FUJITSU Software
Systemwalker Operation Manager

How-To Guide

UNIX/Windows(R)

Preface

Purpose of This Document

This document covers the functions of Systemwalker Operation Manager according to user objectives to enable the user to easily reference the settings and procedure required to achieve a specific objective. This document is useful not only as a task-oriented manual but also provides helpful tips for using Systemwalker Operation Manager. The information in this document pertains to Systemwalker Operation Manager V13.0.0 and later.

Intended Readers

This document is intended for those who install or design operations for Systemwalker Operation Manager, and those who use Systemwalker Operation Manager for scheduling, operating, monitoring, and managing jobs.

This document assumes you are familiar with how to work with operating systems and GUIs.

How to Read This Document

This document is organized according to procedures so that the user can achieve a specific objective by reading just the section pertaining to the objective indicated in the section title. If required, the user should also read the sections noted in "References" in each section.

Abbreviations and Generic Terms Used

- The term "Windows Server 2012 R2" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2012 R2 Foundation (x64)

    - Microsoft(R) Windows Server(R) 2012 R2 Standard (x64)

    - Microsoft(R) Windows Server(R) 2012 R2 Datacenter (x64)

- The term "Windows Server 2012" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2012 Foundation (x64)

    - Microsoft(R) Windows Server(R) 2012 Standard (x64)

    - Microsoft(R) Windows Server(R) 2012 Datacenter (x64)

    - Microsoft(R) Windows Server(R) 2012 R2 Foundation (x64)

    - Microsoft(R) Windows Server(R) 2012 R2 Standard (x64)

    - Microsoft(R) Windows Server(R) 2012 R2 Datacenter (x64)

- The term "Windows Server 2008 R2" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2008 R2 Foundation

    - Microsoft(R) Windows Server(R) 2008 R2 Standard

    - Microsoft(R) Windows Server(R) 2008 R2 Enterprise

    - Microsoft(R) Windows Server(R) 2008 R2 Datacenter

- The term "Windows Server 2008 Foundation" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2008 R2 Foundation

    - Microsoft(R) Windows Server(R) 2008 Foundation

- The term "Server Core" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2012 Standard Server Core

    - Microsoft(R) Windows Server(R) 2012 Datacenter Server Core

- Microsoft(R) Windows Server(R) 2008 Standard Server Core

- Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V(TM) Server Core

- Microsoft(R) Windows Server(R) 2008 Enterprise Server Core

- Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V(TM) Server Core

- Microsoft(R) Windows Server(R) 2008 Datacenter Server Core

- Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V(TM) Server Core

- The term "Windows Server 2008 STD" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2008 Standard (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V(TM)

- The term "Windows Server 2008 DTC" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2008 Datacenter (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V(TM)

- The term "Windows Server 2008 EE" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2008 Enterprise (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V(TM)

- The term "Windows Server 2008" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2008 Standard (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 Enterprise (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 Datacenter (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 Foundation (x64)

    - Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V(TM) (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V(TM) (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V(TM) (x86)/(x64)

    - Microsoft(R) Windows Server(R) 2008 R2 Foundation (x64)

    - 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)

- The term "Windows Server 2003 STD" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition

    - Microsoft(R) Windows Server(R) 2003 R2, Standard Edition

    - Microsoft(R) Windows Server(R) 2003, Standard x64 Edition

    - Microsoft(R) Windows Server(R) 2003, Standard Edition

- The term "Windows Server 2003 DTC" is used to refer to all of the following products:

    - Microsoft(R) Windows Server(R) 2003 R2, Datacenter x64 Edition

    - Microsoft(R) Windows Server(R) 2003 R2, Datacenter Edition

    - Microsoft(R) Windows Server(R) 2003, Datacenter x64 Edition

    - Microsoft(R) Windows Server(R) 2003, Datacenter Edition for Itanium-based Systems

    - Microsoft(R) Windows Server(R) 2003, Datacenter Edition

- The term "Windows Server 2003 EE" is used to refer to all of the following products:

  - Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition

  - Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition

  - Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition

  - Microsoft(R) Windows Server(R) 2003, Enterprise Edition for Itanium-based Systems

  - Microsoft(R) Windows Server(R) 2003, Enterprise Edition

- The term "Windows(R) 2000" is used to refer to all of the following products:

  - Microsoft(R) Windows(R) 2000 Professional

  - Microsoft(R) Windows(R) 2000 Server

  - Microsoft(R) Windows(R) 2000 Advanced Server

  - Microsoft(R) Windows(R) 2000 Datacenter Server

- The term "Windows NT(R)" is used to refer to all of the following products:

  - Microsoft(R) Windows NT(R) Server network operating system Version 4.0

  - Microsoft(R) Windows NT(R) Workstation operating system Version 4.0

- The term "Windows(R) 8.1" is used to refer to all of the following products:

  - Windows(R) 8.1 (x86)

  - Windows(R) 8.1 Pro (x86)

  - Windows(R) 8.1 Enterprise (x86)

  - Windows(R) 8.1 (x64)

  - Windows(R) 8.1 Pro (x64)

  - Windows(R) 8.1 Enterprise (x64)

- The term "Windows(R) 8" is used to refer to all of the following products:

  - Windows(R) 8 (x86)

  - Windows(R) 8 Pro (x86)

  - Windows(R) 8 Enterprise (x86)

  - Windows(R) 8 (x64)

  - Windows(R) 8 Pro (x64)

  - Windows(R) 8 Enterprise (x64)

  - Windows(R) 8.1 (x86)

  - Windows(R) 8.1 Pro (x86)

  - Windows(R) 8.1 Enterprise (x86)

  - Windows(R) 8.1 (x64)

  - Windows(R) 8.1 Pro (x64)

  - Windows(R) 8.1 Enterprise (x64)

- The term "Windows(R) 7" is used to refer to all of the following products:

  - Windows(R) 7 Home Premium (x86)

  - Windows(R) 7 Professional (x86)

  - Windows(R) 7 Enterprise (x86)

- Windows(R) 7 Ultimate (x86)

- Windows(R) 7 Home Premium (x64)

- Windows(R) 7 Professional (x64)

- Windows(R) 7 Enterprise (x64)

- Windows(R) 7 Ultimate (x64)

- The term "Windows Vista(R)" is used to refer to all of the following products:

  - Windows Vista(R) Home Basic (x86)

  - Windows Vista(R) Home Premium (x86)

  - Windows Vista(R) Business (x86)

  - Windows Vista(R) Enterprise (x86)

  - Windows Vista(R) Ultimate (x86)

  - Windows Vista(R) Home Basic (x64)

  - Windows Vista(R) Home Premium (x64)

  - Windows Vista(R) Business (x64)

  - Windows Vista(R) Enterprise (x64)

  - Windows Vista(R) Ultimate (x64)

- The term "Windows(R) XP" is used to refer to all of the following products:

  - Microsoft(R) Windows(R) XP Professional x64 Edition

  - Microsoft(R) Windows(R) XP Professional

  - Microsoft(R) Windows(R) XP Home Edition

- The term "Windows(R) Me" is used to refer to Microsoft(R) Windows(R) Millennium Edition.

- The term "Windows(R) 98" is used to refer to Microsoft(R) Windows(R) 98 operating system.

- The following product is abbreviated as "Windows(R) 2000 Server".

  - Microsoft(R) Windows(R) 2000 Server operating system

- Windows Internet Explorer(R) is abbreviated as "Internet Explorer".

- Versions of Systemwalker Operation Manager that run on the following operating systems are referred to as "Windows versions of Systemwalker Operation Manager" or simply "Windows versions":

  - Windows

  - Windows that supports 64-bit architecture other than Itanium

- Articles specific to the version of Systemwalker Operation Manager that runs on Windows that supports 32-bit architecture are referred to as "Windows x86 version".

- Articles specific to the version of Systemwalker Operation Manager that runs on Windows that supports Itanium are referred to as "Windows for Itanium version".

- Articles specific to the version of Systemwalker Operation Manager that runs on Windows that supports 64-bit architecture other than Itanium are referred to as "Windows x64 version".

- Windows(R) 2000, Windows Server 2003 STD, Windows Server 2003 DTC, Windows Server 2003 EE, Windows Server 2008, Windows Server 2008 EE, Windows Server 2008 DTC, Windows Server 2008 STD, Windows Server 2008 Foundation, Windows Server 2008 R2, Server Core, Windows Server 2012, and Windows Server 2012 R2 may be abbreviated as "Windows servers".

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

- Versions of Systemwalker Operation Manager that run on Solaris are referred to as "Solaris versions of Systemwalker Operation Manager" or "Solaris versions".

- Articles specific to the version of Systemwalker Operation Manager that runs on 32-bit versions of Solaris are referred to as "Solaris 32-bit version".

- Articles specific to the version of Systemwalker Operation Manager that runs on 64-bit versions of Solaris are referred to as "Solaris 64-bit version".

- Versions of Systemwalker Operation Manager that run on UXP/DS are referred to as "DS versions of Systemwalker Operation Manager" or "DS versions".

- Versions of Systemwalker Operation Manager that run on HP-UX are referred to as "HP-UX versions of Systemwalker Operation Manager" or "HP-UX versions".

- Versions of Systemwalker Operation Manager that run on AIX are referred to as "AIX versions of Systemwalker Operation Manager" or "AIX versions".

- Versions of Systemwalker Operation Manager that run on the following operating systems are referred to as "Linux versions of Systemwalker Operation Manager" or "Linux versions".

    - Linux

    - Linux that supports 64-bit architecture other than Itanium

- Articles specific to the version of Systemwalker Operation Manager that runs on Linux that supports 32-bit architecture are referred to as "Linux x86 version".

- Articles specific to the version of Systemwalker Operation Manager that runs on Linux that supports Itanium are referred to as "Linux for Itanium version".

- Articles specific to the version of Systemwalker Operation Manager that runs on Linux that supports 64-bit architecture other than Itanium are referred to as "Linux x64 version".

- Solaris, DS, HP-UX, AIX, Linux, and Linux for Itanium versions of Systemwalker Operation Manager are referred to collectively as "UNIX versions of Systemwalker Operation Manager" or simply "UNIX versions".

- Solaris, HP-UX, AIX, Linux, and UXP/DS may be referred to as "UNIX servers".

- Systemwalker Operation Manager Standard Edition may be abbreviated as "SE".

- Systemwalker Operation Manager Enterprise Edition may be abbreviated as "EE".

- Standard Edition may be abbreviated as "SE" and Enterprise Edition may be abbreviated as "EE".

- BrightStor(R) ARCserve(R) Backup for Windows is abbreviated as "ARCserve".

- Microsoft(R)-Mail that is provided as a standard feature with Windows NT(R) is abbreviated as "MS-Mail".

Abbreviations of Manual Titles

Product names and versions are sometimes omitted from the official names used in Systemwalker Operation Manager manuals referenced in this document.

For example, the *Systemwalker Operation Manager Technical Guide* is referred to as the "Technical Guide".

Symbols Used in Commands and JCL

The symbols used in examples of commands and JCL are explained below.

Example

[PARA={a|b|c}...]

Symbol conventions

Symbol	Explanation
[ ]	Items enclosed in square brackets are optional.
{ }	One of the alternative items enclosed in braces must be selected.
_	When all optional items enclosed in square brackets "[]" are omitted, the default value indicated by an underscore "_" is used.
|	One of the items separated by vertical bars must be selected.
...	The item immediately preceding the ellipsis (...) can be specified repeatedly.

Information Specific to Windows Versions or UNIX Versions

This document provides information that is common to both Windows versions and UNIX versions. Information relevant only to Windows versions or UNIX versions is distinguished from common information as described below.

Title [Windows versions]

All the information provided under the section title and its subheadings is specific to Windows versions.

Title [UNIX versions]

All the information provided under the section title and its subheadings is specific to UNIX versions.

If the information differs between the Windows and UNIX versions, the description for each version will contain wording such as "On Windows versions," or "On UNIX versions," to identify it as relating to a particular version.

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Contents

Chapter 1 Design

1.1 I Want to Start a Job Net on a Particular Day Each Week

This section describes how to set job net startup days such as the following:

- Startup days: Every Monday to Friday, first day of every month

The procedure below describes how to register a startup day pattern such as the one above as a schedule pattern named "Sales1" and set it as a job net startup day. Schedule patterns are convenient because they can be reused when you need to set the same type of startup day pattern for another job net.

The procedure on V13.3.1 or earlier is different from the procedure on V13.8.0 or later. Refer to the relevant procedure.

Procedure (V13.3.1 or earlier)

The procedure for setting startup days using a schedule pattern is as follows:

a. Create a schedule pattern.

b. Set the job net startup days (use the schedule pattern created in step a).

a. **Create a schedule pattern**.

   1. Display the **Schedule Pattern Information** window

       In the **Systemwalker Operation Manager** window, select **Tools** >> **Schedule pattern**. The **Select Schedule Pattern Information** window will be displayed. In the **Select Schedule Pattern Information** window, click **New**.

   2. Specify the startup days.

       Set startup days in the **New Schedule Pattern Information** window.

       1. To enable the startup days for all months, select **Monthly** in the middle of the window.

       2. Click the "M" day of the week field in the target month. Then, while pressing down the Shift key, click the "F" day of the week field in the same row (selects a range of days). Right-click a selected date and select **Startup Days**. You can use this procedure to select the days from Monday to Friday for every week in every month as startup days.

       3. Click "1" in the target month. Right-click the selected "1" and select **Startup Days**.

   3. Register the schedule pattern.

       Select **File** >> **Save As**. The **Save As** window will be displayed.

       Enter "Sales1" for **Schedule pattern name** and click **Save**.

This completes the creation of the "Sales1" schedule pattern, with Monday to Friday of each month and the first day of each month set as startup days.

b. **Set the job net startup days**.

   1. Display the **Startup days : Schedule pattern** tab of the **Job Net Properties** window.

       Select the job net for which you want to set startup days, then right-click and select **Properties**. In the **Job Net Properties** window that is displayed, click the **Startup days** tab and then **Schedule pattern** under **Another base job net**.
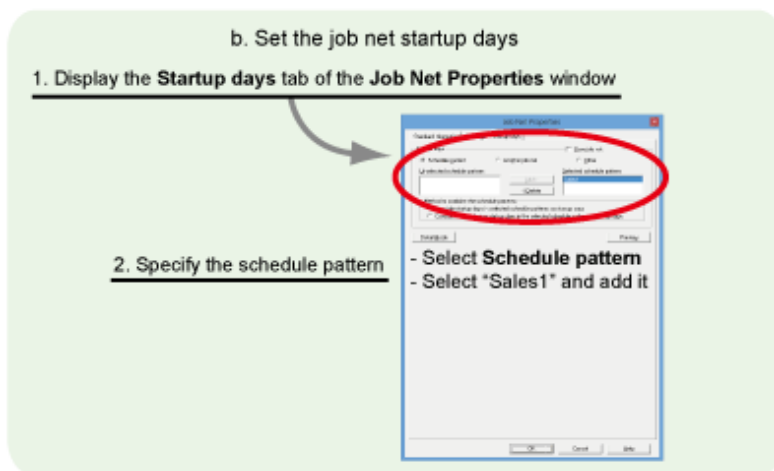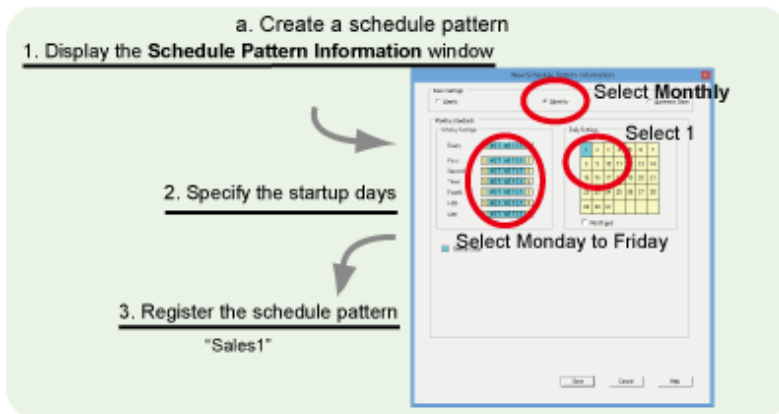
   2. Specify the schedule pattern

       In the **Job Net Properties** window, click the **Startup days : Schedule pattern** tab and specify the following value:

       - Select "Sales1" under **Schedule pattern**.

Procedure (V13.8.0 or later)

The procedure for setting startup days using a schedule pattern is as follows:

a. Create a schedule pattern.

b. Set the job net startup days (use the schedule pattern created in step a).

a. Create a schedule pattern
1. Display the **Schedule Pattern Information** window

2. Specify the startup days

Select **Monthly**

Select 1

Select Monday to Friday

3. Register the schedule pattern
"Sales1"

b. Set the job net startup days
1. Display the **Startup days** tab of the **Job Net Properties** window

2. Specify the schedule pattern

- Select **Schedule pattern**
- Select "Sales1" and add it

c. **Create a schedule pattern**.

   1. Display the **Schedule Pattern Information** window.

      In the **Systemwalker Operation Manager** window, select **Tools** >> **Schedule pattern**. The **Select Schedule Pattern Information** window will be displayed. In the **Select Schedule Pattern Information** window, click **New**.

   2. Specify the startup days.

      Set startup days in the **New Schedule Pattern Information** window.

         1. To enable the startup days for all months, select **Monthly** under **Basis settings**.

         2. For **Weekly Settings** under **Monthly standards**, click Monday to Friday next to **Every**. (Specifying weekdays next to **Every** specifies those days for every week.)

         3. For **Daily settings**, click "1".

   3. Register the schedule pattern.

      Select **File** >> **Save**. The **Save As** window will be displayed.

      Enter "Sales1" for **Schedule pattern name** and click **Save**.

This completes the creation of the "Sales1" schedule pattern, with Monday to Friday of each month and the first day of each month set as startup days.

d. **Set the job net startup days.**

1. Display the **Startup days** tab of the **Job Net Properties** window.

   Select the job net for which you want to set startup days, then right-click and select **Properties**. In the **Job Net Properties** window that is displayed, click the **Startup days** tab.

2. Specify the schedule pattern.

   In the **Job Net Properties** window that is displayed, click the **Startup days** tab and specify the following values:

   - Select **Schedule pattern**.

   - Select "Sales1" from the **Unselected schedule pattern** list and click **Add** ("Sales1" is displayed in the **Selected schedule pattern** list).

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Configure the basic settings for startup days in the Job Net Properties window

Several windows allow you to set the startup days for job nets, as listed below. However, the set startup days are treated differently depending on which window was used.

Only startup days set in the **Startup days** tab of the **Job Net Properties** window can be set as semipermanent startup days.

To individually set startup days that cannot be formed into a pattern (for example, if you want to set only one particular day such as December 20 for startup), use the **Startup Days** window or **Application Plan** window. However, these windows are intended only for fine tuning and do not allow you to set semipermanent startup days.

Windows for startup days	Usage	Set startup days
Job Net Properties window (**Startup days** tab)	For setting basic startup days	Set semipermanently
Startup Days window	For confirming and setting (fine tuning) startup days per job net	Treated as exception days (*1)
Application Plan window	For confirming and setting (fine tuning) startup days for all job nets at one time	Treated as exception days (*1)

*1: What are exception days?

- Exception days are startup days set in the **Startup Days** window or **Application Plan** window. They are sometimes cleared when you change the calendar or startup days. Refer to "1.2 I Want to Fine Tune Startup Days" for details.

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Reference:

"Job Net Information Settings" and "Registering Startup Days" in the *User's Guide*

1.2 I Want to Fine Tune Startup Days

Use the following windows to fine tune startup days:

- **Startup Days** window

- **Application Plan** window

The scenarios for using each window are as follows:

Startup Days window	When you want to confirm and fine tune the startup days per job net.

Application Plan window	When you want to confirm and fine tune the startup days for all job nets at one time.

Startup days set in the **Startup Days** window or **Application Plan** window are treated as "**exception days**." Note that exception days are sometimes cleared when you change the calendar or startup days.
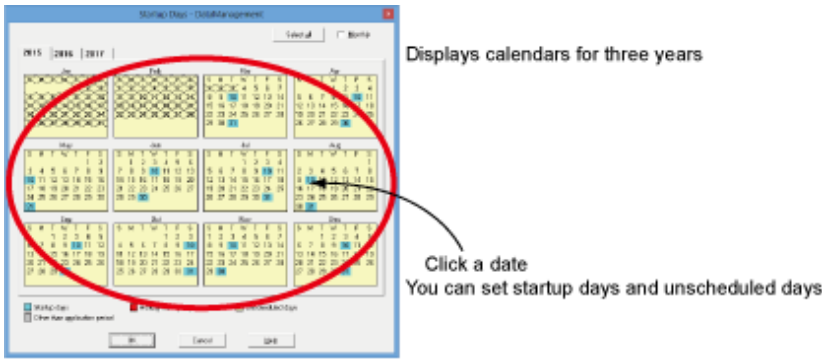
Startup Days window

This window enables you to specify any job net and check its startup days in calendar format. You can click a date on the calendar and set it as a startup day or unscheduled day.

However, you can enter settings only for a maximum of three years, including the current year.

For example, if you are setting startup days in March 2015, you can set startup days only for the following years:

- 2015 (the current year)

- 2016 (the next year)

- 2017 (the year following)

Procedure

1. Display the **Startup Days** window.

   Use either of the following operations to display the **Startup Days** window:

   - In the **Job Selection** window, select the job net, then right-click and select **Startup days**.

   - In the **Job Net Management** window, select the job net, then right-click and select **Startup days**.

2. Fine tune the startup days.

   In the **Startup Days** window, select the date or day of the week you want to change and right-click. Select **Startup days** or **Unscheduled day** (you can also switch between **Startup days** and **Unscheduled day** by double-clicking a date or day).

Application Plan window

This window displays a list where you can check and fine tune the startup schedule for all registered job nets. You can click a date corresponding to the job net you want to change and set **Execution** or **Unscheduled**.

This window enables you to fine tune days when the load is high while comparing your selected job net with the schedules for other job nets. You can also fine tune the job net while checking the overall operation schedule.

Displays a list of job net startup days for the specified year and month

Click a day for the job net and set it as a startup day or unscheduled day

Procedure

1. Display the **Application Plan** window.

   Select a project in the **Job Selection** window, and select **Tools** >> **Application Plan**.

2. Fine tune the startup days.

   In the **Application Plan** window, click the date of the job net you want to change to set it as a startup day or unscheduled day.

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Cases where exception days are cleared and cases where clearing of exception days can be halted

Startup days individually set in the **Startup Days** window or **Application Plan** window are referred to as "exception days". The following operations clear exception days (the startup days of the selected job net are re-created).

However, in the cases marked "Y" in the "Halt recreation" column of the following table, you can use the halt recreation of startup days function to halt the recreation of startup days and the clearing of exception days.

Cases where exception days are cleared	Halt recreation
When a holiday calendar being referenced by a job net is changed. (*1)	Y
When a schedule pattern being referenced by a job net is changed.	Y
When any of the following tabs in the **Job Net Properties** window is changed (including cases where the job net control statement is used and changes are made to the relevant operands): - **Startup days** tab - **Calendar** tab - **Operation period** tab	N
When a job net references another base job net and the startup days of the base job net are changed.	N
When **Calendar** only is distributed as policy data.	Y

```
*1: To prevent exception days from being cleared, you can use the halt recreation of startup days
function.
Alternatively, specify a reschedule date to halt recreation until the reschedule date.
Refer to "1.3 I Want to Reflect New Holiday Information only in Job Net Startup Days from a Particular
Date" for details.
```

To halt recreation of startup days

Use the halt recreation of startup days function to halt the recreation of startup days. By default, nothing is selected under **Halt recreation of startup days**.

1. Display the **Define Jobscheduler Startup Parameters** window and click the **Use function2** tab.

   In the **Systemwalker Operation Manager Environment Setup** window, click **Startup parameter**. In the **Define Jobscheduler Startup Parameters** window, click the **Use function2** tab.

2. Specify **Halt recreation of startup days**.

   In the **Use function2** tab of the **Define Jobscheduler Startup Parameters** window, select **Halt recreation of startup days**.

3. Restart the Jobscheduler services and daemons.

> **Reference:**
>
> "Registering Startup Days" and "Customizing Registered Startup Days" in the *User's Guide*

1.3 I Want to Reflect New Holiday Information only in Job Net Startup Days from a Particular Date

This section assumes that holiday calendar A such as the one below has been created, and that job net A references it:

Calendar A	Current: Daily working days Change the 20th of each month to a holiday (change date: March 15)
Job net A	- Refer to calendar A - Days specified as holidays in the calendar are not scheduled

When calendar A is changed (March 15), you may want to reflect new holiday information in job net A (which references calendar A) from April 1 instead of immediately. In this case, specify a reschedule date when changing calendar A.

Specifying April 1 as the reschedule date allows the startup days for job net A (which references calendar A) to remain unchanged until the end of March, so jobs will be started every day. From the reschedule date of April 1, job net A will reference the new holiday calendar A, so the 20th day of every month will be unscheduled.
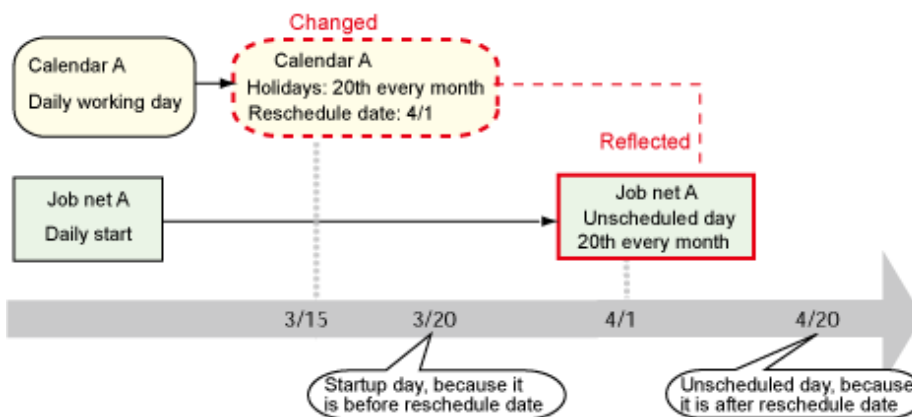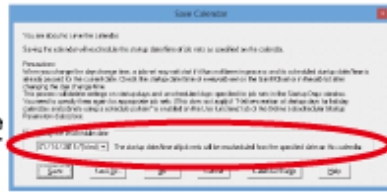

The new holiday information for calendar A will not be reflected during March. Therefore, even though March 20 is a holiday on the calendar, it is a startup day for the job net.

Procedure

1. Save the new calendar

2. Set the **reschedule date**

Select Specify the **reschedule date**
Specify April 1

Information
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If other job nets are also referencing calendar A

The reschedule date is effective for all existing job nets referencing calendar A when the calendar is saved. It is recommended that you confirm beforehand which job nets will be affected.

How do I confirm affected job nets?

Before saving the new holiday calendar, display the **Add Calendar** window, select the calendar to be changed, then right-click and select **Status**. The **Calendar Status** window will be displayed. This window displays a list of the job nets referencing the holiday calendar to be changed, so you can confirm the affected job nets.

Select the calendar to be changed,
then select **File** or right-click and select **Status**
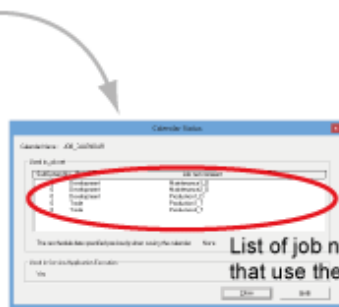
List of job nets
that use the calendar

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1. Save the new calendar.

   After changing holiday information for calendar A, display the **Add Calendar** window, then select **File** >> **Save**.

2. Set the reschedule date.

   In the **Save Calendar** window, select **Specify the reschedule date**, specify the date (April 1) when holiday information for calendar A is to be reflected in the startup days for job net A, and click **Save** to save the date.

> **Reference:**
>
> "Setting the Calendar Reschedule Date" in the *User's Guide*

1.4 I Want to Schedule Each Job Net to Wait for the Preceding Job Net to End before Starting

Systemwalker Operation Manager supports the following methods for scheduling the sequence of individual job nets so that a job net waits for the preceding job net to end before starting:

- Job net layering

- Message event linking

- Job net grouping

P Point

Job net layering

You can register job nets (child job nets) in another job net (parent job net). You can use the flow to visually schedule registered child job nets in a parent job net. This means that, by simply drawing a line to connect the job nets in sequence, you can create a schedule where a job net waits for the preceding job net to end before it starts.
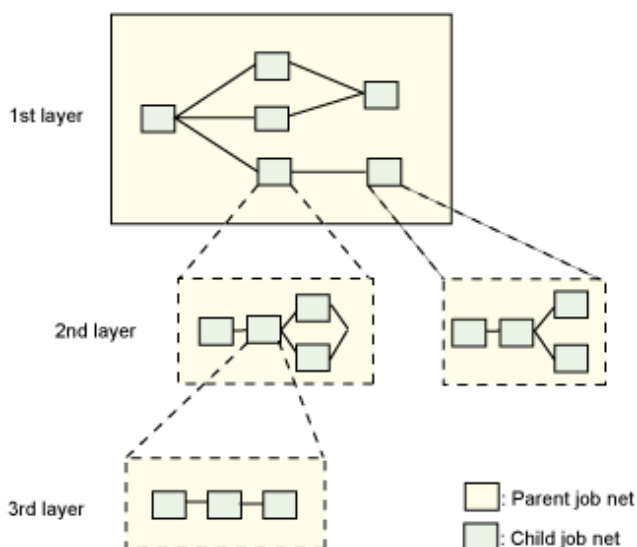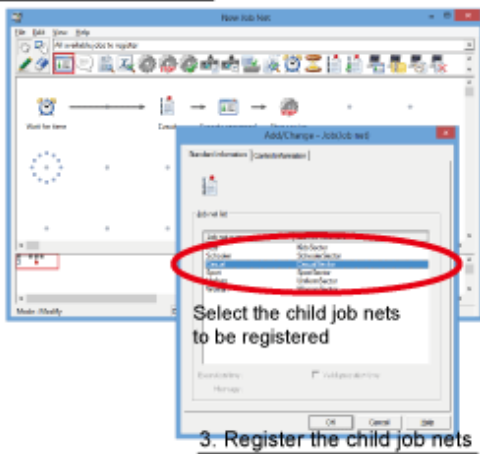

Execution condition for the succeeding job net

End of the preceding job net (child job net)

Procedure

1. Create child job nets

2. Create a parent job net

Select the child job nets to be registered

3. Register the child job nets

1. Create child job nets in the **New Job Net** window.

2. Create a parent job net in the **New Job Net** window.

3. In the **New Job Net** window for the parent job net, register the child job nets as a job, and edit the sequential relationship between them on the flow.

> **Conditions for becoming a parent job net or child job net**
>
> - Conditions for becoming a parent job net condition
>   - The execution attribute is the Job Execution Control attribute.
>
> - Conditions for becoming a child job net (all must be satisfied)
>   - The child job net belongs to the same project as the parent job net.
>   - The execution attribute is the Job Execution Control attribute.
>   - None is specified under Execution condition.
>   - The child job net is not a child job net of another job net.

Message event linking

You can link individual job nets using a message by setting the execution condition so that the preceding job net generates a message and the succeeding job net uses the receipt of this message as a trigger for startup.
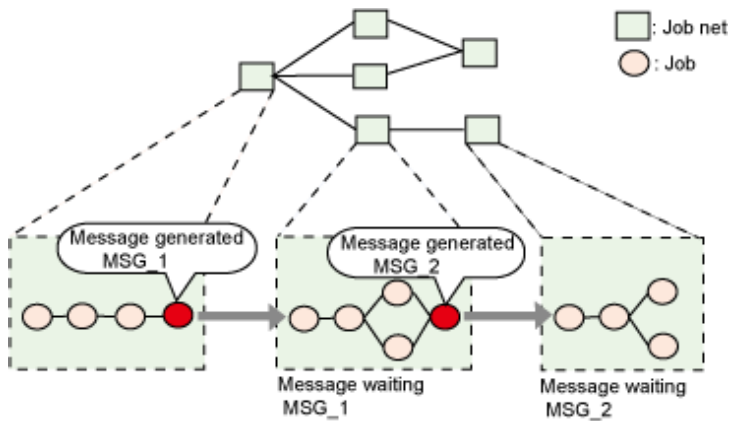
: Job net
: Job

Execution condition for the succeeding job net

Receipt of a message from the preceding job net

Procedure

1. In the last job of the preceding job net, register a job that will generate a message
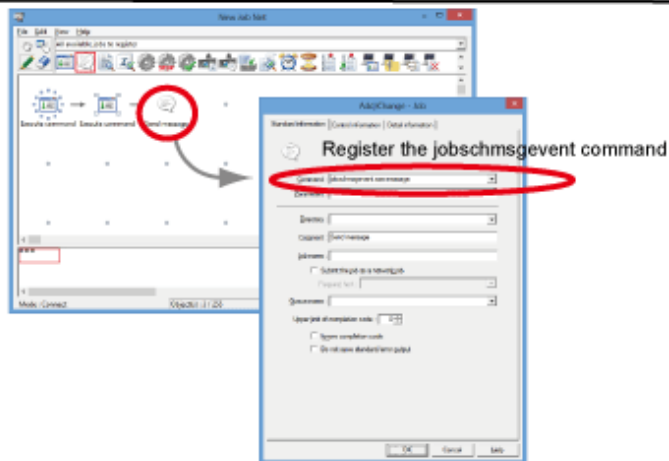
2. In the first job of the succeeding job net, specify the message to be waited for
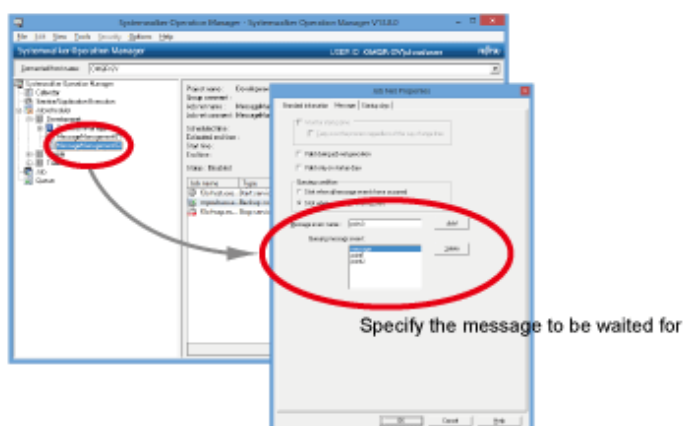
1. In the **Standard information** tab of the **Add/Change - Job** window for the last job in the preceding job net, register the jobschmsgevent command to generate a message.

2. In the **Standard information** and **Message** tabs of the **Job Net Properties** window for the succeeding job net, set the receipt of a message from the preceding job net as the execution condition.

<u>Familiarize yourself with this mechanism before using it, because it is difficult to check the operating status of a job net and to count and clear message events.</u>

Grouping

You can connect job net icons on the screen using the flow for creating a group and then visually create and schedule a flow diagram in the same way as you created the job flow diagram.

Execution conditions for the succeeding job net

All the following conditions must be satisfied:

- The preceding job net was completed.
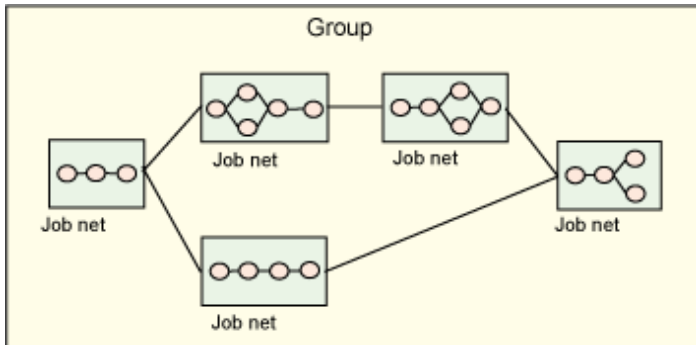
- The execution time has been reached (if **Execution time** is enabled).

- The message event execution condition has been satisfied (if message event linking is used).

The **Startup on power-on if power is off during scheduled execution** condition specified in the **Standard information** tab of the **Job Net Properties** window, and the **Wait for startup time** condition specified in the **Message** tab of the **Job Net Properties** window are ignored.

Procedure

1. Display the **New Group** window

2. Register job nets

Register job nets and create a flow
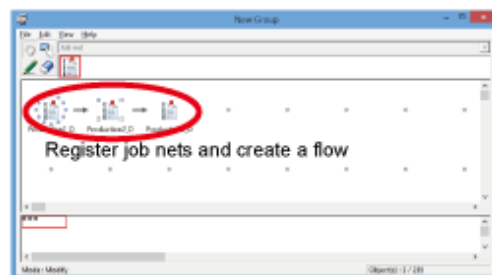
1. In the **Job Selection** window, select a project, then right-click and select **New** >> **Group**.

2. Register job nets in the **New Group** window and edit the sequential relationship between the job nets on the flow.

> - A group starts once a day.
>
> - Conditions for job nets to be registered in a group (all must be satisfied)
>
>   - The job net belongs to the same project as the group.
>
>   - A startup time of once a day is registered for **Execute at** under **Execution condition**.
>
>   - **Valid during job net execution** is not specified as a message event execution condition.

- The same job net does not already exist in the group.

- The job net is not registered in another group.

> **References:**
>
> **Job net layering**
> "Nesting job nets" under "Additional Operations" in the *Technical Guide*
> "Layering Job Nets" in the *User's Guide*
>
> **Message event linking**
> "Using event occurrence as an execution trigger" under "Additional Operations" in the *Technical Guide*
> "Job Net Information Settings" and "Message Events and Job Net Actions" in the *User's Guide*
>
> **Grouping**
> "Job Nets Registered in a Group" and "Registering Groups" in the *User's Guide*

1.5 I Want to Change the Flow Configuration per Day

To make job nets with different startup days wait to start when the conditions are as set out below, use job net layering, which enables you to automatically change the job net flow configuration for each working day.

Job net name	Startup day	Execution condition
Job net A	Daily	-
Job net B	15th of every month	-
Job net C	Daily	Wait for job net A and job net B

The job net layering function enables you to register job nets as a job (child job net) in another job net.

You can set a different startup day for each child job net and set a sequential relationship by using a connecting line in the same way as for jobs in a job net. This means that by using the flow diagram, you can easily schedule a job net to wait for the preceding job net to end.

Procedure
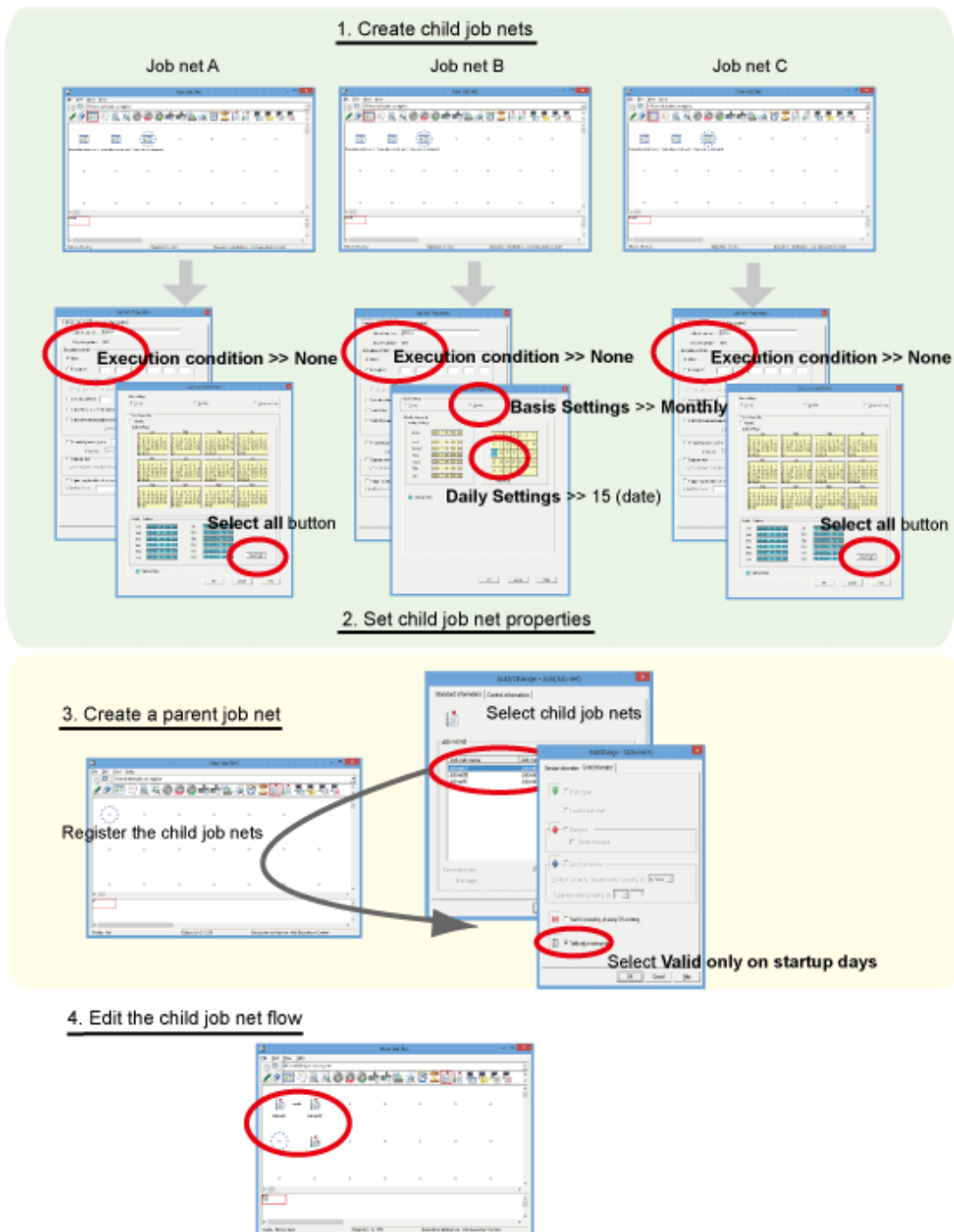
1. Create child job nets (job net A, job net B, and job net C).

    In the **Job Selection** window, select a project, then right-click and select **New** >> **Job Net** >> **Job Execution Control**.

    In the **New Job Net** window, create the job nets A, B, and C that will be the child job nets.

    Child job net conditions (all must be satisfied)

    - The child job net belongs to the same project as the parent job net.

    - The execution attribute is the Job Execution Control attribute.

    - **None** is specified under **Execution condition**.

    - The child job net is not a child job net of another job net.

    ---

2. Set child job net properties.

In the **Job Selection** window, select the child job nets created in step 1, then right-click and select **Properties**. In the **Job Net Properties** window, set the execution condition and startup days for each child job net created, as explained below.

Specify an execution condition

For job nets A, B, and C, select **None** under **Execution condition** in the **Standard information** tab.

Specify startup days

For job nets A and C, click **Select all** in the **Startup days (Other) (Yearly standards)** window.

For job net B, select **Monthly** under **Basis Settings** in the **Startup days (Other)** window, and then select "15" (date) under **Daily Settings**.

3. Create a parent job net (job net P).

In the **Job Selection** window, select the same project as that for the child job nets, then right-click and select **New** >> **Job Net** >> **Job Execution Control**.

Register the child job nets in the **New Job Net** window.

Parent job net condition

- The execution attribute is the Job Execution Control attribute.

When you select a job net from the icon selection area in the **New Job Net** window, the **Add/Change - Job** window for child job nets is displayed. The **Standard information** tab displays **Job net list**, which lists job nets that can be registered as child job nets. Select the job nets to be registered. Startup days have been specified for the child job nets, so select **Valid only on startup days** in the **Control information** tab.

🅿 Point
. . . .

Remember to select "Valid only on startup days" for child job nets for which startup days are specified

The reason for selecting **Valid only on startup days** is to prevent child job nets from being accidentally started on unscheduled days.

Essentially, when a parent job net starts, its child job nets also start. Therefore, if you set startup days for child job nets, remember to select **Valid only on startup days** in addition to the usual procedure for setting the startup days. This ensures that unscheduled child job nets are not started on the startup day for the parent job net.
. . . .

4. Edit the child job net flow.

Draw a line connecting the child job nets in the **New Job Net** window and edit the flow diagram that shows their sequential relationship.

Operation when job net layering is used

If you use job net layering in the above example, the configuration will be as shown below.
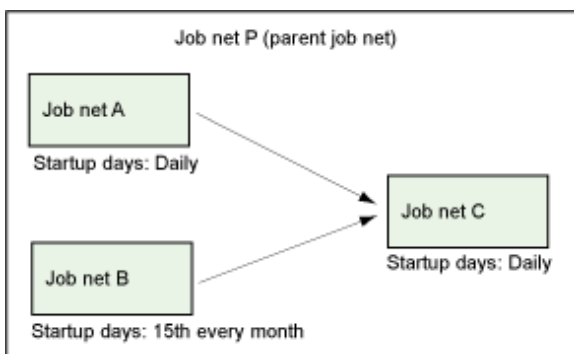
Startup days have been set for the layered child job nets, so the configuration of the job nets changes for each working day, with different schedules for the 15th of every month and for all other days.

15th of every month

All days other than 15th of every month

For all days other than the 15th of every month, the condition to wait for job net B to end is automatically disabled.
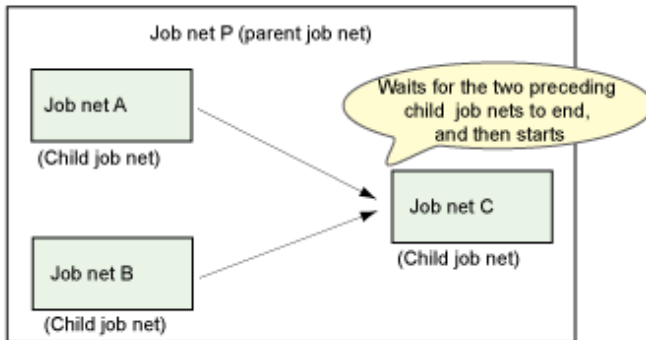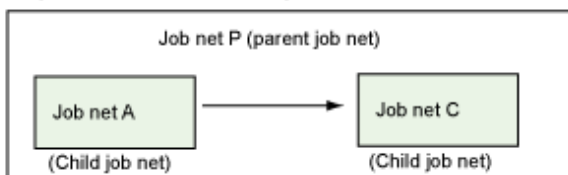
> **Reference:**
>
> "Setting up startup days for nested job nets" and "Nesting job nets" under "Additional Operations" in the *Technical Guide*
>
> "Layering Job Nets" in the *Systemwalker Operation Manager User's Guide*

1.6 I Want to Specify the nth Business Day as a Job Net Startup Day

This section describes how to start a job net on the 3rd business day of every month.

In the **Startup days : Business Day Basis** tab of the **Job Net Properties** window, you can specify the "*n*th business day" as the startup day. Business days are automatically counted using the holiday calendar you set beforehand, so you can easily set a particular business day without setting complicated shift processing.

The procedure on V13.3.1 or earlier is different from the procedure on V13.8.0 or later. Refer to the relevant procedure.

Procedure (V13.3.1 or earlier)

First set a holiday calendar, and then configure the following settings:

1. Display the **Startup days : Business Day Basis** tab of the **Job Net Properties** window.

    In the **Startup days** tab of the **Job Net Properties** window for the job net for which you want to set startup days, select **Business days** under **Another base job net**.

2. Specify the startup days.

    In the **Startup days : Business Day Basis** tab, configure the following settings:

    -   In **Month's start date**, specify the day that is to be the 1st business day.

    -   In **Criteria**, specify whether to count the business days from the beginning of the month or from the end of the month.

    -   Specify **3rd business day** under **Unselected business days** and click **Add**.

If the date of a set business day falls in the preceding month or succeeding month due to holidays or some other reason and you do not want to set that date as a startup day, select **Set only business days of the month as startup days**.

Procedure (V13.8.0 or later)

First set a holiday calendar, and then configure the following settings:
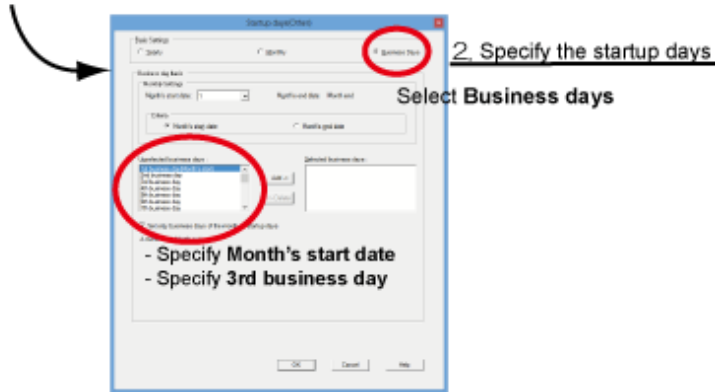
1. Display the **Startup Days(Other)** window.

   In the **Standard information** tab of the **Job Net Properties** window for the job net for which you want to set startup days, select **Other** and click **Edit**.

2. Specify the startup days.

   In the **Startup Days(Other)** window, configure the following settings:

   - Select **Business days** under **Basis settings**.

   - Specify the day that is to be the 1st business day in **Month's start date**.

   - Specify **Month's start date** under **Criteria**.

   - Specify **3rd business day** under **Unselected business days** and click **Add**.

   If the date of a set business day falls in the preceding month or succeeding month due to holidays or some other reason and you do not want to set that date as a startup day, select **Set only business days of the month as startup days**.

> **Reference:**
>
> "Job Net Information Settings" in the *User's Guide*

1.7 I Want to Schedule the System to Wait for Jobs to End before it Shuts Down [Windows]

You can schedule the system so that it waits for jobs to end before it shuts down. Use the procedure described below.

Set the shutdown time and completion monitoring beforehand in the power control schedule. Then, create a termination processing job net and register it in the Jobscheduler. After the termination processing job net has executed, it calls the shutdown exit (program). The called shutdown exit uses the queuing completion notification command to issue a "queuing completion notification" and performs shutdown processing.
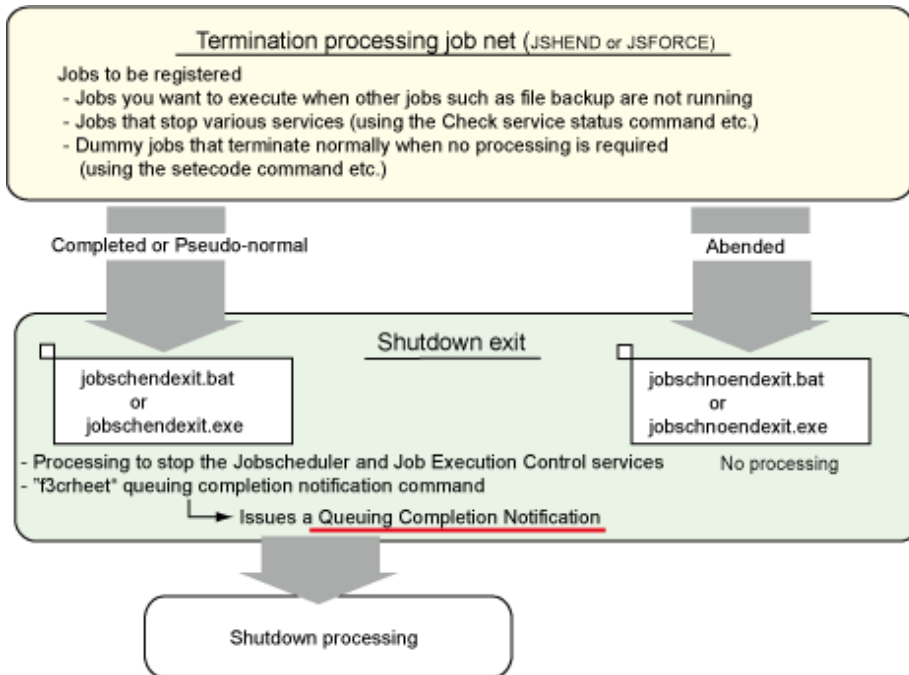
Note

Do not directly terminate the system from a job

Do not directly shut down the system from a Systemwalker Operation Manager job by, for example, directly setting the shutdown command of the operating system in a job definition and executing it.

Figure 1.1 Flow from startup of the termination processing job net to shutdown processing

Set the power control schedule and completion monitoring (queuing completion notification) beforehand.

In addition, create a termination processing job net and edit (as required) the shutdown exit. The shutdown exit is provided as standard.

The procedure for these tasks is described below.

Set power control

1. Define the power control schedule.

   Select **SYSTEM_CALENDAR** from the **Job Selection** window of the **Systemwalker Operation Manager** window and then select **Options** >> **Power Control Schedule**. In the **Power Control** tab of the **Power Control Schedule** window, configure the following settings:

   - **Select Power Control**

   - **Power Control Pattern**

       - Click **Pattern Setup** to display the **Power Control Pattern** dialog box and set the power-off time and reboot time.

2. Define the queuing completion notification.

   Configure shutdown processing to start after a completion notification is received.

   1. In the **Completion Monitoring** tab of the **Power Control Schedule** window where you defined the power control schedule, select the **Completion Monitoring** check box and click **Details**.

   2. Select the **Notify Queuing Completion** check box in the **Completion Monitoring** dialog box, click **Completion Notification** to display the **Queuing Completion Notification Definition** dialog box, and click **Add**.

   3. Under **Queuing Completion Notification** in the **Queuing Completion Notification Definition** dialog box, enter the string (*1) to be specified in the f3crheet command on the shutdown exit and click **OK** to register it.

      *1: If you use the standard shutdown exit, this string will be "system".

Create a termination processing job net

1. Register a project.

   Register a project with the same name as the startup account of the Jobscheduler service. (On V13.8.0 or later, if you have not changed the service startup account from the default that was set after installation, the project name will be "SYSTEM".)

   This step is not required if a project has already been registered.

   You can check the startup account of the Jobscheduler service by using the following method:

   - In the **Services** dialog box on the **Control Panel**, check the account of the "Systemwalker MpJobsch" service.

2. Register a termination processing job net (JSHEND or JSHFORCE).

   Create a termination processing job net in the window for registering job nets in the same way as that for ordinary job nets. Register one of the names listed below as the job net name of the termination processing job net you created, according to its purpose. (You must register this name as the "job net name" and not as the "job net comment".) Register the termination processing job net in the project you registered in step 1.

   JSHEND:

   If any job net is executing when the termination processing job net is started, processing waits for the job net to end before executing the job.

   JSHFORCE:

   If any job net is executing when the termination processing job net is started, processing forcibly terminates the job net and executes the job.

Note

Do not register jobs that shut down systems in the termination processing job net

Do not register jobs that will shut down the machine in the termination processing job net. Use the shutdown exit for shutting down the machine.

Edit the shutdown exit

The shutdown exit is provided as standard. Edit it as required.

The "f3crheet" queuing completion notification command is set in the shutdown exit. In the f3crheet command, specify a string for reporting that particular processing has ended.

```
f3crheet XXXX
```

XXXX: You can specify any string containing up to 100 characters. You cannot use spaces or commas (,).

The string specified here will be reported to power control as a queuing completion notification.

In the standard shutdown exit, "system" has been set for the string *XXXX*. If this string does not need changing, you do not need to amend it.

With the predefined setting, the system will be shut down when a completion notification issued by the f3crheet command is received. (If any other completion notification has been defined, the system will not be stopped until all completion notifications have been reported.)

Note

To power off the system

To perform power control, including power on and power off, you need a power control device (hardware) and corresponding software.

If you use the shutdown and reboot operations only, you do not require a power control device (hardware) or corresponding software.

Shutdown exit (program)

Depending on the result of the termination processing job net when it has finished running, the Jobscheduler may call the shutdown exit.

- **If the termination processing job net is completed normally or pseudo-normally**

  The Jobscheduler calls "jobschendexit.bat" or "jobschendexit.exe". You can use the program provided at installation as is, or modify it to perform particular processing.

- **If the termination processing job net terminated abnormally**

  The Jobscheduler calls "jobschnoendexit.bat" or "jobschnoendexit.exe". If the job net terminated abnormally, the program provided at installation does not perform any processing, so you must customize it as required.

References:

"Shutting Down the System at Optional Times [Windows version]" in the *User's Guide*

"f3crheet Queuing Completion Notification Command" and "Completed/Abended Shutdown Exit [Windows]" in the *Reference Guide*

1.8 I Want Particular User Rights to be Used for Starting Jobs [Windows Versions]

Essentially, jobs run on Systemwalker Operation Manager are executed using the rights of the logon account of the Job Execution Control service.

To allow jobs to be executed only with particular user rights, you must configure the following settings:

   a. Specify **Execute jobs under the respective job owner's authority**.

   b. Define the job owner information.

   c. Grant "Log on as a batch job" rights to the user who will execute the jobs.

   d. Even for domain users, perform this operation on both the server that will submit the jobs and the server that will execute them.

Check the logon account of the Job Execution Control service as follows:

   - In the **Services** dialog box on the **Control Panel**, check the account of the "Systemwalker MpMjes" service.

The term "job owner" refers to the owner of the project. If you specify **Execute jobs under the respective job owner's authority**, the project owner will be the effective user of the jobs in the project.
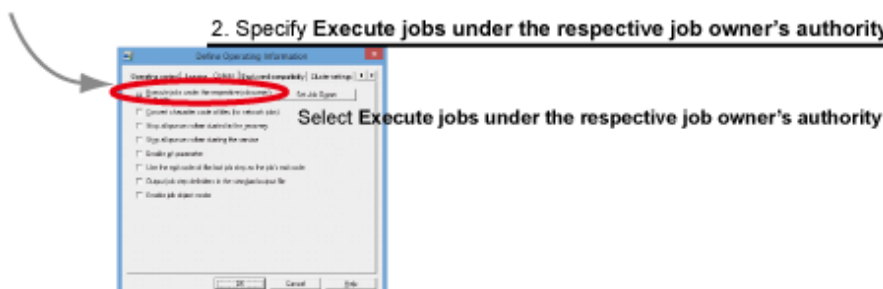
Procedure

   a. Specify **Execute jobs under the respective job owner's authority**.

   For network jobs, perform this operation on both the server that will submit the jobs and the server to which they will be submitted.

1. Display the **Define Operating Information** window.

   In the **Systemwalker Operation Manager Environment Setup** window, click **Operation information**.

2. Specify **Execute jobs under the respective job owner's authority**.

   In the **Define Operating Information** window, click the **Options** tab and select **Execute jobs under the respective job owner's authority**.

b. Define the job owner information.

   For network jobs, perform this operation on the server that will submit the jobs.

   Essentially, the **Define Job Owner's Information** window displays the user who was registered as **Owner** in the **New Project** window. Register the project and then perform the following operation:

1. Display the **Define Password Information** dialog box.

   Click **Job owner** in the **Systemwalker Operation Manager Environment Setup** window. In the **Define Job Owner's Information** window, select a user. Select **User** >> **Define**.

2. Set a password.

   In the **Define Password Information** dialog box, enter password information (information about the job owner).

   If the password is set correctly, the **Status** field in the **Define Job Owner's Information** window will change from "Undefined" to "Defined".
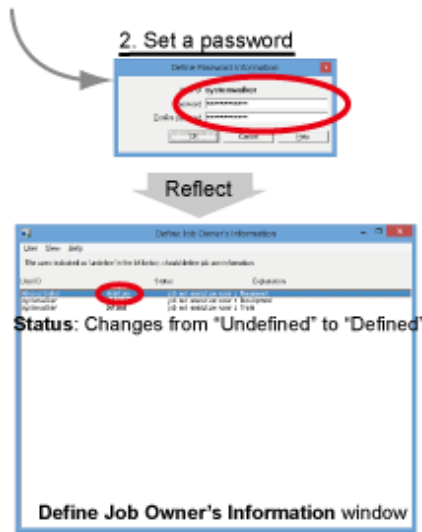
Point

V13.8.0 or later

Display the **Define Operating Information** window and the **Options** tab. Select **Execute jobs under the respective job owner's authority** to enable the **Set Job Owner** button. You can also display the **Define Job Owner's Information** window by clicking this button.

c. Grant "Log on as a batch job" rights to the job owner

For network jobs, perform this operation on both the server that will submit the jobs and the server to which they will be submitted.

On Windows Server 2012
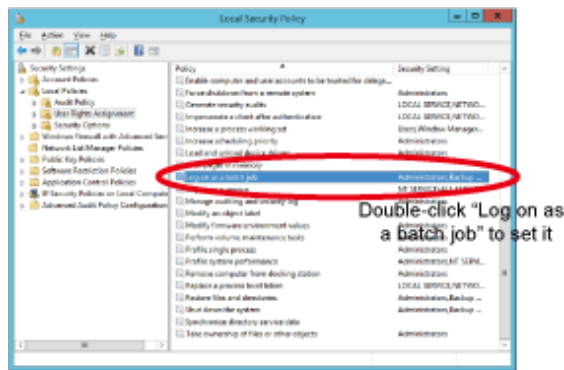
Using **Administrative Tools** in the Windows operating system, open **Local Security Policy** >> **User Rights Assignment** and grant "Log on as a batch job" rights to the job owner (the method for configuring this setting is different on each operating system).

When you have configured the above settings a to c, all jobs will be executed using the rights of the job owner (project owner).

However, if an effective user is specified for **Effective user name** in the **Detail information** tab of the **Add/Change/Monitor Job** window, the effective user defined for the job has priority. The job will therefore be executed using the rights of the specified effective user.

> **Reference:**
>
> "Defining the System Operating Information", "Job Execution Privileges", and "Defining the Job Owner Information [Windows]" in the *Installation Guide*

1.9 I Want to Automatically Distribute Jobs for Execution on Servers with Low Load

Use the Distributed Execution function when you want to automatically distribute jobs for which execution has been requested and execute them on servers with low load, starting with the server with the lowest load. You can distribute jobs for which you want to perform distributed execution to the distributed execution queue that will submit the jobs. To do this, assign the host group that is the execution server group at the distribution destination.

The following describes how to use host group "Grp1", which consists of hostA, hostB, and hostC, to distribute and execute jobs submitted to the distributed execution queue "queueA".

Execution server group at the distribution destination
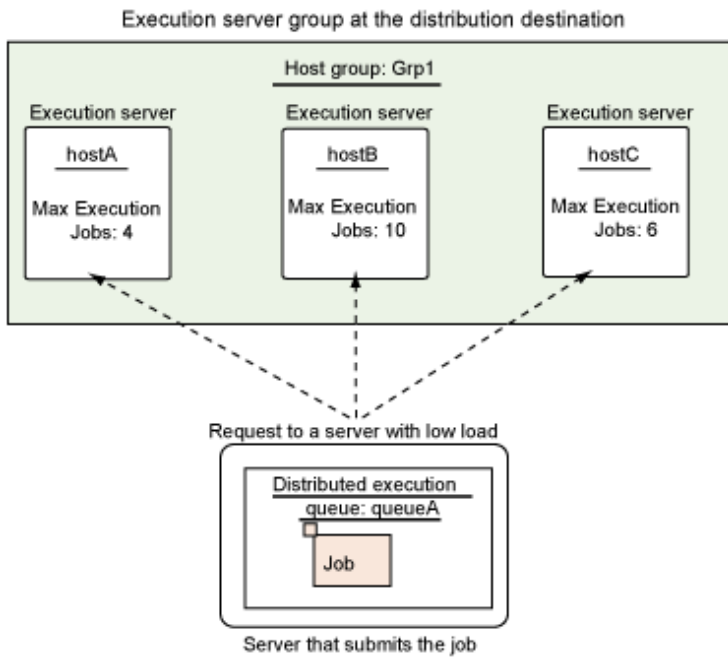
Procedure

You can use distributed execution by using the following method:

a. Create a queue for performing distributed execution.

b. Create jobs to be processed by distributed execution.

a. Create a queue for performing distributed execution

Queue Name: "queueA"

Enable distributed execution: Select this option
Host Group: "Grp1"
Contained Host: "(hostA(4),hostB(10),hostC(6))"

b. Create jobs to be processed by distributed execution

Queue Name: "queueA"
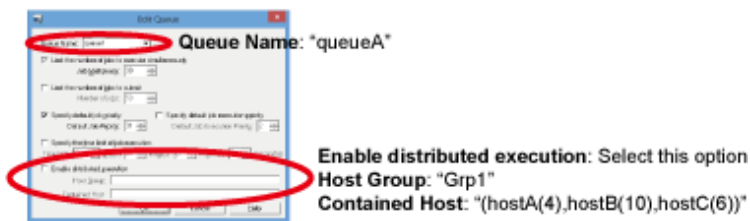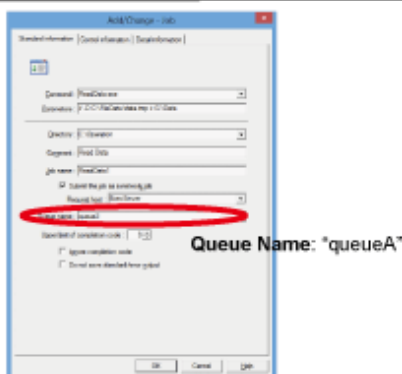
📌 Note

Remember to register an effective user

Register an effective user for the jobs not only on the execution server but also on the server that will submit the jobs (schedule server).

a. Create a queue for performing distributed execution.

   1. Display the **Create Queue** window.

     In the **Systemwalker Operation Manager Environment Setup** window, click **Operation information**. Then, in the **Define Operating Information** window, click **Add**.

   2. Create queueA.

     In the **Create Queue** window, specify the following settings:

      - **Queue Name**: "queueA"

      - **Enable distributed execution**: Select this option.

      - **Host Group**: "Grp1"

      - **Contained Host**: "(hostA(4),hostB(10),hostC(6))"

Contained Host

Specify the configuration of the host group.

Specify the host name and Max Execution Jobs (maximum number of jobs executed simultaneously on the server) of the execution server at the distribution destination in the format "*<execution server name>*(*<Max Execution Jobs>*)". If registering multiple servers as execution servers, separate them with a comma ",", and enclose the entire specification in parentheses "()", as shown above.

You can register up to 100 execution servers for one host group.

---

b. Create jobs to be processed by distributed execution.

   1. Display the **Add/Change - Job** window

     Perform the following operations in the **New/Change Job Net** window (you can also display this window from the **Recovery Change Job Net** window or the **Monitor Job Net** window):

      - Double-click a job icon.

      - Right-click a job icon and select **Properties**.

      - Select a job icon and select **File** >> **Properties**.

   2. Specify a queue.

     In the **Add/Change - Job** window, click the **Standard information** tab, specify "queueA" for **Queue Name**, and register the job.

When a server submits the job for which you specified "queueA" for **Queue Name**, an execution request is sent to the Grp1 server with the lowest load.

Operation when the Distributed Execution function is used

The following explains how jobs submitted to the "queueA" distributed execution queue are assigned to an execution server when the Distributed Execution function is used in the type of configuration explained above.

Assume that jobs are being executed on the execution servers of the "Grp1" host group as shown below.

	Number of jobs executed
hostA (Max Execution Jobs: 4)	2
hostB (Max Execution Jobs: 10)	4

hostC (Max Execution Jobs: 6)	6

Submitted jobs are executed by the server for which "Max Execution Jobs specified by **Executing Jobs**/**Contained Host name**" is the lowest within the host group.

In the case shown above, the values are as follows:

hostA: 2/4= 0.5

hostB: 4/10=0.4

hostC: 6/6= 1.0

Therefore, jobs are submitted to host B, which has the lowest load.
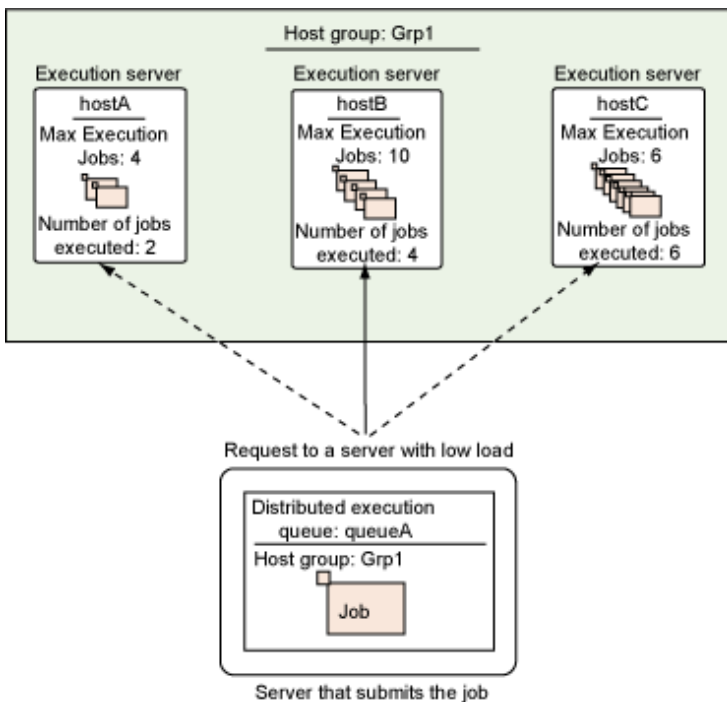
Information

Operation when the distribution destination execution server fails

The execution server that failed is excluded from the distribution destination. The Distributed Execution function is continued on another server. After the server that failed is recovered, it will resume functioning as a distribution destination within about 10 minutes at the most.

Jobs that were running on the server when it failed are regarded as having terminated abnormally. Check the operating status of jobs that terminated abnormally, and reexecute them or take other appropriate action.

Note

Cannot be used at the same time as network jobs

You cannot submit network jobs that specify the request host to a distributed execution queue.

Reference:

1.10 I Want to Execute Jobs on the Standby Node in a Cluster Configuration

Applicable versions and levels

- Windows versions: V13.3.0 or later
- Solaris versions: V13.3.0 or later
- Linux versions: V13.3.0 or later
- Linux for Itanium versions: V13.3.0 or later
- HP-UX versions: V13.3.0 or later
- AIX versions: V13.3.0 or later

The standby node in a cluster configuration is fundamentally a system that waits as the failover destination in case an error occurs in the active node. However, you can execute jobs on the standby node even if the active node is operating normally.

If you want to execute jobs on a standby node, set up a configuration such as the one explained below. You can then execute jobs on Subsystem0 of the standby node (node 2).

- Set Subsystem0 as a non-cluster configuration.

- Set Subsystem1 as a cluster configuration.

This type of configuration is referred to as "1:1 active/standby configuration (with subsystems and partial cluster operation)".
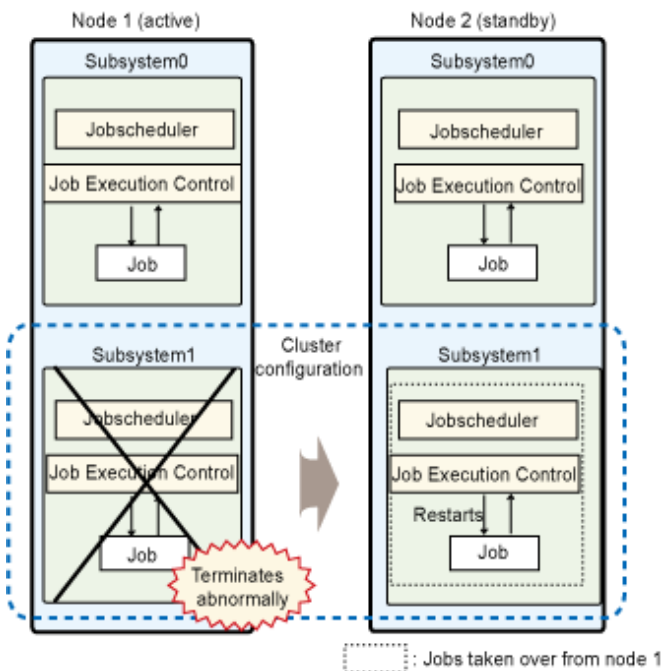
Refer to the configuration explained under "1:1 active/standby (with subsystems and partial cluster operation)" in *Systemwalker Operation Manager Cluster Setup Guide for Windows* or *Systemwalker Operation Manager Cluster Setup Guide for UNIX* for information on this procedure.

References:

Cluster Setup Guide for Windows

Cluster Setup Guide for UNIX

1.11 I Want to Automatically Resubmit Jobs to Another Server when the Server Fails

This section describes how to automatically resubmit executing jobs to Execution server A or Execution server C if you are using a configuration that submits jobs from a schedule server to an execution server and Execution Server B fails while jobs are being executed, as shown below.
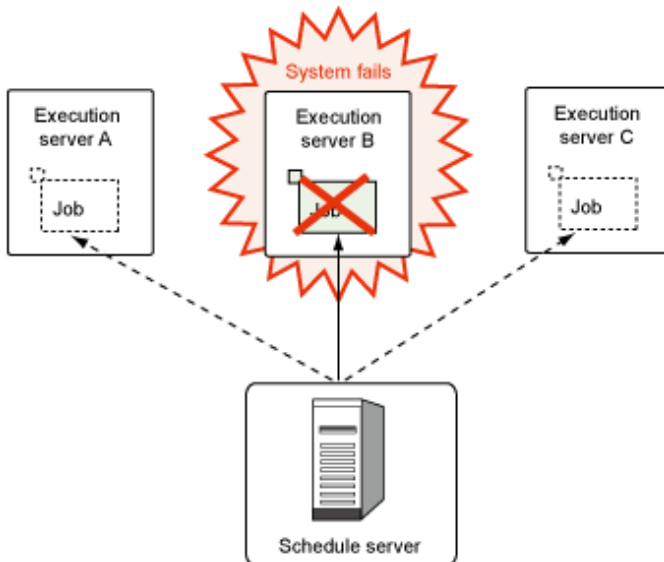
You can use the following methods to automatically resubmit jobs to another server if the execution server fails:

- Distributed execution

- Duplication of execution server

P Point

If you do not know which method to use

The following table provides an overview of both operation methods. Select the one that best suits your purpose.

	Advantages	Disadvantages
Distributed execution	You can set up a maximum of 100 distribution destination servers. You can configure the system so that if a particular server fails, the system assumes that the server has failed for a maximum of 10 minutes, during which time the server is removed as a distribution destination server (so that jobs are not submitted).	You cannot predict which server will execute a job.
Duplication of execution server	Jobs are normally executed on the primary server. The secondary server executes jobs only if the primary server fails. You can configure operation so that jobs are executed on an alternative server only if an error occurs.	If the primary server fails, the system first attempts to submit jobs to the primary server and then transitions to the secondary server, so it takes time to submit jobs.

Distributed execution

The fundamental purpose of this function is to distribute load. Distributed execution groups multiple execution servers and assigns jobs to the execution server with the lowest load. However, if an execution server within the group fails, this function reassigns jobs to another execution server within the group, and the jobs are resubmitted.

If using distributed execution, register the execution server group that will be the distribution destination. Do this when creating the queue for distributed execution. Refer to "1.9 I Want to Automatically Distribute Jobs for Execution on Servers with Low Load" for details.

Information

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How does the system judge whether an execution server has failed?

If a connection to the execution server with the lowest load cannot be established, connection will be retried in accordance with retry interval and retry number specified in the retry settings. If connection to the execution server fails even after the retries, the execution server is judged to have failed, and jobs will be submitted to the execution server with the lowest load (the execution server that failed will not be considered).

By default, connection to the execution server is not retried. The retry settings can be defined under **Change the connection retry settings for network jobs** in the **Network** tab of the **Define Operating Information** window.

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Duplication of execution server

When running network jobs, you can specify primary and secondary servers as execution servers so that when the primary execution server fails, execution of jobs is automatically requested to the secondary execution server.

If duplicating an execution server for network jobs, define the primary and secondary execution servers when you register jobs.

Note

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Overhead generated during transition from primary execution server to secondary execution server

If jobs are submitted while the primary execution server is paused, a request is not suddenly issued to the secondary execution server even if the system knows that the primary one is paused. In each case, the system performs retry processing for the primary execution server before issuing a request to the secondary one, so overhead is always generated during transition.

Overhead depends on the state of the operating system, servers, and network.

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Procedure

Use one of the following methods to register the primary and secondary execution servers.

Note

. . . .

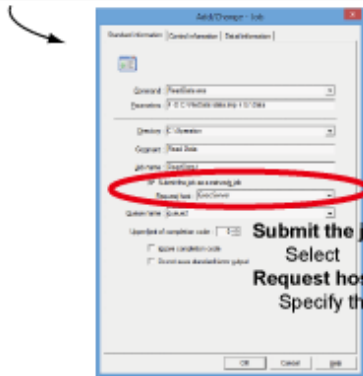**Execution servers that cannot be registered**

You cannot specify a local host name for a primary or secondary server.

. . . .

When duplicating the execution server for a particular job

1. Display the **Standard information** tab of the **Add/Change - Job** window

2. Set duplication

Submit the job as a network job:
Select
Request host:
Specify the primary and secondary execution servers

1. Display the **Standard information** tab of the **Add/Change - Job** window for the job for which you want to duplicate the execution server.

2. Specify the following values in the **Standard information** tab of the **Add/Change - Job** window:

   - Select **Submit the job as a network job**.

   - Specify the primary and secondary execution servers for **Request host**, using the following format:

   <*primary host name*>,<*secondary host name*>

Information

When registering servers using the job control statement

1. Set the execution servers using the format "<*primary host name*>,<*secondary host name*>" in the req_host operand of the job control statement.

2. Execute the jobschsetnet command with the -nent or -nche operand specified. In the definition file, specify the name of the file that stores the job control statement of the job edited in step 1.

When duplicating execution servers for a particular job net

1. Display the **Standard information** tab of the **Job Net Properties** window

2. Set duplication

Submit the jobs of the job net as a network job:
Select
Default host name:
Specify the primary and secondary execution servers

1. Display the **Standard information** tab of the **Job Net Properties** window for the job net for which you want to duplicate the execution server.

2. Specify the following values in the **Standard information** tab of the **Job Net Properties** window:

   - Select **Submit the jobs of the job net as a network job**.

- Specify the primary and secondary execution servers for **Default host name**, using the following format:

> <primary host name>,<secondary host name>
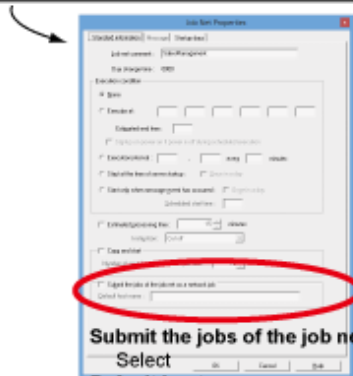
Information

When registering servers using the job net control statement

1. Set the execution servers using the format "*<primary host name>,<secondary host name>*" in the defaulthost operand of the job net control statement.

2. Execute the jobschsetnet command with the -nent or -nche operand specified. In the definition file, specify the name of the file that stores the job net control statement of the job edited in step 1.

Information

How does the system judge whether an execution server has failed?

In the following cases, the primary execution server is judged to have failed and jobs are requested to the secondary execution server.

- The primary server cannot be reached.

- The primary server itself has failed.

- The primary job execution control daemon has stopped.

Information

When all execution servers have failed

If both the primary and secondary execution servers fail while executing a job, the job is considered to have terminated abnormally.

References:

<Distributed execution>
"Defining the System Operating Information" in the *Installation Guide*

<Duplication of execution server>
"Duplicating the Network Job Execution Server" in the *User's Guide*

1.12 I Want to Cut off Jobs That are Taking a Long Time to Process and Restart Them

This section describes how to cut off and restart processing if a job that is taking a long time to process has not completed when its scheduled time is reached.

When executing a job net containing a job that is taking a long time to process, you might judge that the job may take longer than the expected time to process. You can cut off processing of this job when the cut-off execution time is reached, and restart it only once by setting a cut-off execution time and recovery job beforehand.

1. Display the properties of the job that is taking a long time to process.

   From the **Change Job Net** window, right-click the job that is taking a long time to process and select **Properties**.

2. Set the cut-off execution time.

   From the **Add/Change - Job** window, click the **Detail information** tab, select **Cut-off execution time**, and set the desired time. This setting causes the job to terminate abnormally when the cut-off execution time is reached.

3. Create a recovery job.

   Create a recovery job as the succeeding job after the job that is taking time to process.
   As the recovery job, register any job that terminates normally, and select **Recovery** in the **Control information** tab.

4. Apply the recovery job.

   Under **Recovery** in the **Control information** tab, select **Restart previous job** for the recovery job you created.

🅿 Point
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Cut-off execution time and recovery job

You cannot set a cut-off execution time and recovery job while a job net is being executed. This can be done only when the job net is paused.
. . . .

| |
|---|
| **Reference:** |
| "Registering Jobs" in the *User's Guide* |

1.13 Combining Multiple Event Wait Jobs as Startup Triggers

To make a job net wait for multiple specific conditions before starting, use an "event wait job" that makes the job net wait for specific conditions. For example, you may want to set file update and the generation of a message event as an AND condition for starting a job net.

The following table lists the event wait jobs.

Event wait job name	Wait condition
Wait for file	Waits for a file to be created/deleted/updated.
Wait for message event	Waits for a message event to be generated.
Wait for time	Waits until the specified time.
Waits until specified time	Waits for the specified time interval. Delays the job net by the specified time.

If you register an event wait job as the first job in a job net, the succeeding job is executed after all the conditions for event wait jobs have been met.
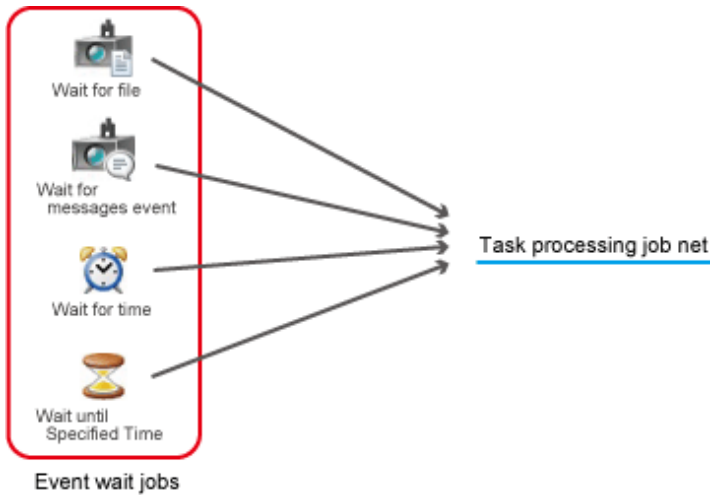
Event wait jobs

Information

Using the completion of any event wait job as a trigger

The default setting is wait with AND condition, which uses the completion of all event wait jobs as the startup trigger.

To set "wait with OR" condition, which uses the completion of any event wait job as the startup trigger, specify the following setting for the succeeding job that the event wait jobs connect to:

- Specify **Wait for preceding job using OR condition** in the **Control information** tab of the **Add/Change - Job** window

Making a task processing job net wait even if it is executing

If you place an event wait job and a task processing job in the same job net, the job net cannot receive a wait while tasks are being processed.

To make a task processing job net wait even if it is executing, create separate job nets, each of which will wait for a specific condition. Configure task processing job nets so that they start when they receive a message event issued at the end of a job net.

Creating wait job nets and task processing job nets separately enables the wait job nets to receive the next wait even while tasks are being processed.
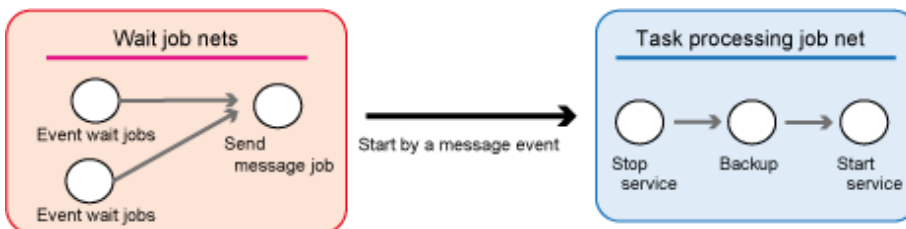
Procedure

1. Create a wait job net

   Set an event wait job and a send message job, and connect the event wait job to the send message job to create a wait job net.

   For the send message job, set the message event that the task processing job net will wait for.

2. Set the wait job net

   In the **Job Net Properties** window, set the startup days and startup conditions for starting a wait.

   The wait job net starts in accordance with the conditions set here, and then the task processing job net starts. To repeat the wait, set execution conditions to suit requirements.

3. Set the task processing job net

Configure the following settings in the **Message** tab of the **Job Net Properties** window for the task processing job net.

   - Register the message event that the task processing job net will wait for

   - Specify **Valid during job net execution**

1.14 Setting the Startup Time for a Layered Job Net

You may want to start a child job net at a different time from its parent job net. By registering a wait for time job at the start of a child job net, you can make job nets in the second and subsequent layers also wait until the specified time is reached before they start.

Procedure

1. In the **New/Change Job Net** window for the child job net, register a wait for time job as the first job.

Figure 1.2 New/Change Job Net window
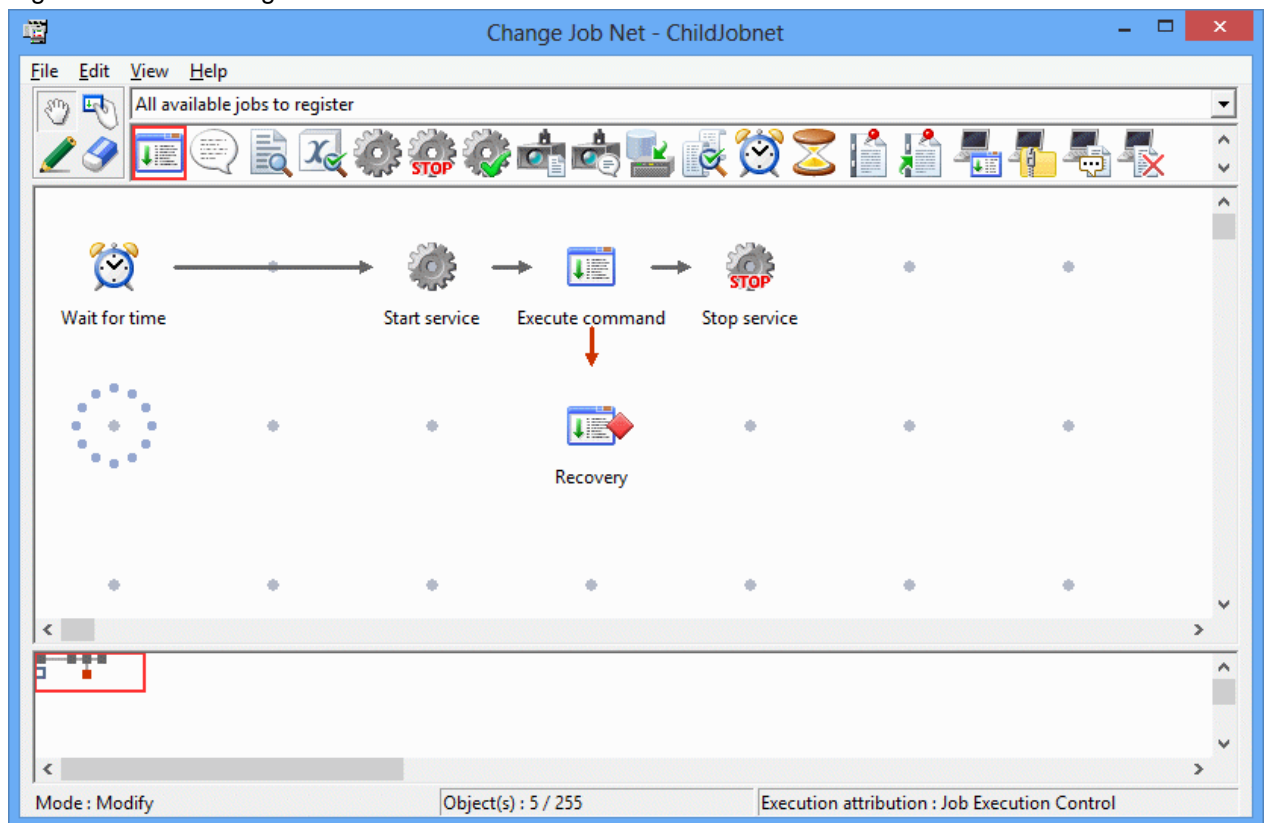
2. The **Standard information** tab of the **Add/Change - Job** window for the wait for time job is displayed. Register the jobschchecktime command in **Command** and set the wait time.

Figure 1.3 Add/Change - Job window

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

If the wait time has already passed when the job net starts, the succeeding job is immediately started.

> **Reference:**
>
> "Determining Job Types" in the *Design Guide*
> "Registering Jobs" in the *User's Guide*

Chapter 2 Operation and Monitoring

2.1 Take Corrective Actions for a Job Net that Terminated Abnormally

This section explains the corrective actions to take when a job net terminates abnormally.

If you have checked the job net that terminated abnormally and you want to start it the next time

Use the "**confirmation operation**".

If the confirmation operation is enabled, you can halt the next startup of the job net that terminated abnormally until the confirmation operation is performed (the job net is not executed even if the execution conditions for the next startup are satisfied, and the job net is not scheduled even if the day change time is reached). If the status changes to "Confirmed" as a result of the confirmation operation, the job net is started the next time the execution conditions are satisfied.

If the confirmation operation is disabled, the job net is scheduled when the day change time is reached even if you have not taken corrective action, and the status changes to "Waiting".

If you want to restart the job and job net that terminated abnormally

Use the "**restart operation**".

The restart operation enables you to restart from the job that terminated abnormally. If you specified a restart point, the job restarts from the restart point.

If you want to fine tune the restart of the job and job net that terminated abnormally

Use "**recovery operations**".

You can, for example, skip the job that terminated abnormally and start executing from the succeeding job, or you can execute just the job that terminated abnormally.

If you want to leave the status of the job and job net as is and change the erroneous part

Use the "recovery-change" operation.

If, for example, a job or job net terminates abnormally due to an invalid specification in the command line or some other reason, you can change just the incorrect part and restart from the job that terminated abnormally, keeping the status of the job and job net as is. (Normally, changing the information of a job resets the status of the job net and jobs within the job net. The status changes to "Waiting".)

The procedure and operation for each corrective action are explained below.

Refer to the appropriate manual for details.

	Confirmation operation	Restart operation	Recovery operations	Recovery-change operation
What are the prerequisite settings?	(1) In the **Define Jobscheduler Startup Parameters** window, select the **Use function1** tab and then select **Enable verification** under **Verification at error occurrence**. (2) Select a setting in the **Advanced Settings for Verification** window displayed	None Note: To specify a "restart point", which enables you to start executing from a specific job when you restart the job net, set a restart point in the **Control information** tab of the **Add/Change - Job** window.	None	None

	Confirmation operation	Restart operation	Recovery operations	Recovery-change operation
	by clicking the **Details** button (by default, all settings are selected). (*1) The confirmation operation setting is enabled for all job nets.			
Which windows can be used for performing the operation?	**Systemwalker Operation Manager** (Job Tree, **Gantt Chart**) **Job Net Management** **Job Nets Management**	**Systemwalker Operation Manager** (Job Tree, **Gantt Chart**) **Monitor Job Net** **Job Net Management** **Job Nets Management**	**Monitor Job Net**	**Recovery Change Job Net** (display this window by selecting **Change Recovery** from the **File** menu of the **Monitor Job Net** window)
What procedure is required in the above windows?	Right-click the job net that terminated abnormally, and click **Operation >> Confirm** from the pop-up menu that is displayed. The status of the job net changes to "Confirmed".	Right-click the job or job net that terminated abnormally, and click **Operation >> Restart** from the pop-up menu that is displayed. To restart the entire job net displayed in the flow, click **Restart Flow** from the **File** menu.	Right-click the job or job net that terminated abnormally, and click **Recovery** from the pop-up menu that is displayed. In addition, select any of the following operations: - **Start from Specified Job** - **Restart from Specified Job** - **Start from Next Job** - **Specified Job Only**	Display the **Add/ Change - Job** window for the job you want to change and change the job information.
What happens after the operation is performed?	When you perform the confirmation operation, the status of the job net that terminated abnormally changes to "Confirmed" and is started the next time the execution conditions are satisfied. The job net is scheduled when the day	Execution starts from the job that terminated abnormally. If a restart point was set, execution starts from the job in which the restart point was set.	Jobs are started or restarted according to the operation selected in the **Recovery** menu. Note: Refer to "Actions when recovery operations are enabled" below.	After saving the changes, restart to execute from the job that terminated abnormally.

	Confirmation operation	Restart operation	Recovery operations	Recovery-change operation
	change time is reached.			
When is the operation not permitted?	If **Enable verification** is not selected in **Verification at error occurrence**.	If a recovery job is running.	- If a recovery job is running. - If a higher-order job net is "Waiting". - If **Invalid at next restart** is selected for a higher-order job net. - If the succeeding job is "Executing" or has the completed status, no operation other than **Specified Job Only** is available. - If the succeeding job is "Waiting", the **Specified Job Only** operation is not available. - If the job is in a group, the operation cannot be performed if the status of the job net is not "Warning".	If the job net is "Executing", the values cannot be saved in the **Recovery Change Job Net** window.
Notes	If this setting is enabled, the next startup is halted until the confirmation operation is performed.	Restart point: - You can specify only one restart point in a job net. - If a job terminates abnormally and it is before the job in which the restart point is set, the restart point is ignored and execution is restarted from the job that terminated abnormally.	Job conditions for which recovery operations are available: - The job has the Job Execution Control attribute. - The higher-order job net that contains the parent job net does not belong to a group.	Information that can be changed: Information that can be registered in the **Add/Change - Job** window can be changed. However, there are the following limitations: - You cannot change a recovery job to a normal job. - You cannot change the **Job net name** of the job with the "Job Net" icon. - You cannot change the **Valid only on startup days** setting for a child job net. Additionally, you cannot change the

	Confirmation operation	Restart operation	Recovery operations	Recovery-change operation
			-	job flow configuration (sequential relationship), or add or delete jobs.

*1:

In case of V13.2.0 or earlier, select **Validate job net confirmation** under **Schedule option** in the **Use function1** tab of the **Define Jobscheduler Startup Parameters** window (by default, all settings are selected).

📖 Information
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Actions when recovery operations are enabled

If you have enabled recovery operations, the following actions will be performed:

- **Start from Specified Job**

   The specified job is executed. If you specify a child job net, execution starts from the first job in the child job net.

- **Restart from Specified Job**

   The specified job is executed. Execution starts from the job that terminated abnormally in the job net. Only jobs with the job net icon can be operated.

   This operation is the same as the "restart operation" of a job that terminated abnormally.

- **Start from Next Job**

   The status of the specified job remains as is, and execution starts from the succeeding job. Only jobs other than those with the job net icon can be operated.

- **Specified Job Only**

   Only the specified job is executed. The succeeding job is not executed. Only jobs other than those with the job net icon can be operated.
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If a job terminates abnormally, the recovery job registered beforehand is started automatically

Instead of taking corrective action after a job has terminated abnormally, Systemwalker Operation Manager allows , you to register an executable file (referred to as a "recovery job") beforehand that defines the corrective action to be taken if an error occurs, and the recovery job is started automatically if a job terminates abnormally. If the recovery job completes normally, you can even restart the original job that terminated abnormally without performing any operation.
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References:

For the confirmation operation:
"Defining Startup Parameters" in the *Installation Guide*
"Job Net Operations and Actions" in the *User's Guide*

For the restart operation:
"Operating Scheduled Jobs" and "Job Net Operations and Actions" in the *User's Guide*
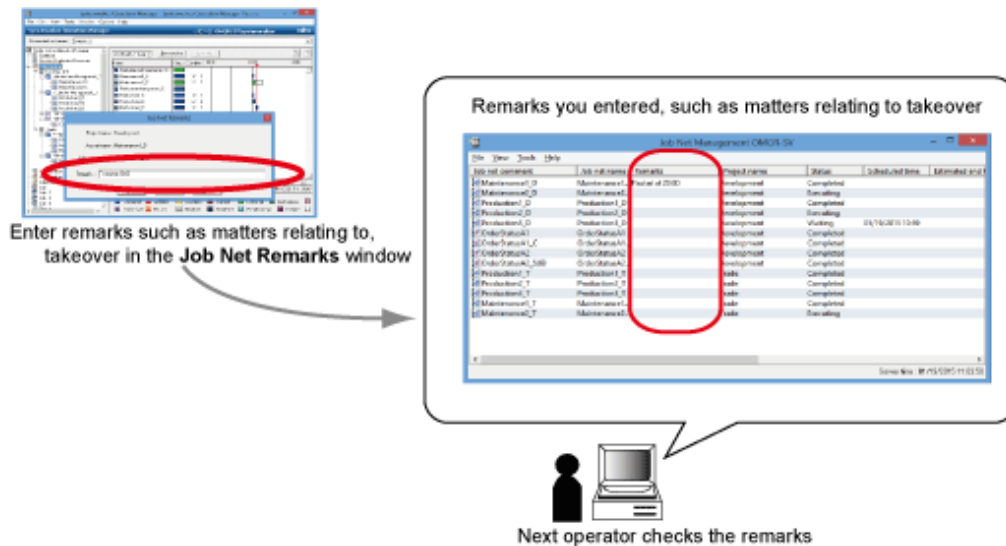
For recovery operations:
"Recovering Scheduled Jobs" and "Job Recovery Operations and Actions" in the *User's Guide*

For the recovery-change operation:
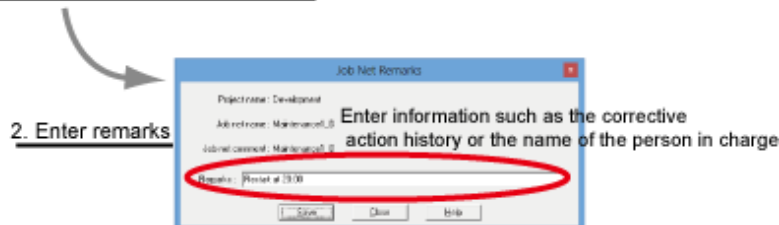"Recovery-Changing the Job Information" in the *User's Guide*

2.2 Add Remarks for the Next Operator

If you want to add additional notes or remarks for the next operator, such as a history of corrective actions or matters relating to takeover, you can add remarks in the job net information. You can write any text, such as a description for the job net, as the job net remarks. The written text is displayed in various windows, such as the **Job Net Management** window. The next operator can then review the remarks displayed in the window.

Enter remarks such as matters relating to, takeover in the **Job Net Remarks** window

Remarks you entered, such as matters relating to takeover

Next operator checks the remarks

Procedure

1. Display the **Job Net Remarks** window

2. Enter remarks

Enter information such as the corrective action history or the name of the person in charge

1. Display the **Job Net Remarks** window

   Right-click a job net displayed in the following windows, and click **Job Net Remarks** from the pop-up menu that is displayed:

   - **Job Selection** window

   - **Gantt Chart** window

   - **Job Net Management** window

2. Enter the remarks

   In the **Job Net Remarks** window, write any text (such as a corrective action history or matters relating to takeover) in the **Remarks** field.

The remarks you entered are displayed in the following windows:

- **Job Net Management** window

- **Job Nets Management** window

- [On V13.3.1 or earlier]

  Schedule Distribution Monitor[Monitor Carried Over Job Nets] window (if schedule distribution is being performed)

  [On V13.8.0 or later]

  Master Schedule Management [Monitor Carried over Job Nets] window (if Master Schedule Management is being performed)

Information

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Benefits of using remarks

Add a description for other operators providing details not apparent from just the job net name and folder name

> You can, for example, append keywords identifying the work phase, such as "confirmation job before backup" or "late night monitoring job" (you can use the set keywords to perform a filtered search).

Cross-search using remarks

> You can cross-search the job nets running on multiple servers using any keyword written in the remarks. The cross-searched job nets can then be monitored (easily extract them by setting the same keyword).

> Windows that can be used for searching remarks

  - **Job Net Filtering Conditions** window

  - **Filtering Conditions for Job Nets Management** window

  - **Filtering Conditions Setup** window (list of job nets)

  - **Define Filtering Conditions** dialog box ([on V13.3.1 or earlier] schedule distribution; [on V13.8.0 or later] Master Schedule Management)

Filter job nets by using keywords from the remarks and batch process them

> You can perform a filtered search in the **Job Net Management** window and the **Job Nets Management** window using keywords from the remarks and batch process (such as restart and cancel) multiple selected job nets.

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2.3 Check the Operation History

> **Applicable versions and levels**
>
> - Windows versions: V13.2.0 or later
> - Solaris versions: V13.2.0 or later
> - Linux versions: V13.2.0 or later
> - Linux for Itanium versions: V13.2.0 or later
> - HP-UX versions: V13.2.0 or later
> - AIX versions: V13.2.0 or later

Operations performed on Systemwalker Operation Manager are recorded in the audit log files. By analyzing the audit log files, you can check the operation history, including who performed what operation, when, and from where.

The audit log files record operations such as the following:

- Service and daemon startup

- Login authentication to Systemwalker Operation Manager

- Definition changes and operations using a Systemwalker Operation Manager environment setup client

- Client usage

- User registration and password changes

- Project additions and updates

- Schedule definition changes and operations

- Job and queue definition changes and operations

- Command and API operations

By default, audit logs are output to the directories below:

[Windows versions]

<*Systemwalker Operation Manager installation directory*>\MPWALKER.JM\mpcmtool\audit

[UNIX versions]

/var/opt/FJSVftlo/audit

Procedure

Only operating system administrators can view recorded audit log files. Use a text editor, Microsoft(R) Excel, or similar application to view and analyze log files.

1. Import audit log files

   Import the relevant log files (mp_omgr_audit *YYMMDD*.log) from the output destination specified in the audit log settings to a text editor, Microsoft(R) Excel, or similar application.

   One line of an audit log constitutes one record, and the log is recorded in CSV format as shown below.

   > <*date*>,<*operation location*>,<*execution host*>,<*operator*>,<*operation type*>,<*operation target*>,<*operation content*>,<*execution result*>,<*component*>,<*additional information*>

2. Extract the required logs

   Using the search and sort functions, extract the audit logs relevant to your purpose from the audit logs you imported to the text editor or Microsoft(R) Excel, and then analyze them.

   For example, to check who changed the "JNET1" job net and when:

   1. From the audit log file, extract the line containing the job net name "JNET1" and "MOD_JOBNET", which indicates a change to the job net.

   2. From the date and operator information, identify who operated the job net and when.

   Each change to a job net is marked by a search keyword such as "MOD_JOBNET", with a different keyword used for each type of operation. Use the search keyword when extracting the required information according to operation type.

After an audit log file is output, it is saved only for the specified retention period. It is recommended that you periodically back up audit log files as required.

Information

Benefits of using audit log files

- You can monitor and trace which user performed unauthorized operations.

- By periodically checking the logs, you can confirm that there have been no suspicious operations or access (such as numerous login failures).

- You can use the log files for investigation when information has been leaked.

- You can trace the cause when a problem occurs due to erroneous operation, so you can use the log files as the information for isolating problems.

- The collection of logs is a deterrent against unauthorized operation of data and information leakage.

2.4 Restrict Monitoring to Specific Job Nets

Applicable versions and levels

- Windows versions: V13.8.0 or later
- Solaris versions: V13.8.0 or later
- Linux versions: V13.8.0 or later

The Web Console enables the operator to restrict monitoring to the job nets that are important for operation. The operator can thus reliably monitor the execution status of the minimum required job nets in the Gantt chart and the job net list screen.
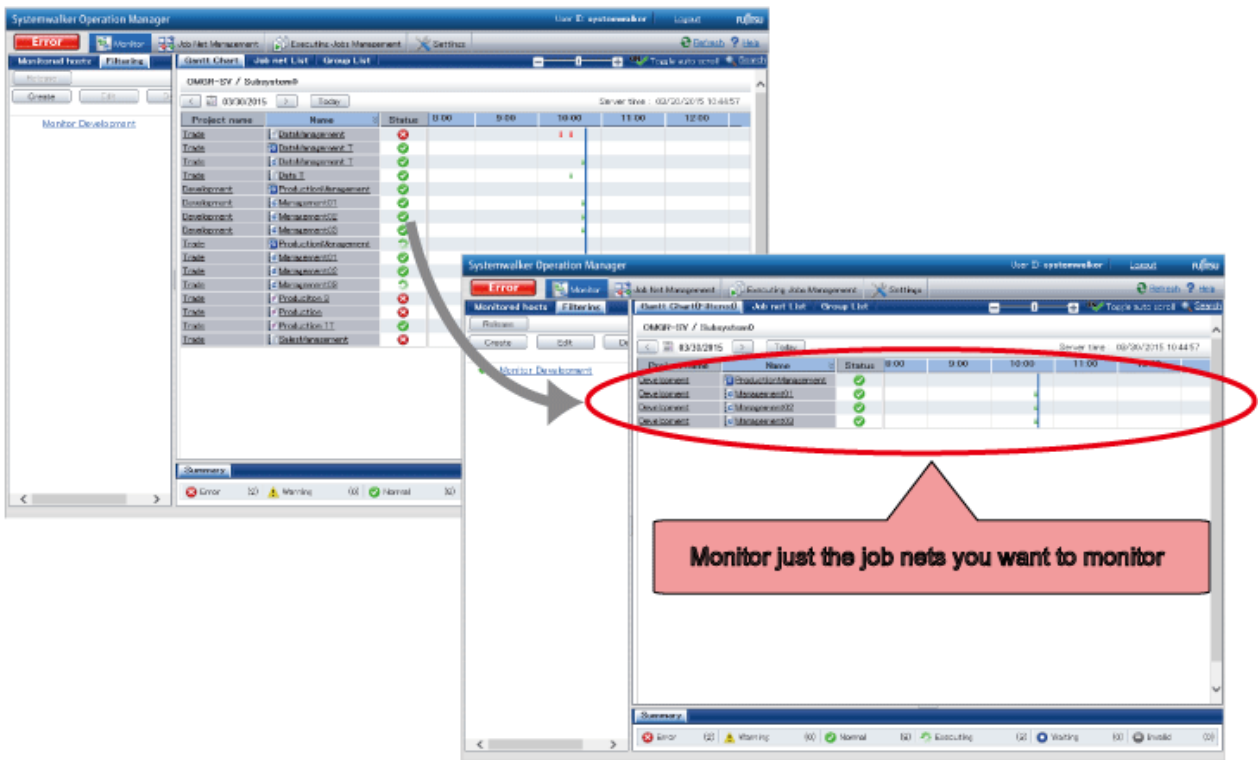
Procedure

1. Specify the job nets to be monitored

   Select the job nets to be monitored. In **Job Net Remarks**, specify the keyword (for example, "Online job monitoring") to be used as the monitoring condition.

   Use the following procedure to specify **Job Net Remarks**:

   - Configuring the settings from a Systemwalker Operation Manager client

     Specify a keyword in the **Remarks** field in the **Job Net Remarks** window.

   - Configuring the settings from the Systemwalker Operation Manager Web Console

     Click **Job Net Management** >> **Remarks** and specify a keyword.

- Configuring the settings from a command

    Use the jobschnetmemo command to specify a keyword.

2. Specify the job net filtering conditions for restricted monitoring

   Specify the job net filtering conditions based on a keyword to be used as the monitoring condition.

   1. In the Systemwalker Operation Manager Web Console, click **Monitor** >> **Filter** tab, and click **Create**.

   2. To create filtering conditions, enter any name (for example, "Online job filter monitoring") in **Filter name**, enter the keyword (online job monitoring) you specified in step 1 in the **Remarks** field under **Text**, and click **Save**.

3. Filter and monitor the job nets selected for restricted monitoring

   Filter and monitor the job nets based on the keyword used as the monitoring condition. In the Systemwalker Operation Manager Web Console, click **Monitor** >> **Filter** tab and select the filter name you saved in part 2 of Step 2.

Selecting the filter name ("Online job filter monitoring") enables you to restrict the job nets in the **Gantt chart** or **Job net list** tab displayed from **Monitor**, and monitor just the job nets you want to monitor.

Information

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- Job nets that partially match the keyword you set in the **Remarks** field of **Create filter display** in the Web Console are displayed. You can therefore restrict monitoring to just the job nets you want to monitor even if text (such as a corrective action history or matters relating to takeover) is defined in addition to the keyword to be used as the monitoring condition.

- Saved filter names facilitate subsequent monitoring because you can select a saved filter name from **Filter management display** in the Web Console for filtering and monitoring.

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Reference:

"Overview of the Web Console Functions" in the *Web Console Operation Guide*