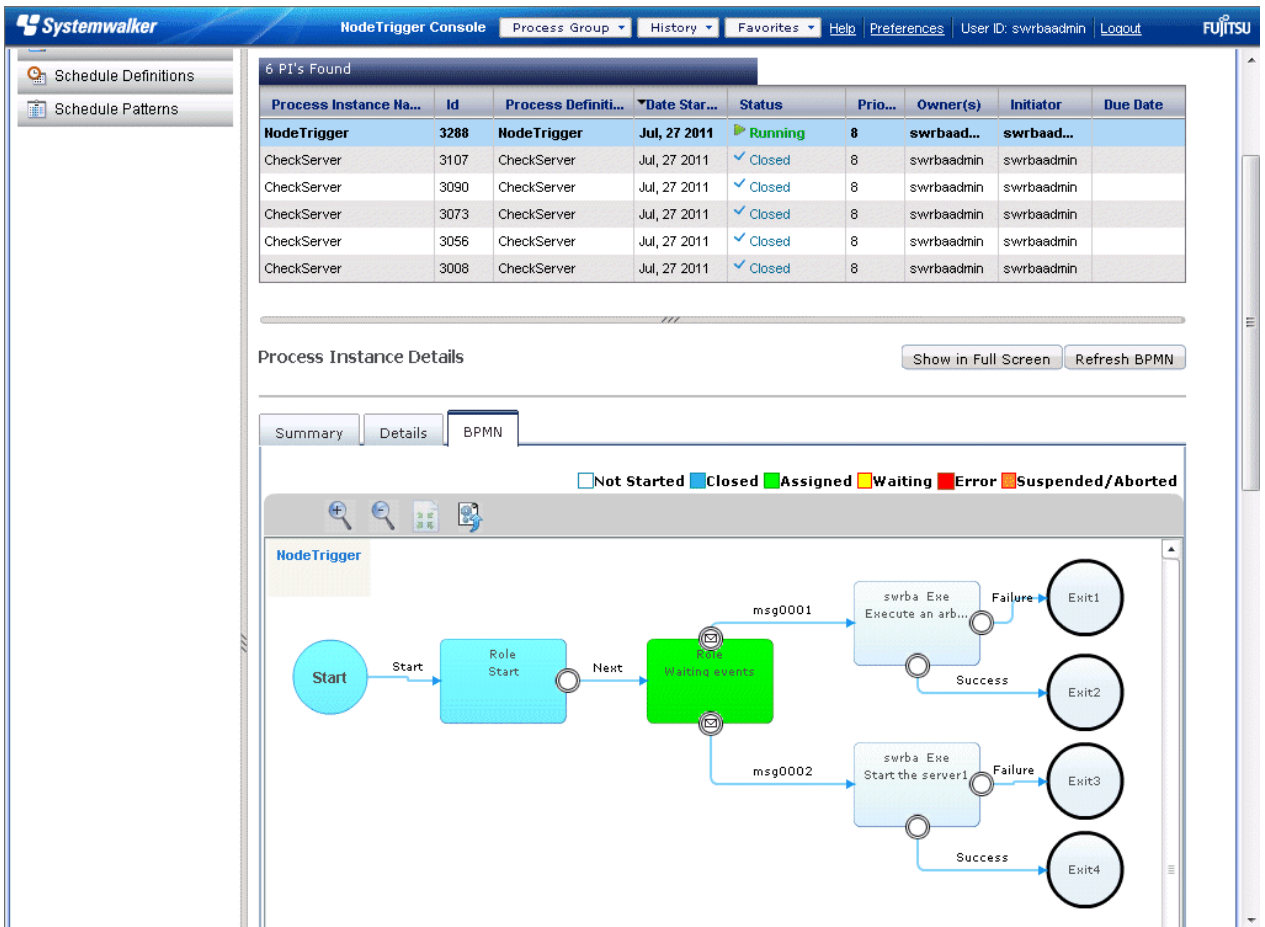
Example: If the message ID for the event that occurred is "msg0001" and the host name of the server on which the event occurred is "test":

```
swrba_notifyevent -msgID msg0001 -host test -comment "database error" -key "***BEGIN_KEY--
{{ezsGjLOinOSbrr7HJD65ksBT2o7X2vXhCp7f2iqAqhnboFDFj5le+Y6A1c/YBUaSo6M/IXYNdHA5
N4Pvd6NI69OYtw9XrefsuB7y1GpjGqbzssIr0SNNjn6x5q5oCsDdrkjVKTxh4Dj/+16z2yX/w==}}--END_KEY***"
```

Refer to "swrba_notifyevent (Event Notification Command)" in the *Systemwalker Runbook Automation Reference Guide* for information on the event notification command.

- Start the process instance, then advance the process instance as far as the node on which the event filter is set.

Node transitions will take place when the event notification command is issued.



- Refer to "7.8 Checking Automated Operation Processes" for information on how to check the results of the node transition.

3.2.3.5.2 Creating the Automated Operation Process for which the Node Transition Destination Changes as a Result of an Event

The configuration procedure used so that the transition destination changes according to the message ID value when the message ID for the event that occurred is "msg0001" or "msg0002" is explained in this section.

Node transition is performed by the execution of the event notification command when an event occurs.

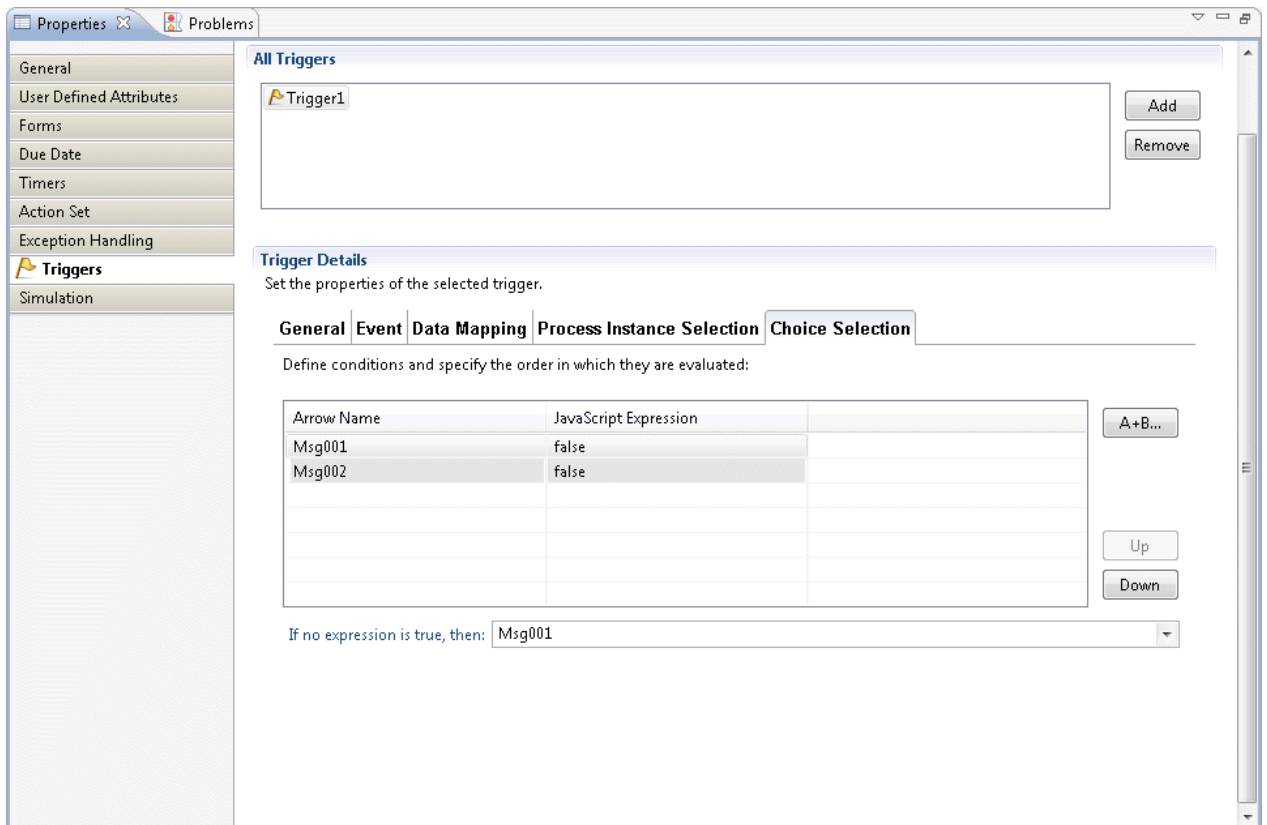
The following information can be passed as arguments to the event notification command, and this information can be used in the Automated Operation Process:

Argument name	Meaning	XPath (Note 1)
msgID	Message ID for the event that occurred	"RBAEvent/msgID/text()"
HostName	Name of the host on which the event occurred	"RBAEvent/HostName/text()"
Comment	Comment	"RBAEvent/Comment/text()"

Note 1: XPath is the format defined in the process definition for when the information specified in the event notification command is referenced.

1. Click the **Triggers** tab on the Activity Node on which the event filter is set, then select the **Choice Selection** tab of the **Trigger Details** section.

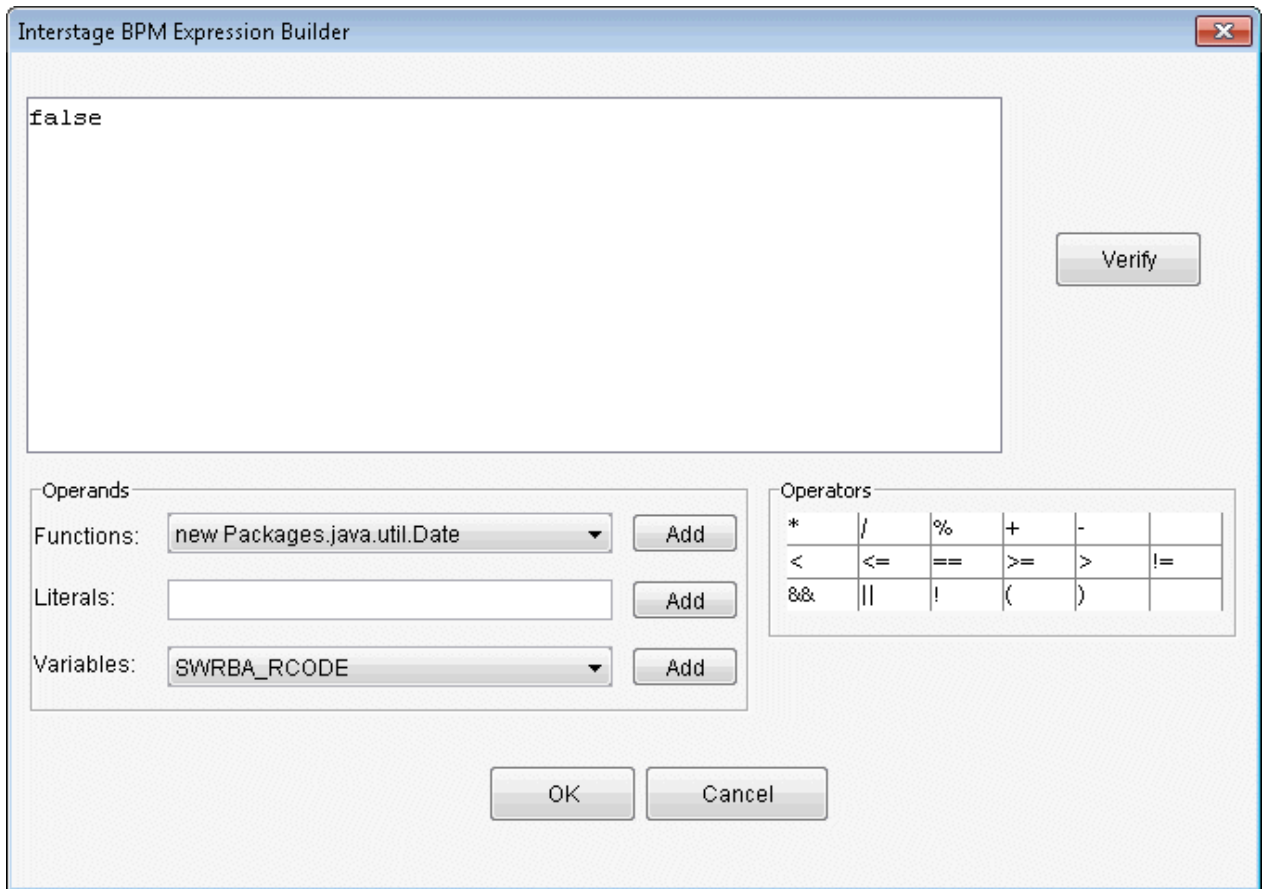
The list of arrows that are added to the Activity Node are displayed.



2. To set the transition destination selection condition JavaScript expression (condition expression), select the arrow from the list of arrows, then click the **A+B** button.

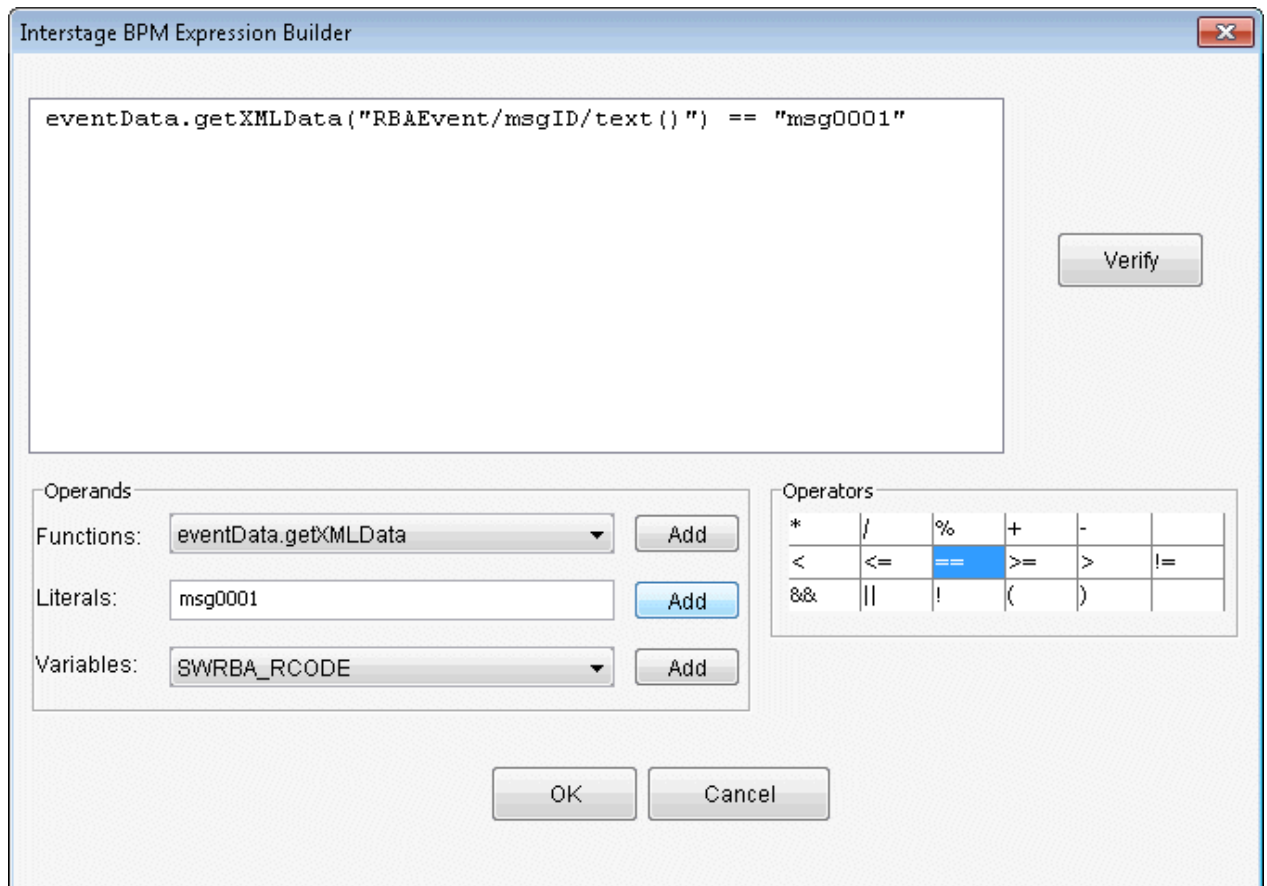
The **Expression Builder** dialog box will be displayed.

Here, the condition expression is created so that transition occurs to "msg0001" when the Activity Node arrow is "msg0001" and the message ID value when the message ID for the event that occurred is "msg0001".



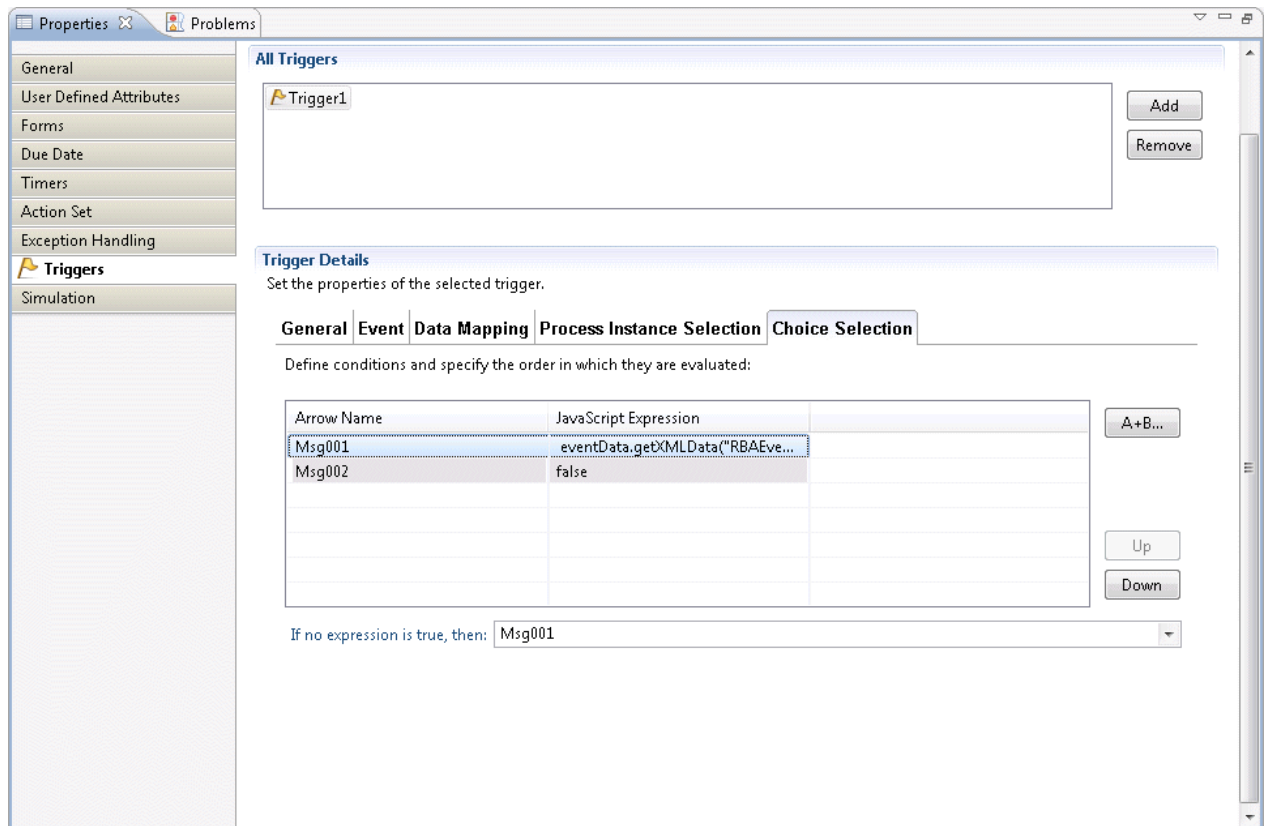
3. In the **Interstage BPM Expression Builder** window, create the condition expression using the same procedure as for the creation of the event filter expression.

Note that if a conditional expression has already been set, the conditional expression should be deleted before creating a new one.



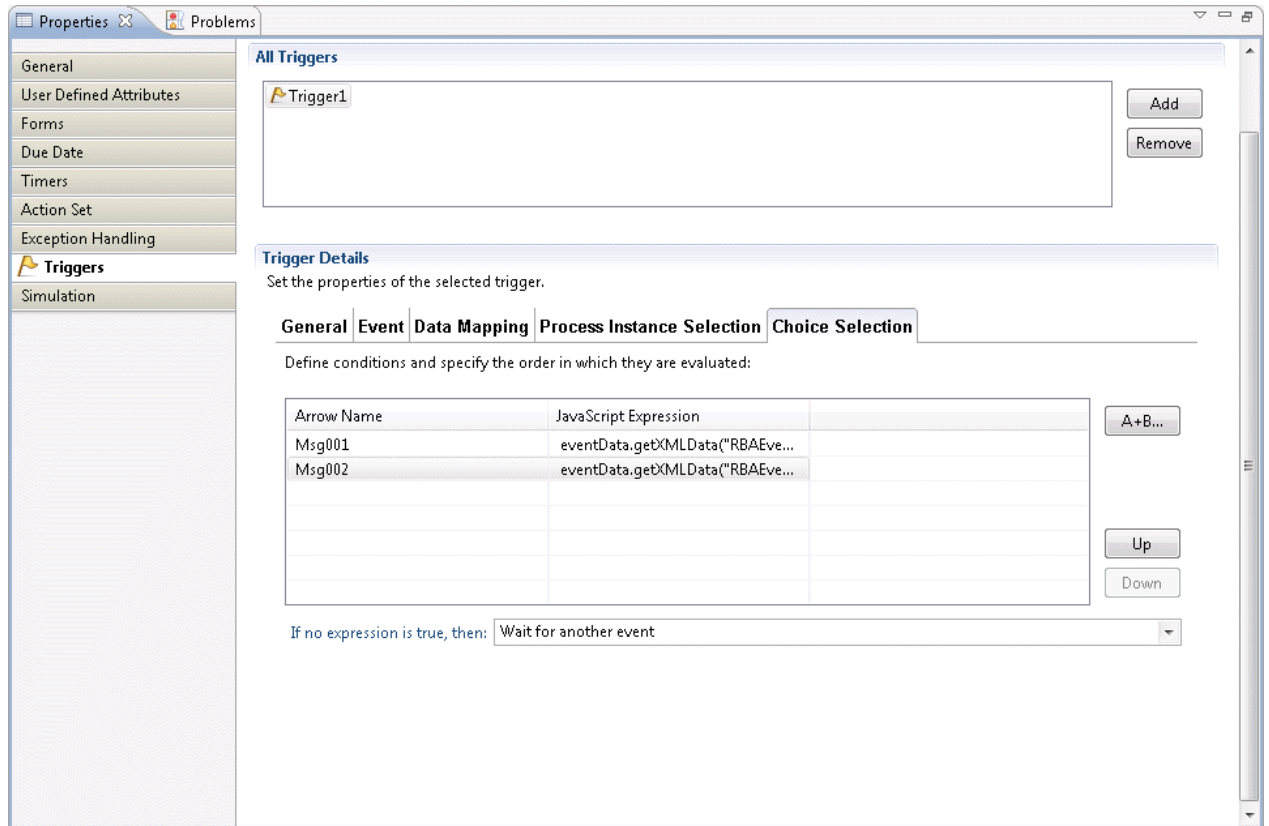
4. Click the **OK** button in the **Expression Builder** window.

The content for the condition expression that was created in the **JavaScript Expression** field will be displayed.



5. Using the same procedure, create the condition expression for arrow "msg0002".

In this example, the condition expression is created so that transition occurs to "msg0002" when the Activity Node arrow is "msg0002" and the value for the RBAEvent/msgID element of the XML data sent when the event was monitored is "msg0002".



6. In the **If no expression is true, then** field of the **Trigger Details** section, the behavior that will apply can be selected for when an event occurs that does not match the condition expression. The items that can be selected are as follows:

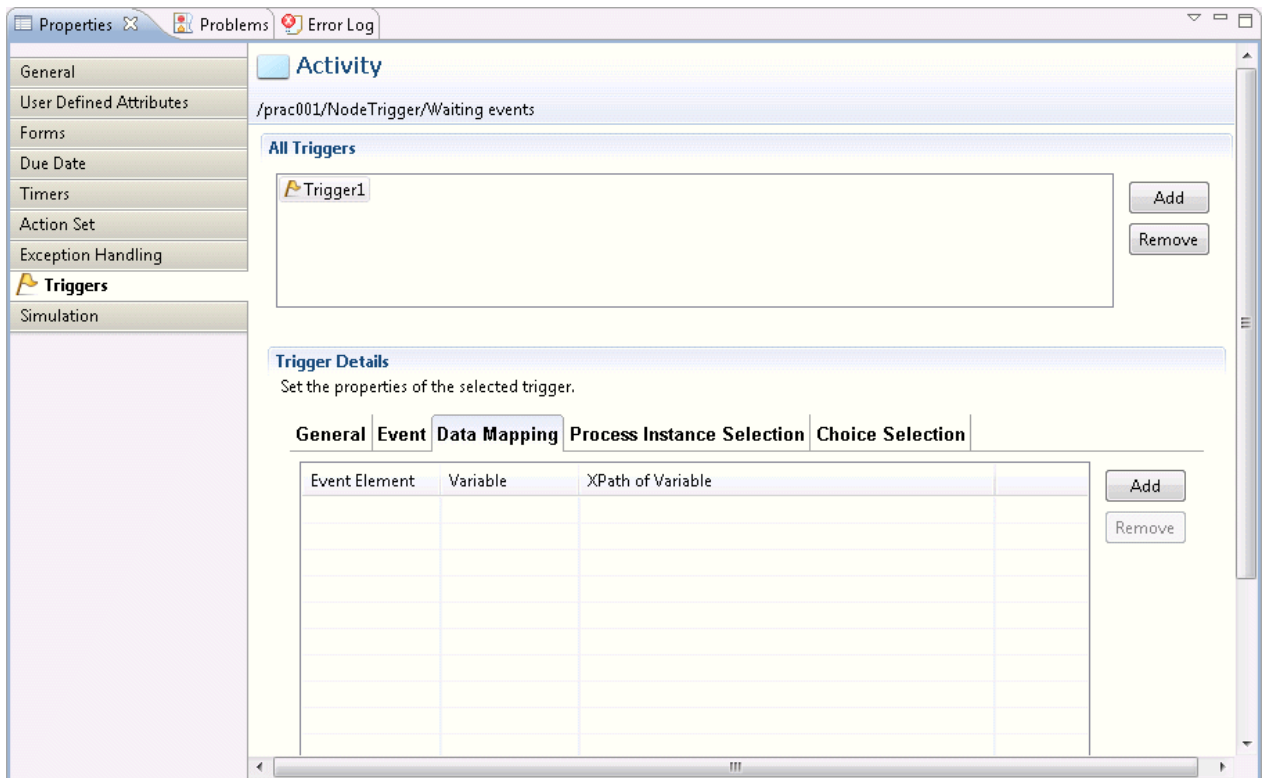
- **Arrow Name:** Node transition occurs for the specified arrow
- **Wait for another event:** Node transition does not occur for any arrows

3.2.3.5.3 Using Various Event Notification Command Items

Items passed using the event notification command can be mapped to the UDA.

By mapping them to the UDA, items can also be used as operation component input values.

1. Select the **Triggers** tab on the activity on which the event filter is set, then select the **Data Mapping** tab of the section.

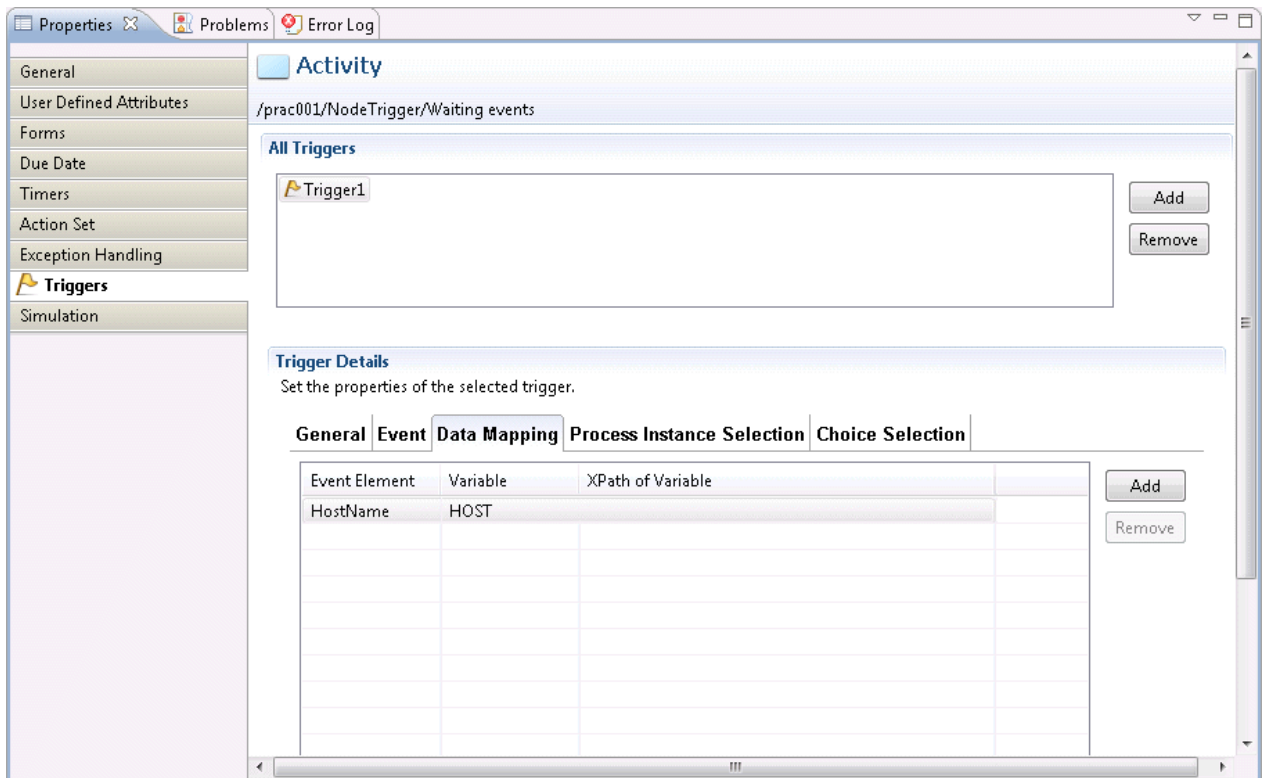


2. Click the **Add** button, and select the items shown below from the drop-down list:

Here, the host name is mapped as UDA name: HOST.

- Event element: The various RBAEvent element items of the XML data sent when an event occurs can be selected:
 - HostName: Host name
 - msgID: Message ID
 - comment: Comment

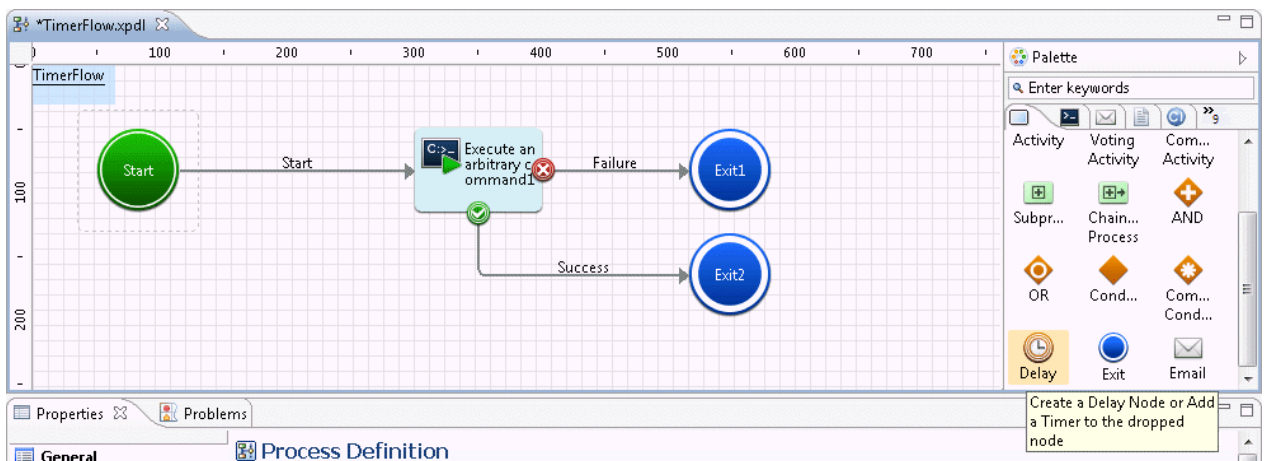
- Variable: UDA name



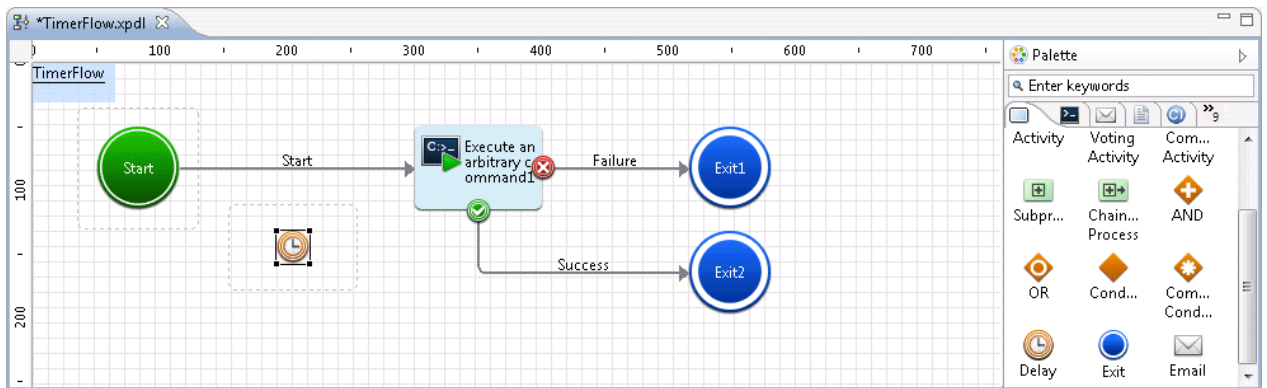
3.2.3.6 Automated Operation Processes That Will Change in Response to a Timer

The procedure that is used to create the automated operation process that will execute the command after the automated operation process has started and is delayed for the time that was set is shown below.

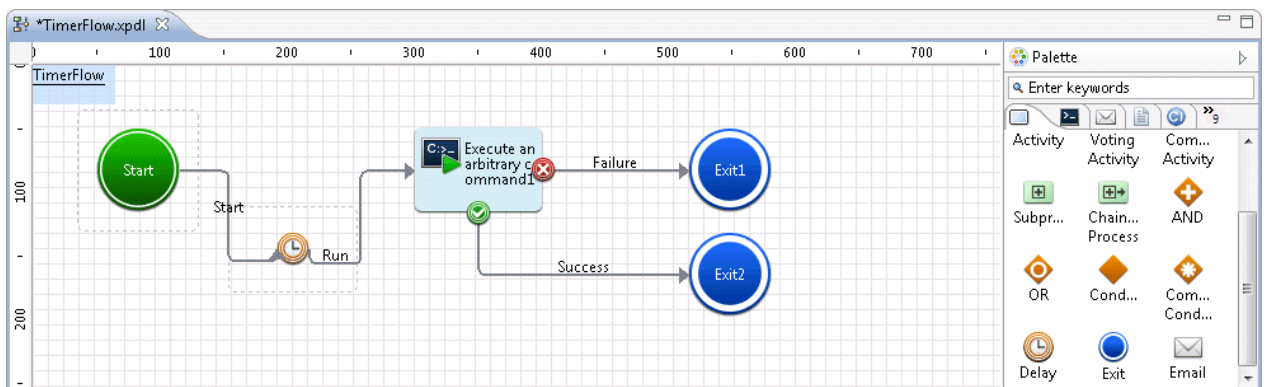
1. Click the **Delay** in the **Event** folder under the **Basic** tab of the **Palette**.



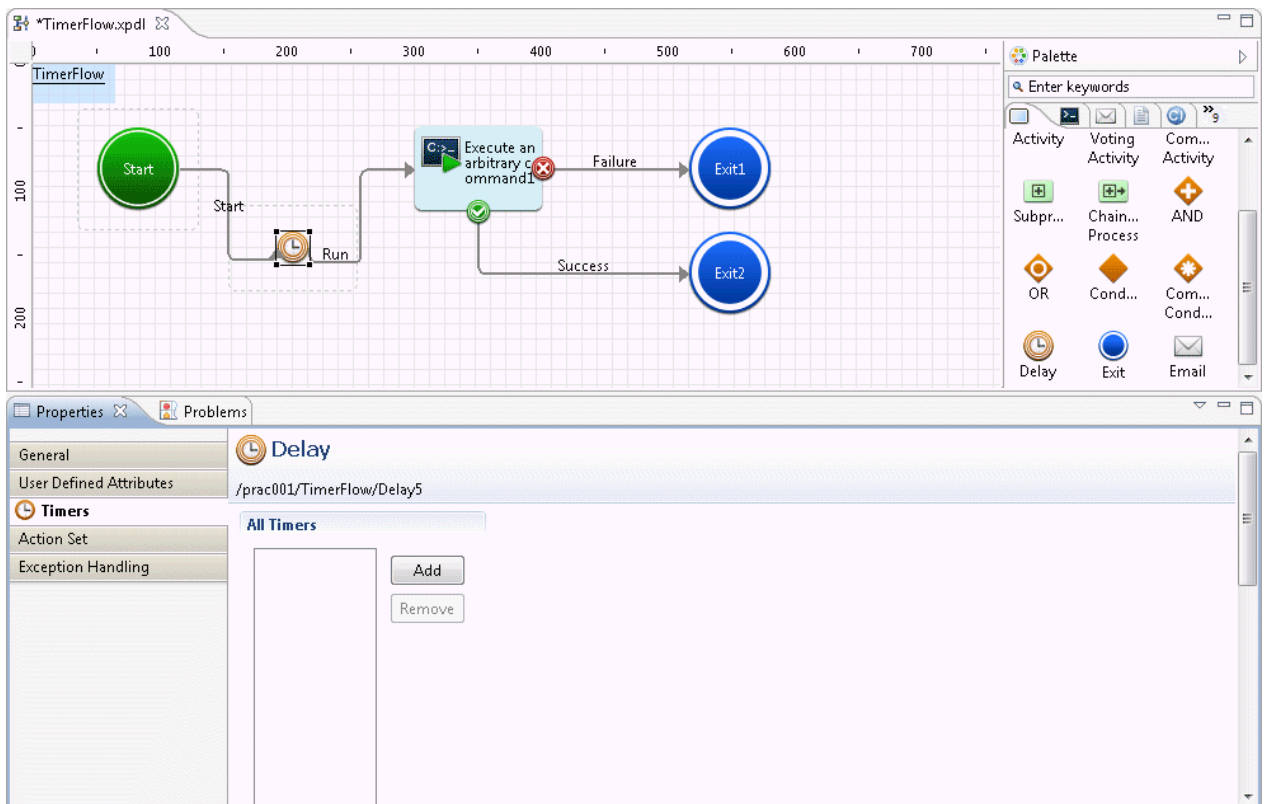
2. On the Process Definition Editor, add the Delay Node by pointing and clicking the area where it should be placed.



3. Each node is joined by an arrow. Set an arrow name if necessary.



4. Select the Delay Node that was placed on the Process Definition Editor and click the **Properties >> Timers** tabs.

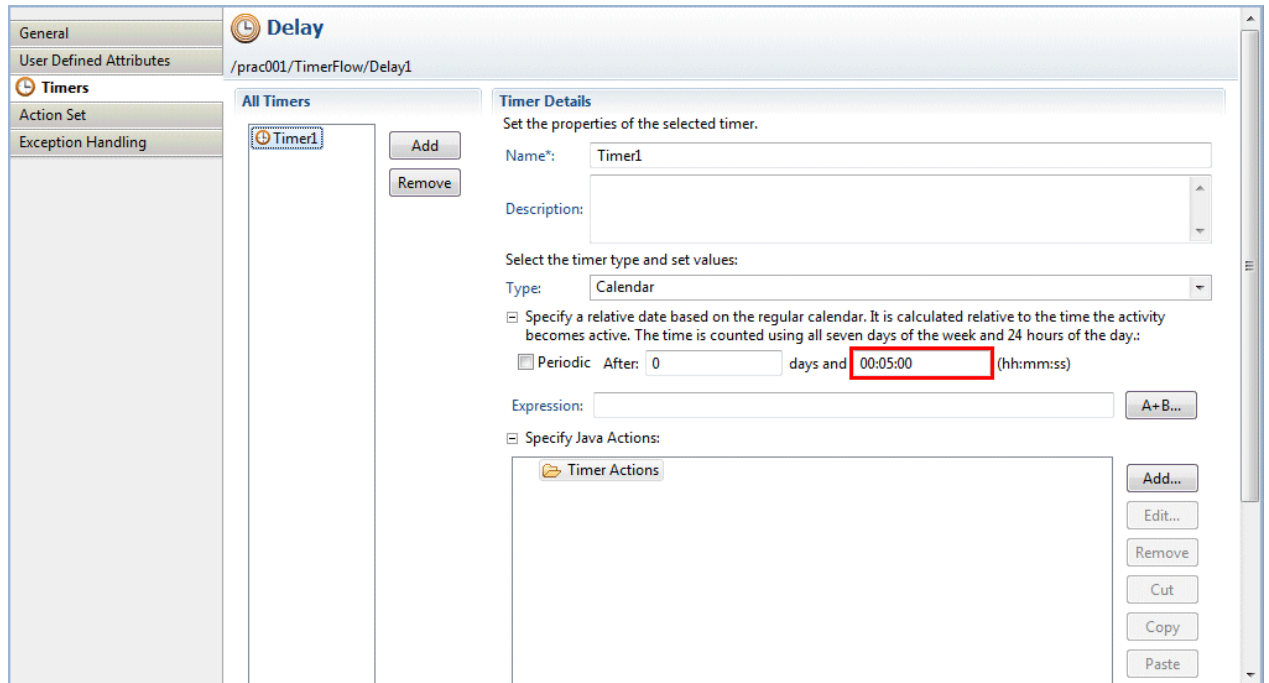


5. Click the **Add** button.

The Timer Details window will be displayed.

6. Change the timer name if necessary, then set the waiting time.

Here, the delay has been set as a period of 5 minutes. Refer to "Defining Timers" in the "*Systemwalker Runbook Automation Studio User's Guide*" for information on how to set the delay time.



3.2.3.7 Parallel Execution of Operation Components

Multiple operation components can be executed in parallel within a single Automated Operation Process.

The procedure for creating an Automated Operation Process that is to execute two operation components in parallel is explained below.

Note

- In parallel execution of operation components, OR nodes and AND nodes must be used. Parallel execution that does not use OR nodes and AND nodes cannot be guaranteed.
- The running time of each operation component will vary according to the contents of the tasks to be implemented, so the order of parallel execution cannot be guaranteed.

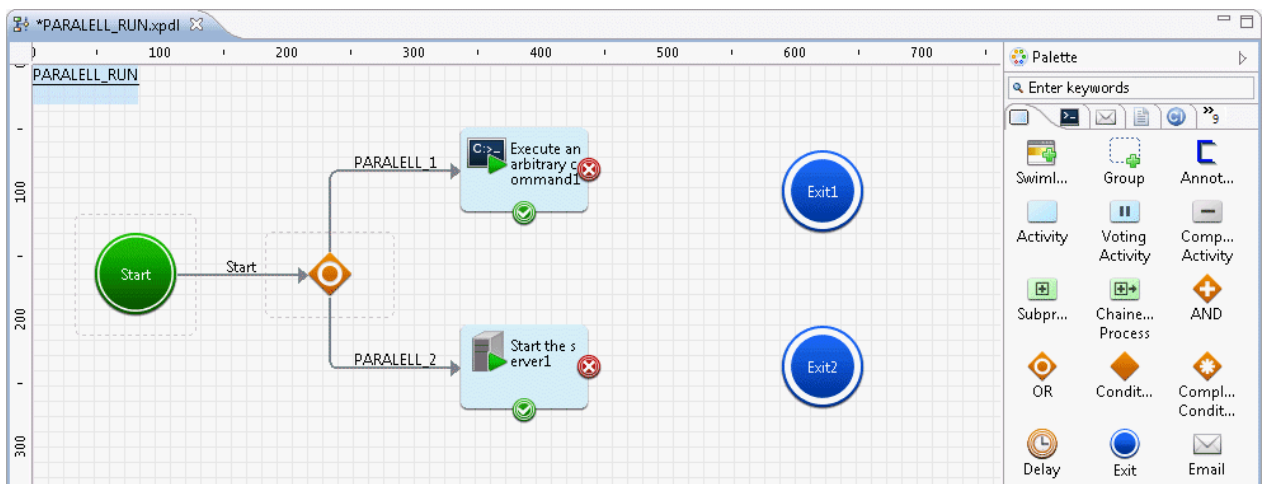
1. In the Process Definition Editor, position the operation component nodes that are to execute in parallel, and click the **OR** in the **Route** folder under the **Basic** tab of the **Palette**.



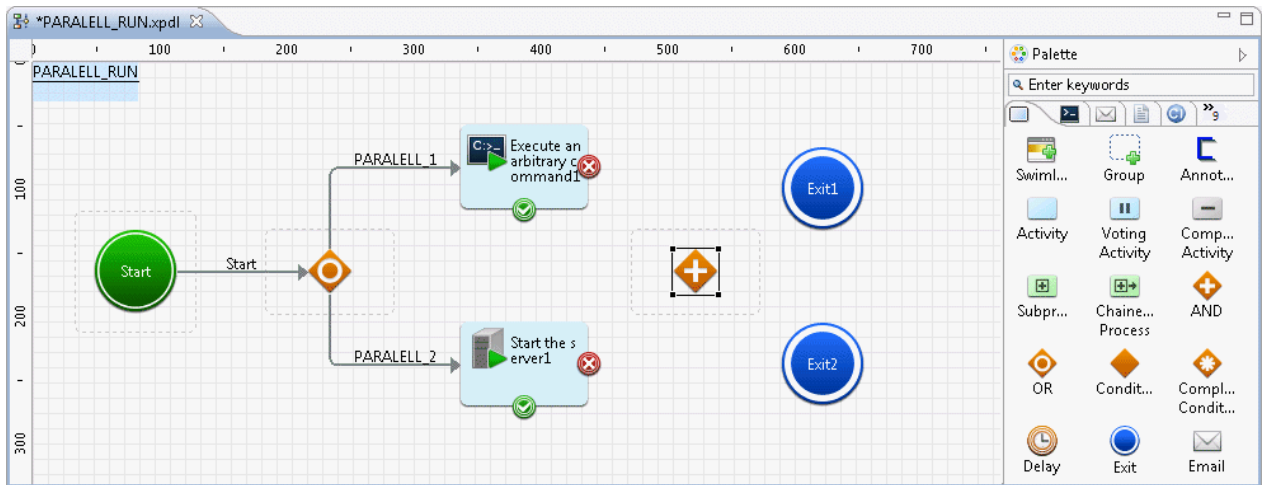
2. In the Process Definition Editor, move the cursor to the location where you want to place the OR node and click to add the OR node. Ensure that the OR node is positioned before the operation component nodes that are to execute in parallel.



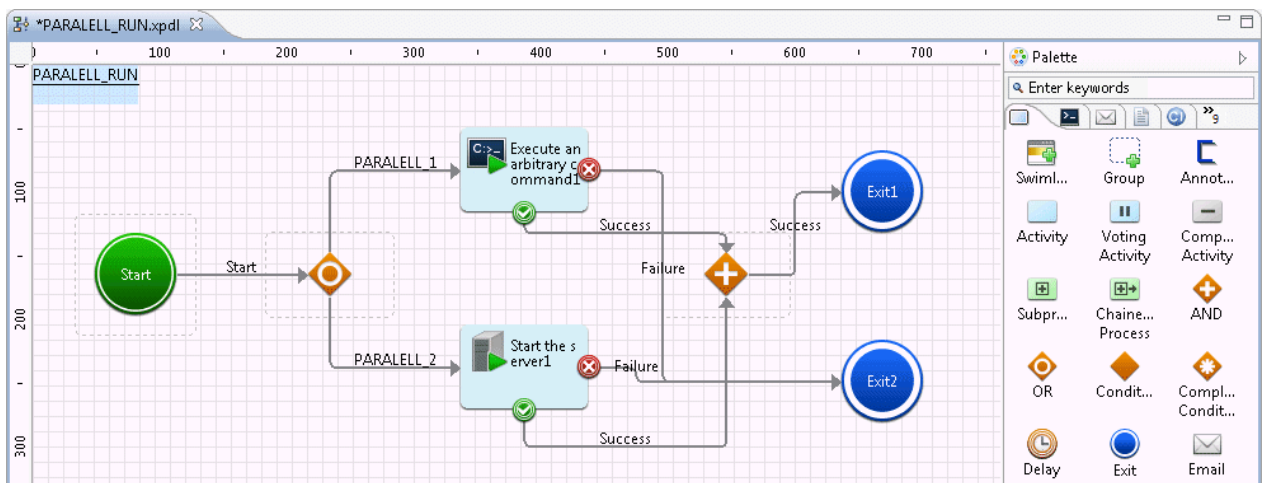
3. Use arrows to connect the nodes. Set names for the arrows as required. Connect the arrows to all operation component nodes from the OR node.



- Click the **AND** in the **Route** folder under the **Basic** tab of the **Palette**, and then, move the cursor to the location where you want to place the AND node. Add the AND node, ensuring that it is positioned after the operation component nodes that are to execute in parallel.



- Use arrows to connect the nodes. Set names for the arrows as required. Connect the arrows to the AND node from all operation component nodes that are to execute in parallel.



3.2.3.8 Sending Email Periodically

In an Automated Operation Process, email can be sent using specified date or any time intervals.

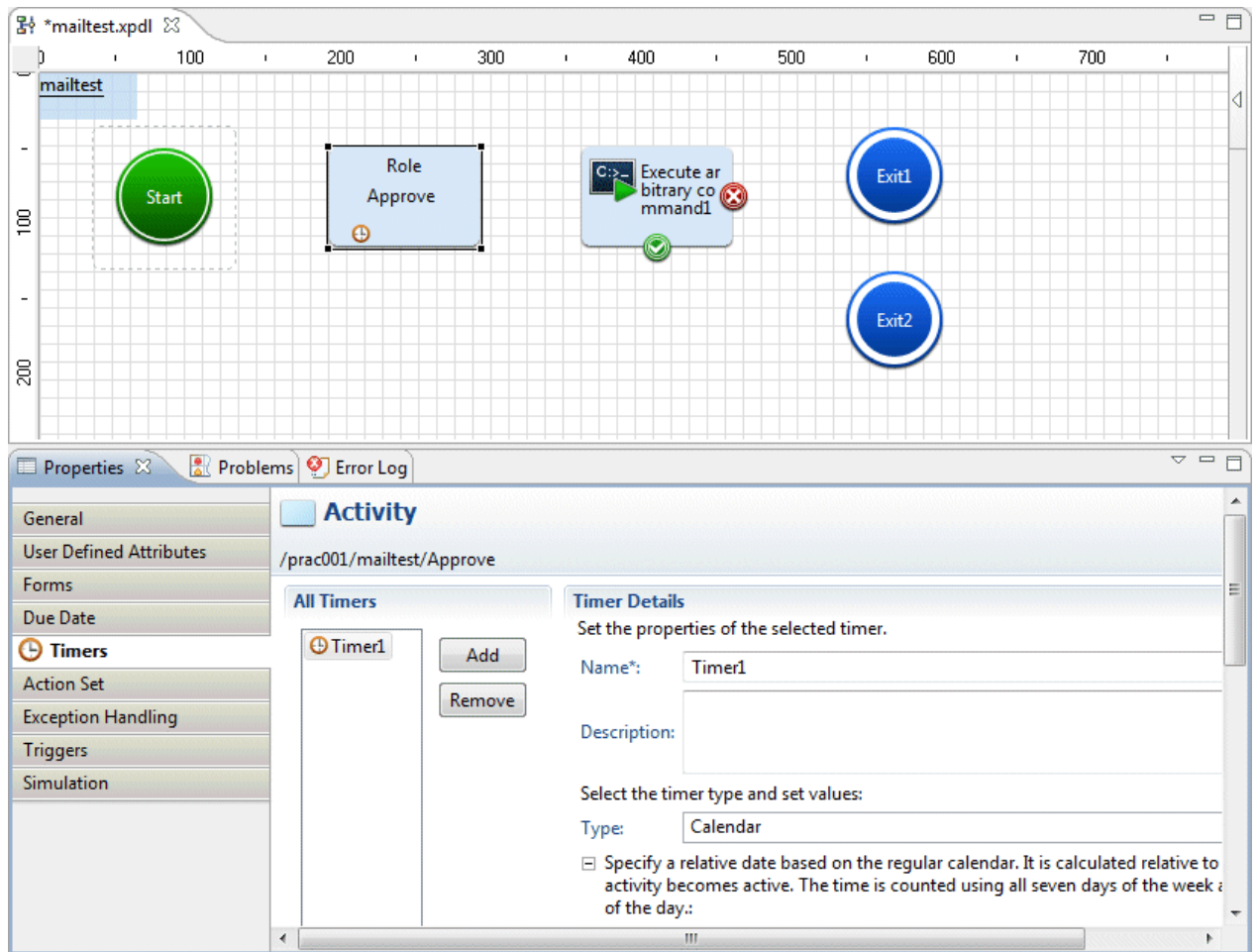
As a result, in a case where processing in an Automated Operation Process is suspended due to an approval activity, task reminder email can be periodically posted to the approver.

The email send setting can be set in every activity in an Automated Operation Process.

- Create an Automated Operation Process and select an activity to be targeted for this setting.

- Select the **Timers** tab from the Properties view and then click the **Add** button.

You can change the name of the added timer at your discretion.



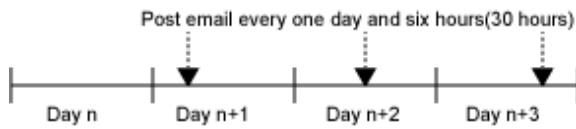
- Set a time interval at which email is to be sent. Select the **Periodic** checkbox and then set the items shown below. Refer to *Timer Definitions* in the *Systemwalker Runbook Automation Studio User's Guide* for details of each item.

Item	Description
Type	Select a timer type from any of the following: <ul style="list-style-type: none"> - Calendar - Business - Advanced
Day	Set an interval in number of days. Combining this with the time setting allows a regular interval to be specified. When you select the Periodic checkbox, After days changes to Every days.
Time	Set a time interval. Combining this with the Day setting allows a regular interval to be specified.

For example, if 0 (every day) is set in day and 03:00:00 is set in time, email will be posted every three hours every day from when the setted activity was started.



In addition, if 1 (every day) is set in day and 06:00:00 is set in time, email will be posted every one day and six hours(30 hours) from when the setted activity was started.



Information

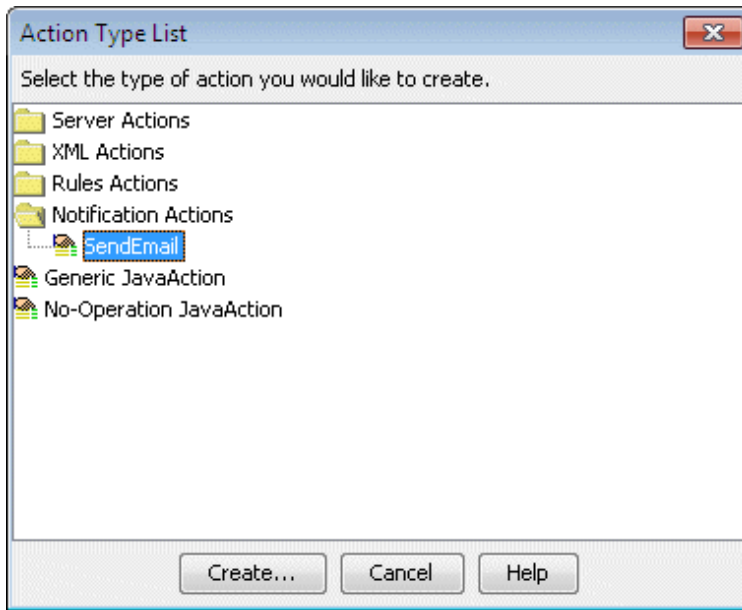
If the email notification setting has been enabled, the first email notification will be implemented immediately after processing transitions to the relevant activity.

Below is an input example in which a calendar is selected for the timer Type and 1 (every day) is set in day and 06:00:00 is set intime.

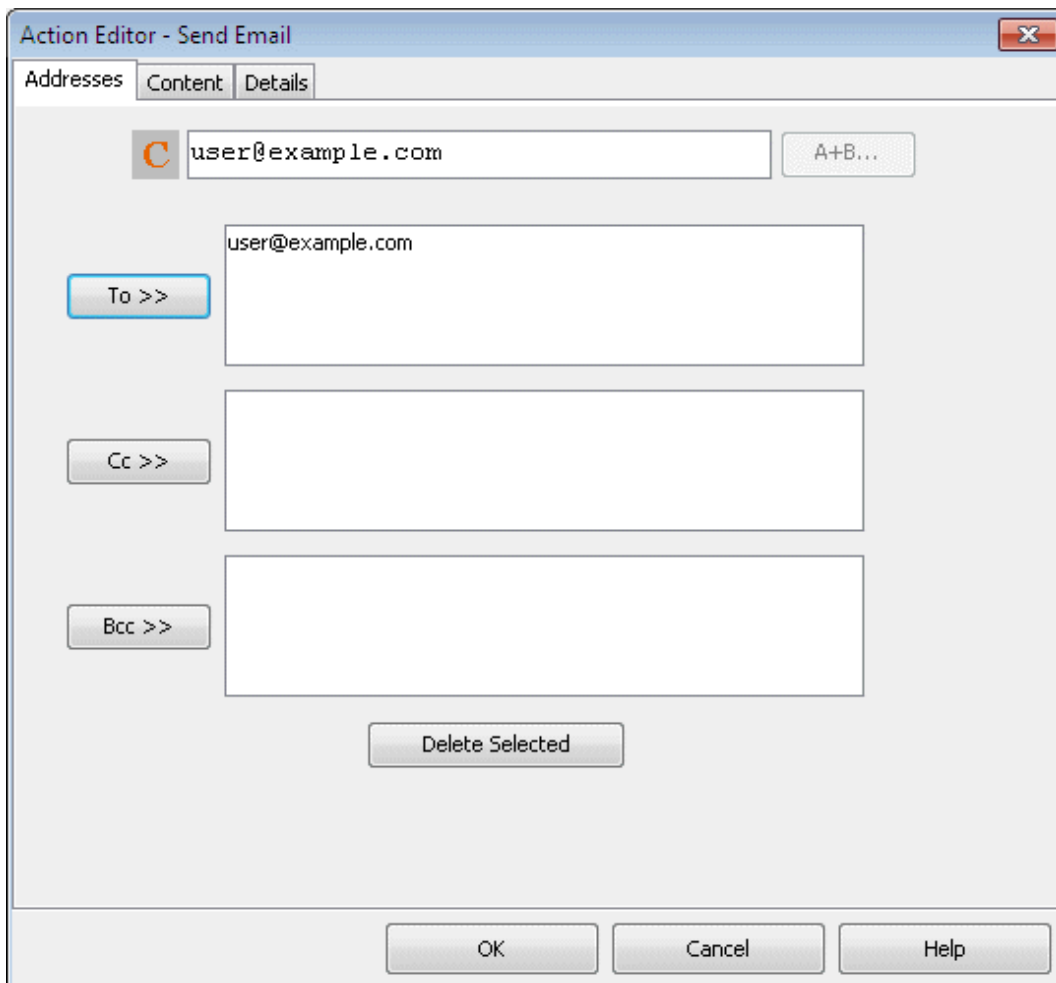
The screenshot shows the 'Activity' configuration window for the path '/prac001/mailtest/Approve'. The 'Timers' tab is active, displaying a list of timers with 'Timer1' selected. The 'Timer Details' panel for 'Timer1' is open, showing the following configuration:

- Name: Timer1
- Description: (empty text area)
- Type: Calendar
- Specify a relative date based on the regular calendar. It is calculated relative to the time the activity becomes active. The time is counted using all seven days of the week and 24 hours of the day:
 - Periodic After: 0 days and 06:00:00 (hh:mm:ss)
- Expression: (empty text field)
- Specify Java Actions:
 - Timer Actions (empty list)

4. Select **Timer Actions** and then click the **Add** button. In the action type list dialog box that is displayed, select Notification Actions >> **SendEmail**



5. Select the **Addresses** tab in the **Send Email** dialog box that is displayed and then enter the email recipient address. If enter the email address by E mode, Enter the email address with double quotation mark.

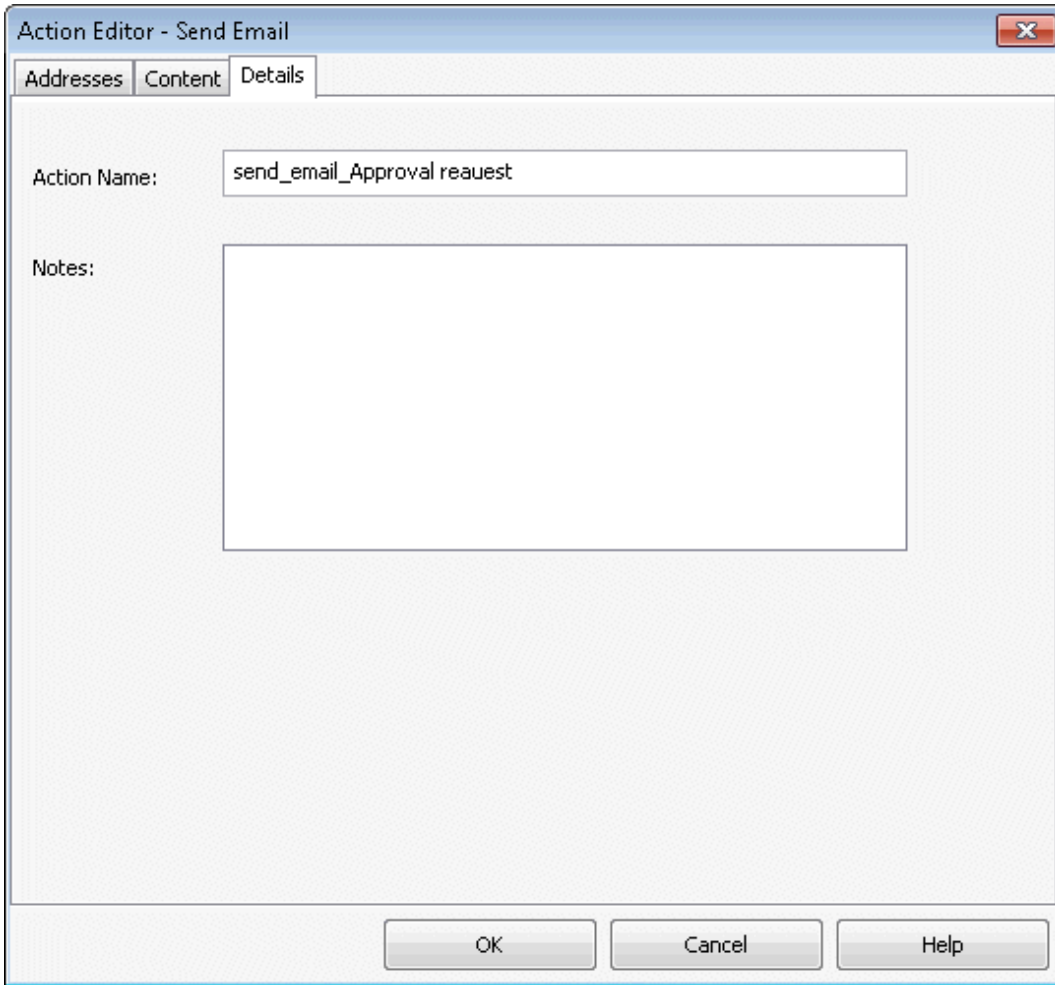


6. Select the **Content** tab in the **Send Email** dialog box and then enter the subject and text of the email.

The screenshot shows a dialog box titled "Action Editor - Send Email" with three tabs: "Addresses", "Content", and "Details". The "Content" tab is selected. The dialog contains the following fields and controls:

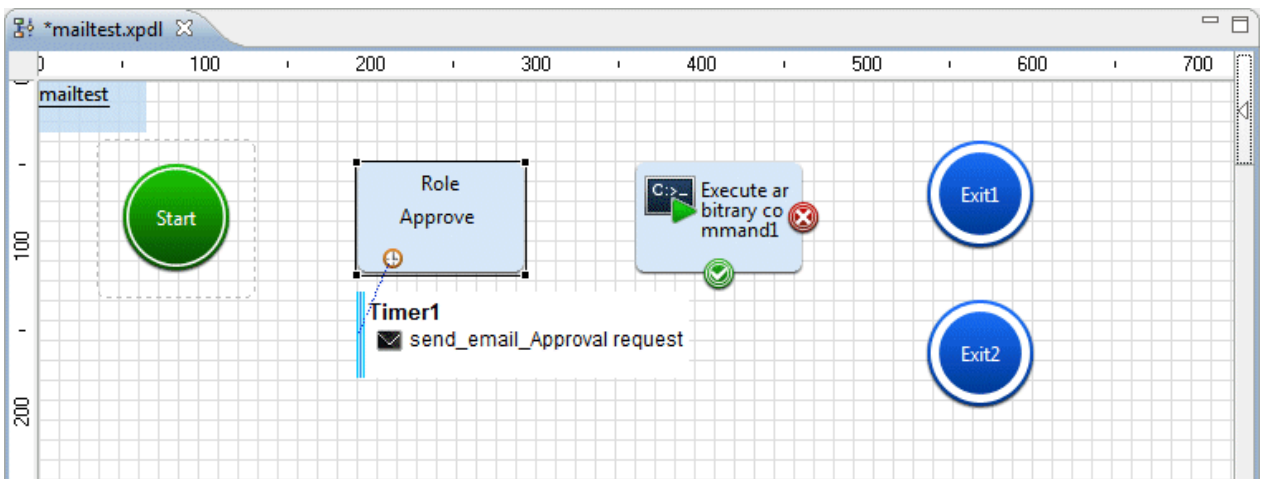
- Subject:** A text box containing "Approval reouest" and an "A+B..." button.
- From:** A text box containing "postmaster@example" and an "A+B..." button.
- Format:** Radio buttons for "Plain Text" (selected) and "HTML".
- Body:** A large text area containing "Execute approval process." and "This mail is sent regularly." with an "A+B..." button.
- Attachment:** An empty list box with "Add...", "Edit...", and "Remove" buttons.
- Options:** A checkbox labeled "Attach Process Instance Attachments" which is currently unchecked.
- Buttons:** "OK", "Cancel", and "Help" buttons at the bottom.

You can add any name or description to the outgoing email action by selecting the details tab of the **Send Email** dialog box.



7. When you click the **OK** button in the **Send Email** dialog box, the settings are complete.

A process definition that has the email notification setting enabled will be displayed as shown below.



3.2.3.9 Automated Operation Processes That Will Execute Multiple Same Operations

It is possible to execute the same operation for multiple targets and create Automated Operation Processes for execution of the same operation multiple times.

Repeatedly execute same operation

Using the Compound Activity Node, it is possible to create an Automated Operation Process for the repeated execution of a series of tasks for multiple servers, such as stopping the operating system after the job application has stopped.

Repeated Execution of the Same Processing within a Fixed Time

Using the "Check that the specified time has elapsed" operation component, it is possible to execute the same operation repeatedly until a fixed time elapses. As with the confirmation that the startup is completed after the server startup request is received, it is possible to create an Automated Operation Process for the execution of operations that are treated as abnormal startups because the startup cannot be confirmed even though the fixed time has elapsed.

Batch Operation for Multiple Operations

The following operation components can be multiple specified operation objects such as confirmed service name.

The same operation for multiple operations can be done collectively, such as checking multiple services have started.

Operation components	Objects of batch operation
Check that service has started	The service which checked start
Check port connection	The port number which checked connect
Check server running normally	The service which checked start, and the port number which checked connect
Check operational status of node	The node which checked operate
Start the server	The server which started
Stop the server	The service which stopped
Stop OS	The server which stop OS
Restart OS	The server which restart OS
Start virtual server	The virtual server which started
Stop virtual server	The virtual server which stopped
Restart virtual server	The virtual server which restarted

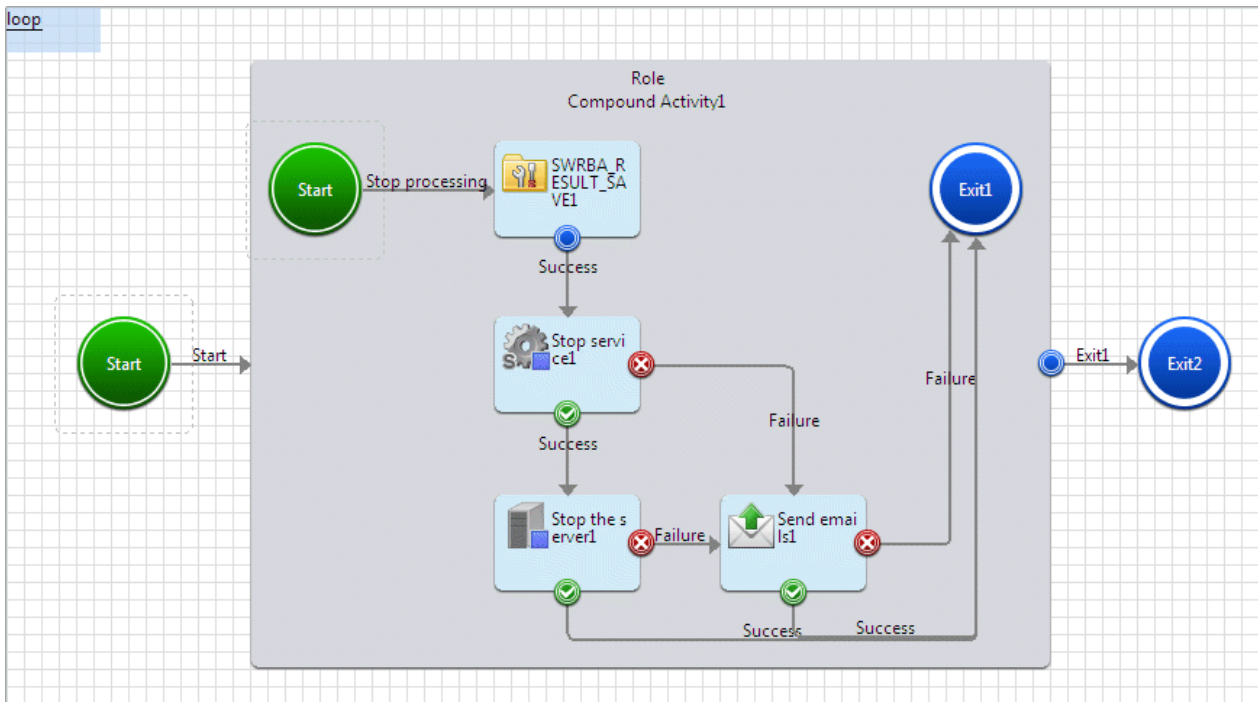
Multiply execute operation processes

Using the "Execute multi-operation processes" operation component, other Automated Operation Processes can be executed concurrently. An Automated Operation Process, that defines the finite processing used for multiple Automated Operation Processes, can also be called. Additionally, by executing the operation component once, Automated Operation Processes can be executed with multiple servers as operation targets.

3.2.3.9.1 Repeatedly execute same operation

While the operation target is being changed, it is possible to execute the same operation repeatedly.

The procedure to create an Automated Operation Process for the repeated execution of the operation to stop the server after the service has stopped is shown below.



1. Click the **Compound Activity** in the **Basic** tab. With the Process Definition Editor, add the Compound Activity Node by pointing and clicking in the area where it should be placed.
2. Click the **Store data as execution results** in the **Operation process control** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the Compound Activity Node area where it should be placed.
3. Click the **Stop the service** in the **Service/Process Operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the Compound Activity Node area where it should be placed.
4. Click the **Stop the server** in the **Server operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the Compound Activity Node area where it should be placed.
5. Click the **Send emails** in the **Email Operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the Compound Activity Node area where it should be placed.
6. Click the **Exit** in the **Basic** tab of the **Palette**. With the Process Definition Editor, add the Exit Node by pointing and clicking in the Compound Activity Node area where it should be placed.
7. Click the **Exit** in the **Basic** tab of the **Palette**. With the Process Definition Editor, add the Exit Node by pointing and clicking in the area where it should be placed.
8. Each node is joined by an arrow. Set an arrow name if necessary.
9. Create the user defined attribute (UDA) for storing common information host names to be used in multiple operation components:
 1. Select the **Properties >> User Defined Attributes** tabs.
 2. Click the **Add** button to add the user defined attribute (UDA).

Here, the following UDAs are added:

UDA name	Type	Default value
hostlist	STRING	The operation target server host name is set in the following format: "server 1","server 2","server 3",...
hostname	STRING	No initial value is set.
counter	INTEGER	This UDA is used as a counter for repetitive operations. By default, the UDA is set to 0.

10. Set the properties for the Compound Activity Node that was positioned.

With the Process Definition Editor, click the Compound Activity Node that the input information is set on. Click the **Properties** >> **General** tabs, and set the properties.

Set the following for the **Sequential Loop** property.

Item name	Settings value
Condition	Clear the checkbox. The conditions are not specified here.
Count	Select this checkbox, and specify the number of servers to be operated.

11. Set the input information for the operation component node that was positioned.

With the Process Definition Editor, click the operation component node that the input information is set on. Click the **Properties** >> **IO Setting** >> **Input Data** tabs and set the input information.

The content that can be set for the input information is shown below:

Operation component name	Option name	Settings value
Stop service	hostname	Set the host name. Here, select Variable (uda) as the type and set hostname .
	service	Set the name of the service to be stopped.
Stop the server	hostname	Set the host name. Here, select Variable (uda) as the type and set hostname .
Send emails	hostname	Specify the host name or IP address for the SMTP server.
	fromaddress	Set the email address of the sender.
	toaddress	Set the email address of the recipient.
	subject	Set the subject line for the email.
	text	Set the body of the email.

12. In the repeated processing, the operation target host name is set as UDA: hostname.

1. Set the I/O information for the **Store data as execution results** operation component that was placed.
2. With the Process Definition Editor, click the **Store data as execution results** operation component.
3. Click the **Properties** >> **IO Setting** >> **Input Data** tabs and set the input information.

The content that can be set for the input information is shown below:

Option name	Settings value
input1	Set the data that is to be edited. Here, select Variable (uda) as the type and set counter .
input2	Set the data to be edited. Here, select Variable (uda) as the type, and set hostlist .

4. Click the **Output Data** tab and set the output information.
5. Click the **Add** button, then select the **uda** that has been added to the list in the **Output Data** tab, then enter the following information:

Execution results	Variable name
result1	counter

Execution results	Variable name
result2	hostname

6. Select **counter**, and click the **Add** button for **Define Filter**.

The **Filter settings** dialog box will be displayed.

7. Select **Calculate** from the **List of filters**, and click the **Add** button.

8. Set the following in the **Define Filter** area, and click **OK**.

Item name	Settings value
Calculation method	Select Add .
Operation value type	Select Fixed value .
Addition value	Set "1".

9. Select **hostname** from the **Output Data** section list, and click the **Add** button for **Define Filter**.

Filter settings dialog will be displayed.

10. From **List of filters**, select "Extract CSV data", then click the **Add** button.

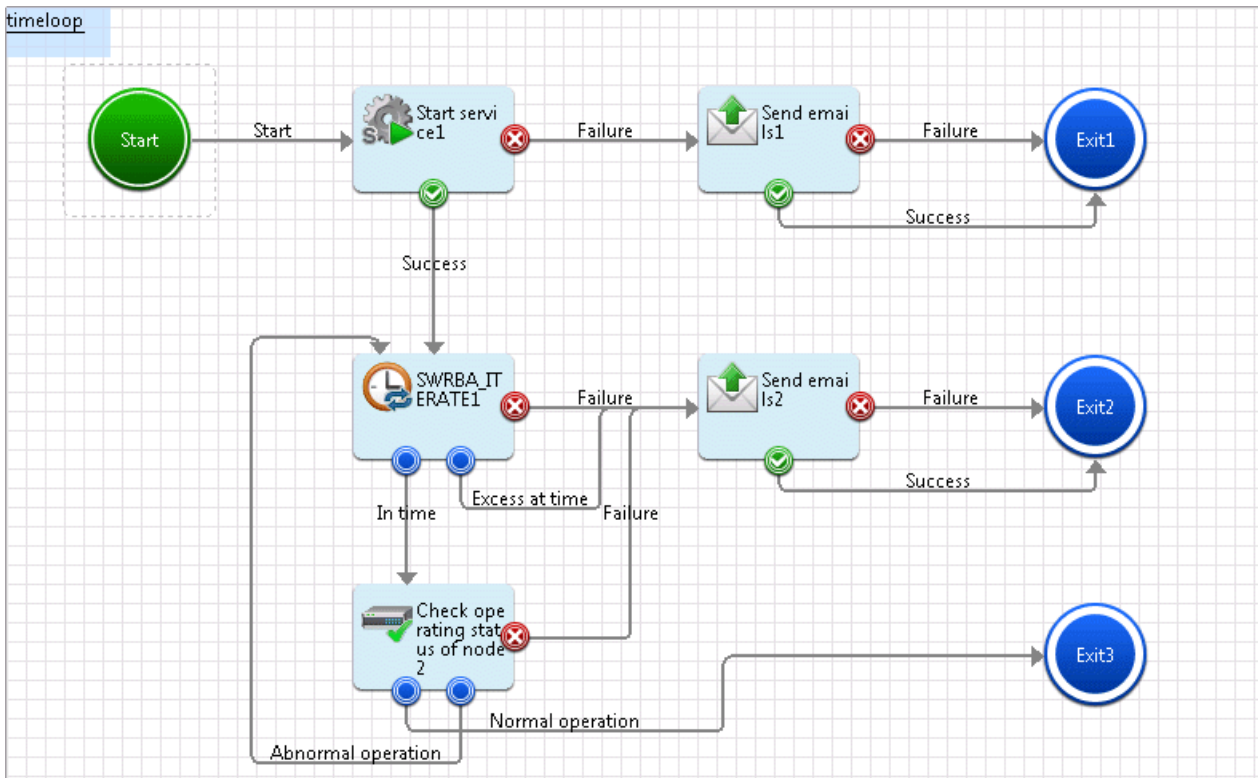
11. Set the following in the **Define Filter** area, and click the **OK** button.

Item name	Settings value
Delimiter	Select Comma .
Enclose with	Select Double quotes .
Treat the first row as the header	Do not select.
Sort condition	Optional.
Row to be extracted	Optional.
Column to be extracted	Specify the UDA that is assigned to the counter. Specify counter here.

3.2.3.9.2 Repeatedly execute same operation within a fixed time

It is possible to execute the same operation repeatedly until a fixed time elapses.

The procedure to create an Automated Operation Process for the execution of the startup confirmation at 30 second intervals for a maximum of 5 minutes after the server startup request was received is shown below.



1. Click **Start the server** in the **Server operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.
2. Click **Check that the specified time has elapsed** in the **Operation process control** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.
3. Click **Check operational status of node** in the **Network operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.
4. Click **Send emails** in the **Email Operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.
5. Click **Exit** in the **Basic** tab of the **Palette**. With the Process Definition Editor, add the Exit Node by pointing and clicking in the area where it should be placed.
6. Each node is joined by an arrow. Set an arrow name if necessary.
7. Create the user defined attribute (UDA) for storing common information host names to be used in multiple operation components.
 1. Select the **Properties >> User Defined Attributes** tabs.
 2. Click **Add** to add the user defined attribute (UDA).

Additionally, as the initial value of the UDA, set "hostname" as the host name of the server that will execute the operation.

8. Set the input information for the operation component node that was positioned.

With the Process Definition Editor, click the operation component node that the input information is set on. Click the **Properties >> IO Setting >> Input Data** tabs and set the input information.

The content that can be set for the input information is shown below:

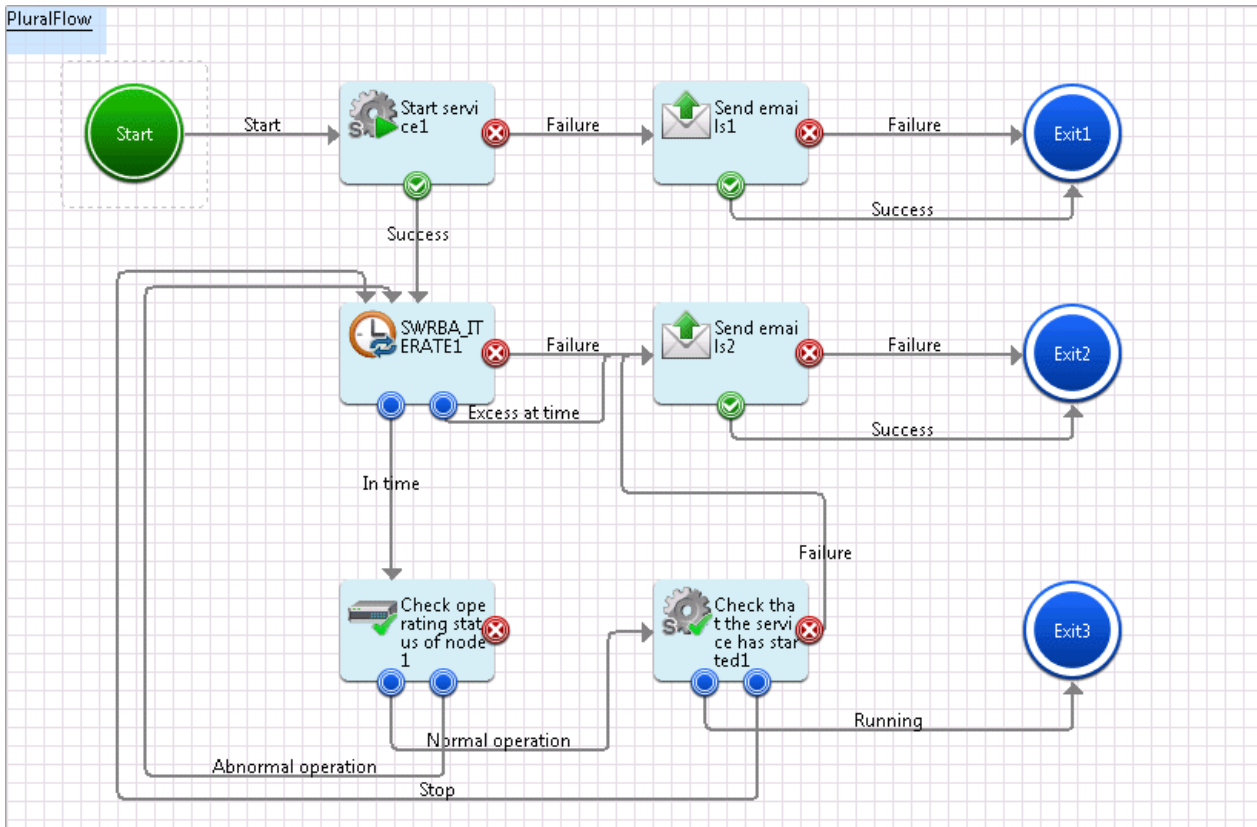
Operation component name	Option name	Settings value
Start the server	hostname	Set the host name. Here, select Variable (uda) as the type and set hostname .

Operation component name	Option name	Settings value
Check that the specified time has elapsed	iteration_duration	Set the repeat processing time. Here, set "300".
	iteration_sleep_time	Set the repeat processing wait time. Here, set "30".
Check operational status of node	hostname	Set the host name. Here, select Variable (uda) as the type and set hostname .
Send emails	hostname	Specify the host name or IP address for the SMTP server.
	fromaddress	Set the email address of the sender.
	toaddress	Set the email address of the recipient.
	subject	Set the subject line for the email.
	text	Set the body of the email.

3.2.3.9.3 Batch Operations for Multiple Operation Targets

Batch operations can be executed for multiple identical operations, such as confirmation that the service has started up.

The procedure to create an Automated Operation Process for the batch execution of the confirmation that multiple services have started up, after the node operational status for the Automated Operation Process created in "3.2.3.9.2 Repeatedly execute same operation within a fixed time" has been checked, is shown below.



1. Click **Check that the service has started** in the **Service/Process Operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.
2. Click **Send emails** in the **Email Operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.

- Each node is joined by an arrow. Set an arrow name if necessary.
- Set the input information for the operation component node that was positioned.

With the Process Definition Editor, click the operation component node that the input information is set on. Click the **Properties >> IO Setting >> Input Data** tabs and set the input information.

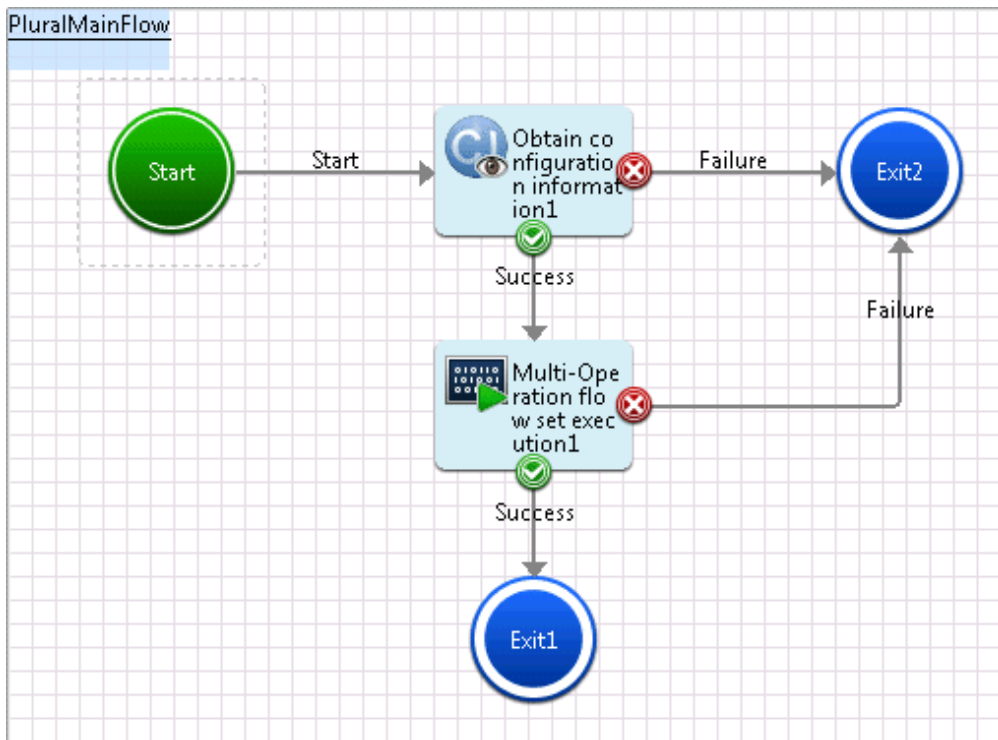
The content that can be set for the input information is shown below:

Operation component name	Option name	Settings value
Check that the service has started	hostname	Set the host name. Here, select Variable (uda) as the type and set hostname .
	service	Set the list of service names for which the startup is to be checked. Set the service names in the following format: "service 1","service 2","service 3",...
Send emails	hostname	Specify the host name or IP address for the SMTP server.
	fromaddress	Set the email address of the sender.
	toaddress	Set the email address of the recipient.
	subject	Set the subject line for the email.
	text	Set the body of the email.

3.2.3.9.4 Multiple Execution of Automated Operation Process

Multiple Execution of Automated Operation Process can be done by differential setting, such as executing same contents of processing to multiple server

The procedure to create an Automated Operation Process that was created in "3.2.3.9.3 Batch Operations for Multiple Operation Targets" as the Automated Operation Process that is executed for the Windows server registered in CMDB is shown below.



- Click the **Obtain configuration information** in the **Configuration item operations** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.

2. Click the **Store data as execution results** in the **Operation process control** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.
3. Click the **Multi-Operation flow set execution** in the **Command execution** tab. With the Process Definition Editor, add the operation component node by pointing and clicking in the area where it should be placed.
4. Click the **Exit** in the **Event** folder under the **Basic** tab of the **Palette**. With the Process Definition Editor, add the Exit node by pointing and clicking in the area where it should be placed.
5. Each node is joined by an arrow. Set an arrow name if necessary.
6. Create the user defined attribute (UDA) for storing the input information of the **Execute multi-operation processes** operation component.

1. Select the **Properties >> User Defined Attributes** tabs.
2. Click **Add** to add the user defined attribute (UDA).

Here, the UDA name is "param". No initial value is set for the UDA.

7. Set the input information for the **Obtain configuration information** operation component that was positioned.

Click the **Obtain configuration information** operation component on the Process Definition Editor. Click the **Properties >> IO Setting >> Input Data** tabs and set the input information.

The content that can be set for the input information is shown below:

Option name	Settings value
hostname	Set the CMDB host name. Here, select Value(fixed) as the type and set localhost .
serachpath	Specify a conditional expression for acquiring the configuration information. Here, select Value(fixed) as the type and set the following: <pre>/%LogicalServer[(!/#observed/rc:LogicalServer/rc:SystemSettings/rc:OSSetting[matches(@@name,'Windows.*')]]]</pre>

8. Set the input information for the **Execute multi-operation processes** operation component that was positioned.

With the Process Definition Editor, click the **Execute multiple operation processes** operation component. Click the **Properties >> IO Setting >> Input Data** tabs and set the input information.

The content that can be set for the input information is shown below:

Option name	Settings value
subflowname	Name of the process definition that was created in " 3.2.3.9.3 Batch Operations for Multiple Operation Targets ".
parameters	Set the information that will be passed to the Automated Operation Process that will be executed. Here, select Variable (uda) as the type and set param .

9. Set the UDA: param value that will be used as the input information for the **Execute multi-operation processes** operation component.

1. Set the output information for the **Obtain configuration information** operation component that was positioned.

Click the **Obtain configuration information** operation component on the Process Definition Editor. Click the **Properties >> IO Setting >> Output Data** tabs and set the output information.

2. Click the **Add** button, then select the UDA that has been added to the list in the **Output Data** tab, then set the following value:

Execution results	Variable name
ci_get_result	param

- Click the **Define Filter >> Add** button.

Filter settings dialog will be displayed.

- From **List of filters**, select **Extract XML attribute**, then click the **Add** button.

- The following are set in the **Define Filter** area:

Item name	Settings value
XPath	Set the following string: /entities/item/record/LogicalServer
Attribute name	Select the following string: hostname Additionally, select Select multiple .
Delimiter	Select Line feed .

From the server information that was obtained from CMDB, use a delimiter to extract the server names.

- From **List of filters**, select **Format**, then click the **Add** button.

- The following are set in the **Define Filter** area:

Item name	Settings value
Delimiter	Select "Comma" .
Enclose with	Select Double quotes .
Format string	Set the strings shown below. In \$number , a serial number that starts with 1 is set. In {0}, the server names that were extracted using the delimiter are set. <Parameter ID="[\$number]"> <TargetUDA Name="hostname" Value="{0}"/> </Parameter>

- From **List of filters**, select "Add string", then click the **Add** button.

- The following are set in the **Define Filter** area:

Item name	Settings value
Text	Set the following strings: <?xml version="1.0" encoding="UTF-8"?> <ParameterSet>
Application method	Select Apply for all .
Text location	Select Add to Start .

- From **List of filters**, select "Add string", then click the **Add** button.

- The following are set in the **Define Filter** area:

Item name	Settings value
Text	Set the following string: </ParameterSet>
Application method	Select Apply for all .

Item name	Settings value
Text location	Select Add to end .

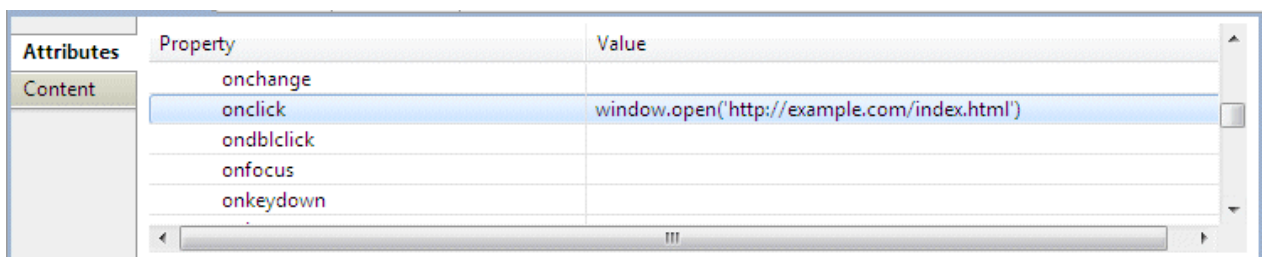
3.2.3.10 Adding Help Button in Form

With using Button items, Able to add help button in form.

The processing to add help button in form is shown below.

1. Select Button item in **Basic** folde of **Palette**. In Design Editor, Click the locale where to deploy items, and add Button item.
2. Seelect **Property** >> **Attribute** tab, Change **type** value from "submit" to "button".
3. Input button label in **value**.Here, Input Help as a button label.
4. Input URL of help displayed in value of **onclick** with the following format.Here, Input " http://example.com/index.html ", for example.

onclick: window.open('http://example.com/index.html')



Click **Help** button, Specified help documents of URL is displayed with another windows.

3.3 Diverting Development Resources

Divert any development resources that can be diverted, using either of the two following task types:

- Downloading operation components
- Downloading Automated Operation Processes

3.3.1 Downloading Operation Components

Divert the operation components that have been registered by downloading them.

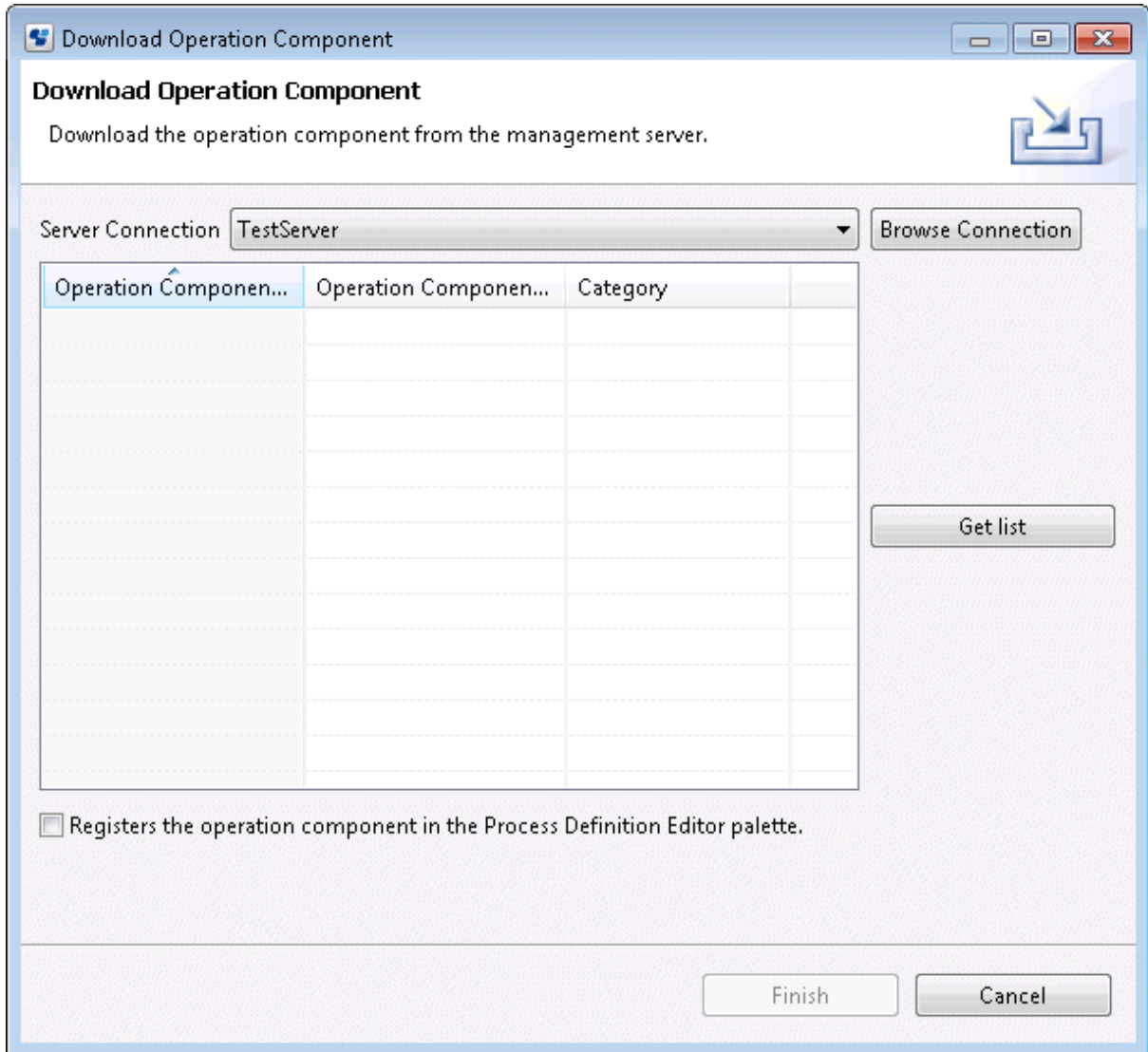
The two methods of downloading from the Management Server the operation components that have been registered are as follows:

- Downloading from Studio
- Downloading from a Web console

3.3.1.1 Downloading from Studio

1. Right-click a category or project name in the **Operation Component Management** view. Select **Download Operation Component** from the pop-up menu.

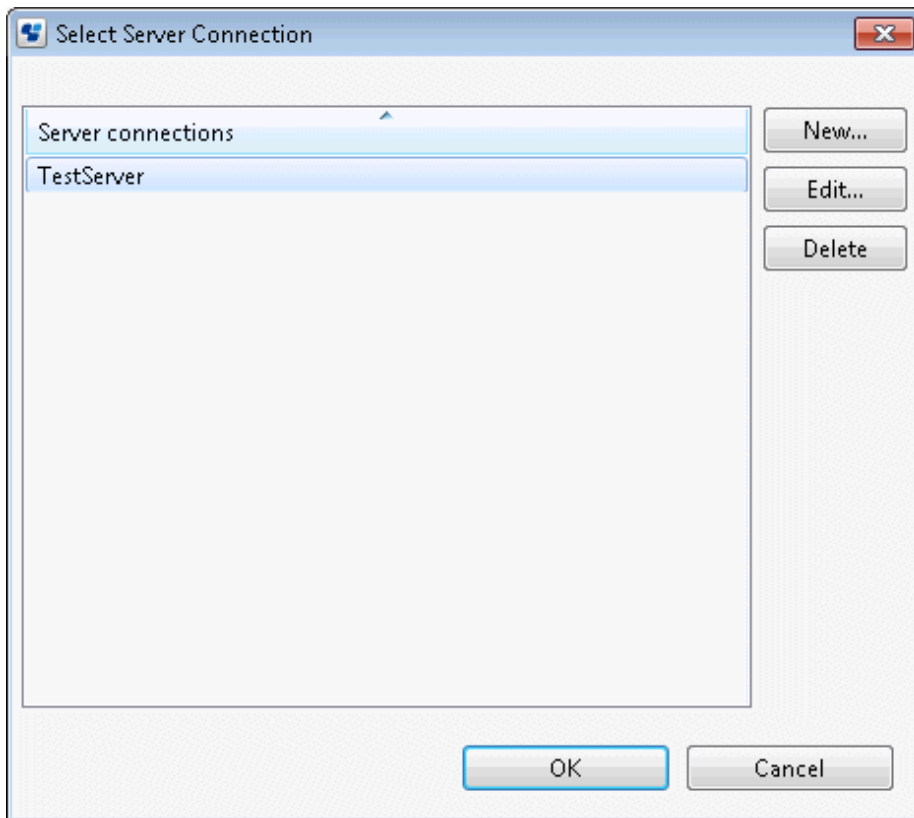
The **Download Operation Component** dialog box will be displayed. The server connection that last had active status will be displayed automatically.



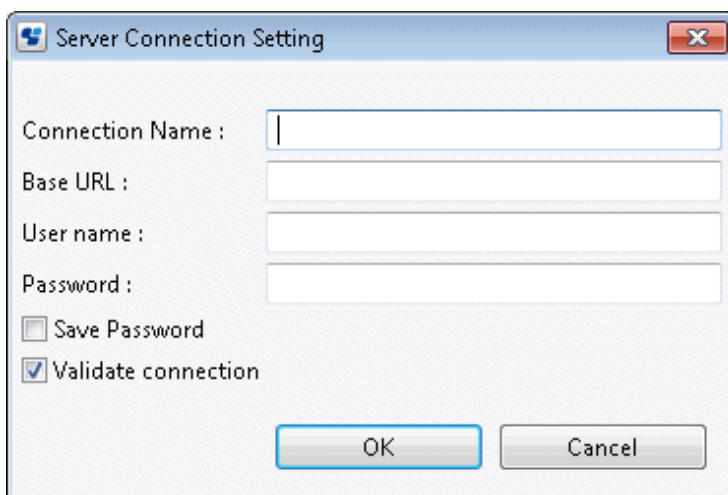
2. To use one of the available server connections, Select a server from the **Server Connection** drop-down list and go to step 4.
3. To edit either of the server connections or to specify a new server, follow the procedure shown below.
 - a. Click **Browse Connection** in the **Download Operation Component** dialog box.

The **Select Server Connection** dialog box will be displayed. The server connections that can be used will be displayed in alphabetical order. The first server in the list will always be selected as a default server. If no server connection has been

specified yet, the **Server connections** list will be empty. In the example shown below, only one server connection can be used.



b. Click New in The **Select Server Connection** dialog box. The **Server Connection Setting** dialog box will be displayed.



Enter the following contents in the dialog box:

- Connection name: Name of a specific server connection

Base URL: URL used to connect to the server. The format of the base URL is as follows:

`http://<hostname>:<port>/<context>/`

The example shown below is a URL in which "console" is used as context, "rbaserver" is used as hostname, and "80" is used as port.

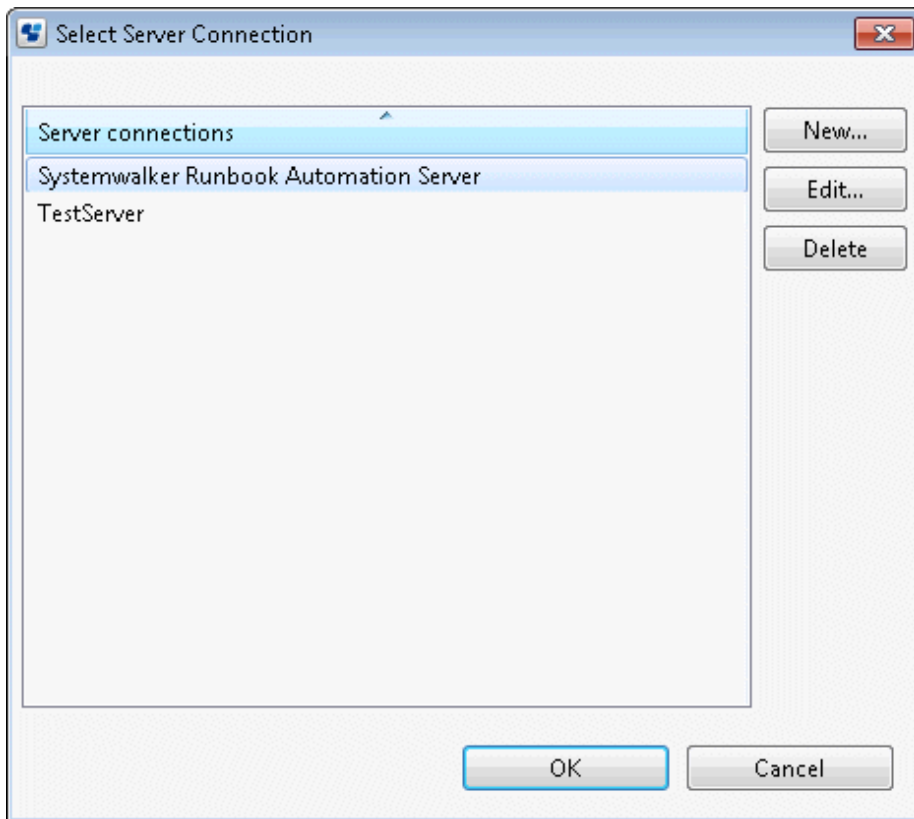
`http://rbaserver:80/console/`

- User name: User name authorized by Systemwalker Runbook Automation

- Password: Password that has been associated with the user name
- When you save your password by enabling the **Save Password** checkbox, you will no longer be required to re-enter your password when you next log in to the Management Server of Systemwalker Runbook Automation.
- If the **Validate connection** check box is selected, the connection confirmation will be performed when the **OK** button is clicked.

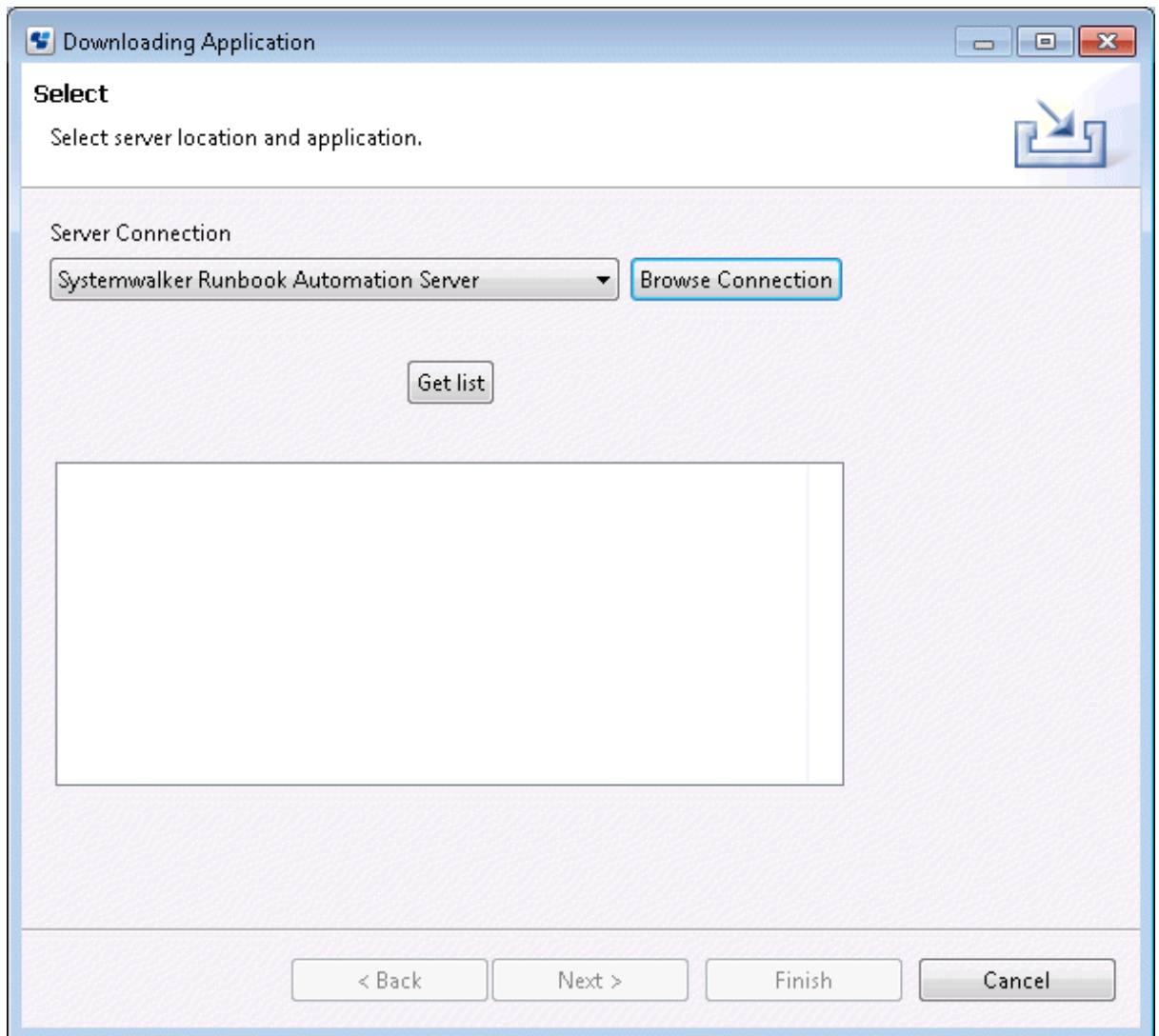
c. Check the server settings and click **OK**.

A new server connection will be added to the **Server connections** list. In the example shown below, a Management Server of Systemwalker Runbook Automation has been specified.



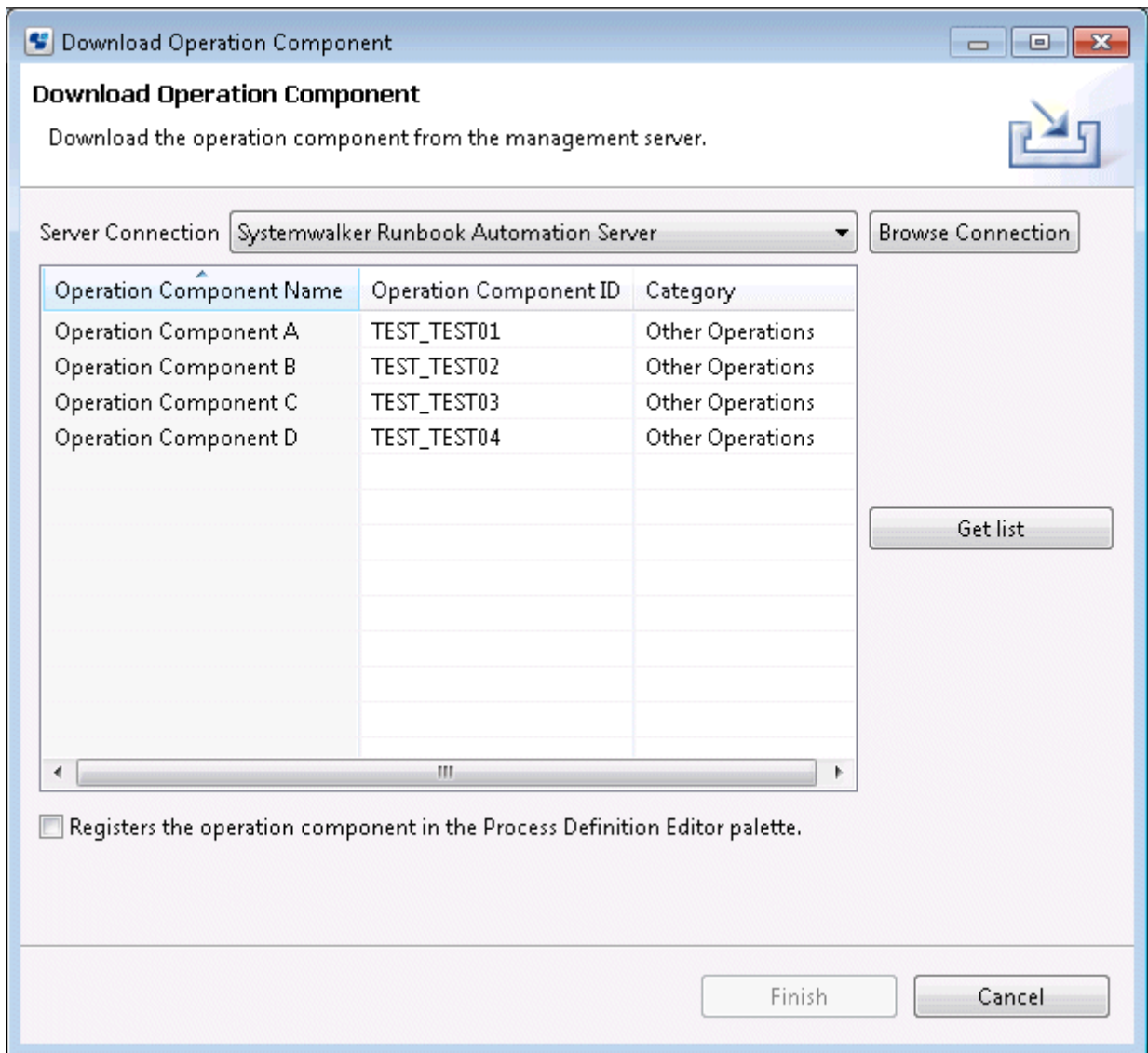
- d. Click **OK** in the **Select Server Connection** dialog box to confirm the server selection.

The selected server connection (in the example, a Management Server of Systemwalker Runbook Automation) will be displayed in the **Downloading Application** dialog box.



4. Click the **Get list** button.

A list of operation components will be displayed in the tree.

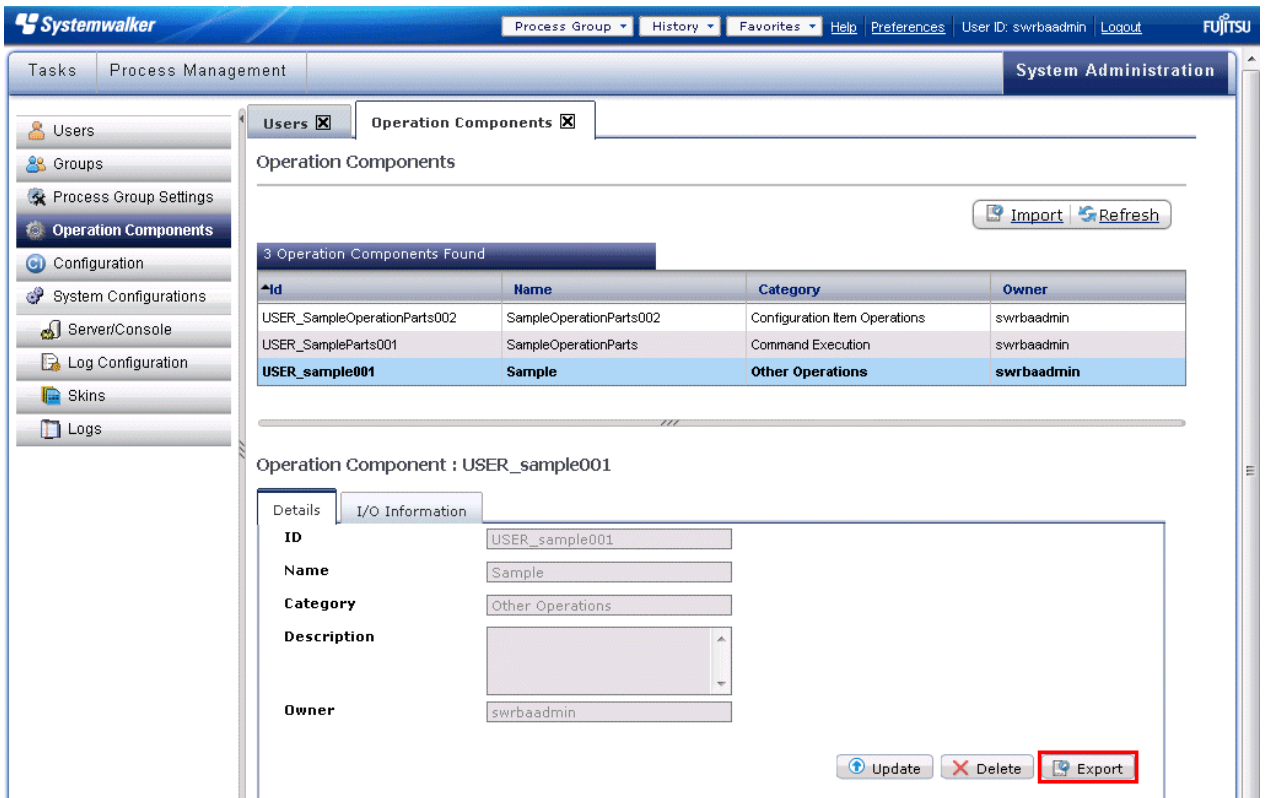


5. Select the operation component to be downloaded.
6. To register the operation component in the Process Definition Editor palette as well as downloading it, check **Registers the operation component in the Process Definition Editor Palette**.
7. Click **Exit** to download the operation component from the specified Management Server.

3.3.1.2 Downloading from a Web Console

1. When you select the **Operation Component** submenu from the **System Management** tab, a list of the operation components that have been registered will be displayed in the list panel.

- From the list of operation components, select the operation components to be exported and click **Export** in the **Details** tab in the details panel. The **Download File** dialog box will be displayed.



- Save the files according to the displayed dialog box.
The operation components will be downloaded. The operation components will be compressed into a zip format.
- Use the operation components in any operation component development environment by diverting them.

3.3.2 Downloading Automated Operation Processes

Divert an Automated Operation Process that has been registered by downloading it.

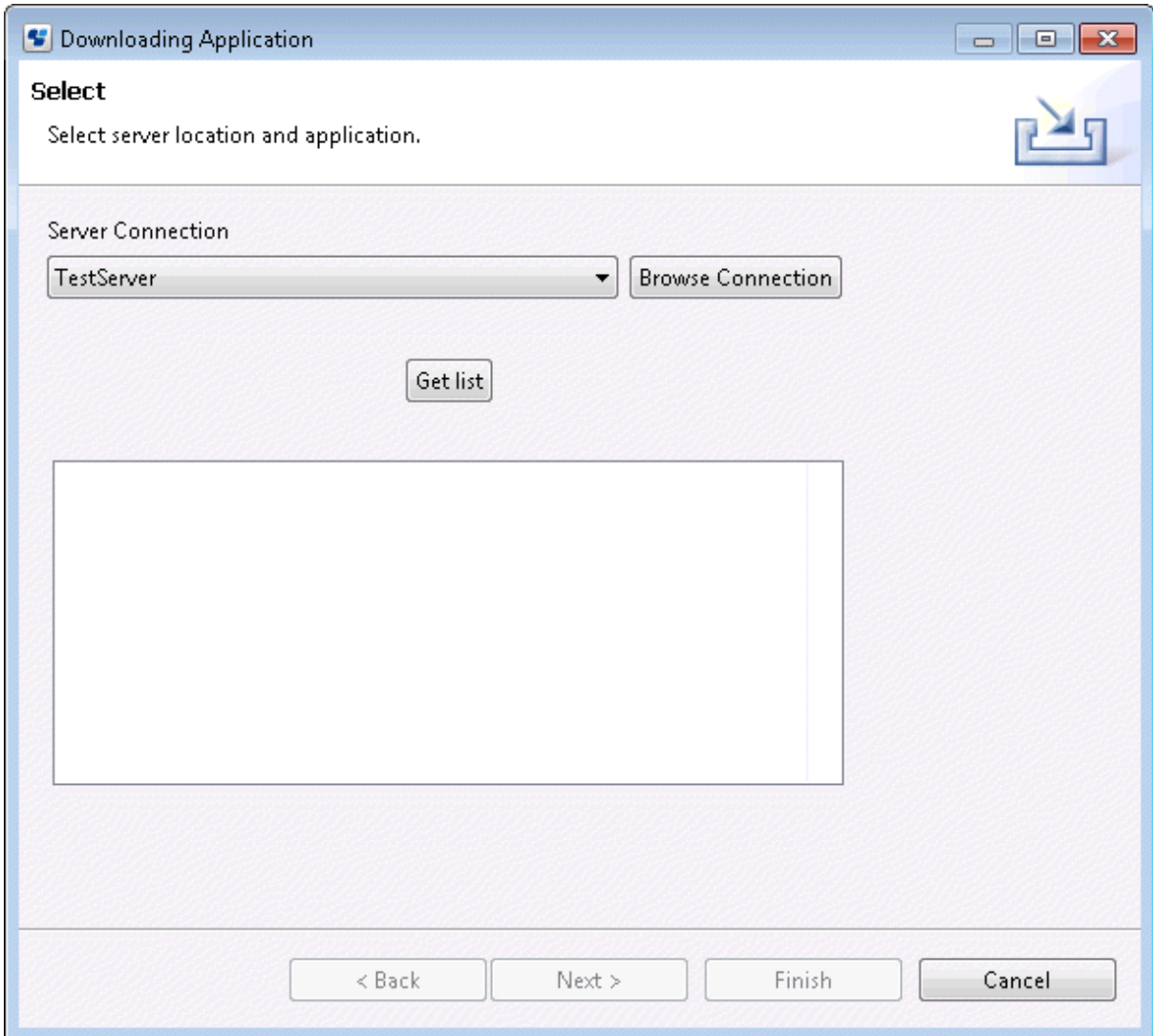
The two methods of downloading from the Management Server an Automated Operation Process that has been registered are as follows:

- Downloading from Studio
- Downloading from a Web console

3.3.2.1 Downloading from Studio

1. Right-click a project name in the **Navigator** view. Select **Download Application from Server** from the pop-up menu.

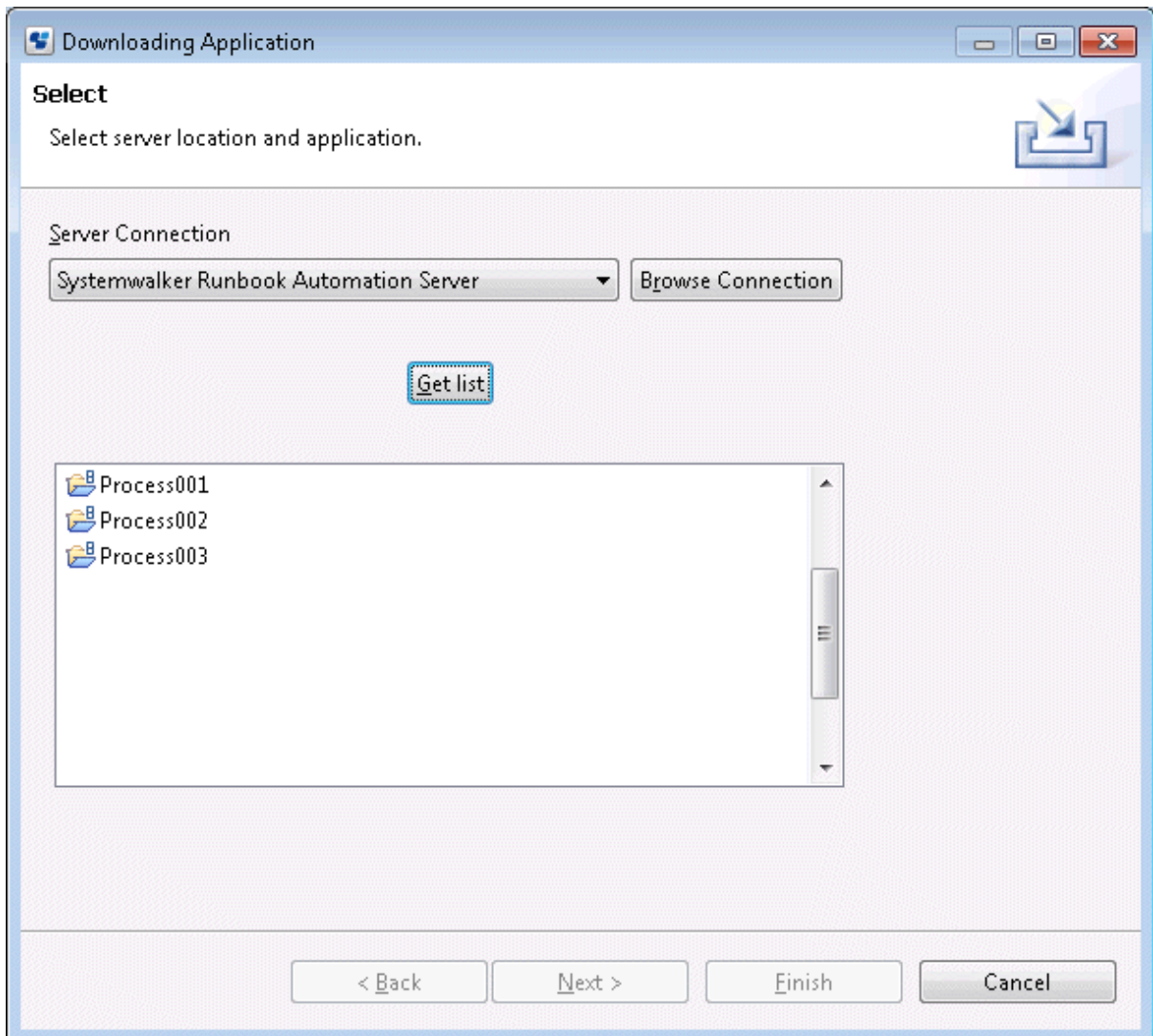
The **Downloading Application** dialog box will be displayed. The server connection that last had active status will be displayed automatically.



2. To use one of the available server connections, select a server from the **Server Connection** drop-down list and go to step 4.
3. To edit either of the server connections or to specify a new server, Refer to the procedure 3 of [3.3.1.1 Downloading from Studio](#) in *Downloading Operation Components*.

4. Click the **Get list** button in the **Downloading Application** dialog box.

The names of all applications that exist in the specified server will be displayed. In the example, three projects are displayed.



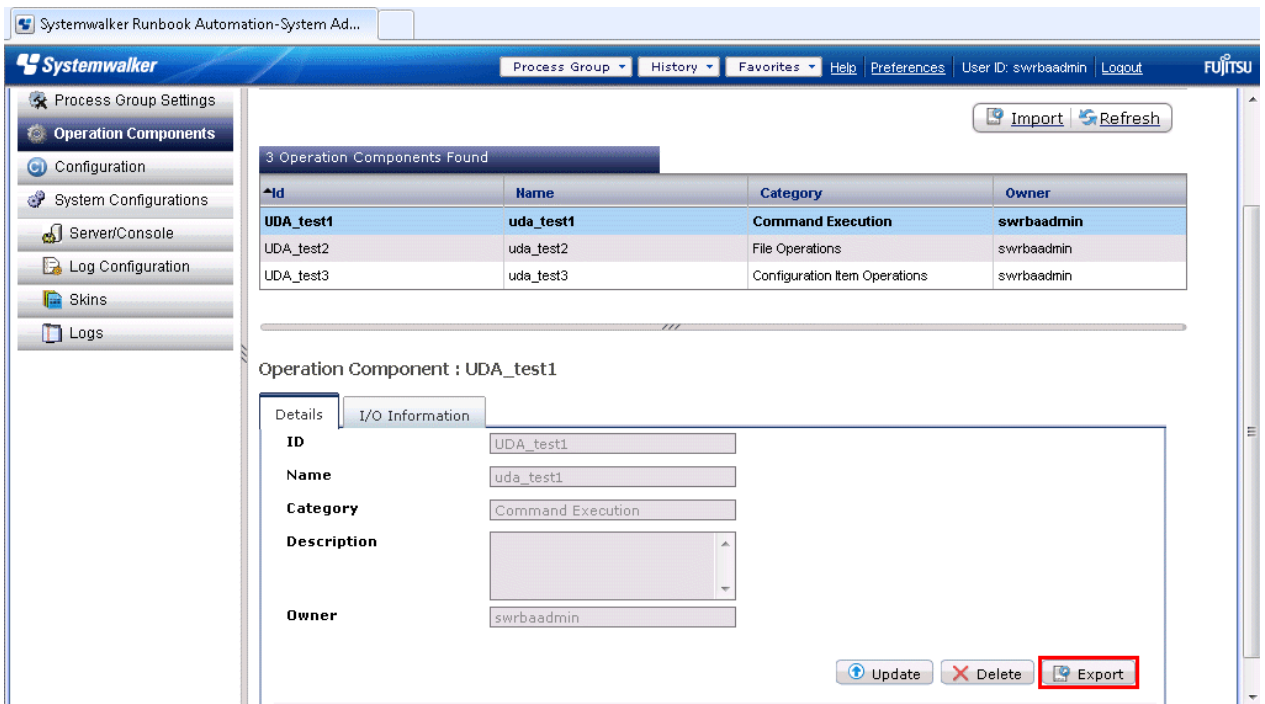
5. Select the project to be downloaded from the server and click **Next**.
The **Downloading Application** dialog box will be displayed. All of the components of the selected project will be displayed.
6. Use the checkbox to select the components to be downloaded.
Select the name of the project to be downloaded from the **Application name** drop-down list. The default name is the name of the workspace project. To avoid conflicting names, change the default. The procedure shown below provides the method for selecting the project components to be downloaded.
7. Select the project components to be downloaded and click **Next**. The **Project** dialog box will be displayed. You can enter additional information about the project here.
8. Enter a description of the project. There is no need to set up an owner group.
Entering additional information about the project is optional. The download procedure can also be completed by omitting this step.
9. Click **Exit** to download the project from the specified server.

3.3.2.2 Downloading from a Web Console

1. From the **Process Group** drop-down menu, select the Automated Operation Process that is to perform operations.
The Automated Operation Processes that have been registered in the Management Server will be listed in the drop-down menu.

- When you select the **Process Group Settings** submenu in the **System Administration** tab, a list of the Automated Operation Process Groups that have been registered will be displayed in the list panel.
- Click **Export** on the toolbar of the details tab of the process group to be downloaded.

The Save dialog box will be displayed.



- Right-click the **Navigator** view of Systemwalker Runbook Automation Studio. Select **Import Bar file** from the pop-up menu and import the Bar file.

3.4 Developing Operation Components

If you cannot develop an Automated Operation Process using the following two types of operation components, develop new operation components:

- Operation components provided by the product
- Operation components that have already been developed

In Systemwalker Runbook Automation Studio, developed operation components are used as operation component nodes.

Languages that can be used

When creating operation components, create script files written in either of the following languages:

- Ruby
- Perl

Development method

Create a script file using an environment such as an external Ruby development environment or Perl development environment, or by using the text editor.

In the script file, write the script that is used below.

- Libraries provided by the product

These libraries are program components (Ruby script or Perl script) that can be used from within operation components and that have been grouped together by purpose or function.



A library provided by the product cannot be used as an operation component.

Character code

The character code used when a script is executed will be the character code set in the Systemwalker Runbook Automation operating environment.

The character code used for the input and output information of a script will be UTF-8. When you are using a library which performs extraction of input information, the input information will be converted according to the operating environment in the library. When you want to output the results to standard output or standard error output, you must set up character strings that have been converted to UTF-8.

Common functions

Timeout and retry of the execution of operation components are common functions of operation components that can be enabled.

Defining the options shown below will enable these extended options for input information.

- Timeout of the execution of operation components

Name	Data type	Minimum value	Maximum value
Timeout	INTEGER	300	86400

- Retry of the execution of operation components

Name	Data type	Minimum value	Maximum value
Retry	INTEGER	0	5
retry_interval	INTEGER	1	14400

3.4.1 Processing Flow of Operation Components

Operation components perform processing using the following procedure:

1. Inputting to operation component

The name of the file that stores the input information required to execute an operation component (input information file) is received as an argument when the operation component is executed.

The input information file is an XML format file.

The file name is received as an absolute path.

2. Obtaining the input information required for executing the operation component

Within the operation component, the input information library is used to extract input information from the input information file.

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

3. Executing the operation component

The input information is used to perform the processing required by the operation component.

The operation component will be executed on the Management Server. If you want to execute processing on a remote server, you must create a process for executing processing remotely.

4. Outputting the execution results of the operation component

The execution results of the operation component consist of return values, standard output, and standard error output.

The character code of standard output and standard error output is converted to UTF-8 for output.

Standard output can be used as input information for processing performed by the next operation component.

Standard error output can be used for maintaining the execution results of the operation component.

3.4.2 Composition Example of a Ruby Script

An example of an "Execute an arbitrary command" operation component is used here to explain the composition of a Ruby script.

<pre>require 'standard/swrba_input' require 'standard/swrba_command'</pre>	Mandatory	(1) Reading library to be used
<pre>require 'kconv' require 'standard/swrba_logger'</pre>	Optional	
<pre>Logger = Swrba_Logger.new("swrba_command_run","swrba_standard_guest.log")</pre>	Optional	(2) Preparing log output for operation component
<pre>input = Swrba_Input.new option = [] while data = ARGV.shift option.push(data) end if option.size != 2 exit 198 end if option[0] != "-input" exit 198 end if File.exist?(option[1]) == false exit 198 end</pre>	Mandatory	(3) Preparing extraction of input information from input information file
<pre>hostname = input.input_analysis(option[1],"hostname") ipaddress = input.input_analysis(option[1],"ipaddress") commandline = input.input_analysis(option[1],"commandline") username = input.input_analysis(option[1],"username") password = input.input_analysis(option[1],"password") execusername = input.input_analysis(option[1],"execusername") execpassword = input.input_analysis(option[1],"execpassword")</pre>	Optional	(4) Extracting input information
<pre>if ipaddress != nil && ipaddress != "" hostname = ipaddress end if hostname == nil exit 197 end if commandline == nil exit 197 end</pre>	Optional	(5) Checking input information
<pre>command = Swrba_Command.new begin command.run(hostname, username, password, execusername,execpassword, commandline)</pre>	Optional	(6) Executing using library
<pre>STDOUT.print command.stdout.toutf8 rescue => exc</pre>	Optional	(7) Outputting execution results

STDERR.print command.stderr.toutf8		
logger.error(exc)		
exit command.return_code		
end		

3.4.2.1 Script Details

The details of the script file outlined above are explained below.

(1) Reading library to be used

This reads the library to be used by the operation component. The libraries that can be used are the standard libraries provided by Ruby and the libraries that are described in the library reference. If you want to use a library provided by the product, define "standard/*file name of library*" in the "require" statement. Refer to "Libraries Provided by the Product" in the *Systemwalker Runbook Automation Reference Guide* for details of the libraries provided by the product.

Ruby script	Description
require 'standard/swrba_input'	Defining a library for analyzing the file that stores the input information. This library must be defined.
require 'standard/swrba_command'	Defining a library for executing an arbitrary command
require 'kconv'	Defining a library for performing conversion of the character code
require 'standard/swrba_logger'	Defining a library for outputting a log of the operation component

(2) Preparing log output for operation component

This prepares the processing results of the operation component to be output as a log.

Ruby script	Description
logger = Swrba_Logger.new ("swrba_command_run", "swrba_standard_guest.log")	Generating an instance for outputting a log - "swrba_command_run" Label name for identifying the output source of the log. Specify a label name that will be unique. - "swrba_standard_guest.log" File name of the log. Specify any file name. However, do not specify the log file name "swrba_standard.log", which is provided by Systemwalker Runbook Automation and is output by the operation component.

(3) Preparing extraction of input information from I/O information file

Include processing for preparing the extraction of input information.

Ruby script	Description
input = Swrba_Input.new	Generating an instance for analyzing the input information file
option = []	Performing data initialization
option.push(data)	Obtaining parameter information and storing it in option
if option.size != 2	Checking the number of parameters
if option[0] != "-input"	Checking the option type
if File.exist?(option[1]) == false	Checking that the file exists

(4) Extracting input information

This extracts the input information required for execution from the input information file.

Ruby script	Description
<code>hostname = input.input_analysis(option[1],"hostname")</code>	Extracting host name information from the input information file
<code>ipaddress = input.input_analysis(option[1],"ipaddress")</code>	Extracting IP address information from the input information file
<code>commandline = input.input_analysis(option[1],"commandline")</code>	Extracting information on the commands to be executed from the input information file
<code>username = input.input_analysis(option[1],"username")</code>	Extracting information on connection user names from the input information file
<code>password = input.input_analysis(option[1],"password")</code>	Extracting information on connection user passwords from the input information file
<code>execusername = input.input_analysis(option[1],"execusername")</code>	Extracting information on executing user names from the input information file
<code>execpassword = input.input_analysis(option[1],"execpassword")</code>	Extracting information on passwords of executing user names from the input information file

(5) Checking input information

This checks the extracted input information. If no mandatory input information exists, processing ends with an error.

Ruby script	Description
<code>if ipaddress != nil && ipaddress != "" hostname = ipaddress end</code>	If IP address information is included in input information file, specifying IP address in host name

(6) Executing using library

This writes the contents to be executed using a library. The Ruby script shown above is an example where the command library is to be used.

(7) Outputting execution results

This outputs the executed results. The Ruby script shown above is an example where the command library is to be used.

Ruby script	Description
<code>STDOUT.print</code>	Standard output
<code>STDERR.print</code>	Standard error output
<code>command.stdout.toutf8</code>	Converting the character code of the contents to be output to UTF-8

In the example shown above, this outputs a log if an exception occurs.

Ruby script	Description
<code>logger.error(exc)</code>	Output the exception results to a log

3.4.2.2 About Logs of Operation Components

The log files of an operation component are output in the following format:

uppercase initial of log type,[log output date and time#instance number] log type:process id:activity id.label name:log contents
 (Example) E, [2010-04-21T16:06:22.710069 #340] ERROR -- :process id:activity id.label name:[exception contents]

The log files are stored in the following location and are in a 1-megabyte rotation:

Windows:

[Systemwalker Runbook Automation Management Server installation directory]\SWRBAM\etc\share\rbaope\work\log

Linux:

/etc/opt/FJSVswrbam/share/rbaope/work/log/

3.4.2.3 About Return Values of Operation Components

Return values of uniquely developed operation components can be set in a range between 0 and 255. Note that return values between 156 and 160 and between 171 and 240 have been reserved by Systemwalker Runbook Automation, so return values should not be set in these ranges. In addition, when return values between 161 and 170 are set, a retry is implemented. The retry count is set as I/O information for an operation component when an Automated Operation Process is developed.

(Example) Setting return value of "150": exit 150

3.4.2.4 About Storage Locations and File Names of Operation Components

After creating uniquely developed operation components, registering the operation components causes them to be stored in the following location of the Management Server:

Windows:

[Systemwalker Runbook Automation Management Server installation directory]\SWRBAM\etc\share\rbaope\bin\parts\guest\E0

Linux:

/etc/opt/FJSVswrbam/share/rbaope/bin/parts/guest/E0/

Specify the Ruby script file names as follows:

- Use up to 64 bytes, including the extension (.rb), to specify the file name.
- Only lowercase letters (a-z), uppercase letters (A-Z), numeric characters (0-9), half-size hyphen (-), half-size underscore (_), and period (.) can be used in a file name.
- Ensure that the first character is a lowercase letter (a-z) or uppercase letter (A-Z).

In addition, the Ruby script file names of operation components that are provided as standard by the product have the prefix "swrba". In view of maintainability, adding the prefix "swrba" to Ruby script file names of uniquely developed operation components is not recommended.

3.4.3 Composition Example of a Perl Script

An example of creating an "Execute an arbitrary command on a local server" operation component is used here to explain the composition of a Perl script in an operation component.



The only library for Perl provided by Systemwalker Runbook Automation is an input information library.

If you want to create operation components using Perl script, obtain Perl libraries as required and install them in the Management Server.

use Swrba_Input;	Mandatory	(1) Reading library to be used
use strict; use warnings;	Optional	

<pre> use IPC::Open3; use Symbol; use utf8; use Encode; use Encode::Guess qw/cp932 euc-jp 7bit-jis/; </pre>		
<pre> binmode STDOUT, 'utf8'; binmode STDERR, 'utf8'; </pre>	Optional	(2) Setting output character code of component execution results
<pre> my \$input = new Swrba_Input; if(\$#ARGV != 1){ exit 198; } if(\$ARGV[0] ne "-input"){ exit 198; } if(! -f \$ARGV[1]){ exit 198; } </pre>	Mandatory	(3) Preparing extraction of input information from input information file
<pre> my \$hostname = \$input->input_analysis(\$ARGV[1],"hostname"); if(\$hostname eq ""){ exit 197; } my \$commandline = \$input->input_analysis(\$ARGV[1],"commandline"); if(\$commandline eq ""){ exit 197; } </pre>	Optional	(4) Extracting input information
<pre> my (\$cmd_stdout, \$cmd_stderr, \$cmd_stdin) = (gensym, gensym, gensym); my \$pid = open3(\$cmd_stdin, \$cmd_stdout, \$cmd_stderr, \$commandline); my @out = <\$cmd_stdout>; my @err = <\$cmd_stderr>; foreach my \$line (@out){ print STDOUT decode('Guess',\$line); } foreach my \$line (@err){ print STDERR decode('Guess',\$line); } waitpid(\$pid, 0); my \$child_exit_status = \$? >> 8; close \$cmd_stdin; close \$cmd_stdout; close \$cmd_stderr; </pre>	Optional	(5) Outputting execution results
<pre> exit \$child_exit_status; </pre>	Optional	(6) Ending script

3.4.3.1 Script Details

The details of the script file outlined above are explained below.

(1) Reading library to be used

This reads the library to be used by the operation component. The libraries that can be used are the standard libraries provided by Perl and those described in the library reference. Refer to "Libraries Provided by the Product" in the *Systemwalker Runbook Automation Reference Guide* for details of the libraries provided by the product.

Perl script	Description
use Swrba_Input;	Defining a library for analyzing the file that stores the input information. This library must be defined.
use Symbol; use utf8; use Encode; use Encode::Guess qw/cp932 euc-jp 7bit-jis/;	Defining a library for performing conversion of the character code for standard output and standard error output for a component Here, the standard Perl libraries are being used. If these libraries have not been installed in the Management Server, you must obtain and install them. In this example, the character code is converted to UTF-8.

(2) Setting output character code of component execution results

This sets the character code type for the execution results of the operation component.

Perl script	Description
Binmode STDOUT, 'utf8'; binmode STDERR, 'utf8';	Ensures that standard output and standard error output is output in UTF-8

(3) Preparing extraction of input information from input information file

Include processing for preparing the extraction of input information.

Perl script	Description
my \$input = new Swrba_Input;	Declaring variable name "input" as a local variable
if(\$#ARGV != 1){ exit 198; } if(\$ARGV[0] ne "-input"){ exit 198; }	Checking that the format of the parameter to be handled is correct
if(! -f \$ARGV[1]){ exit 198; }	Checking that the file to be handled as an input parameter exists

(4) Extracting input information

This extracts the input information required for execution from the input information file.

Perl script	Description
my \$commandline = \$input->input_analysis(\$ARGV[1],"commandline");	Extracting command line information from the input information file

Perl script	Description
<pre>if(defined(\$commandline)){ exit 197; }</pre>	

(5) Outputting execution results

This outputs the executed results.

Perl script	Description
<pre>my (\$cmd_stdout, \$cmd_stderr, \$cmd_stdin) = (gensym, gensym, gensym); my \$pid = open3(\$cmd_stdin, \$cmd_stdout, \$cmd_stderr, \$commandline); my @out = <\$cmd_stdout>; my @err = <\$cmd_stderr>;</pre>	Obtaining standard output and standard error output of the component
<pre>foreach my \$line (@out){ print STDOUT decode('Guess',\$line); }</pre>	Standard output
<pre>foreach my \$line (@err){ print STDERR decode('Guess',\$line); }</pre>	Standard error output
<pre>waitpid(\$pid, 0); my \$child_exit_status = \$? >> 8;</pre>	Receiving return values of the component

(6) Ending script

This ends the Perl script.

Perl script	Description
<pre>exit \$child_exit_status;</pre>	Ending script by using received return values

3.4.3.2 About Return Values of Operation Components

Return values of uniquely developed operation components can be set in a range between 0 and 255. Note that return values between 156 and 160 and between 171 and 240 have been reserved by Systemwalker Runbook Automation, so return values should not be set in these ranges. In addition, when return values between 161 and 170 are set, a retry is implemented. The retry count is set as I/O information for an operation component when an Automated Operation Process is developed.

(Example) Setting return value of "150": exit 150

3.4.3.3 About Storage Locations and File Names of Operation Components

After creating uniquely developed operation components, registering the operation components causes them to be stored in the following location of the Management Server:

Windows:

[Systemwalker Runbook Automation Management Server installation directory]\SWRBAM\etc\share\rbaope\bin\parts\guest\E0

Linux:

/opt/FJSVswrbam/etc/share/rbaope/bin/parts/guest/E0

Specify Perl script file names as follows:

- Use up to 64 bytes, including the extension (.pl).
- Only lowercase letters (a-z), uppercase letters (A-Z), numeric characters (0-9), half-size hyphen (-), half-size underscore (_), and period (.) can be used in a file name.
- Ensure that the first character is a lowercase letter (a-z) or uppercase letter (A-Z).

In addition, the Ruby script file names of operation components that are provided as standard by the product have the prefix "swrba". In view of maintainability, adding the prefix "swrba" to Perl script file names of uniquely developed operation components is not recommended.

3.4.4 Creating Operation Component Projects

Create a project for saving an operation component.

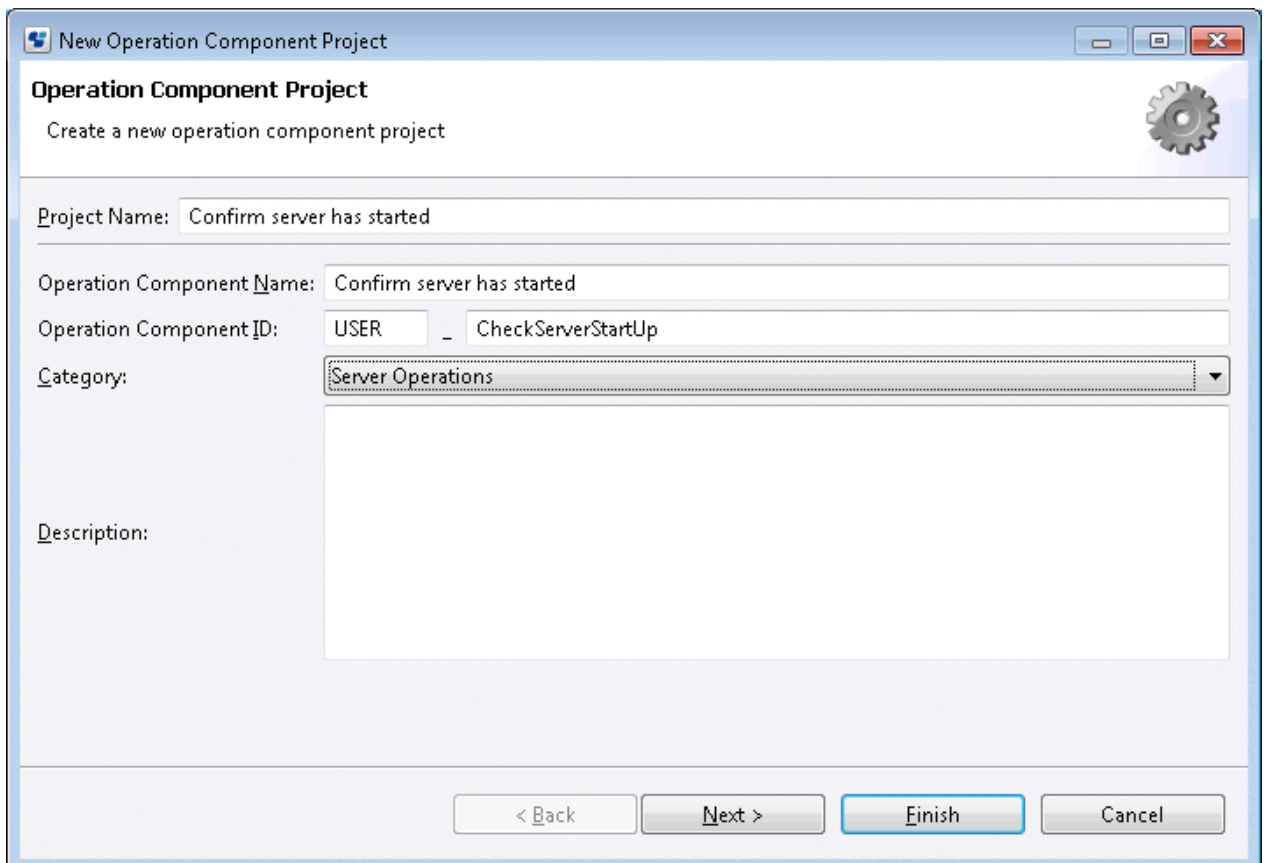


About the management structure of operation components

One operation component project is required for one operation component.

1. Right-click a category in the **Operation Component Management** view. Select **New >> Operation Component** from the pop-up menu,

The **New Operation Component Project** dialog box will be displayed.



New Operation Component Project

Operation Component Project
Create a new operation component project

Project Name: Confirm server has started

Operation Component Name: Confirm server has started

Operation Component ID: USER _ CheckServerStartUp

Category: Server Operations

Description:

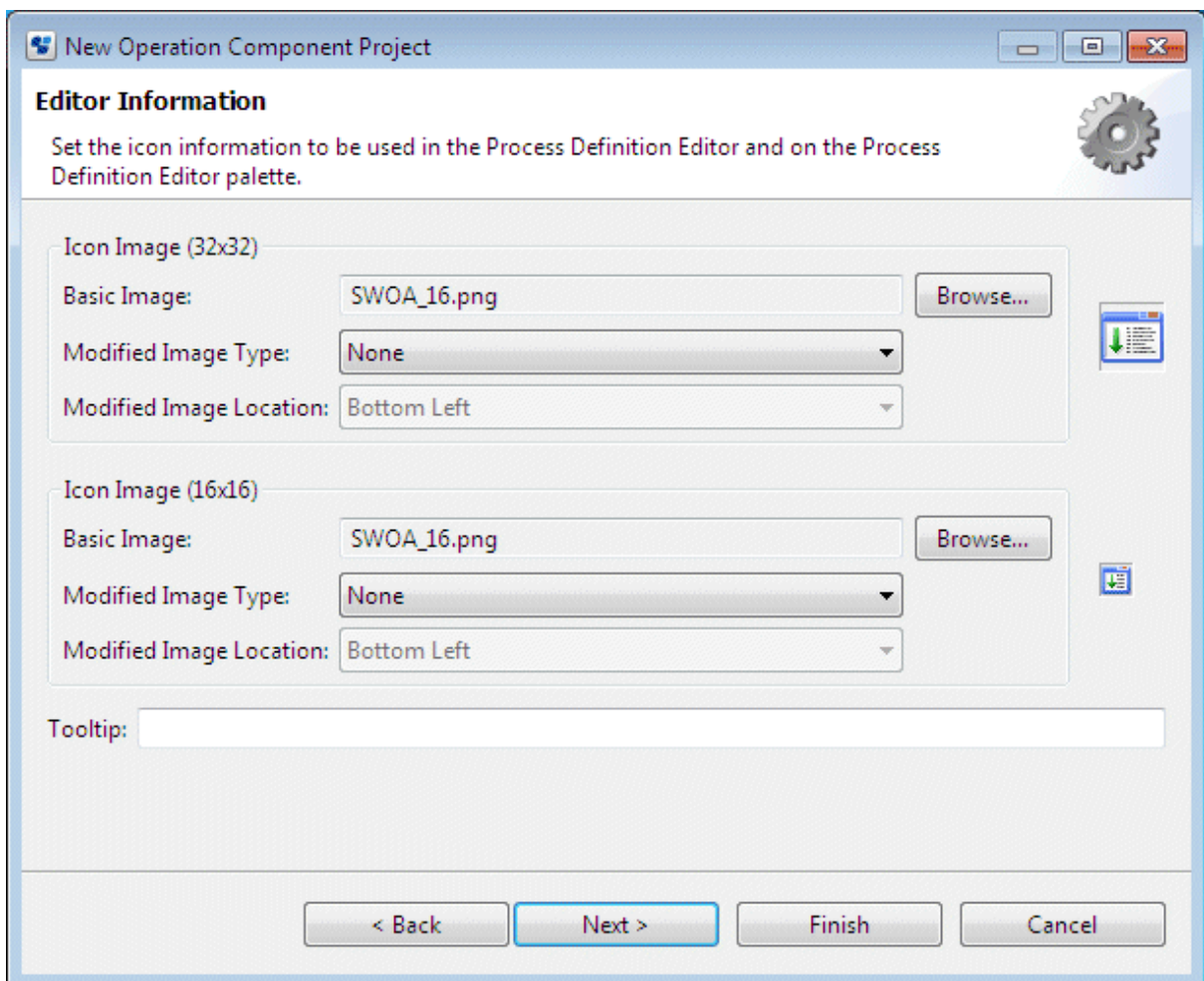
< Back Next > Finish Cancel

- Enter the name of the project in the **Project Name** field.
The name of the project must be made unique to the workspace.
- Enter the name of the operation component in the **Operation Component Name** field. Enter the name using up to 61 characters.
The operation component name will be used as the display name in the Process Definition Editor palette.
- Enter an ID for uniquely identifying the operation component in the **Operation Component ID** field. Enter up to 5 half-size characters as the ID prefix in the left-hand field. Enter up to 55 half-size letters or underscores in the right-hand field.

Note

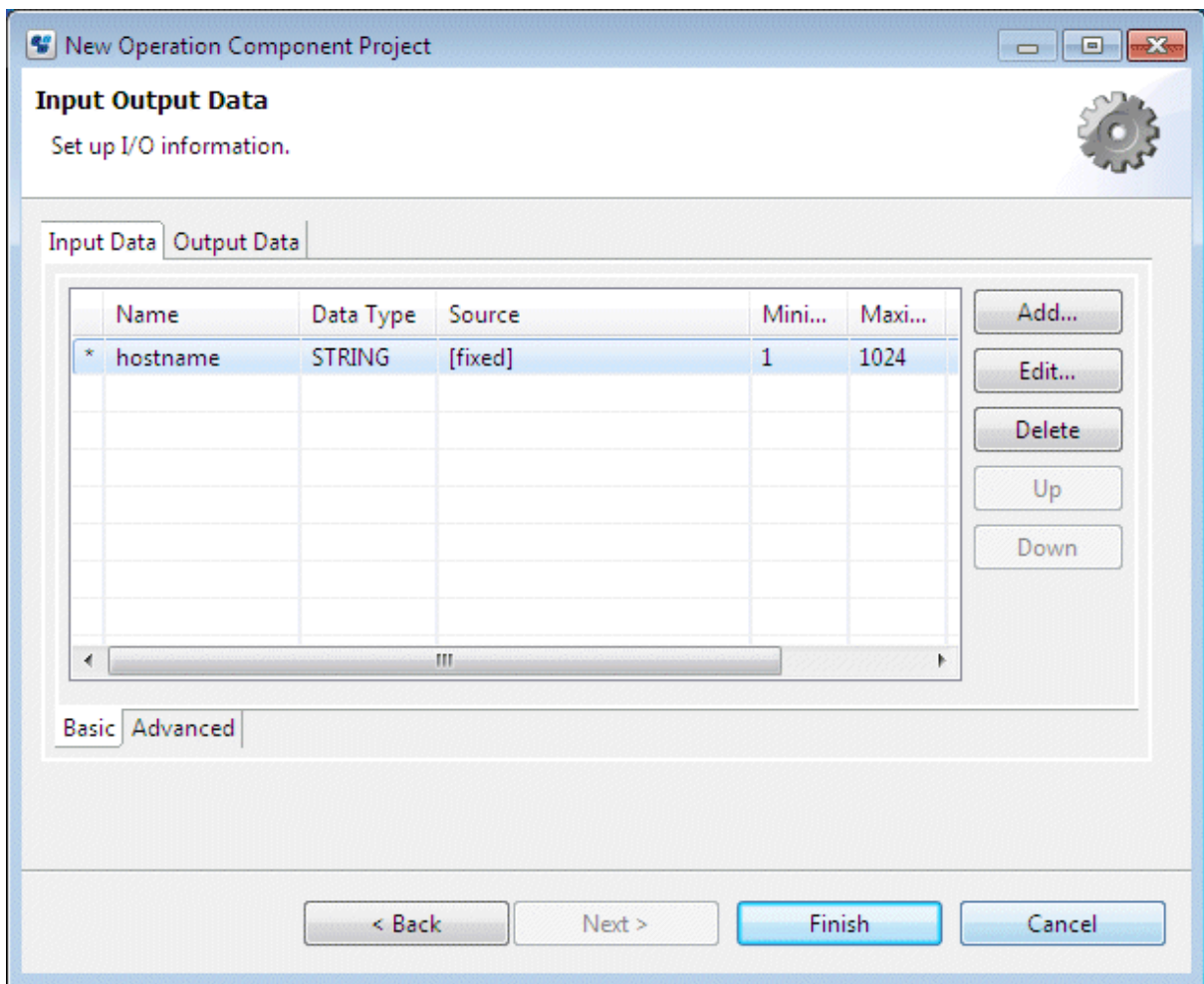
"SWRBA" cannot be used as the prefix of an operation component ID.

- Select a category of operation component from the **Category** combo box.
A category is a virtual folder for managing an operation component by applying a system to it, and it does not exist in the workspace. The category is the name of the group (folder) that is used when the operation component (operation component node) is displayed in the Process Definition Editor palette.
- Enter a description of the operation component in the **Description** field using up to 4096 characters.
- Click the Next button and set icon image information with using Process Definition Editor in **Editor Information** display and with using Process Definition Editor palette.(Optional)



- Enter a simple description of the operation component in the **Tooltip** field. (Optional)
The entered text can be displayed as tooltip help when the cursor is placed over the icon of the operation component node in the Process Definition Editor palette.

9. Click the **Next** button and set the I/O information for executing the operation component in the **I/O Settings** field.



New Operation Component Project

Input Output Data

Set up I/O information.

Input Data Output Data

Destination	Execution ...	
[uda] SWRBA_RCODE	returnCode	
[uda] SWRBA_STDOUT	stdout	
[uda] SWRBA_STDERR	stderr	

< Back Next > Finish Cancel

Click **Add** or **Delete** to add or delete an item.

Add Input Data

Input Data

Name:

Mandatory/Optional: Mandatory Optional

Data Type:

Select from List

Minimum Number of Characters:

Maximum Number of Characters:

Default:

Description:

OK Cancel

10. Click **Exit**.

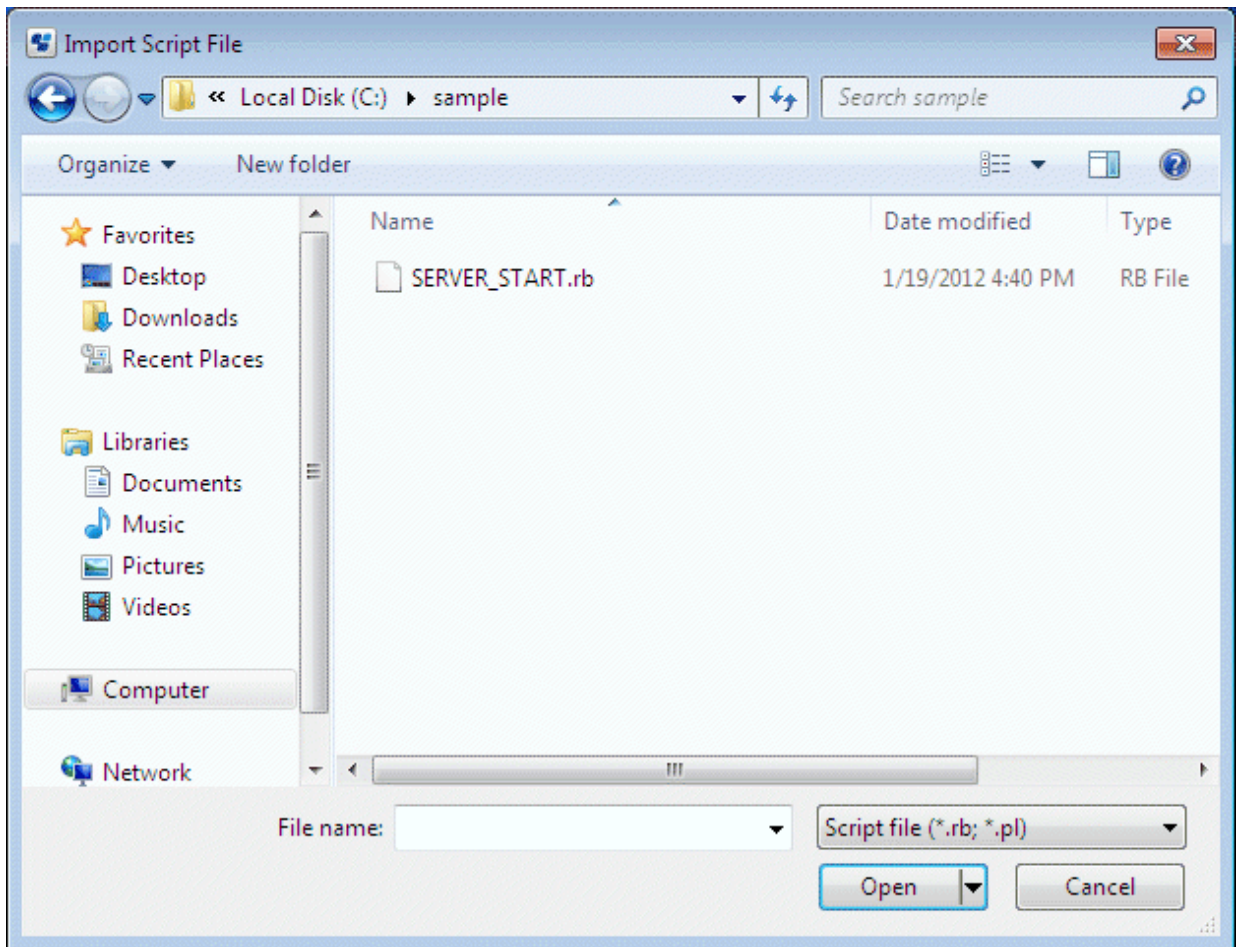
3.4.5 Importing Script Files

Import a script file to the created operation component project.

Only a file with an extension of .rb or .pl can be imported.

1. Right-click the project that is to import the script file in the **Operation Component Management** view and select **Import Script File** from the pop-up menu.

2. In the **Import Script File** dialog box, move to the location in which the script file has been stored.



3. Select a script file and click the **Open** button to import the script file.

Note that if a script file with the same file name already exists in the project, a message will be displayed to check whether you want to overwrite the file. In addition, if a script file with a different name already exists in the project, a message will be displayed to check whether you want to rewrite the file.

3.4.6 Registering Developed Operation Components in the Palette

Register a developed operation component in the Process Definition Editor palette.

Registering an operation component will allow it to be called from the Process Definition Editor palette when you want to use a created operation component to create an Automated Operation Process.

The four registration methods are as follows:

- Registering when importing to Systemwalker Runbook Automation Studio

During import of an operation component to Systemwalker Runbook Automation Studio, checking **Registers the operation component in the Process Definition Editor palette** in the **Import Operation Component** dialog box allows you to register the operation component in the Process Definition Editor palette while importing it.

- Registering from the menu

Use the **Register in the Process Definition Editor palette** menu in the **Operation Component Management** view to register the operation component in the Process Definition Editor palette.

- Registering when uploading to the Management Server

When you are registering an operation component in the Management Server from Systemwalker Runbook Automation Studio, checking **Registers the operation component in the Process Definition Editor palette** in the **Upload Operation Component** dialog box allows you to register the operation component in the Process Definition Editor palette while uploading it.

- Registering when downloading from the Management Server

When you are downloading an operation component to Systemwalker Runbook Automation Studio from the Management Server, checking **Registers the operation component in the Process Definition Editor palette** in the **Download Operation Component** dialog box allows you to register the operation component in the Process Definition Editor palette while downloading it.

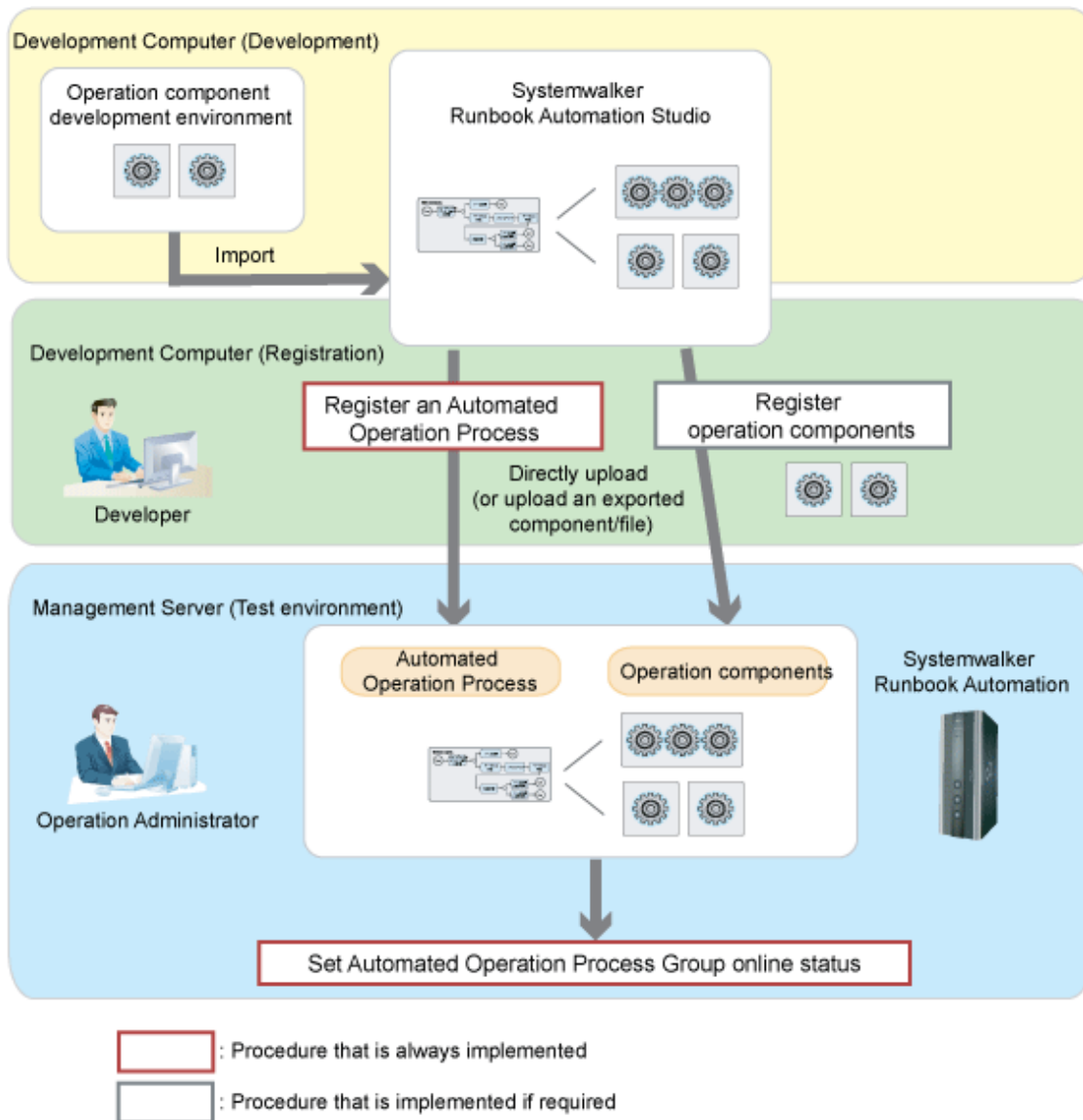
Refer to the *Systemwalker Runbook Automation Studio User's Guide* for procedures on how to modify I/O information or script files of self-produced operation components that have been registered in the palette.

Chapter 4 Registering Automated Operation Process

This chapter explains how to register automated operation processes.

4.1 The flow of registering

The following diagram shows the flow of registering an Automated Operation Process and operation components.



An outline of the tasks shown in this diagram is given below.

Registering an Automated Operation Process

The Automated Operation Process is registered using one of the methods shown below:

- Using Studio

1. Systemwalker Runbook Automation Studio is operated as follows:

a. Upload the application project.

The development computer process definition will be uploaded to the Management Server.

- Using the Web console

1. Systemwalker Runbook Automation Studio is operated as follows:

- a. Export the workflow application project.

The files for the registration of the process definition in the Management Server are created in the development computer.

2. The Web console is operated as follows:

- a. Create the Automated Operation Process group space.

- b. Update the Automated Operation Process group.

The process definition will be registered in the Management Server.

Registering operation components

If new operation components have been developed, register the operation components in the Management Server using either of the following methods:

- Registering from Systemwalker Runbook Automation Studio:

1. Upload the operation components.

The operation components of the Development Computer will be uploaded to the Management Server.

- Registering from a Web console

1. In Systemwalker Runbook Automation Studio, export the operation components.

A file for registering the developed operation components in the Management Server will be created in the Development Computer.

2. In the Web console, import the operation components.

The operation components of the Development Computer will be uploaded to the Management Server.

Giving an Automated Operation Process Group online status

An online state will be necessary in order to use the Automated Operation Process that was registered.

4.2 Registering an Automated Operation Process

If an Automated Operation Process has been developed, register an Automated Operation Process in the Management Server in one of the following ways:

- Registering from Studio
- Registering from a Web console

4.2.1 Registering from Studio

The procedure for registering an Automated Operation Process from Systemwalker Runbook Automation Studio is shown below.

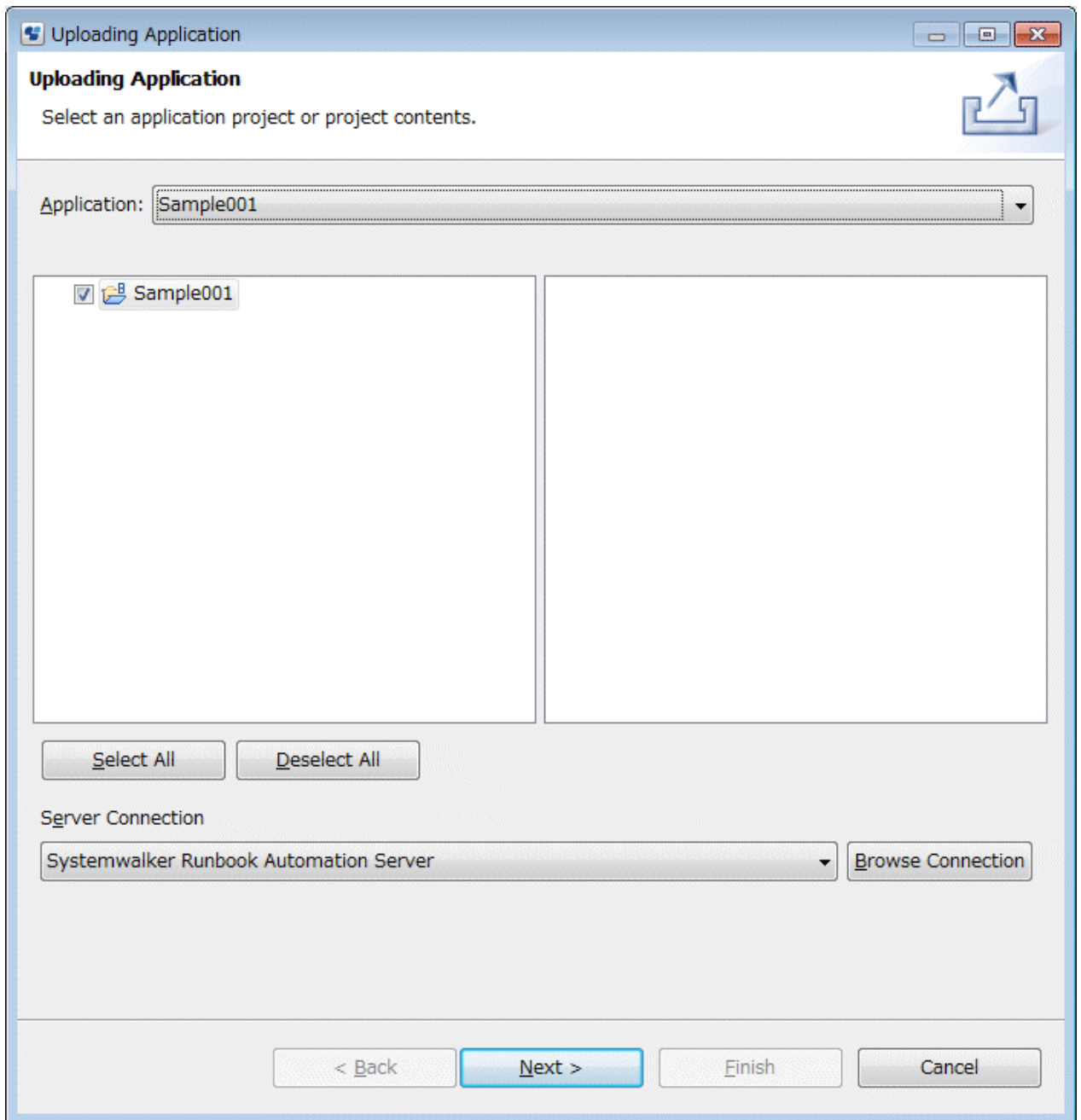
Management Server Administrator privileges are required in order to execute this operation.

If an Application project is upload to Management Server, following a procedure as below.

1. Right-clicking project name in the **Navigator** view.

Select **Uploading Application** from pop-up menu.

The **Uploading Application** dialog box will be displayed. If Server Connection is not specified, an error message will be displayed in the dialog box



2. If specify the project for uploading, following a procedure as below.

a. Select a project from Application drop-down list.

Default application is the name of project selected in the **Navigator** view.

b. Using check box, the components to be uploaded are selected or not. you can upload all projects or a component as a single project. For this, click symbol "+" before project name, and deploy project folder. Selecting project component prevents to upload same projects. It is not necessary to deploy file for other purposes. Also, It is possible to select or deselect all component with using **Select All** or **Deselect All** button. All projects components are selected as a default.

3. Select Management Server.

If select server, select it from drop-down list or refer to usable server connection.

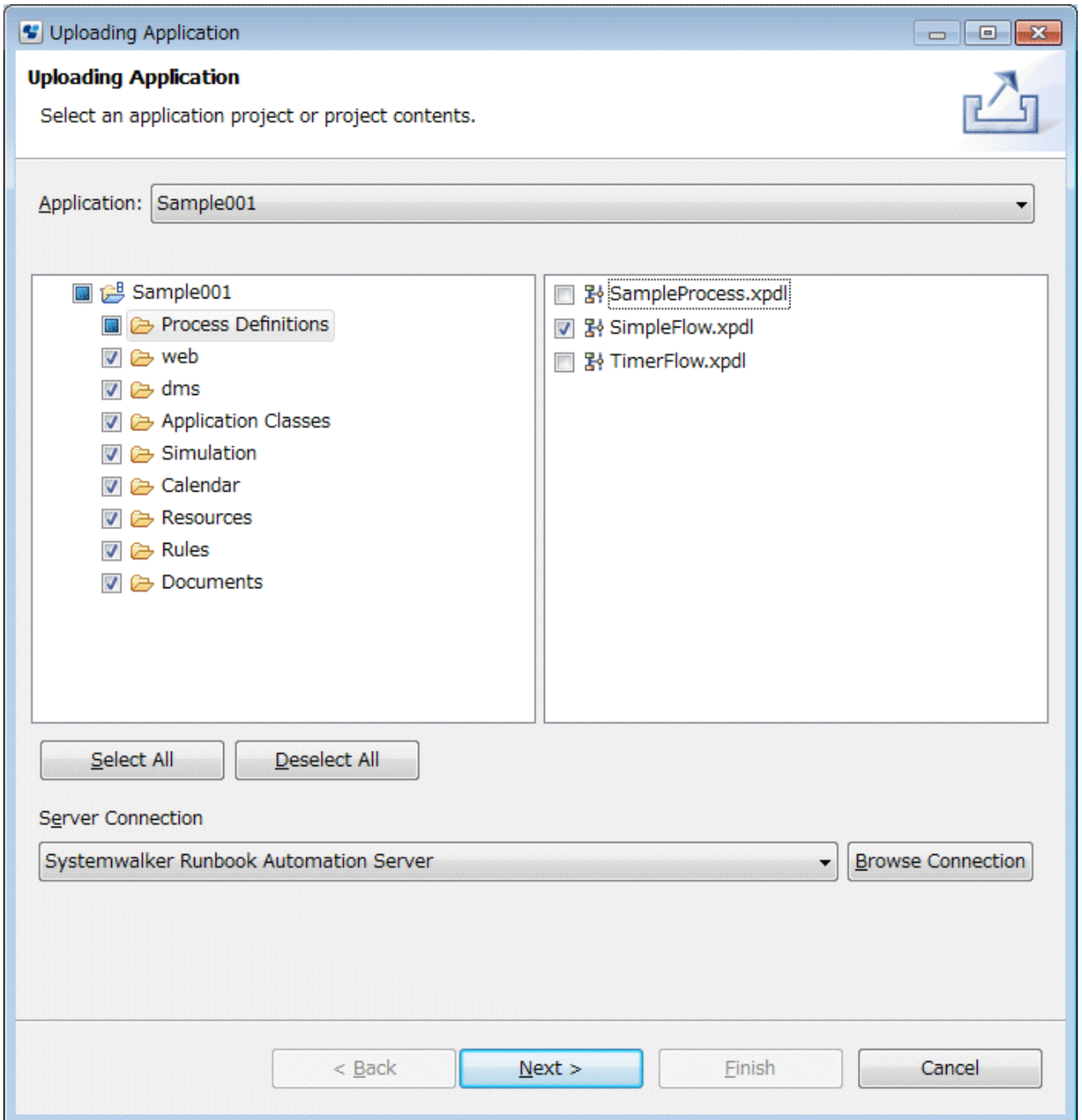
Select a Management Server from the Server Connection drop-down list. The server that was selected last will be displayed here automatically. If you have not selected a server before, the list will be empty. In this case, or if you want to select a different Management Server, follow the procedure shown below.

- a. Click the Browse connect button in the **Uploading Application** dialog box.

The **Select Server Connect** dialog box will be displayed.

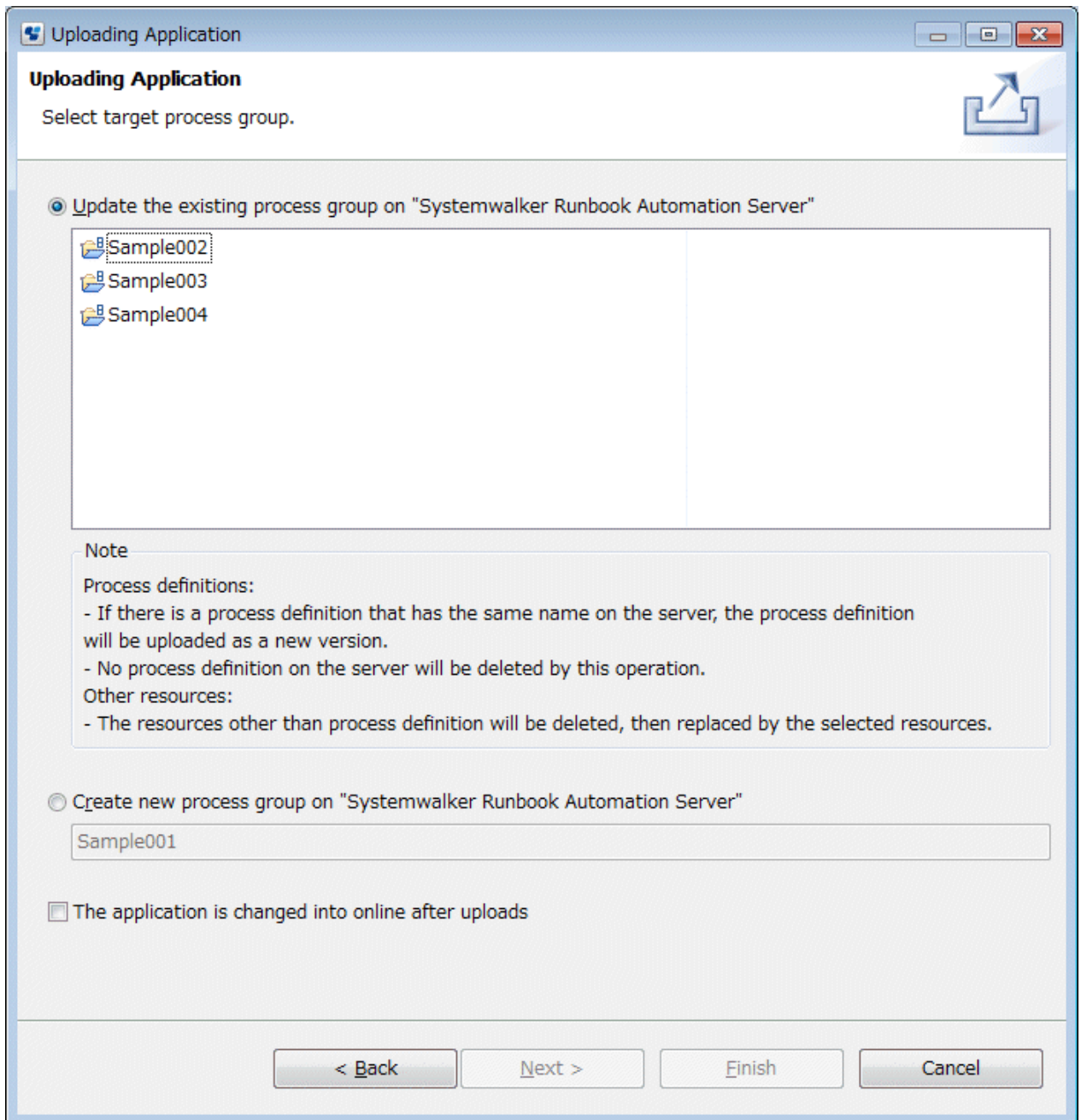
- a. Select the server connection information for the Management Server you want to connect and click the **OK** button.
- b. If you add new server connection information, select **New** button. for the Management Server you want to connect and click the **OK** button. The **Set Server Connect** dialog box will be displayed.
- c. In the Select **Server Connect** dialog, Input required data in displayed **Server Connect** daialog.

The following example shows to specify Management Server of Systemwalker Runbook Automation.The **Uploading Application** dialog will be displayed as below.



4. Click **Next** button in the **Uploading Application** dialog.

You can select to update an existing Automated Operation Process in server, or create an existing Automated Operation Process.



- If you upload the project to other existing Automated Operation Process group in server, check on **Update the existing process group on ...** .

Note

Process Definition:

- If there is a process definition that has the same name on th server, the process definition will be uploaded as a new version.
- No process definition on the server will be deleted by this operation.

Other resources:

- The resources other than process definition will be deleted, then replaced by the selected resources.

- If you upload new project to server, check on **Create new process group on ...** .
- If a new project name is same with other server name, message will be displayed to check whether you want to update it.

5. Click **Finish** button, and then upload new project.

4.2.2 Registering from a Web Console

The procedure for registering an Automated Operation Process from a Web console is shown below.

4.2.2.1 Exporting Workflow Application Projects

Systemwalker Runbook Automation Studio is operated as follows:

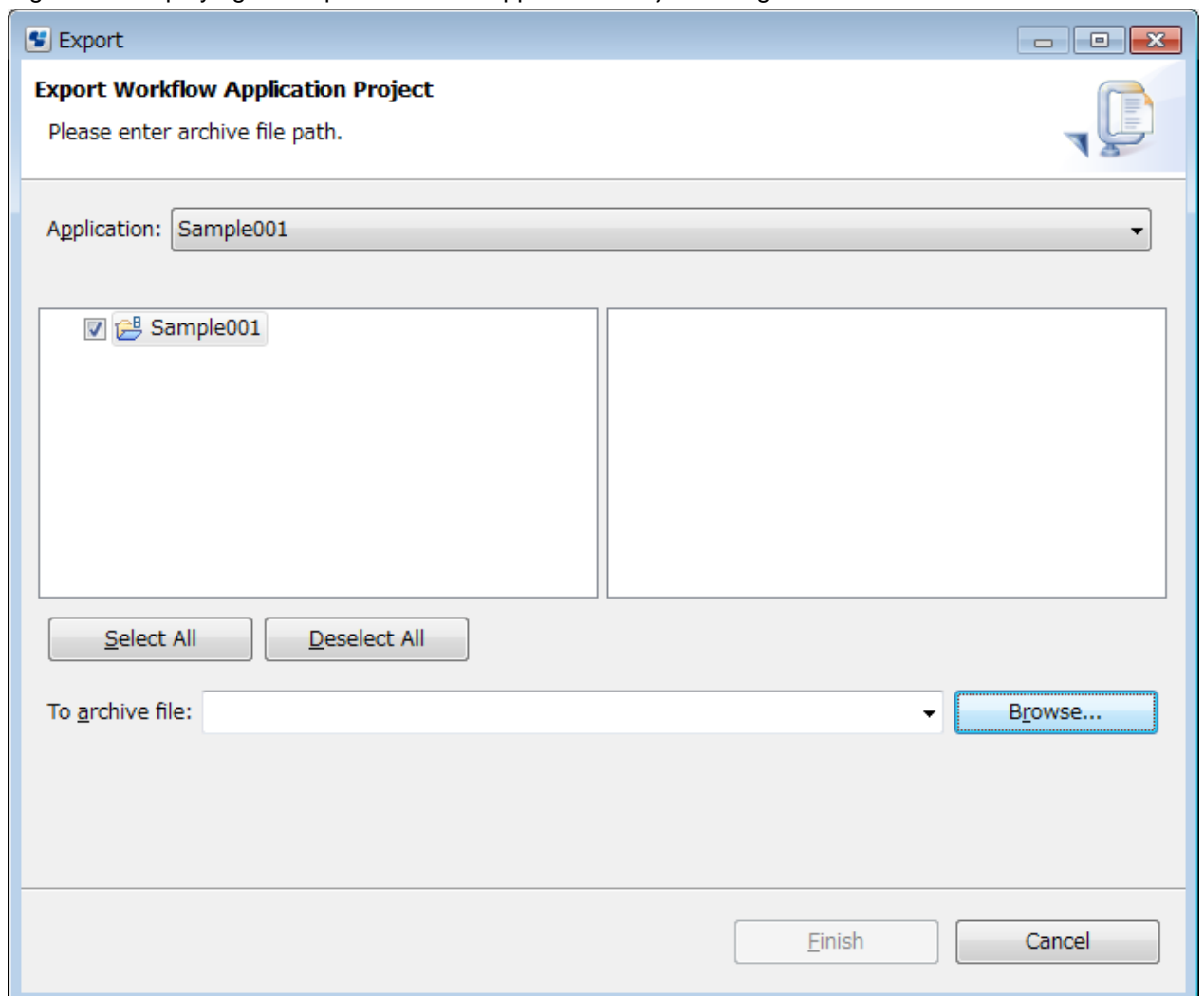
- Export the workflow application project from the workspace to the local file system to package all the files that make up the application as a .bar file.

The procedure is shown below.

1. Right-click a project name in the **Navigator** view. Select **Export** from the pop-up menu. Alternatively, this option can also be selected from the **Files** menu.

The **Export Workflow Application Project** dialog box will be displayed. The local file system and the name of the .bar file that was selected in the workspace will be displayed.

Figure 4.1 Displaying the Export Workflow Application Project dialog box



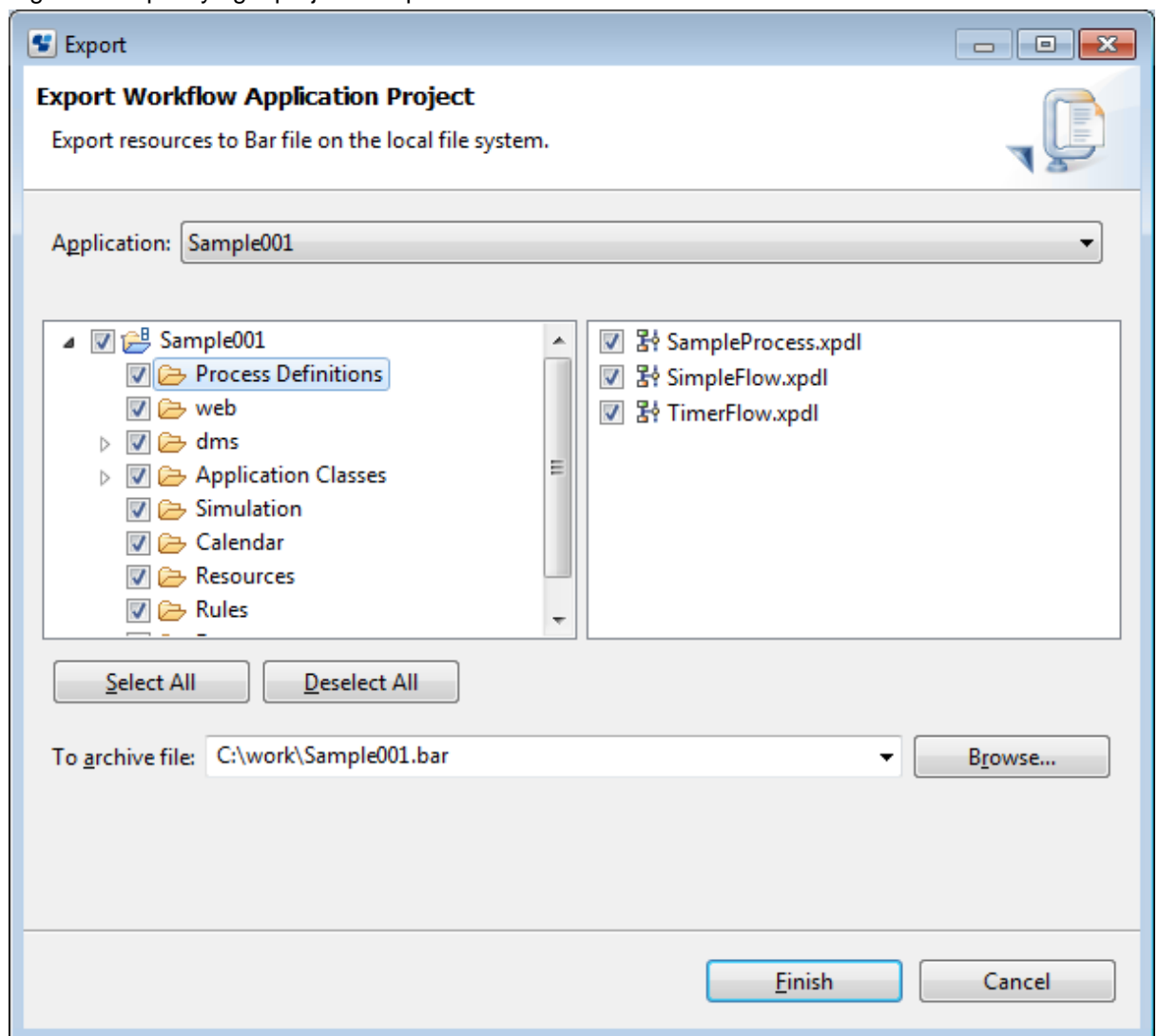
2. Specify the project component to be exported. Follow the procedure shown below.
 - a. Select the application to be exported from the **Application** drop-down menu. The default application is the name of the project selected in the **Navigator** view.

All the files that make up the application will be displayed.
 - b. Use the check boxes to select or deselect the files to be exported. The **Select ALL** or **Deselect All** buttons can be used to select or deselect all the files, respectively.
 - c. Use the **Archive File** drop-down list to specify the file in which the project to be exported will be archived. The **Browse** tab can also be used to browse the archive files. The default name of the archive file is the name of the project to be exported (such as the Prac001.bar file).

The file path will be displayed in the **Archive File** drop-down list.
(C:\tmp, for example)

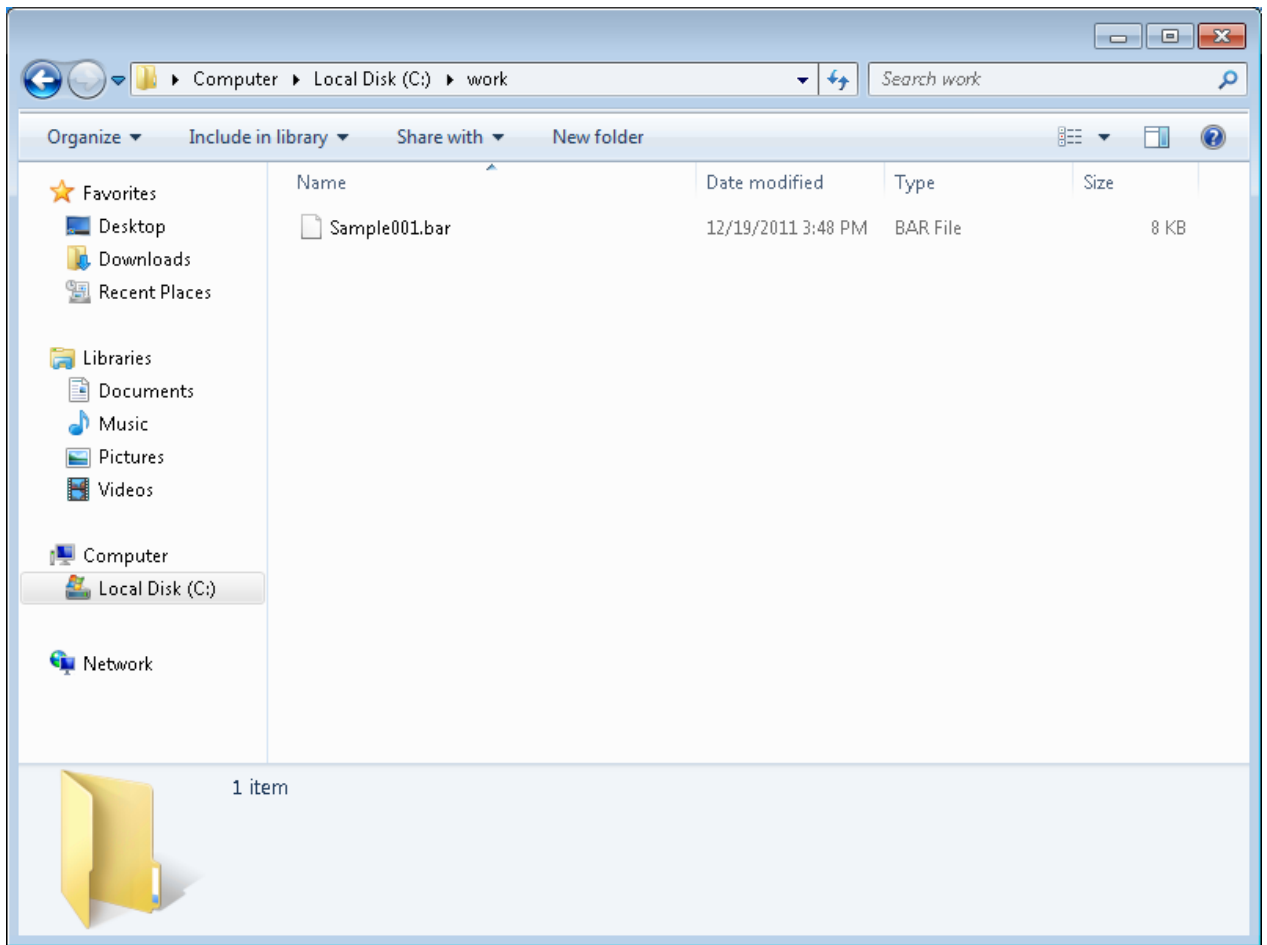
The following diagram shows how to select a specific project component and how to specify the default archive file.

Figure 4.2 Specifying a project component and archive file



3. Select the project component to be exported, specify an archive file, and click **Finish** to export the project.

This will save the workflow application project as the Prac001.bar file in the directory specified in the local file system.

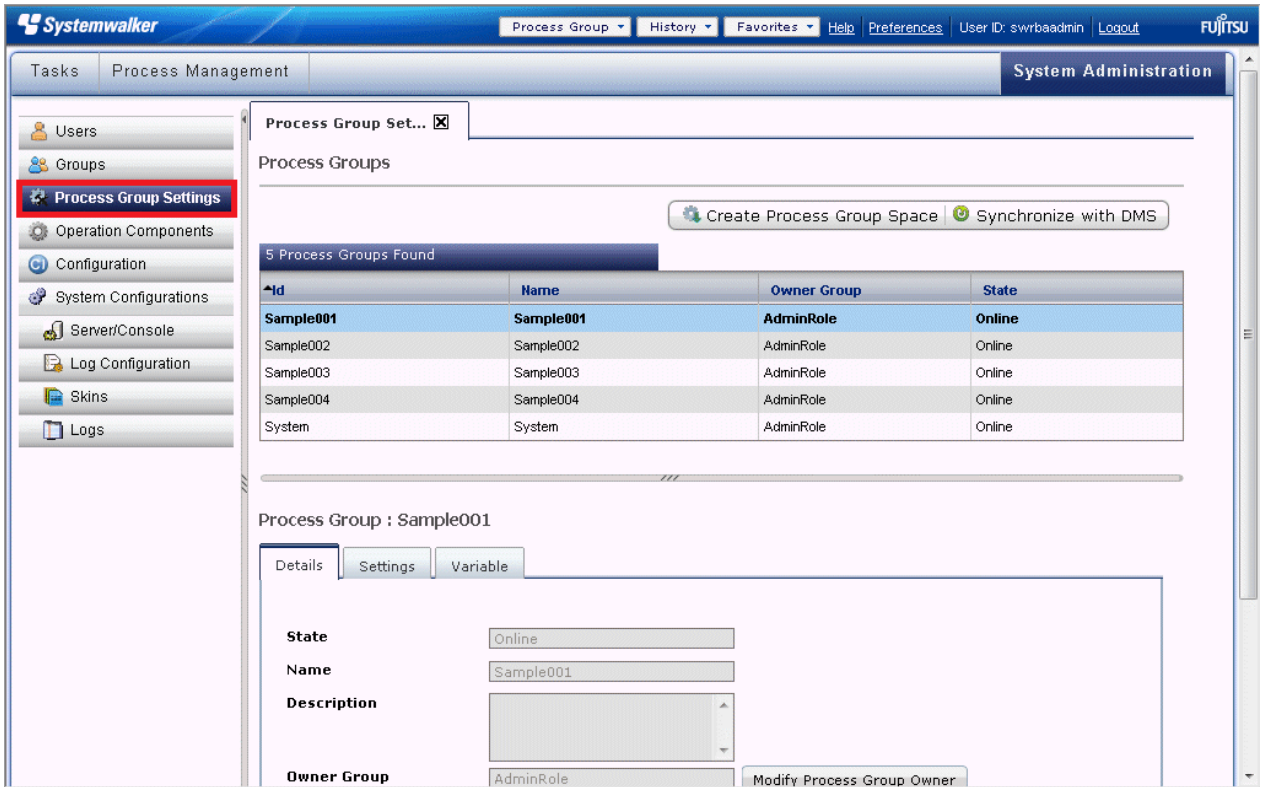


4.2.2.2 Creating Automated Operation Process Group Spaces

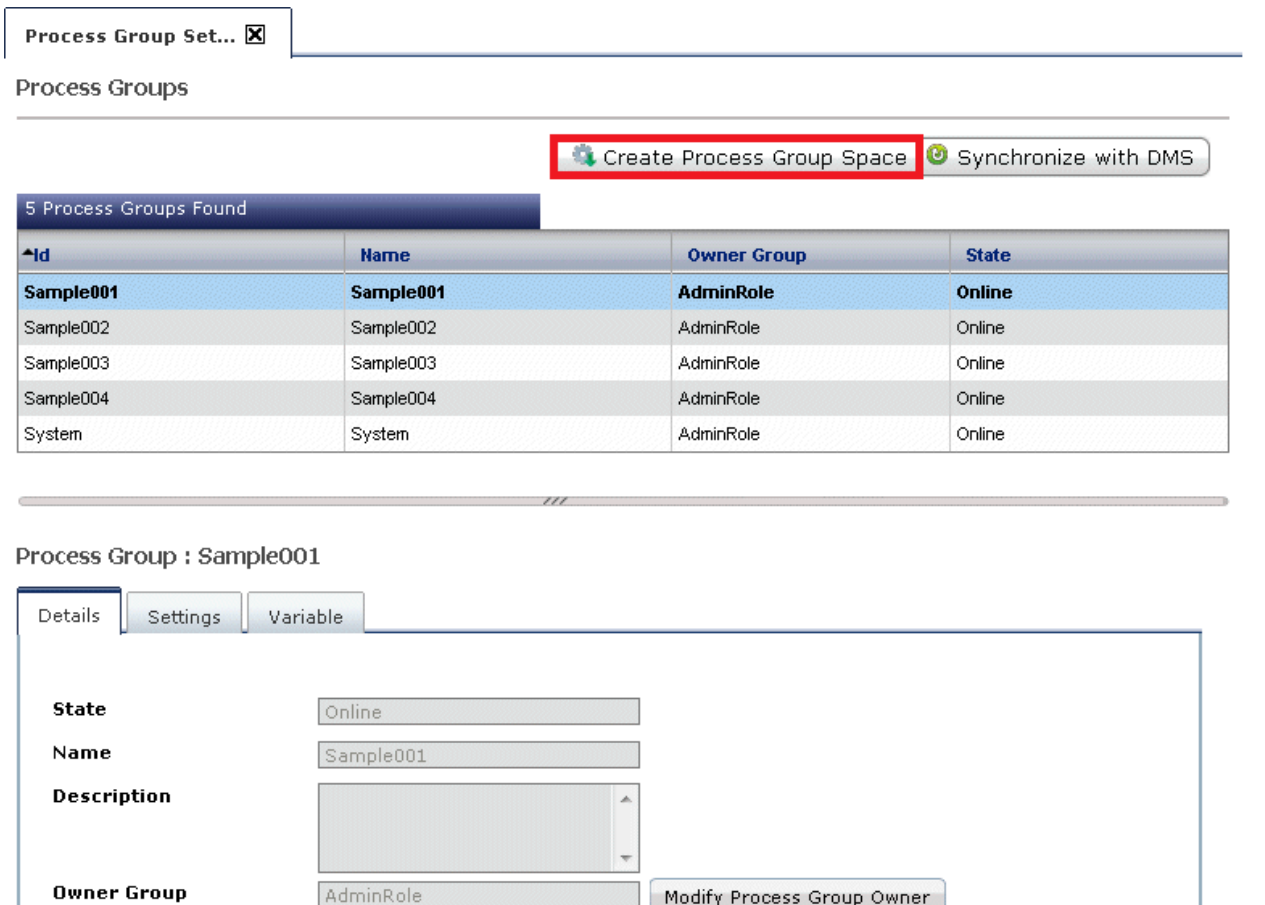
The procedure for creating an Automated Operation Process Group on a Web console is shown below.

Note that in order to create an Automated Operation Process Group space using the explanation given here, you must log in as a user with administrator privileges.

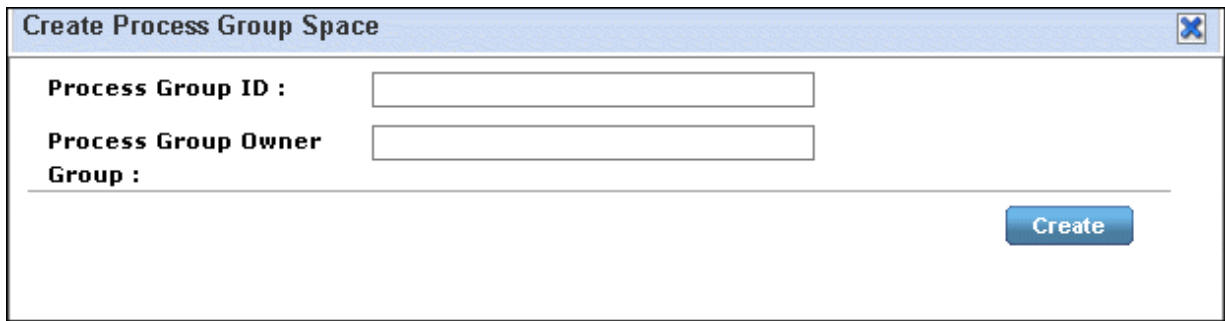
1. From the **System Administration** tab, open the **Process Group Settings** submenu.



2. Select **Create Process Group Space** from the tool bar.



The **Create Process Group Space** dialog box will be displayed.



3. Enter the identification information of the Automated Operation Process Group in the **Process Group ID** field. When a process group space is created, the information entered in the process group ID will also be registered as the process group name. The ID specified here will be displayed in the list of Automated Operation Process Group URLs later.

Note

Blank spaces and special characters cannot be used in Automated Operation Process Group IDs. Only alphanumeric characters and underscores can be used.

4. Enter the role or group to which the Automated Operation Process Group belongs in the **Process Group Owner** field. If nothing is specified in this field, the default administrator group will be allocated as the **Process Group Owner**.
5. Click **Create**. This Automated Operation Process Group will also be added under the apps subdirectory that was specified as the DMS Application Root Directory at console setup, and which is under the tenant-specific directory in the Management Server directory.

4.2.2.3 Updating Automated Operation Process Groups

Updating an Automated Operation Process Group registers the *.bar file created by Systemwalker Runbook Automation Studio in the Management Server.

Prerequisites

- An Automated Operation Process Group space that has been created on a Web console is required.
- The Automated Operation Process Group space to be updated must be displayed in the details tab of the **Process Group Settings** submenu, which is in the **System Administration** tab.
- The status of the Automated Operation Process Group must be **Offline**.

Refer to "[8.1.3 Giving Automated Operation Process Groups Offline Status](#)" for the procedure for giving Automated Operation Process Groups **Offline** status.

- When the creation of an Automated Operation Process Group using Systemwalker Runbook Automation Studio has completed, always check that it has been saved in *.bar file format.

Note

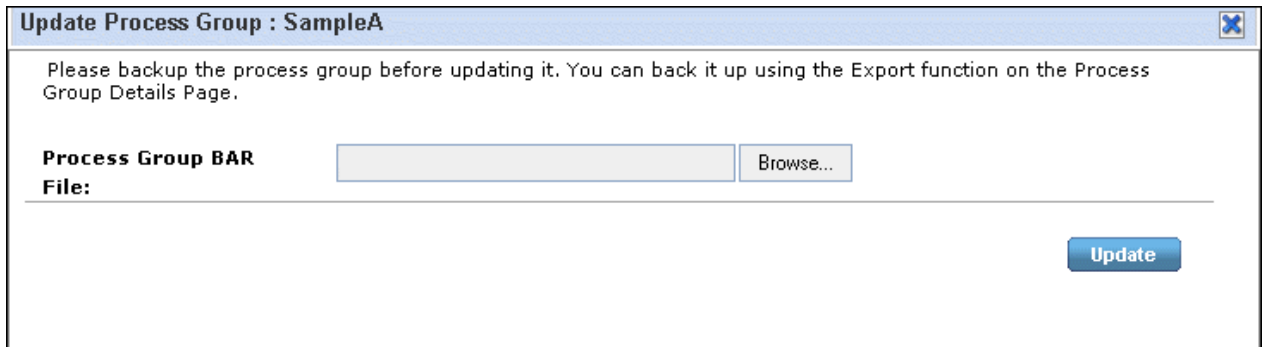
Before updating an Automated Operation Process Group, export the Automated Operation Process Group to a directory that will not be affected by the update procedure (such as C:) and back it up. To provide against data or settings files being corrupted by updates, execute a backup each time an Automated Operation Process Group is updated.

The procedure is shown below.

1. When the status is such that the process group space of the Automated Operation Process Group to be updated is displayed in the details tab of the **Process Group Settings** submenu, click **Update**.

The **Update Process Group** dialog box will be displayed in the details panel.

Refer to "4.2.2.2 Creating Automated Operation Process Group Spaces" for information on creating an Automated Operation Process Group space.



Update Process Group : SampleA

Please backup the process group before updating it. You can back it up using the Export function on the Process Group Details Page.

Process Group BAR File:

2. Click **Browse** and move to the folder that contains the Automated Operation Process Group (*.bar file). Select the BAR file and click **Browse**.

The BAR file will be displayed in BAR File.

3. Click **Update**.

The process group space will be updated, including all process definitions and processes that are part of the BAR file contents and the Automated Operation Process Group.



Process definitions

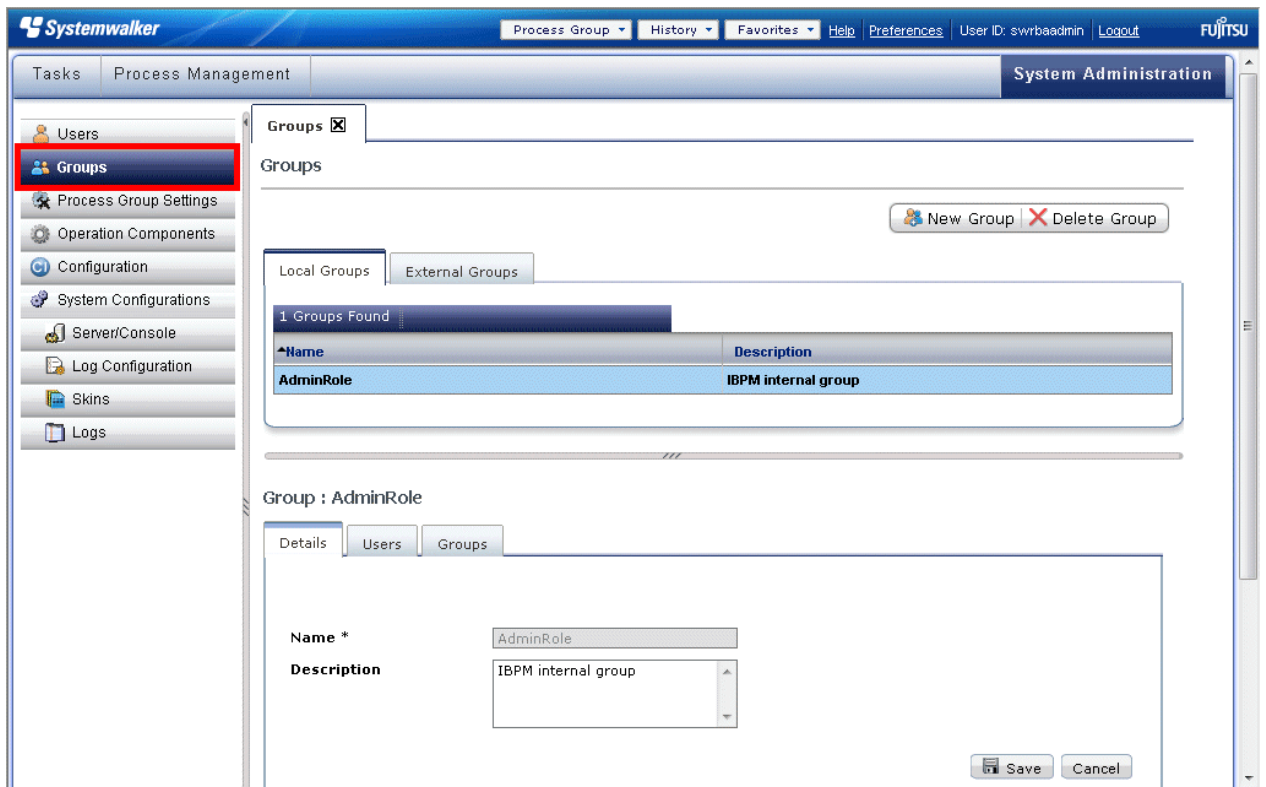
- If a process definition with the same name exists on the server, a process definition will be registered as a new version.
- A process definition on the server will not be deleted by update processing.

Files other than process definitions

- A file on the server will be overwritten by an uploaded file.
- A file on the server that does not exist in an uploaded BAR file will be deleted.

4. If the Automated Operation Process Group that has just finished being installed includes an activity that has been allocated to a group that is not listed in the local group list, a group must be added. Follow the procedure shown below to add a group to the local group list.
 - a. When you select the **Group** submenu in the **System Administration** tab, group information will be displayed in the details panel.

b. When you select a group from the list panel, the group details will be displayed in the details panel.



- c. When you right-click the group list and select **New** from the pop-up menu, the **New Group** dialog box will be displayed, and you can create a new group.

The screenshot shows the 'New Group' dialog box. It has a title bar with the text 'New Group' and a close button. The main area is divided into several sections: 'Name *' with a text input field; 'Description' with a text area; 'Users' section containing 'Available Users' and 'Assigned Users' lists, with a search box and 'Search' button above the 'Available Users' list, and four navigation buttons (right arrow, left arrow, right double arrow, left double arrow) between the two lists; 'Groups' section containing 'Available Groups' and 'Assigned Groups' lists, with a search box and 'Search' button above the 'Available Groups' list, and four navigation buttons between the two lists. At the bottom right are three buttons: 'Save', 'Save & Add Another', and 'Cancel'.

Note

If the group that the installed Automated Operation Process Group is to use is not added to the group list, the process has an undefined group for allocation of the activity. This results in an error status.

4.3 Registering Operation Components

If new operation components have been developed, register the operation components in the Management Server in one of the following ways:

- Registering from Studio
- Registering from a Web console

4.3.1 Registering from Studio

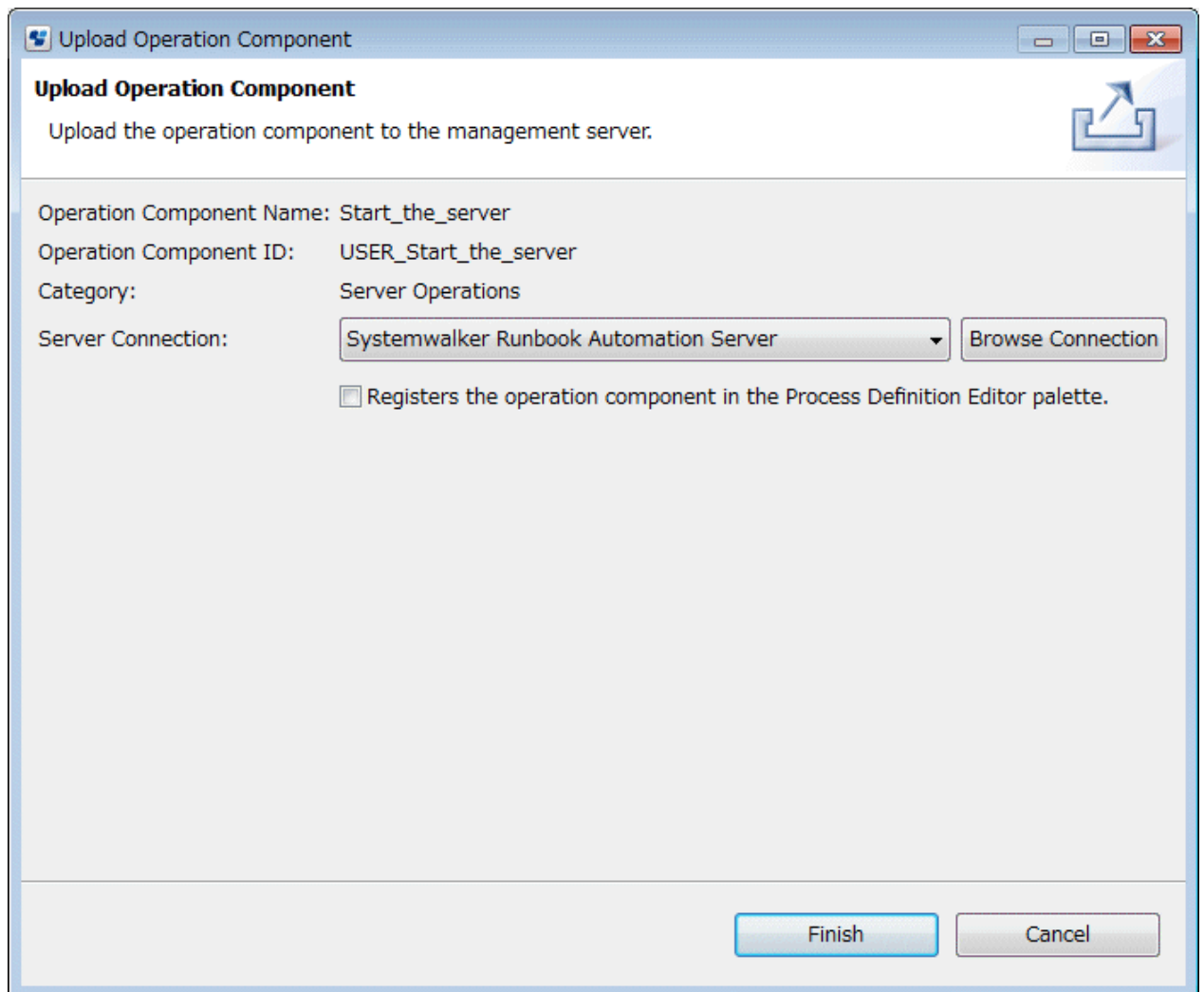
The procedure for registering operation components from Systemwalker Runbook Automation Studio is shown below.

Note that multiple operation components cannot be uploaded simultaneously.

Management Server Administrator privileges are required in order to execute this operation.

1. Right-click an operation component in the **Operation Component Management** view. Select **Upload Operation Component** from the pop-up menu,

The **Upload Operation Component** dialog box will be displayed. If Server Connection is not specified, an error message will be displayed in the dialog box.



2. Select a Management Server.

Select a Management Server from the Server Connection drop-down list. The server that was selected last will be displayed here automatically. If you have not selected a server before, the list will be empty. In this case, or if you want to select a different Management Server, follow the procedure shown below.

- a. Click the Browse connect button in the **Upload Operation Component** dialog box.
The **Select Server Connect** dialog box will be displayed.
 - b. If you select different Management Server, Select the server connection information for the Management Server you want to connect and click the **OK** button.If you have not selected a server,Click **New** button in the Select **Server Connect** dialog, Input required data in displayed **Server Connect** dialog.
 - c. Enter the required items in the Server connect setting dialog box.
3. To register the operation component in the Process Definition Editor palette as well as uploading it, check **Registers the operation component in the Process Definition Editor Palette**.
 4. Click **Exit** to upload the operation component.

If an operation component with the same ID already exists in the Management Server, a message will be displayed to check whether you want to update it.

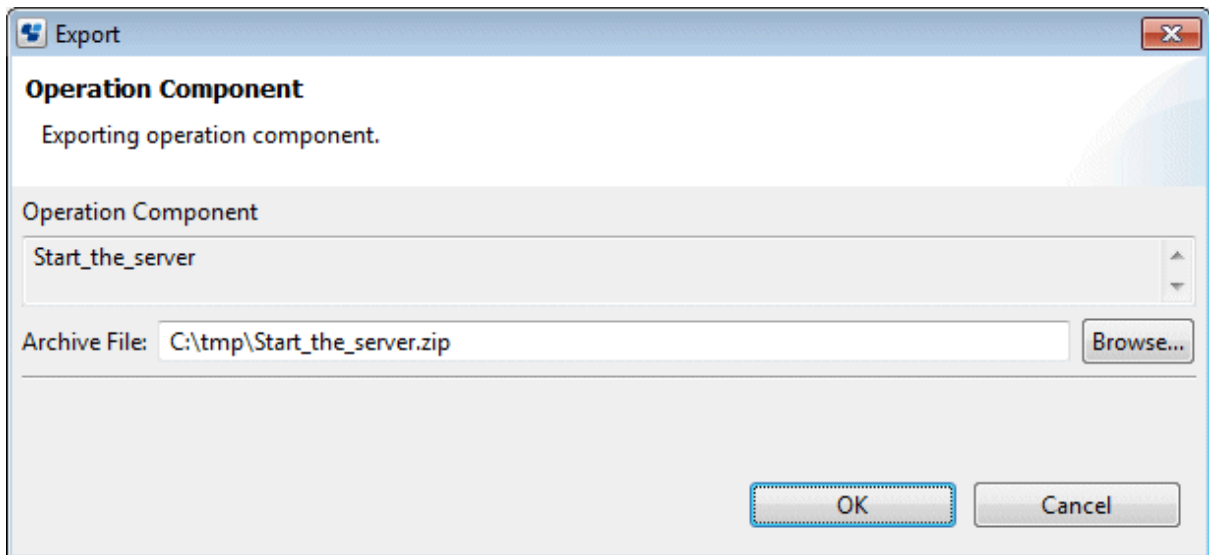
4.3.2 Registering from a Web Console

4.3.2.1 Exporting Operation Components

The procedure for exporting operation component projects is shown below.

In Systemwalker Runbook Automation Studio:

1. Right-click a project name in the **Operation Component Management** view and then select **Export Operation Component** from the pop-up menu.
2. In the **Export** dialog box that is displayed, specify in the **Archive File** field the name of the archive file that is to be output.



3. Click **OK**.

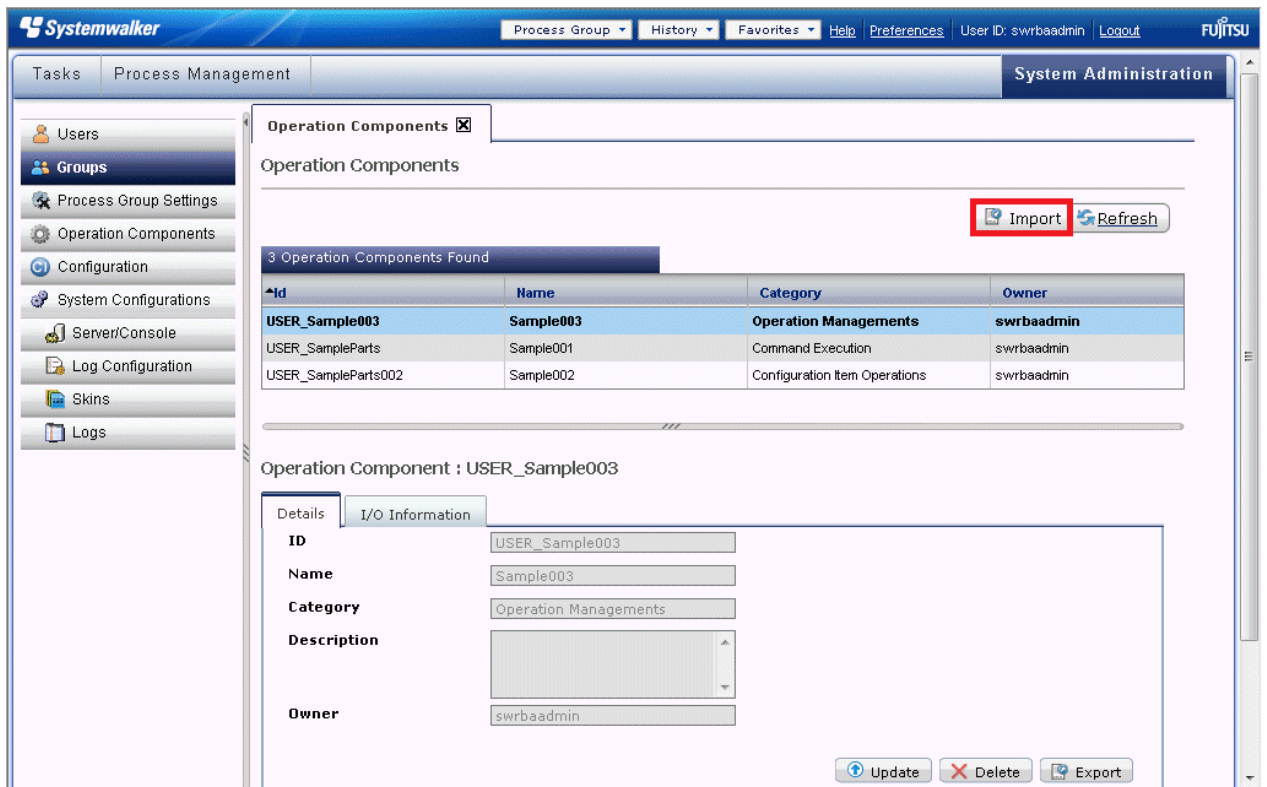
The operation component project will be saved as a .zip file under the specified directory.

4.3.2.2 Importing Operation Components

The procedure for importing operation component projects is shown below.

In the Web console:

1. Click the **Operation Component** submenu of the System Administration tab and then click **Import** on the toolbar.



The **Import Operation Component** dialog box will be displayed.



2. Click **Browse** to select the operation component file and then click **Import**.

The list will be updated and the imported operation component will be displayed in the list of operation components.

4.4 Automated Operation Process Groups Online

This section describes how to change an automated operation process group status to Online. When a group is online, it is possible to perform actions such as startup and check the progress of automated operation processes.

This action can be performed only by the system administrator.

Note that, if **The application is changed into online after uploads** of the **Uploading Application** dialog box is selected and registered using Studio, this task will be unnecessary since the status will change to online automatically at the time of upload.

To change an automated operation process group to an online status from the Web Console, follow the steps below

1. Click the **Process Group Settings** submenu in the **System Administration** tab - the **Process Group Settings** tab will be displayed in the work area.

The list panel of the tab will display the automated operation process groups.

Process Group : Sample001

Details Settings Variable

State Offline

Name Sample001

Description

Owner Group AdminRole Modify Process Group Owner

Online Offline Update Uninstall Export Access Key

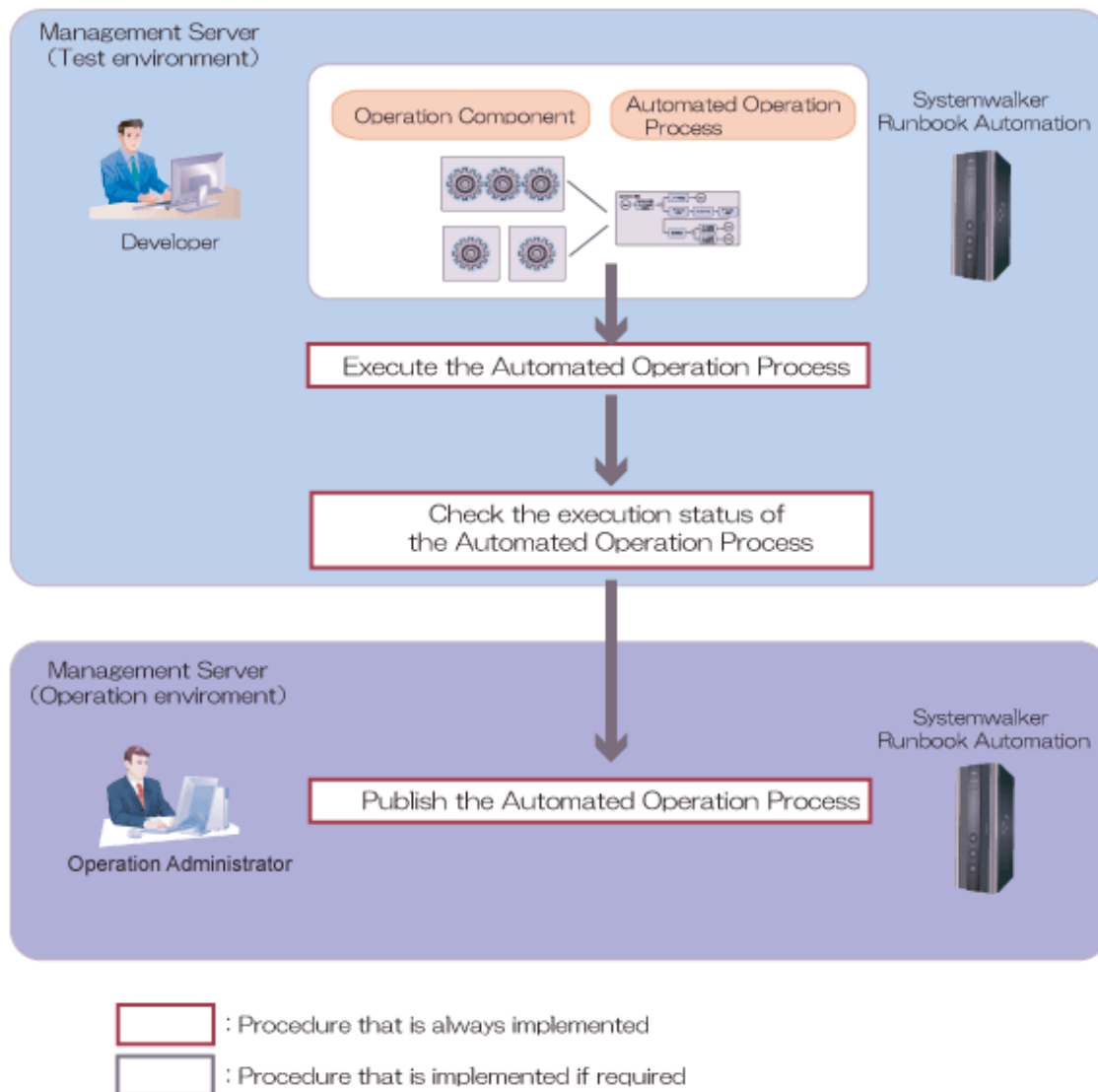
2. Select an automated operation process group from the list. In the details panel, click **Online** in the **Details** tab - the status will change to Online

Chapter 5 Testing an Automated Operation Process

This chapter explains how to test Automated Operation Processes.

5.1 Test Flow

The Automated Operation Process test flow is shown in the figure below:



An overview of the tasks shown in the above figure is explained below.

Execute the Automated Operation Process

Start the Automated Operation Process and check its behavior to confirm that it is the intended registered Automated Operation Process.

Check the execution status of the Automated Operation Process

Check the status of the executed Automated Operation Process, then check the task results and status.

Publish the Automated Operation Process

After confirming that there are no problems in the test operation, publish the Automated Operation Process so that the user can use it.

5.2 Executing the Automated Operation Process

Start the Automated Operation Process and check its behavior to confirm that it is the intended registered Automated Operation Process. Refer to "7.4 Starting Automated Operation Processes" for details.

Note that the process debug can also be executed by starting the Automated Operation Process on Systemwalker Runbook Automation Studio.

Refer to "Process Debugging" in the *Systemwalker Runbook Automation Studio User's Guide* for details.



When the Automated Operation Process is started, the operation will actually be executed for the Managed Server. A separate testing environment must be prepared if there is any chance that the test could affect the system during operation.

5.3 Checking the Execution Status of the Automated Operation Process

In the Automated Operation Process status confirmation window, the following can be checked for executing and completed flows:

- Overall view
- Values for each of the user defined attributes

The current position of a flow that is running and what caused a flow to end abnormally can be checked using this content.

Refer to "7.8 Checking Automated Operation Processes" for details.

5.4 Publishing the Automated Operation Process

Publish the Automated Operation Process after the test is complete.

5.4.1 Publishing the Process Definition



- This Management feature can only be executed by a user that has administrator privileges.
- Automated Operation Process definitions with the same process definition name are handled as the same Automated Operation Process definition in the Management Server. Only one version of an identical Automated Operation Process definition can be published.

If another version of an already published Automated Operation Process definition is published, the previously **Published** version will then be **Obsolete**.

Use the following procedure to publish Draft status process definitions.

1. Click the **Process Definition** submenu in the **Process Management** tab, then select the process definition that is to be published from the list panel.

Process Definitions

Process Definition List

[Open](#) [Import](#) [Refresh](#)

2 PD Found

Process Definition Name	Id	Version	State	Owner
Sample002	3026	1.0	Draft	swrbaadmin
Sample001	3015	1.0	Draft	swrbaadmin

Process Definition Details [Show in Full Screen](#) [Refresh BPMN](#)

Summary BPMN

Name	<input type="text" value="Sample001"/>
ID	<input type="text" value="3015"/>
Description	<input type="text"/>
State	<input type="text" value="Draft"/> Publish
Owner	<input type="text" value="swrbaadmin"/> Change Owner
Version	<input type="text" value="1.0"/>
Priority	<input type="text" value="8"/>

2. Click the **Summary** tab to access the process definition **Summary** tab.

3. Check that the correct process definition information is displayed, then click **Publish**.

A pop-up window that notifies the result of the action will be displayed.

Process Definition Details

Show in Full Screen

Refresh BPMN

Summary | BPMN

Name	<input type="text" value="Sample001"/>
ID	<input type="text" value="3015"/>
Description	<input type="text"/>
State	<input type="text" value="Draft"/> Publish
Owner	<input type="text" value="swrbaadmin"/> <input type="button" value="Change Owner"/>
Version	<input type="text" value="1.0"/>
Priority	<input type="text" value="8"/>
Use same SubProcess definition version	<input type="text" value="false"/>

Chapter 6 Scheduling Automated Operation Processes

This chapter explains how to schedule Automated Operation Processes.

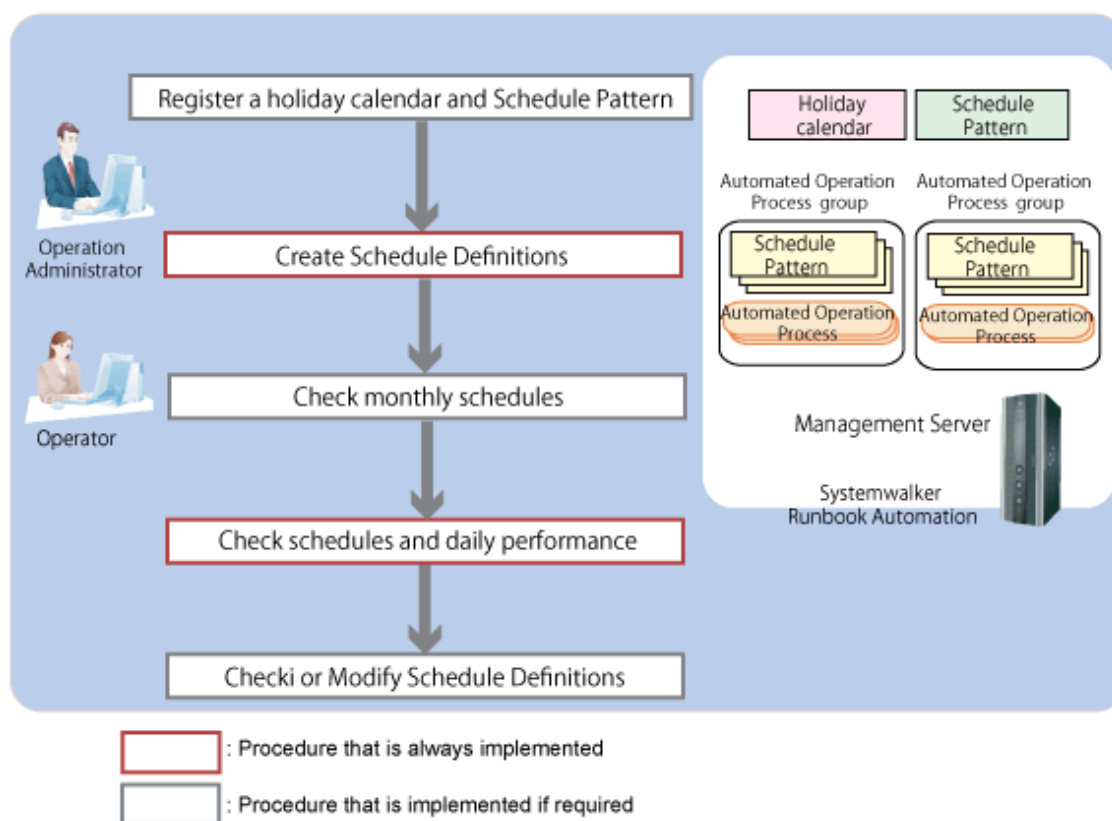
By specifying items such as the startup day in a published Automated Operation Process and by setting up a Schedule Definition, you can make an Automated Operation Process execute automatically at a pre-determined date and time.

The contents defined for the schedule can be checked on a monthly basis to identify the day an Automated Operation Process will be executed.

The next startup date and last start date are shown in Schedule Definition list, so you can check whether tasks are being performed according to the schedule and also suppress processing by putting tasks on hold or disabling them if necessary.

6.1 Schedule Definition Creation Flow

The following diagram shows the flow of creating a Schedule Definition for an Automated Operation Process.



An outline of the tasks shown in this diagram is given below.

Registering a holiday calendar and Schedule Pattern

To set a schedule using the holiday and startup day patterns, create and then register the following in advance:

- A holiday calendar that is commonly used by Management Servers.
- Schedule Patterns used commonly in the Management Server, or the startup day pattern used commonly in the Automated Operation Process Group.

Creating a Schedule Definition

Create a Schedule Definition for automatically executing an Automated Operation Process at a pre-determined date and time.

Set up a Schedule Definition for an Automated Operation Process by selecting the holiday calendar and Schedule Pattern you want to use from those that have been registered already or by setting up a startup day directly. You can also set up startup time by directly selecting a time or setting an interval to create a Schedule Definition.

Checking the monthly schedule

Check the date for execution of the Automated Operation Process using the Schedule Definition in the monthly calendar.

Checking the schedule and daily performance

For the Automated Operation Process in the process group, check the scheduled execution time and the actual execution performance time using the Schedule Definition in the daily list.

The scheduled and actual execution for one day can be checked using a Gantt chart, so the execution status for the automated operation can be determined.

Checking or modifying the Schedule Definition

Check or modify as required the Schedule Definition that has already been registered.

6.2 Registering Holiday Calendars and Schedule Patterns

Register a holiday calendar and Schedule Pattern.

A holiday calendar is a working calendar for business systems that is commonly used by Management Servers.

A Schedule Pattern is a pattern of start days for routine tasks that is commonly used by Management Servers and within the Automated Operation Process Group.

The procedure for creating and registering a holiday calendar and Schedule Pattern is shown below.

	Creator	Creation method
Holiday calendar (common to Management Servers)	Operation Administrator	Command setting
Schedule Pattern (common to Management Servers)	Operation Administrator	Command setting
Schedule Pattern (common to Automated Operation Process Group)	Operation Administrator	GUI setting

6.2.1 Registering Holiday Calendars

Holiday calendars include a default calendar called "SYSTEM_ CALENDAR" that has been registered in the Management Server in advance. The holidays that have been set up in the "SYSTEM_ CALENDAR" are displayed as holidays in the date field of the monthly schedule of the operation schedule.

In addition, a date change time (the time at which date changes and new day begins) can be set up in the system calendars. The date change time at installation is 0 hours 0 minutes.

If you want to use multiple holiday calendars, you can add holiday calendars at your discretion.

Use `swrba_holimport` command to register a holiday calendar or use `swrba_change_systemtime` to change date change time.

`swrba_holimport`

This command registers holiday calendar information. Use a calendar definition file with this command to register holiday calendar and make sure to keep a backup of the calendar definition files you register.

```
swrba_holimport -ent calendar definition file
```

`swrba_holexport`

This command outputs holiday calendar information. For the "SYSTEM_ CALENDAR", this command also outputs the date change time.

swrba_change_systime

This command changes a date change time.

Refer to the *Systemwalker Runbook Automation Reference Guide* for information on commands.

6.2.2 Registering Schedule Patterns

Register a pattern of startup days for tasks that are to be performed routinely, such as on day X every year or X day of the week every month.

When a Schedule Pattern is specified as the startup day of an Automated Operation Process, if the Schedule Pattern is changed, this will be automatically reflected in the startup day of the Automated Operation Process.

A Schedule Pattern that is commonly used by Management Servers and a Schedule Pattern that is commonly used by an Automated Operation Process Group can be created.

Schedule Pattern common in Management Server

Use swrba_patternimport command to register a Schedule Pattern that is commonly used in Management Server.

swrba_pattrenimport

This command registers a Schedule Pattern. Use a Schedule Pattern definition file with this command to register Schedule Pattern and make sure to keep a backup of the Schedule Pattern definition files you register.

```
swrba_patternimport -ent Schedule Pattern definition file
```

swrba_patternexport

This command outputs a Schedule Pattern.

Refer to the *Systemwalker Runbook Automation Reference Guide* for information on commands.

In following windows the name of the Schedule Patterns common in management server are marked with an "*".

- Create Schedule Definition Wizard (Confirm)
- Schedule Definition Details (Definition Information)
- Schedule Definition List Window

Schedule Pattern common to an Automated Operation Process Group

Register a Schedule Pattern that is commonly used within an Automated Operation Process Group from a Web console.

1. Click the Schedule Patterns submenu of the Process Management tab and then click the **Create** button to create a new Schedule Pattern.

Screenshot of the Schedule Patterns list interface. The interface includes a header 'Schedule Patterns' with a close icon, a sub-header 'Schedule Pattern list', a filter input field, and a table with 4 items. The table columns are Name, ID, and Type. The items are: Weekday (ID 5, Type Every week), Business_day(every_week) (ID 4, Type Every Month(Busin...)), Everyday (ID 3, Type Everyday), and The_1st_Business_Day (ID 2, Type Every Month). A 'Create' button is visible at the bottom right.

2. Enter the following values in the Schedule Pattern creation window and then click the **Finish** button.

Item	Input value
Name	Name of the Schedule Pattern. This is a name that includes the Schedule Definition name and that is unique within the Automated Operation Process Group. (Mandatory)
Type	Select from every day, every week, every month, every month (business days), and every year. (Mandatory)
Every Year	Set a date or day of the week of every year. (Optional)
Every Month	Set a date of every month, a day of the week of a certain week of every month, or month end. (Optional)
Every Week	Set a day of week. (Optional)
Every Day	Set every day. (Optional)
Every Month(Business Day)	Set financial month or business days. (Optional)

6.3 Creating Schedule Definitions

Set up a Schedule Definition for a process definition that has been published.

The procedure for creating a Schedule Definition from a Web console is shown below.

This operation is performed by an Operation Administrator or an operator.

1. Click the Process Definition submenu of the Process Management tab and then select from the list panel a process definition for setting up a Schedule Definition.

Process Definitions

Process Definition List

Open Import Refresh

2 PD Found

Process Definition Name	Id	Version	State	Owner
Sample002	3026	1.0	Published	swrbaadmin
Sample001	3015	1.0	Published	swrbaadmin

Process Definition Details

Show in Full Screen Refresh BPMN

Summary
BPMN

Name	<input type="text" value="Sample001"/>	
ID	<input type="text" value="3015"/>	
Description	<input type="text"/>	
State	<input type="text" value="Published"/>	<input type="button" value="Obsolete"/>
Owner	<input type="text" value="swrbaadmin"/>	<input type="button" value="Change Owner"/>
Version	<input type="text" value="1.0"/>	
Priority	<input type="text" value="8"/>	

- Click the Create Schedule Definition button from the Summary tab of process definition details, and create a new Schedule Definition.

Process Definition Details Show in Full Screen Refresh BPMN

Summary BPMN

Name

ID

Description

State

Owner

Version

Priority

Use same SubProcess definition version

Schedule Definition number

- You can enter the following values in the General Settings panel. After entering the values, click the **Next** button.

Item	Input value
Name	Name of the Schedule Definition (Mandatory) Specify this in up to 50 bytes. The characters listed below, blank spaces, and user-defined characters cannot be included. In addition, a hash (#) cannot be specified as the first character. ? \ * " < > / : ; , ' .
Process Definition	Name of the process definition. (Mandatory)
Scheduled Execution Time	Expected execution time of the process (1 to 9999 minutes) (Optional)
Execute multiple processes at a time(*1) (*2)(*3)	Choose either Allow or Do not allow for the simultaneous execution of process definition by Schedule Definition.
Memo	Description of Schedule Definition (optional) Specify a maximum of 128 bytes. The blank spaces, and user-defined characters cannot be included.

*1:

Schedule Patterns are set up with UDAS. To avoid simultaneous execution of process instances with the same set of UDAs select **Do not allow**. If choosing **Do not allow**, the simultaneous execution in the following cases will be inhibited:

- Automatic execution according to Schedule Definition
- Direct start from Schedule Definition details (operation) window

If a start from a process definition is performed by setting user-defined attributes, processes will be executed simultaneously even if **Do not allow** is selected.

*2:

In case of **Do not allow**, during the execution of the process instance you cannot perform the following actions on Schedule Definition, you have to wait for the process instance to finish.

Change the state (On Hold, Disable), immediately start, edit or delete the Schedule Definition.

*3:

In case of **Allow**, during the simultaneous execution of processes (when the process instance state is created) you cannot perform the following actions on Schedule Definition. You have to wait for the process instance to finish.

Change the state (On Hold, Disable), immediately start, edit or delete the Schedule Definition.

Create Schedule Definition

General Settings > User Defined Attributes Settings > Startup Days Settings > Startup Time Settings > Confirm

*Name:

*Process Definition:

Scheduled Execution Time(1-9999minutes):

Execute multiple processes at a time: Allow Do not allow

Memo:

An asterisk (*) indicates that this item is mandatory

Next Cancel

4. Enter the values that are to be passed to the operation component in the User Definition Attribute Setting panel. After entering the values, click the **Next** button.

In this example, the following value is passed to the operation component:

Example:

Inputparam3:Param1

The screenshot shows a software window titled "Create Schedule Definition" with a close button in the top right corner. The window has a breadcrumb trail: "General Settings" > "User Defined Attributes Settings" > "Startup Days Settings" > "Startup Time Settings" > "Confirm". The "Startup Days Settings" tab is active. Below the breadcrumb is a "Default" tab. The main area contains six input fields, each with a label and a dropdown arrow on the right:

- SWRBA_RCODE: empty
- SWRBA_STDOUT: empty
- SWRBA_STDERR: empty
- Param1: empty
- Param2: empty
- Param3: param3

At the bottom right of the window are three buttons: "Back", "Next", and "Cancel".

- The values shown below can be entered after selecting **Set startup days** in the **Startup Days Settings** panel. After these values are entered, click the **Confirm and Adjust** button.

If **Do not set startup days** is selected, the start time cannot be set in the **Startup Time Settings** panel that follows.

Item	Input value
Basic Settings	Select an already registered Schedule Pattern or a directly set a startup day (every day, every month, every week, date of a business day, or day of the week). (Mandatory)
Holiday settings	Set the already registered holiday calendar and select the treatment of startup days that are holiday. (Optional)
Operation Period Settings	Period for which a process is to be started by the Schedule Definition (optional). If no value is entered, the day of registration onwards will be used as the period for which a process is to be started by the schedule.

Create Schedule Definition

General Settings > User Defined Attributes Settings > Startup Days Settings > Startup Time Settings > Confirm

Set Startup Days Do not set Startup Days

Basic Settings: Use Schedule Pattern

Schedule Pattern: --Select one of the following options--

Holiday Settings: Do Not Use Holiday Calendar

To change the operation method for the holiday schedule definition, configure the holiday settings.

Operation Period Settings: Do Not Set

The operation period can be limited. If not settings, the Schedule Definition is effective at any time.

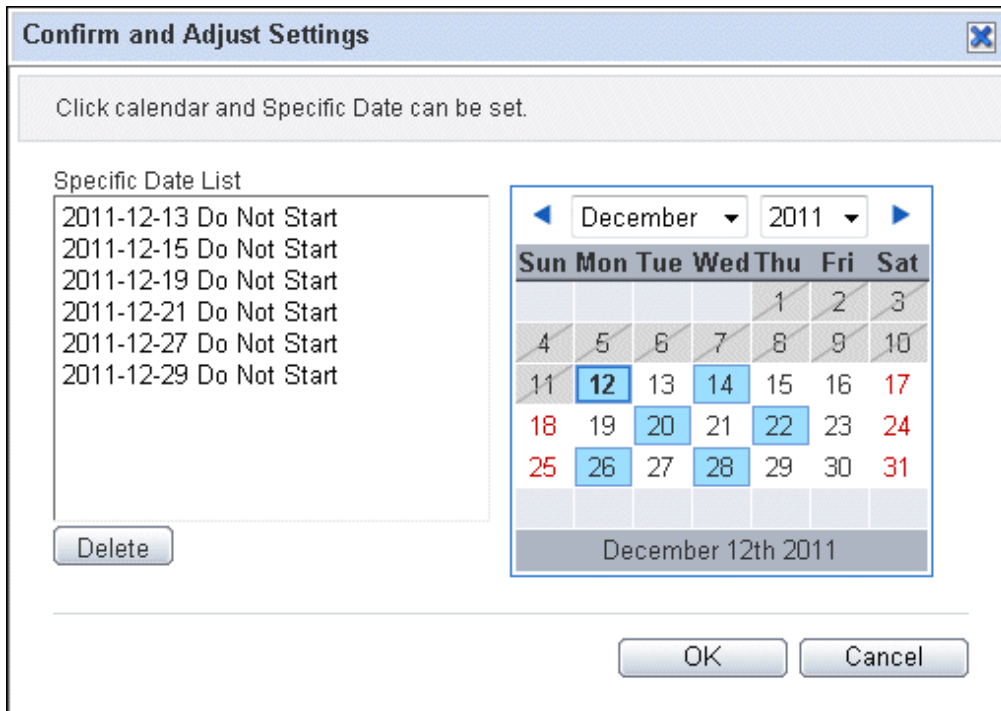
Confirm and Adjust Settings

Specific Date List

Back Next Cancel

6. In Confirm and Adjust Settings window set up the following items and press **OK** button. In Startup Days Setting window press **Next** button.

Item	Input value
Specific Date Setting	This sets a day that is to have special handling in the Schedule Definition regardless of the Schedule Pattern or holiday settings. (Optional)
Year & Month	Dates which can be checked and used. Up to 3 years can be checked in advance. (Mandatory)



The following items can be displayed in calendar

Startup Day	Dates with blue background
Holidays	Dates displayed by red numbers
Dates outside Operation Period	Dates with hatched numbers
Dates in past	Dates with a gray background

Note

When a specific date is cleared

A specific date will be cleared when the operations listed below are performed (the target Schedule Definition will be re-created). After performing the change operations listed below, check and if necessary re-set the specific date in Confirm and Adjust Settings of the Schedule Definition Editings window.

- When a holiday calendar being referenced by a Schedule Definition is changed
- When a Schedule Pattern being referenced by a Schedule Definition is changed

7. The values shown below can be entered after selecting **Set startup days** in the **Startup Time Settings** panel. After entering these values, click the **Next** button.

Item	Input value
Basic Settings	Set start by time or start by interval. (Mandatory)

Create Schedule Definition ✕

General Settings > User Defined Attributes Settings > Startup Days Settings > Startup Time Settings > Confirm

Set Startup Time Do not set Startup Time

Date Change Time: 00:00 +0900

Basic Settings: Specify Startup Time ▾

Startup Time List

8. The set contents for the Schedule Definition will be displayed in the Confirm panel. When you click the **Finish** button, the Schedule Definition will be registered. If necessary click the **Back** button to move to previous windows and make changes. The name of Process instance which is started by Schedule Definition is the same as the process definition name.

The screenshot shows a dialog box titled "Create Schedule Definition" with a close button in the top right corner. The dialog has a tabbed interface with five tabs: "General Settings", "User Defined Attributes Settings", "Startup Days Settings", "Startup Time Settings", and "Confirm". The "Confirm" tab is currently selected. Below the tabs, the text "Register the Schedule Definition as the following settings" is displayed. The dialog is divided into two main sections: "General Settings" and "User Defined Attributes Settings".

General Settings

Name:	Regular_work
Process Definition:	Sample002
Scheduled Execution Time:	30 minutes
Execute multiple processes at a time:	Allow
Memo:	

User Defined Attributes Settings

SWRBA_RCODE:	
SWRBA_STDOUT:	
SWRBA_STDERR:	
Param1:	
Param2:	
Param3:	param3

At the bottom right of the dialog, there are three buttons: "Back", "Finish", and "Cancel".

6.4 Checking Monthly Schedules

Check the monthly schedule for an Automated Operation Process for which a schedule has been defined.

There are two methods used to check monthly schedules from the Web console. These are as follows:

- Checking the monthly schedule of a specific Schedule Definition
- Checking the monthly schedule of multiple Schedule Definitions from a list

Each procedure is shown below.

6.4.1 Checking Monthly Schedules of Specific Schedule Definitions


1. Click the **Schedule Definitions** submenu of the Process Management tab and then select the Schedule Definition name.

- In **Definition Information** window of Schedule Definition detail click on **Confirm Startup Day** button.

Regular_work (6)

Schedule Definition: Regular_work

Edit Delete Close



Operation **Definition Information** Start history

Confirm Startup Day

General Settings

Name: Regular_work
Process Definition: Sample002
Scheduled Execution Time: 30 minutes
Execute multiple processes at a time: Allow
Memo:

User Defined Attributes Settings

SWRBA_RCODE:
 SWRBA_STDOUT:
 SWRBA_STDERR:

- In **Confirm Startup Day** you can check startup days, holidays and operation period of the chosen Schedule Definition.

Confirm Startup Day

December 2011

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

December 12th 2011

Close

6.4.2 Checking the Monthly Schedule of Multiple Schedule Definitions

- Click the **Schedule Definitions** submenu of the **Process Management** tab.

2. Click the **Operation schedule** button in the list of Schedule Definitions window.

The screenshot shows the 'Schedule Definitions' window with a tab for 'Schedule Definition list'. Below the title bar is a 'Filter' field. A toolbar contains icons for list and grid views, a 'Refresh' icon, and pagination controls: '1 - 6 of 6 items | Page 1 / 1 | Show: 10 items'. The main area is a table with the following data:

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner
System start(Group A)	101	Enable	2012-01-09 07:56	2012-01-12 07:00	System start(Group A)	swrbaad
System start(Group B)	102	Enable		2012-01-12 07:30	System start	swrbaad
Operation monitoring(Group A)	104	Enable	2012-01-06 17:15	2012-01-10 12:15	Operation monitoring	swrbaad
Operation monitoring(Group B)	105	On Hold	2012-01-06 17:28	2012-01-10 12:30	Operation monitoring	swrbaad
System stop	107	Enable	2012-01-08 21:51	2012-01-11 21:00	System stop	swrbaad
Data backup	108	On Hold			Backup	swrbaad

At the bottom right of the window is a 'Create' button.

3. In the scheduled operation window, the startup days, holidays, and operation periods for multiple Schedule Definitions can be checked for a particular month.

The screenshot shows the 'Operation Schedule' window with a tab for 'Operation Schedule'. Below the title bar is a 'Filter' field. The toolbar includes view icons, a month selector set to 'Jan 2012', a 'This month' button, and pagination controls: '1 - 6 of 6 items | Page 1 / 1 | Show: 10 items'. The main area is a calendar grid for January 2012. The grid has columns for days of the week (Su to Tu) and rows for schedule definitions. The grid shows various colored blocks (red, blue, grey) representing scheduled operations. For example, 'System start(Group A)' has a blue block on Jan 9, 12, and 15. 'System start(Group B)' has blue blocks on Jan 9, 12, and 15. 'Operation monitoring(Group A)' has blue blocks on Jan 9, 10, 12, 13, 15, 16, 18, 19, 21, 22, 24, and 25. 'Operation monitoring(Group B)' has blue blocks on Jan 9, 10, 12, 13, 15, 16, 18, 19, 21, 22, 24, and 25. 'System stop' has blue blocks on Jan 9, 12, 15, 16, 18, 19, 21, 22, 24, and 25. 'Data backup' has a blue block on Jan 9. At the bottom right is an 'Edit Startup Days' button.

6.5 Checking Schedules and Daily Performance

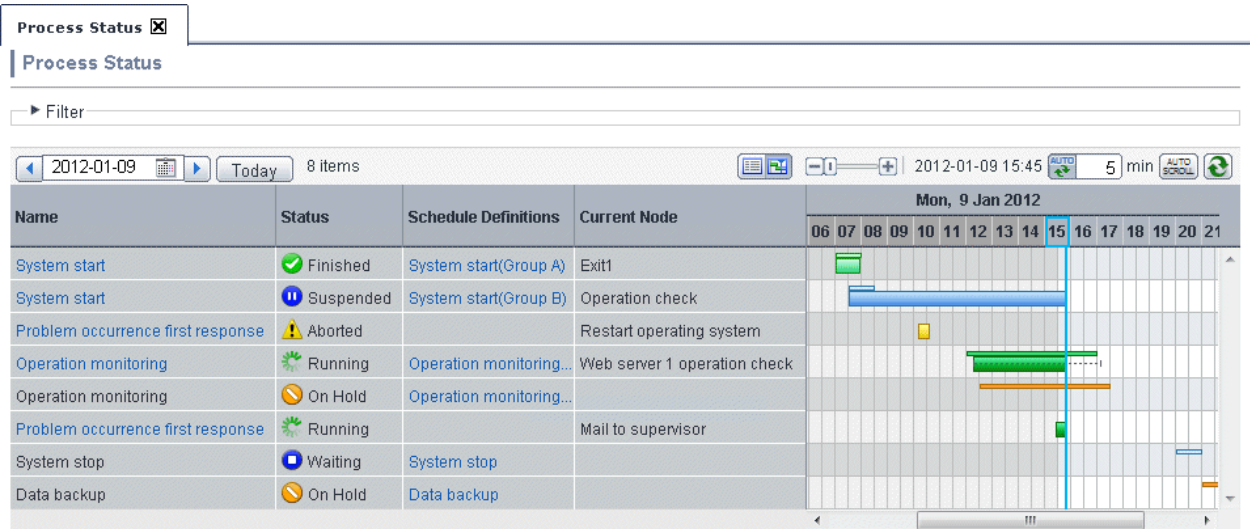
The schedule and performance for an Automated Operation Process can be checked using a Gantt chart. They are displayed on separate lines.

For Gantt charts, a 25-hour chart that includes the current time is displayed. If a time in the past is specified, a chart with historical information is displayed. If a time in the future is specified, a chart with schedule information is displayed.

The procedure used to check the schedule and performance from the Web console is shown below.

1. Click the **Process Status** submenu of the **Process Management** tab.

The schedule and performance for an Automated Operation Process can be checked using the Gantt chart that is displayed.



The schedule and performance of the Automated Operation Process are displayed on separate lines.

The schedule for the Automated Operation Process is displayed in the upper area of the chart, and the performance is displayed in the lower area of the chart. These are also color coded.

- To display filtered process instances, click **Filter** then enter the conditions.
- To check a process instance flow, click the process instance name from **Name**. If the name of an actual process instance is selected, the process instance details will be displayed. If the name of a scheduled process instance is selected, the process definition details will be displayed.
- To check a Schedule Definition, click the Schedule Definition name from **Schedule Definitions**.

6.6 Checking or Modifying Schedule Definitions

A Schedule Definition that has already been registered can be checked or modified as required.

The procedure for checking or modifying a Schedule Definition from a Web console is shown below.

1. Click the **Schedule Definitions** submenu of the Process Management tab.

A list of Schedule Definitions that have been registered will be displayed in the list panel. The information shown below can be checked from the list of Schedule Definitions.

Item	Display contents
Name	Schedule Definition name
ID	Schedule Definition ID
State	Schedule Definition state <ul style="list-style-type: none"> - Enable: State in which scheduling based on startup day or startup conditions is possible - Disable: State in which start is impossible even if the startup day or startup conditions are satisfied - On hold: State in which an Automated Operation Process is not started and is waiting for manual start even if the startup day or startup conditions are satisfied
Last Start Date	The date of the last execution of the automation operation process.

Item	Display contents
Next Startup Date	Date and time at which the process definition is next scheduled to start
Process Definition	Name of the process definition that is using the Schedule Definition.
Owner	The user ID of the Schedule Definition owner. The user ID of the user who created the Schedule Definition is set as the owner. Users without administration privilege can only view the Schedule Definitions they own. To view other users Schedule Definitions change the settings of the filter.
Schedule Pattern	The name of the Schedule Pattern that is being used by the Schedule Definition. If startup days are directly specified this column will be empty.
Holiday Calendar	The name of the holiday calendar that is being used by the Schedule Definition.

Schedule Definitions

Schedule Definition list

Filter

1 - 3 of 3 items | Page 1 / 1 | Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

Create

2. If you want to narrow down the list of the Schedule Definitions click **Filter** button and set the filtering parameters and click **Apply**.

Schedule Definitions ✕

Schedule Definition list

▼ Filter

Name:

Process Definition:

Owner:

Schedule Pattern:

Holiday Calendar:

State:

Memo:

1 - 3 of 3 items | Page 1 / 1 | Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

3. Select the name of the Schedule Definition you want to check from the list panel.

The Schedule Definition details will be displayed.

Schedule Definitions

Schedule Definition list

▼ Filter

Name:

Process Definition:

Owner:

Schedule Pattern:

Holiday Calendar:

State:

Memo:

1 - 2 of 2 items | Page 1 / 1 | Show: 10 items


Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	

4. Click the **Definition Information** panel of the Schedule Definition details. To edit the definition information, click the **Edit** button.

Schedule Definitions [X] Weekend_confirmin... [X]

Schedule Definition: Weekend_confirming

Edit Delete Close



Operation **Definition Information** Start history

Confirm Startup Day

General Settings

Name: Weekend_confirming

Process Definition: Sample001

Scheduled Execution Time: 15 minutes

Execute multiple processes at a time: Allow

Memo:

User Defined Attributes Settings

SWRBA_RCODE:

SWRBA_STDOUT:

SWRBA_STDErr:

Chapter 7 Using Automated Operation Processes

This chapter explains how to use various operations, such as start, progress, and check, for automated operation processes.

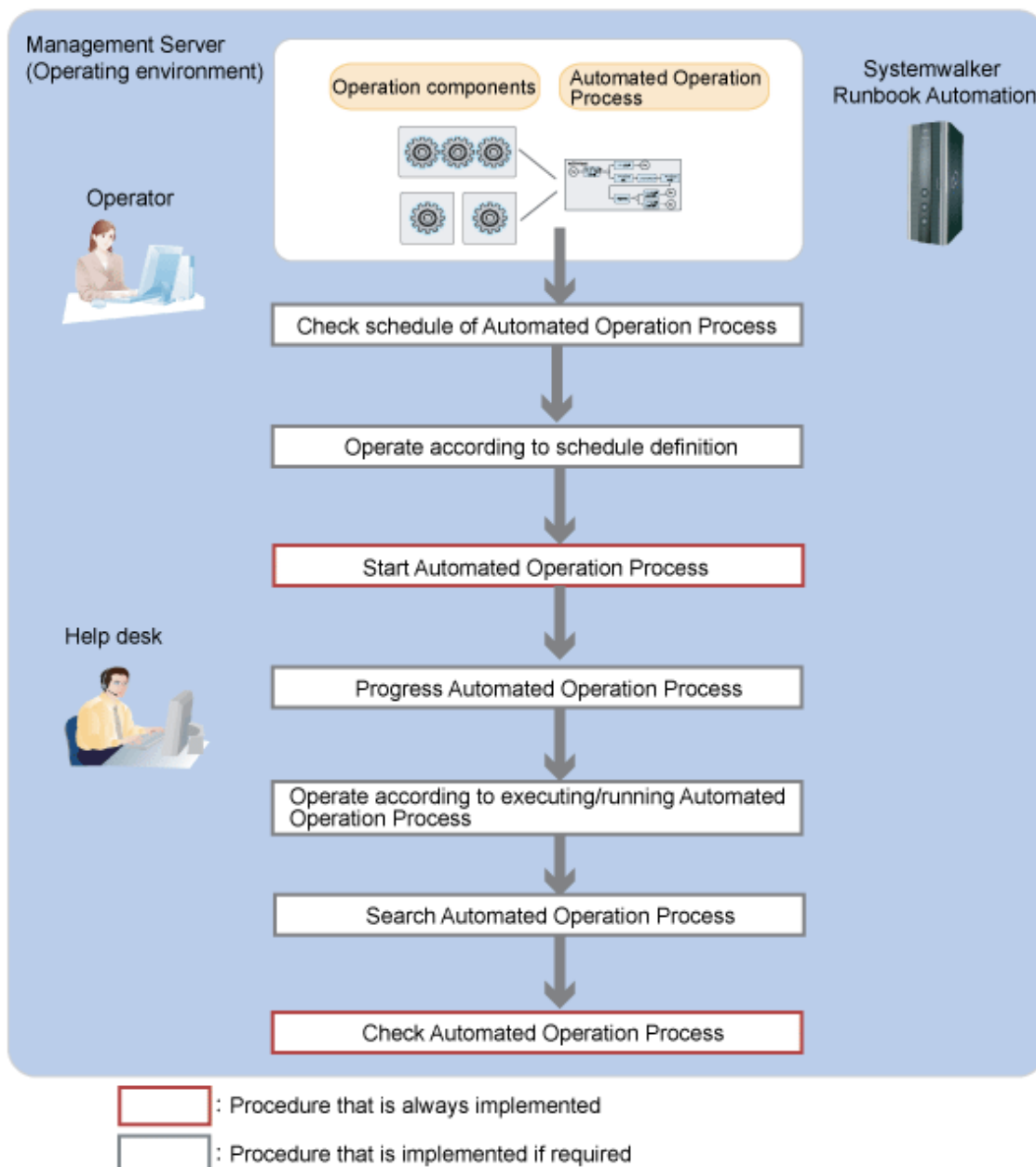
Defined processing can be executed automatically by the starting of a registered process definition.

Automated operation processes that include human tasks will delay an operation when it reaches a node for which human tasks are required. For automated operation processes including human tasks that delay operations, progress to the next processing can be achieved by the person in charge of performing the progress operation.

Note that, for automated operation processes that are running or have already been executed, you can check how far processing has progressed. For automated operation processes that are running, you can also perform various operations such as suspend and resume, and abort.

7.1 The flow of Automated Operations

The following diagram shows the flow of Automated Operations.



An outline of the tasks shown in this diagram is shown below.

Checking the schedule of an Automated Operation Process

If an Automated Operation Process is to be started using a schedule, check the schedule of the Automated Operation Process.

Operating according to the schedule definition

According to the schedule definition that has already been registered, perform immediate start, enable, disable, and on hold operations as required.

Starting an Automated Operation Process

Start automated operations by starting an Automated Operation Process.

Progressing an Automated Operation Process

Progress an Automated Operation Process that has been assigned to the person in charge or progress an Automated Operation Process waiting for processing.

Operating according to an Automated Operation Process that is running

According to an Automated Operation Processes that is running, perform pause, resume, and abort operations as required.

Searching an Automated Operation Process

A search of an Automated Operation Process can also be used if you want to display a short list of the process definitions you want to start or the Automated Operation Processes for which you want to check the execution status, from the many process definitions or Automated Operation Processes that exist.

Checking an Automated Operation Process

If you want to monitor the execution status or execution results of an Automated Operation, check the Automated Operation Process.

A Gantt Chart showing scheduled and actual results can also be used to check an Automated Operation Process for which a schedule has been set.

7.2 Checking the Schedules of Automated Operation Processes

Check the schedule of an Automated Operation Process for which a schedule definition has been set.

The following methods can be used to check the schedule from a Web console:

- Confirmation using a Gantt chart

In the list of process statuses window, check the Automated Operation Process schedule and daily performance in the Gantt chart.

- Checking using a **Schedule Definitions** list

In the **Schedule Definitions** list display, Display **Next Startup Date** and **Last Startup Date** that are executed from Schedule Definitions

Operation (Confirmation using a Gantt chart)

Refer to "[6.5 Checking Schedules and Daily Performance](#)" for details about how to confirm the schedule and performance for the Automated Operation Process using a Gantt charation

Operation (Confirmation using a Schedule Definitions list)

Operation (Confirmation using a Gantt chart)

1. Click the **Schedule Definitions** list submenu of the **Process Management** tab.

The **Next Startup Date** and **Last Startup Date** of an Automated Operation Process can be checked.

Schedule Definitions ✕

Schedule Definition list

▶ Filter

1 - 3 of 3 items
Page 1 / 1
Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

When check actual result of schedule of an Automated Operation Process, Refer to the [7.8.3 Checking Actual Results of Automated Operation Process Schedules](#)

7.3 Operating according to Schedule Definitions

This section explains each of the following operations according to schedule definitions that have already been registered:

- Immediately starting Automated Operation Processes for which schedules have been defined
- Enabling schedule definitions
- Disabling schedule definitions
- Putting schedule definitions on hold

These operations can be executed by users who belong to a group that can perform a process start for the process definition.

7.3.1 Immediately Starting Automated Operation Processes for which Schedules have been Defined

This operation immediately starts an Automated Operation Process for which a schedule has been defined, regardless of the schedule.

Even after the Automated Operation Process is started, the schedule remains.

This operation cannot be performed when the schedule definition status is on hold or disabled.

Operation

1. Click the **Process Management** tab.

- When you click the **Define Schedule** submenu, a list of the schedule definitions that have been registered will be displayed in the list panel.

Schedule Definitions

Schedule Definition list

Filter

1 - 3 of 3 items | Page 1 / 1 | Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

Create

- From the list of schedule definitions, select the schedule definition name that you want to start immediately.

The schedule definition details will be displayed.

- Click the **Immediately Start** button from the **Operation** panel of the **Schedule Definition**.

Schedule Definitions Regular_work (6)

Schedule Definition: Regular_work

Edit Delete Close

Operation Definition Information Start history

Immediately Start Enable Disable On Hold

Schedule Definition Summary

Name: Regular_work
State: Enable
Owner: swrbaadmin
Last Startup Date: 2011-12-12 15:00
Next Startup Date: 2011-12-14 08:00

7.3.2 Enabling Schedule Definitions

This operation enables a schedule definition that has been put on hold or disabled.

This operation cannot be performed when the schedule definition status is enabled.

Operation

- Click the **Process Management** tab.

- When you click the **Define Schedule** submenu, a list of the schedule definitions that have been registered will be displayed in the list panel.

Schedule Definitions

Schedule Definition list

Filter

1 - 3 of 3 items | Page 1 / 1 | Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

Create

- From the list of schedule definitions, select the schedule definition name that you want to enable immediately.

The schedule definition details will be displayed.

- Click the **Enable** button from the **Operation** panel of the **Schedule Definition**.

Schedule Definitions Regular_work (6)

Schedule Definition: Regular_work

Edit Delete Close

Operation Definition Information Start history

Immediately Start Enable Disable On Hold

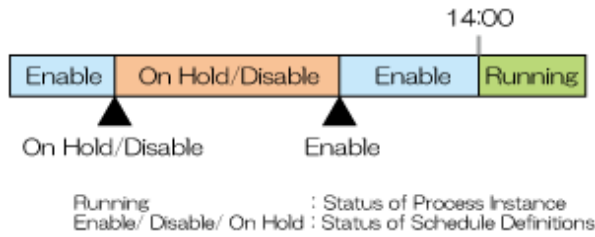
Schedule Definition Summary

Name: Regular_work
State: Disable
Owner: swrbaadmin
Last Startup Date: 2011-12-12 15:00
Next Startup Date: 2011-12-14 08:00

Operating a process instance when the schedule definition has been operated

- Where a schedule definition has had its status changed to enabled before its startup condition has been satisfied

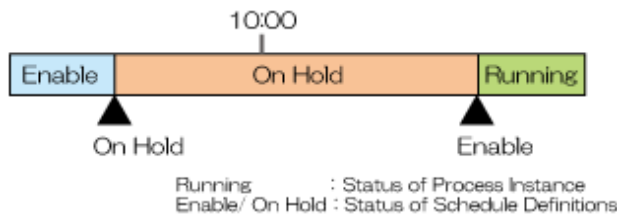
Startup condition of schedule definition: Start Time by time of 14:00



Process instance will be executed at 14:00 after enabled.

- Where a schedule definition has had its on hold status changed to enabled after its startup condition has been satisfied

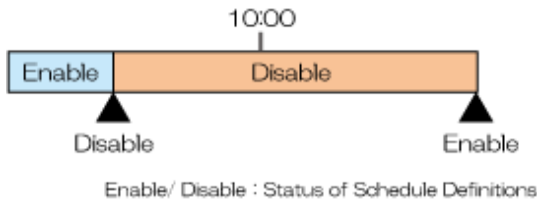
Startup condition of schedule definition: Start Time by time of 10:00



Process instance will be executed when it is enabled.

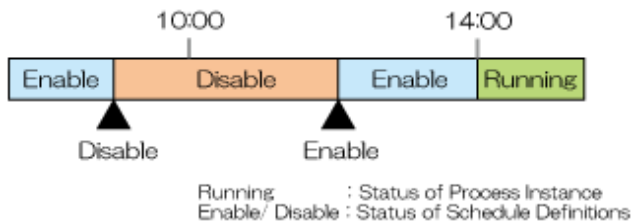
- Where a schedule definition has had its disabled status changed to enabled after its startup condition has been satisfied

a. Startup condition of schedule definition: Start Time by time of 10:00



Process instance will not be executed after enabled.

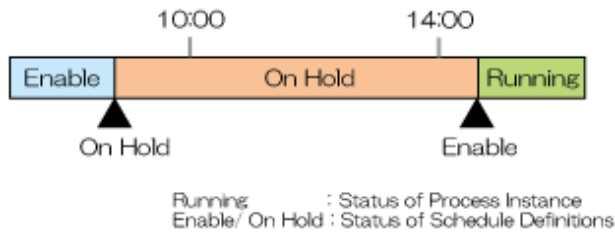
b. Startup conditions of schedule definition: Start by times of 10:00 and 14:00



When enabled, The first start time has been executed. It will be executed at 14:00 as a next start time schedule.

- Where a schedule definition has had its on hold status changed to enabled after its startup conditions have been satisfied twice

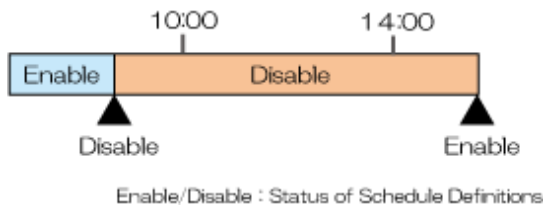
Startup conditions of schedule definition: Start by times of 10:00 and 14:00



In case of its startup conditions have been satisfied twice on hold status, the twice start time schedule has not been executed. When enabled, The first start time has been executed.

- Where a schedule condition has had its disabled status changed to enabled after its startup conditions have been satisfied twice

Startup conditions of schedule definition: Start Time by times of 10:00 and 14:00



In case of its startup conditions have been satisfied twice on disable status, the first and twice start time schedule has not been executed.

7.3.3 Disabling Schedule Definitions

This operation disables a schedule definition that has become enabled or put on hold.

Disabling a schedule definition makes the schedule definition not start even when the startup day or startup conditions are satisfied and makes it wait for the next scheduled start date and time.

Select this operation if you do not want to implement a start using the schedule.

This operation cannot be performed when the schedule definition status is disabled.

Operation

1. Click the **Process Management** tab.
2. When you click the **Define Schedule** submenu, a list of the schedule definitions that have been registered will be displayed in the list panel.

Schedule Definitions

Schedule Definition list

Filter

1 - 3 of 3 items | Page 1 / 1 | Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

Create

- From the list of schedule definitions, select the schedule definition name that you want to be disable.
The schedule definition details will be displayed.
- Click the **Disable** button from the **Operation** panel of the schedule definition details.

Schedule Definitions Regular_work (6)

Schedule Definition: Regular_work

Edit Delete Close

Refresh

Operation Definition Information Start history

Immediately Start Enable **Disable** On Hold

Schedule Definition Summary

Name:	Regular_work
State:	Enable
Owner:	swrbaadmin
Last Startup Date:	2011-12-12 15:00
Next Startup Date:	2011-12-14 08:00

7.3.4 Putting Schedule Definitions On Hold

This operation puts on hold a schedule definition that has become enabled.

Putting a schedule definition on hold makes the schedule definition not start even when the startup day or startup conditions are satisfied but makes the schedule definition start if is enabled.

Select this operation if you decide not to start using the schedule temporarily or if you want to start at your discretion.

This operation cannot be performed when the schedule definition status is on hold or disabled.

Operation

- Click the **Process Management** tab.

- When you click the **Define Schedule** submenu, a list of the schedule definitions that have been registered will be displayed in the list panel.

The screenshot shows a window titled 'Schedule Definitions' with a sub-tab 'Schedule Definition list'. Below the title bar is a search filter field. The main area contains a table with the following data:

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

Below the table is a 'Create' button.

- From the list of schedule definitions, select the schedule definition name that you want to be hold.
The schedule definition details will be displayed.
- Click the **On Hold** button from the **Operation** panel of the schedule definition details.

The screenshot shows the details for the 'Regular_work' schedule definition. The window title is 'Schedule Definition: Regular_work'. At the top right are 'Edit', 'Delete', and 'Close' buttons. Below these are tabs for 'Operation', 'Definition Information', and 'Start history'. Under the 'Operation' tab, there are buttons for 'Immediately Start', 'Enable', 'Disable', and 'On Hold'. A 'Refresh' button is also present. The main content area is titled 'Schedule Definition Summary' and contains the following information:

Name: Regular_work
State: Enable
Owner: swrbaadmin
Last Startup Date: 2011-12-12 15:00
Next Startup Date: 2011-12-14 08:00

7.4 Starting Automated Operation Processes

The automated operation is started by starting the automated operation process.

There are two methods that can be used to start the automated operation process. These are as follows:

- Starting Automated Operation Processes Manually
- Starting Automated Operation Processes in Response to an Event
- Starting an Automated Operation Process from the REST interface

This section explains each automated operation process start method.

7.4.1 Starting an Automated Operation Process from the Web Console

The method used to start the Automated Operation Process from the Web console manually is explained below.

There are two methods that can be used to start the Automated Operation Process manually. These are as follows:

- Starting a new Automated Operation Process

The **Summary** window is used to start the new Automated Operation Process.

Note that, if there are many process definitions, the process definitions to be started can be filtered before being started using the process definition search. Refer to "[7.7.1 Searching Process Definitions](#)" for information on how to search process definitions.

- Reusing a process instance to start the Automated Operation Process

According to this method, the Automated Operation Process is started by reusing the information (process instance) for the previously executed Automated Operation Process. The Automated Operation Process can be executed by inheriting the form value that was specified the previous time the Automated Operation Process was executed. The Automated Operation Process can also be executed after modifying the inherited information.

Note that, if there are many process instances, the process instances to be referenced can be filtered before being started using the process instance search. Refer to "[7.7.2 Searching Process Instances](#)" for information on how to search process instances.



Note

If the process instance creation window for the Automated Operation Process already exists, a new process instance creation window cannot be displayed for new or reused process instances.

First close the process instance creation window, then start the Automated Operation Process.

7.4.1.1 Starting a new Automated Operation Process

When a trouble or an urgent occurred, with executing exceptional operation process, the method used to start the new Automated Operation Process is explained below.

Note that, if there are many process instances, the process instances to be referenced can be filtered before being started using the process instance search. Refer to "[7.7.2 Searching Process Instances](#)" for information on how to search process instances.

Operation

1. Click the **Process Management** tab, then click the **Process definition** submenu.

A list of process definition be displayed.

2. From the list of process definition, select the process definition to be started.

Process Definitions

Process Definition List

Open Import Refresh

Process Definition Name	Id	Version	State	Owner
Sample002	3084	3.0	Draft	swrbaadmin
Sample001	3073	3.0	Draft	swrbaadmin
Sample002	3048	2.0	Published	swrbaadmin
Sample001	3037	2.0	Draft	swrbaadmin
Sample002	3026	1.0	Obsoleted	swrbaadmin
Sample001	3015	1.0	Published	swrbaadmin

3. Click **Summary** tab in the Process Definition Details

Process Definition Details Show in Full Screen Refresh BPMN

Summary | BPMN

Name

ID

Description

State Publish

Owner Change Owner

Version

Priority

Use same SubProcess definition version

Start Delete Export

4. Click **Start** button from **Summary** tab in the Process Definition Details, create new process instance. In the creation window of process instance, each parameter can be specified.

Process Definition Details Show in Full Screen Refresh BPMN

Summary | BPMN

Name

ID

Description

State Publish

Owner Change Owner

Version

Priority

Use same SubProcess definition version

Start Delete Export

5. The following values can be entered in the **General** panel. If no value is entered, The values that specified when creating Process Definitions are used as a default.

Item	Input Value
Name	Process instance name (Optional)
Description	Process instance description (Optional)

Item	Input Value
Comment	Process instance comment (Optional)

Process Definitions Create New Instan...

General

Name

Description

Comment

[Back to top](#)

Form

InputForm

hostname

command

6. In the **Form** panel, enter the values passed operation component, and click **Start** button, start the Automated Operation Process. In this example, the following values are passed operation component.

Example)

Hostname: localhost(Specify executed host)

Command: /path/example_backup.sh(Specify executed command)

Form

InputForm

hostname

command

Attachments

Add Attachment

[Back to top](#)

Start

7. The **Result Summary** dialog box will be displayed. Check that **Result** is **Success**, then click **X**.

Result Summary ✕

Result Summary

Start Process Definition Result

ID	Name	Result	Comments
3095	Sample001	Success	Process Instance Id:3095 Created and Started successfully.

7.4.1.2 Reusing a Process Instance to Start the Automated Operation Process

This section explains how to start the Automated Operation Process by reusing a process instance that was executed previously.

When the Automated Operation Process is started, the following values can be reused:

- General window names, descriptions, comments
- Start Node form values

Note

- When the Automated Operation Process is started by reusing a process instance, the Automated Operation Process that is started is an identical version to the original process instance.
- If the Automated Operation Process is in a discarded state, the process instance cannot be reused.
- Only the process instance owner can reuse the process instance.
- Only process instances in a finished state can be reused.
- Attached files cannot be reused.

Operation

1. Click the **Process Management** tab, then click the **Process Instances** submenu.

A list of process instances will be displayed. Select **My Processes**, **My Inactive Processes**, or **All Inactive Processes** as the process filter.

Process Instances

My Processes

Process Filters: My Processes

5 PI's Found

Process Instance	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample002	Dec, 12 2011	▶ Running	8	swrbaad...	swrbaad...	
Sample002	Dec, 12 2011	✓ Closed	8	swrbaadmin	swrbaadmin	
Sample001	Dec, 12 2011	▶ Running	8	swrbaadmin	swrbaadmin	
Sample001	Dec, 12 2011	✓ Closed	8	swrbaadmin	swrbaadmin	
Sample002	Dec, 12 2011	▶ Running	8	swrbaadmin	swrbasch	

2. From the list of process instances, select and right-click the process instance to be reused and then started. Select **Reuse** from the menu.
3. In the **General** panel, the values entered in the original process instance are displayed. Change these values if necessary.

The following values can be entered:

Item	Input Value
Name	Process instance name (Optional)
Description	Process instance description (Optional)
Comment	Process instance comment (Optional)

Process Instances [X] Create New Instan... [X]

General

Name:

Description:

Comment:

[Back to top](#)

Form

InputForm

hostname:

command:

4. In the **Form** panel, the values entered in the original process instance are displayed.

Note that the input items that are displayed in the form panel will be different, depending on the Automated Operation Process definition. An example of the window is displayed below.

 **Note**

If there are multiple tabs in the form panel, display the content for all the tabs to check whether the values that are set are valid.

If the Automated Operation Process is started without the content for all the tabs being displayed, the values for the tabs that were not displayed will not be reused, and the Automated Operation Process will restart without any values being set. However, if initial values are set for the process definition, these initial values will be enabled.

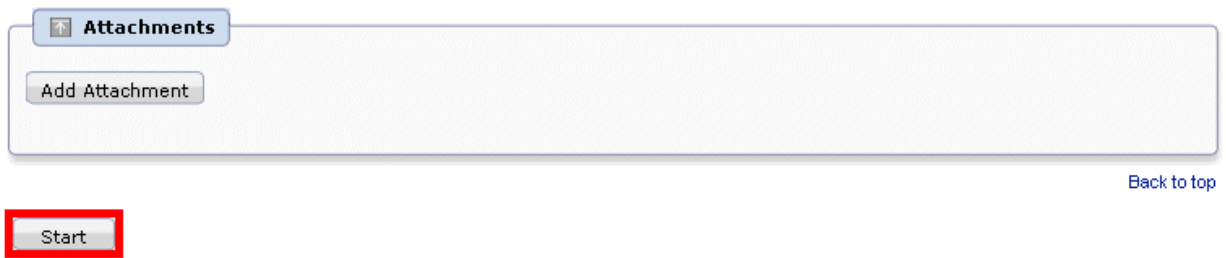
Form

InputForm

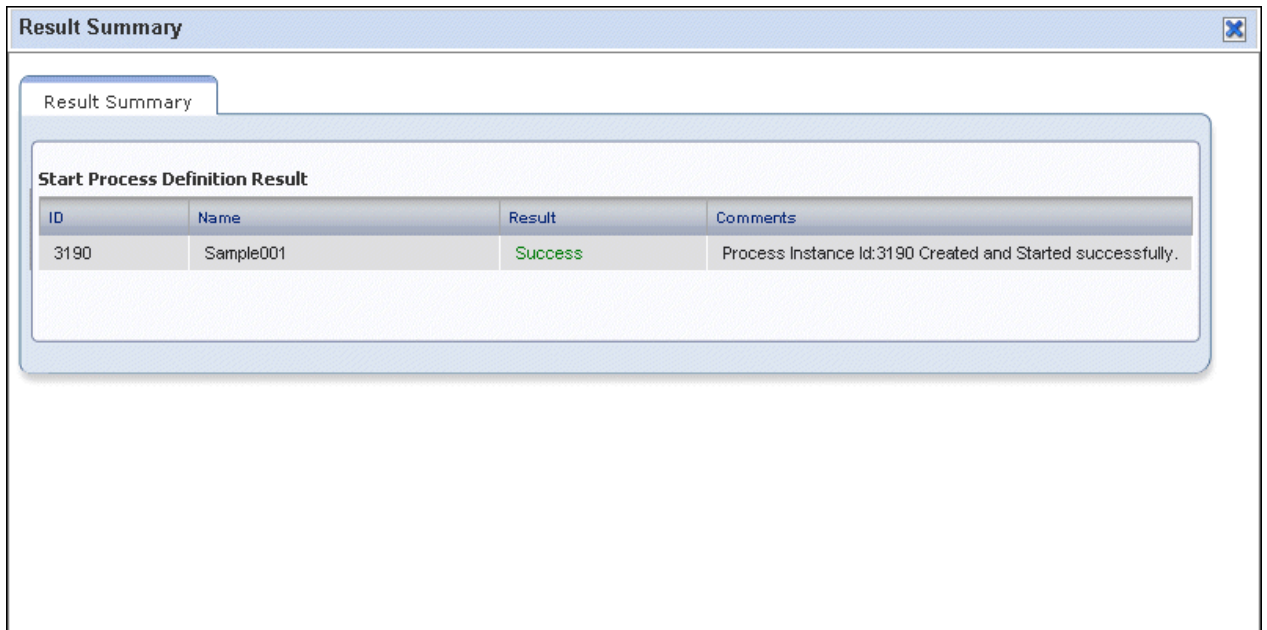
hostname:

command:

5. Click the **Start** button to start the Automated Operation Process.



6. The **Result Summary** dialog box will be displayed. Check that **Result** is **Success**, then click **X**.



7.4.2 Starting an Automated Operation Process from an Event

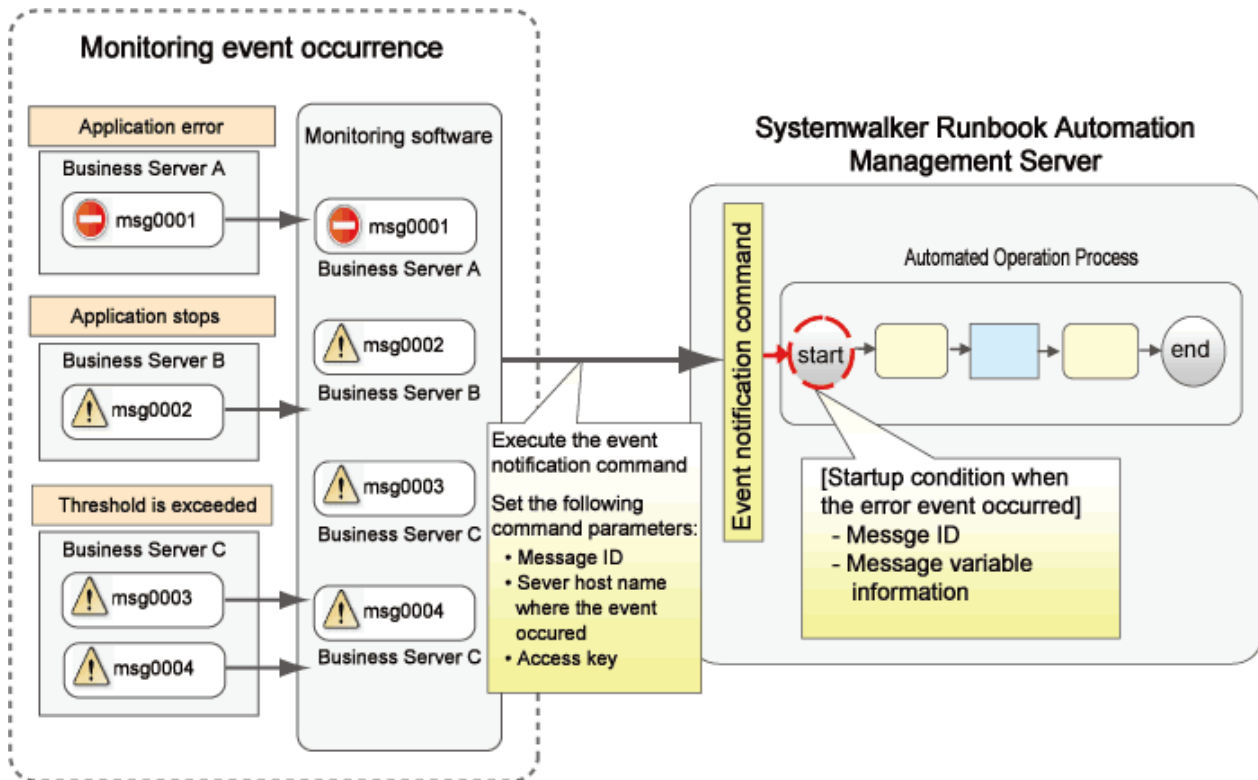
When the following kinds of monitored events occur, the Automated Operation Process will be started automatically by the event discovery trigger:

- Errors that have occurred on the Business Server
- Thresholds being exceeded for performance monitoring items
- Start and stop of a specific service/application

To start the Automated Operation Process from the event, the event notification command is executed.

If the above type of event occurs, configure the monitoring software settings so that the event notification command is executed on the Management Server using the monitoring software.

The figure below shows the relationship between the event notification command and the monitoring software.



In the monitoring software, set the message ID for when the event occurs, the host name of the server in which the event occurs and access key in the parameters, and execute the event notification command.

The event notification command notifies the content that was set in these parameters to the Management Server. The value notified to the Management Server is determined as matching/not matching the start condition set for the Automated Operation Process. If the value is determined as matching the start condition, the Automated Operation Process is started.

Refer to "[3.2.3.4 Automated Operation Processes That Will Start in Response to an Event](#)" for information on the start condition settings.

In the following example shown below, the event notification command uses event ID: 0001, event occurrence server name: test.

1. Obtain the access key.

The access key is information that identifies the Automated Operation Process that is to be started from an event. Obtain the access key using the Web console.

From the Automated Operation Process Group list displayed in **System Administration >> Process Group Settings** of the Web console, select the Automated Operation Process Group containing the start target Automated Operation Process. Click **Access Key** in the **Details** tab of the Automated Operation Process group.

Process Group : Sample

2. Configure the settings so that the event notification command is executed on the Management Server, using the monitoring software, when the monitored event occurs.

Set the message ID, host name, and access key as event notification command parameters.

Example:

```
swrba_notifyevent -msgID 0001 -host test -comment "database error" -key "**BEGIN_KEY--
{{ezsGjLOinOQR0HscigWbH1b9sMuLVy+JMlim/73mQiQxzknJkz4atTcFBhaHvQ5Gy1Br/
Buo6XztLtGxJ6iNA8MZvGtQbwvJIfNUXHmeovS+jc5Hdhb/IzqxfgkZkXmac+WTDbdBg+U=}}--END_KEY**"
```

Refer to "swrba_notifyevent (Event Notification Command)" in the *Systemwalker Runbook Automation Reference Guide* for information on the event notification command.

3. Refer to "7.8 Checking Automated Operation Processes" for information on how to check the Automated Operation Process that was started.

7.4.3 Starting Automated Operation Processes from the REST Interface

The REST interface can be used to start Automated Operation Processes.

Refer to the *Systemwalker Runbook Automation Reference Guide* for information on the REST interface.

Operation

1. Use a Web console or the REST interface to check in advance the information required in order to start an Automated Operation Process from the REST interface, such as the name of the Automated Operation Process Group to be started and the process definition name.
2. Use the REST interface to start the Automated Operation Process.

An example of a Java program for starting an Automated Operation Process is shown below:

```
import java.io.BufferedReader;
import java.io.ByteArrayOutputStream;
import java.io.InputStreamReader;
import java.io.OutputStream;
import java.net.HttpURLConnection;
import java.net.URL;

import javax.mail.internet.MimeUtility;

/**
 * REST Client Sample
 *
 * <pre>
 * Using JavaMail utility for Base64 encoding
 * Enter JavaMail module (mail.jar) as required.
 * </pre>
 */
public class ClientApl {

    // URL of connection destination
    private final static String baseUrl="http://example.com"

    /**
     * Start process.
     * @param args
     */
    public static void main(String[] args) {

        String username="swrbaadmin";    // User ID
        String password="systemwalker#1"; // Password
        String appId = "TEST";          // Automated Operation Process Group name
        String pdname = "TEST";         // Process definition name
        String id_pass= null;
        HttpURLConnection conn = null;

        try {
            URL url = new URL(baseUrl + "/rbaserver/ProcessInstances" + "?"
                + "appid=" + appId
                + "&pdname=" + pdname);

            // Encoding for Basic authentication
            ByteArrayOutputStream bos = null;
            OutputStream os = null;
            try {
                bos = new ByteArrayOutputStream();
                os = MimeUtility.encode(bos , "base64");
                os.write((username + ":" + password).getBytes());
                os.flush();
                id_pass = bos.toString();
            } catch (Exception e) {
                e.printStackTrace();
                throw e;
            }
        }
    }
}
```

```

    } finally {
        os.close();
        bos.close();
    }

    // HTTP connection
    conn = (HttpURLConnection) url.openConnection();
    conn.setRequestProperty("Authorization", "Basic " + id_pass);

    conn.setRequestMethod("POST");
    conn.setRequestProperty("Content-Type", "text/plain");
    conn.setRequestProperty("Accept", "application/xml");

    conn.connect();

    // Obtain results.
    if (conn.getResponseCode() != HttpURLConnection.HTTP_OK){
        // Request Error.

        System.out.println("StatusCode : " + conn.getResponseCode());
        System.exit(1);
    }

    BufferedReader bf = new BufferedReader(new InputStreamReader(conn.getInputStream()));
    String line = bf.readLine();
    while(line != null){
        System.out.println(line);
        line = bf.readLine();
    }
} catch (Exception e) {
    e.printStackTrace();
} finally {
    if ( conn != null){
        conn.disconnect();
    }
}

System.exit(0);
}
}

```

7.5 Progress of Automated Operation Processes

This section describes how to progress the automated operation process that has been assigned to the person in charge, or has been delayed for processing.

There are two methods that can be used to progress the automated operation process. These are as follows:

- Progress of Automated Operation Processes Manually
- Progress of Automated Operation Processes in Response to a Timer

This section explains how to progress the automated operation process.

7.5.1 Progress of Automated Operation Processes from Web console

In automated operation processes that include human tasks, this is used to progress the automated operation process when the human tasks have been completed.

Only the current person in charge of a task can process the task when it is assigned. ("current person in charge" means the user/group to which the current task has been assigned.)

Operation

1. Click the **Tasks** tab.
2. Click the **My Tasks** submenu. From the list of displayed tasks, select the task that will be processed. The task detail information will then be displayed at the bottom of the screen.

Note that, by selecting one of the process filters above this list, the list can be displayed according to filter conditions.

The screenshot shows the Systemwalker console interface. The top navigation bar includes 'Sample001 Console', 'Process Group', 'History', 'Favorites', 'Help', 'Preferences', 'User ID: swrbaadmin', and 'Logout'. The main content area is titled 'Tasks' and 'Process Management'. A sidebar on the left shows 'My Tasks' selected. The main area displays 'My Tasks' with a filter dropdown set to 'My Tasks' and buttons for 'Open' and 'Refresh'. Below this, a table shows '1 Tasks Found' with the following data:

Activity Name	Id	Process Instance Nam...	Created	Status	Due Date	Priority
Activity1	4152	SampleFlow	Dec, 19 2011	Active		8

The 'Activity1' row is highlighted with a red border. Below the table, the task details for 'Task: Activity1 [SampleFlow]' are shown in a 'Details' tab. The details include:

- Status: Active
- From: swrbaadmin
- To: swrbaadmin
- Date: December, 19 2011 16:21:30
- Process Instance: SampleFlow
- Due Date: [Empty field]
- Description: [Empty field]

3. Click the **Details** tab, and check the information in the **Form** panel.
In the same tab, files can be attached and comments added optionally.

Task: Activity1 [SampleFlow]

The screenshot shows the 'Task: Activity1 [SampleFlow]' details page. The 'Details' tab is selected and highlighted with a red border. The 'Form' panel is visible, showing an 'Output' section with the following input fields:

- SWRBA_RCODE: 0
- SWRBA_STDOUT: SUCCESS
- SWRBA_STDERR: [Empty field]

4. In the **Make Choice** panel, select and then click the processing to process the task.

The screenshot shows a web interface with three main sections:

- Attachments:** A header with an upward arrow icon and the text "Attachments". Below it is a button labeled "Add Attachment". A message box states "There are no attachments in this task." To the right is a "Back to top" link.
- Comments:** A header with an upward arrow icon and the text "Comments". Below it is a text input field labeled "Comment" and a button labeled "Add Comment". To the right is a "Back to top" link.
- Make Choice:** A header with an upward arrow icon and the text "Make Choice". Below it are two buttons labeled "NG" and "OK". To the right is a "Back to top" link.

5. From the **Result Summary** dialog box, check that **Result** is **Success**.

The screenshot shows a dialog box titled "Result Summary" with a close button in the top right corner. Inside the dialog, there is a tab labeled "Result Summary" and a section titled "MakeChoice Workitem Result". Below this section is a table with the following data:

ID	Name	Result	Comments
4152	Activity1	Success	Workitem Id:4152 completed by Make Choice action. successfully.

7.5.2 Progress of Automated Operation Processes in Response to a Timer

This is used to execute specific processing when the timer expires, for example after a specified interval has elapsed, or a specified date/time has been reached.

In an automated operation process that has a node for which a timer has been set, the node is changed according to the timer settings.

7.6 Operations on Automated Operation Processes that are Running

This section explains the following operations on automated operation processes that are running:

- Suspending Automated Operation Processes
- Resuming Automated Operation Processes
- Aborting Automated Operation Processes
- Resuming Automated Operation Processes that have Ended Abnormally

7.6.1 Suspending Automated Operation Processes

Perform the operation shown below when the automated operation process is running and you want to pause processing temporarily in order to operate the managed server so you make sure that transition to the next node does not occur for the automated operation process that is running.

This operation can only be executed by the automated operation process owner.



Note

If the operation component **Execute multiple operation processes** has paused an Automated Operation Process that was being processed, Automated Operation Processes executed from this operation component will not change to a paused state.

Perform the pause operation for the Automated Operation Process executed from this operation component if necessary.

Operation

1. Click the **Process Management** tab.

When the **Process Instances** submenu is clicked, the list of process instances will be displayed.

Note that, by selecting one of the process filters above this list, the list can be displayed according to filter conditions.

The screenshot shows the Systemwalker console interface. The main window is titled "Sample001 Console" and has a navigation menu on the left with "Process Management" selected. Under "Process Management", "Process Instances" is selected. The main area shows "My Processes" with a table of 6 process instances found. The table has columns for Process Instance Name, Id, Process Definition, Date Started, Status, Priority, Owner(s), Initiator, and Due Date. The first instance is "Sample001-3" with Id 222, Status "Closed", and Owner "swrbaad...". The other five instances have Ids 209, 196, 183, 170, and 157, with Statuses "Closed" and "Running".

Process Instance Na...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample001-3	222	Sample001-3	Jul, 12 2011	Closed	8	swrbaad...	swrbaad...	
Sample001-3	209	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	196	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	183	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	170	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	157	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	

- If a process instance with "Running" status is selected from the displayed list of process instances, the process instance details will be displayed at the bottom of the screen.

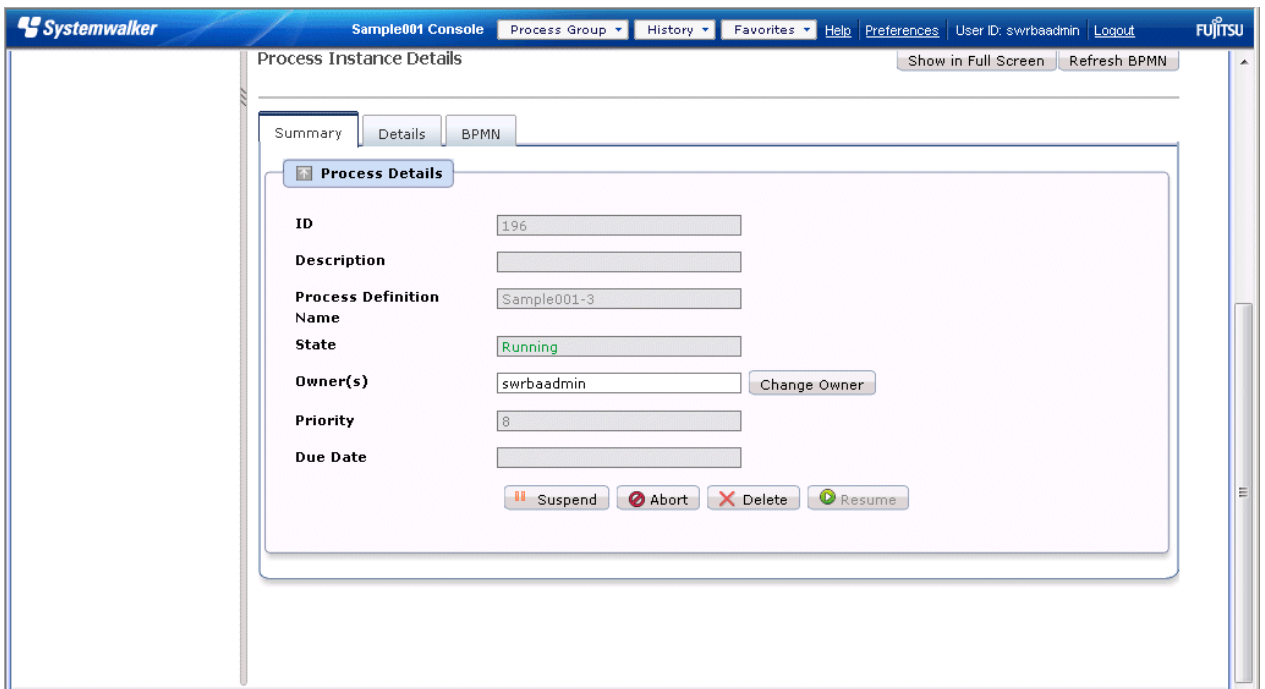
The screenshot shows the Systemwalker Process Management interface. The top navigation bar includes 'Sample001 Console', 'Process Group', 'History', 'Favorites', 'Help', 'Preferences', 'User ID: swrbaadmin', and 'Logout'. The left sidebar contains navigation options: 'Process Status', 'Process Instances', 'Process Definitions', 'PI Searches', 'PD Searches', 'Schedule Definitions', and 'Schedule Patterns'. The main area is titled 'My Processes' and contains a table of process instances. The table has columns: Process Instance Na..., Id, Process Definiti..., Date Star..., Status, Prio..., Owner(s), Initiator, and Due Date. The row for 'Sample001-3' with ID '196' and status 'Running' is highlighted. Below the table are buttons for 'Open', 'Delete', and 'Refresh'. A legend at the bottom indicates status colors: Not Started (white), Closed (blue), Assigned (green), Waiting (yellow), Error (red), and Suspended/Aborted (orange).

Process Instance Na...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample001-3	222	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	209	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	196	Sample001-3	Jul, 12 2011	Running	8	swrbaad...	swrbaad...	
Sample001-3	183	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	170	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	157	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	

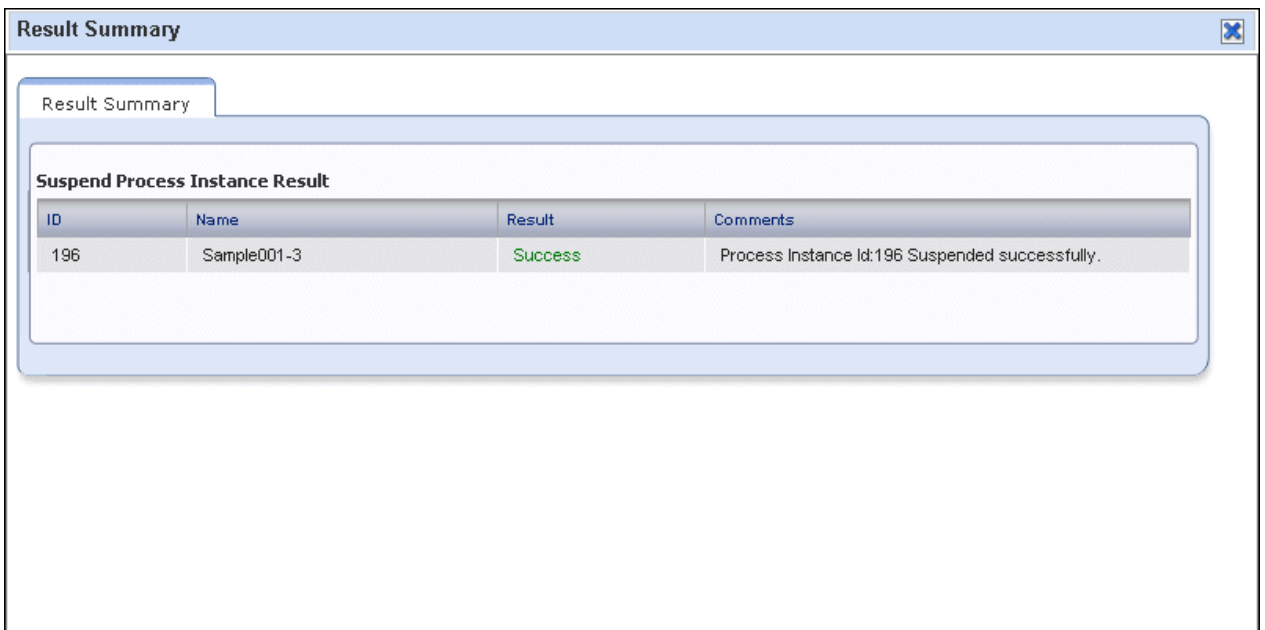
- Click the **Summary** tab of **Process Instance Details**.

This screenshot is identical to the previous one, but the 'Summary' tab is now selected in the 'Process Instance Details' section at the bottom. The 'Process Details' sub-tab is also visible, showing the ID '196' in a text input field.

4. If the **Suspend** button in the **Process Details** panel is clicked, the automated operation process can be suspended.



5. The **Result Summary** dialog box will be displayed. Check that **Result** is **Success**, then click **X**.



7.6.2 Resuming Automated Operation Processes

Perform the operation shown below when the automated operation process has been suspended for some reason and can now be resumed so you resume the transition to the next node for the automated operation process that has been suspended.

This operation can only be executed by the automated operation process owner.

Note

If the "Execute multiple operation processes" operation component has paused an Automated Operation Process that was being processed, and Automated Operation Processes executed from this operation component are also paused, first of all execute the operation to resume the Automated Operation Processes executed from this operation component.

Operation

1. Click the **Process Management** tab.

When the **Process Instances** submenu is clicked, the list of process instances will be displayed.

Note that, by selecting one of the process filters above this list, the list can be displayed according to filter conditions.

The screenshot displays the Systemwalker Process Management interface. The top navigation bar includes 'Sample001 Console', 'Process Group', 'History', 'Favorites', 'Help', 'Preferences', 'User ID: swrbaadmin', and 'Logout'. The left sidebar contains a menu with 'Process Status', 'Process Instances' (selected), 'Process Definitions', 'PI Searches', 'PD Searches', 'Schedule Definitions', and 'Schedule Patterns'. The main content area is titled 'My Processes' and features a 'Process Filters' dropdown set to 'My Processes'. Below this, a table lists 6 process instances found. The table columns are: Process Instance Na..., Id, Process Definiti..., Date Star..., Status, Prio..., Owner(s), Initiator, and Due Date. The first instance (ID 222) is highlighted in blue and has a 'Closed' status. Other instances have statuses of 'Closed', 'Suspended', and 'Running'. Below the table, there are buttons for 'Open', 'Delete', and 'Refresh'. At the bottom, there are tabs for 'Summary', 'Details', and 'BPMN', and a legend for process statuses: Not Started (white), Closed (blue), Assigned (green), Waiting (yellow), Error (red), and Suspended/Aborted (orange).

Process Instance Na...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample001-3	222	Sample001-3	Jul, 12 2011	Closed	8	swrbaad...	swrbaad...	
Sample001-3	209	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	196	Sample001-3	Jul, 12 2011	Suspended	8	swrbaadmin	swrbaadmin	
Sample001-3	183	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	170	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	157	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	

- If a process instance with "Suspended" status is selected from the displayed list of process instances, the process instance details will be displayed at the bottom of the screen.

The screenshot shows the Systemwalker Process Management interface. The top navigation bar includes "Sample001 Console", "Process Group", "History", "Favorites", "Help", "Preferences", "User ID: swrbaadmin", and "Logout". The left sidebar contains navigation options: "Process Status", "Process Instances", "Process Definitions", "PI Searches", "PD Searches", "Schedule Definitions", and "Schedule Patterns". The main content area is titled "My Processes" and features a "Process Filters" dropdown set to "My Processes". Below this is a table with 6 process instances found. The instance with ID 196 and status "Suspended" is highlighted in blue. The table columns are: Process Instance Na..., Id, Process Definiti..., Date Star..., Status, Prio..., Owner(s), Initiator, and Due Date.

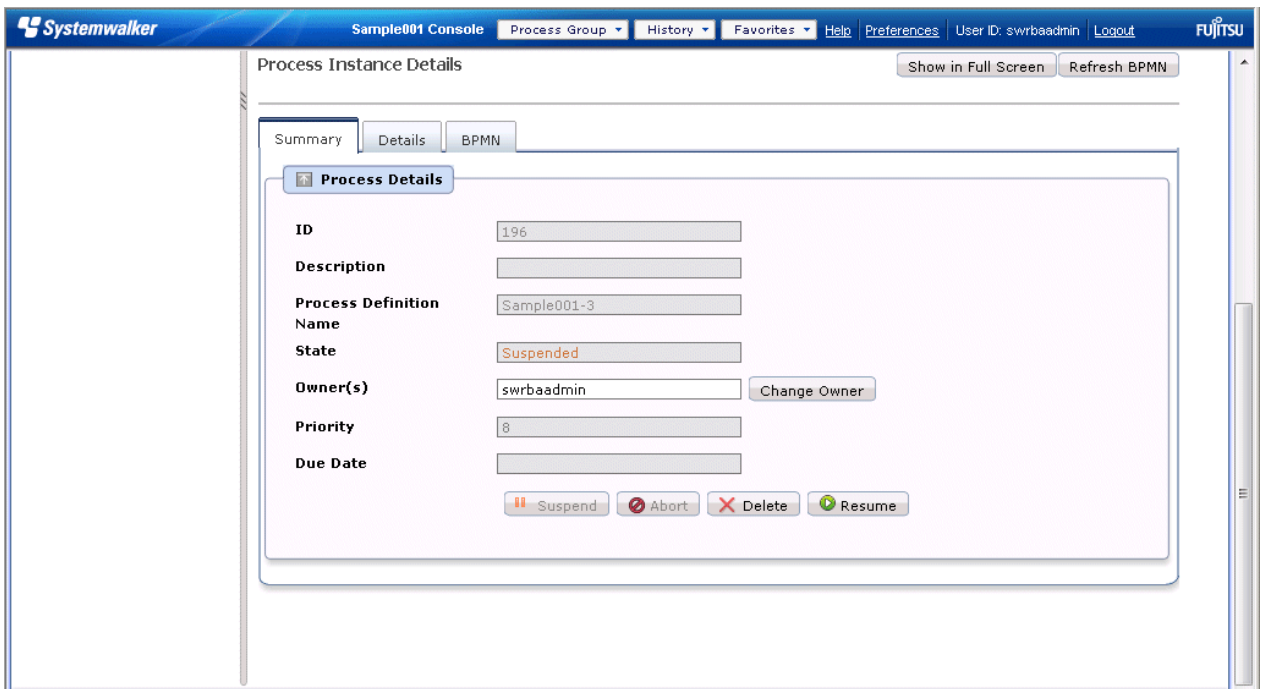
Process Instance Na...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample001-3	222	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	209	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	196	Sample001-3	Jul, 12 2011	Suspended	8	swrbaad...	swrbaad...	
Sample001-3	183	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	170	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	157	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	

Below the table, there are buttons for "Open", "Delete", and "Refresh". Under "Process Instance Details", there are buttons for "Show in Full Screen" and "Refresh BPMN". At the bottom, there are tabs for "Summary", "Details", and "BPMN". A legend below the tabs shows color-coded boxes for: Not Started (white), Closed (blue), Assigned (green), Waiting (yellow), Error (red), and Suspended/Aborted (orange).

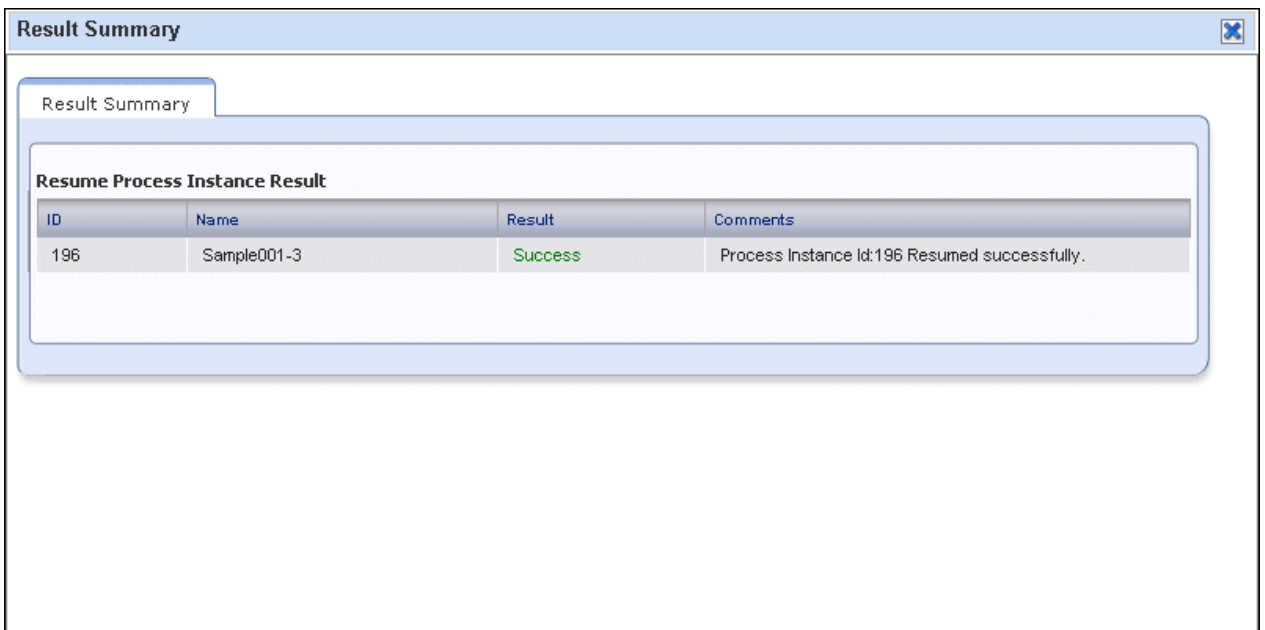
- Click the **Summary** tab of **Process Instance Details**.

This screenshot is identical to the previous one, but the "Summary" tab is now selected in the "Process Instance Details" section. The "Process Details" sub-tab is also visible, showing the ID field with the value "196" entered.

- If the **Resume** button in the **Process Details** panel is clicked, the automated operation process can be resumed.



- The **Result Summary** dialog box will be displayed. Check that **Result** is **Success**, then click **X**.



7.6.3 Aborting Automated Operation Processes

Perform the operation shown below when the automated operation process has been executed by mistake and you want to abort the execution of the automated operation process that is running.

This operation can only be executed by the automated operation process owner.

Note

If the "Execute multiple operation processes" operation component has paused an Automated Operation Process that was being processed, and Automated Operation Processes executed from this operation component are also paused, first of all execute the operation to resume the Automated Operation Processes executed from this operation component.

Operation

1. Click the **Process Management** tab.

When the **Process Instances** submenu is clicked, the list of process instances will be displayed.

Note that, by selecting one of the process filters above this list, the list can be displayed according to filter conditions.

The screenshot displays the Systemwalker Process Management interface. The main window shows a list of process instances under the 'My Processes' filter. The table below represents the data shown in the screenshot:

Process Instance No...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample001-3	222	Sample001-3	Jul, 12 2011	Closed	8	swrbaad...	swrbaad...	
Sample001-3	209	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	196	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	183	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	170	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	157	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	

Below the table, there are tabs for 'Summary', 'Details', and 'BPMN'. A legend at the bottom indicates the status colors: Not Started (white), Closed (blue), Assigned (green), Waiting (yellow), Error (red), and Suspended/Aborted (orange).

- If a process instance with "Running" status is selected from the displayed list of process instances, the process instance details will be displayed at the bottom of the screen.

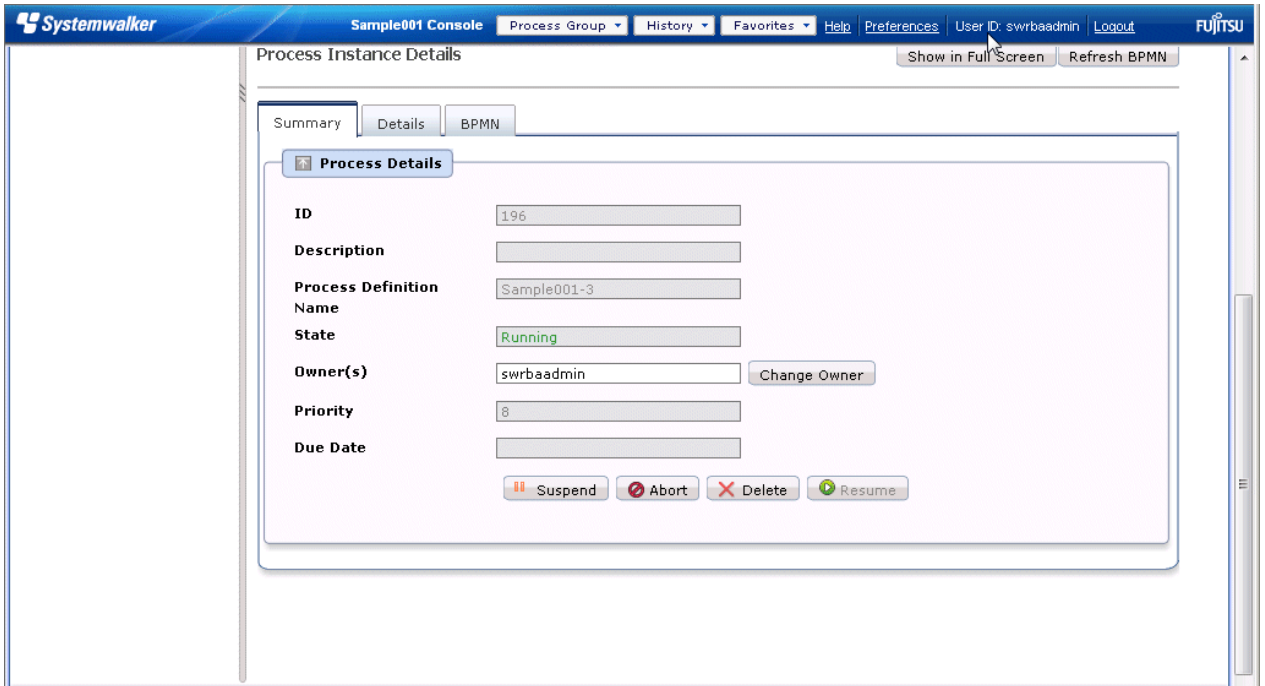
The screenshot shows the Systemwalker Process Management interface. The top navigation bar includes 'Sample001 Console', 'Process Group', 'History', 'Favorites', 'Help', 'Preferences', 'User ID: swrbaadmin', and 'Logout'. The left sidebar contains navigation options: 'Process Status', 'Process Instances', 'Process Definitions', 'PI Searches', 'PD Searches', 'Schedule Definitions', and 'Schedule Patterns'. The main area is titled 'My Processes' and contains a table of process instances. The table has columns: Process Instance Na..., Id, Process Definiti..., Date Star..., Status, Prio..., Owner(s), Initiator, and Due Date. The row for 'Sample001-3' with ID '196' and status 'Running' is highlighted. Below the table are buttons for 'Open', 'Delete', and 'Refresh'. A legend at the bottom indicates status colors: Not Started (white), Closed (blue), Assigned (green), Waiting (yellow), Error (red), and Suspended/Aborted (orange).

Process Instance Na...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample001-3	222	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	209	Sample001-3	Jul, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001-3	196	Sample001-3	Jul, 12 2011	Running	8	swrbaad...	swrbaad...	
Sample001-3	183	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	170	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001-3	157	Sample001-3	Jul, 12 2011	Running	8	swrbaadmin	swrbaadmin	

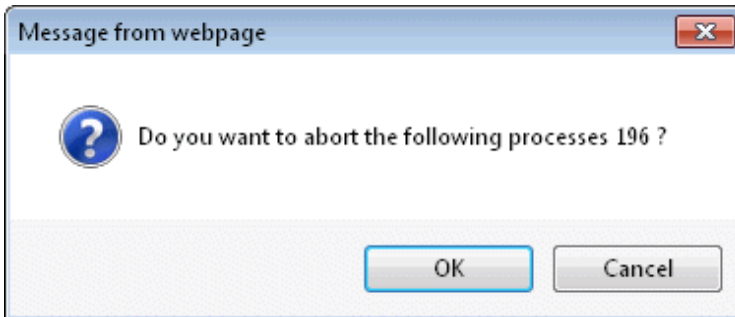
- Click the **Summary** tab of **Process Instance Details**.

This screenshot shows the same interface as above, but with the 'Summary' tab selected in the 'Process Instance Details' section. The 'Process Details' sub-tab is active, showing the 'ID' field with the value '196' entered.

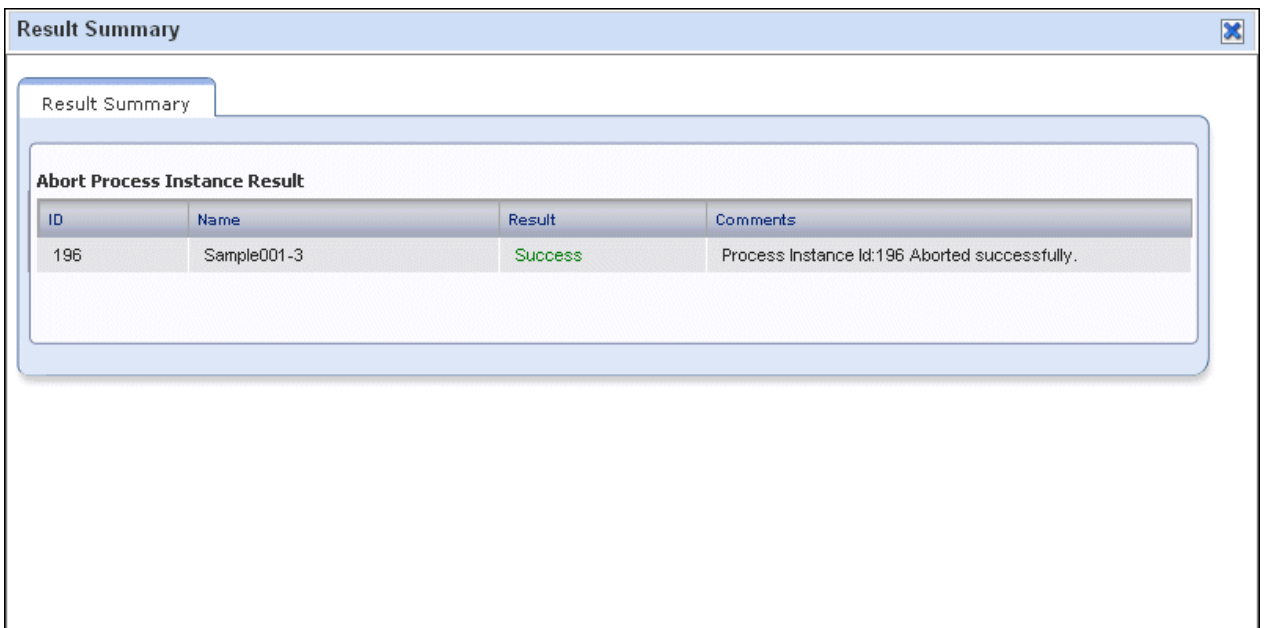
- Click **Abort** in the **Process Details** panel.



- A process instance abort confirmation dialog box will be displayed. To abort the automated operation process, click the **OK** button.



- The **Result Summary** dialog box will be displayed. Check that **Result** is **Success**, then click **X**.



7.6.4 Resuming Automated Operation Processes that have Ended Abnormally

If an Automated Operation Process has ended abnormally with a status such as error or aborted, you can activate the Automated Operation Process after eliminating the cause of the abnormality to resume the Automated Operation Process from any locale.

A resume operation can be performed not only from the node that ended abnormally but also from a node prior or subsequent to the node that ended abnormally.

This operation can be executed by the owner of an Automated Operation Process or by an Administrator user.

Note that this operation can be implemented only when the status of a process instance is one of those listed below. If this operation is implemented for a process instance with a status other than those listed below, an error message dialog box will be displayed on the Web console.

- Running
- End
- Error
- Aborted

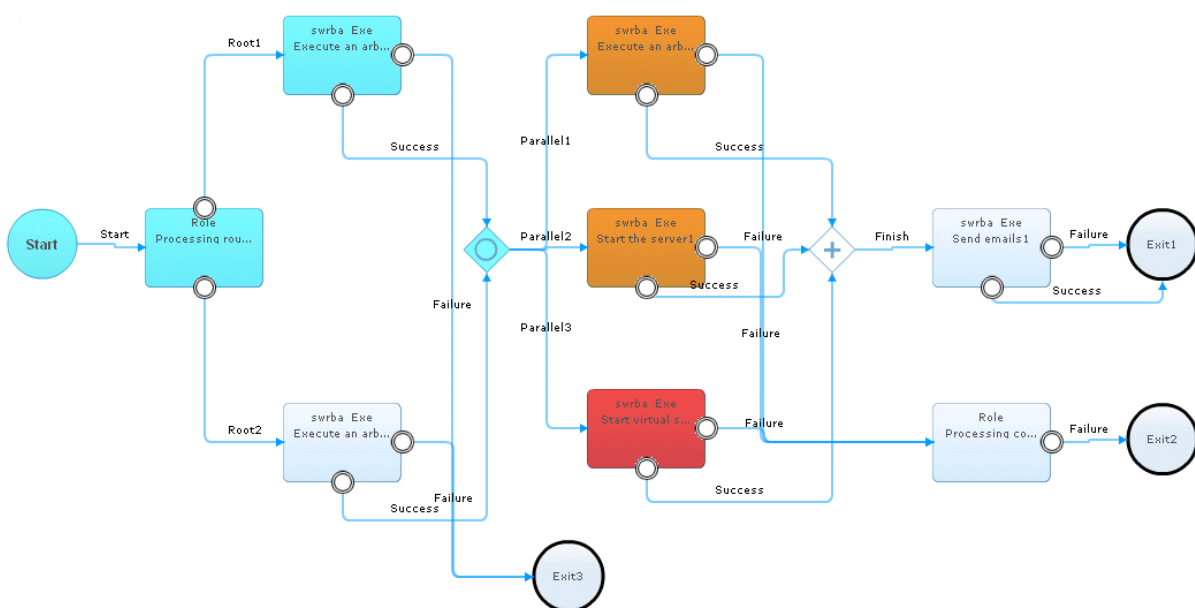


Implementing this operation is not recommended for a process instance with a "Running" or "End" status.

When processing should not be performed, processing of the Automated Operation Process may be performed again and trouble may arise in operation.

When resume Automated Operation Process, Resume it from appropriate position on the basis of process definition constitution.

For example, the following Automated Operation Process that will execute following node with taking over the execution result of the root such as 1 or 2, when it has ended abnormally at 3 or 4 or 5 node, if it is resumed from 2 node, the future processing may not become what envisioned for result because the processing which it is not just selected node processing has been performed. Also if it is resumed from 6 node, the processing of 6 node, itself may not become what envisioned for result because the nodes before 6 node has not ended normally.



Also, When resume node which has been already ended normally, depending on processing of the operation components, it may be executed unnecessary processing to operation server and may arise in operation.

The following four patterns of operation procedure are each explained below:

- Resuming from a node that has ended abnormally
- Resuming from a node other than a node that has ended abnormally
- Resuming an Automated Operation Process that has distributed nodes or that is performing parallel execution of nodes

Note

If the reason of abnormal ended is error in process definition, the Automated Operation Process may be ended abnormally with same reason even if executed activation. In this case, Re-entry modified process definition and execute the Automated Operation Process form first again.

Operation (resuming from a node that has ended abnormally)

1. Click the **Process Management** tab.

When you click the **Process Instance** submenu, a list of process instances will be displayed.

Note that by selecting one of the process filters displayed above this list, the list can be displayed according to filter conditions.

The screenshot shows the 'Systemwalker' interface for 'Sample001 Console'. The 'Process Management' tab is active, and the 'Process Instances' submenu is selected. The main area displays 'My Processes' with a filter set to 'My Processes'. A table lists 6 process instances found, with columns for Process Instance Name, Id, Process Definition, Date Started, Status, Priority, Owner(s), Initiator, and Due Date. The statuses include Error, Closed, and Assigned. Below the table, there are tabs for 'Summary', 'Details', and 'BPMN', and a legend for process statuses: Not Started, Closed, Assigned, Waiting, Error, and Suspended/Aborted.

Process Instance Na...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample004	843	Sample004	Jul, 13 2011	Error	8	swrbaad...	swrbaad...	
Sample003	669	Sample003	Jul, 13 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample003	639	Sample003	Jul, 13 2011	Error	8	swrbaadmin	swrbaadmin	
Sample003	620	Sample003	Jul, 13 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample002	554	Sample002	Jul, 13 2011	Error	8	swrbaadmin	swrbaadmin	
Sample002	535	Sample002	Jul, 13 2011	Closed	8	swrbaadmin	swrbaadmin	

- If an Automated Operation Process with a status of "Error" or "Aborted" is selected from the displayed list of process instances, the process instance details will be displayed at the bottom of the window.

From the process instance details, select the **BPMN** tab.

The screenshot shows the Systemwalker console interface. At the top, there's a navigation bar with 'Sample001 Console', 'Process Group', 'History', 'Favorites', 'Help', 'Preferences', 'User ID: swrbaadmin', and 'Logout'. On the left, there are tabs for 'Schedule Definitions' and 'Schedule Patterns'. The main area displays a table with 6 process instances found. The table has columns: Process Instance No., Id, Process Definiti..., Date Star..., Status, Prio..., Owner(s), Initiator, and Due Date.

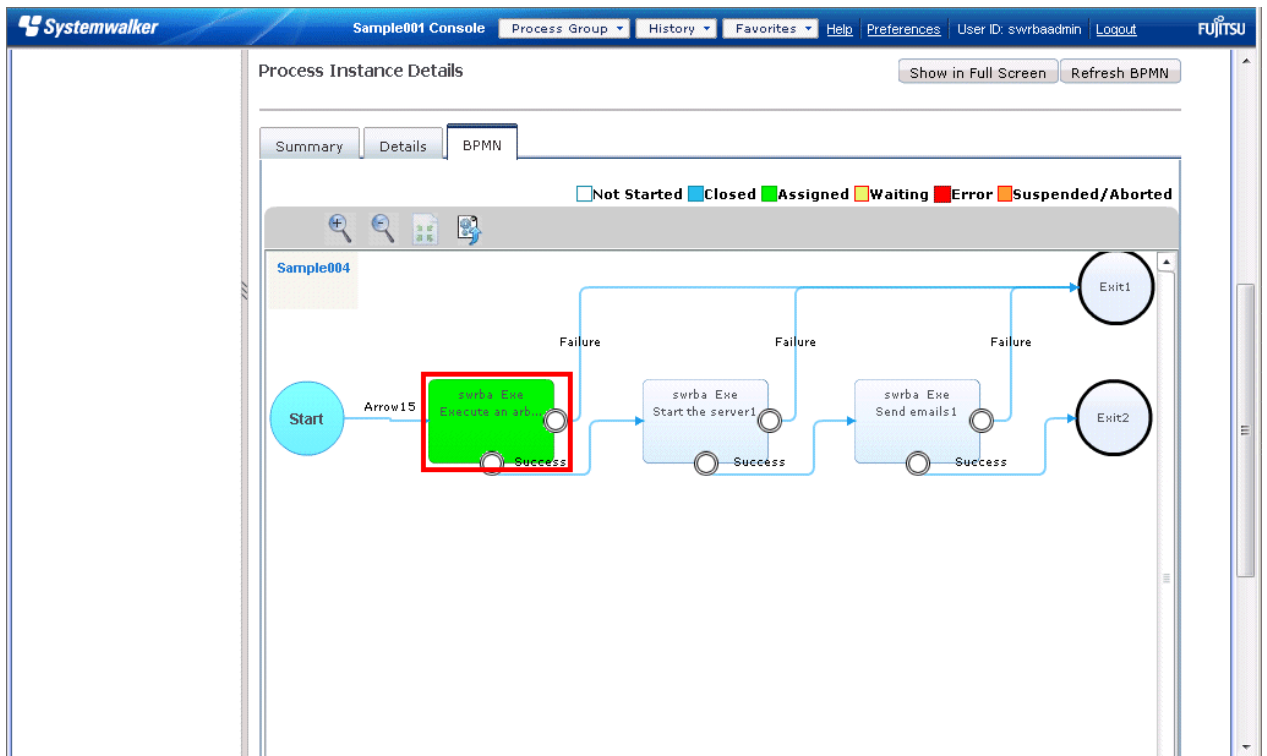
Process Instance No.	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample004	843	Sample004	Jul, 13 2011	Error	8	swrbaad...	swrbaad...	
Sample003	669	Sample003	Jul, 13 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample003	639	Sample003	Jul, 13 2011	Error	8	swrbaadmin	swrbaadmin	
Sample003	620	Sample003	Jul, 13 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample002	554	Sample002	Jul, 13 2011	Error	8	swrbaadmin	swrbaadmin	
Sample002	535	Sample002	Jul, 13 2011	Closed	8	swrbaadmin	swrbaadmin	

Below the table, the 'Process Instance Details' section is visible, with the 'BPMN' tab selected. The BPMN diagram for 'Sample004' shows a flow starting from a 'Start' node, followed by an 'swrba Exe Execute an arb...' node (highlighted in red), then 'swrba Exe Start the server1', and 'swrba Exe Send emails 1', leading to 'Exit1' and 'Exit2' nodes. Transitions are labeled 'Success' and 'Failure'.

- Eliminate the cause of the node becoming abnormal, as required. The cause of the abnormality that occurred will be displayed in the system log or in a customized message of the Automated Operation Process. Refer to [7.8.4 Confirming the Operation Component Execution Status/Execution Results](#) for information on how to check customized messages.
- Position the mouse cursor over the node to be activated, right-click and select **Activation** from the menu.

This screenshot shows the same BPMN diagram as the previous one, but with a context menu open over the 'swrba Exe Execute an arb...' node. The menu options are: Activate, Forms, Actions, Timers, Triggers, Due Date, Iterator (Parallel) Loop, Sequential Loop, Show Custom Messages, Settings..., and About Adobe Flash Player 10... The 'Activate' option is highlighted.

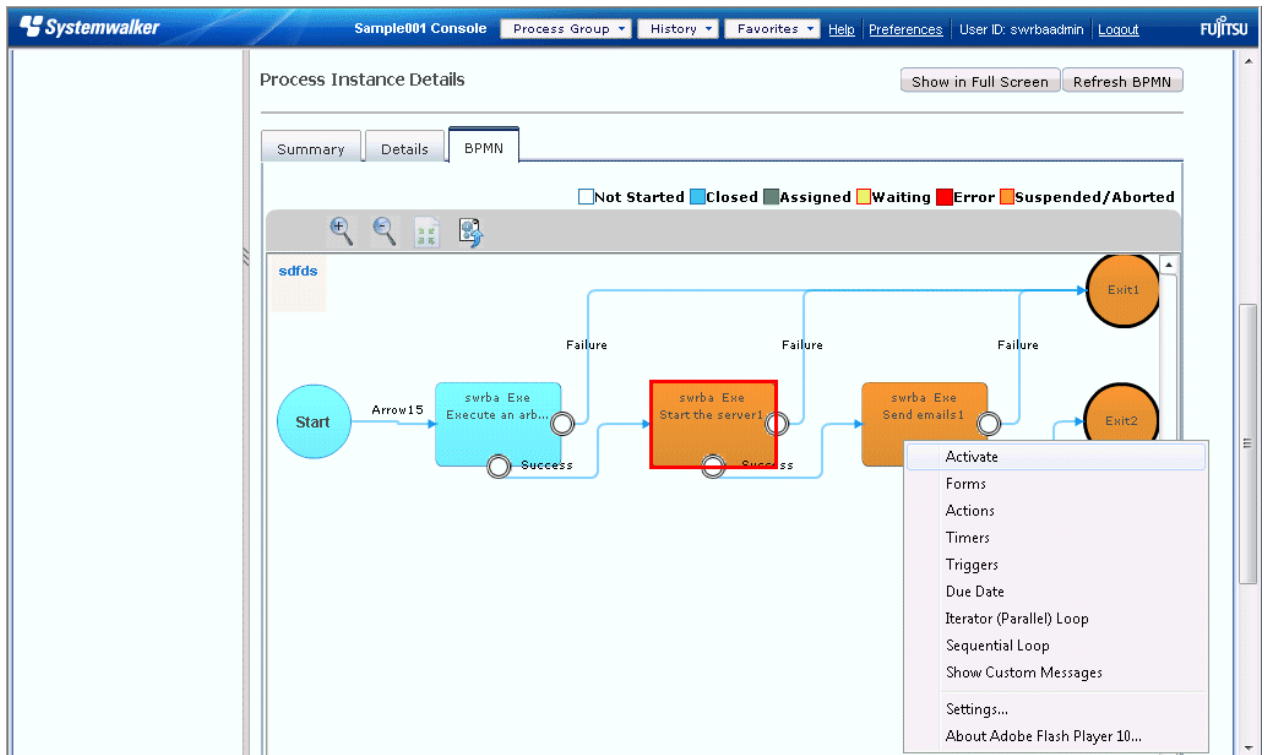
5. The Automated Operation Process will be resumed from the node for which **Activation** was selected.



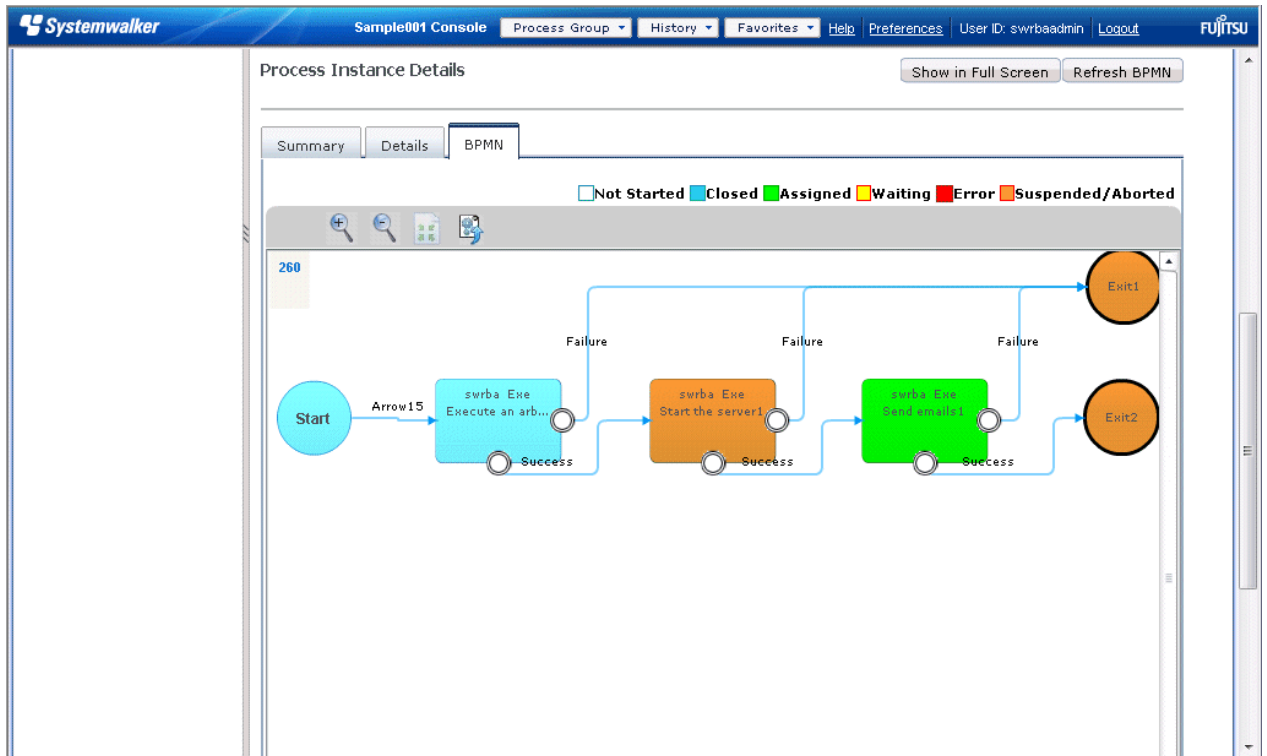
Operation (resuming from a node other than a node that has ended abnormally)

It is also possible to activate a node other than a node that has ended abnormally.

1. In the **BPMN** window of process instance details, position the mouse cursor over the node to be activated, right-click and select **Activation** from the menu. In the example shown below, activation is being performed on the node subsequent to the red frame.

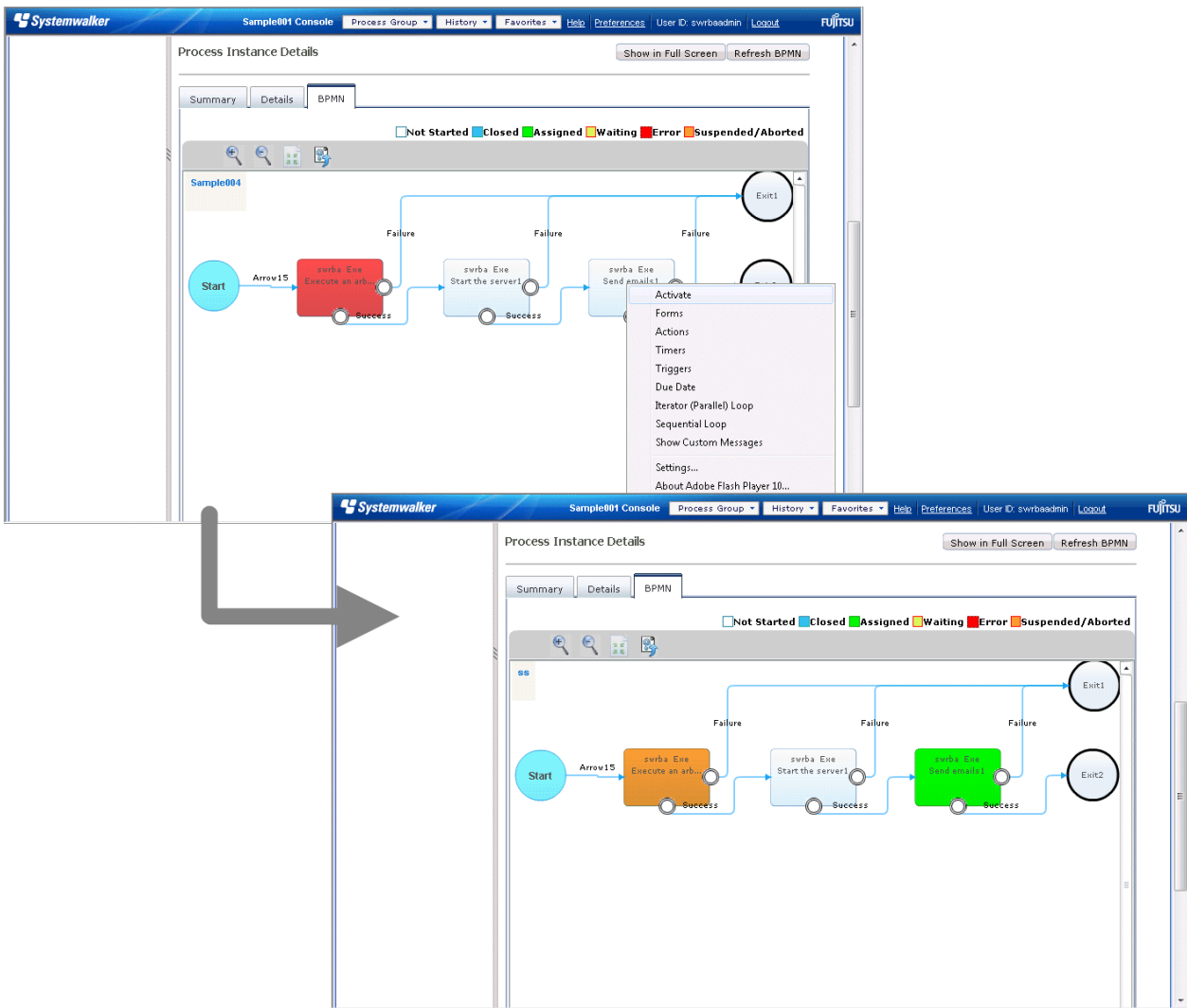


2. Processing of the Automated Operation Process will be resumed from the subsequent node, without the node at which the abnormality occurred being executed.



Note

For process instance in error status, if the node except of node that error is occurred will be activated, the status of node that error is occurred is in abort status. But it is not subject to the operation of the process instance and each node in process instance.

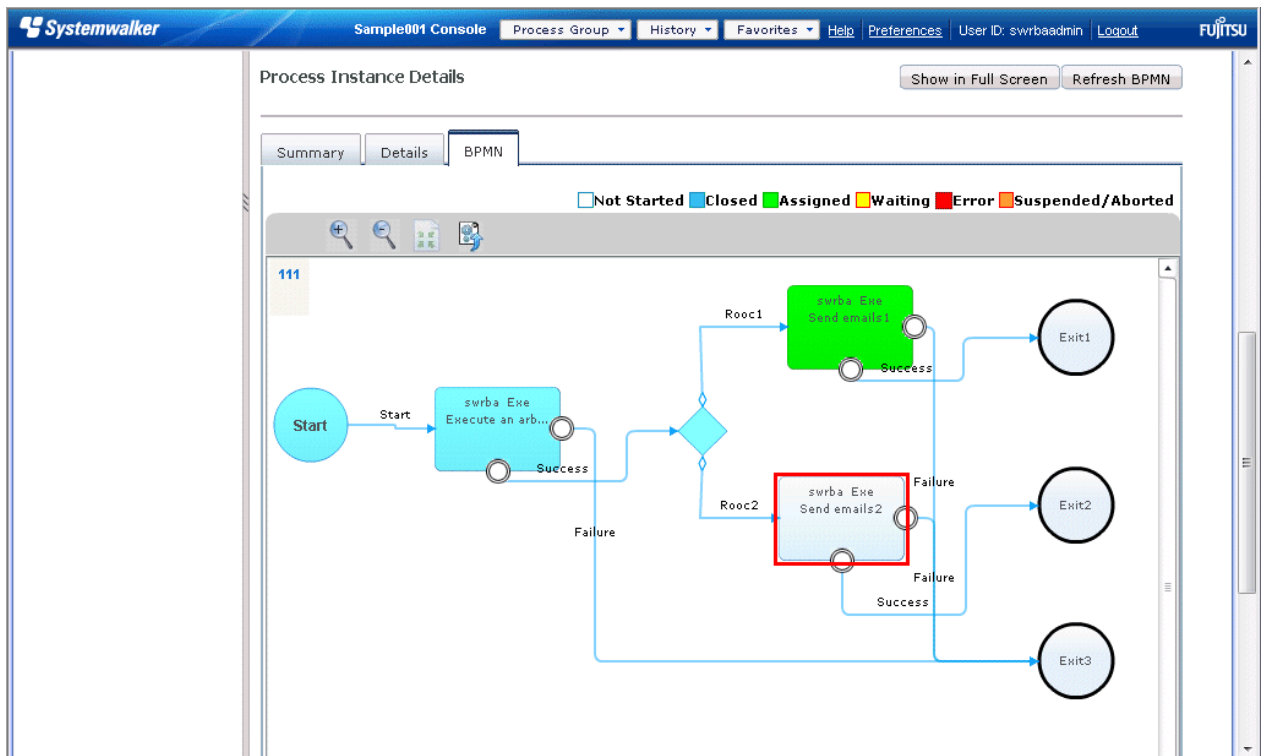
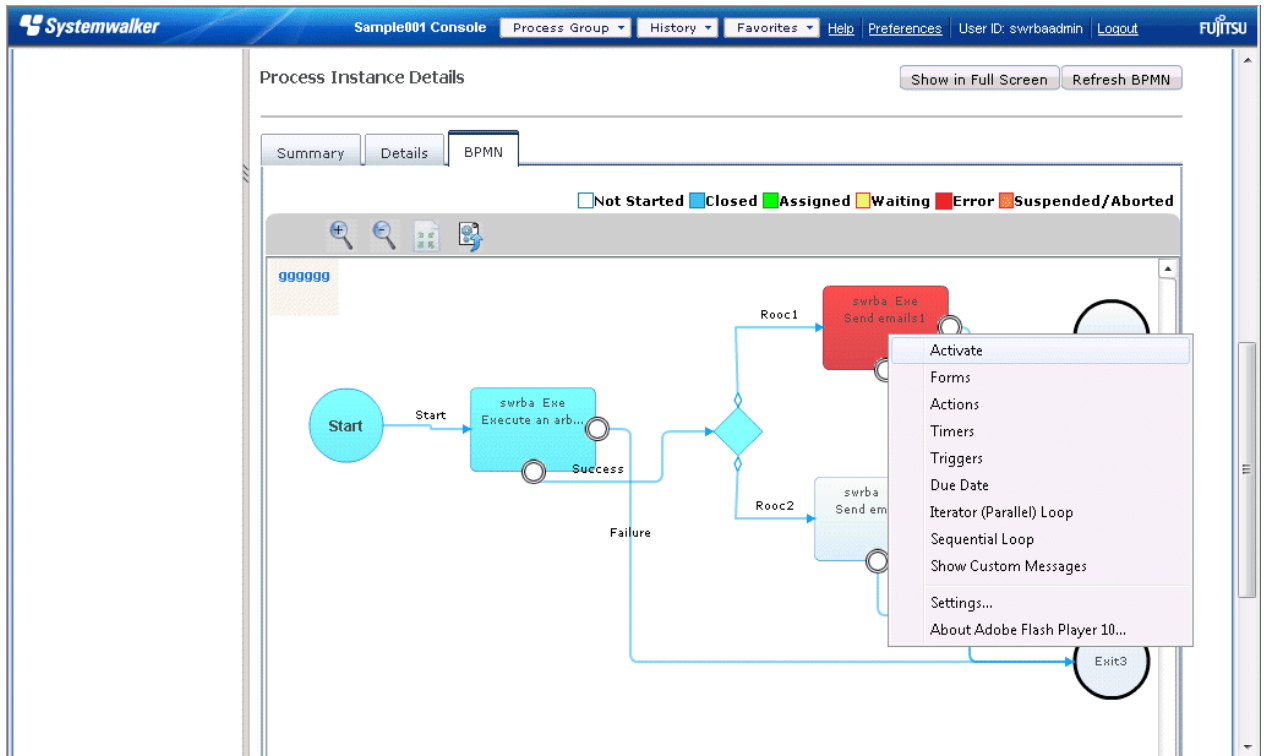


Operation (resuming an Automated Operation Process that has distributed nodes or that is performing parallel execution of nodes)

An Automated Operation Process that is attempting to distribute processing among nodes or an Automated Operation Process that is deploying nodes in parallel can be activated in order to resume the Automated Operation Process midway through processing.

- For an Automated Operation Process that has distributed nodes

If one of the distributed nodes is activated as shown below, only the node selected for activation will be resumed and the other distribution destination node (red frame) will not be executed.



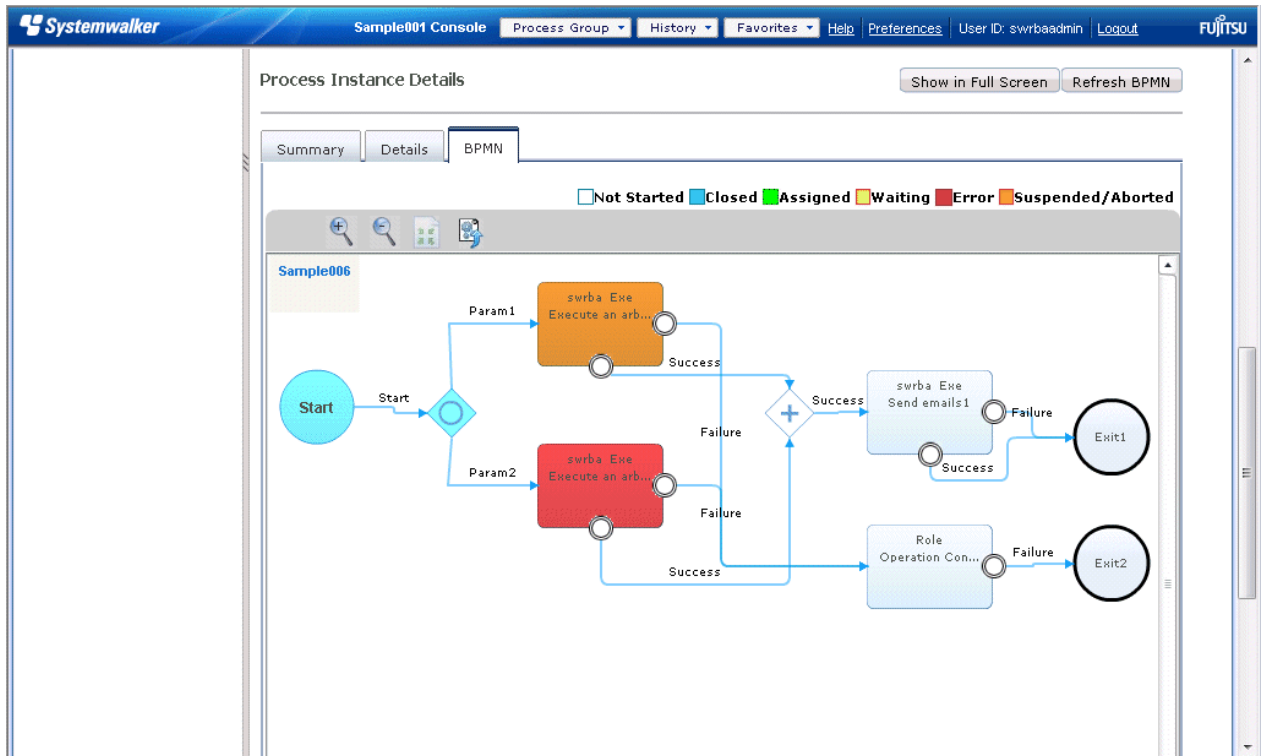
Note

If an abnormal end has occurred just before a distributed node, it is normally possible to resume from a node that differs from the distribution destination node to be transitioned.

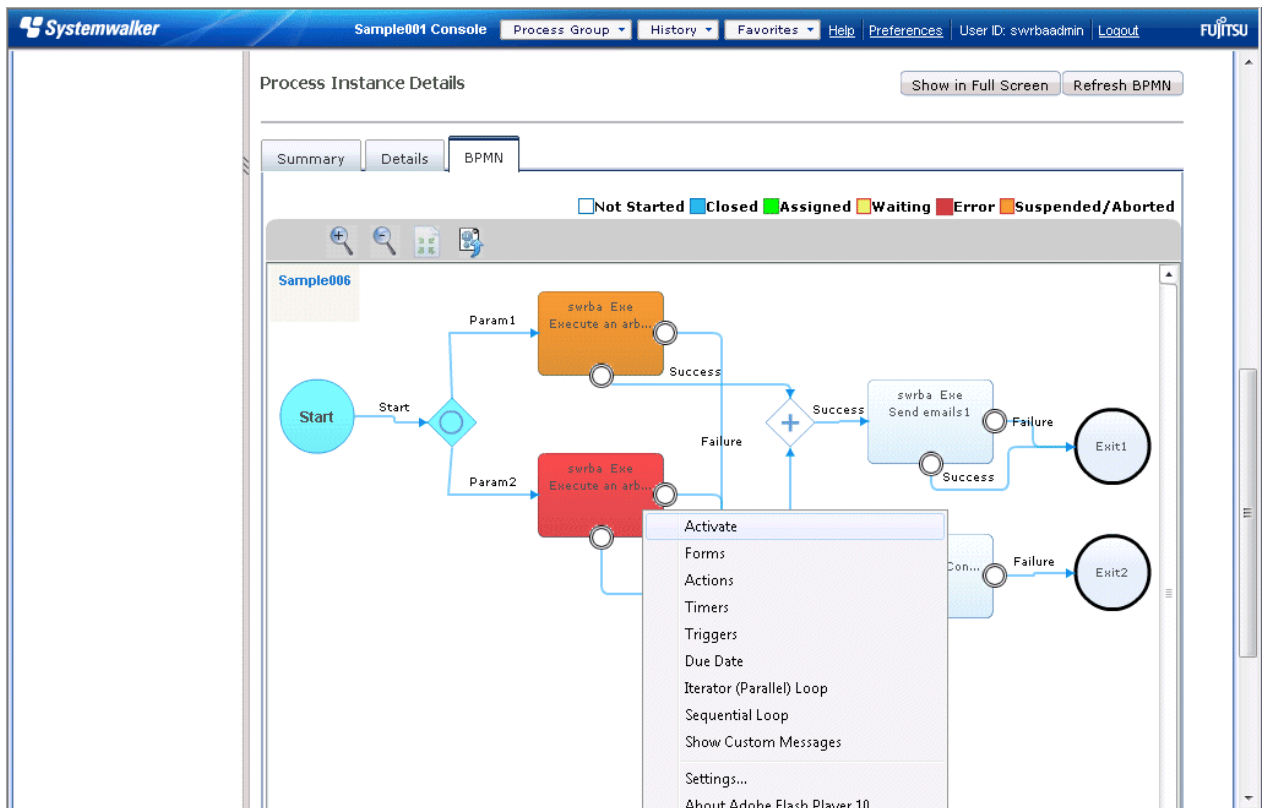
Note that if a process definition has been created based on the premise that the results of the node prior to distribution are to be passed on to the distribution destination node, the operation of the Automated Operation Process may not have the anticipated result.

- For an Automated Operation Process that is deploying nodes in parallel

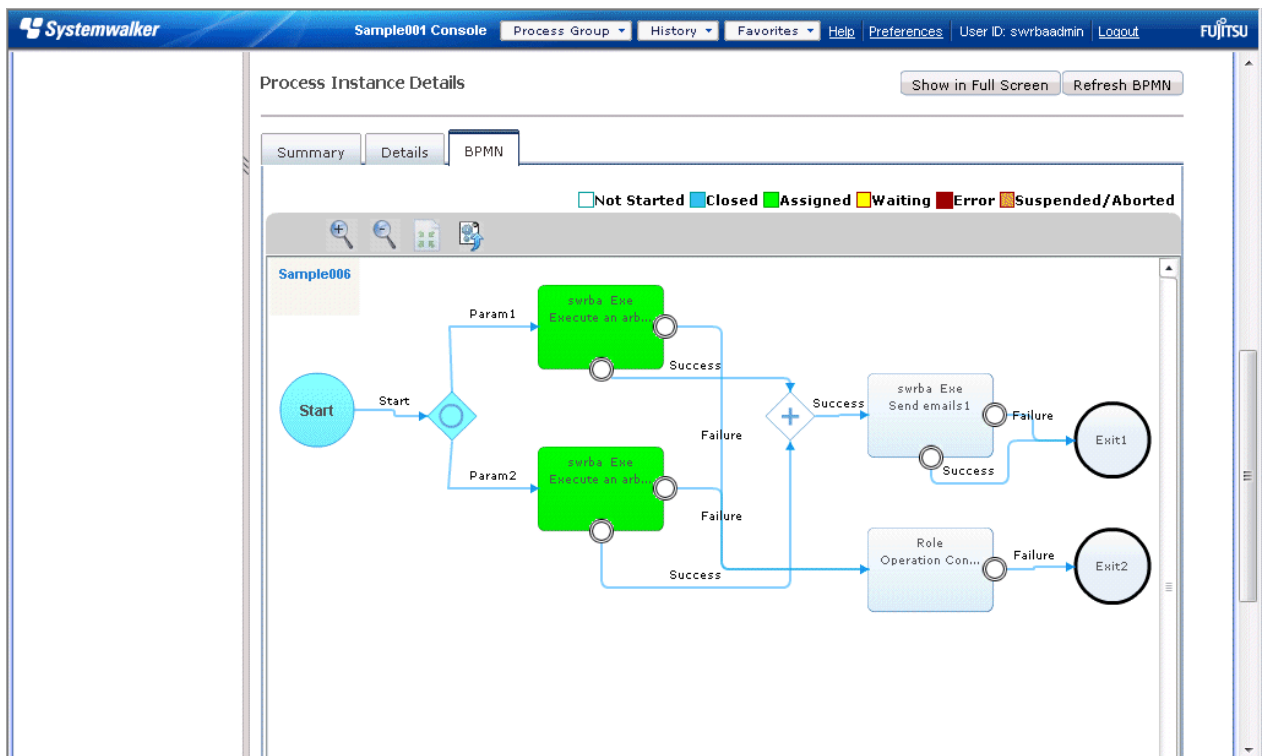
This explains that the procedure to resume the Automated Operation Process, as the following, if the error occurred in deployed parallel nodes. If a node stops in the Error state, other nodes running in parallel will enter the Suspended or Aborted state.



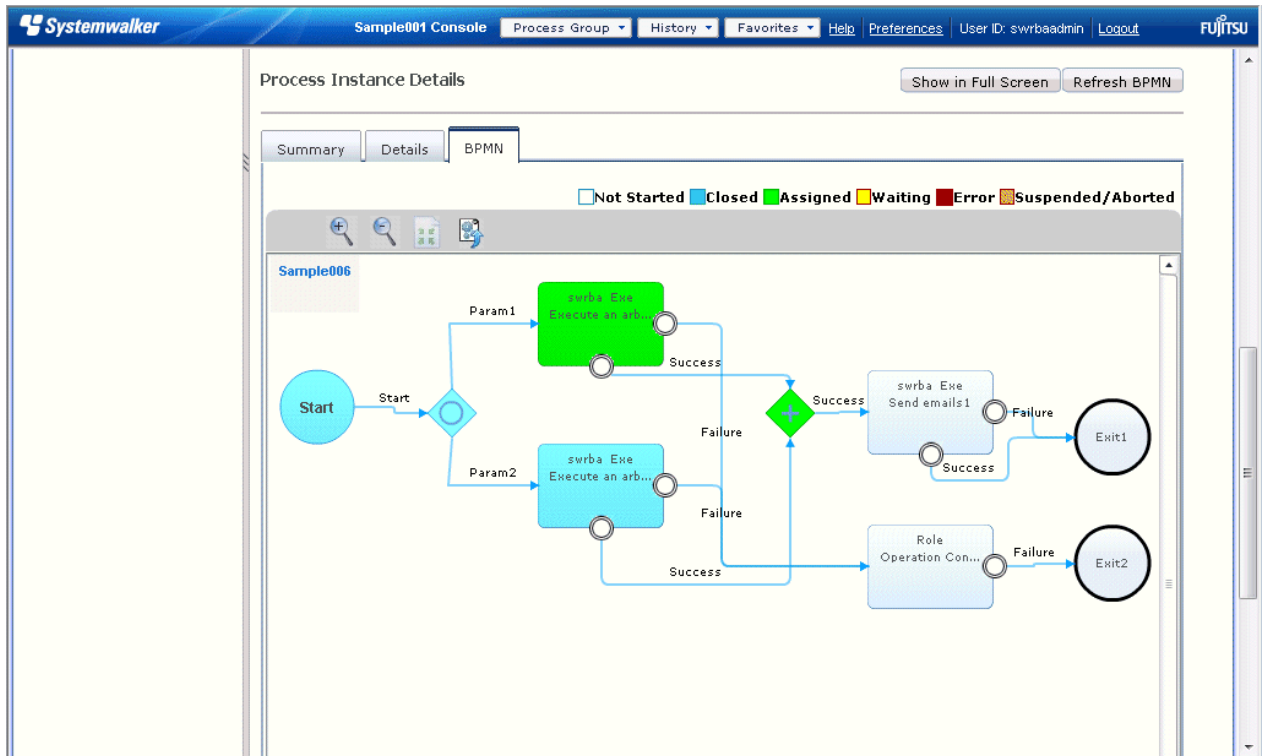
1. Right-click with pointing to node which resumed for, and select **Activate** from menu.



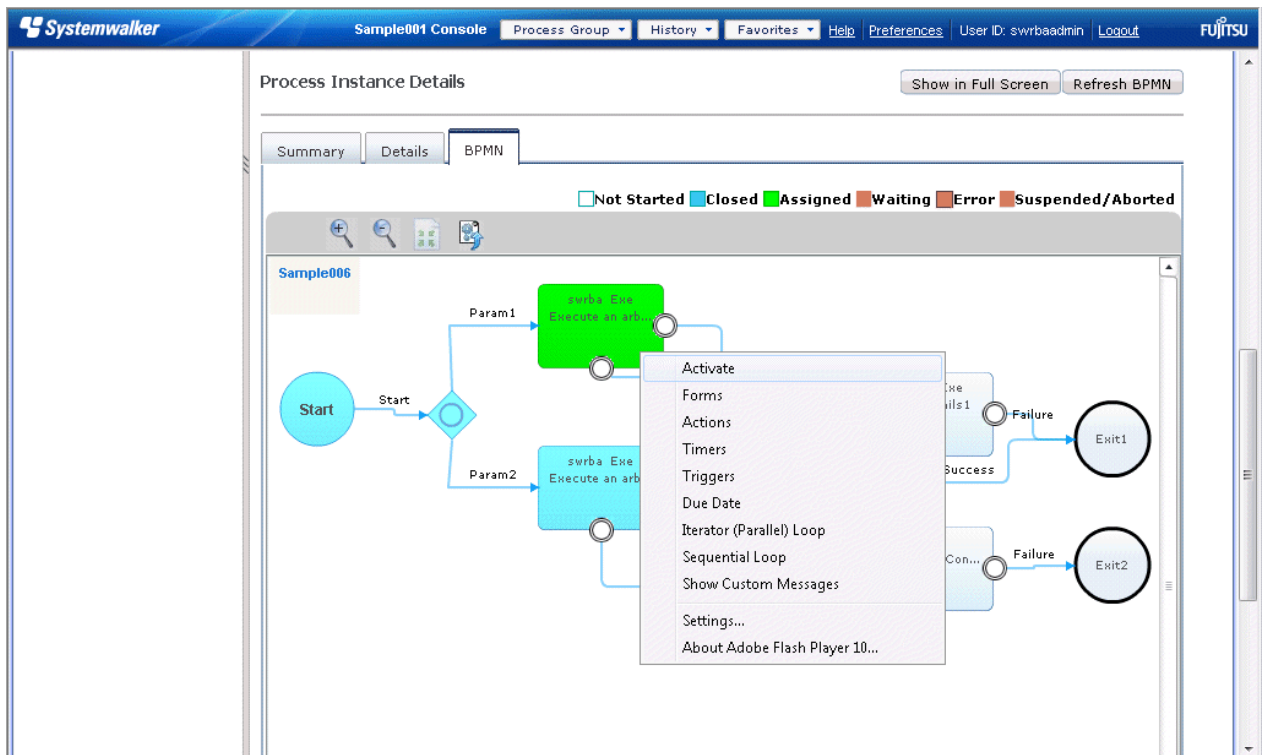
2. Node selected **Activate** will be resumed.
At this point, any node in the Suspended or Aborted state will enter the Assigned state.



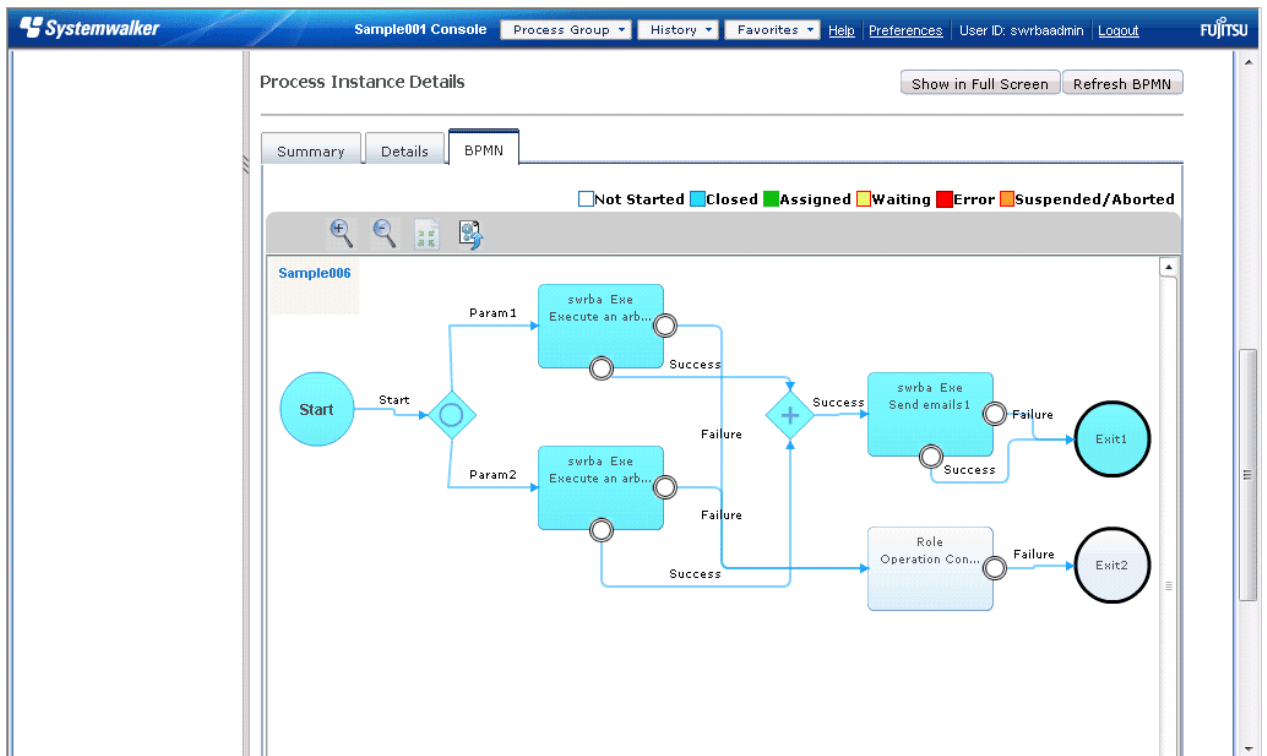
3. Resumed node is ended, and AND node is assigned. AND node is waiting for moving until all parallel deployed node before AND node will be ended.



4. After the "AND" Node enters the Assigned state, execute **Deactivate**, and then, **Activate** for any assigned nodes that have been placed in parallel. Execute **Activate** for any nodes that are in the Not Started state.

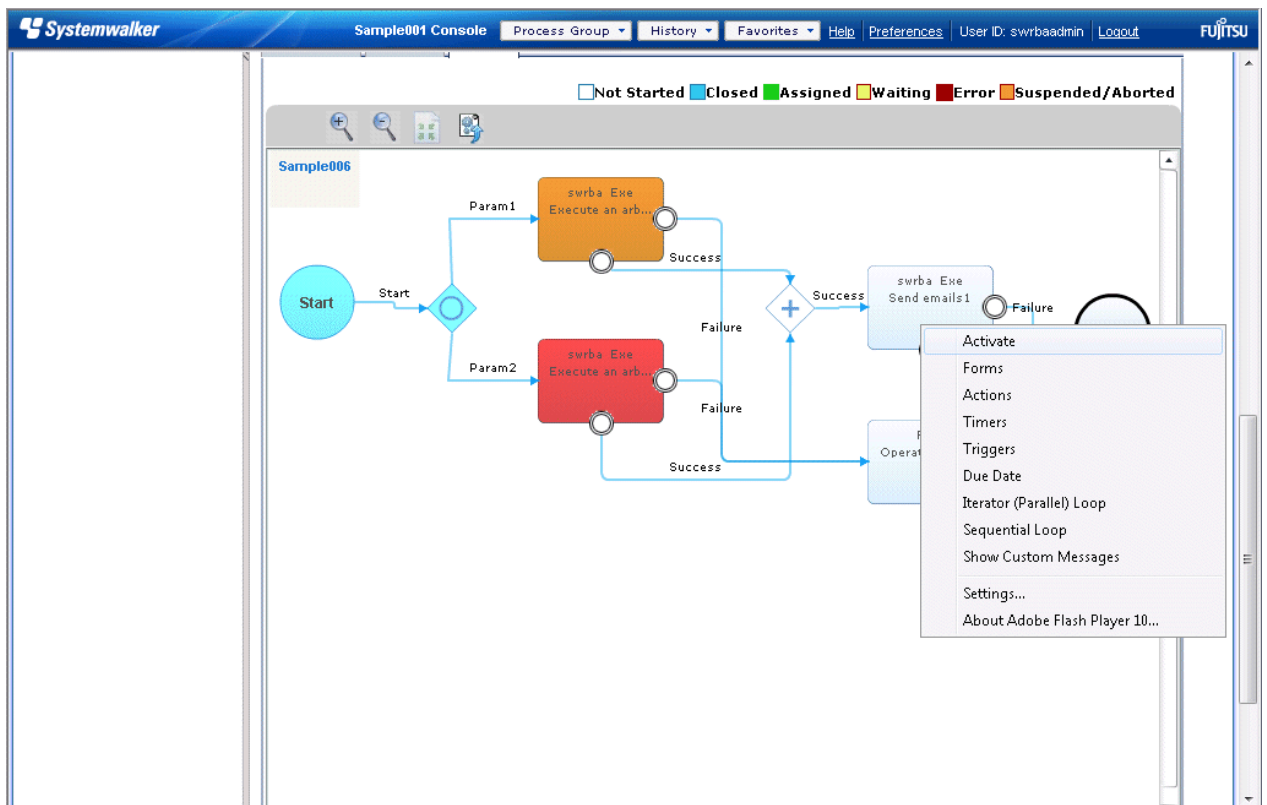


5. After all node which parallel deployed are exit, AND node will be move next.

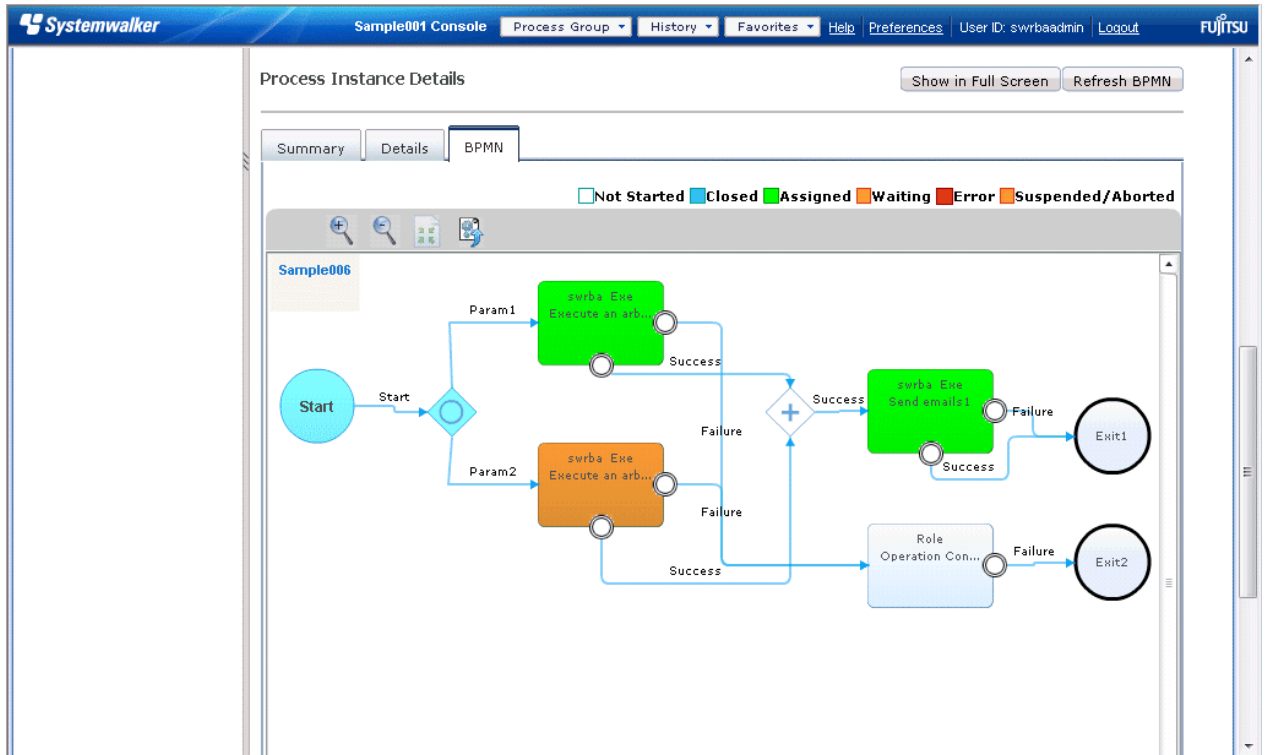


If resume the Automated Operation Process from last node deployed parallel, execute the following procedure.

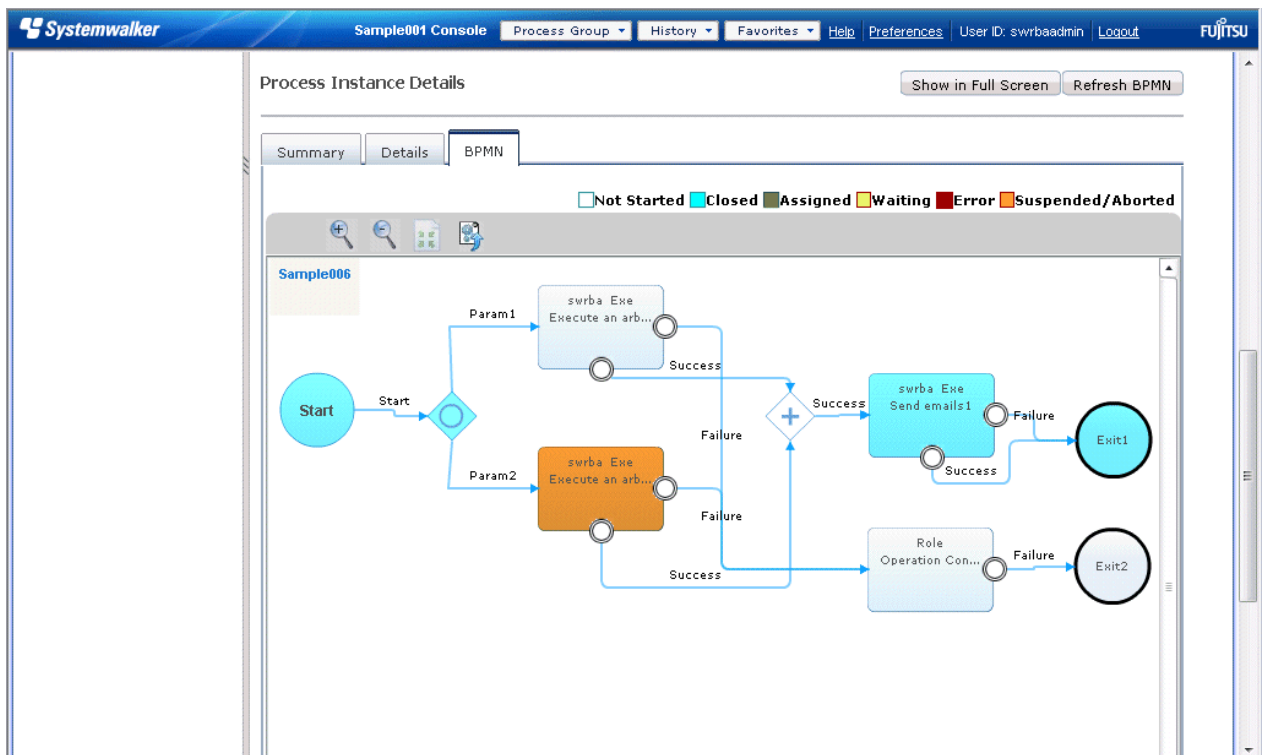
1. Right-click with pointing to node which resumed for, and select **Activate** from menu. In the following windows, it is selected **Activate** for the node which deployed after AND node.



2. The node selected **Activate** is resumed. The node before the node executed **Activate** can not be resumed.



3. The the Automated Operation Process will be ended without resuming node before executed Activate node.



7.7 Searching Automated Operation Processes

The automated operation process search can also be used to filter and display automated operation processes for which process definitions will be started and execution statuses will be checked, when there are many process definitions and automated operation processes.

There are two methods that can be used to search the automated operation process. These are as follows:

- Searching Process Definitions
- Searching Process Instances

7.7.1 Searching Process Definitions

If there are many process definitions, the process definitions to be started can be filtered before being displayed using the process definition search.

All users can display published process definitions. Other process definitions can only be displayed by the process definition owner and users with administrator privileges.

Operation

1. Click the **Process Management** tab.

Click the **PD Searches** submenu to display the screen in which the search conditions will be specified.

PD Searches

Search Process Definitions

Basic Search

Predefined Filter My Process Definitions

Process Definition State Draft
Published
Obsoleted
Deleted

Process Definition ID Equal To

Process Definition Name Equal To

Owner Equal To

Results per Page 10

More Search Options

Custom Columns:

Available Fields	Selected Fields
------------------	-----------------

2. In the **Basic Search** panel of the **PD Searches** tab, specify the search conditions.

PD Searches

Search Process Definitions

Basic Search

Predefined Filter My Process Definitions

Process Definition State
Draft
Published
Obsoleted
Deleted

Process Definition ID Equal To

Process Definition Name Equal To

Owner Equal To

Results per Page 10

More Search Options

Custom Columns:

Available Fields	Selected Fields
------------------	-----------------

3. When the **Search** button is clicked, the list of process definitions that match the search conditions will be displayed.

More Search Options

Custom Columns:

Available Fields	Selected Fields
Process Definition Name Id Version State Owner	Process Definition Name Id Version State Owner

- When the process definition that will be started is selected from the list of process definitions in the **PD Search Result** tab, the process definition detail information will be displayed at the bottom of the screen.

PD Searches
PD Search Result

Process Definition List

3 PD Found

Process Definition Name	Id	Version	State	Owner
Sample003	3226	4.0	Published	swrbaadmin
Sample001	3204	4.0	Published	swrbaadmin
Sample002	3048	2.0	Published	swrbaadmin

Process Definition Details

Summary
BPMN

Name	<input type="text" value="Sample003"/>	
ID	<input type="text" value="3226"/>	
Description	<input type="text"/>	
State	<input type="text" value="Published"/>	<input type="button" value="Obsolete"/>
Owner	<input type="text" value="swrbaadmin"/>	<input type="button" value="Change Owner"/>
Version	<input type="text" value="4.0"/>	

7.7.2 Searching Process Instances

If there are many automated operation processes, the automated operation processes for which you want to check the execution status can be filtered and displayed, using the process instance search.

Automated operation processes can be displayed by the automated operation process owner, starters of the automated operation process, and users with administrator privileges.

Operation

1. Click the Process Management tab. Click the PI Searches submenu to display the screen in which the search conditions will be specified.

PI Searches

Search Process Instances

Basic Search

Predefined Filter My Active Processes

Process Instance Name Equal To

Process Instance State
Closed
Suspended
Aborted

Process Instance Priority High(16 and above)
Medium(8 to 15)
Low(0 to 7)

Initiator Equal To

Owner Equal To

Date Started **Between** **and**
Timezone: GMT+09:00 Timezone: GMT+09:00

Results per Page 10

2. In the **Basic Search** panel of the **PI Searches** tab, specify the search conditions.

Basic Search

Predefined Filter My Active Processes



Process Instance Name Equal To

Process Instance State Running
Closed
Suspended
Aborted

Process Instance Priority High(16 and above)
Medium(8 to 15)
Low(0 to 7)

Initiator Equal To **Modify Assignee**

Owner Equal To **Modify Assignee**

Date Started Between  and 
Timezone: GMT+09:00 Timezone: GMT+09:00

Results per Page 10

Sort Date Started

Sort Order Ascending Descending

More Search Options

Process Instance ID Equal To

Process Instance Title Equal To

Process Definition ID Equal To

Process Definition Name -- Select --

Due Date Between  and 
Timezone: GMT+09:00 Timezone: GMT+09:00

Custom Filters:

Add Filters

UDA Name	Type	XPath	Operator	Filter value
<input type="text"/>	<input type="text"/>	<input type="text"/>	=	<input type="text"/>

Created Filter

Custom Columns:

- When the **Search** button is clicked, the list of process instances that match the search conditions will be displayed.

Custom Columns:

Choose Work List UDAs To Display:

Available Fields **Selected Fields**

>

<

▲

▼

Choose Fields To Display:

Available Fields **Selected Fields**

Id
 Process Instance Name
 Process Definition
 Date Started
 Status
 Priority
 Due Date
 Initiator
 Owner(s)

>>

>

<

<<

Id
 Process Instance Name
 Process Definition
 Date Started
 Status
 Priority
 Due Date
 Initiator
 Owner(s)

▲

▼

- When the process instance for which you want to check the execution status is selected in the **PI Search Result** tab, the process instance details will be displayed at the bottom of the screen, and you can check the execution status of the automated operation process.

PI Searches ☒
PI Search Result ☒

6 PI's Found								
Id	Process Insta...	Process Defini...	Date Star...	Status	Priority	Due Date	Initiator	Owner(s...
3476	Sample004	Sample004	Dec, 13 2011	▶ Running	8		swrbaad...	swrbaad...
3325	Sample002	Sample002	Dec, 13 2011	▶ Running	8		swrbasch	swrbaadmin
3297	Sample002	Sample002	Dec, 13 2011	▶ Running	8		swrbasch	swrbaadmin
3245	Sample003	Sample003	Dec, 12 2011	▶ Running	8		swrbaadmin	swrbaadmin
3190	Sample001	Sample001	Dec, 12 2011	▶ Running	8		swrbaadmin	swrbaadmin
3059	Sample002	Sample002	Dec, 12 2011	▶ Running	8		swrbasch	swrbaadmin

7.8 Checking Automated Operation Processes

Check the automated operation process to obtain the automated operation execution status and execution results.

If there are many automated operation processes, the automated operation processes for which you want to check the execution status can be filtered and checked, using the process instance search. Refer to "7.7.2 Searching Process Instances" for information on how to search for process instances.

Additionally, when checking the execution status or start performance of the Automated Operation Process on a daily basis, the Gantt chart can also be used.

7.8.1 Checking execution status for Automated Operation Processes

This section explains the method used to check the execution status and comments for the automated operation process.

Automated operation processes can be displayed by the automated operation process owner, starters of the automated operation process, and users with administrator privileges.

Operation

1. Click the **Process Management** tab.

When the **Process Instances** submenu is clicked, the list of process instances will be displayed.

Note that, by selecting one of the process filters above this list, the list can be displayed according to filter conditions.

Process Definitions
Create New Instan...
Process Instances

My Processes

Open Delete Refresh

Process Filters: My Processes

8 PI's Found

Process Instance Na...	Id	Process Definiti...	▼Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample003	3268	Sample003	Dec, 12 2011	✓ Closed	8	swrbaad...	swrbaad...	
Sample003	3245	Sample003	Dec, 12 2011	▶ Running	8	swrbaadmin	swrbaadmin	
Sample001	3190	Sample001	Dec, 12 2011	▶ Running	8	swrbaadmin	swrbaadmin	
Sample001	3170	Sample001	Dec, 12 2011	✓ Closed	8	swrbaadmin	swrbaadmin	
Sample002	3137	Sample002	Dec, 12 2011	✓ Closed	8	swrbaadmin	swrbaadmin	
Sample002	3123	Sample002	Dec, 12 2011	✓ Closed	8	swrbaadmin	swrbaadmin	
Sample001	3095	Sample001	Dec, 12 2011	✓ Closed	8	swrbaadmin	swrbaadmin	
Sample002	3059	Sample002	Dec, 12 2011	▶ Running	8	swrbaadmin	swrbasch	

2. Select the confirmation target automated operation process from the list.

Process Definitions Create New Instan... Process Instances

My Processes

Open Delete Refresh

Process Filters: My Processes

8 PI's Found

Process Instance Na...	Id	Process Definiti...	Date Star...	Status	Prio...	Owner(s)	Initiator	Due Date
Sample003	3268	Sample003	Dec, 12 2011	Closed	8	swrbaad...	swrbaad...	
Sample003	3245	Sample003	Dec, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001	3190	Sample001	Dec, 12 2011	Running	8	swrbaadmin	swrbaadmin	
Sample001	3170	Sample001	Dec, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample002	3137	Sample002	Dec, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample002	3123	Sample002	Dec, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample001	3095	Sample001	Dec, 12 2011	Closed	8	swrbaadmin	swrbaadmin	
Sample002	3059	Sample002	Dec, 12 2011	Running	8	swrbaadmin	swrbaadmin	

3. Click the **BPMN** tab, and check the progress status of the automated operation process. Accordingly, you can check how far processing has progressed.

Process Instance Details

Show in Full Screen Refresh BPMN

Summary Details **BPMN**

Not Started Closed Assigned Waiting Error Suspended/Aborted

Sample003

```

graph LR
    Start((Start)) -- Arrow7 --> Task[swrba Exe Execute an arb...]
    Task -- Failure --> Exit3((Exit3))
    Task -- Success --> RoleActivity4[Role Activity4]
    RoleActivity4 -- Arrow10 --> Exit4((Exit4))
  
```


- Click the **Details** tab, and check the information in the **Node Instance Details** panel. Accordingly, you can check who has executed which operation, and when.

Process Instance Details Show in Full Screen Refresh BPMN

Summary **Details** BPMN Jump To -Select One-

Process Details

Process Id 3268
Process Name Sample003
State Closed
Date Started December, 12 2011 17:30:45
Date Completed December, 12 2011 17:31:48
User Responsible swrbaadmin

[Back to top](#)

Node Instance Details

Id	Activity Name	Status	Created	Responsible
3269	Start	Closed	December, 12 2011 17:30:45	swrbaadmin
3270	Execute an arbitrary command1	Closed	December, 12 2011 17:31:01	swrbaadmin
3271	Exit3	Not Started		
3272	Activity4	Closed	December, 12 2011 17:31:48	swrbaadmin
3273	Exit4	Closed		

- Comments entered when the process was started or was progressed can also be checked in the same tab.

Comments

Comment

✘ **Activity2** [3355] : swrbaadmin [December, 13 2011 10:25:52]
Input the comment.

[More..](#)

[Back to top](#)

About process filters

The process filters listed below are available:

Process filter	Description
Process	For the process instances within the Automated Operation Process Group being selected, it displays the process instances for which the logged-in user is the owner or applicant.

Process filter	Description
Active process	For the process instances within the Automated Operation Process Group being selected, it displays the process instances with a status of Running or Error for which the logged-in user is the owner or applicant.
Inactive process	For the process instances within the Automated Operation Process Group being selected, it displays the process instances with a status of End, Aborted, Pause, or Error for which the logged-in user is the owner or applicant.
Process with Error status	For the process instances within the Automated Operation Process Group being selected, it displays only the process instances with a status of Error for which the logged-in user is the owner or applicant.
All processes	Displays all of the process instances within the Automated Operation Process Group being selected. Only a user with system administrator privileges can use this process filter.
All active processes	Displays all of the process instances within the Automated Operation Process Group being selected that have a status of Running or Error. Only a user with system administrator privileges can use this process filter.
All inactive processes	Displays all of the process instances within the Automated Operation Process Group being selected that have a status of "End", "Aborted", "Pause", or "Error". Only a user with system administrator privileges can use this process filter.
All processes with Error status	Displays all of the process instances within the Automated Operation Process Group being selected that have a status of "Error" only. Only a user with system administrator privileges can use this process filter.

7.8.2 Checking the Execution Status of the Automated Operation Process using a Gantt Chart

The execution status or start performance of the Automated Operation Process can be checked using a Gantt chart. In the Gantt chart, the Automated Operation Process schedule and performance are displayed using color coding according to the execution status.

For information about the procedure used to check data using the Gantt chart, refer to "[6.5 Checking Schedules and Daily Performance](#)" or "[A.1.16 Process Status List window \(Gantt Chart\)](#)".

7.8.3 Checking Actual Results of Automated Operation Process Schedules

This section explains how to check the execution results of an operation component that has been started by schedule definition.

- Able to check when Automated Operation process will be started by schedule definition,
- Able to check the error result if the Automated Operation Process has failed to start.

Operation

1. Click **Schedule Definition** submenu in **Process Management** tab.

Schedule Definition list which are registered in list panel is displayed. If you want to be displayed with narrow down the schedule definition, click **Filter**. For the detail of **Filter**, refer to the [A.1.8 Schedule Definition List Window \(Filter\)](#).

Schedule Definitions

Schedule Definition list

Filter

1 - 3 of 3 items | Page 1 / 1 | Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

Create

2. Select the Schedule Definition name that you want to check from list panel.
3. Detail Schedule Definition will be displayed.

Schedule Definitions

Schedule Definition list

Filter

1 - 3 of 3 items | Page 1 / 1 | Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-12 15:00	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

Create

4. Click **Start history** tab.

Start history is displayed.

If refer to the latest start history, select **Latest** in the **Select history**. If refer to the past starthistory, Select from 1 **generation ago** to 9 **generation ago** in **Select history file**.

Regular_work (1) [X]

Schedule Definition: Regular_work

Edit Delete Close

Operation Definition Information **Start history**

Start history:

Select history: latest

```

2012-02-01 17:17:36.596 INFO: Process instance has been started. Process definition name=test Version=1.0
Process instance ID=1029
2012-02-01 17:17:49.309 INFO: Process instance has been started. Process definition name=test Version=1.0
Process instance ID=1049
2012-02-01 17:18:09.234 INFO: Process instance has been started. Process definition name=test Version=1.0
Process instance ID=1072
2012-02-01 17:18:21.950 INFO: Process instance has been started. Process definition name=test Version=1.0
Process instance ID=1093
2012-02-01 17:20:10.906 INFO: Process instance has been started. Process definition name=test Version=1.0
Process instance ID=1117
2012-02-01 17:21:00.409 INFO: Process instance has been started. Process definition name=test Version=1.0
Process instance ID=1139

```

Information

- In the Start history, the information is displayed with the following format. For the detail of messages which displayed in Start history, refer to the *Systemwalker Runbook Automation Messages Guide*

```
YYYY-MM-DD HH:MM:SS.sss Messages
```

- Start history are managed by 10th generation files. With 256 Kbyte per one generation, Maximum 2.5Mbyte Start history can be saved. If over 2.5Mbyte, it will be deleted from old start history.
- The latest start histories are stored the following file of Management Server. Also, the past start histories are saved with adding generation count in filename. For example, the file name of 1 generation ago start history is **schedule.log.1**

[Windows]

[Systemwalker Runbook Automation Install directory of Management server]\etc\share\schedule\Automated Operation Process Group ID\Schedule Definition ID\schedule.log

[Linux]

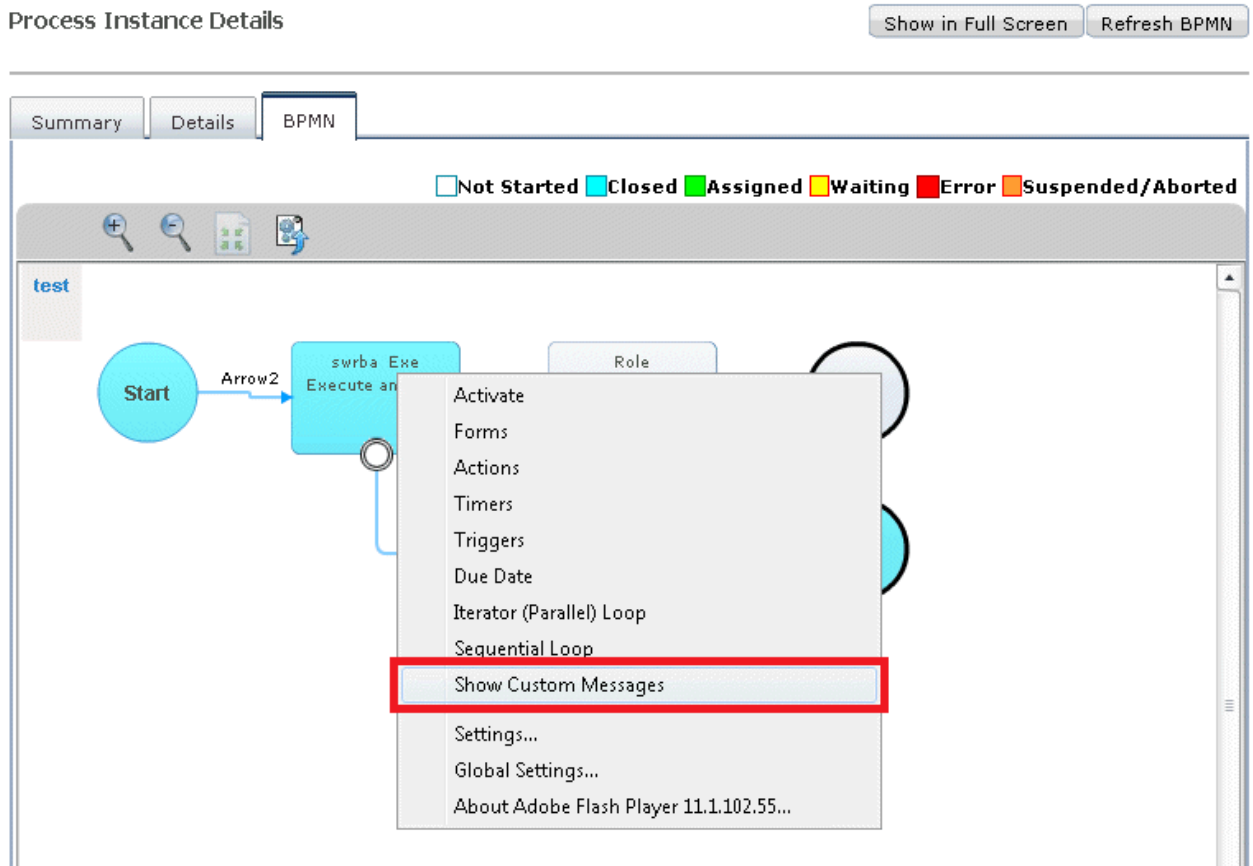
/etc/opt/FJSVswrbam/share/schedule/Automated Operation Process Group ID / Schedule Definition ID /schedule.log

7.8.4 Confirming the Operation Component Execution Status/Execution Results

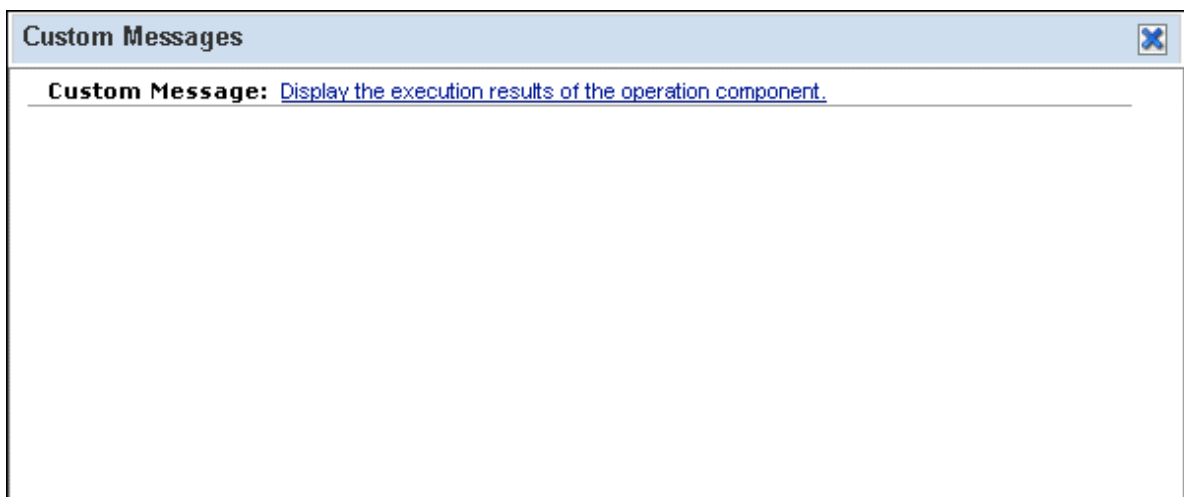
This section explains how to check the execution results of an operation component that is built into an Automated Operation Process, when checking the execution status of an operation component that is running, the cause of an Automated Operation Process error, or the behavior of the Automated Operation Process that was created to make sure it is running as expected.

The execution status or execution results of the operation component can be checked from the **BPMN** window of the process instance details window.

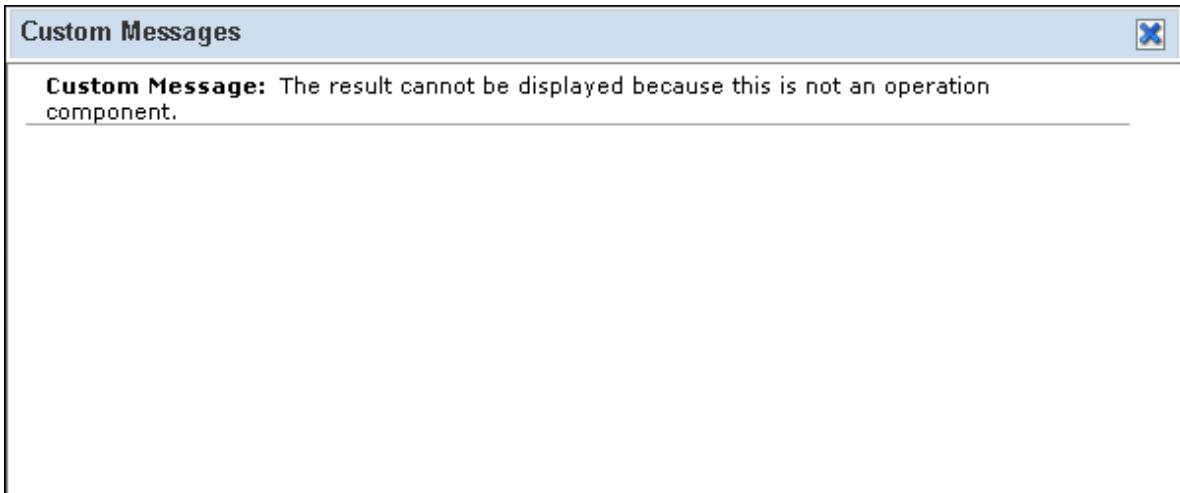
1. Right-click the operation component node for which the execution results are to be checked, then select **Show Custom Messages**.



2. Click the link that is displayed in the **Custom Messages** dialog box.



If there are no operation component execution results, the following message is displayed in the custom message dialog box:



3. The execution status and execution results can be checked in the **Execution status** or **Execution results** window of the displayed operation component.

- Checking the execution status

The execution status displayed at the top is the latest execution status. To update the execution status so that it has the latest execution status, click the **Refresh** button.

- Checking the execution results

As execution results of the selected operation component, values such as start time and output information can be confirmed. Refer to "[A.2.2 Operation Component Execution Status/Execution Results Confirmation Window](#)" in Appendix A, "Window Reference" for information on each item. Note that the content displayed at the top is the latest execution results. Previous execution results are also listed in the order in which they occurred, and can also be referenced. A maximum of 30 execution results can be referenced.

Operation component execution history : SWRBA_FILE_READ1

All 1 Cases | 1/1 pages | pages

Number of times executed	1	
Start time	2012/01/30 18:08:51.587	
End time	2012/01/30 18:09:10.854	
Execution status	<pre> 2012/01/30 18:08:57.385 FSP_SW/RB-A_BASE: INFO: 03050: Execution of the operation component is about to start. : PROCESSID=1003 ACTIVITYID=1005 NAME=Load file 2012/01/30 18:09:06.088 FSP_SW/RB-A_BASE: INFO: 020038: File loading will start. hostname=localhost 2012/01/30 18:09:06.260 FSP_SW/RB-A_BASE: INFO: 020039: File loading is complete. 2012/01/30 18:09:07.541 FSP_SW/RB-A_BASE: INFO: 03051: Execution of the operation component has finished. : PROCESSID=1003 ACTIVITYID=1005 NAME=Load file 2012/01/30 18:09:08.448 FSP_SW/RB-A_BASE: INFO: 03052: Filtering is about to start. : PROCESSID=1003 ACTIVITYID=1005 NAME=Load file FILTER=Extract XML attribute 2012/01/30 18:09:08.604 FSP_SW/RB-A_BASE: INFO: 03053: Filtering has finished. : PROCESSID=1003 ACTIVITYID=1005 NAME=Load file FILTER=Extract XML attribute </pre>	
Selection results	Success	
Input information	hostname	localhost
	filename	c:\work\test.xml
	readscope	
	ostype	
	username	
	password	
	execusername	
execpassword		

- Click the output information in order to confirm the behavior.

The filter I/O information can be displayed. Note that the link will not be displayed when a filter has not been set for the node.

Output information for filter : SWRBA_FILE_READ1

All 1 Cases | 1/1 pages | pages

Output destination for filter		Variable1
Input information	file_value	<pre><systems> <system name="System_A" mail="user1@example.com"> <servers> <server ipaddress="192.168.1.10"/> <server ipaddress="192.168.1.20"/> </servers> </system> <system name="System_B" mail="user2@example.com"> <servers> <server ipaddress="192.168.2.10"/> </servers> </system></pre>
Output information	Extract XML attribute	"192.168.1.10","192.168.1.20"

7.9 Attaching Files to Automated Operation Processes

Any file can be attached to an Automated Operation Process.

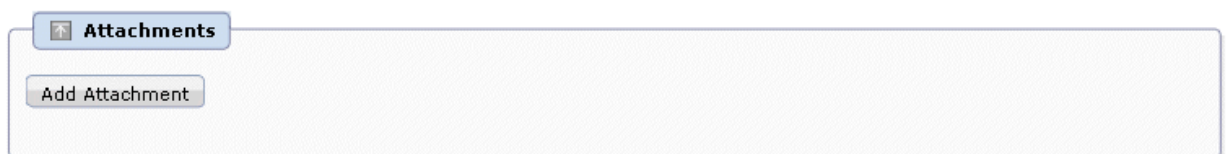
The **Attach** panel of the window for starting an Automated Operation Process or of the task details window can be used to attach a file to an Automated Operation Process.

Refer to [7.4.1 Starting an Automated Operation Process from the Web Console](#) for information on the window for starting an Automated Operation Process. Refer to [7.5.1 Progress of Automated Operation Processes from Web console](#) for information on displaying the task details window.

Note that in the descriptions of the operation methods shown below, the window for starting an Automated Operation Process is used as an example.

Operation

- Click the **Add Attachment** button in the **Attachments** panel.



[Back to top](#)

- Enter the name of the file to be attached in the **Attachment Name** column and click **Browse** button and enter select file name.

3. When the **Add Attachment** button is clicked, the file will have an attached status

Adding Attachment to Process Instance ✕

Attachment Name

Attachment File

Attachments

Attachment Name	File Name	Actions
TestSample	Sample.docx	Delete

[Back to top](#)

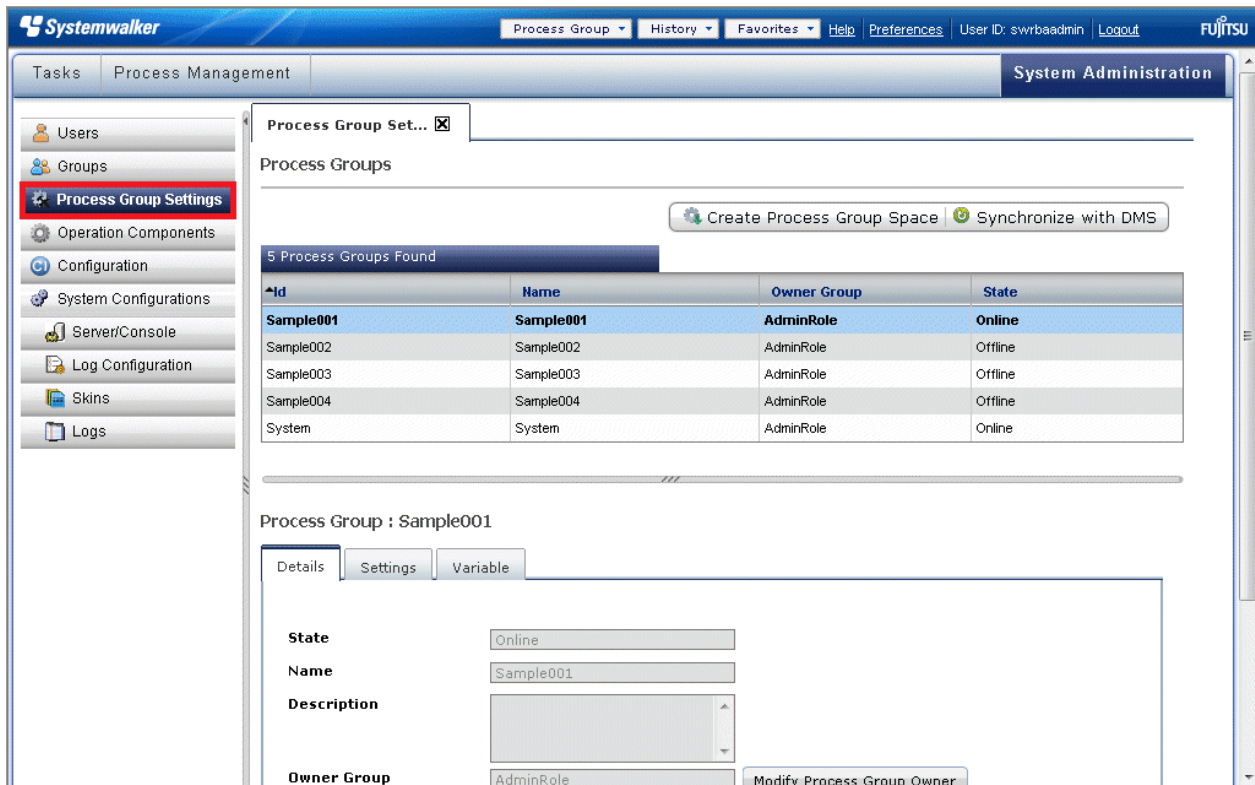
Chapter 8 Managing Automated Operations

This chapter explains how to manage Automated Operations.

8.1 Managing Automated Operation Process Groups

This section provides information on managing Automated Operation Process Groups.

When clicking the **Process Group Settings** submenu from the **System Administration** tab, the **Process Group Settings** tab will be displayed in the work area. A list of Automated Operation Process Groups will be displayed in the list panel of this tab. When you select one of the Automated Operation Process Groups in the list panel, the details of that group will be displayed in the details panel.



8.1.1 Creating Automated Operation Process Group Spaces

Refer to "[4.2.2.2 Creating Automated Operation Process Group Spaces](#)" for information on creating Automated Operation Process Group spaces.

8.1.2 Giving Automated Operation Process Groups Online Status

Refer to "[4.4 Automated Operation Process Groups Online](#)" for information on placing Automated Operation Process Groups online.

8.1.3 Giving Automated Operation Process Groups Offline Status

Follow the procedure below to give an Automated Operation Process Group offline status:

1. Select the Automated Operation Process Group to which you want to give offline status from the process group list and click **Offline** in the **Details** tab of the details panel.

The status of the Automated Operation Process Group will change to **Offline**.

8.1.4 Updating Automated Operation Process Groups

Refer to "[4.2.2.3 Updating Automated Operation Process Groups](#)" for information on updating Automated Operation Process Groups.

8.1.5 Uninstalling Automated Operation Process Groups

The Automated Operation Process Groups that can be uninstalled are those that do not have a process instance and have a **Initialization** or **Offline** status.

Follow the procedure below to uninstall an Automated Operation Process Group:

1. Select the Automated Operation Process Group you want to uninstall from the process group list and click **Uninstall** in the **Details** tab of the details panel.
2. Click **OK** in the deletion confirmation message.

8.1.6 Exporting Automated Operation Process Groups

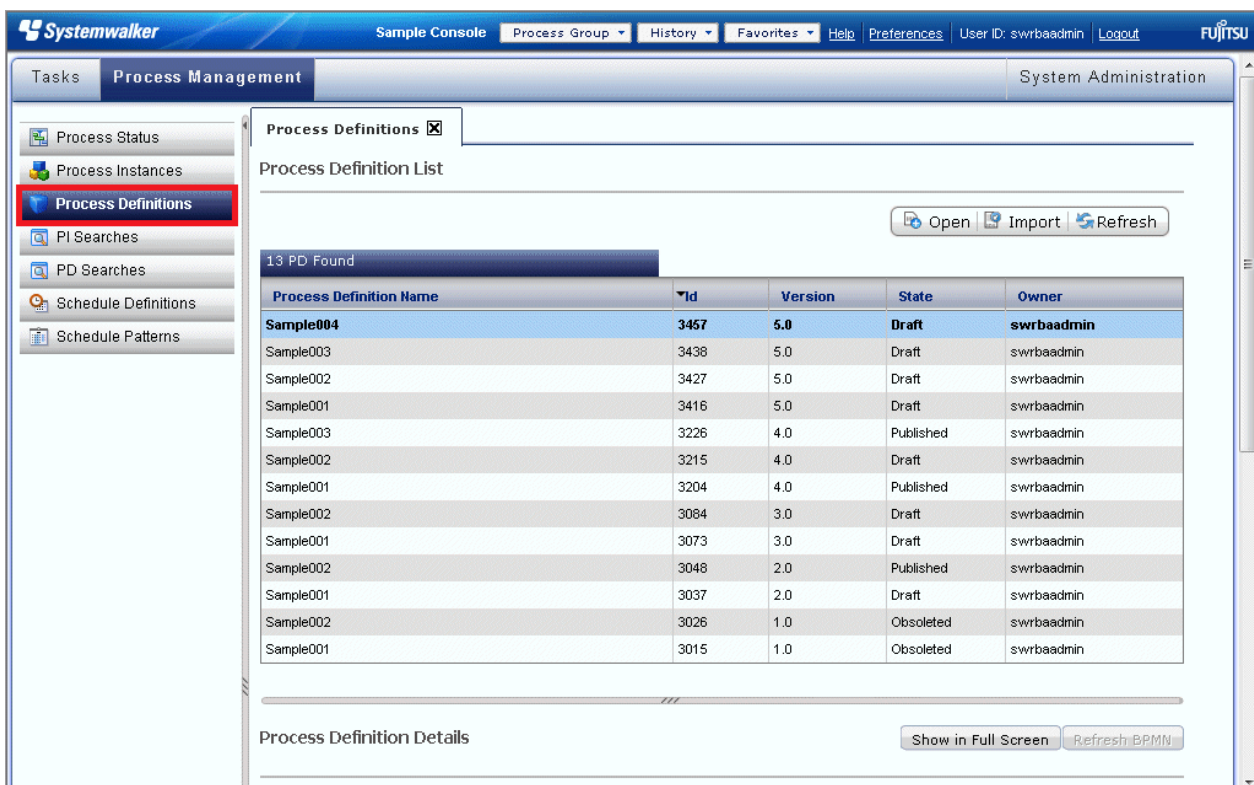
Follow the procedure shown to export an Automated Operation Process Group to a BAR file:

1. Select an Automated Operation Process Group from the **Process Group** drop-down list.
2. Select the Automated Operation Process Group you want to export from the process group list and click **Export** in the **Details** tab of the details panel. The **Download file** dialog box will be displayed.
3. Save the file according to the displayed dialog box.

8.2 Managing Process Definitions

This section provides information on managing process definitions.

When you click the **Process Definitions** submenu from the **Process Management** tab, the **Process Definitions** tab will be displayed in the work area. A list of process definitions will be displayed in the list panel of this tab. When you select one of the process definitions in the list panel, the details of that definition will be displayed in the details panel.



The screenshot displays the Systemwalker Process Management interface. The top navigation bar includes 'Sample Console', 'Process Group', 'History', 'Favorites', 'Help', 'Preferences', 'User ID: swrbaadmin', and 'Logout'. The main interface is divided into a left navigation pane and a main content area. The left pane has 'Process Definitions' highlighted. The main content area shows the 'Process Definitions' tab with a 'Process Definition List' table. The table has columns for 'Process Definition Name', 'Id', 'Version', 'State', and 'Owner'. Below the table, there is a 'Process Definition Details' section with buttons for 'Show in Full Screen' and 'Refresh BPMN'.

Process Definition Name	Id	Version	State	Owner
Sample004	3457	5.0	Draft	swrbaadmin
Sample003	3438	5.0	Draft	swrbaadmin
Sample002	3427	5.0	Draft	swrbaadmin
Sample001	3416	5.0	Draft	swrbaadmin
Sample003	3226	4.0	Published	swrbaadmin
Sample002	3215	4.0	Draft	swrbaadmin
Sample001	3204	4.0	Published	swrbaadmin
Sample002	3084	3.0	Draft	swrbaadmin
Sample001	3073	3.0	Draft	swrbaadmin
Sample002	3048	2.0	Published	swrbaadmin
Sample001	3037	2.0	Draft	swrbaadmin
Sample002	3026	1.0	Obsoleted	swrbaadmin
Sample001	3015	1.0	Obsoleted	swrbaadmin

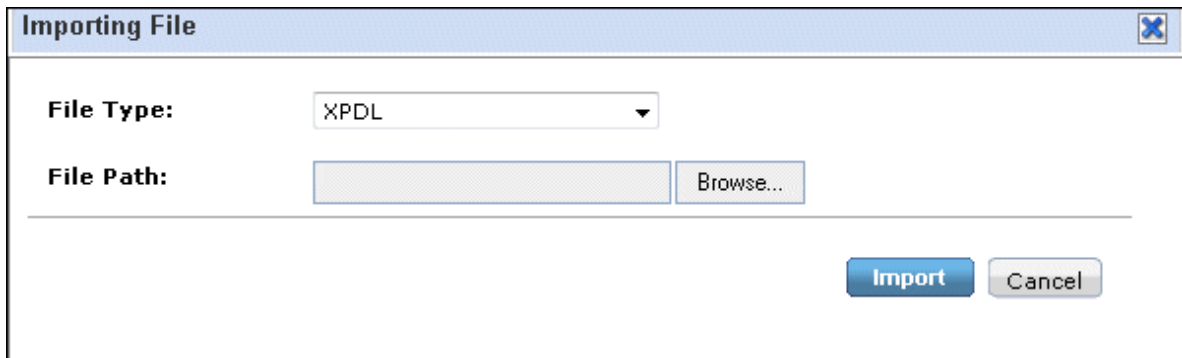
8.2.1 Importing Process Definitions

Process definitions can be imported in XPDL or BPEL format.

Follow the procedure below to import a process definition:

1. Click the **Process Management** tab from the main menu and then click the **Process Definitions** link from the submenu.
2. Click **Import** on the process definition list toolbar.

The **Importing File** dialog box will be displayed.



3. Select the process definition you want to import, browse and select a process definition file, and then click **Import**.

The list will be updated and the imported process definition will be displayed in the list of process definitions.

8.2.2 Exporting Process Definitions

Process definitions can be exported in XPDL (XPDL 1.0 or XPDL 2.0) or BPEL format.

Follow the procedure below to export a process definition:

1. Click the **Process Management** tab from the main menu and then click the **Process Definitions** link from the submenu.
2. Click the process definition you want to export on the process definition list toolbar.

3. Click the **Export** button in the summary tab of the **Process Definition Details** window.

A list of formats that can be exported will be displayed.

Process Definition Details

Show in Full Screen Refresh BPMN

Summary BPMN

Name Sample004

ID 3457

Description

State Draft Publish

Owner swrbaadmin Change Owner

Version 5.0

Priority 8

Use same SubProcess definition version false

Start Delete Export

XPDL 1.0
XPDL 2.0
BPEL

4. Click the format you want to export.

The file download will be performed.

8.2.3 Updating Process Definitions

To update a process definition, import a process definition with the same name as the process definition you want to update. Refer to ["8.2.1 Importing Process Definitions"](#) for information on importing process definitions.

8.2.4 Deleting Process Definitions

Follow the procedure below to delete a process definition:

1. Click **Summary** in the **Process Definition** details panel to access the process definition **Summary** tab.
2. Click **Delete** in the process definition window.
3. Click **OK** in the deletion confirmation message for the selected process definition.

A pop-up window notifying you of the result of your action will be displayed.

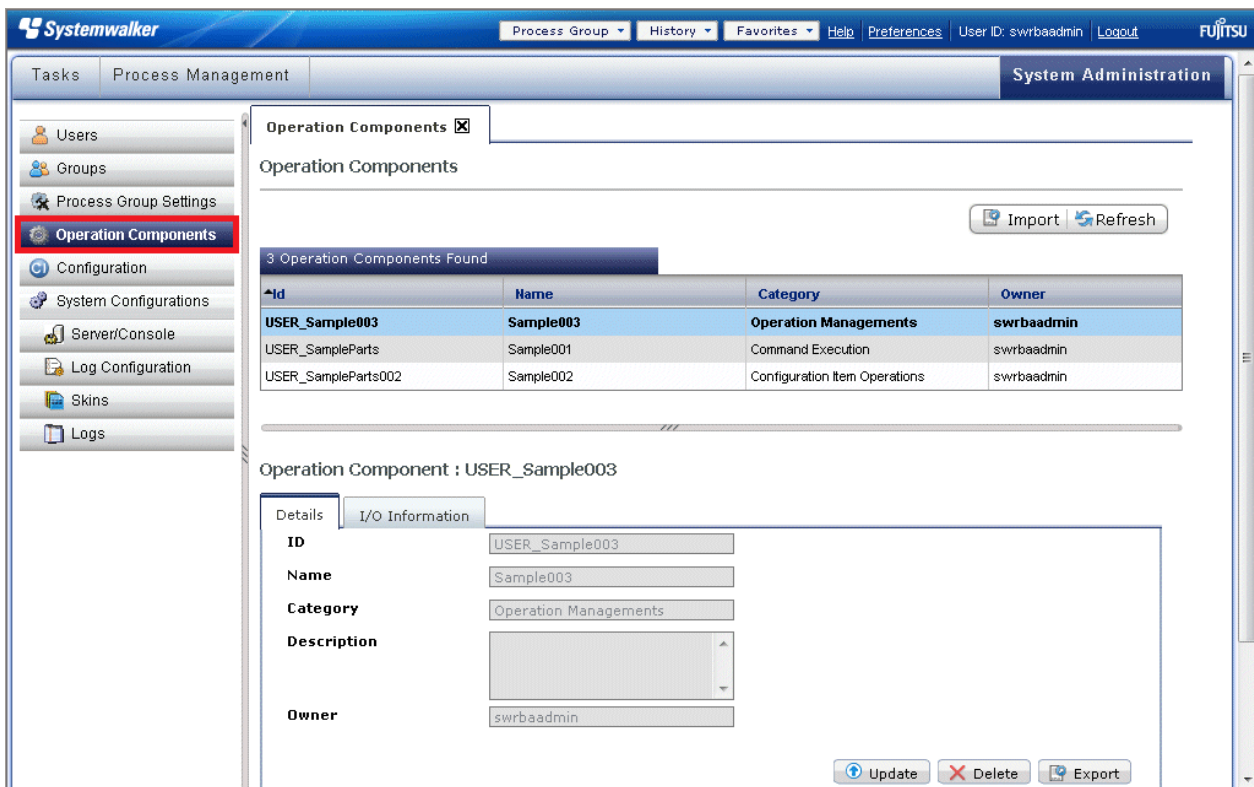
8.2.5 Publishing Process Definitions

Refer to ["5.4 Publishing the Automated Operation Process"](#) for information on publishing process definitions.

8.3 Managing Operation Components

If you are using a process definition that includes operation components other than those that are provided as standard, you must first import the required operation components into the Management Server. This section provides information on managing operation components.

When you click the **Operation Component** submenu from the **System Administration** tab, the **Operation Component** tab will be displayed in the work area. A list of operation components will be displayed in the list panel of this tab. When you select one of the operation components in the list panel, the details of that operation component will be displayed in the details panel.



8.3.1 Importing Operation Components

Refer to "4.3.2.2 Importing Operation Components" for information on importing operation components.

8.3.2 Updating Operation Components

Follow the procedure below to update operation components:

1. Select the operation component you want to update from the list of operation components and then click **Update** in the **Details** tab of the details panel.
The **Update Operation Component** dialog box will be displayed.
2. Click **Browse** to select an operation component file and then click **Update**.

8.3.3 Deleting Operation Components

Follow the procedure below to delete operation components:

1. Select the operation component you want to delete from the list of operation components and then click **Delete** in the **Details** tab of the details panel.
2. Click **OK** in the deletion confirmation message.

8.3.4 Exporting Operation Components

Follow the procedure below to export operation components:

1. Select the operation component you want to export from the list of operation components and then click **Export** in the **Details** tab of the details panel.
The **Download file** dialog box will be displayed.
2. Save the file according to the displayed dialog box.


8.4 Managing Schedule Definitions

This chapter provides information on managing Schedule Definitions.

When you click the **Define Schedule** submenu from the **Process Management** tab, a list of the Schedule Definitions that have been registered will be displayed in the in the list panel. When you select one of the Schedule Definitions in the list panel, the details of that definition will be displayed in the details panel.

Regular_work (6)

Schedule Definition: Regular_work



General Settings

Name: Regular_work

Process Definition: Sample002

Scheduled Execution Time: 30 minutes

Execute multiple processes at a time: Allow

Memo:

User Defined Attributes Settings

SWRBA_RCODE:

SWRBA_STDOUT:

SWRBA_STDERR:

Param1:

8.4.1 Exporting a Schedule Definition

The Schedule Definition and Schedule Pattern can be exported to a different Management Server.

Use the following procedure to export the Schedule Definition.

- Export the holiday calendar

Use the holiday calendar information export command (swrba_holexport) to export the holiday calendar that is registered on the Management Server.

```
swrba_holexport -rh holiday-calendar
```

- Export the Management Server common Schedule Pattern

Use the Schedule Pattern export command (swrba_patternexport) to export the Management Server common Schedule Pattern.

```
swrba_patternexport -rsp sample-pattern
```

- Export the Schedule Definition/Automated Operation Process Group common Schedule Pattern

Use the Schedule Definition export command (swrba_scheduleexport) to export the Schedule Definition and Automated Operation Process Group common Schedule Pattern.

```
swrba_scheduleexport -pg sample0001 -d C:\work
```

Note that, when different directory services are referenced for the export source and the import destination, add the required users and assign the required privileges, and create the various roles that are used in the process definition. Refer to the *Systemwalker Runbook Automation Installation Guide* and "[2.1 Procedure of preparing for Automated Operations](#)" for details.

Refer to the *Systemwalker Runbook Automation Reference Guide* for information on the commands.

8.4.2 Importing a Schedule Definition

Schedule Definition information, Schedule Patterns, and holiday calendars that have been exported can be imported to a different Management Server.

Use the following procedure to import the Schedule Definition.

1. Apply the Automated Operation Process Group/process definition

Apply the Automated Operation Process Group and process definition used in the schedule feature that were exported from the Systemwalker Runbook Automation Studio or the import source Management Server.

Refer to "[Chapter 3 Developing Automated Operations](#)" or "[Chapter 4 Registering Automated Operation Process](#)" for information on the application procedure.

2. Import the holiday calendar

Use the holiday calendar information import command (swrba_holimport) to import the holiday calendar.

```
swrba_holimport -ent holiday-calendar
```

3. Import the Management Server common Schedule Pattern

Use the Schedule Pattern import command (swrba_patternimport) to import the Schedule Pattern.

```
swrba_patternimport -ent sample-pattern
```

4. Import the Schedule Definition/process group common Schedule Pattern

Use the Schedule Definition import command (swrba_scheduleimport) to import the Schedule Definition and process group common Schedule Pattern.

```
swrba_scheduleimport -d C:\work
```

5. Enable the imported Schedule Definition

The imported Schedule Definition is in a **Disable** state. Enable the Schedule Definition so that it can be used.

Note that, when different directory services are referenced for the export source and the import destination, add the required users and assign the required privileges, and create the various roles that are used in the process definition. Refer to the *Systemwalker Runbook Automation Installation Guide* and "[2.1 Procedure of preparing for Automated Operations](#)" for details.

Refer to the *Systemwalker Runbook Automation Reference Guide* for information on the commands.

8.4.3 Deleting Schedule Definitions

Follow the procedure below to delete Schedule Definitions:

1. Select the Schedule Definition you want to delete from the list of Schedule Definitions.

The **Schedule Definitions Details** will be displayed.

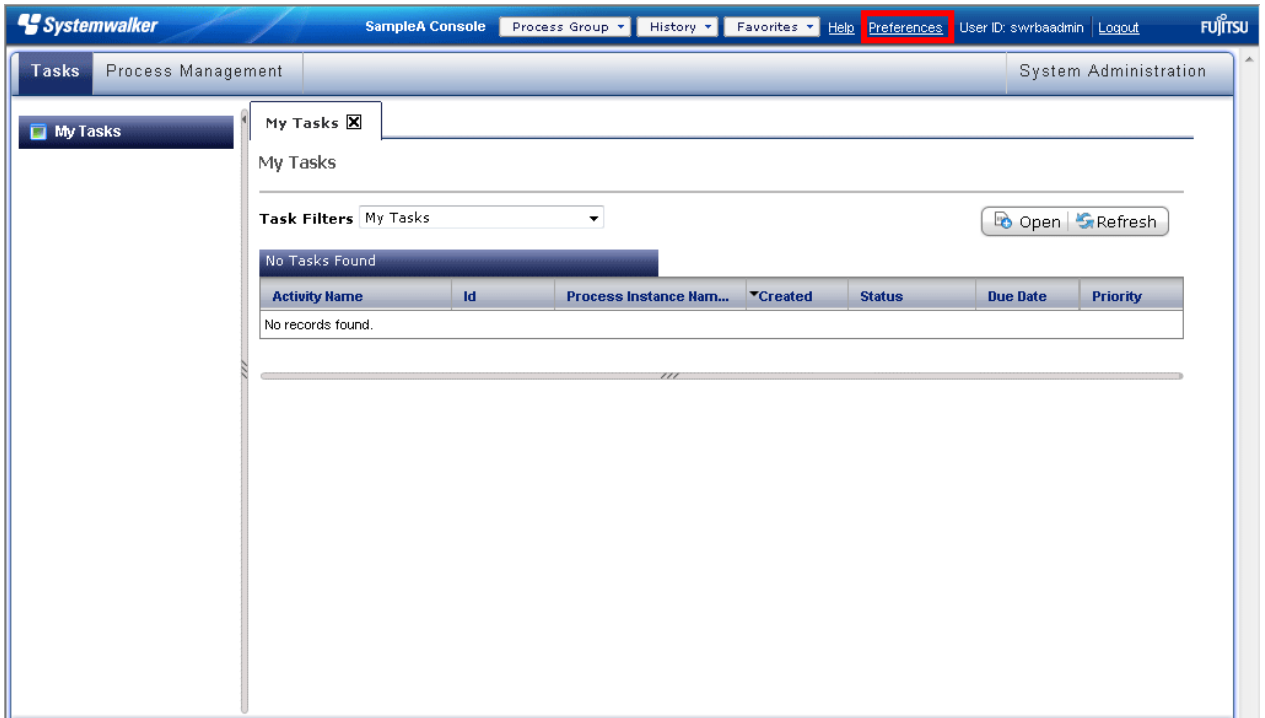
2. Click the **Delete** button from the **Summary** panel of the **Schedule Definitions Details**.

8.5 Setting Up Email Notification

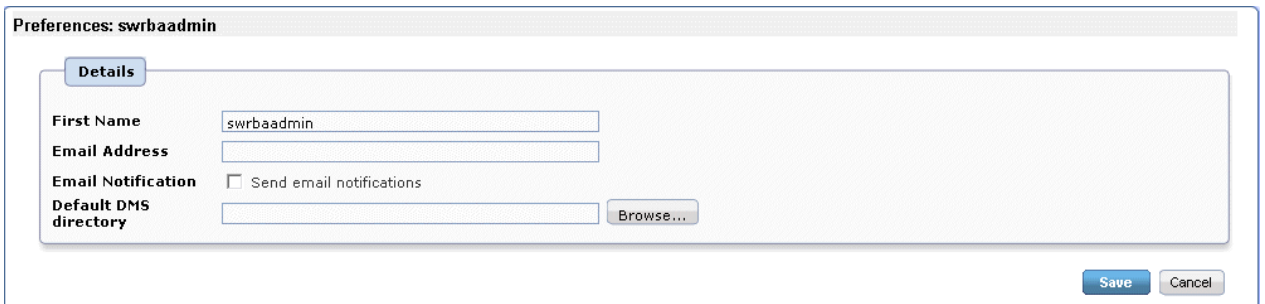
You can specify the settings below so that mail can be used to notify the person responsible when tasks are being assigned.

Perform the following operations after logging into a Web console:

1. When you click **Preferences**, the window for setting up mail notification will be displayed.



2. Set the email address of a user who is assigned a task in **Email Address** in the **Details** panel and select the **Email Notification** checkbox in the **Details** panel.



3. Click the **Save** button to save the setting.

Chapter 9 Configuration Management

This chapter explains the windows used for performing operations on the configuration items stored in the CMDB.

Note

"Configuration baseline" and "Expected record" cannot be used in Systemwalker Runbook Automation.

9.1 Starting Method and Window Layout

This section explains how to start the configuration management windows and the layout of the windows.

There are several different types of configuration management windows, as follows:

- CI View

This window shows a tree display of the relationship between configuration items as well as detailed displays of configuration items. This window is used to search for configuration items according to specified conditions, and to compare two configuration items.

- CI Registration

This window is used to register new configuration items in the CMDB.

- CI Update/Delete

This window is used to update and delete configuration items that have already been registered in the CMDB.

- CI Import

This window is used to import configuration items from a file and register them in the CMDB.

- Configuration Baseline Comparison

This window is used to compare two configuration baselines and find differences in configuration items between the two baselines.

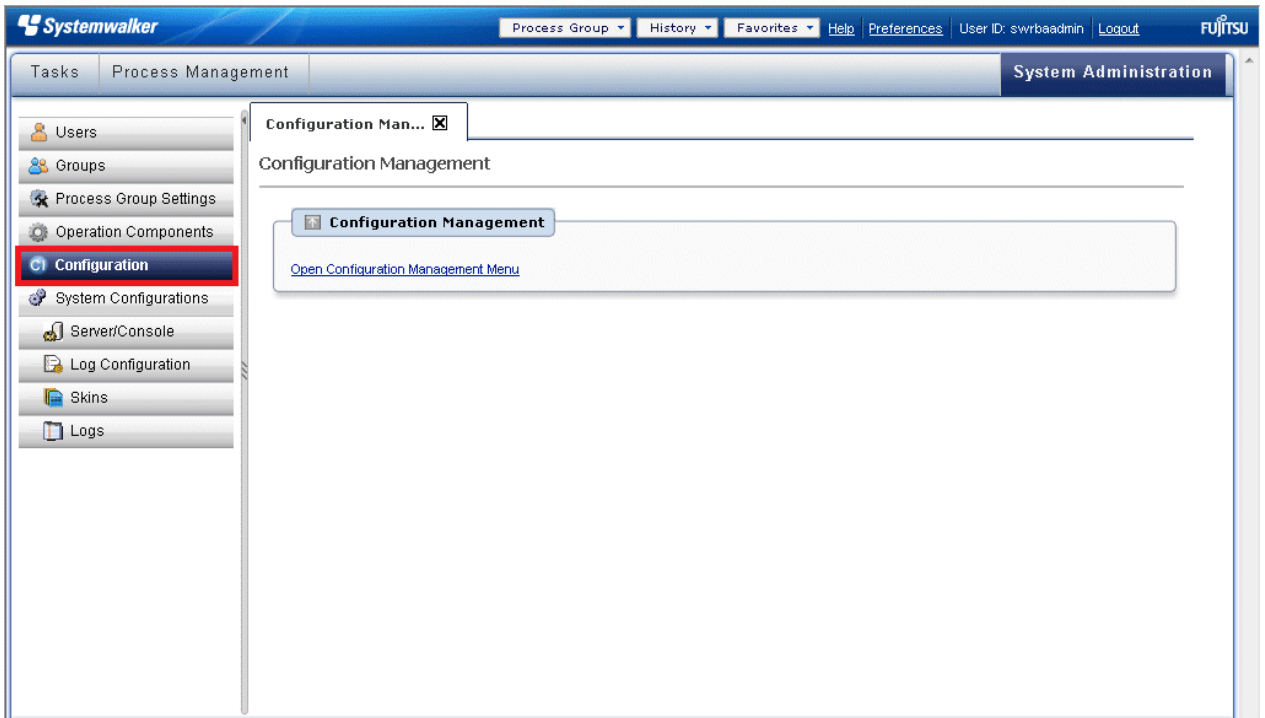
Note

The maximum length of the strings that can be entered or displayed in all these windows is 512 characters (either single-byte or double-byte characters).

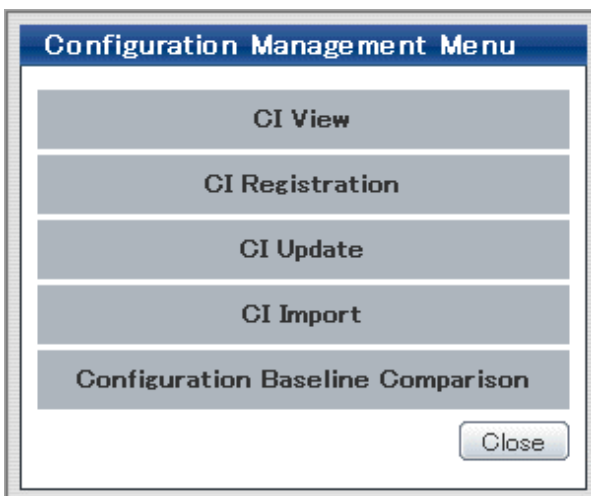
9.1.1 How to Open the Configuration Management Windows

This section explains how to open the configuration management windows from the menus of the Web console.

1. When you select the submenu **Configuration** in the **System Administration** tab, **Configuration Management** tab will be displayed in work area.



2. When you click **Open Configuration Management Menu**, the menu window, calling **Configuration Management** window will be displayed as another window.



3. **CI View**, **CI Registration**, **CI Update/Delete**, **CI Import** and **Configuration Baseline Comparison** are displayed in the content area as shown in the above screenshot. Click on the menu item corresponding to the window that you want to open.

9.2 CI View

This section explains the window for viewing configuration items.

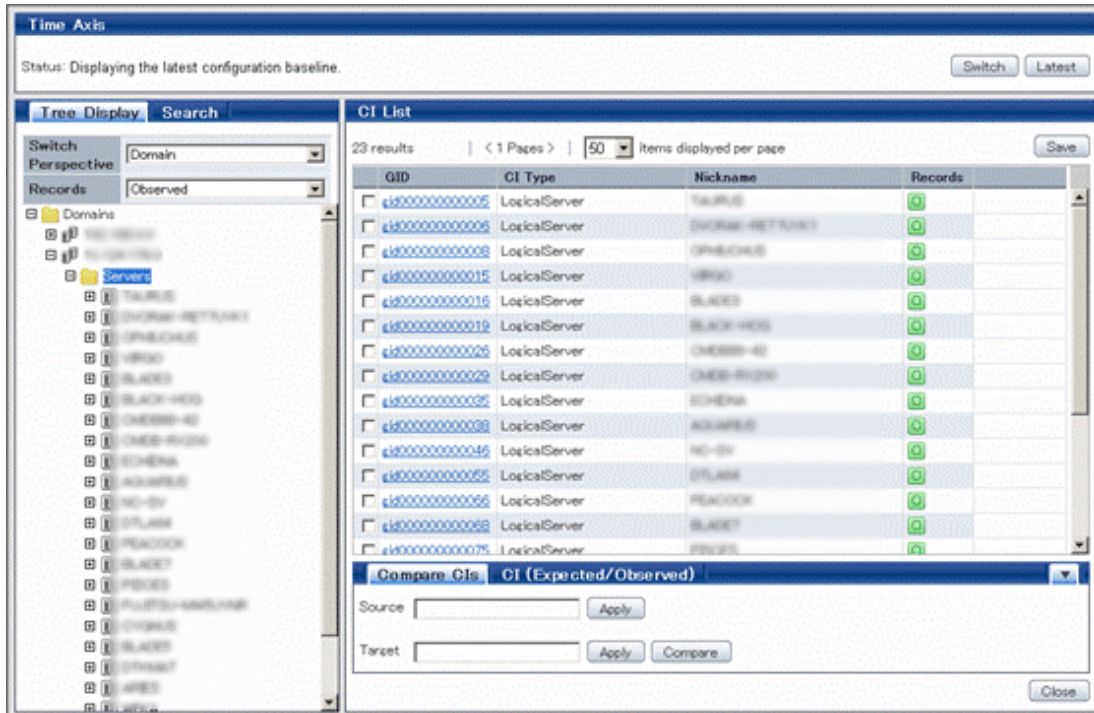
An overview of configuration items is displayed in the list display area of the **Configuration Management** window. More detailed information on configuration items can be displayed by clicking on a configuration item in the list display area.

Refer to "*Configuration Item Format*" in the *Systemwalker Runbook Automation Reference Guide* for information on the different types of configuration items.

9.2.1 Tree Display for Configuration Items

Display method

1. Select **CI View** from the **Configuration Management** menu of the Web console window.
2. Click the **Tree Display** tab.



Operation method

Item name		Description
Time Axis	Status	This item shows the creation time of the configuration baseline that you are currently working with.
	Switch button	This button is used to select which configuration baseline to display. Selecting a configuration baseline allows you to operate on configuration items from a particular point of time in the past (the time when the baseline was taken). It is also possible to release the selected baseline and work with the most recent configuration items.
	Latest button	This button changes the operating target to the latest configuration items.
Tree Display tab (This tab displays the relationships between configuration items in a tree format.)	Switch Perspective	This drop-down menu is used to select which CI tree model to use.
	Records	This drop-down menu is used to select the record type of the configuration items being operated on. There are three record types: Expected , Observed , and Catalog
List display (the left pane)	Tree Display	This area displays folders indicating configuration item types and configuration items under each folder in tree format. The tree can be used to trace which configuration items are related to (have a link to) which other configuration items.
CI List (This area displays a list of the configuration items in the folder that has been	GID	This column displays the GID of the configuration item. The GID is an ID that is unique to each configuration management item. Items can be sorted in ascending/descending order by clicking the column heading.

Item name	Description	
selected in the tree in the left pane.)	CI Type	This column displays the type of configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname	This column shows the nickname ("nickname" attribute) for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Records	This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
	xx items displayed per page	This item is used to specify how many configuration items to display per page. If there are more configuration items than can fit on a single page, click the right arrow button to display the next page of configuration items. Click the left arrow button to go back to the previous page.
	Save button	This button is used to save the selected configuration items to a file.
Compare CIs (This tab is used to compare two configuration items.)	Source	This item is used to enter the GID for the source configuration item.
	Target	This item is used to enter the GID for the compared configuration item.
	Apply button	Click this button to automatically enter the GID for the configuration item that has been selected in the CI List .
	Compare button	Click this button to display a window showing the results of comparing the two configuration items whose GIDs have been specified in Source and Target .
CI (Expected/Observed) (This tab is used to compare the observed record of a configuration item with its expected record.)	CI Comparison Target	This item is used to enter the GID for the source configuration item.
	Apply button	Click this button to automatically enter the GID for the configuration item that has been selected in the CI List .
	Compare button	Click this button to display a window showing the results of comparing the observed and expected records for the configuration items whose GID was specified in CI Comparison Target .

Use the following procedure to display a list of configuration items from the tree:

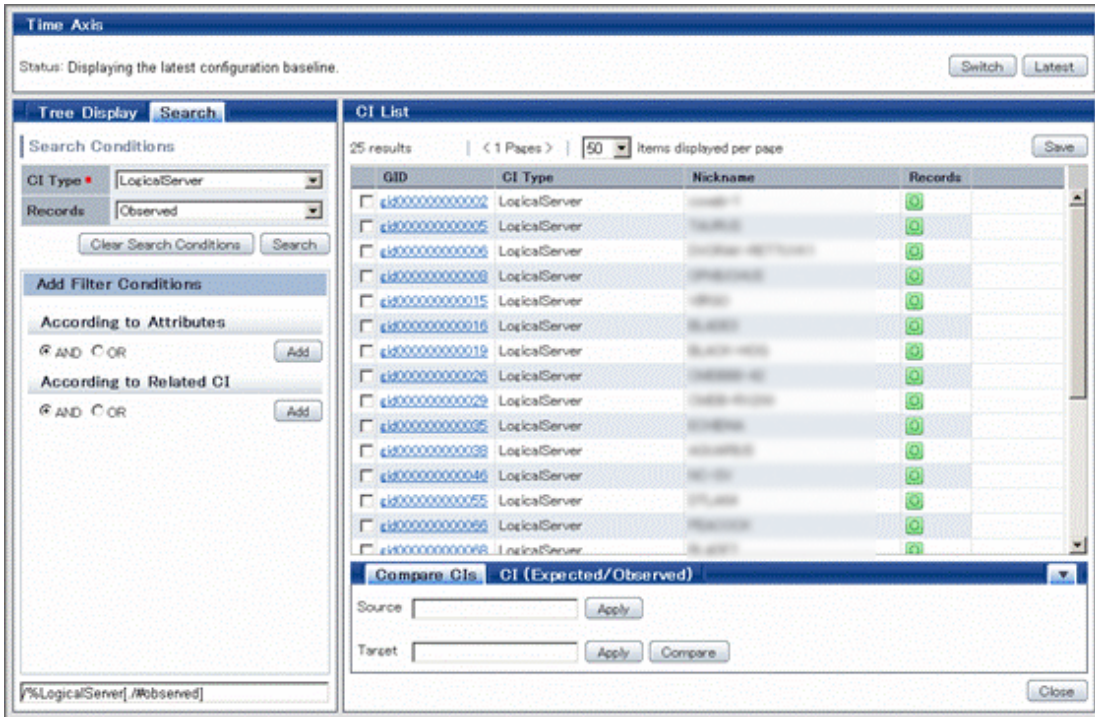
1. Click the **Tree Display** tab on the **Configuration Management** window.
2. Select which configuration item tree model to display from the **Switch Perspective** drop-down menu.
3. Select which type of record to display from the **Records** drop-down menu.
4. Click on the [+] symbols in the tree to display a configuration item and configuration items that are related to that configuration item.
5. Select a folder to display a list of configuration items in the **CI List**.

9.2.2 Searching for Configuration Items

Display method

1. Select **CI View** from the **Configuration Management** menu of the Web console window.

2. Click the **Search** tab.



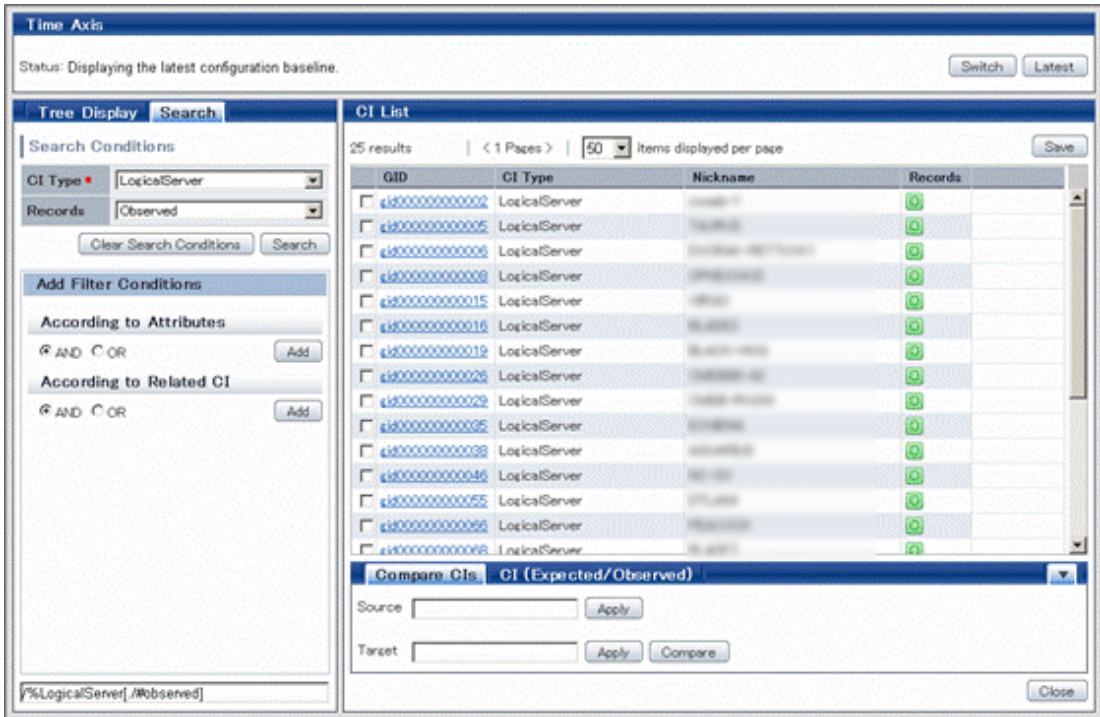
Operation method

Item name		Description
Time Axis (top part of the window)	Status	This item shows the time for the configuration baseline that you are currently working with.
	Switch button	This button is used to select which configuration baseline to display. Selecting a configuration baseline allows you to operate on configuration items from a particular point of time in the past (the time when the baseline was taken). It is also possible to release the selected baseline and work with the most recent configuration items.
	Latest button	This button changes the operating target to the latest configuration items.
Search tab (This tab is used to specify the conditions for finding configuration items.)	CI Type	This drop-down menu is used to select which type of configuration item to search for.
	Records	This drop-down menu is used to select the record type of the configuration items being searched for. There are three record types: Expected , Observed , and Catalog
	Clear Search Conditions button	This button is used to clear the filter conditions and the settings for which type of configuration item to search for. These conditions and settings are returned to their initial values.
	Search button	This button executes a search based on the filter conditions and the settings for which type of configuration item to search for.
	Add button under According to Attributes	This button is used to add a condition for filtering configuration items according to attribute values. If multiple attribute values are specified, the conditions can be joined by a logical 'AND' (find configuration items that match all of the conditions) or a logical 'OR' (find configuration items that match at least one of the conditions).
	Add button under	If multiple related configuration items are specified, the conditions can be joined by a logical 'AND' (find configuration items that match all of

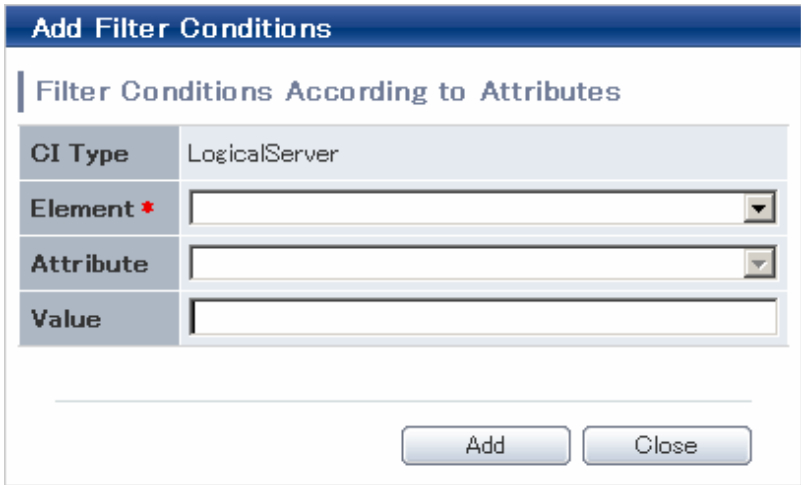
Item name		Description
	According to Related CI	the conditions) or a logical 'OR' (find configuration items that match at least one of the conditions).
CI List (This area displays a list of the configuration items that have been found by the search.)	GID	This column displays the GID of the configuration item. The GID is an ID that is unique to each configuration management item. Items can be sorted in ascending/descending order by clicking the column heading. Click a GID number to open a window that displays the details of the configuration item.
	CI Type	This column displays the type of the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname	This column shows the nickname ("nickname" attribute) for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Records	This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
	xx items displayed per page	This item is used to specify how many configuration items to display per page. If there are more configuration items than can fit on a single page, click the right arrow button to display the next page of configuration items. Click the left arrow button to go back to the previous page.
	Save button	This button is used to save the selected configuration items to a file.
Compare CIs (This tab is used to compare two configuration items.)	Source	This item is used to enter the GID for the source configuration item.
	Target	This item is used to enter the GID for the compared configuration item.
	Apply button	Click this button to automatically enter the GID for the configuration item that has been selected in the CI List .
	Compare button	Click this button to display a window showing the results of comparing the two configuration items whose GIDs have been specified in Source and Target .
CI (Expected/Observed) (This tab is used to compare the observed record of a configuration item with its expected record.)	CI Comparison Target	This item is used to enter the GID for the source configuration item.
	Apply button	Click this button to automatically enter the GID for the configuration item that has been selected in the CI List .
	Compare button	Click this button to display a window showing the results of comparing the observed and expected records for the configuration items whose GID was specified in CI Comparison Target .

Use the following procedure to search for configuration items from the tree.

1. Use the **CI Type** drop-down menu to select which type of configuration item to search for.



2. Select which type of record to search for from the **Records** drop-down menu.
3. To use an attribute value of the configuration item as a search condition, click the **Add** button below **According to Attributes**. Then select the **Element** and **Attribute**. Enter a value for the attribute and then click the **Add** button.



4. To use a particular configuration item that is related to the target configuration item as a search condition, click the **Add** button below **According to Related CI**. Then select an item from the **CI Type** drop-down menu and click the **Add** button. To use an

attribute value of the related configuration item as a search condition, click the **Add** button below **According to Related CI**. Then select the **CI Type** and **Element**. Enter a value for the attribute and then click the **Add** button.

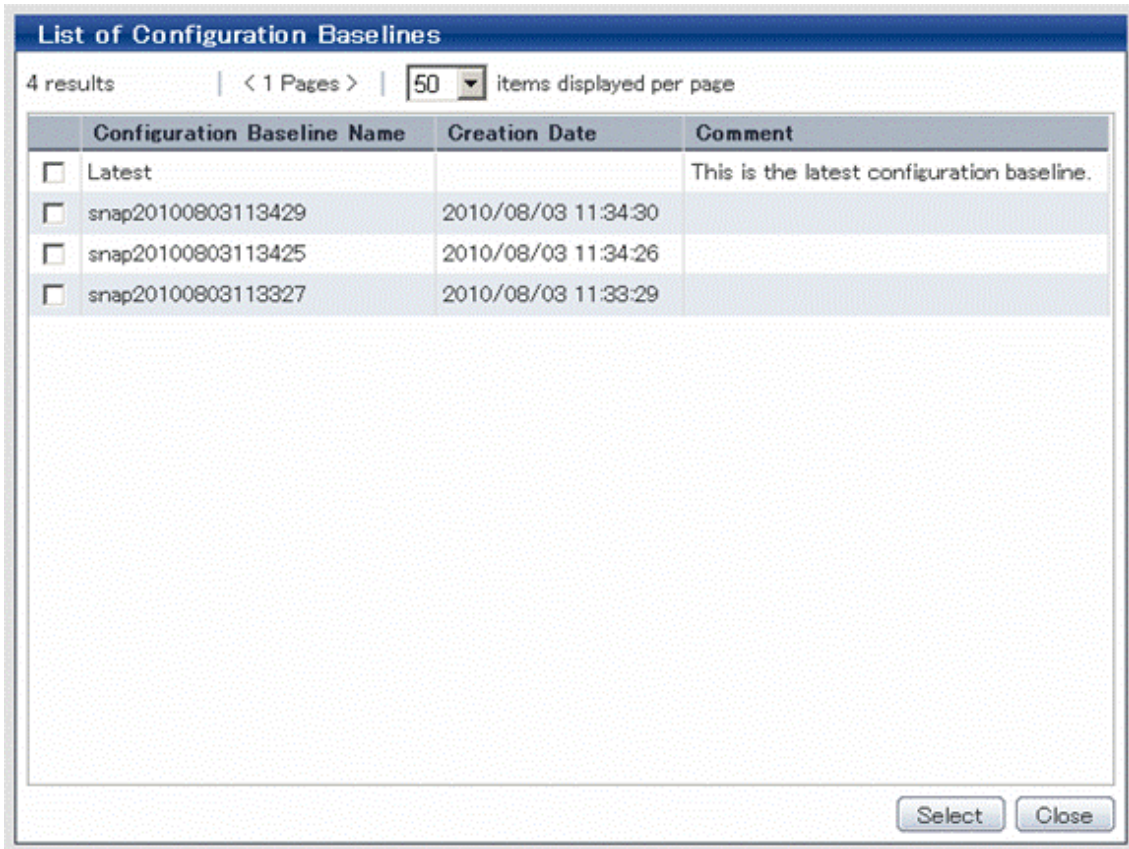
5. Click the **Search** button.
6. Search results will be displayed in **CI List**.

9.2.3 Switching between Configuration Baselines

Display method

1. Select **CI View** from the **Configuration Management** menu of the Web console window.

2. Click the **Switch** button in the **Time Axis** of the **Configuration Management** window.



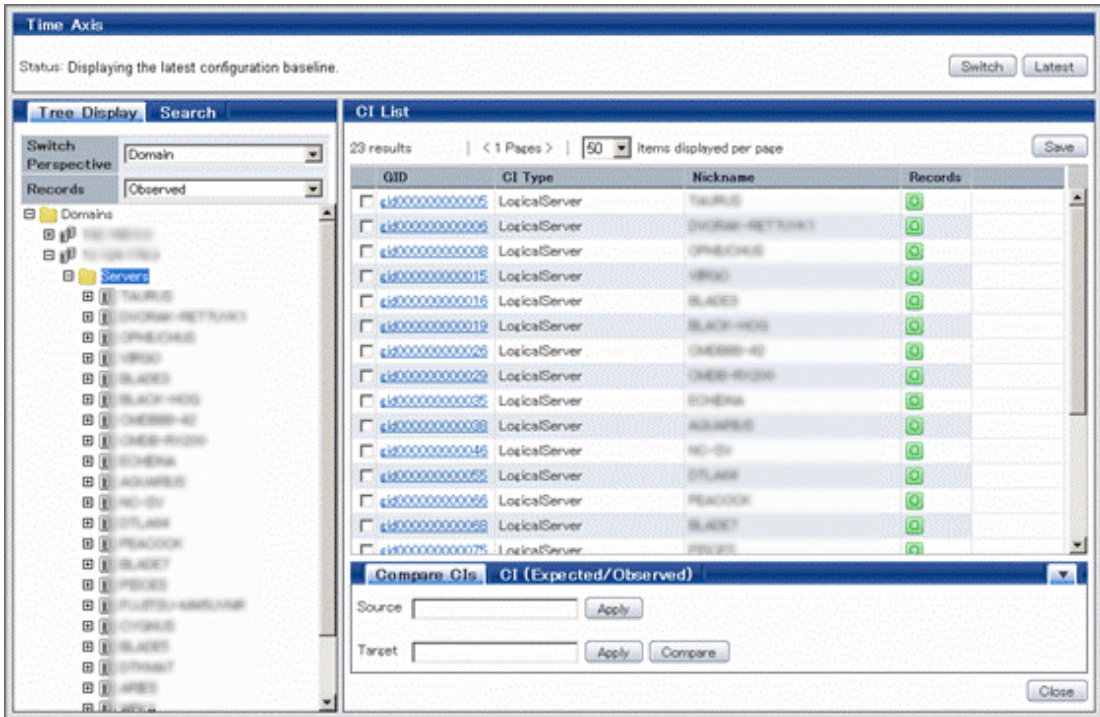
Selecting a configuration baseline makes it possible to display, search for and compare information on configuration items using the selected configuration baseline.

Operation method

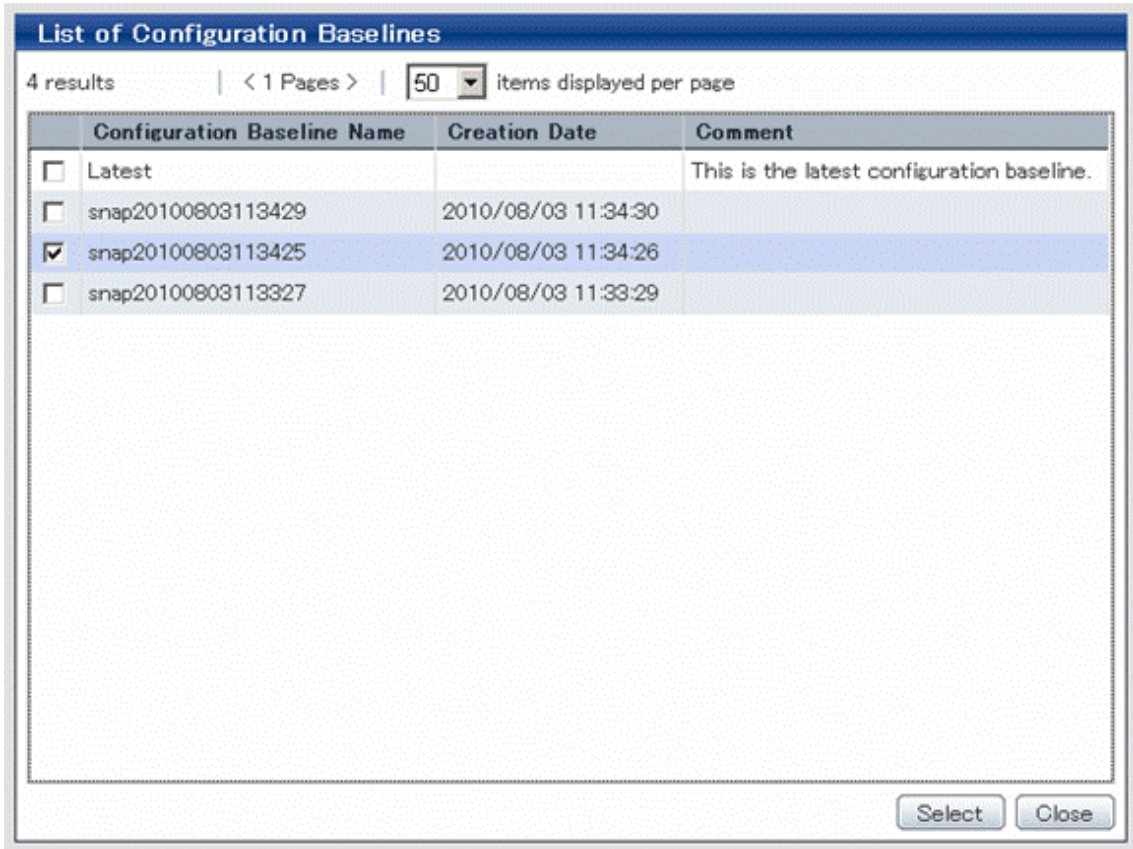
Item name	Description	
List of Configuration Baselines	Configuration Baseline Name	This column displays the names of the available configuration baselines.
	Creation Date	This column displays the date and time when the configuration baseline was created.
	Comment	This column displays the memos of the configuration baselines.
	xx items displayed per page	This item specifies the number of configuration baselines to display on each page. If there are more configuration baselines than can fit on a single page, click the right arrow button to display the next page of configuration baselines. Click the left arrow button to go back to the previous page.
Select button	Click this button to switch the operation target to the configuration baseline selected in the list and then close the window.	
Close button	Click this button to simply close the window without changing anything.	

Use the following procedure to select a configuration baseline:

1. Click the **Switch** button to display a list of available configuration baselines.



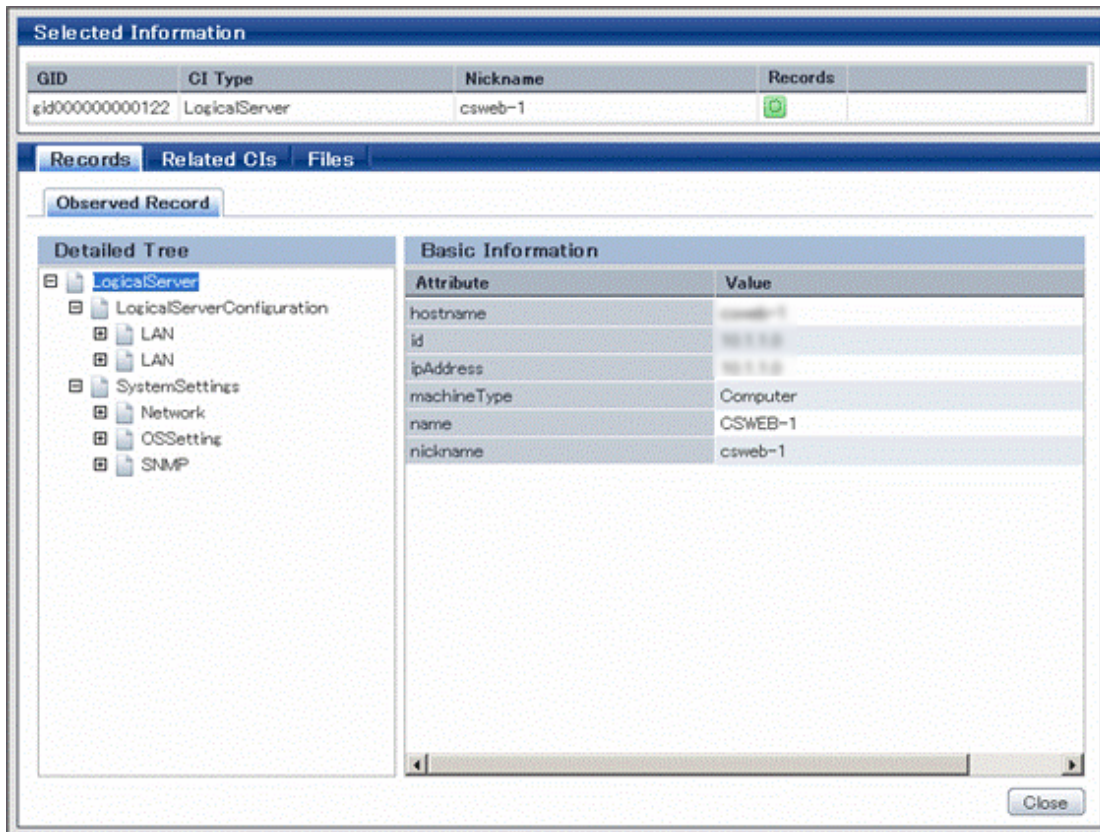
2. In the list, select the check box for the configuration baseline to be displayed, and then click the **Select** button.



9.2.4 Detailed Display

Display method

1. Select **CI View** from the **Configuration Management** menu of the Web console window.
2. Click the **Tree Display** or **Search** tab.
3. Click a GID number in the **CI List** of either the **Tree Display** window or the **Search** window to display a **Detailed View** window.



Operation method

Item name		Description
Selected Information	GID	This column displays the GID of the configuration item.
	CI Type	This column displays the type of the configuration item.
	Nickname	This column shows the nickname for the configuration item.
	Records	This column indicates the records that the target configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
Records tab (This tab is used to display expected, observed or catalog records.)	Detailed Tree	This is a tree of the elements that make up the configuration item. Selecting an element displays the attribute values for that element in the Basic Information section.
	Basic Information	Attribute This column shows the names of attributes. Items can be sorted in ascending/descending order by clicking the column heading.

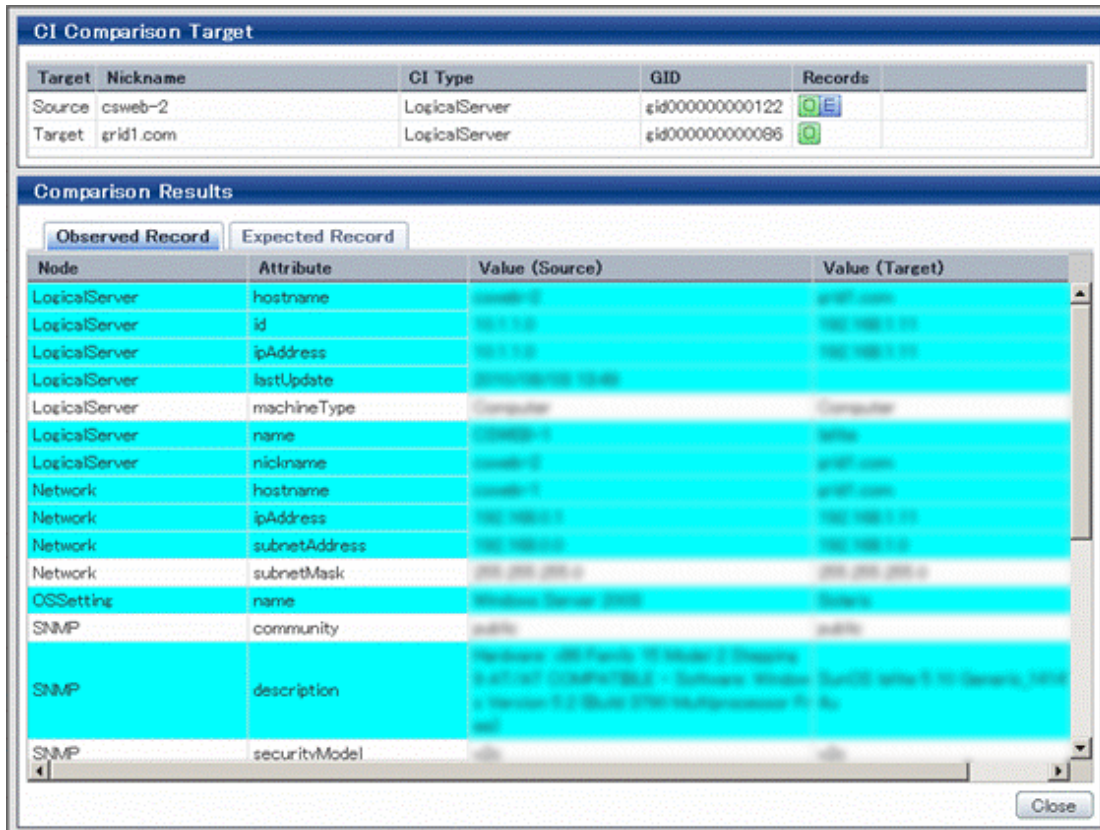
Item name		Description
	Value	This column shows the values of attributes. Items can be sorted in ascending/descending order by clicking the column heading.
Related CIs tab (This tab displays a list of configuration items related to the configuration item for which the detailed display is being shown.)	GID	This column displays the GID of the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	CI Type	This column displays the type of the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname	This column shows the nickname ("nickname" attribute) for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Records	This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
Files tab (This tab displays a list of the files held by the configuration item for which the detailed display is being shown.)	File Name	This column displays the names of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname	This column displays the nicknames of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Annotation	This column displays the comments of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Hash value	This column displays the hash values of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	File ID	This column displays the IDs of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Version	This column displays the versions of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Last Updated	This column displays the last modification dates and times of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	File Size	This column displays the sizes of the files. Items can be sorted in ascending/descending order by clicking the column heading.
Close button		This button closes the window.

9.2.5 Comparing Configuration Items

Display method

1. Select **CI View** from the **Configuration Management** menu of the Web console window.
2. Display the configuration item that you want to compare in the **CI List**.

3. Click the **Compare CIs** tab at the bottom right of the window.
4. Select the check box for one configuration item, and then click the **Apply** button for the **Source**.
5. Select the check box for one compared configuration item, and then click the **Apply** button for the **Target**.
6. Click the **Compare** button.



Operation method

	Item name	Description
CI Comparison Target	Target	This item displays Source and Target .
	Nickname	This column shows the nickname for the configuration item used for comparison.
	CI Type	This column displays the type of the configuration item.
	GID	This column displays the GID of the configuration item.
	Records	This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
Comparison Results	Expected Record tab	This tab displays the result of comparing the expected records of the two configuration items.
	Observed Record tab	This tab displays the result of comparing the observed records of the two configuration items.
	Catalog Record tab	This tab displays the result of comparing the catalog records of the two configuration items.

Item name		Description
	Node	This column shows the element name for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Attribute	This column shows the attribute name for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Expected	This column displays the attribute values for the expected record. Items can be sorted in ascending/descending order by clicking the column heading.
	Observed	This column displays the attribute values for the observed record. Items can be sorted in ascending/descending order by clicking the column heading.
Close button		This button closes the window.

9.2.6 Comparing Expected Records with Observed Records

Display method

1. Select **CI View** from the **Configuration Management** menu of the Web console window.
2. Display the configuration item that you want to compare in the **CI List**.
3. Click the **CI (Expected/Observed)** tab at the bottom right of the window.
4. Select the check box for one target configuration item, and then click the **Apply** button.
5. Click the **Compare** button.

The screenshot shows a window titled "CI Comparison Target" with a table of configuration items. Below it is a "Comparison Results" table with columns for Node, Attribute, Expected, and Observed. The "lastUpdate" row for LogicalServer is highlighted in cyan.

Target	Nickname	CI Type	GID	Records
Source	csweb-2	LogicalServer	gid000000000122	<input checked="" type="checkbox"/> <input type="checkbox"/>

Node	Attribute	Expected	Observed
LogicalServer	hostname	csweb-2	csweb-2
LogicalServer	id	101110	101110
LogicalServer	ipAddress	10.1.1.0	10.1.1.0
LogicalServer	lastUpdate	2008-10-16 10:00	2008-10-16 10:00
LogicalServer	machineType	Computer	Computer
LogicalServer	name	CSWEB-1	CSWEB-1
LogicalServer	nickname	csweb-2	csweb-2
LAN	description	Microsoft Loopback Adapter	Microsoft Loopback Adapter
LAN	index	2	2
LAN	ipAddress	10.1.1.1	10.1.1.1
LAN	macAddress	01:00:00:00:00:00	01:00:00:00:00:00
LAN	netmask	255.255.255.0	255.255.255.0
LAN	speed	1000000	1000000
LAN	type	ethernet802.3	ethernet802.3
LAN	description	Brocade NetIron 5348 Fibre	Brocade NetIron 5348 Fibre
LAN	index	4000	4000
LAN	ipAddress	10.128.176.102	10.128.176.102
LAN	macAddress	1-2-3-4-5-6-7-8	1-2-3-4-5-6-7-8
LAN	netmask	255.255.255.0	255.255.255.0

Buttons: Copy Observed to Expected, Close

Operation method

Item name		Description
CI Comparison Target	Target	This item displays Source .
	Nickname	This column shows the nickname for the configuration item used for comparison.
	CI Type	This column displays the type of the configuration item.
	GID	This column displays the GID of the configuration item.
	Records	This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
Comparison Results	Node	This column shows the element name for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Attribute	This column shows the attribute name for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Expected	This column displays the attribute values for the expected record. Items can be sorted in ascending/descending order by clicking the column heading.
	Observed	This column displays the attribute values for the observed record. Items can be sorted in ascending/descending order by clicking the column heading.
Close button		This button closes the window.
Copy Observed to Expected button		This button replaces the attribute values of the expected record with the attribute values of the observed record.

9.3 Registering, Updating and Deleting Configuration Items

This section explains how to register, update and delete configuration items.



Note

Note the following when updating or deleting collected configuration item observed records using the Agent.

- If there are any differences between the actual condition of the observed record and the collection source configuration information, then execute "update differences" or "update all" for the observed record using the Agent.
- If the execution of "update differences" or "update all" for the observed record using the Agent fails, or the updates are not reflected in the observed record, then update/delete from the **Configuration Management** window.
- If "update all" for an observed record using the Agent is executed when the actual condition of the collection source configuration information has been deleted, then the configuration item observed records for which the actual condition has been deleted will still remain in CMDB. In this case, update/delete from the **Configuration Management** window.
- If a configuration item is deleted by mistake, then subsequent executions of "update differences" using the Agent might fail. In this case, execute "update all" using the Agent.

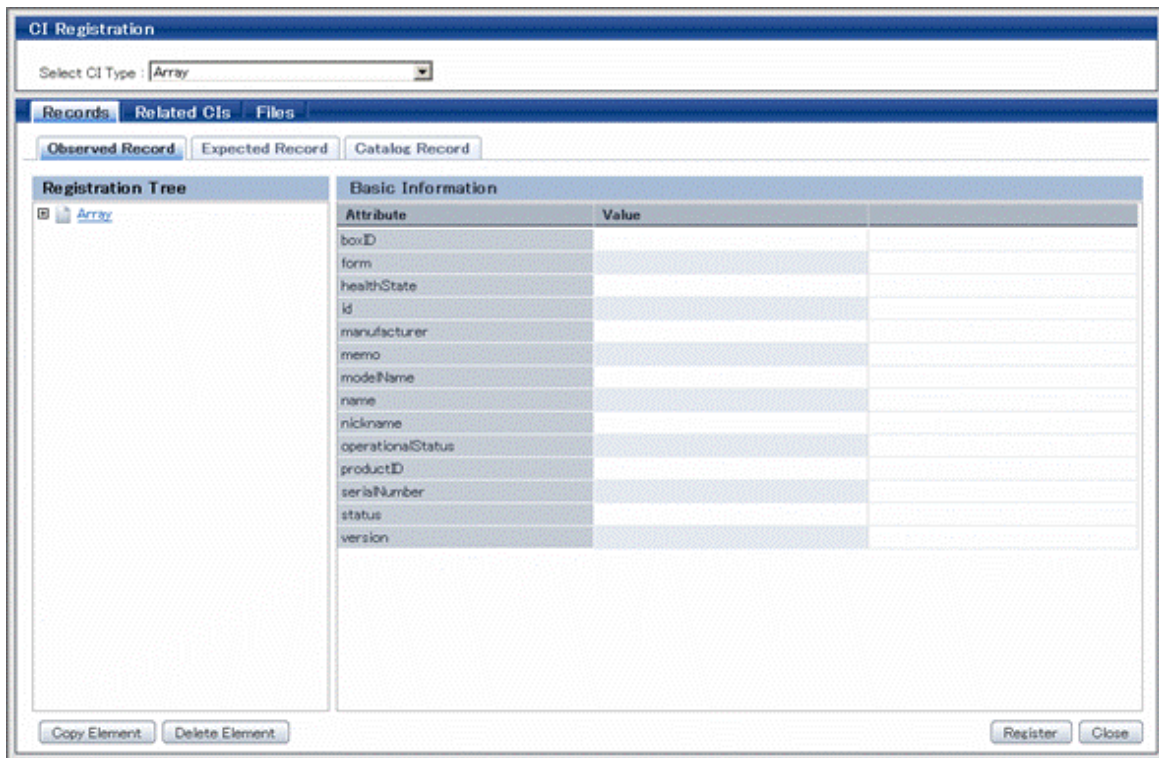
The update of observed records using the Agent uses the `cmdbrefresh` command.

Refer to "cmdbrefresh (Observed Record Collection Request Command)" in the *Systemwalker Runbook Automation Reference Guide* for details. Refer to the event log message to check for the completion of collection processing.

9.3.1 Registering Configuration Items

Display method

1. Select **CI Registration** from the **Configuration Management** menu of the Web console window.



Operation method

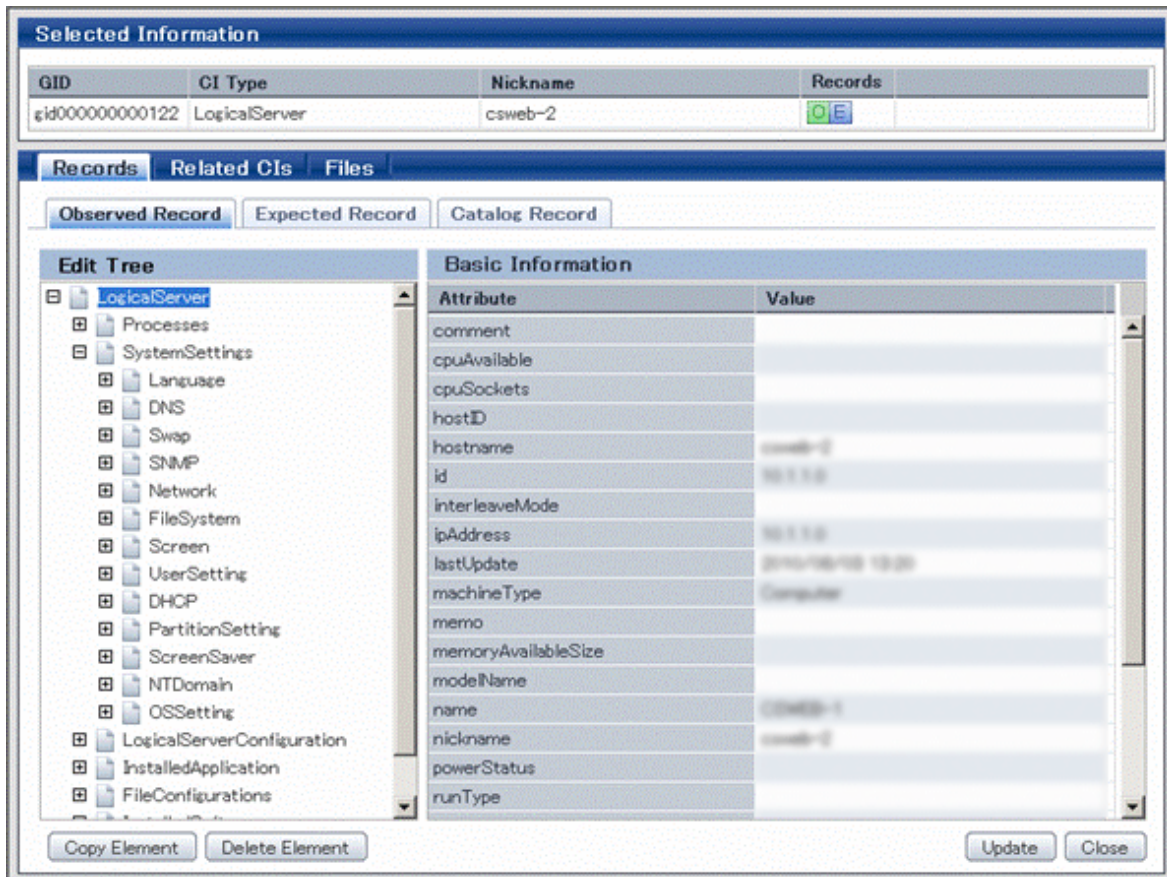
Item name		Description	
CI Registration	Select CI Type	This drop-down list is used to select the type of configuration item that has been registered.	
Records tab (This tab is used to select which type of record to register (an expected record, an observed record or a catalog record).)	Registration Tree	This is a tree of the elements that make up the configuration item. Selecting an element displays the attribute values for that element in the Basic Information section.	
	Basic Information	Attribute	This column shows the names of attributes. Items can be sorted in ascending/descending order by clicking the column heading.
		Value	This column shows the values of attributes. The value can be edited by selecting the attribute and then either clicking the value field or pressing the Enter key. Items can be sorted in ascending/descending order by clicking the column heading.
	Copy Element button	This button creates a copy of the element selected in the Registration Tree .	
Delete Element button	This button deletes the element selected in the Registration Tree .		
Related CIs tab (This tab is used to add or remove	GID	This column displays the GID of the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.	

Item name		Description
configuration items from the list of related configuration items.)	CI Type	This column displays the type of the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname	This column shows the nickname ("nickname" attribute) for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Records	This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
	Add button	This button is used to create an association between the configuration item that is currently being edited and another configuration item.
	Remove button	This button is used to remove the selected configuration item from the list of related configuration items.
Files tab (This tab displays a list of the files held by the configuration item for which the detailed display is being shown.)	File Name	This column displays the names of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname	This column displays the nicknames of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Annotation	This column displays the comments of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Hash value	This column displays the hash values of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	File ID	This column displays the IDs of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Version	This column displays the versions of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Last Updated	This column displays the last modification dates and times of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	File Size	This column displays the sizes of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Add button	This button is used to associate a file to the configuration item.
Remove button	This button is used to disassociate a file that has been registered to the configuration item.	
Update button		This button registers the settings with the CMDB.
Close button		This button closes the window.

9.3.2 Updating Configuration Items

Display method

1. Select **CI Update/Delete** from the **Configuration Management** menu of the Web console window.
2. Display the configuration item that you want to edit in the **CI List**.
3. In the **CI List**, click the GID number for the configuration item to be edited.



Operation method

	Item name	Description
Selected Information	GID	This column displays the GID of the configuration item.
	CI Type	This column displays the type of the configuration item.
	Nickname	This column shows the nickname for the configuration item.
	Records	This column indicates the records that the target configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
Records tab (This tab is used to select which type of record to edit (an expected record, an	Edit Tree	This is a tree of the elements that make up the configuration item. Selecting an element displays the attribute values for that element in the Basic Information section.

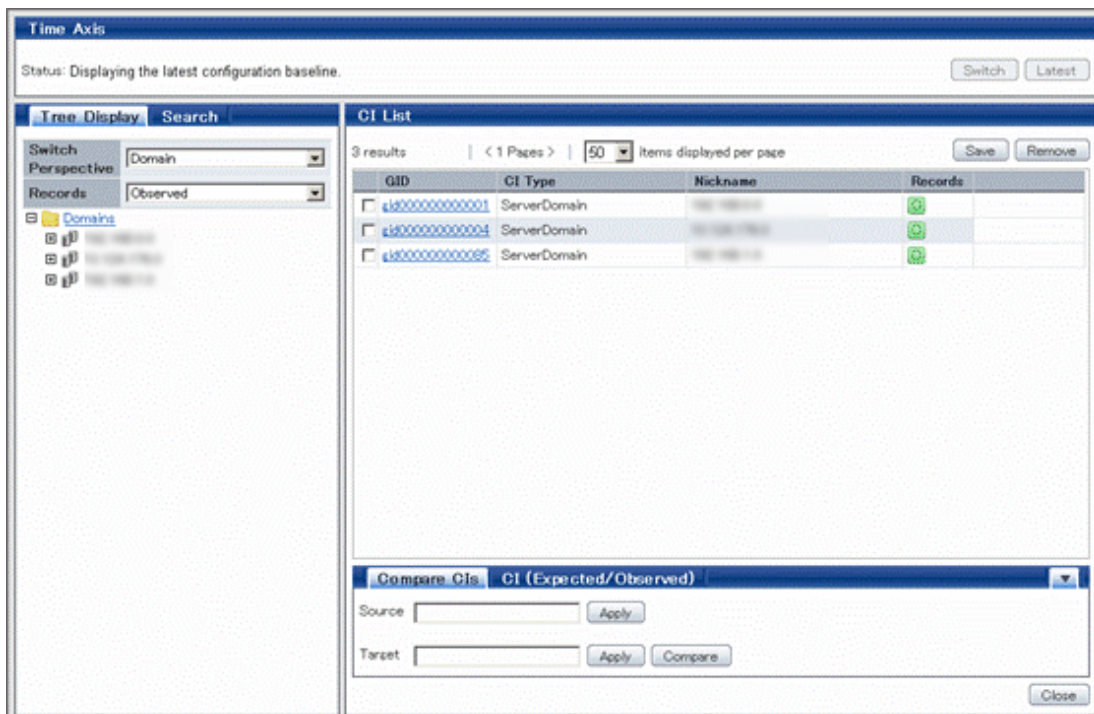
Item name		Description	
observed record or a catalog record.)	Basic Information	Attribute	This column shows the names of attributes. Items can be sorted in ascending/descending order by clicking the column heading.
		Value	This column shows the values of attributes. The value can be edited by selecting the attribute and then either clicking the value field or pressing the Enter key. Items can be sorted in ascending/descending order by clicking the column heading.
	Copy Element button		This button creates a copy of the element selected in the Edit Tree .
	Delete Element button		This button deletes the element selected in the Edit Tree .
Related CIs tab (This tab is used to add or remove configuration items from the list of related configuration items.)	GID		This column displays the GID of the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	CI Type		This column displays the type of the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname		This column shows the nickname ("nickname" attribute) for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Records		This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
	Add button		This button is used to create an association between the configuration item that is currently being edited and another configuration item.
	Remove button		This button is used to remove the selected configuration item from the list of related configuration items.
Files tab (This tab displays a list of the files held by the configuration item for which the detailed display is being shown.)	File Name		This column displays the names of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname		This column displays the nicknames of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Annotation		This column displays the comments of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Hash value		This column displays the hash values of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	File ID		This column displays the IDs of the files. Items can be sorted in ascending/descending order by clicking the column heading.

Item name		Description
	Version	This column displays the versions of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Last Updated	This column displays the last modification dates and times of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	File Size	This column displays the sizes of the files. Items can be sorted in ascending/descending order by clicking the column heading.
	Add button	This button is used to associate a file to the configuration item.
	Remove button	This button is used to disassociate a file that has been registered to the configuration item.
Update button		This button updates the CMDB with the edited content.
Close button		This button closes the window.

9.3.3 Deleting Configuration Items

Display method

1. Select **CI Update/Delete** from the **Configuration Management** menu of the Web console window.
2. Display the configuration item that you want to edit in the **CI List**.
3. In the **CI List**, select the check boxes for the configuration items to be deleted, and then click the **Remove** button.



Operation method

Item name		Description
Time Axis	Status	This item shows the time for the configuration baseline that you are currently working with.
	Switch button	This button is used to select which configuration baseline to display. Selecting a configuration baseline allows you to operate on configuration items from a particular point of time in the past (the time when the baseline was taken). It is also possible to release the selected baseline and work with the most recent configuration items.
	Latest button	This button changes the operating target to the latest configuration items.
Tree Display tab (This tab displays the relationships between configuration items in a tree format.)	Switch Perspective	This drop-down menu is used to select which CI tree model to use.
	Records	This drop-down menu is used to select the record type of the configuration items being operated on. There are three record types: Expected , Observed , and Catalog .
List view (the left pane)	Tree Display	This area displays folders indicating configuration item types and configuration items under each folder in tree format. The tree can be used to trace which configuration items are related to (have a link to) which other configuration items.
CI List (This area displays a list of the configuration items in the folder that has been selected in the tree in the left pane.)	GID	This column displays the GID of the configuration item. The GID is an ID that is unique to each configuration management item. Items can be sorted in ascending/descending order by clicking the column heading.
	CI Type	This column displays the type of the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Nickname	This column shows the nickname ("nickname" attribute) for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
	Records	This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
	xx items displayed per page	This item is used to specify how many configuration items to display per page. If there are more configuration items than can fit on a single page, click the right arrow button to display the next page of configuration items. Click the left arrow button to go back to the previous page.
	Save button	This button is used to save the selected configuration items to a file.
	Remove button	This button is used to delete the selected configuration items.
Compare CIs (This tab is used to compare two configuration items.)	Source	This item is used to enter the GID for the source configuration item.
	Target	This item is used to enter the GID for the compared configuration item.
	Apply button	Click this button to automatically enter the GID for the configuration item that has been selected in the CI List .
	Compare button	Click this button to display a window showing the results of comparing the two configuration items whose GIDs have been specified in Source and Target .
CI (Expected/ Observed) (This tab is used to compare the observed record of a configuration	CI Comparison Target	This item is used to enter the GID for the source configuration item.
	Apply button	Click this button to automatically enter the GID for the configuration item that has been selected in the CI List .

Item name		Description
item with its expected record.)	Compare button	Click this button to display a window showing the results of comparing the observed and expected records for the configuration items whose GID was specified in CI Comparison Target

9.3.4 Importing Configuration Items

Display method

1. Select **CI Import** from the **Configuration Management** menu of the Web console window.

Operation method

Item name		Description
CI Import	Browse button	This button is used to specify a file where configuration items have been entered in XML format.
Register button		This button registers the specified file content with the CMDB.
Close button		This button closes the window.

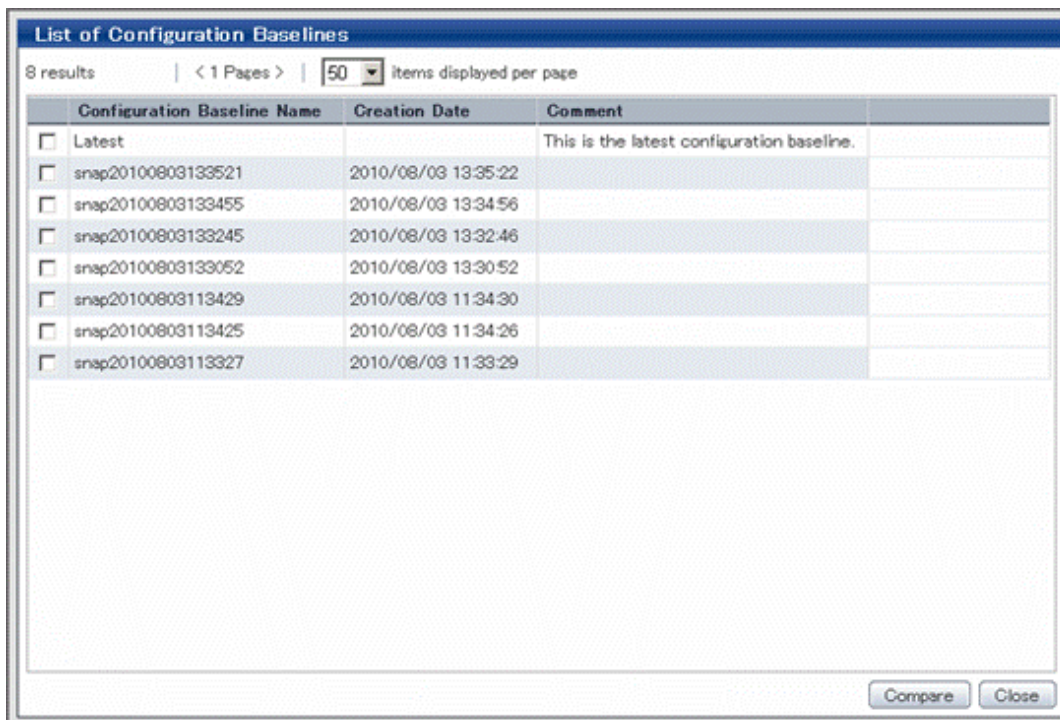
9.4 Comparing Configuration Baselines

This section explains how to compare configuration items in two different configuration baselines.

9.4.1 List of Configuration Baselines Window

Display method

1. Select **Configuration Baseline Comparison** from the **Configuration Management** menu of the Web console window.



Operation method

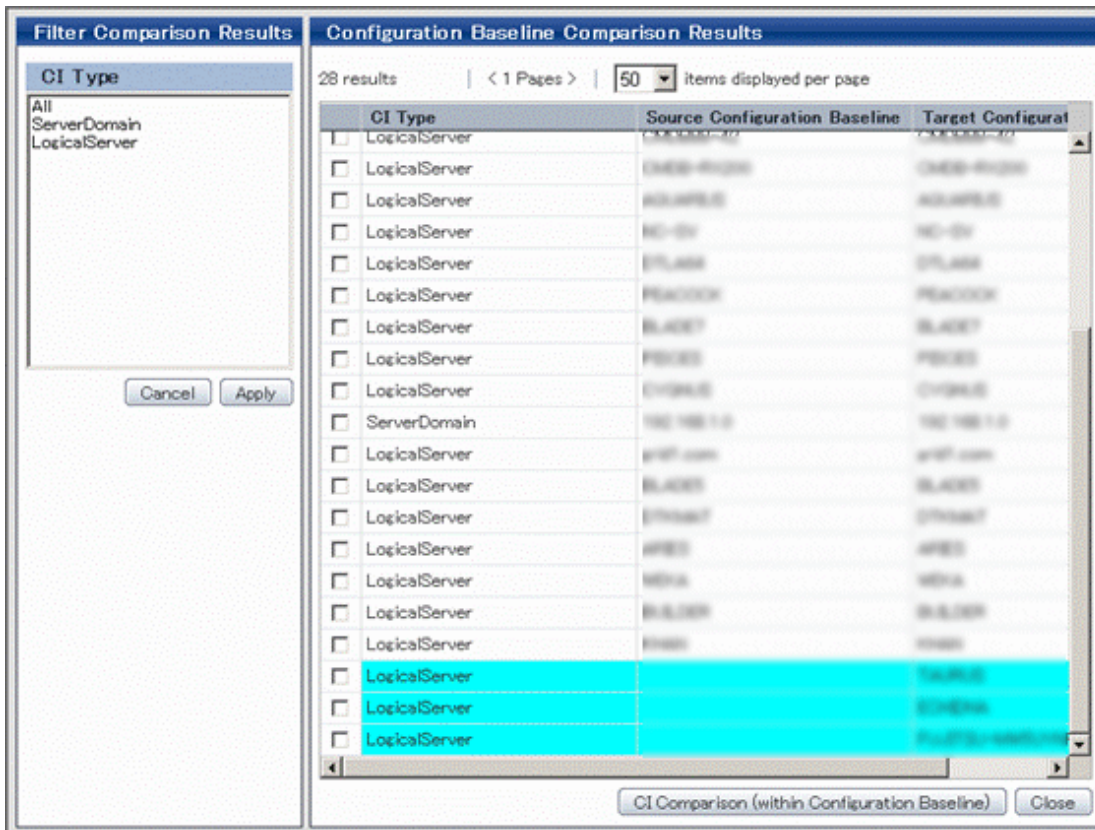
Item name		Description
List of Configuration Baselines	Configuration Baseline Name	This column displays the names of the available configuration baselines.
	Creation Date	This column displays the date and time when the configuration baseline was created.
	Comment	This column displays the memos of the configuration baselines.
	xx items displayed per page	This item specifies the number of configuration baselines to display on each page. If there are more configuration baselines than can fit on a single page, click the right arrow button to display the next page of configuration baselines. Click the left arrow button to go back to the previous page.
Compare button		This button is used to compare the two selected configuration baselines.
Close button		This button closes the window.

9.4.2 Results of Configuration Baselines Comparisons

Display method

1. Select the check boxes for the two configuration baselines to be compared in the **List of Configuration Baselines**.
2. Click the **Compare** button.
3. **Configuration Baseline Comparison Results** will be displayed.

The two configuration baselines will be compared, and the configuration items that differ between the two baselines will be highlighted.



Operation method

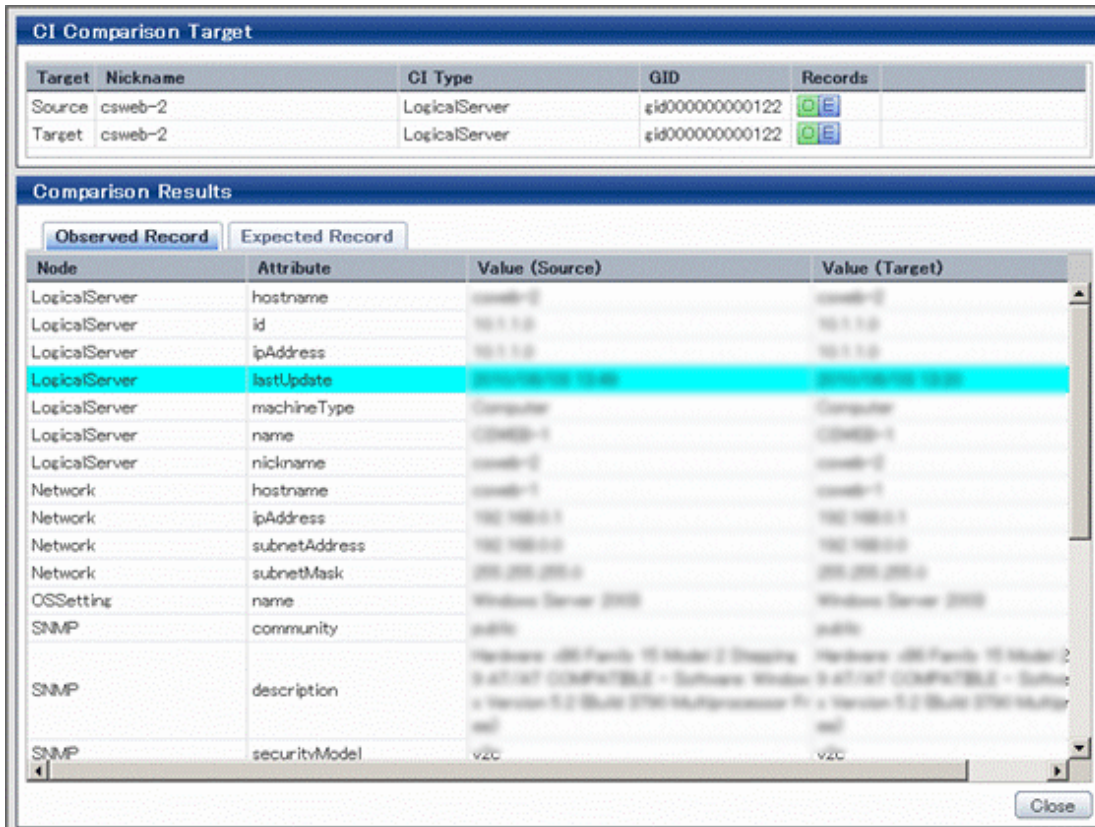
Item name		Description
Configuration Baseline Comparison Results	CI Type	This column displays the type of the configuration item.
	Source Configuration Baseline	This column displays the nicknames for the configuration items in the source configuration baseline.
	Target Configuration Baseline	This column displays the nicknames for the configuration items in the compared configuration baseline.
	xx items displayed per page	This item is used to specify how many configuration items to display per page. If there are more configuration items than can fit on a single page, click the right arrow button to display the next page of configuration items. Click the left arrow button to go back to the previous page.
Filter Comparison Results	Select CI Type	This section is used to specify which type of configuration items are displayed in the comparison results.
	Apply	This button is used to filter the comparison results according to the configuration item type that has been selected with the Select CI Type item.
	Cancel	This button clears the filter conditions.
CI Comparison (within Configuration Baseline) button		This button is used to compare the two selected configuration baselines.
Close button		Click this button to return to the List of Configuration Baselines window.

9.4.3 Comparing Configuration Items Using the Configuration Baseline

Display method

1. Display **Configuration Baseline Comparison Results**.
2. Click the **CI Comparison (within Configuration Baseline)** button.
3. The **Comparison Results** window will be displayed.

This window allows you to compare the status of configuration items at the point when a configuration baseline was created to the status of those same configuration items now.



Operation method

Item name	Description	
CI Comparison Target	Target	This item displays Source and Source .
	Nickname	This column shows the nickname for the configuration item used for comparison.
	CI Type	This column displays the type of the configuration item.
	GID	This column displays the GID of the configuration item.
	Records	This column indicates the records that the configuration item holds. "O" indicates an observed record, "E" indicates an expected record and "C" indicates a catalog record.
Comparison Results	Expected Record tab	This tab displays the result of comparing the expected records of the two configuration items.
	Observed Record tab	This tab displays the result of comparing the observed records of the two configuration items.

Item name	Description
Catalog Record tab	This tab displays the result of comparing the catalog records of the two configuration items.
Node	This column shows the element name for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
Attribute	This column shows the attribute name for the configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
Value (Source)	This column displays the attribute value of the current configuration item. Items can be sorted in ascending/descending order by clicking the column heading.
Value (Target)	This column displays the attribute value of the configuration item at the time when the configuration baseline was created. Items can be sorted in ascending/descending order by clicking the column heading.
Close button	This button closes the window.

Appendix A Window Reference

A.1 Scheduling

This section describes the Scheduling windows.

A.1.1 List of Windows

- [A.1.2 Create Schedule Definition Wizard \(General Settings\)](#)
- [A.1.3 Create Schedule Definition Wizard \(User Defined Attributes Settings\)](#)
- [A.1.4 Create Schedule Definition Wizard \(Startup Days Settings\)](#)
- [A.1.5 Create Schedule Definition Wizard \(Startup Time Settings\)](#)
- [A.1.6 Create Schedule Definition Wizard \(Confirm\)](#)
- [A.1.7 Schedule Definition List Window](#)
- [A.1.8 Schedule Definition List Window \(Filter\)](#)
- [A.1.9 Schedule Definition Details \(Operation\)](#)
- [A.1.10 Schedule Definition Details \(Definition Information\)](#)
- [A.1.11 Schedule Definition Details \(Start History\)](#)
- [A.1.12 Schedule Patterns List Window](#)
- [A.1.13 Schedule Patterns List Window \(Filter\)](#)
- [A.1.14 Schedule Patterns Creation Window](#)
- [A.1.15 Schedule Patterns Definition Information Window](#)
- [A.1.16 Process Status List window \(Gantt Chart\)](#)
- [A.1.17 Process Status List window \(List\)](#)
- [A.1.18 Process Status List window \(Filter\)](#)
- [A.1.19 Scheduled Operation window](#)

A.1.2 Create Schedule Definition Wizard (General Settings)

Outline

The create Schedule Definition wizard (general settings) sets up general information when a new Schedule Definition is to be created.

Calling sequence or built-in sequence

Use the procedure below to display this wizard:




This wizard can also be displayed by clicking the Create button in the Schedule Definition Window.

1. Login to the RBA console and select a process group.
2. Click the Process Definitions submenu of the Process Management tab.

- From the process definition list, click the Process Definition Name for which a Schedule Definition is to be created.

Process Definitions

Process Definition List

 Open
  Import
  Refresh

13 PD Found

Process Definition Name	Id	Version	State	Owner
Sample004	3457	5.0	Draft	swrbaadmin
Sample003	3438	5.0	Draft	swrbaadmin
Sample002	3427	5.0	Draft	swrbaadmin
Sample001	3416	5.0	Draft	swrbaadmin
Sample003	3226	4.0	Published	swrbaadmin
Sample002	3215	4.0	Draft	swrbaadmin
Sample001	3204	4.0	Published	swrbaadmin
Sample002	3084	3.0	Draft	swrbaadmin
Sample001	3073	3.0	Draft	swrbaadmin
Sample002	3048	2.0	Published	swrbaadmin
Sample001	3037	2.0	Draft	swrbaadmin
Sample002	3026	1.0	Obsoleted	swrbaadmin
Sample001	3015	1.0	Obsoleted	swrbaadmin

- From the Summary tab of the process definition details, click the Create Schedule Definition button for creating a new Schedule Definition.

Process Definition Details

Summary BPMN

Name

ID

Description

State

Owner

Version

Priority

Use same SubProcess definition version

Schedule Definition number

5. The Schedule Definition creation window (general settings) will be displayed, so set up each item.

The screenshot shows a dialog box titled "Create Schedule Definition" with a close button in the top right corner. The dialog has a tabbed interface with the following tabs: "General Settings" (selected), "User Defined Attributes Settings", "Startup Days Settings", "Startup Time Settings", and "Confirm". The "General Settings" tab contains the following fields and options:

- *Name:** A text input field.
- *Process Definition:** A dropdown menu with "Sample003" selected.
- Scheduled Execution Time(1-9999minutes):** A text input field.
- Execute multiple processes at a time:** Two radio buttons: "Allow" (selected) and "Do not allow".
- Memo:** A text input field.

Below the fields, there is a note: "An asterisk (*) indicates that this item is mandatory". At the bottom right of the dialog, there are two buttons: "Next" and "Cancel".

Name

Specify the Schedule Definition name.

Use up to 50 bytes to specify the Schedule Definition name. The Schedule Definition name cannot include blank spaces, half-size kana characters or user-defined characters. The Schedule Definition name cannot start with # or contain the following characters.

? \ * " < > | / : ; , ' .

Process Definition

Process definition selected from the process definition list is displayed.

In case of creating from Schedule Definition list, select from the drop-down list the process definition to be used in the Schedule Definition.

Scheduled Execution Time

Specify the expected execution time from the start to the end of the schedule.

Use numeric characters between 1 and 9999 (minutes) to specify the expected execution time.

Execute multiple processes at a time

If the time of schedule startup has been duplicated, set up whether multiple Automated Operation Processes are to be started simultaneously:

- Allow: Starts multiple Automated Operation Processes simultaneously
- Do not allow: Does not start multiple Automated Operation Processes simultaneously

Comment

Use up to 128 bytes to specify a comment. The comment cannot include half-size kana characters or user-defined characters. A new line cannot be entered in a comment.

A.1.3 Create Schedule Definition Wizard (User Defined Attributes Settings)

Outline

The Create Schedule Definition Wizard (user-defined attributes settings) sets up the values of the UDAs (user defined attributes) that are to be used in a Schedule Definition when a new Schedule Definition is to be created.

Calling sequence or built-in sequence

This wizard will be displayed when you click the **Next** button in the Create Schedule Definition Wizard (general settings).

The screenshot shows a window titled "Create Schedule Definition" with a progress bar at the top containing five steps: "General Settings", "User Defined Attributes Settings" (which is the active step), "Startup Days Settings", "Startup Time Settings", and "Confirm". Below the progress bar is a "Default" tab. The main area contains five input fields, each with a label on the left and a text box on the right with up and down arrow buttons. The labels are: "SWRBA_RCODE", "SWRBA_STDOUT", "SWRBA_STDERR", "hostname", and "command". At the bottom right of the window are three buttons: "Back", "Next" (which is highlighted with a dotted border), and "Cancel".

User Definition Attributes Setting

Specify the values that are to be set in the UDAs to be used by the process definition.

A.1.4 Create Schedule Definition Wizard (Startup Days Settings)

Outline

The Create Schedule Definition Wizard (startup days settings) sets up the startup days of a Schedule Definition.

Calling sequence or built-in sequence

This wizard will be displayed when you click the **Next** button in the Create Schedule Definition Wizard (user defined attributes settings).

Startup Days Settings

Select either **Set startup days** or **Do not set startup days**.

Set Startup Days

Select this option to automatically start the Automated Operation Process on the specified date.

Do not set Startup Days

Select this option to:

- Display a list of main processes started manually (does not display subprocesses)
- Define input parameters (UDA) before starting Automated Operation Processes manually

Additionally, if the startup days are not set, **Do not set startup time** is selected by default.

Basic Settings

Select whether a Schedule Pattern that has been registered in the system is to be used. If so, select a Schedule Pattern from the drop-down list.

If a Schedule Pattern that has been registered in the system is not to be used, specify the items below to create a new Schedule Pattern:

Type

Select a startup day type. You can select from the following types:

Every Day

This sets every day as the startup day.

Every Week

This sets a specific day of every week as the startup day. Select Sunday to Saturday from the checkbox.

Every Month

This sets a specific day every month or a day of the week of a certain week of every month as the startup day. Click the **Edit** button and select the startup day from the Every Month setting window. When you select the **Add** button, the business day setting will be added to the list. The startup days below can be selected:

Date	Select a day in a range between 1st and 31st (days) from the drop-down list.
End of Month	This sets the month end as the startup day.
Day	Select the day of the week that using the following items: - Week: 1st to 5th (weeks) or last week - Day: Sunday to Saturday (day of the week)

Every Month (Business Day)

This sets a specific business day every month as the startup day. Click the **Edit** button and select the startup day from the Every Month(Business Day) setting window. A business day that has been selected from the drop-down list will be set as the startup day. When you select the **Add** button, the business day settings window will be displayed. Multiple business days can be added.

Month Settings	This sets the start date and end date of the fiscal month. A date that has been selected in a range between 1 and 28 (days) in the beginning of the fiscal month will be the start date. The end date will be automatically set as one day before the start date.
Business Day Base	This sets a base for the first business day. Select either beginning of fiscal month or end of fiscal month.
Business Day	This sets the business day. Select the business day from the drop-down list If the business day is the beginning of fiscal month Business Day: 1st to 28th business day If the business day is the end of fiscal month Business Day: 1 to 28 business days prior to month end

Every Year

This sets a specific date or a specific day of the week of every year as the startup day. Click the **Edit** button and select the startup day from the Every Year setting window. When you select the **Add** button, the business day setting will be added to the list. The items below can be specified:

Date	Select any month and day from the drop-down list: - Month: January to December - Day: 1 to 31 (days)
Day	Select any day of the week according to the following items from the drop-down list: - Month: January to December - Day: Sunday to Saturday

Holiday Settings

This specifies a holiday calendar that is to be used by the Schedule Definition.

Do Not Use Holiday Calendar

This does not use the holiday calendar.

Use Holiday Calendar

Select only one of the registered holiday calendars from the drop-down list.

Holiday Treatment

Set the handling for when the startup day that has been set falls on a holiday in the holiday calendar.

Treatment

Select from the items below:

Do Not Start	The Schedule Definition will not operate.
Shift to Previous Day	This shifts the startup day in the direction of the previous day.
Shift to Next Day	This shifts the startup day in the direction of the next day.

Number of Maximum Shifts

This sets a limit on the number of days on which a shift is to be performed if Shift to previous day or Shift to next day has been selected in **Action**. A value in a range between 1 and 99 (days) can be specified. If no number is specified no limit will be applied to the shifts. 0 cannot be used.

Use Holiday Calendar More than Once

This uses a combination of multiple holiday calendars.

Holiday Calendars that can be Used

A list of the holiday calendars that can be used by a Schedule Definition will be displayed.

Selected Holiday Calendar

A list of the holiday calendars that are being used by Schedule Definitions will be displayed.

Combination Conditions

This sets the combination conditions for holidays where multiple holiday calendars have been selected:

- Make this day a holiday when all selected calendars have this day as a holiday (AND)
- Make this day a holiday when any of the selected calendars has this day as a holiday (OR)

Holiday Operation

This sets the handling for when the startup day that has been set falls on a holiday in the holiday calendar.

The items that are to be set are the same as for **Use Holiday Calendar**.

Operation Period Settings

This sets the period for which the Schedule Definition is to operate.

If no period is set, every day will be set as startup day starting from the today.

Start Date

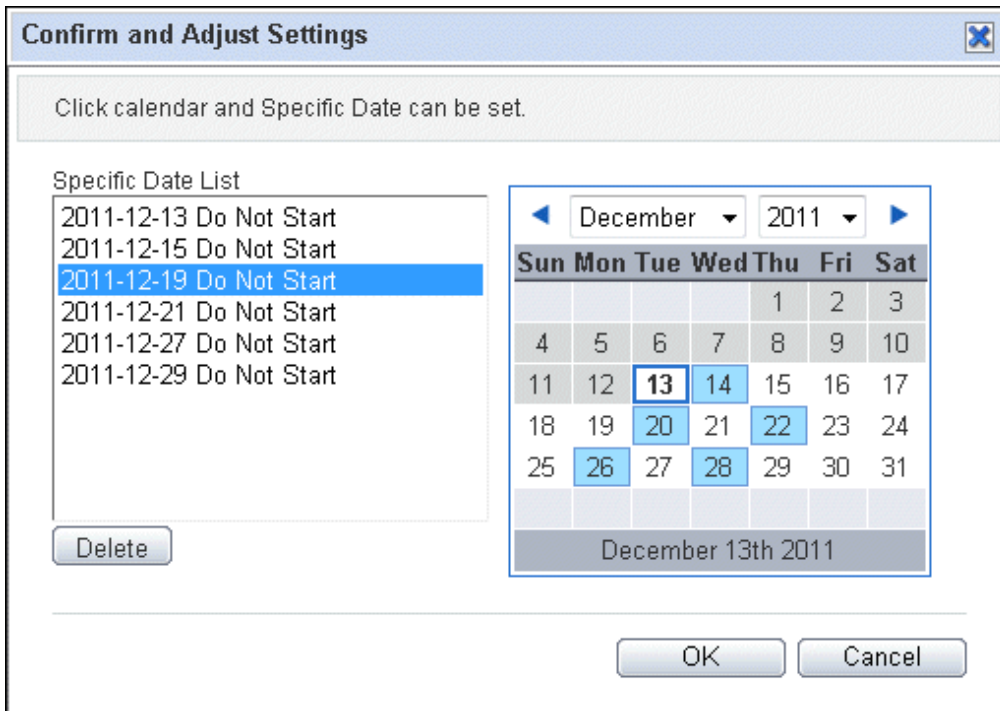
This sets the operation start date of the Schedule Definition. If a startup day is not specified, the startup day will be from this day. The start date cannot be a date in past.

End Date

This sets the operation end date of the Schedule Definition. If an end date is not specified, the operation period will be semi-permanent

Confirm and Adjust Settings

A calendar format can be used to check the startup days that have been set. Click the Confirm and Adjust Settings button and check the startup days.



The following parameters are displayed

Startup Day	Dates with blue background
Holidays	Dates displayed by red numbers
Dates outside Operation Period	Dates with hatched numbers
Dates in past	Dates with a gray background

Specific Date Setting

This sets a day that is to have special handling in the Schedule Definition regardless of the Schedule Pattern or holiday settings.

To set a specific date, click on the date and add or remove startup day.

A.1.5 Create Schedule Definition Wizard (Startup Time Settings)

Outline

The Create Schedule Definition Wizard (startup time settings) sets up the startup times of a Schedule Definition.

Calling sequence or built-in sequence

This wizard will be displayed when you click the **Next** button in the Create Schedule Definition Wizard (startup day settings).

Startup Time Settings

Select either **Set startup time** or **Do not set startup time**.

Set Startup Time

Select this option to automatically start the Automated Operation Process at the specified time.

Do not set Startup Time

Select this option to:

- Display a list of main processes started manually (does not display subprocesses)
- Define input parameters (UDA) before starting Automated Operation Processes manually

Additionally, if startup days are not set, **Do not set startup time** is selected by default.

Basic Settings

Select one of the following: **Specify Startup Time**, or **Specify Startup Interval**.

Specify Startup Time

The Schedule Definition starts at any time that has been set. When you select the **Add** button after setting these items, a new startup time will be set. Up to six startup times can be set.

Hour	0 to 23 (hours)
Minute	0 to 59 (minutes)

Specify Startup Interval

This starts the Schedule Definition at fixed time intervals.

When specifying startup interval the start time and end time should be on same day.

Start Time

Use an hour and minute format to specify the start time of a period of time after which the start of the Schedule Definition will be performed.

Hour	0 to 23 (hours)
Minute	0 to 59 (minutes)

End Time

Use an hour and minute format to specify the end time of a period of time after which the start of the Schedule Definition will be performed.

Hour	0 to 23 (hours)
Minute	0 to 59 (minutes)

Startup Interval

This sets an interval for starting in a range between 5 and 240 (minutes).

A.1.6 Create Schedule Definition Wizard (Confirm)

Outline

The Create Schedule Definition Wizard (Confirm) displays the details of Schedule Definition for confirmation.

If the startup day or start time have not been set, **None** will be displayed.

Calling sequence or built-in sequence

This wizard will be displayed when you click the **Next** button in the Create Schedule Definition Wizard (startup time settings).

The screenshot shows a window titled "Create Schedule Definition" with a close button in the top right corner. The window has a breadcrumb trail: "General Settings > User Defined Attributes Settings > Startup Days Settings > Startup Time Settings > Confirm". Below the breadcrumb, it says "Register the Schedule Definition as the following settings".

The "General Settings" section contains:

- Name: Operation_Comfirm
- Process Definition: Sample001
- Scheduled Execution Time:
- Execute multiple processes at a time: Allow
- Memo:

The "User Defined Attributes Settings" section contains:

- SWRBA_RCODE:
- SWRBA_STDOUT:
- SWRBA_STDERR:
- hostname: localhost
- command: ipconfig

The "Startup Days Settings" section is partially visible at the bottom. At the bottom right of the window are three buttons: "Back", "Finish", and "Cancel".

Back

Push this button to return to previous wizard windows.

Finish

Push this button to finish the creation wizard.

Cancel

Push this button to cancel the creation wizard.

A.1.7 Schedule Definition List Window

Outline

The Schedule Definition List window displays a list of the Schedule Definitions that have been registered.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Definitions** submenu of the Process Management tab.

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Operation_Confirm	9	Enable		2011-12-14 10:00	Sample001	swrbaadmin	
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-13 09:21	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

The information below will be displayed in a list:

Name

The name of the Schedule Definition.

ID

The ID of the Schedule Definition.

State

The state of the Schedule Definition.

Enable	The Schedule Definition has an Enable state. The automation operation process will be executed on the defined schedule.
Disable	The Schedule Definition has a Disable state. The automation operation process will not be executed regardless of the startup day or startup condition.
On Hold	The Schedule Definition has On Hold state. The automation operation process will not be executed regardless of the startup day or startup condition, the automation operation process should be manually executed.

Last Start Date

This shows the date of the last execution of the automation operation process.

Next Startup Date

This shows the date of the next execution of the automation operation process.

Process Definition

The name of the process definition that is using the Schedule Definition.

Owner

This shows the user ID of the Schedule Definition owner. The user ID of the user who created the Schedule Definition is set as the owner.

Schedule Pattern

The name of the Schedule Pattern that is being used by the Schedule Definition.

Holiday Calendar

This shows the holiday calendar being used by Schedule Definition.

The operations below can also be performed in the Schedule Definition list window

Create

This creates a new Schedule Definition. When you select the **Create** button, the new Schedule Definition creation window will be displayed.



This displays the operation schedule window.



This updates the Schedule Definition list and displays the latest status.

By selecting single or multiple Schedule Definitions and right clicking you can change the state(Enable, Disable, On Hold) of Schedule Definitions or delete them.

A.1.8 Schedule Definition List Window (Filter)

Outline

You can use the Schedule Definition List window (filter) to narrow down the information that is to be displayed by performing filtering.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Definitions** submenu of the Process Management tab.

3. Select **Filter**.

Schedule Definitions

Schedule Definition list

▼ Filter

Name:

Process Definition:

Owner:

Schedule Pattern:

Holiday Calendar:

State:

Memo:

1 - 4 of 4 items | Page 1 / 1 | Show: 10 items

Name	ID	State	Last Startup Date	Next Startup Date	Process Definition	Owner	Schedule
Operation_Comfirm	9	Enable		2011-12-14 10:00	Sample001	swrbaadmin	
Weekend_confirming	8	Enable		2012-01-07 13:00	Sample001	swrbaadmin	
Schedule1	7	Enable		2012-01-04 09:00	Sample001	swrbaadmin	
Regular_work	6	Enable	2011-12-13 09:21	2011-12-14 08:00	Sample002	swrbaadmin	Weekday

The items below can be set as filtering information. When you select the **Apply** button, filtering will be executed.

Name

The name of the Schedule Definition. Partial matching of the Schedule Definition name will be used in filtering.

Process Definition

The name of the process definition that is using the Schedule Definition. Select the process definition from the drop-down list.

Owner

The user ID of the Schedule Definition owner. Full matching of the owner will be used for filtering. Users without administration privilege can only view the Schedule Definitions they own. To view other users Schedule Definitions change the settings of the filter.

Schedule Pattern

The name of the Schedule Pattern that is being used by the Schedule Definition. Select the Schedule Definition from the drop-down list.

Holiday Calendar

The name of the holiday calendar that is being used by the Schedule Definition. Select the holiday calendar from the drop-down list.

State

The state of the Schedule Definition. Select the state from the drop-down list.

Memo

The memo that has been set in the Schedule Definition. Filtering will be based on partial matching search on memo.

A.1.9 Schedule Definition Details (Operation)

Outline

The Schedule Definition details (operation) window displays the operation schedule of the Schedule Definition. The operation schedule window can be used to check startup days in a calendar format window for any month and also allows you to modify the startup days directly from the window.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Definitions** submenu of the Process Management tab.
3. Select the **Schedule Definition** in the Schedule Definition list.
4. Select the Operation tab in the Schedule Definition details window.

Regular_work (6) X

Schedule Definition: Regular_work

Edit Delete Close

Refresh

Operation Definition Information Start history

Immediately Start Enable Disable On Hold

Schedule Definition Summary

Name:	Regular_work
State:	Enable
Owner:	swrbaadmin
Last Startup Date:	2011-12-13 09:21
Next Startup Date:	2011-12-14 08:00

The following information will be displayed in this window.

Name

The name of the Schedule Definition.

State

The state of the Schedule Definition.

Owner

This shows the user ID of the Schedule Definition owner. The user ID of the user who created the Schedule Definition is set as the owner.

Last Startup Date

This shows the date of the last execution date of the automation operation process.

Next Startup Date

This shows the date of the next execution of the automation operation process.

In Operation window the following operations can be performed

Immediately Start

This executes the automation operation process which is used by Schedule Definition immediately. This operation cannot be performed by Schedule Definitions with On Hold state or Disable state.

Enable

This changes the state of Schedule Definition to Enable. This operation cannot be performed by Schedule Definitions with Enable state.

Disable

This changes the state of Schedule Definition to Disable. This operation cannot be performed by Schedule Definitions with Disable state.

On Hold

This changes the state of Schedule Definition to On Hold. This operation cannot be performed by Schedule Definitions with On Hold state or Disable state.

In Definition Information the following operations can be performed

Edit

Use this to edit the Schedule Definition.

Delete

Use this to delete the Schedule Definition.

Close

Use this to close this window.

A.1.10 Schedule Definition Details (Definition Information)

Outline

The Schedule Definition details (definition information) displays detailed information on the Schedule Definition. In the Definition information window, specific operations can be performed according to the Schedule Definition.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Definitions** submenu of the Process Management tab.
3. Select any Schedule Definition from the Schedule Definition list.

4. Select the Definition Information tab in the Schedule Definition details window.

Regular_work (6)

Schedule Definition: Regular_work



General Settings

Name: Regular_work

Process Definition: Sample002

Scheduled Execution Time: 30 minutes

Execute multiple processes at a time: Allow

Memo:

User Defined Attributes Settings

SWRBA_RCODE:

SWRBA_STDOUT:

SWRBA_STDERR:

Param1:

Param2:

Param3: param3

Startup Days Settings

Basic Settings: Use Schedule Pattern

Schedule Pattern: Weekday

Holiday Settings: Use Holiday Calendar More than Once

Holiday Calendars: SUN
SAT

Combination Conditions: A holiday if the date is present in any of selected calendars (OR)

Holiday Treatment: Shift to Previous Day

Number of Maximum Shifts: 1 days

Operation Period Settings: 2011-12-12 - 2013-12-31

Specific Date Settings: 2011-12-13 Do Not Start
2011-12-15 Do Not Start
2011-12-19 Do Not Start
2011-12-21 Do Not Start
2011-12-27 Do Not Start
2011-12-29 Do Not Start

Startup Time Settings

Basic Settings: Specify Startup Interval

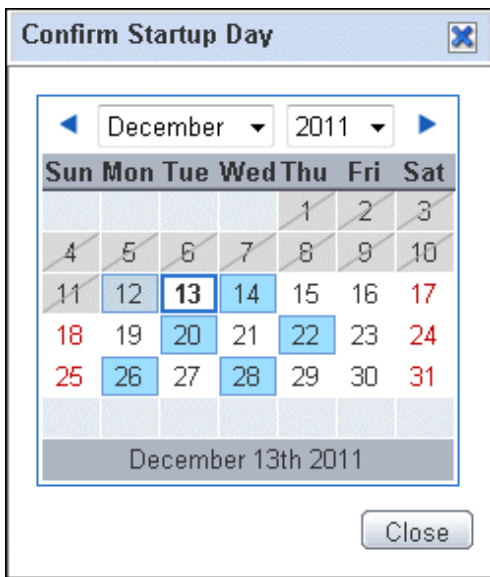
Start Time: 08:00

End Time: 15:00

Startup Interval: 30 minutes Interval

In the Definition Information window, the information below will be displayed.

By Clicking **Confirm Startup Day** button the monthly schedule of Schedule Definition can be displayed.



Startup Day	Dates with blue background
Holidays	Dates displayed by red numbers
Dates outside Operation Period	Dates with hatched numbers
Dates in past	Dates with a gray background

Click the **Edit** button to edit the Schedule Definition. Schedule Definition name and process definition cannot be changed. The edit wizard is similar to the Create Schedule Definition Wizard.

Name

The name of the Schedule Definition. This cannot be changed.

Process Definition

The name of process definition. This cannot be changed.

Scheduled Execution Time

The estimated time between starting and finishing the execution of the automation operation process.

Execute multiple processes at a time

This shows if multiple automation operation processes with same Schedule Definition condition can be executed simultaneously.

Memo

The additional information about the Schedule Definition.

User Defined Attributes Settings

The UDAs used by the process definition.

Startup day settings

Basic Settings

This shows whether or not a Schedule Pattern is used. To use a Schedule Pattern select from the drop-down list. If not using a Schedule Pattern you have to setup the startup days.

Holiday Settings

The holiday calendar used by the Schedule Definition.

Operation Period Settings

This shows the period of time the Schedule Definition will be used.

Specific Date Settings

Confirm or adjust the day that is to have special handling in the Schedule Definition regardless of the Schedule Pattern or holiday settings.

Startup Time Settings

Basic Setting

Select whether **Start Time** or **Start by Interval** is to be used.

Start by Time

The Schedule Definition starts at any time that has been set.

The items that can be edited are the same as for **Start by Time** in the Create Schedule Definition Wizard (startup time settings).

Start by Interval

The Schedule Definition starts at fixed time intervals.

The items that can be edited are the same as for **Start by Interval** in the Create Schedule Definition Wizard (startup time settings).

The following operations can also be performed

Edit

Edit the details of Schedule Definition.

Delete

This deletes a Schedule Definition.

Close

This closes this window.

A.1.11 Schedule Definition Details (Start History)

Outline

The Schedule Definition details (Start History) displays detailed information on the execution of automation operation processes by Schedule Definition.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Definitions** submenu of the Process Management tab.
3. Select any Schedule Definition from the Schedule Definition list.

4. Select the **Start History** tab in the Schedule Definition details window.

Regular_work (6) [X]

Schedule Definition: Regular_work

Edit Delete Close

Start history

Start history:

Select history: --Select one of the following options--

In **Select History** drop-down list you can choose to view the latest start history record or view older start history records.

Regular_work (6) [X]

Schedule Definition: Regular_work

Edit Delete Close

Start history

Start history:

Select history: latest

2011-12-12 15:00:08.026 INFO: Process instance has been started. Process definition name=Sample002 Version=2.0
Process instance ID=3059
2011-12-13 09:21:04.854 INFO: Process instance has been started. Process definition name=Sample002 Version=2.0
Process instance ID=3297
2011-12-13 09:21:11.635 INFO: Process instance has been started. Process definition name=Sample002 Version=2.0
Process instance ID=3311
2011-12-13 09:21:19.713 INFO: Process instance has been started. Process definition name=Sample002 Version=2.0
Process instance ID=3325
2011-12-13 09:21:25.932 INFO: Process instance has been started. Process definition name=Sample002 Version=2.0
Process instance ID=3339
2011-12-13 09:21:31.963 INFO: Process instance has been started. Process definition name=Sample002 Version=2.0
Process instance ID=3353

Select History

In **Select History** drop-down list you can choose to view the latest start history record or view older start history records. Select **latest** to view the last start history record, 1st and 2nd will display the older records.

Each start history record is displayed in the bellow format. For further information on the start history record refer to *Systemwalker Runbook Automation Message Guide*.

YYYY-MM-DD HH:MM:SS.sss Message

YYYY : Year

MM : Month

DD : Day

HH : Hour

MM : Minute

SS : Second

sss : Millisecond

The following operations can also be performed

Edit

Edit the details of Schedule Definition.

Delete

This deletes a Schedule Definition.

Close

This closes this window.

A.1.12 Schedule Patterns List Window

Outline

The Schedule Patterns List window displays detailed information on the Schedule Patterns shared inside the process group.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Patterns** submenu of the Process Management tab.

Screenshot of the Schedule Patterns List window. The window title is "Schedule Patterns" with a close button. Below the title bar is a header "Schedule Pattern list". There is a search filter input field. Below the filter is a table with 4 items. The table has columns: Name, ID, and Type. The items are: Weekday (ID 5, Type Every week), Business_day(every_week) (ID 4, Type Every Month(Busin...)), Everyday (ID 3, Type Everyday), and The_1st_Business_Day (ID 2, Type Every Month). Below the table is a "Create" button.

Name	ID	Type
Weekday	5	Every week
Business_day(every_week)	4	Every Month(Busin...
Everyday	3	Everyday
The_1st_Business_Day	2	Every Month

The information below will be displayed in a list:

Name

The name of the Schedule Pattern.

ID

The ID of the Schedule Pattern.

Type

The type of Schedule Pattern is displayed. Schedule types are Everyday, Every week, Every month, Every Month(Business Day), Every year.

In Schedule Pattern list you can delete single or multiple Schedule Patterns by selecting them and right click and selecting **Delete**.

The following operation also can be performed.

Create

A new Schedule Pattern can be created. Press the **Create** button to display Schedule Pattern creation window.



This updates the Schedule Pattern list and displays the latest status.

A.1.13 Schedule Patterns List Window (Filter)

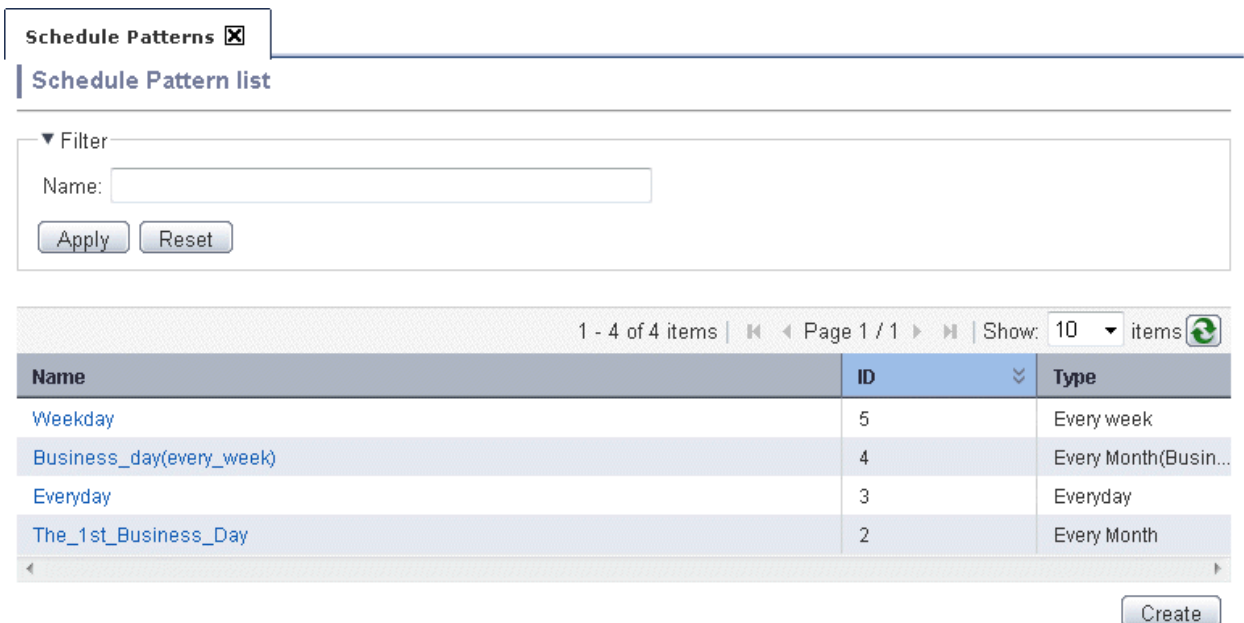
Outline

You can use the Schedule Pattern List window (filter) to narrow down the information that is to be displayed by performing filtering.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Patterns** submenu of the Process Management tab.
3. Select **Filter**.



The screenshot shows the 'Schedule Patterns' window with a 'Filter' section containing a 'Name' input field, 'Apply', and 'Reset' buttons. Below the filter is a table with 4 items. The table has columns for Name, ID, and Type. A 'Create' button is located at the bottom right of the window.

Name	ID	Type
Weekday	5	Every week
Business_day(every_week)	4	Every Month(Busin...
Everyday	3	Everyday
The_1st_Business_Day	2	Every Month

The items below can be set as filtering information. When you select the **Apply** button, filtering will be executed.

Name

The name of the Schedule Pattern.

A.1.14 Schedule Patterns Creation Window


Outline

You can use the Schedule Pattern Creation window to set up a new Schedule Pattern shared in process group.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Patterns** submenu of the Process Management tab.
3. Select **Create**.



Name

Select a name for the Schedule Pattern. The schedule name must be unique inside the process group, and cannot be the same as a Schedule Definition name.

Type

Select the type of Schedule Pattern is displayed. Schedule types are shown bellow.

Everyday

Everyday will be set as a startup day.

Every week

Selected day of every week will be set as a startup day. Select the checkbox of the day from Sunday to Saturday.

Every month

Selected day of every month will be set as a startup day. Select **Edit** button choose from Date, End of Month, Day. Selecting **Add** button will add the selected day to the Schedule Pattern. Multiple days can be added.

Day	Select a day in a range between 1st and 31st (days) from the drop-down list.
End of Month	This sets the month end as the startup day.
Day	Select the day of the week that using the following items: - Week: 1st to 5th (weeks) or last week - Day: Sunday to Saturday (day of the week)

Every Month(Business Day)

This sets a specific business day every month as the startup day. Click the Edit button and select the startup day from the Every Month(Business Day) setting window. A business day that has been selected from the drop-down list will be set as the startup day. When you select the Add button, the business day setting will be in the list.

Month Settings	This sets the start date and end date of the fiscal month. A date that has been selected in a range between 1 and 28 (days) in the beginning of the fiscal month will be the start date. The end date will be automatically set as one day before the start date.
Business Day Base	This sets a base for the first business day. Select either beginning of fiscal month or end of fiscal month.
Business Day	This sets the business day. Select the business day from the drop-down list If the business day is the beginning of fiscal month Business Day: 1st to 28th business day If the business day is the end of fiscal month Business Day: 1 to 28 business days prior to month end

Every Year

This sets a specific date or a specific day of the week of every year as the startup day. Click the Edit button and select the startup day from the Every Year setting window. When you select the **Add** button, the business day setting will be added to the list. The items below can be specified:

Date	Select any month and day from the drop-down list: - Month: January to December - Day: 1st to 31st (days)
Day	Select any day of the week according to the following items from the drop-down list: - Month: January to December - Day: Sunday to Saturday

Please check the following

This window creates Schedule Patterns common to automation operation process group. To register Schedule Patterns common in management server use the swrba_patternimport command.

A.1.15 Schedule Patterns Definition Information Window

Outline

You can use the Schedule Pattern Definition Information window to view Schedule Pattern settings.

Calling sequence or built-in sequence

Use the procedure below to display this window:

1. Login to the RBA console and select a process group.
2. Click the **Schedule Patterns** submenu of the Process Management tab.

3. Select a Schedule Pattern from the list.

The_1st_Business_... [X]

Schedule Pattern: The_1st_Business_Day

Edit Delete Close

Definition Information

Name: The_1st_Business_Day

Type: Every Month

Startup Days: The 1st day of every month
The 3rd day of every month
The 10th day of every month
The 21st day of every month

The following information is displayed.

Name

Name of Schedule Pattern.

Type

Type of the Schedule Pattern.

The following operations can also be performed.

Edit

Edit the details of Schedule Pattern.

Delete

This deletes a Schedule Pattern.

Close

This closes this window.

A.1.16 Process Status List window (Gantt Chart)

Outline

The execution schedule of the Automated Operation Process and the current status are displayed in a 25 hour time chart that contains the current time.

The execution schedule displays the schedule for the next 24 hours after the display start time. Color coding is used to indicate the current Automated Operation Process status. Specifying a past date displays the history information in a chart. If a time in the future is specified, a chart with schedule information is displayed.

In the Gantt chart, Automated Operation Processes that meet one of the following conditions are displayed.

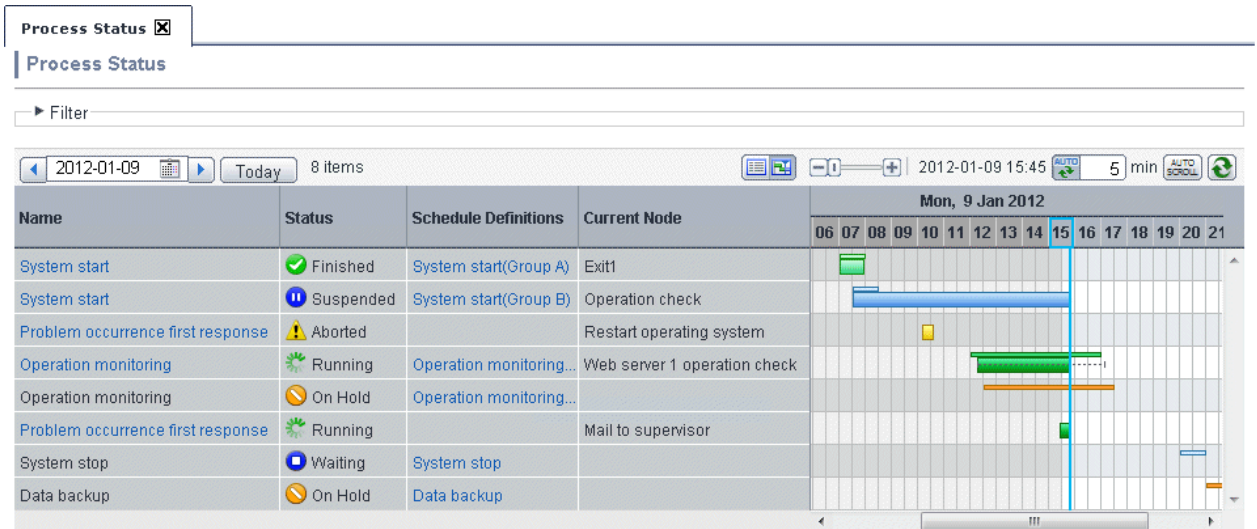
- Automated Operation Processes where the specified date falls between the start date/time and end date/time for the Automated Operation Process
- Automated Operation Processes where the specified date falls between the scheduled start date/time and scheduled end date/time for the Automated Operation Process
- Automated Operation Processes in the Running or Suspended state where the specified date falls before the date/time when the Automated Operation Process is predicted to end
- Automated Operation Processes that are executing after being started by specifying UDAs from a process definition

- Automated Operation Processes that are on hold

Calling sequence or built-in sequence

Use the following procedure to display this window:

1. Log in to the Web console and select a process group.
2. Click the **Process Status** submenu of the **Process Management** tab.



(Updates to the latest information)

The Gantt chart display updates to the latest information. The Gantt chart display the date when it is updated.

When today's server date changes to accommodate the date change time at the time of the update, the display date does not change automatically. The display time position (horizontal position) is displayed in the same position as prior to the update.

AutoRefresh

The Gantt chart display updates to the latest information automatically at the specified update interval. The default setting is set to automatically update at 5-minute intervals. A value from 5 to 20 (minutes) can be specified for the update interval. The automatic update only occurs when today's information is displayed. If the server date changes when the automatic update is enabled, today's information will be displayed automatically.

- Relationship between the **Process Status** tab and automatic updates
 - If you switch to another tab with the **Process Status** window displayed and the session timeout interval is reached, a session timeout will occur.
 - If you switch to another tab with the **Process Status** window displayed, and then, switch back before the automatic update time arrives, the previous **Process Status** window will be displayed and the automatic update will continue.

Example: Automatic updates start at 0:00 and are performed every 20 minutes

If you switch to another tab at 0:10, and then, switch back to the **Process Status** window at 0:15, the status as of 0:00 will be displayed. Additionally, the next update will occur at 0:20.

- If you switch to another tab with the **Process Status** window displayed, and then, switch back after the automatic update time arrives, the **Process Status** display will be updated and the automatic update will restart.

Example: Automatic updates start at 0:00 and are performed every 20 minutes

If you switch to another tab at 0:10, and then, switch back to the **Process Status** tab at 0:40, the status as of 0:40 will be displayed. Additionally, the next update will occur at 1:00.

Specify the date

Specify the date for the information to be displayed in the Gantt chart. The initial display is the information for today. The date selection can be specified using a date calendar. When **Today** is selected, the display will return to the display for today.

- If a past date is specified, the past schedule and performance information will be displayed in the Gantt chart. A date as far back as Jan 01 of the year before last can be selected.
- If a future date is specified, the future schedule information will be displayed in the Gantt chart. A date as far into the future as Dec 31 of the year after next can be selected.

AutoScroll

When the window is refreshed, the Gantt chart list will automatically scroll so that it is centered on the current time. In the default setting, automatic scrolling is enabled.

Vertically scroll	The display will be centered on the Automated Operation Process for which the start time or scheduled start time is closest to the current time.
Horizontally scroll	The time chart will be centered on the current time.

To scroll manually both horizontally and vertically, clear the **AutoScroll** setting. To use automatic scrolling again, select **AutoScroll**.

If the date changes when automatic scrolling is enabled, today is displayed automatically.

Column width

The Gantt chart time width changes in three phases using a slider.

Server time

The Management Server system time when the information was updated is displayed.

The following information is displayed in the list:

Name

This is the process instance name.

When the name is clicked, the process instance details will be displayed. If the user is not the process instance start user or the owner, an error message will be displayed when this name is selected. Additionally, the link will not be displayed if the process instance has a "never executed" status.

Status

This is the process instance status.

Status	Description
Exit	The Exit Node is reached and the Automated Operation Process finishes.
Running	The Automated Operation Process is running normally.
Waiting	The Automated Operation Process is scheduled and waiting to be executed.
Suspended	The Automated Operation Process has been paused. When a user performs the Suspended operation, the status changes to "paused". To change the status to "running" again, the user performs the Resume operation. In this state, only the Resume operation is possible. This operation is performed in the process instance details window.

Status	Description
Error	<p>An error has occurred in the Automated Operation Process. The status changes to "Error" in the following cases:</p> <ul style="list-style-type: none"> - When there is an error with the Java Action set for the process definition or node or with the value specified for the role of an Activity Node - When the Automated Operation Process cannot be executed because the necessary processes are not running on the Management Server <p>If this status occurs, take appropriate action by either checking the details of the process instance or by looking up the system log to find out the cause of the error.</p>
On Hold	The Schedule Definition has been put on hold. Even if the startup day/start time are satisfied, the Automated Operation Process will not be started until the user performs the OnHold cancellation operation.
Aborted	The Automated Operation Process has been canceled. When a user performs the Abort operation, the status changes to Abort . This operation is performed in the process instance details window.

Schedule Definitions

The Automated Operation Process start type is displayed.

Displayed Content	Description
Schedule Definitions name	<p>This is displayed if the UDA set for the Schedule Definition is used to start the Automated Operation Process.</p> <p>If the Schedule Definition name is clicked, the details window for the selected Schedule Definition is displayed.</p>
Blank	This is displayed if the Automated Operation Process is started from the process definition after the UDA was specified.

Current node

The process instance node position is displayed.

Status	Displayed node
Exit	Exit Node.
Running	Node being processed. If there are multiple current nodes, only the latest node (the node that was transitioned to last) will be displayed.
Waiting	None.
Suspended	Paused node.
Error	Node in which the error occurred.
On Hold	None.
Aborted	Canceled node.

Gantt chart.

The Automated Operation Process start performance and scheduled start are displayed in the Gantt chart. The displayed start time will change to the date change time. However, if the date change time setting is any value except 0 minutes, the displayed start time will change to 0 minutes.

If the scheduled start time and the actual start time are different, the predicted end time will be displayed as a dotted line on the performance line.

The schedule is displayed in the upper area of the chart, and the performance is displayed in the lower area of the chart.

The chart is displayed according to the status, as shown below:

Status	Schedule/Performance	Chart
Exit	Schedule line	Scheduled start date to scheduled end date (Green)
	Performance line	Start date to end date (Green)
Running	Schedule line	Scheduled start date to scheduled end date (Green)
	Performance line	Start date to current date (Green)
Waiting	Schedule line	Scheduled start date to scheduled end date (Blue)
	Performance line	None
Suspended	Schedule line	Scheduled start date to scheduled end date (Blue)
	Performance line	Start date to current date (Blue)
Error	Schedule line	Scheduled start date to scheduled end date (Red)
	Performance line	Start date/time to end date/time (Red)
On Hold	Schedule line	Scheduled start date/time to scheduled end date/time (Orange)
	Performance line	None
Aborted	Schedule line	Scheduled start date/time to scheduled end date/time (Yellow)
	Performance line	Start date/time to end date/time (Yellow)

Note that, when the mouse is pointed to a row in the displayed schedule or performance line of the Gantt chart, the following detail information will be displayed:

- Scheduled start time
- Scheduled end time
- Start time
- End time
- Exit Node

List View

- All process instances for the corresponding date in the process group will be displayed.
- The list is sorted into time series for the scheduled start date (or actual start date) and then displayed.
- The length of the performance part chart represents the actual execution time of the Automated Operation Process.
- The length of the scheduled start and currently running part chart represents the predicted execution time specified for the Schedule Definition. If a predicted execution time has not been specified, it represents the previous performance value. The scheduled execution time of the Automated Operation Process that is started first is displayed as 15 minutes.
- Automated Operation Processes started from the process definition are also displayed. In this case, however, the predicted end time will not be displayed with a dotted line.
- If a start interval has been set for the Schedule Definition start time, it will be displayed one row at a time for each process instance started.
- Subprocesses are not displayed in a list.

- If there is a large increase in the numbers of items displayed in a list, the following warning message will be displayed. Adjust the numbers of displayed items using the filter.
 - When the numbers of items displayed exceeds 500

"It will take a long time to display all {500} items - do you confirm the display operation? To restrict the number of items displayed, cancel the display operation and set up a filter."
 - When the numbers of items displayed exceeds 3000

"Only the first {3000} process instances will be displayed. If necessary, use a filter to restrict the number of process instances."
- When the Gantt chart is first displayed or when the **Today** button is clicked, the display will scroll horizontally so that it is centered on the current time. In all other cases, the horizontal scrolling position does not change.
- The 25 hour part display displays a connection to the following day. For this reason, the current time line will not be displayed even if it exists in the 25 hour part. Click the **Today** button to display the information for today.

A.1.17 Process Status List window (List)

Outline

The execution schedule and current status of the Automated Operation Process are displayed in a list.

The execution schedule shows the schedule for the next 24 hours after the display start time. Color and character coding are used to indicate the current Automated Operation Process status. The Automated Operation Processes displayed in the 24-hour schedule are the same as the Automated Operation Processes displayed in the Gantt chart.

Calling sequence or built-in sequence

Use the following procedure to display this window:

1. Log in to the Web console and select a process group.
2. Click the **Process Status** submenu of the **Process Management** tab.
3. Click the list display switch button (icon).

Name	ID	Status	Scheduled Start Time	Scheduled End Time	Start Time	End Time	Current Node
System start	101	Finished	2012-01-09 07:00	2012-01-09 08:00	2012-01-09 07:00	2012-01-09 07:56	Exit1
System start	102	Suspended	2012-01-09 07:30	2012-01-09 08:30	2012-01-09 07:30		Operation check
Problem occurrence first r...	103	Aborted			2012-01-09 10:07	2012-01-09 10:33	Restart operating
Operation monitoring	104	Running	2012-01-09 12:00	2012-01-09 17:00	2012-01-09 12:15		Web server 1 open
Operation monitoring		On Hold	2012-01-09 12:30	2012-01-09 17:30			
Problem occurrence first r...	106	Running			2012-01-09 15:24		Mail to supervisor
System stop		Waiting	2012-01-09 20:00	2012-01-09 21:00			
Data backup		On Hold	2012-01-09 21:00	2012-01-09 22:00			



(Updates to the latest information)

Update the information to the latest information.

AutoRefresh

The list display is updated automatically at the specified update interval. The default setting is set to automatically update at 5-minute intervals. A value from 5 to 20 (minutes) can be specified for the update interval. The automatic update only occurs when today's information is displayed. If the server date changes when automatic update is enabled, today is displayed automatically.

The relationship between the **Process Status** tab and automatic updates is the same as for Gantt charts.

Specify the date

Specify the date for the information to be displayed in the list. The initial display will display today's information. The date selection can be specified using a date calendar. When **Today** is selected, the display will return to the display for today.

- If a past date is specified, the past schedule and performance information will be displayed in the Gantt chart. A date as far back as Jan 01 of the year before last can be selected.
- If a future date is specified, the future schedule information will be displayed in the Gantt chart. A date as far into the future as Dec 31 of the year after next can be selected.

Server time

The Management Server system time when the information was updated is displayed.

The following information is displayed in the list:

Name

This is the process instance name.

ID

This is the process instance ID.

Status

This is the process instance status.

Exit	The Exit Node is reached and the Automated Operation Process finishes.
Running	The Automated Operation Process is running normally.
Waiting	The Automated Operation Process is scheduled and waiting to be executed.
Suspended	The Automated Operation Process has been paused. When a user performs the Suspended operation, the status changes to "paused". To change the status to "running" again, the user performs the Resume operation. In this state, only the Resume operation is possible. This operation is performed in the process instance details window.
Error	An error has occurred in the Automated Operation Process. This process has this status if the Java Action value that was set for the process definition or node, or the value that was set for the Activity Node role, is invalid.
On Hold	The Schedule Definition has been put on hold. Even if the startup day/start time are satisfied, the Automated Operation Process will not be started until the user performs the OnHold cancellation operation.
Aborted	The Automated Operation Process has been canceled. When a user performs the Abort operation, the status changes to Abort This operation is performed in the process instance details window.

Scheduled Start Time

The Automated Operation Process scheduled start time is displayed in the format yyyy-MM-dd hh:mm.

Scheduled End Time

The Automated Operation Process scheduled end time is displayed in the format yyyy-MM-dd hh:mm.

Start Time

The Automated Operation Process start date is displayed in the format yyyy-MM-dd hh:mm.

End Time

The Automated Operation Process end time is displayed in the format yyyy-MM-dd hh:mm.

Current node

The process instance node position is displayed.

Status	Displayed node
Exit	Exit Node.
Running	Node being processed. If there are multiple current nodes, only the latest node (the node that was transitioned to last) will be displayed.
Waiting	None.
Suspended	Paused node.
Error	Node in which the error occurred.
On Hold	None.
Aborted	Canceled node.

Process Definitions

This is the process definition name.

Schedule Definitions

The Automated Operation Process start type is displayed.

Schedule Definitions name	This is displayed if the UDA set for the Schedule Definition is used to start the Automated Operation Process.
Blank	This is displayed if the Automated Operation Process is started from the process definition after the UDA was specified.

List View

- The initial display is sorted into time series for the scheduled start time (or actual start time) and then displayed.
- Automated Operation Processes started from the process definition are also displayed.
- Subprocesses are not displayed in a list.

A.1.18 Process Status List window (Filter)

Outline

Filtering is performed for the process status list window so that the information that is displayed can be limited.

Calling sequence or built-in sequence

Use the following procedure to display this window:

1. Log in to the Web console and select a process group.
2. Click the **Process Status** submenu of the **Process Management** tab.
3. Select **Filter**.

▼ Filter

Name:

State:

Process Definition:

Schedule Definition:

Schedule Definition owner:

Memo:

Scheduled start time range/Start time range: From To

The items shown below can be set for the filtering information. When the **Apply** button is clicked, filtering is executed.

Name

This is the process instance name.

For this item, filtering is performed using partial match.

State

This is the process instance status. It is selected from the drop-down list.

Process Definition

This is the name of the process definition that uses the Schedule Definition. It is selected from the drop-down list.

Schedule Definition

This is the Schedule Definition name. It is selected from the drop-down list.

Schedule Definition owner

This is the Schedule Definition owner.

For this item, filtering is performed using exact match.

Memo

This is the description set for the Schedule Definition.

For this item, filtering is performed using partial match.

Scheduled start time range/Start time range

Specify the displayed time range. In the specified time range, Automated Operation Processes with the scheduled start date/actual start date are displayed.

Specify the start and end times for the range. Only "hours" for the start and end times can be specified. Specify the time range from date change time to date change time + 23 hours. The date change time cannot be crossed.

A.1.19 Scheduled Operation window

Outline

This displays the scheduled operations for the Schedule Definition. The startup day for the Schedule Definition in the process group can be checked in list format for any month.

Calling sequence or built-in sequence

Use the following procedure to display this window:

1. Log in to the Web console and select a process group.
2. Click the **Schedule Definitions** submenu of the **Process Management** tab.
3. Click the **Operation schedule** button in the list of Schedule Definitions window.

Schedule Definitions

Operation Schedule

Filter

Jan 2012 This month 1 - 6 of 6 items Page 1 / 1 Show: 10 items

Name	ID	Jan 2012																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
		Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th
System start(Group A)	101																										
System start(Group B)	102																										
Operation monitoring(Group A)	104																										
Operation monitoring(Group B)	105																										
System stop	107																										
Data backup	108																										

Edit Startup Days

In the scheduled operation window, the startup day information and holiday information set for the Schedule Definition can be checked for any month.

The following information is displayed in the list:

Name

This is the Schedule Definition name.

ID

This is the Schedule Definition ID.

Specify the year and month

Initially, this displays the scheduled operations for the current month. To display scheduled operations for a specific month and year select the year and month from the drop-down list. A 3-year range from Jan 01 of this year to Dec 31 of the year after next can be specified.



This displays the list of scheduled operations for the Schedule Definition.

Operation schedule

The startup day information set for the Schedule Definition registered in the process group is displayed. The displayed range is 3 months, the specified month, the previous month, and the following month.

The meaning of the display in each startup day frame is as follows:

Status	Description
Blue bar	The Automated Operation Process startup day.
/	The days not entered in the operation period range.
Background - red	The holiday specified in each Schedule Definition.
Background - ash	A past date.
Blue frame (frame around date)	The current date (today).

Filter

This is the same for the list of Schedule Definitions window.

Turn the pages

This is the same function for the list of Schedule Definitions window.

Edit startup days

The startup day edit window used for editing is displayed.

The Schedule Definition that is displayed is the same Schedule Definition as displayed in the current page.

In this window, multiple specific day settings are saved in batch.

The meaning of the display in each startup day frame is the same as for the list of Schedule Definitions window, and the following are also displayed:

Black frame	The specific day.
-------------	-------------------

List View

In this list, the Schedule Definitions for which a startup day has not been set are also displayed. When the specific day is added in **Edit startup days**, the Schedule Definition startup day basic information changes to **Only Specific Date** and the specific day is added.

A.2 Managing Operation Component Execution History

This section describes the operation component execution history management window.

A.2.1 Window List

- [A.2.2 Operation Component Execution Status/Execution Results Confirmation Window](#)
- [A.2.3 Filter Execution Results Confirmation window](#)

A.2.2 Operation Component Execution Status/Execution Results Confirmation Window

Outline

The operation component execution status and execution results are displayed.

For each item on the screen, the display content is updated according to the execution status of the operation component.

This means that the content displayed in the window may change (immediately after the operation component has started executing or midway through execution), depending on the content of the definitions for the Automated Operation Process.

Calling sequence or built-in sequence

Use the following procedure to display this window:

1. Display the **BPMN** window of the process instance details window.
2. Right-click the operation component node for which the execution status or results are to be checked, then select **Show Custom Messages**.
3. Click the link that is displayed in the **Custom Messages** dialog box.

Operation component execution history : SWRBA_FILE_READ1

All 1 Cases | 1/1 pages | pages

Input information	username	
	password	
	execusername	
	execpassword	
	timeout	
	retry	
	retry_interval	
Execution results	message	The operation component was successful.
	file_value	<pre><systems> <system name="System_A" mail="user1@example.com"> <servers> <server ipaddress="192.168.1.10"/> <server ipaddress="192.168.1.20"/> </servers> </system> <system name="System_B" mail="user2@example.com"> <servers> <server ipaddress="192.168.2.10"/> </servers> </system></pre>
	returnCode	0
Output information	Variable1	"192.168.1.10","192.168.1.20"

Number of times executed

This is the number of times the operation component node is executed.

Activity Name

This is the operation component node name.

Start time

This is the operation component start time.

End time

This is the operation component end time.

Execution status

This is the execution status for the operation component.

Refer to *Messages Displayed in the Custom Messages* in the *Systemwalker Runbook Automation Message Guide* for information on the messages that are displayed.

Selection results

The transition destination arrow name for the results of the executed operation component is displayed.

Input Data

This is the operation component input information.

The value that is input to the operation component is displayed for each operation component parameter.

If more than 10,000 characters of data have been specified, only the first 10,000 characters will be displayed.

In this case, the following message will be displayed below the parameter name.

"All characters after and including the 10,001st are omitted."

Immediately after an operation component starts executing, the following values will be displayed for each input type as initial display values.

- **Value (fixed):** *Value specified using Systemwalker Runbook Automation Studio*
- **Variable (uda):** *UDA name*
- **Execution results (result):** *node name: variable name*

If the values of variables, execution results, and variable parameters have been specified, these values will be replaced according to the execution status of the operation component.

Values that reflect the results of this replacement processing will be displayed in the display area on the window, according to the execution status of the operation component.

Execution status

These are the execution results for the operation component. A value is displayed for each set of operation component execution results.

This item is displayed when the operation component registered when the product was installed is executed.

If more than 10,000 characters of data have been specified, only the first 10,000 characters will be displayed.

In this case, the following message will be displayed below the execution result name.

"All characters after and including the 10,001st are omitted."

Output Data

The information that is output to the UDA is displayed for each UDA.

Additionally, if a filter has been set for the UDA, the output information can be clicked to display the filter execution results confirmation window.

If more than 10,000 characters of data have been specified, only the first 10,000 characters will be displayed.

In this case, the following message will be displayed below the UDA name.

"All characters after and including the 10,001st are omitted."

A.2.3 Filter Execution Results Confirmation window

Outline

The filter execution results are displayed.

Calling sequence or built-in sequence

This is displayed by clicking **Output Data** in the operation component execution status and execution results confirmation window.

Output information for filter : SWRBA_FILE_READ1

All 1 Cases | 1/1 pages | pages

Output destination for filter		Variable1
Input information	file_value	<pre><systems> <system name="System_A" mail="user1@example.com"> <servers> <server ipaddress="192.168.1.10"/> <server ipaddress="192.168.1.20"/> </servers> </system> <system name="System_B" mail="user2@example.com"> <servers> <server ipaddress="192.168.2.10"/> </servers> </system></pre>
Output information	Extract XML attribute	"192.168.1.10","192.168.1.20"

Destination

The name of the UDA that stores the filter execution results is displayed.

Input Data

The information that is input to the filter is displayed for each set of operation component execution results.

If more than 10,000 characters of data have been specified, only the first 10,000 characters will be displayed.

In this case, the following message will be displayed below the execution result name.

"All characters after and including the 10,001st are omitted."

Output Data

The filter execution results are displayed for each filter and in the order in which the filters were executed.

The display content will be updated as the filtering progresses.

Note that the filter output information that was executed last will be set in the output destination UDA.

If more than 10,000 characters of data have been specified, only the first 10,000 characters will be displayed.