

FUJITSU Software

Symfoware Server V12.0.0

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

Installation and Setup Guide

for Server

Windows

B1WS-1136-02ENZ0(00)
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Preface

Purpose of this document

The Symfoware Server database system extends the PostgreSQL features and runs on the Windows platform.

This document describes how to install and setup "Symfoware Server".

Intended readers

This document is intended for those who install and operate Symfoware Server.

Readers of this document are assumed to have general knowledge of:

- PostgreSQL
- SQL
- Windows

Structure of this document

This document is structured as follows:

[Chapter 1 Overview of Installation](#)

Describes the installation types and procedures

[Chapter 2 Operating Environment](#)

Describes the operating environment required to use Symfoware Server

[Chapter 3 Initial Installation](#)

Describes how to perform an initial installation of Symfoware Server

[Chapter 4 Setup](#)

Describes the setup to be performed after installation

[Chapter 5 Reinstallation](#)

Describes how to reinstall Symfoware Server

[Chapter 6 Uninstallation](#)

Describes how to uninstall Symfoware Server

[Appendix A Installation in Silent Mode](#)

Provides specifications for installation in silent mode

[Appendix B Multi-Version Installation](#)

Describes how to install a version different from the one currently installed

[Appendix C Setting Up and Removing WebAdmin](#)

Describes how to set up and remove WebAdmin

[Appendix D Checking the Version of the Installed Product](#)

Describes how to check the version of the installed product

[Appendix E Configuring Parameters](#)

Describes Symfoware Server parameters.

[Appendix F Uninstall \(middleware\) Tool](#)

Describes the Uninstall (middleware)

[Appendix G Estimating Database Disk Space Requirements](#)

Describes how to estimate database disk space requirements

[Appendix H Estimating Memory Requirements](#)

Describes the formulas for estimating memory requirements

[Appendix I Quantitative Limits](#)

Describes the quantity range

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Chapter 1 Overview of Installation

This chapter provides an overview of Symfoware Server installation.

1.1 Installation Types

The following three installation types are available for Symfoware Server:

- Initial installation
- Reinstallation
- Multi-version installation

1.1.1 Initial Installation

In initial installation, Symfoware Server is installed for the first time.

Refer to "[Chapter 3 Initial Installation](#)" for details.

1.1.2 Reinstallation

Perform reinstallation to repair installed program files that have become unusable for any reason.

Refer to "[Chapter 5 Reinstallation](#)" for details.

1.1.3 Multi-Version Installation

Perform multi-version installation when installing a version different from the one currently running on the same OS.

Refer to "[Appendix B Multi-Version Installation](#)" for details.

1.2 Installation Procedure

The following installation procedures are available for Symfoware Server:

- Installation in interactive mode
- Installation in silent mode

Select the installation procedure that corresponds to your environment.



.....

If you have antivirus software installed, the server may crash, fail to start, or stop responding, during installation or when starting up after installation. Set scan exception settings for the installation directory and resource allocation directory so that the files in these directories are not scanned for viruses.

.....

1.2.1 Installation in Interactive Mode

Interactive mode enables installation to be performed while the required information is entered interactively.

In interactive mode installation, the Symfoware Server installer automatically determines the installation state of Symfoware Server. Install Symfoware Server using one of the following installation types, in accordance with the installation state:

- Initial installation
- Reinstallation
- Multi-version installation

1.2.2 Installation in Silent Mode

Silent mode enables installation to be performed without the need to enter any information interactively.

Initial installations and multi-version installations can be performed in silent mode.

1.3 Uninstallation

Uninstallation removes the system files of the installed Symfoware Server.

Refer to "[Chapter 6 Uninstallation](#)" for details.

Chapter 2 Operating Environment

This chapter describes the operating environment required to use Symfoware Server.



See

Refer to "Operating Environment" in the Symfoware Server Installation and Setup Guide for Client when installing the Symfoware Server client feature at the same time.

2.1 Required Operating System

One of the operating systems shown in the table below is required to use Symfoware Server.

Table 2.1 Operating systems

Operating system name	64-bit product	32-bit product
<ul style="list-style-type: none"> - Microsoft(R) Windows Server(R) 2003, Standard Edition - Microsoft(R) Windows Server(R) 2003, Enterprise Edition - Microsoft(R) Windows Server(R) 2003 R2, Standard Edition - Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition 	N	Y
<ul style="list-style-type: none"> - Microsoft(R) Windows Server(R) 2003, Standard x64 Edition - Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition - Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition - Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition 	Y	Y (*1)
<ul style="list-style-type: none"> - Microsoft(R) Windows Server(R) 2008 Standard - Microsoft(R) Windows Server(R) 2008 Enterprise - Microsoft(R) Windows Server(R) 2008 Datacenter - Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V - Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V - Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V 	Y	Y
<ul style="list-style-type: none"> - Microsoft(R) Windows Server(R) 2008 R2 Datacenter - Microsoft(R) Windows Server(R) 2008 R2 Enterprise - Microsoft(R) Windows Server(R) 2008 R2 Standard - Microsoft(R) Windows Server(R) 2008 R2 Foundation 	Y	Y (*1)
<ul style="list-style-type: none"> - Microsoft(R) Windows Server(R) 2012 Datacenter 	Y	Y (*1)

Operating system name	64-bit product	32-bit product
- Microsoft(R) Windows Server(R) 2012 Standard		
- Microsoft(R) Windows Server(R) 2012 Essentials		
- Microsoft(R) Windows Server(R) 2012 Foundation		

Y: Can be used

N: Cannot be used

*1): Symfoware Server runs in a 32-bit environment and also can run on the Server Core installation option supported for Windows Server(R) 2008 or later.

Note

- The TCP/IP protocol must be installed.
- One of the following basic software products is required if performing failover that is linked to the cluster software of the operating system:
 - Microsoft(R) Windows Server(R) 2003, Enterprise Edition
 - Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition
 - Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition
 - Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition
 - Microsoft(R) Windows Server(R) 2008 Enterprise
 - Microsoft(R) Windows Server(R) 2008 Datacenter
 - Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V
 - Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V
 - Microsoft(R) Windows Server(R) 2008 R2 Datacenter
 - Microsoft(R) Windows Server(R) 2008 R2 Enterprise
 - Microsoft(R) Windows Server(R) 2012 Datacenter
 - Microsoft(R) Windows Server(R) 2012 Standard
 - Microsoft(R) Windows Server(R) 2012 Essentials
 - Microsoft(R) Windows Server(R) 2012 Foundation

2.2 Related Software

The following table lists the software required to use Symfoware Server.

Table 2.2 Related software

No.	Software name	Version	Remarks
1	Visual Studio	2008 2010 2012	-
2	.NET Framework	3.5 SP1 or later 4 4.5	-
3	JDK or JRE	Java SE 6/7 or later	-



The following programs are installed during installation of Symfoware Server:

- Microsoft Visual C++ 2005 Redistributable Package version 8.0.50727.42
- Microsoft Visual C++ 2010 Redistributable Package version 10.0.40219

Do not uninstall the above programs as they are required for running Symfoware Server.

The following table lists servers that can be connected to the Symfoware Server client feature.

Table 2.3 Connectable servers

OS	Product name
Windows Linux	Symfoware Server Standard Edition (Open Interface) V12.0.0 or later

2.3 Excluded Software

This section describes excluded software.

The exclusions amongst Symfoware Server editions are as follows:

Installed product		Product to be installed	
		Symfoware Server Standard Edition	
		32-bit product	64-bit product
Symfoware Server Standard Edition	32-bit product	Y (*2)	Y (*1)
	64-bit product	Y (*1)	Y (*2)

Y (*1): New installation can be performed.

Y (*2): Reinstallation or multi-version installation can be performed, depending on the generation.

2.4 Required Patches

There are no required patches.

2.5 Hardware Environment

The following hardware is required to use Symfoware Server.

Memory

256MB or more is recommended (128MB or more).

2.6 Supported System Environment

This section describes the supported system environment.

2.6.1 TCP/IP Protocol

Symfoware Server supports version 4 and 6 (IPv4 and IPv6) of TCP/IP protocols.



Note

Do not use link-local addresses if TCP/IP protocol version 6 addresses are used.

2.6.2 File System

You can install Symfoware Server only if the system folder is an NTFS volume.

Chapter 3 Initial Installation

This chapter describes the procedures for the initial installation of Symfoware Server.

Note

- The installation must be performed by a user with administrator privileges (a user ID that belongs to the Administrators group).
- Stop all applications before starting the installation.
- The Windows Installer service must be running.
- In either of the following cases, it is necessary to switch to install mode by executing the command shown below before installation. Also, after the installation is completed, execute the command shown below to switch back to execute mode.
 - In Windows Server(R) 2003, Windows Server(R) 2003 R2 or Windows Server(R) 2008, the terminal server is installed in application server mode.
 - In Windows Server(R) 2008 R2 or Windows Server(R) 2012, the remote desktop service is installed in application server mode.

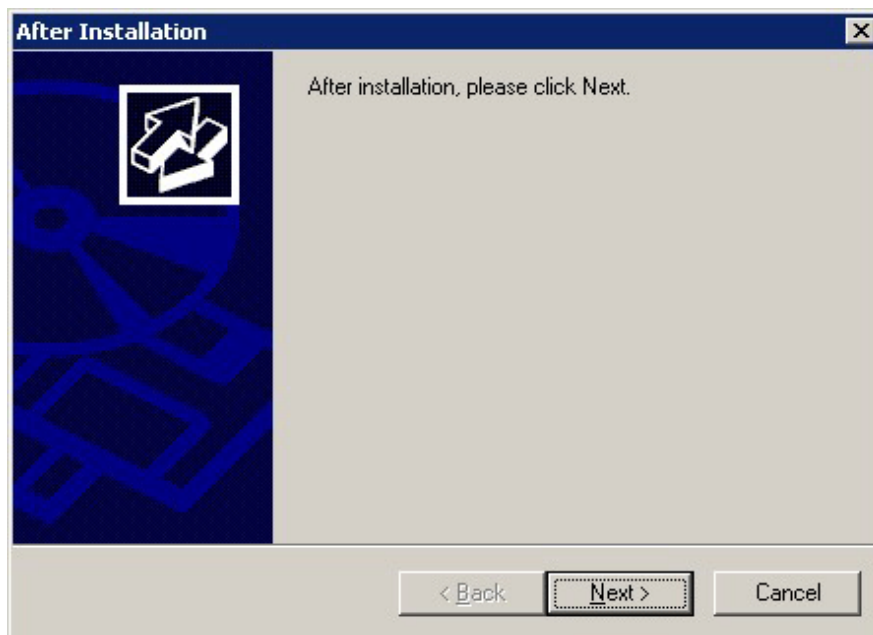
[Before the installation]

```
CHANGE USER /INSTALL
```

[After the installation]

```
CHANGE USER /EXECUTE
```

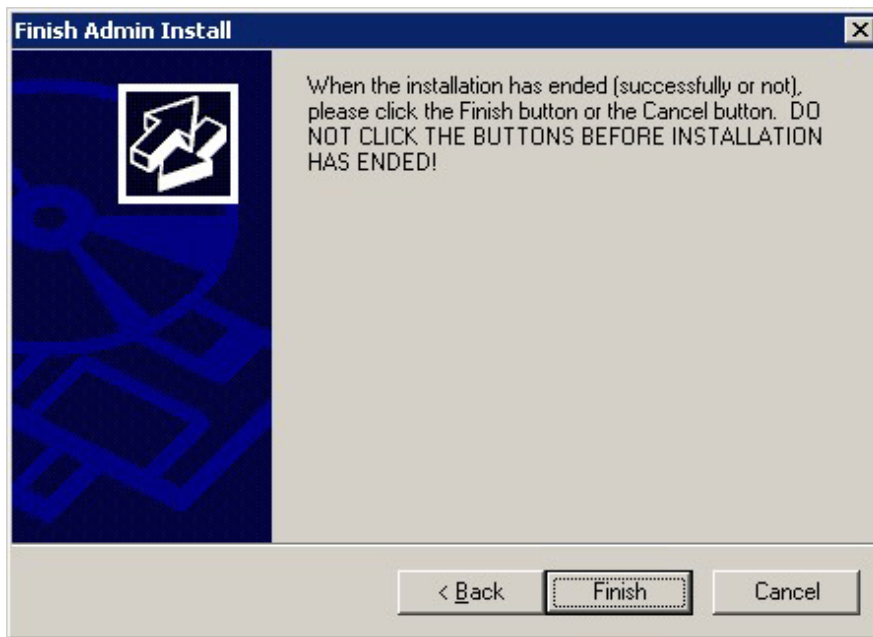
- The following window may be displayed when executing the installation program:



If this window is displayed, perform the following operations:

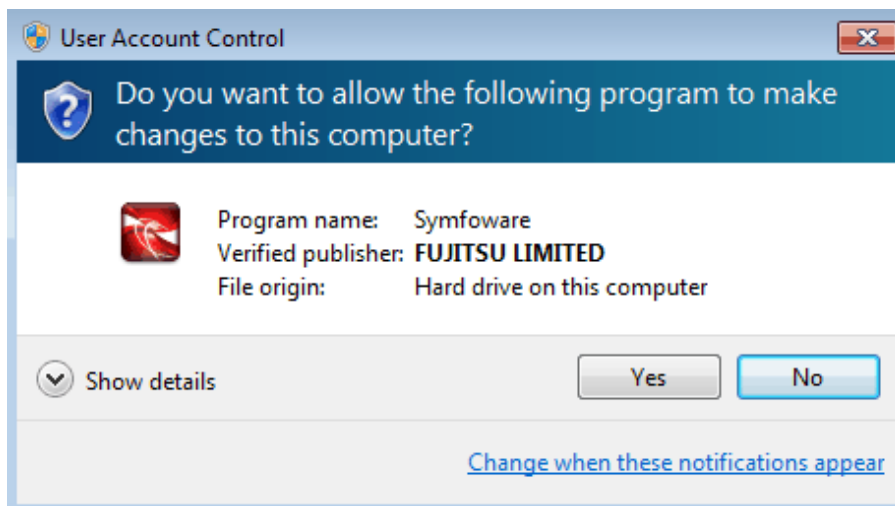
1. Perform the installation steps until the [InstallShield Wizard Complete] window is displayed.
2. At the window shown above, click [Next].

3. The window shown below is displayed. Click [Finish].



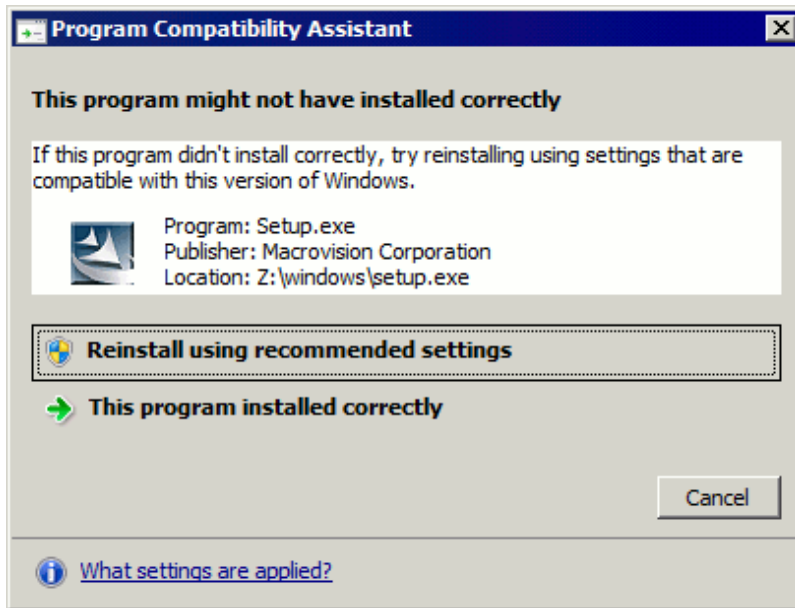
Information

- Refer to "[Appendix D Checking the Version of the Installed Product](#)" for information on how to check the versions of installed products.
- If a [User Account Control] dialog box such as the following is displayed at the start of the installation, click [Yes] to continue processing:



If [No] is clicked, permission to continue is denied and an [Error] dialog box will be displayed. To continue the installation, click [Retry] at the [Error] dialog box. To end the installation, click [Cancel].

- If installation is suspended or processing terminates abnormally, a dialog box of the program compatibility assistant similar to the one shown below may be displayed. Click [This program installed correctly] and continue operation.



3.1 Installation in Interactive Mode

The installation must be performed by a user with administrator privileges (a user ID that belongs to the Administrators group).

The example described here shows the procedure for installing Symfoware Server Standard Edition (64bit) on a 64-bit operating system.

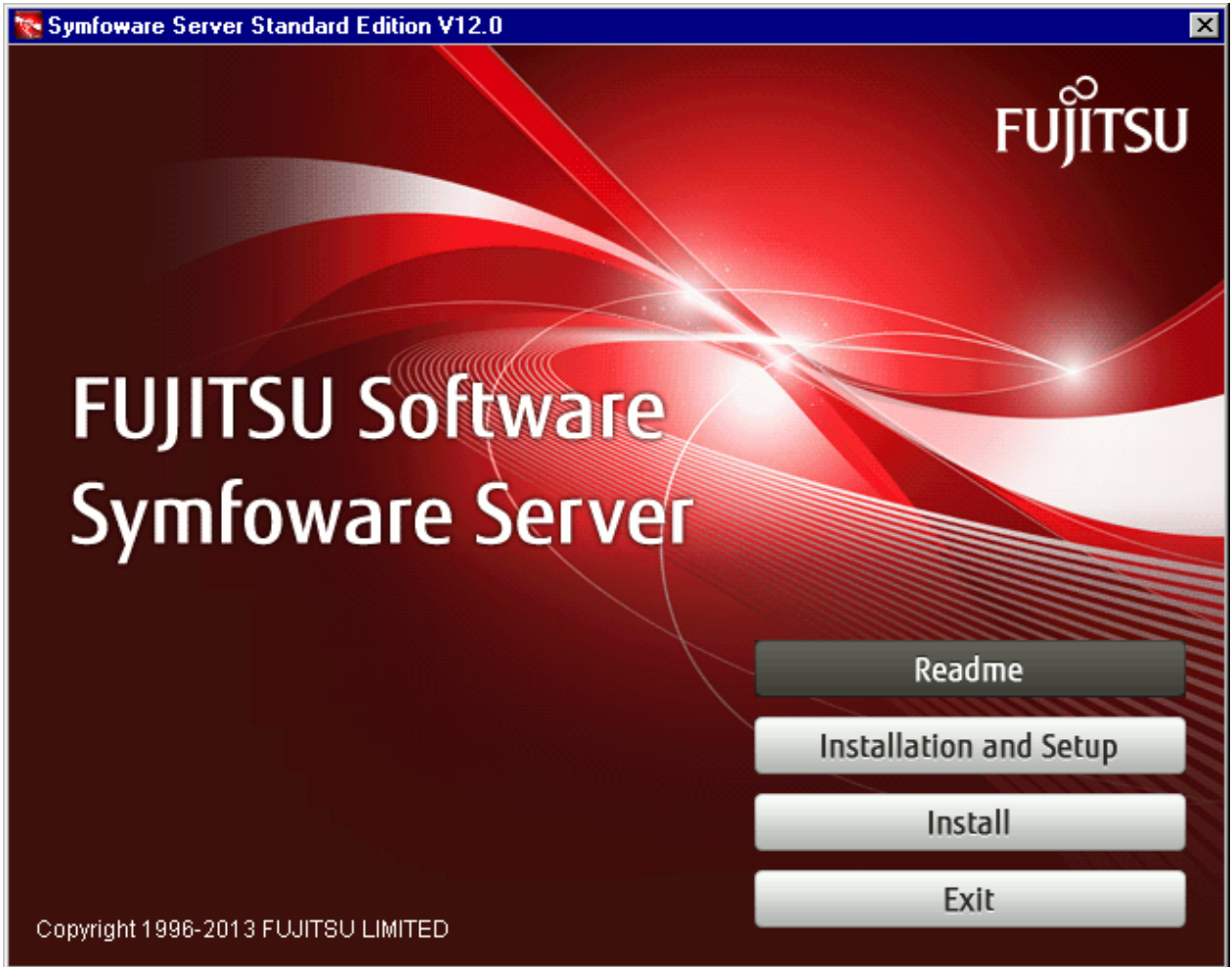
The installation procedure is described below.

1. Inserting the DVD

Insert the Symfoware Server DVD into the drive.

2. Running the installation program

When the DVD is inserted, the installation menu will be displayed. Click [Install].



Note

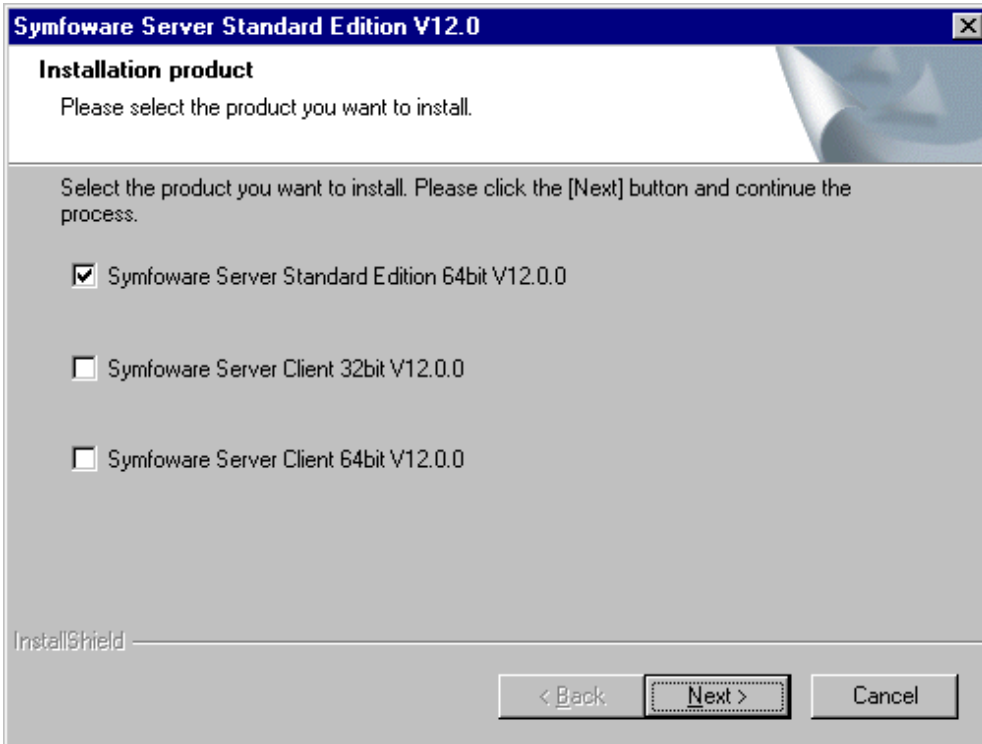
If the Autorun feature of Windows is disabled, or if the operating system is a remote desktop service (terminal service), the installation program is not automatically started. Execute the following file using [Run] or Windows Explorer.

Z:\autorun.exe

For Z, specify the drive name of the drive where the DVD has been inserted.

3. Selecting the product to install

The [Installation product] window will be displayed. After checking that there is sufficient free space at the installation destination, select the product to be installed, and then click [Next].

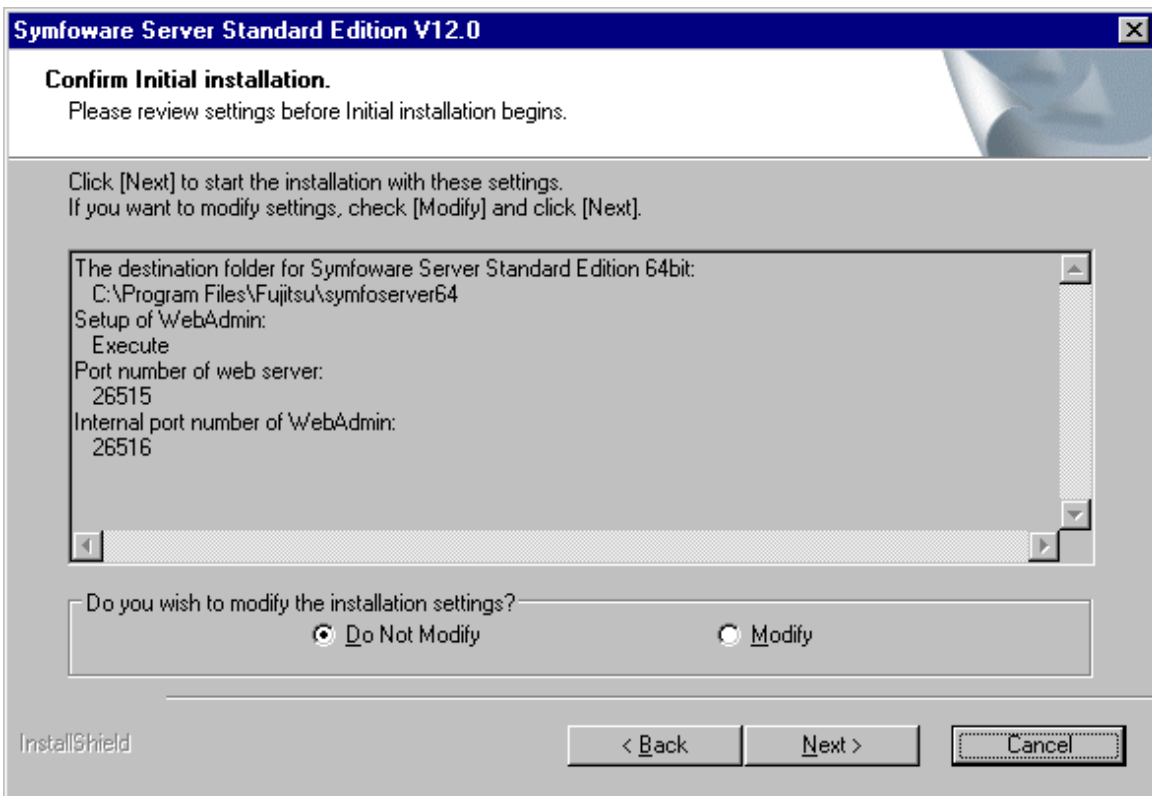


4. Checking the installation content

The [Confirm Setup Information] window will be displayed.

If there are no issues with the settings content, click [Next]. The installation process will then start. Proceed to "[8. Completing installation](#)".

To modify the settings content, select [Modify], and then click [Next].

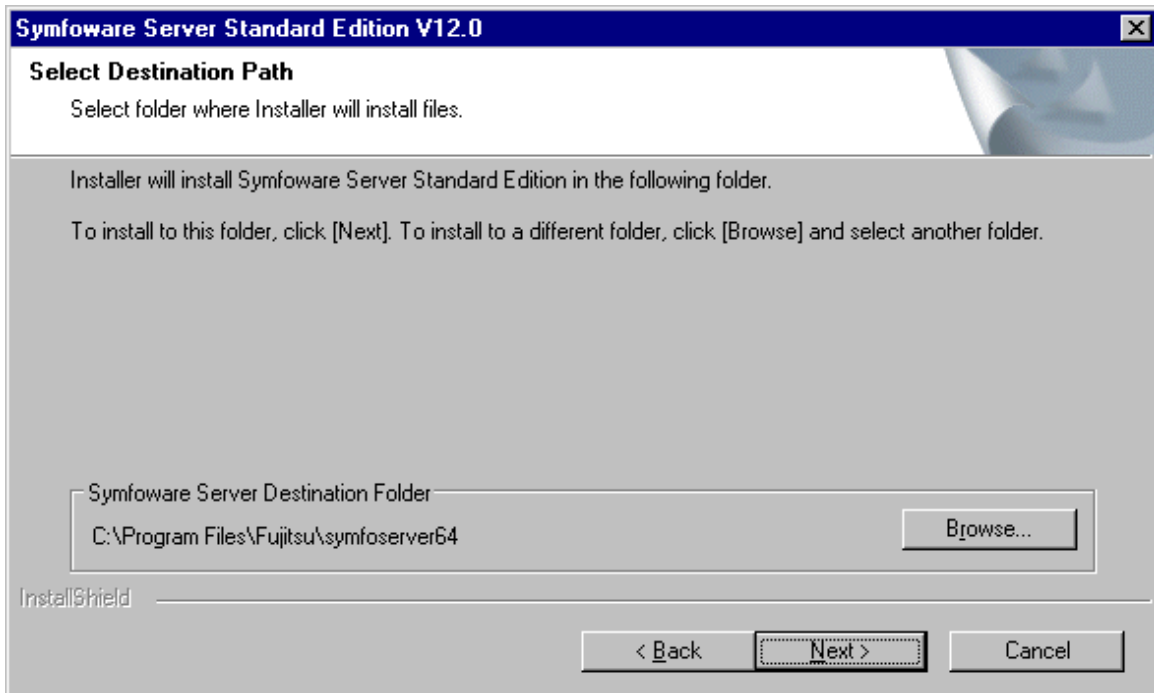


Note

Make a note of the Web server port number for use in the Windows firewall settings.

5. Selecting the installation destination directory

The [Select Destination Path] window will be displayed. Select the installation destination directory, and then click [Next].



Note

It is necessary to specify a local disk as the installation destination of Symfoware Server.

6. Setting up WebAdmin

The [The Setup of WebAdmin] window is displayed. To perform setup, confirm that the port numbers are unused port numbers in the following ranges, and then click [Next]:

- Windows Server(R) 2003 or Windows Server(R) 2003 R2: 5001 to 49151

- Windows Server(R) 2008, Windows Server(R) 2008 R2, or Windows Server(R) 2012: 1024 to 49151

Symfoware Server Standard Edition V12.0

The setup of WebAdmin

Please select whether to run the installation and the setup of WebAdmin simultaneously.

Is the setup of WebAdmin of Symfoware Server executed?

No

Yes

The port number for web server [5001-49151]:

The internal port number for WebAdmin [5001-49151]:

InstallShield

< Back Next > Cancel

Note

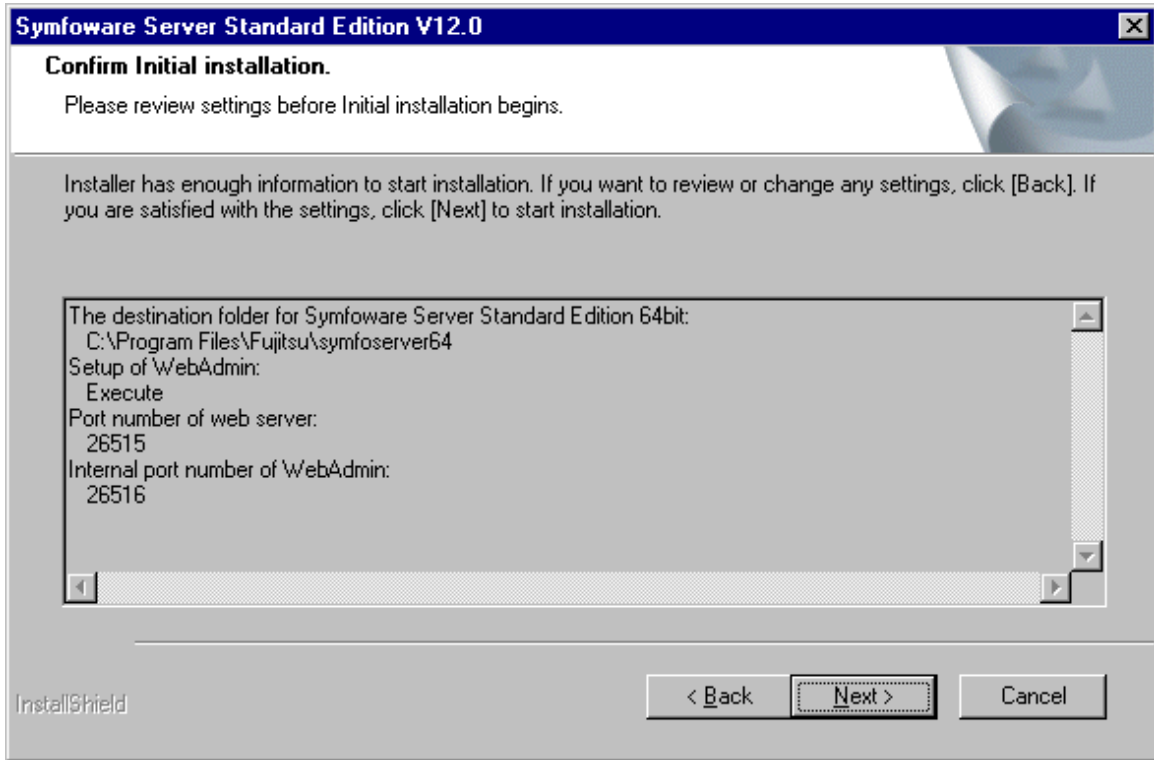
Make a note of the Web server port number for use in the Windows firewall settings.

7. Checking the installation content after modifying the settings

The [Confirm Setup Information] window will be displayed.

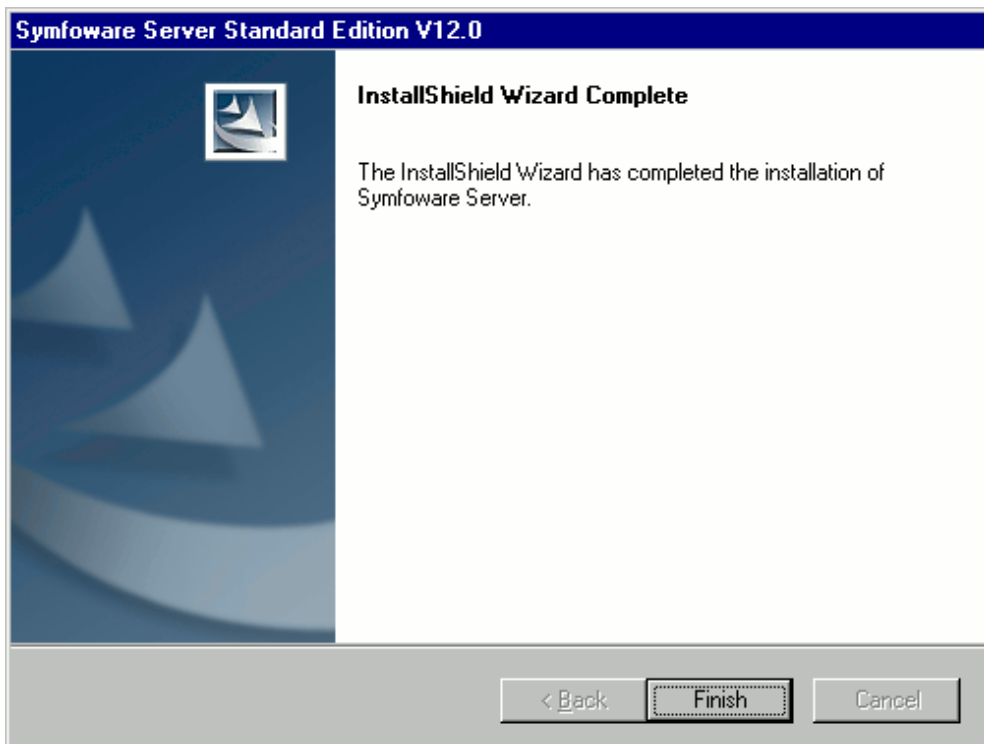
If there are no issues with the settings content, click [Next]. Click [Next] to start the installation process.

To modify the settings content again, click [Back].



8. Completing installation

The completion window is displayed. Click [Finish].



Windows Server(R) 2003, Windows Server(R) 2003 R2, Windows Server(R) 2008 or Windows Server(R) 2008 R2:

Installation is complete if the following has been added to [All Programs] in the [Start] menu:

- Symfoware Server Standard Edition (Open Interface) (64bit) V12.0.0

Windows Server(R) 2012:

Installation is complete if the following has been added to [All apps] in the [Start] screen:

- Symfoware Server Standard Edition (Open Interface) (64bit) V12.0.0

3.2 Installation in Silent Mode

The installation must be performed by a user with administrator privileges (a user ID that belongs to the Administrators group).

Install according to the following procedure:

1. Create an installation parameters CSV file.
2. Run the installation.

1. Create an installation parameters CSV file

Consider the features that will be required for system operations, and then create an installation parameters CSV file that uses the following specification format.

```
sectionName, parameterName, value
sectionName, parameterName, value
:
```

Refer to "[Appendix A Installation in Silent Mode](#)" for information on installation parameters CSV files.



Make a note of the Web server port number for use in the Windows firewall settings.



The template for the installation parameters CSV file is "*Z:\sample\sample.csv*". (Z is the drive on which the DVD is mounted.)

2. Run the installation

- a. When the Symfoware Server DVD is inserted into the drive, the [Install Menu] will be displayed automatically. Click [Finish].
- b. Execute the following command from the command prompt:

```
> Z:\silent.bat installationParametersCsvFile
```

For Z, specify the drive name of the drive where the DVD has been inserted.

If the installer ends in an error, a message is output to the log file and return values are returned. Refer to "[Appendix A Installation in Silent Mode](#)" for details.

Chapter 4 Setup

This chapter describes the setup procedures to be performed after installation completes.

4.1 Operating Method Types and Selection

This section describes how to operate Symfoware Server.

There are two methods of managing Symfoware Server operations - select one that suits your purposes:

- Simple operation management using a web-based GUI tool (WebAdmin)

Suitable when using frequently used basic settings and operations for operation management.

This method allows you to perform simple daily tasks such as starting the system before beginning business, and stopping the system when business is over, using an intuitive operation.

- Advanced operation management using server commands

When operating in a system that is automated by operation management middleware (Systemwalker Centric Manager, for example), this method allows you to use more detailed settings and operations and perform higher level operation management.

Note that it is not possible to combine WebAdmin and server commands in the following ways:

- Using WebAdmin to operate instances created with the initdb command
- Using commands to operate instances created with WebAdmin
- Using commands to recover databases backed up with WebAdmin

For instances created with WebAdmin, however, backup can be obtained with the `pgx_dmpall` command. Also, WebAdmin can perform recovery by using the backup obtained with the `pgx_dmpall` command.

The following table shows the GUI and command operations used at different phases of operation:

Operation		Operation with the GUI	Operation with commands
Setup	Creating an instance	WebAdmin	initdb command
	Changing the configuration files	WebAdmin	Direct editing of the configuration file
Start an instance		WebAdmin	OS-provided net command or sc command
Creating a database		pgAdmin	Specify with a DDL statement and define with psql and applications
Backing up the database		WebAdmin pgx_dmpall command	pgx_dmpall command
Monitoring	Database errors	WebAdmin (*1)	Messages output to the event log (*1)
	Disk space	WebAdmin (*1) (*2)	OS-provided fsutil command (check available capacity) and dir command (check used capacity)
	Connection status	pgAdmin	psql command (*3)
Database recovery		WebAdmin	pgx_rcvall command

*1: It is possible to monitor with operation management middleware (Systemwalker Centric Manager, for example).

*2: A warning is displayed when disk usage exceeds 80%

*3: Status is monitored by retrieving data from the `pg_stat_activity` standard statistics information view.



See

Refer to "Periodic Operations" and "Actions when an Error Occurs" in the Operation Guide for information on monitoring and database recovery.

4.2 Preparations for Setup

This section describes the preparation required before setting up Symfoware Server.

4.2.1 Creating an Instance Administrator

Decide the OS user account that will become the instance administrator. Use either a new user, or a user that already exists.

To create a user, in the [Start] menu, select [Administrative Tools], [Computer Management], and then create the user in [Local Users and Groups]. Refer to "Help and Support" for details.

The following characters can be used for user names:

- - (hyphen)
- _ (underscore)
- Space
- A-Z, a-z, 0-9 (alphanumeric)



Note

The following notes apply if using WebAdmin for operations:

- After creating the user account of the instance administrator, log in to the operating system. A profile directory is created for the user when logging in to the operating system for the first time. This directory will be used by WebAdmin.
- If changing the password for the user account of the instance administrator, always ensure to stop the instance and log out of WebAdmin before making the change. If you mistakenly change the password while logged in to WebAdmin or while the instance is running, log out from WebAdmin, and then log in again, and stop and start the instance.

4.2.1.1 Security policy settings

If using commands for operation, security settings that allow logon as a service are required for the operating system user account of the instance administrator in order to start and stop an instance using a Windows service.



Information

If using WebAdmin for operation, these settings are not required as WebAdmin performs the settings automatically for the user ID (operating system user account) that logged in to the database server.

The following explains how to perform the security settings to allow logon as a service:

1. Displaying the Local Security Policy window

Windows Server(R) 2012:

1. In the [Start] screen, click [Administrative Tools].
2. In the [Administrative Tools] window, click [Local Security Policy].

Other operating systems:

In the [Start] menu, select [Administrative Tools], and then click [Local Security Policy].

2. Setting up security

1. In the [Local Security Policy] window, select [Security Settings], select [Local Policies], and then click [User Rights Assignment].
2. Under [Policy] in the [User Rights Assignment] window, double-click [Log on as a service].
3. In the [Log on as a service Properties] window, set the following:
 - a. Select the [Local Security Setting] tab.
 - b. On the [Local Security Setting] tab, click [Add User or Group].
 - c. In the [Select Users or Groups] window, enter the operating system user account of the instance administrator in [Enter the object names to select].
 - d. Click [OK].
4. In the [Log on as a service Properties] window, click [OK].

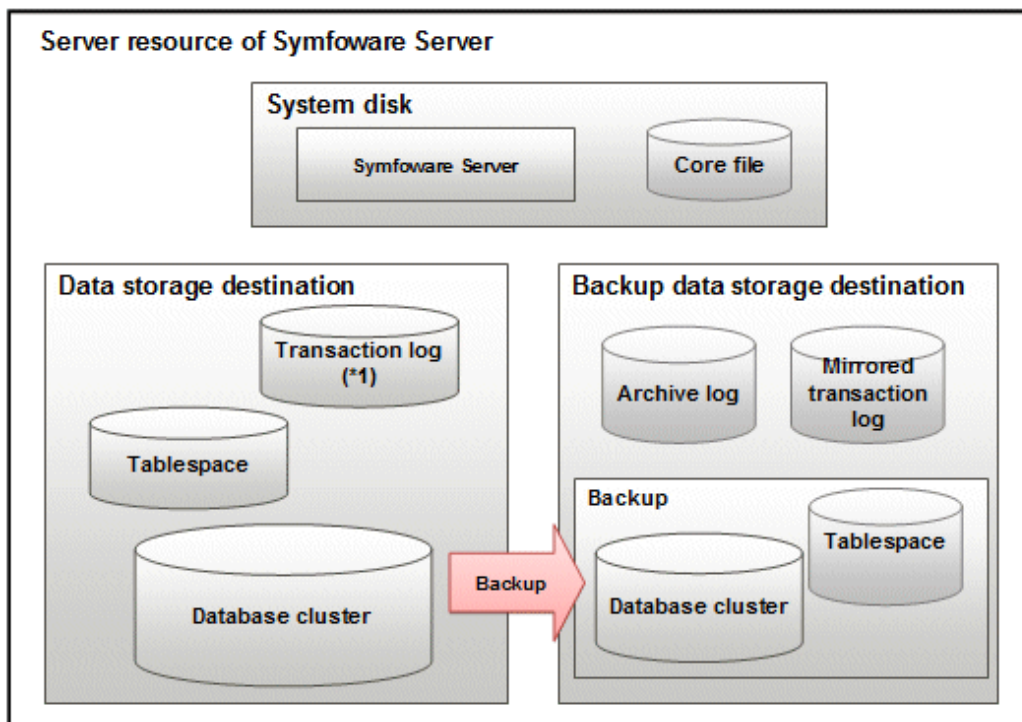
4.2.2 Preparing Directories to Deploy Resources

Prepare the directories required when creating instances.

Considerations when deploying resources

Consider the following when deploying the data storage destination and backup data storage destination:

- Deploy the data storage destination to a disk other than the system disk.
- Deploy the backup data storage destination to a disk other than the data storage destination, to take into account disk failures.
- The backup data storage destination requires at least double the capacity of the data storage destination, so deploy it to the disk with the most space available.
- If the transaction log storage destination and the data storage destination are deployed to different locations, then ensure that it is deployed to a disk other than that of the backup data storage destination.
- If using WebAdmin, specify an NTFS volume for the data storage destination and backup data storage destination. A network drive cannot be specified.



*1: To distribute the I/O load, place the transaction log on a different disk from the data storage destination.

Resource	Role
Database cluster	The area where the database is stored. It is a collection of databases managed by an instance.
Tablespace	Stores table files and index files in a separate area from the database cluster.
Transaction log	Stores log information in preparation for a crash recovery or rollback.
Archive log	Stores log information for recovery
Corefile	Symfoware Server process corefile output when an error occurs with a Symfoware Server process.

Examples of disk deployment

The following are examples of disk deployment:

Number of disks	Disk	Deployment
3	System disk	Symfoware Server program
		Corefile
	Connected physical disk	Data storage destination, transaction log storage destination
	Connected physical disk	Backup data storage destination
2	System disk	Symfoware Server program
		Corefile
		Data storage destination, transaction log storage destination
	Connected physical disk	Backup data storage destination

If instances are created with WebAdmin, it automatically determines the volumes connected to the system and sets the placement destinations for directories.

Volumes that can be candidates for the placement of directories meet the following conditions:

- They are physical disks
- The instance administrator has read and write permissions for the volumes.

The backup data storage destination is deployed to the disk with the greatest available capacity, and the data storage destination is deployed to the next greatest.

Preparing directories

The directories to be prepared depend on the way that you create the instances.

The following shows the directories that need to be prepared:

Directory to be prepared	Using WebAdmin	Using the initdb command
Data storage destination	Y (*1)	Y
Backup data storage destination	Y (*1)	O
Transaction log storage destination	O (*1) (*2)	O
Corefile output destination	N (*3)	O

Y: Required

O: Optional

N: Not required

*1: WebAdmin automatically creates a directory

*2: The default is to create in a directory in the data storage destination. When it is necessary to distribute the I/O load for the database data and the transaction log, consider putting the transaction log storage destination on a different disk from the data storage destination

*3: The default is to output to "*userProfileFolder\localSettingsFolder\Fujitsu\symfo_version\instanceName\core*". For example, if using Windows Server(R) 2008 R2, *userProfileFolder\localSettingsFolder* will be "C:\Users*userName*\AppData\Local".

To change the output destination, specify in the *core_directory* parameter and *core_contents* parameter in *postgresql.conf*. Refer to "Parameters" in the Operation Guide for information on the settings for these parameters.



Note

- The directories must meet the following conditions:
 - The directory owner must be the OS user account that you want to be the instance administrator
 - The directory must have write permission
 - The directory must be empty
- If using WebAdmin, network drives cannot be used.
- If using WebAdmin, only the following characters can be used for directory names:
 - \ (backslash)
 - - (hyphen)
 - _ (underscore)
 - : (colon)
 - Space
 - A-Z, a-z, 0-9 (alphanumeric)
- If anti-virus software is used, set scan exception settings for folders so that none of the server resources that comprise Symfoware Server are scanned for viruses. Alternatively, if the server resources that comprise Symfoware Server are to be scanned for viruses, stop the instance and perform the scan when tasks that use Symfoware Server are not operating.

4.2.3 Estimating Resources

Estimate the resources to be used on the Symfoware Server.

Refer to "[Appendix G Estimating Database Disk Space Requirements](#)" for information on estimating database disk space requirements.

Refer to "[Parameters automatically set by WebAdmin according to the amount of memory](#)" when creating multiple instances with WebAdmin.

Refer to "[Appendix H Estimating Memory Requirements](#)" when creating instances with the *initdb* command, to estimate memory usage.

4.2.4 Windows Firewall Settings

If the Windows firewall feature is to be enabled, you should enable a port number on the Web server. The following explains how to enable a port number:

Windows Server(R) 2003 or Windows Server(R) 2003 R2:

1. In the [Start] menu, select [Control Panel], and then click [Windows Firewall].
2. In the [Windows Firewall] window, on the [Exceptions] tab, click [Add Port].
3. In the [Add a Port] window, set the following:
 - a. In [Name], specify the desired name.

- b. In [Port number], specify the Web server port number that was specified during the WebAdmin setup.
 - c. Select [TCP].
4. Click [OK].
5. On the [Exceptions] tab, in the [Programs and Services] list, check if the added port is enabled.
6. In the [Windows Firewall] window, click [OK].

Windows Server(R) 2008:

1. In the [Start] menu, click [Control Panel].
2. Click [Security] and then click [Windows Firewall].
3. In the [Windows Firewall] window, click [Change settings].
4. On the [Exceptions] tab, click [Add port].
5. In the [Add a Port] window, set the following:
 - a. In [Name], specify the desired name.
 - b. In [Port number], specify the Web server port number that was specified during the WebAdmin setup.
 - c. Select [TCP].
6. Click [OK].
7. On the [Exceptions] tab, in the [Program or port] list, check if the added port is enabled.
8. In the [Windows Firewall] window, click [OK].

Windows Server(R) 2008 R2:

1. In the [Start] menu, click [Control Panel].
2. Click [System and Security], and then click [Windows Firewall].
3. In the [Windows Firewall] window, click [Advanced settings] on the left side of the window.
4. In the [Windows Firewall with Advanced Security] window, click [Inbound Rules] on the left side of the window.
5. Click [New Rule] on the right side of the window.
6. In the [New Inbound Rule Wizard] window, select [Port], and then click [Next].
7. Select [TCP] and [Specific local ports], then specify the Web server port number specified during the WebAdmin setup, and click [Next].
8. Select [Allow the connection], and then click [Next].
9. Select the profiles for which this rule applies, and then click [Next].
10. In [Name], specify the desired name, and then click [Finish].
11. In the [Windows Firewall with Advanced Security] window, check if the added rule is enabled under [Inbound Rules] in the center of the window.

Windows Server(R) 2012:

1. Right-click the [Start] screen, and then click [All apps] that is displayed in the bottom-right of the screen. In the [Apps] window, click [Control Panel].
2. Click [System and Security], and then click [Windows Firewall].
3. In the [Windows Firewall] window, click [Advanced settings] on the left side of the window.
4. In the [Windows Firewall with Advanced Security] window, click [Inbound Rules] on the left side of the window.
5. Click [New Rule] on the right side of the window.

6. In the [New Inbound Rule Wizard] window, select [Port], and then click [Next].
7. Select [TCP] and [Specific local ports], then specify the Web server port number specified during the WebAdmin setup, and click [Next].
8. Select [Allow the connection], and then click [Next].
9. Select the profiles for which this rule applies, and then click [Next].
10. In [Name], specify the desired name, and then click [Finish].
11. In the [Windows Firewall with Advanced Security] window, check if the added rule is enabled under [Inbound Rules] in the center of the window.

4.2.5 Preparing for Output to the Event Log

This section provides an explanation on the preparation to be carried out if you are outputting error logs to the event log.

If outputting error logs to the event log, you should register an event source name beforehand.

If you do not register an event source name, the message content output to the event log may be incomplete.

Due to the default event source name "Symfoware Server Open Interface" being output to the event log when using the following commands, you should register this default event source name beforehand:

- pg_ctl command
- pgx_dmpall command
- pgx_rcvall command

The following is an example in which the DLL of a 64-bit product is registered under the default event source name:

```
regsvr32 "C:\Program Files\Fujitsu\symfoware64\lib\pgevent.dll"
```

If using multiple instances

You can output messages corresponding the event source name assigned by the user, so that messages output to the event log can be identified by instance.

The following is an example in which the DLL of a 64-bit product is registered under the event source name "Symfoware Server inst1":

```
regsvr32 /n /i:"Symfoware Server inst1" "C:\Program Files\Fujitsu\symfoware64\lib\pgevent.dll"
```

You will need to edit the parameters for each instance, therefore, after creating an instance, refer to "[4.5.1 Error Log Settings](#)" when performing this setting.

Note that this step is not required if using WebAdmin to create an instance.

If installing multiple versions

If Symfoware Server is already installed on the same machine, search for the key below in Registry Editor, and make a note of the path of the registered DLL. Afterwards, register a new DLL under the default event source name.

Use the DLL path that you made a note of in the above step when re-registering the default event source name during an uninstall.

Symfoware Server Open Interface



See

.....
 Refer to "Registering Event Log on Windows" in "Server Administration" in the PostgreSQL Documentation for information on how to register event source names.

4.3 Creating an Instance

This section explains how to create an instance.

- [4.3.1 Using WebAdmin](#)
- [4.3.2 Using the initdb Command](#)

Multiple instances can be created.

The memory allocated needs to be adjusted when multiple instances are created with WebAdmin (refer to "[Parameters automatically set by WebAdmin according to the amount of memory](#)" for details).



- Instances created using the initdb command cannot be managed using WebAdmin.
- Databases with the names 'template0' and 'template1' are automatically created when an instance is created. These databases are used as the templates for databases created later. Furthermore, a default database with the name 'postgres' is automatically created, which will be used with Symfoware Server commands. It is important that you do not delete these databases created by default.
- When an instance that uses WebAdmin is created successfully, the following Windows service is registered:

```
symfo_versi on_username_ i nstanceName
```

The account and password of the instance administrator are registered in the Windows service.
If the password for this account is changed, you must also change the password registered in the service.
Change this at the Properties window registered in the Windows service.
- If creating an instance in Windows Server(R) 2003, use an account that does not belong to the Administrators group.
- Refer to "[4.5.2 Configuring Automatic Start and Stop of an Instance](#)" for information on how to start and stop the operating system of the database server, and how to start and stop linked instances.

4.3.1 Using WebAdmin

This section describes how to create an instance using WebAdmin.



Always use WebAdmin to delete an instance if it was created using WebAdmin.

4.3.1.1 Notes on Using WebAdmin

This section describes points to take into account when using WebAdmin.

Notes on using browsers

This section describes notes on using browsers.

Supported browsers

Windows(R) Internet Explorer 8.0, 9.0, and 10.0 are supported.

For the display, use 1024x768 or higher and 256 or more colors.

[Back] feature

The browser's [Back] feature cannot be used. In some browsers, the backspace key has the same functionality as the [Back] feature. Operations cannot be guaranteed when either of these techniques is used.

Browser timeout

- If the browser remains idle for a certain period of time (approximately 15 minutes), a timeout may occur, or the login window may appear when the user performs the next operation.
- A timeout will not occur if the [Monitor] window is displayed.

Activating multiple WebAdmin windows

Operations may not be performed correctly if you start multiple WebAdmin windows and operate the same instance.

Encryption

WebAdmin does not allow encryption environments to be build.



See

.....
Refer to "Protecting Storage Data Using Transparent Data Encryption" in the Operation Guide for information on building encrypted environments.
.....

4.3.1.2 Browser Settings

Confirm the browser settings given below prior to using WebAdmin. If any settings are different, change them.

The required browser settings are described below.

Accepting cookies

WebAdmin uses cookies for communication between the browser and WebAdmin. Confirm that the setting to accept cookies has been selected.

Selecting the character set

WebAdmin outputs results to the browser in UNICODE (UTF-8).

Ensure the character set and font for the browser are set to UNICODE.

- Select [View] >> [Encoding] >> [Auto-Select].

Selecting the font

Confirm that the browser font is set to the default for optimal display of the WebAdmin window.

- Select [View] >> [Text Size] >> [Medium].
- Click [Tools] >> [Internet options] >> [General] >> [Appearance] >> [Fonts], and then configure the following items:
 - Select [MS PGothic] as the [Webpage font].
 - Select [MS Gothic] as the [Plain text font].

Installing the font

Text may not display correctly in the browser unless fonts that correspond to the character set returned to the browser are installed.

In this case, install the fonts using the following procedure:

1. Click [View] >> [Encoding] >> [More], and then select the font to be displayed.
2. Install the font in accordance with the instructions in the [Language pack installation] dialog box.

Pop-up Blocker settings

If the Pop-up Blocker is enabled, use the procedure below to configure settings to allow pop-ups from the server where Symfoware Server is installed.

1. Click [Tools] >> [Internet options], and then select the [Privacy] tab.
If the [Turn on Pop-up Blocker] check box under [Pop-up Blocker] is not selected, the Pop-up Blocker feature will not operate, so the steps below are not required.
2. In the [Privacy] tab, click [Settings] under [Pop-up Blocker].
3. In the [Pop-up Blocker Settings] window, enter the URL of the server where Symfoware Server is installed in the [Address of website to allow] box and click [Add].
4. In the [Pop-up Blocker Settings] window, click [Close].
5. In the [Privacy] tab, click [OK].

4.3.1.3 WebAdmin Setup

If execution of WebAdmin setup was selected during installation, WebAdmin will be set up. WebAdmin can be used immediately after installation, and starts automatically when the machine is restarted. When the machine is restarted, the Web server feature of WebAdmin is started automatically.

Refer to "[C.1 Setting Up WebAdmin](#)" if WebAdmin has not yet been set up.

4.3.1.4 Logging into WebAdmin

This section describes how to log in to WebAdmin.

Activation URL for WebAdmin

In the browser address bar, type the activation URL of the WebAdmin window in the following format:

```
http://hostNameOrIpAddress:portNumber/
```

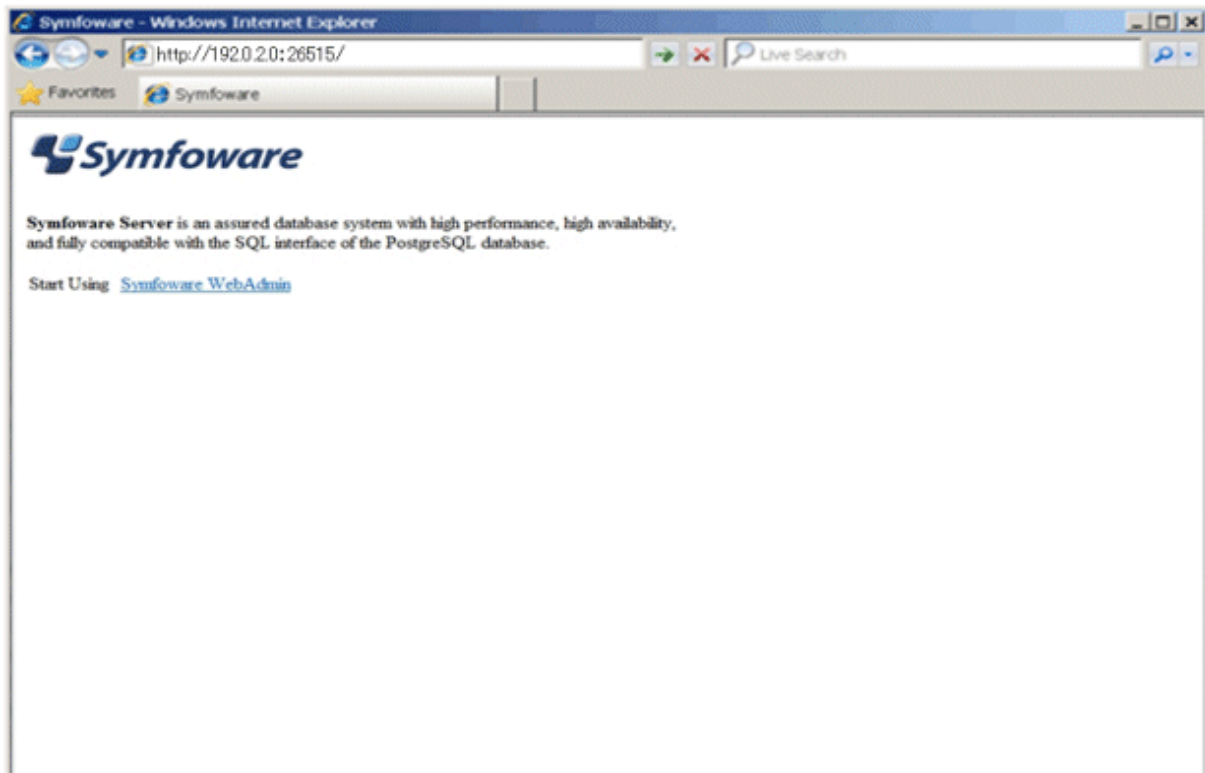
- *hostNameOrIpAddress*: Host name or IP address of the server where Symfoware Server is installed
- *portNumber*: Port number of WebAdmin. The default port number is 26515.

Example

For a server with IP address "192.0.2.0" and port number "26515":

```
http://192.0.2.0:26515/
```

The activation URL window shown below is displayed.



Logging in to the database server

Click [Symfoware WebAdmin] on the activation window to activate WebAdmin and display the [LogIn] window. You can log in to Symfoware Server from the [LogIn] window.



Specify the following values when logging in:

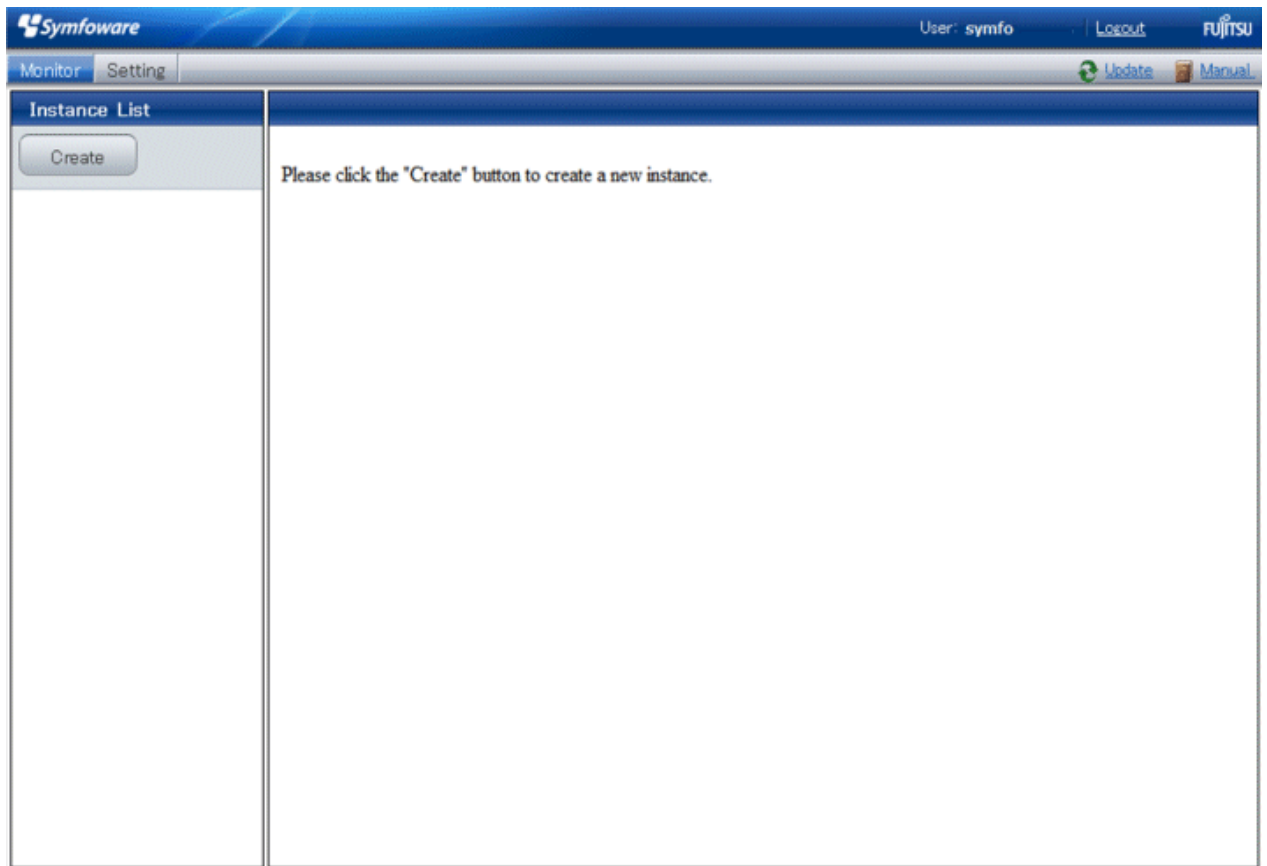
- [User ID]: User ID (OS user account) of the instance administrator
- [Password]: Password corresponding to the user ID

4.3.1.5 Creating an Instance

This section describes how to create an instance.

1. Activate WebAdmin, and log in to the database server.

2. Click [Create] in the [Instance List] window of the [Monitor].



3. Enter the information for the instance to be created.

Create Instance

i Create a new instance.
[Please refer to Symfoware Server Installation and Setup Guide for Server for detail.](#)

Instance Name(*):

Data storage destination(*):

Backup data storage destination(*):

Port(*):

(*)Necessary
▶ **Advanced**

For security reasons, it is strongly recommended that the Backup data storage destination is to be placed on a disk separately from where Symfoware Server install directory, System disk, Data storage destination or Transaction log storage destination is located.

Enter the following items:

- [Instance Name]: Name of the database instance to manage
- [Data storage destination]: Directory where the database data will be stored
- [Backup data storage destination]: Directory where the database backup will be stored
- [Port]: Port number of the database server

Note

- Store in a separate file the data storage destination and backup data storage destination path names specified in this window. Also, obtain a backup of the following file. These will be required to recover the directories if there is a disk failure.

```
install\Dir\gui\data\gui-instance
```

- Do not specify symbolic link files when specifying the data storage destination or backup data storage destination.
- The following characters can be used when specifying the data storage destination and backup data storage destination:
 - \ (backslash)
 - - (hyphen)
 - _ (underscore)
 - : (colon)
 - Space
 - A-Z, a-z, 0-9 (alphanumeric)

- Instance administrator read and write permissions are required for the data storage destination and backup data storage destination.
- Deploy the backup data storage destination, data storage destination, and transaction log storage destination on different disks, to take into account disk failures
- For the port number, specify an unused port number in the following range:
 - Windows Server(R) 2003 or Windows Server(R) 2003 R2: 5001 to 49151
 - Windows Server(R) 2008, Windows Server(R) 2008 R2, or Windows Server(R) 2012: 1024 to 49151
- Make a note of the port number for use in the Windows firewall settings.

4. Click [Advanced] to change the transaction log storage destination, database encoding and Auto Start.

Create Instance

i Create a new instance.
[Please refer to Symfaware Server Installation and Setup Guide for Server for detail.](#)

Instance Name(*):

Data storage destination(*):

Backup data storage destination(*):

Port(*):

(*Necessary)

▼ **Advanced**

Transaction log storage destination:

Encoding:

Auto Start: Yes No

For security reasons, it is strongly recommended that the Backup data storage destination is to be placed on a disk separately from where Symfaware Server install directory, System disk, Data storage destination or Transaction log storage destination is located.

Enter the following items:

- [Transaction log storage destination]: Directory where the transaction log will be stored
- [Encoding]: Specify the database encoding
- [Auto Start]: Specify whether to automatically start or stop an instance when the operating system starts or stops.

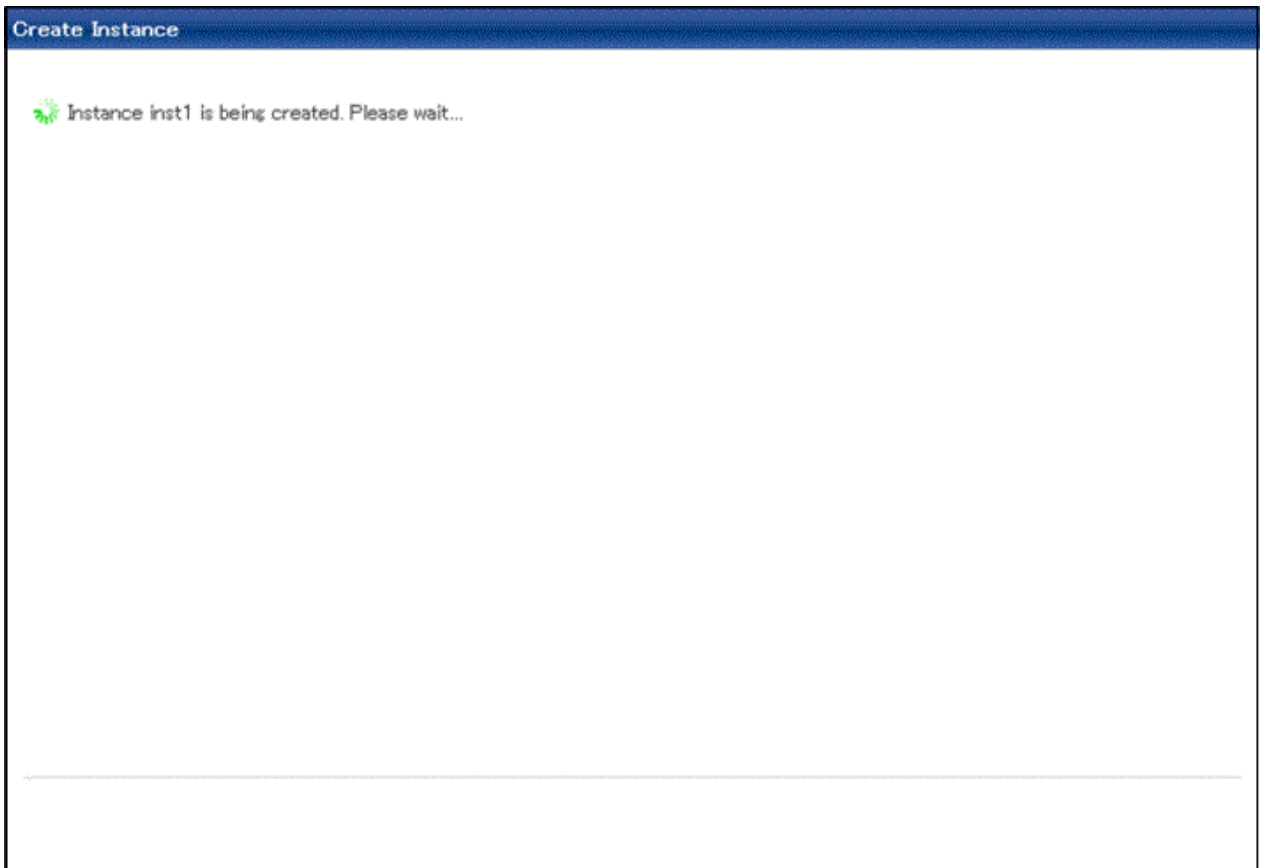
Note

- In a file, record the path names of the data storage destination, the backup data storage destination, and the transaction log storage destination specified in this window.
 This information will be required in the event that the directory needs to be recovered, such as if a fault occurs in the disk device.
- Do not specify symbolic link files when specifying the transaction log storage destination.
- The following characters can be used when specifying the transaction log storage destination:
 - \ (backslash)

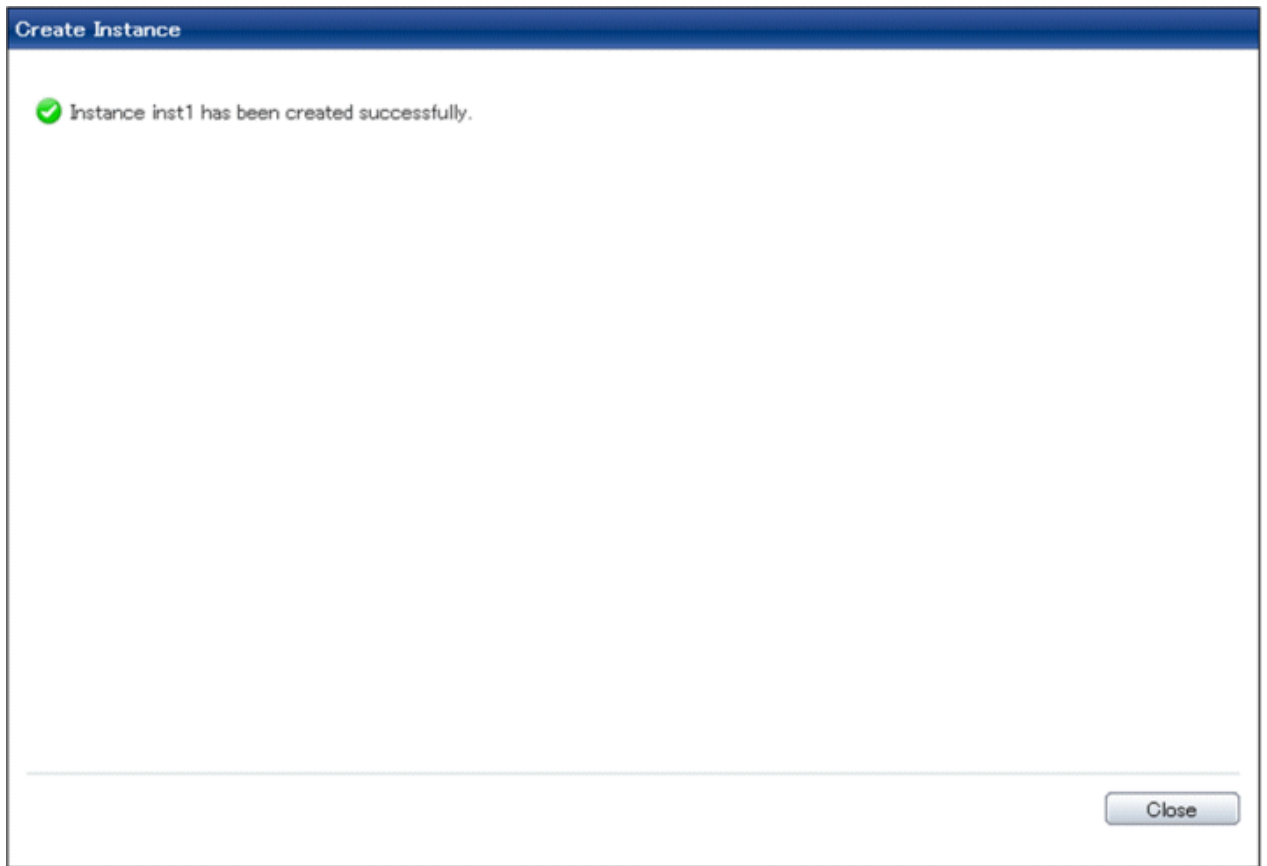
- - (hyphen)
 - _ (underscore)
 - : (colon)
 - Space
 - A-Z, a-z, 0-9 (alphanumeric)
 - Instance administrator read and write permissions are required for the data storage destination and backup data storage destination.
 - The default locale for instances created with WebAdmin is C.
-

5. Click [Create] to create an instance.

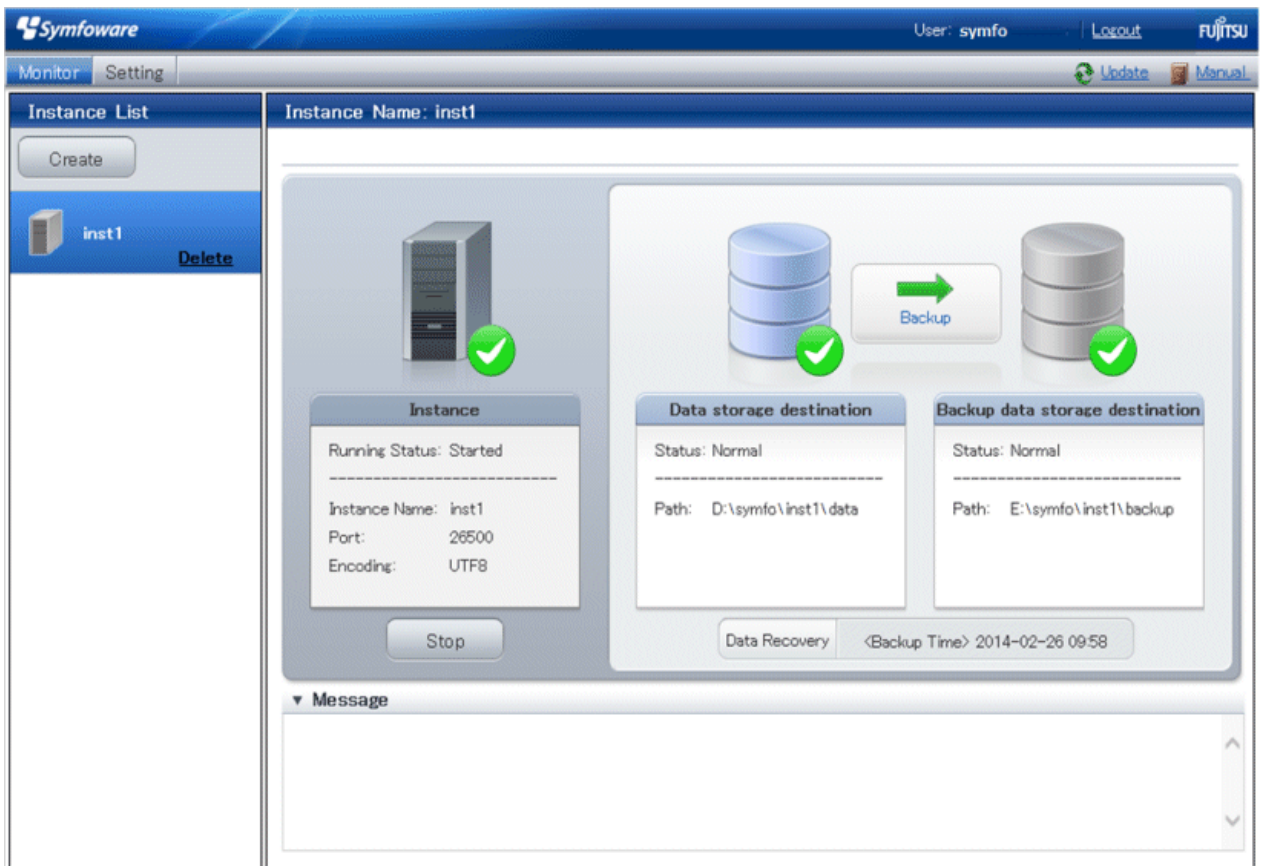
[The instance is being made.]



[Making the instance is completed.]



6. The instance will be started when it is created successfully.



Note

The following message is output during startup of an instance when the startup process is operating normally, therefore, the user does not need to be aware of this message.

```
FATAL: the database system is starting up (XXXXX)
```

4.3.1.6 Changing the settings

You can change the following information that is set when instances are created.

You can change the character set and maximum number of connections, for example, to suit the operating and management environment for Symfoware Server.

- [Character set](#)
- [Client authentication](#)
- [Communication](#)
- [SQL option](#)
- [Used memory](#)

Information

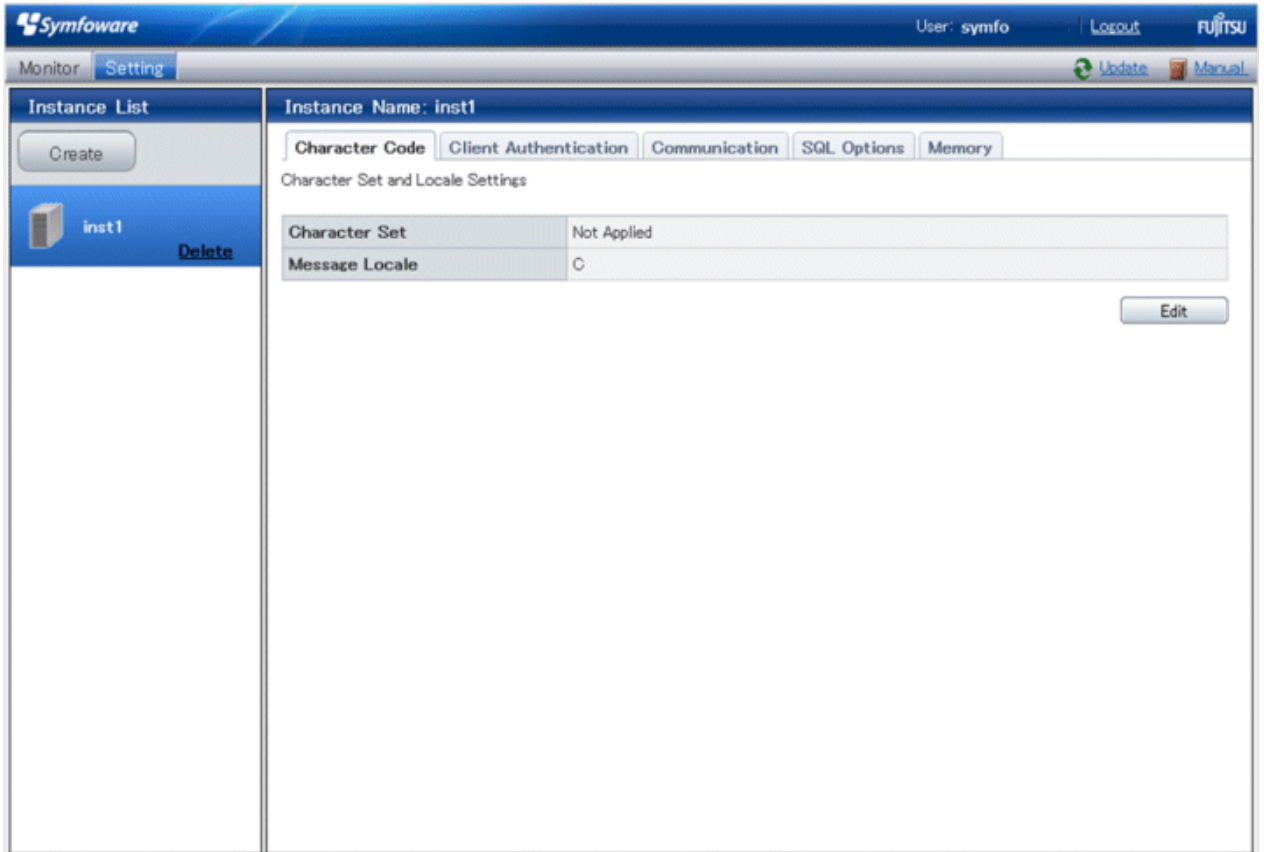
These settings are stored in the files below - you can edit them directly, but WebAdmin may not work properly if you make a mistake (refer to "[Appendix E Configuring Parameters](#)" for details):

- postgresql.conf

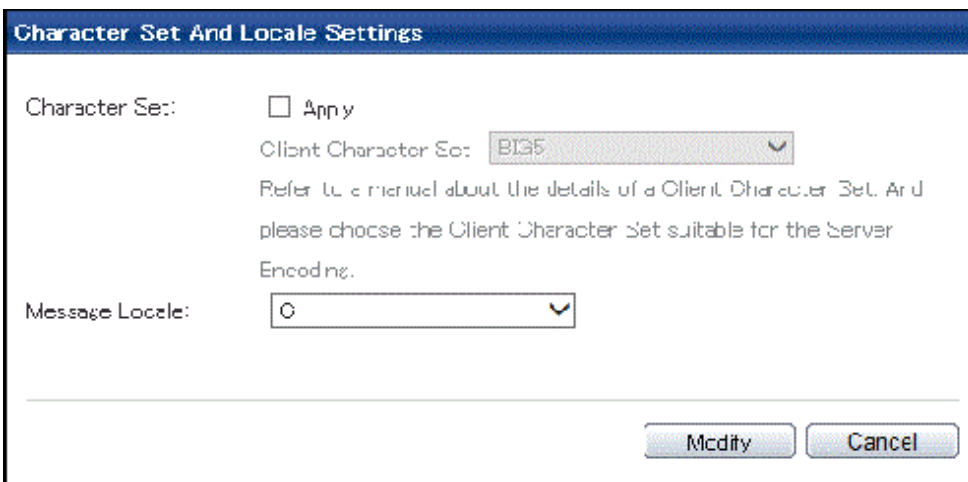
- pg_hba.conf

Changing the character set

1. Start WebAdmin and log in to the database server.
2. Select [Character Code] from the [Setting] menu.
3. Click [Edit].



4. Edit Character Set, and then click [Modify].





Select a character set compatible with the server's one (refer to "Automatic Character Set Conversion Between Server and Client" in "Server Administration" in the PostgreSQL Documentation for details).

Changing client authentication

1. Start WebAdmin and log in to the database server.
2. Select [Client Authentication] from the [Setting] menu.

Click [Add] to register new authentication information.

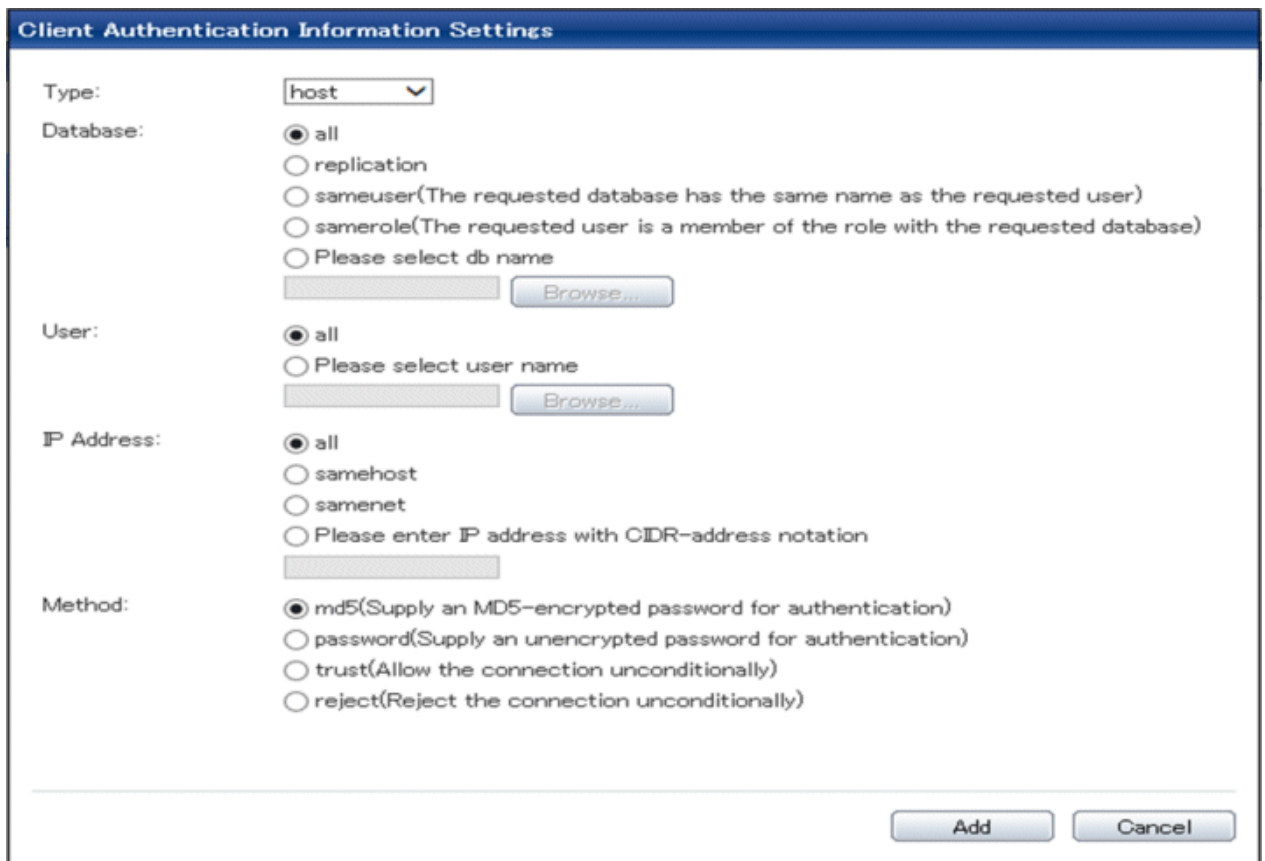
To change authentication information, select the information, and then click [Edit].

To delete authentication information, select the information, and then click [Delete].

The screenshot shows the Symfoware WebAdmin interface. The top navigation bar includes the Symfoware logo, the user name 'symfo', a 'Logout' link, and the Fujitsu logo. Below the navigation bar, there are tabs for 'Monitor' and 'Setting'. The 'Setting' tab is active, and the 'Client Authentication' sub-tab is selected. The main content area is divided into two panels. The left panel, titled 'Instance List', contains a 'Create' button and a list item for 'inst1' with a 'Delete' button. The right panel, titled 'Instance Name: inst1', shows the 'Client Authentication' settings. It includes a table with columns for 'Type', 'Database', 'User', 'IP Address', and 'Method'. Two entries are listed, both with 'host' as the type and 'all' as the database and user. The IP addresses are '127.0.0.1/32' and '::1/128', both using the 'md5' method. Below the table are 'Add', 'Edit', and 'Delete' buttons.

	Type	Database	User	IP Address	Method
<input type="radio"/>	host	all	all	127.0.0.1/32	md5
<input type="radio"/>	host	all	all	::1/128	md5

Click [Add] - the following window will be displayed.



The dialog box titled "Client Authentication Information Settings" contains the following fields and options:

- Type:** A dropdown menu with "host" selected.
- Database:** Radio buttons for "all" (selected), "replication", "sameuser(The requested database has the same name as the requested user)", "samerole(The requested user is a member of the role with the requested database)", and "Please select db name". Below the radio buttons is a text input field and a "Browse..." button.
- User:** Radio buttons for "all" (selected) and "Please select user name". Below the radio buttons is a text input field and a "Browse..." button.
- IP Address:** Radio buttons for "all" (selected), "samehost", "samenet", and "Please enter IP address with CIDR-address notation". Below the radio buttons is a text input field.
- Method:** Radio buttons for "md5(Supply an MD5-encrypted password for authentication)" (selected), "password(Supply an unencrypted password for authentication)", "trust(Allow the connection unconditionally)", and "reject(Reject the connection unconditionally)".

At the bottom right of the dialog box are "Add" and "Cancel" buttons.

Note

Use the following client authentication settings to allow the instance administrator to connect to the database using WebAdmin:

- Type: "host"
- The IP address is a loopback address ("127.0.0.1/32")

Changing communication

1. Start WebAdmin and log into the database server.
2. Select [Communication] from the [Setting] menu.

Note

Before changing communication information, stop the instance.

3. Click [Edit].

The screenshot shows the Symfoware web interface. At the top, there is a navigation bar with 'Monitor' and 'Setting' tabs. The user is logged in as 'svmfo'. The main content area is divided into two sections. On the left, the 'Instance List' shows a table with one instance named 'inst1' and a 'Delete' button. On the right, the 'Instance Name: inst1' settings are displayed. There are tabs for 'Character Code', 'Client Authentication', 'Communication', 'SQL Options', and 'Memory'. The 'Communication' tab is selected, showing 'Communication Settings' with a table:

Port Number	26500
Max Connection	100

An 'Edit' button is located at the bottom right of the settings table.

4. Edit [Port Number] and [Max Connection], and then click [Modify].

The screenshot shows a 'Communication Settings' dialog box. It contains two input fields: 'Port Number' with the value '26500' and 'Max Connection' with the value '100'. Below the fields, there is a note: 'The value of max_connections should include the number of connections(3) used by WebAdmin.' At the bottom of the dialog, there are two buttons: 'Modify' and 'Cancel'.

Note

- For the port number, specify an unused port number in the following range:
 - Windows Server(R) 2003 or Windows Server(R) 2003 R2: 5001 to 49151
 - Windows Server(R) 2008, Windows Server(R) 2008 R2, or Windows Server(R) 2012: 1024 to 49151
- Refer to "4.4.3 Windows Firewall Settings" for information on changing the port number.

- Calculate the maximum number of connections using the formula below:

$$\text{maximumNumberOfConnections} = \text{maximumNumberOfConnectionsFromApplications} + 3 (*1)$$

*1: 3 is the default number of connections required by the system

Calculate the maximum number of connections using the following formula when changing either max_wal_senders (using streaming replication) or superuser_reserved_connections (connections reserved for use by the superuser) in postgresql.conf.

$$\text{maximumNumberOfConnections} = \text{maximumNumberOfConnectionsFromApplications} + \text{superuser_reserved_connections} + \text{max_wal_senders}$$

Refer to "[Appendix E Configuring Parameters](#)" for more information on postgresql.conf.

- Also check if the memory used exceeds the memory installed (refer to "[Parameters automatically set by WebAdmin according to the amount of memory](#)")

Changing the SQL option

1. Start WebAdmin and log in to the database server.
2. Select [SQL Options] from the [Setting] menu.
3. Click [Edit].

The screenshot shows the Symfoware WebAdmin interface. The top navigation bar includes the Symfoware logo, the user 'svmfo', a 'Logout' link, and the Fujitsu logo. Below the navigation bar, there are tabs for 'Monitor' and 'Setting'. The 'Setting' tab is active, and the 'SQL Options' sub-tab is selected. The main content area displays the 'SQL Options Settings' for instance 'inst1'. The settings are as follows:

Setting Name	Value
Interpretation of Expression = NULL	Standard Format
Date Output Format	iso, mdy
Interval Output Format	postgres
The number of digits for floating values	0
Transaction Isolation Levels	read committed
Currency Format	C
Date and Time Format	C
Numerical Value Format	C

An 'Edit' button is located at the bottom right of the settings table.

4. Edit [Interpretation of Expression = NULL], [Date Output Format], [Interval Oputput Format], [The number of digits for floating values], [Transaction Isolation Levels], [Currency Format], [Date and Time Format], and [Numerical Value Format], and then click [Modify].

SQL Options Settings

Interpretation of Expression = NULL: Standard Format Microsoft Access Format

Date Output Format: ISO, MDY(US,NonEuro,NonEuropean) ▼

Interval Output Format: postgres ▼

The number of digits for floating values : 0

Transaction Isolation Levels: read committed ▼

Currency Format: "C" ▼

Date and Time Format: "C" ▼

Numerical Value Format: "C" ▼

Modify Cancel

Note

If you select **postgres** in Date Output Format, dates will be output in the "12-17-1997" format, not the "Wed Dec 17 1997" format used in the PostgreSQL Documentation.

Changing allocated memory

1. Start WebAdmin and log in to the database server.
2. Select [Memory] from the [Setting] menu.

Note

Before changing used memory information, stop the instance.

3. Click [Edit].

The screenshot shows the Symfoware web interface. At the top, the user is logged in as 'svmfo'. The main navigation bar includes 'Monitor' and 'Setting'. On the left, there is an 'Instance List' with a 'Create' button and a table listing instance 'inst1' with a 'Delete' button. The main content area is titled 'Instance Name: inst1' and has several tabs: 'Character Code', 'Client Authentication', 'Communication', 'SQL Options', and 'Memory'. The 'Memory' tab is selected, showing 'Memory Settings' with a table:

Sort Memory(Unit:KB)	5831KB
Share Buffer(Unit:KB)	1165312KB

An 'Edit' button is located at the bottom right of the table.

4. Edit [Sort Memory(Unit:KB)] and [Share Buffer(Unit:KB)], and then click [Modify].

The 'Memory Setting' dialog box is shown. It contains two input fields:

Sort Memory(Unit:KB):	<input type="text" value="1024"/>
Share Buffer(Unit:KB):	<input type="text" value="32768"/>

At the bottom, there are 'Modify' and 'Cancel' buttons.

Note

Also check if the memory used exceeds the memory installed (refer to "[Parameters automatically set by WebAdmin according to the amount of memory](#)" for information on how to check).

4.3.2 Using the initdb Command

This section describes the procedure to create an instance using the initdb command.

4.3.2.1 Creating an instance

Create an instance, with the database cluster storage destination specified in the PGDATA environment variable or in the -D option. Furthermore, the user that executed the initdb command becomes the instance administrator.

Note

- Instances created using the initdb command cannot be managed using WebAdmin.
- If creating multiple instances, ensure that there is no duplication of port numbers or the directories that store database clusters.

See

Refer to "initdb" in "Reference" in the PostgreSQL Documentation for information on the initdb command.

The procedure to create an instance is described below.

1. Use the OS user account that you want as the instance administrator.

Connect with the server using the OS user account that you want as the instance administrator.

2. Configure the environment variables

Configure the environment variables in the server with the newly created instance.

Set the following environment variables:

- PATH environment variables

Add installDir\bin and installDir\lib.

Example

The following is a setting example for environment variables in which "C:\Program Files\Fujitsu\symfoserver64" is used as the installation folder:

```
> SET PATH=C:\Program Files\Fujitsu\symfoserver64\bin;C:\Program Files\Fujitsu  
\symfoserver64\lib;%PATH%
```

3. Create a database cluster

Create the database cluster with the initdb command, specifying the storage destination directory.

Specify the transaction log storage destination and the locale setting option as required.

Example

```
> initdb -D D:\database\inst1 --xlogdir=E:\transaction\inst1 --lc-collate="C" --lc-ctype="C"  
--encoding=UTF8
```

Note

- To balance I/O load, consider deploying the transaction log storage destination to a disk device other than the database cluster storage destination and the backup data storage destination.
- Messages may not display correctly if a value other than "C" is specified as the display language for messages.
- Specify "C" for collation and character category. Performance deteriorates if you specify a value other than "C", although the behavior will follow the rules for particular languages, countries and regions. Furthermore, this may need to be revised when

running applications on systems with different locales.
For example, specify as follows:

```
initdb --locale="C" --lc-messages="C"  
initdb --lc-collate="C" --lc-ctype="C"
```

- Specify an encoding system other than SQL_ASCII for the database. If SQL_ASCII is used, there is no guarantee that the encryption system for data in the database will be consistent, depending on the application used to insert the data.



Refer to "Locale Support" in "Localization" in "Server Administration" in the PostgreSQL Documentation for information on locales.

4. Set port number.

Specify a port number in the port parameter of postgresql.conf. Ensure that the specified port number is not already used for other software. If a port number is not specified, "26500" is selected.

Register the specified port numbers in the /etc/services file if WebAdmin is used to create other instances. WebAdmin uses the services file to check if port numbers specified as available candidates have been duplicated.

Register any name as the service name.



Make a note of the port number for use in the Windows firewall settings.

5. Set the corefile output destination.

Specify the output destination of the corefile, which can later be used to collect information for investigation, by setting the core_directory and core_contents parameters of postgresql.conf.



Refer to "Parameters" in the Operation Guide for information on the settings for these parameters.

6. Set the backup storage destination.

Specify the backup data storage destination and other backup settings when backup is to be performed as a provision against database errors.



Refer to "Backup Methods" in the Operation Guide for information on specifying backup settings.

7. Registering an instance in the Windows service

Use the register mode of the pg_ctl command to register an instance in the Windows service.

Specify the service name, user name, password and path to the instance in the pg_ctl command, and register the instance in the Windows service.

Example

The following is a setting example, in which the service name to register is "Symfoware Server V12.0.0 inst1", the user name is "symfo", and the storage destination directory of the database cluster is "D:\database\inst1":

```
> pg_ctl register -N "Symfoware Server V12.0.0 inst1" -U symfo -P ***** -D D:\database  
\inst1 -w
```



Note

- Registration should be performed by an instance administrator with "Administrator" privileges.
- For the following reasons, a user name and password must always be specified:

Because the Windows service is started up by the Network Service account, all user resources are created as resources of that account. This can result in error events such as failing to access database resources and not being able to perform backups/recovery.

Note that if not specifying a user name and password for security reasons, you should specify the account from the Windows services list immediately after registering the instance in Windows services.

- When entering the password that is specified in the `pg_ctl` command, for security reasons, you should be careful not to allow other users to access it.

This completes registration of an instance in the Windows service.

Commands such as `sc query` can be used to check the registration status.

8. Starting an instance

Use the following procedure to start the service:

- a. Display the [Services] window.

From the [Start] menu, select [Administrative Tools], and then click [Services].

- b. Start the service

From the services list, select the instance name that you wish to start, and click [Start Service].

If using commands to start the service, specify the service name using either the `net start` command or `sc start` command from the command prompt.

4.4 Configuring Remote Connections

This section describes the settings required when connecting remotely to Symfoware Server from a database application or a client command.

4.4.1 When an Instance was Created with WebAdmin

Settings related to connection

The default is to accept connections from remote computers to the database.

Change "listen_addresses" in `postgresql.conf` to change this.

Refer to "[Appendix E Configuring Parameters](#)" for more information on `postgresql.conf`.

Client Authentication Information settings

The following content is set by default when WebAdmin is used to create an instance.

- Authentication of remote connections from local machines is performed.

When changing Client Authentication Information, select [Client Authentication] from [Setting], and then change the settings.

4.4.2 When an Instance was Created with the `initdb` Command

Connection settings

The default setting only permits local connections from the client to the database. Remote connections are not accepted.

Change "listen_addresses" in `postgresql.conf` to perform remote connection.

All remote connections will be allowed when changed as shown below.

Example

```
listen_addresses = '*'
```

Also, configure the parameters shown below in accordance with the applications and number of client command connections.

Parameter name	Parameter description
superuser_reserved_connections	Used to reserve the connections required to manage Symfoware Server. Calculate and set this value based on the description below: <ul style="list-style-type: none">- Connections in continuous use during activation of an instance using the autovacuum feature: 3- Connections required by administrator for maintenance operations such as creating backups or rebuilding indexes: 1- Connections used during pgAdmin operations; Number of clients used
max_connections	Set the value as: <i>numberOfSimultaneousConnectionsToInstance</i> + <i>superuser_reserved_connections</i>

Client authentication information settings

When trying to connect from a client to a database, settings are required to determine whether the instance permits connections from the client - if it does, then it is possible to make settings to determine if authentication is required.



See

Refer to "The pg_hba.conf File" in "Server Administration" in the PostgreSQL Documentation for details.

4.4.3 Windows Firewall Settings

If the Windows firewall feature is to be enabled, you should enable a port number on the database server. The following explains how to enable a port number:

Windows Server(R) 2003 or Windows Server(R) 2003 R2:

1. In the [Start] menu, select [Control Panel], and then click [Windows Firewall].
2. In the [Windows Firewall] window, on the [Exceptions] tab, click [Add Port].
3. In the [Add a Port] window, set the following:
 - a. In [Name], specify the desired name.
 - b. In [Port number], specify the Web server port number that was specified when creating the instance.
 - c. Select [TCP].
4. Click [OK].
5. On the [Exceptions] tab, in the [Programs and Services] list, check if the added port is enabled.
6. In the [Windows Firewall] window, click [OK].

Windows Server(R) 2008:

1. In the [Start] menu, click [Control Panel].
2. Click [Security] and then click [Windows Firewall].

3. In the [Windows Firewall] window, click [Change settings].
4. On the [Exceptions] tab, click [Add port].
5. In the [Add a Port] window, set the following:
 - a. In [Name], specify the desired name.
 - b. In [Port number], specify the Web server port number that was specified when creating the instance.
 - c. Select [TCP].
6. Click [OK].
7. On the [Exceptions] tab, in the [Program or port] list, check if the added port is enabled.
8. In the [Windows Firewall] window, click [OK].

Windows Server(R) 2008 R2:

1. In the [Start] menu, click [Control Panel].
2. Click [System and Security], and then click [Windows Firewall].
3. In the [Windows Firewall] window, click [Advanced settings] on the left side of the window.
4. In the [Windows Firewall with Advanced Security] window, click [Inbound Rules] on the left side of the window.
5. Click [New Rule] on the right side of the window.
6. In the [New Inbound Rule Wizard] window, select [Port], and then click [Next].
7. Select [TCP] and [Specific local ports], then specify the Web server port number specified when creating the instance, and then click [Next].
8. Select [Allow the connection], and then click [Next].
9. Select the profiles for which this rule applies, and then click [Next].
10. In [Name], specify the desired name, and then click [Finish].
11. In the [Windows Firewall with Advanced Security] window, check if the added rule is enabled under [Inbound Rules] in the center of the window.

Windows Server(R) 2012:

1. Right-click the [Start] screen, and then click [All apps] that is displayed in the bottom-right of the screen. In the [Apps] window, click [Control Panel].
2. Click [Windows Firewall].
3. In the [Windows Firewall] window, click [Advanced settings] on the left side of the window.
4. In the [Windows Firewall with Advanced Security] window, click [Inbound Rules] on the left side of the window.
5. Click [New Rule] on the right side of the window.
6. In the [New Inbound Rule Wizard] window, select [Port], and then click [Next].
7. Select [TCP] and [Specific local ports], then specify the Web server port number specified when creating the instance, and then click [Next].
8. Select [Allow the connection], and then click [Next].
9. Select the profiles for which this rule applies, and then click [Next].
10. In [Name], specify the desired name, and then click [Finish].
11. In the [Windows Firewall with Advanced Security] window, check if the added rule is enabled under [Inbound Rules] in the center of the window.

4.5 Other Settings

This section describes settings that are useful for operations.

4.5.1 Error Log Settings

This section explains the settings necessary to monitor errors in applications and operations, and to make discovering the causes easier.

Make error log settings only when instances are created with the `initdb` command.

When creating instances with WebAdmin, these settings are already made and hence do not need to be set. Furthermore, some parameters are used by WebAdmin, and if changed, may cause WebAdmin to no longer work properly. Refer to "[Appendix E Configuring Parameters](#)" for details.

Edit the following parameters in `postgresql.conf`:

Parameter name	Parameter description	How to enable the settings
<code>event_source</code>	Specify the event source name to be attached to messages, for identifying messages output to the event log when using multiple instances.	<ul style="list-style-type: none">- Restart services from the Windows services window.- Use the <code>net</code> command or <code>sc</code> command to stop and start services.
<code>logging_collector</code>	Specify "on" to ensure that messages are output by Symfoware Server to the server log file. The server log file is created in the <code>pg_log</code> directory in the database cluster.	<ul style="list-style-type: none">- Restart services from the Windows services window.- Use the <code>net</code> command or <code>sc</code> command to stop and start services.
<code>log_destination</code>	Specify "stderr, eventlog" to output messages from Symfoware Server to the screen and either the system log or the event log.	reload option of the <code>pg_ctl</code> command
<code>log_line_prefix</code>	<p>Specify information to be added at the start of messages output by an instance. This information is useful for automatic monitoring of messages.</p> <p>You can output the <code>SQLSTATE</code> value, output time, executing host, application name, and user ID.</p> <p>Refer to "What To Log" in the PostgreSQL Documentation for details.</p> <p>Example: <code>log_line_prefix = '%e: %t [%p]: [%l-1] user = %u,db = %d,remote = %r app = %a '</code></p>	reload option of the <code>pg_ctl</code> command

Point

- If you want fewer application errors being output to the eventlog, refer to "When To Log" and "What To Log" in the PostgreSQL Documentation for information on how to reduce the output messages.
- If you want to separate errors output from other software, refer to "Where To Log" in the PostgreSQL Documentation to change the output destination to the server log file rather than the system log.

4.5.2 Configuring Automatic Start and Stop of an Instance

You can automatically start or stop an instance when the operating system on the database server is started or stopped.

Use the following procedure to configure automatic start and stop of an instance.

When you run an instance on a cluster system, the cluster system controls start and stop, so you do not need to use this feature.

When an instance was created with WebAdmin

If an instance is created with WebAdmin, the instance is registered in the Windows service and automatic start and stop is set for the instance.

To change the automatic start and stop setting for an instance, select the service for the applicable instance in the Windows services window, and in [Startup Type], select [Automatic] or [Manual].

When an instance was created with the initdb command

If the startup type of the service is set to [Manual], change it to [Automatic]. By setting the startup type to [Automatic], the service will start up automatically when the Windows(R) system is started up, and will stop automatically when the Windows(R) system is shut down.



The settings should be performed by an instance administrator with "Administrator" privileges.

Use the following procedure to switch the service:

1. Display the [Services] window.

In the [Start] menu, select [Administrative Tools], and then click [Services].

2. Switch the startup type

Select the Symfoware Server service name, display the [Properties] dialog box, and then switch the startup type from [Manual] to [Automatic].

The above setting can also be changed using the `sc config` command.

4.5.3 Settings when Using the features compatible with Oracle databases

The compatibility feature for Oracle databases enables Symfoware Server to be used without any special settings by creating a database instance. Note that settings are required only when using the SUBSTR function.



Refer to "Notes on SUBSTR" in the Application Development Guide for details.

4.6 Integration with Message-Monitoring Software

To monitor messages output by Symfoware Server using software, configure the product to monitor SQLSTATE, instead of the message text - this is because the latter may change when Symfoware Server is upgraded.

Configure Symfoware Server to output messages in a format that can be read by the message-monitoring software by specifying "%e" in the `log_line_prefix` parameter of `postgresql.conf` to output the SQLSTATE value.

A setting example is shown below - it outputs the output time, executing host, application name, and user ID, in addition to the SQLSTATE value.

Example

```
log_line_prefix = '%e: %t [%p]: [%l-1] user = %u,db = %d,remote = %r app = %a '
```



Refer to "What To Log" in the PostgreSQL Documentation for information on how to configure the settings.

4.7 Deleting Instances

This section explains how to delete instances.

- [4.7.1 Using WebAdmin](#)
- [4.7.2 Using Server Commands](#)



- Always use WebAdmin to delete instances that were created using WebAdmin.

4.7.1 Using WebAdmin

This section explains how to delete instances using WebAdmin.

Use the following procedure to delete instances.

1. Stop the instance

In the [Monitor] window, click [Stop].

WebAdmin will automatically stop the instance if deleting the instance without stopping it beforehand.

2. Back up files.

Before deleting the instance, back up any required files under the data storage destination, the backup data storage destination, and the transaction log storage destination.

3. Delete the instance

In the [Instance List] window, select the desired instance, and then click [Delete] - in the confirmation window, click [Delete].



Deleting an instance deletes only the following lowest-level directories. If they are not required, delete them manually.

- Data storage destination
- Backup data storage destination
- Transaction log storage destination (if different from the data storage destination)

4.7.2 Using Server Commands

This section explains how to delete instances using server commands.

Use the following procedure to delete instances.

1. Stop the instance

Stop the instance in Windows services, or use the `pg_ctl` command `stop mode`.

Use the following procedure to stop a service in Windows services:

- a. Display the [Services] window.

In the [Start] menu, select [Administrative Tools], and then click [Services].

- b. Stop the service

Select the instance name that you wish to stop from the services list, and click [Stop Service]. If you stop a service while applications and commands are running, Symfoware Server will force those applications and commands to close and will stop normally.

You can also stop a service by specifying the service name in the `net stop` command or `sc stop` command.

2. Back up files

Before deleting the instance, you should back up all necessary files contained in the data storage destination, backup data storage destination, and transaction log storage destination.

3. Delete the instance

Use a command such as `rmdir` to delete the following directories:

- Data storage destination directory
- Backup data storage destination directory
- Transaction log storage destination directory (if a different directory to the data storage destination directory was specified)

Chapter 5 Reinstallation

This chapter explains the reinstallation of Symfoware Server.

A reinstallation is performed in situations such as when program files that are already installed become corrupted, or when you are performing a fix after the installer fails to start up during an uninstallation. At this time, user resources can be maintained at their state before reinstallation.

If reinstalling, you cannot change the installation destination. To change the installation destination, you will need to perform an initial installation after uninstalling Symfoware Server. Refer to "[Chapter 6 Uninstallation](#)" for information on how to uninstall Symfoware Server, and "[Chapter 3 Initial Installation](#)" for information on how to perform an initial installation.

Note

- The installation must be performed by a user with administrator privileges (a user ID that belongs to the Administrators group).
- Stop all applications before starting the installation.
- Before starting the installation, you should delete all Program Urgent Fixes, Program Emergency Fixes and Program Local Fixes that have been applied. Also, after installation, you should reapply the latest fixes that had been applied before installation.
- In either of the following cases, it is necessary to switch to install mode by executing the command shown below before installation. Also, after the installation is completed, execute the command shown below to switch back to execute mode.
 - In Windows Server(R) 2003, Windows Server(R) 2003 R2 or Windows Server(R) 2008, the terminal server is installed in application server mode.
 - In Windows Server(R) 2008 R2 or Windows Server(R) 2012, the remote desktop service is installed in application server mode.

[Before the installation]

```
CHANGE USER /INSTALL
```

[After the installation]

```
CHANGE USER /EXECUTE
```

- The following window may be displayed when executing the installation program:



If this window is displayed, perform the following operations:

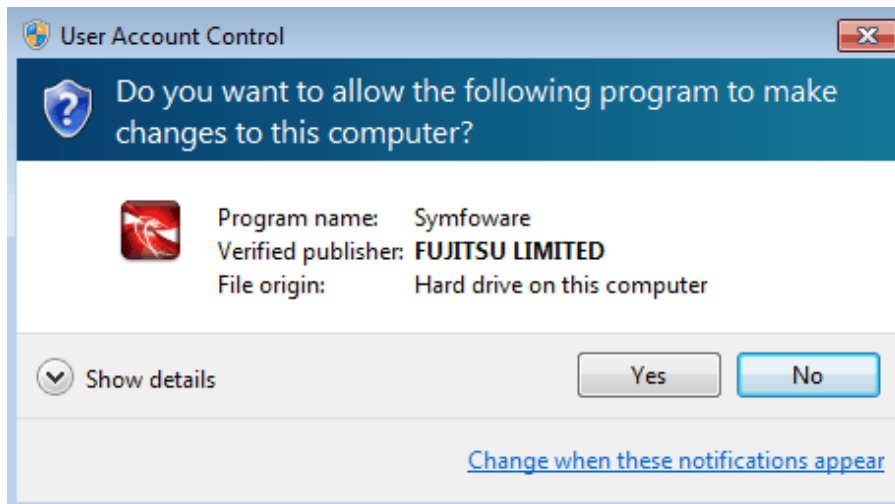
1. Perform the installation steps until the [InstallShield Wizard Complete] window is displayed.

2. At the window shown above, click [Next].
3. The window shown below is displayed. Click [Finish].



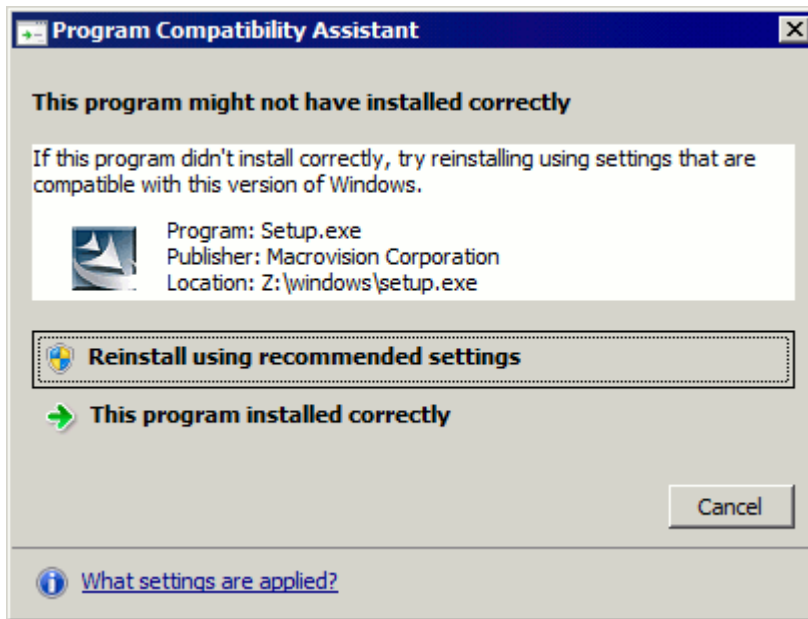
Information

- If a [User Account Control] dialog box such as the following is displayed at the start of the reinstallation, click [Yes] to continue processing.



If [No] is clicked, permission to continue is denied and an [Error] dialog box will be displayed. To continue the reinstallation, click [Retry] at the [Error] dialog box. To end the reinstallation, click [Cancel].

- If reinstallation is suspended or processing terminates abnormally, a dialog box of the program compatibility assistant similar to the one shown below may be displayed. Click [This program installed correctly] and continue operation.



5.1 Installation in Interactive Mode

Reinstall using the following procedure:

1. Tasks required before reinstallation
2. Reinstallation
3. Tasks required after reinstallation

5.1.1 Tasks Required Before Reinstallation

This section explains the tasks to be performed before reinstallation.

Use the following procedure:

1. Stop instances

Stop all instances that are using the product to be reinstalled.

Stopping of instances should be performed by the instance administrator.

When an instance was created with WebAdmin

In the [Monitor] window, click [Stop].

When an instance was created with the initdb command

Stop the instance in Windows services, or use the pg_ctl stop command.

Use the following procedure to stop a service in Windows services:

- a. Display the [Services] window.

In the [Start] menu, select [Administrative Tools], and then click [Services].

- b. Stop the service

Select the instance name that you wish to stop from the services list, and click [Stop Service]. If you stop a service while applications and commands are running, Symfoware Server will force those applications and commands to close and will stop normally.

You can also stop a service by specifying the service name in the net stop command or sc stop command.

2. Stop WebAdmin

If you are using WebAdmin, stop WebAdmin.



See

Refer to "C.1.3 Stopping the Web Server Feature of WebAdmin" for details.

5.1.2 Reinstallation

This section explains how to reinstall Symfoware Server:

1. Inserting the DVD

Insert the Symfoware Server DVD into the drive.

2. Running the installation program

When the DVD is inserted, the installation menu will be displayed. Click [Install].



Note

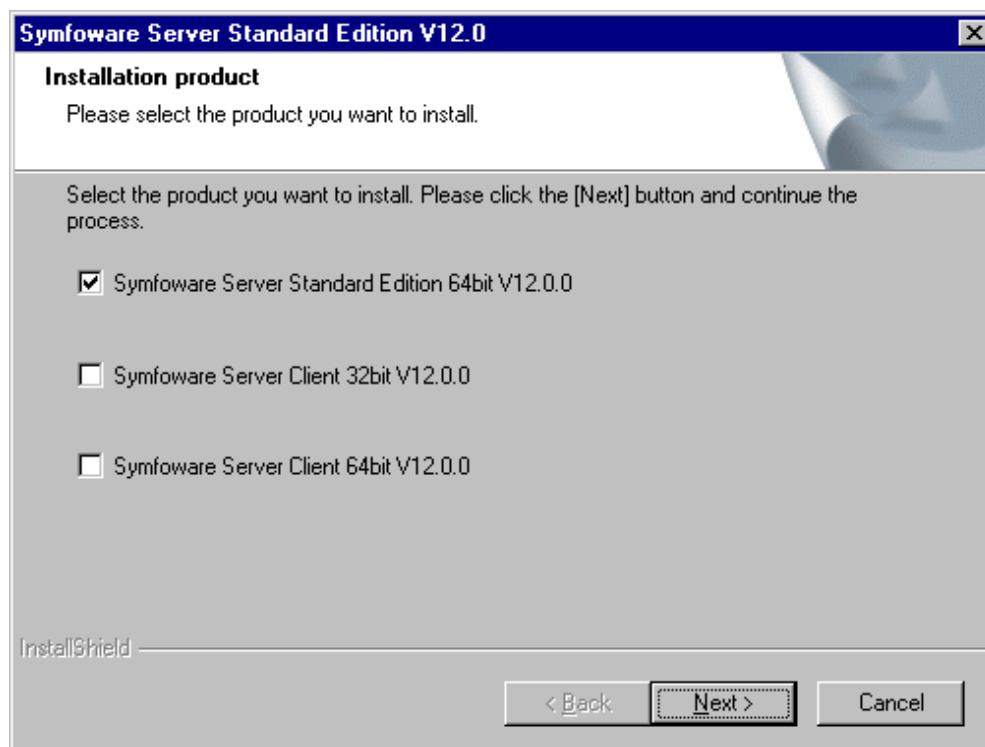
If the Autorun feature of Windows is disabled, or if the operating system is a remote desktop service (terminal service), the installation program is not automatically started. Execute the following file using [Run] or Windows Explorer.

```
Z:\autorun.exe
```

For Z, specify the drive name of the drive where the DVD has been inserted.

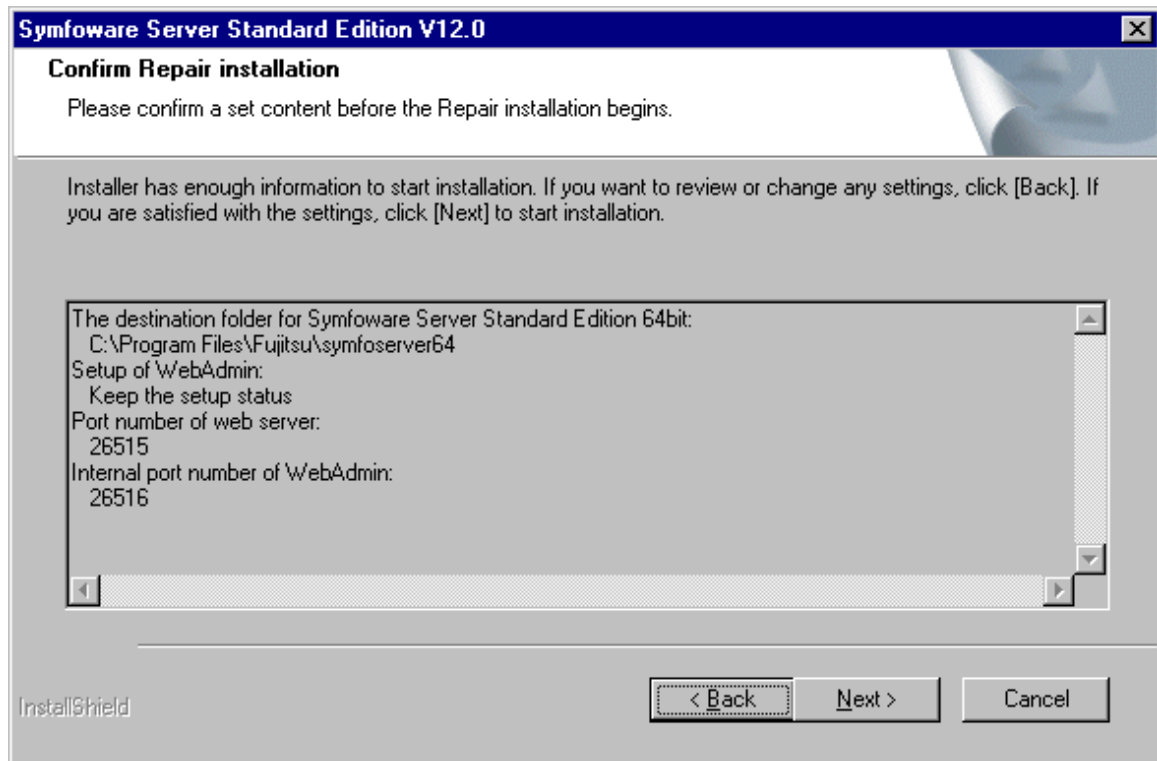
3. Select the product to reinstall

The [Installation product] window will be displayed. After checking that there is sufficient available space at the installation destination, select the product to be installed, and then click [Next].



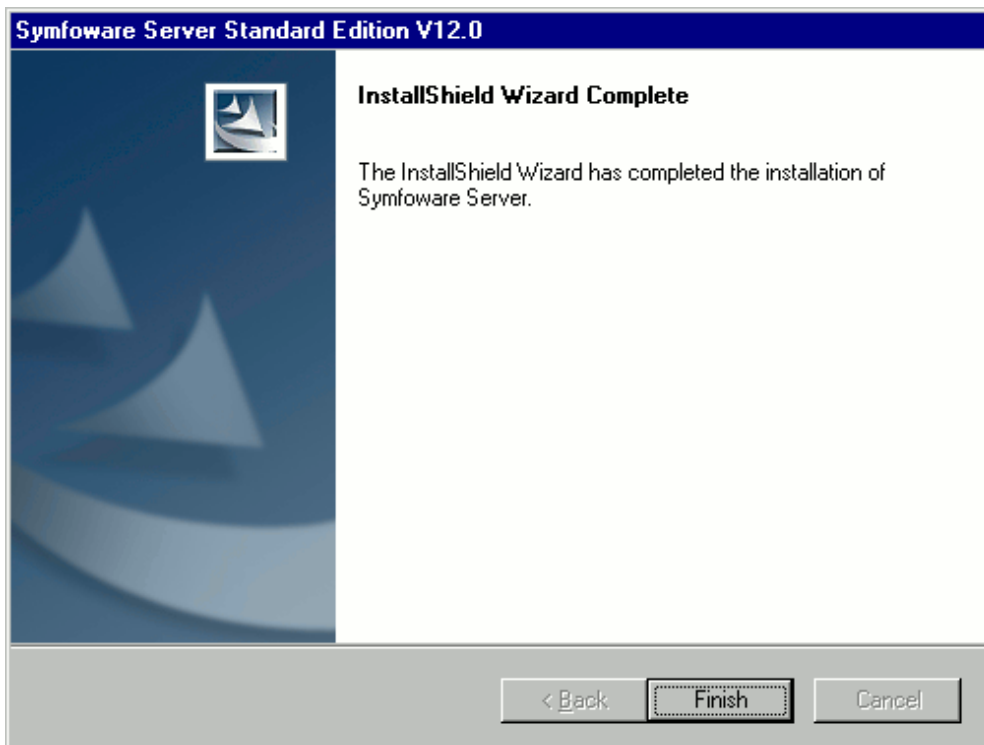
4. Run the reinstallation

In the [Confirm Repair installation] window, click [Next]. The reinstallation will start.



5. Completing installation

The completion window is displayed. Click [Finish].



5.1.3 Tasks Required After Reinstallation

This section explains the tasks to be performed after reinstallation.

Use the following procedure:

1. Start WebAdmin

If you are using WebAdmin, start WebAdmin.



See

.....
Refer to "[C.1.2 Activating the Web Server Feature of WebAdmin](#)" for details.
.....

2. Start an instance

Use the following procedure to start an instance.

Starting of instances should be performed by the instance administrator.

When an instance was created with WebAdmin

In the [Monitor] window, click [Start].

When an instance was created with the initdb command

Use the following procedure to start a service:

- a. Display the **Services** window.

In the [Start] menu, select [Administrative Tools], and then click [Services].

- b. Start a service

Select the instance name that you wish to start from the services list, and click [Start Service].

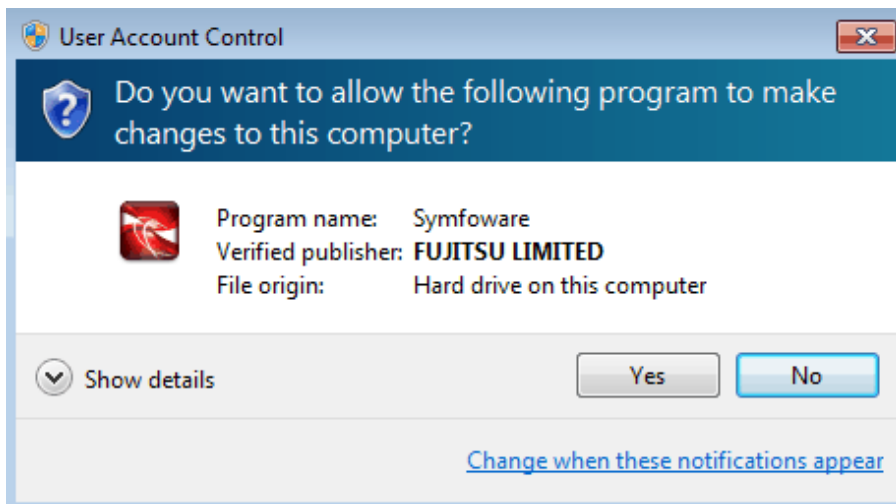
You can also start a service by specifying the service name in the net start command or sc start command.

Chapter 6 Uninstallation

This chapter explains the uninstallation of Symfoware Server.

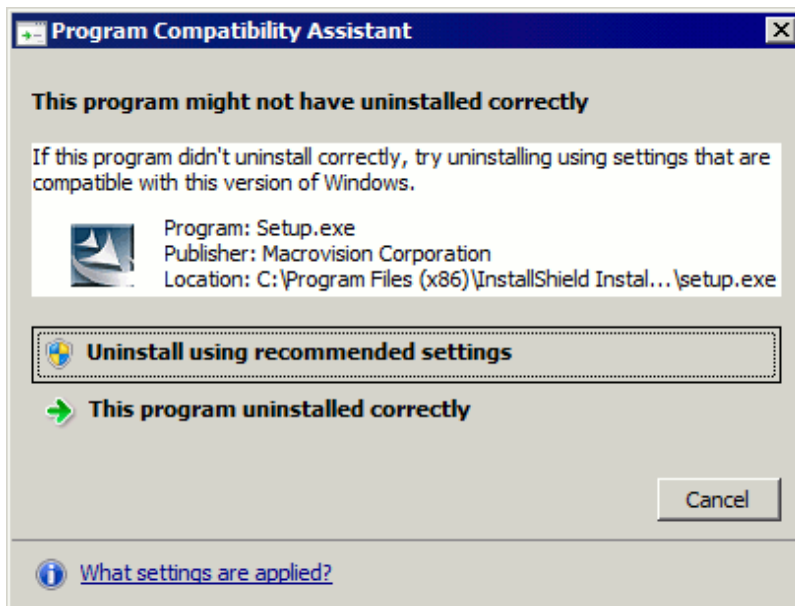
Information

- If a [User Account Control] dialog box such as the following is displayed at the start of the uninstallation, click [Yes] to continue processing:



If [No] is clicked, permission to continue is denied and an [Error] dialog box will be displayed. To continue the uninstallation, click [Retry] in the [Error] dialog box. To end the operation, click [Cancel].

- If uninstallation is suspended or processing terminates abnormally, a dialog box of the Program Compatibility Assistant similar to the one shown below may be displayed. Click [This program uninstalled correctly] and continue operation.



6.1 Uninstallation in Interactive Mode

The example described here shows the procedure for uninstalling Symfoware Server Standard Edition 64-bit from your system.

The uninstallation procedure is described below.

Note

- The installation folder may remain after uninstallation. If it is not required, delete it.
- In Windows Server(R) 2008 or Windows Server(R) 2008 R2, an empty folder may remain in the [Start] menu after uninstallation. In the [Start] menu, select [All Programs], right-click the product name that you uninstalled, and then click [Delete].
- If performing operation with WebAdmin, back up the following file before uninstallation.
Instances will not be recognized by WebAdmin even if Symfoware Server is reinstalled after uninstallation.
If performing operation with WebAdmin after reinstalling Symfoware Server, replace the following backed up file after installation.

instal\Folder\gui\data\gui-instance

By replacing the above file in the installation folder after installation, the instance will be recognized by WebAdmin, and the recognized instance will be set to automatically start and stop.

To disable the automatic start and stop setting for an instance, select the service for the applicable instance in the Windows services window, and in [Startup Type], select [Manual].

See

Refer to the Installation and Setup Guide for Client when uninstalling the Symfoware Server client feature.

1. Stop instances

Stop all instances that are using the product to be uninstalled.

Stopping of instances should be performed by the appropriate instance administrator.

When an instance was created with WebAdmin

In the [Monitor] window, click [Stop].

When an instance was created with the initdb command

Use the following procedure to stop a service:

- a. Display the [Services] window

In the [Start] menu, select [Administrative Tools], and then click [Services].

- b. Stop the service

Select the instance name that you wish to stop from the services list, and click [Stop Service]. If you stop a service while applications and commands are running, Symfoware Server will force those applications and commands to close and will stop normally.

You can also stop a service by specifying the service name in the net stop command or sc stop command.

2. Stop WebAdmin

If you are using WebAdmin, stop WebAdmin.

See

Refer to "[C.1.3 Stopping the Web Server Feature of WebAdmin](#)" for details.

3. Unregister Windows services

Perform this step if the instance was created with the initdb command.

Unregister the instance registered in Windows services.

Use the unregister mode of the pg_ctl command to specify the registered service name and unregister the instance from Windows services.

Example

The following is an example showing execution of this command on the registered service name "Symfoware Server V12.0.0 inst1".

```
> pg_ctl unregister -N "Symfoware Server V12.0.0 inst1"
```

Note

You should unregister services before uninstalling Symfoware Server. If you uninstall Symfoware Server while services are running, several files will remain after the uninstallation.

If you have carried out the uninstallation without unregistering services beforehand, use the server command `sc delete` to unregister the services.

4. Delete registrations related to the event log

If you are outputting to the event log, a DLL registration mentioned in "[4.2.5 Preparing for Output to the Event Log](#)" has been performed. To prevent unnecessary issues from occurring, you should delete this registration. Refer to "Server Administration", "Registering Event Log on Windows" in the PostgreSQL Documentation for details.

The following is an example showing deletion of the DLL registration for a 64-bit product under the default event source name.

```
regsvr32 /u "c:\Program Files\Fujitsu\symfoserver64\lib\pgevent.dll"
```

If using multiple instances

DLL registration is performed so that you can output messages corresponding to the event source name assigned by the user, allowing you to identify messages output to the event log by instance.

Since it is necessary to delete the DLL registration for each instance, delete the DLL registration by event source name.

The following is an example showing deletion of the DLL of a 64-bit product registered under the event source name "Symfoware Server inst1".

```
regsvr32 /u /i:"Symfoware Server inst1" "C:\Program Files\Fujitsu\symfoserver64\lib\pgevent.dll"
```

Note that this step is not required if the instance was created with WebAdmin.

If installing multiple versions

If the instances you created using this package have been set to output error logs to the event log, use the DLL path name that you took note of previously as explained in "[4.2.5 Preparing for Output to the Event Log](#)" to reregister the default event source name.

Note

Ensure to delete DLLs before the uninstallation. If you perform the uninstallation without doing so, you may not be able to delete the DLLs at a later time.

5. Start the uninstaller

The uninstallation must be performed by a user with administrator privileges (a user with an ID that belongs to the Administrators group).

Windows Server(R) 2003 or Windows Server(R) 2003 R2:

1. Display [Add or Remove Programs]
In the [Start] menu, click [Control Panel], and then click [Add or Remove Programs].
2. Start the uninstaller
In the program list, select the following program, and then click [Change/Remove]:
 - Symfoware Server Standard Edition (Open Interface) (64bit) V12.0.0

Windows Server(R) 2008 or Windows Server(R) 2008 R2:

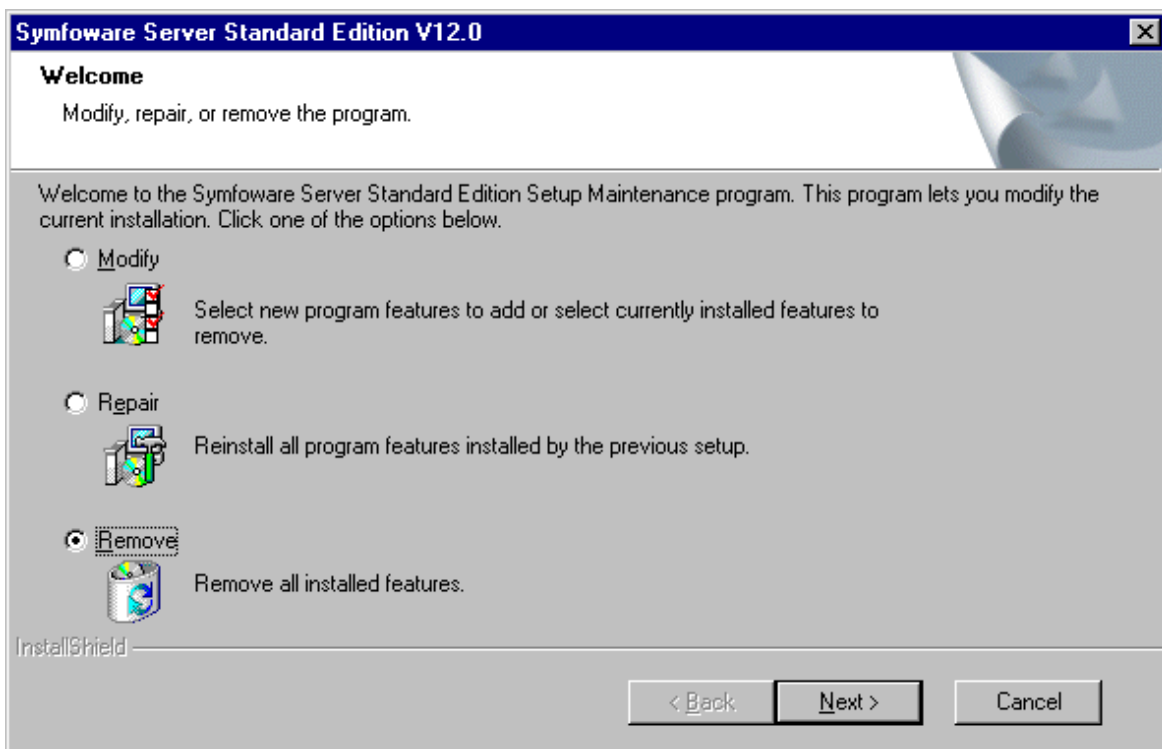
1. Display the Control Panel
In the [Start] menu, click [Control Panel].
2. Start the uninstaller
Click [Programs], and then click [Programs and Features].
In the program list, select the following program, and then click [Uninstall/Change]:
 - Symfoware Server Standard Edition (Open Interface) (64bit) V12.0.0

Windows Server(R) 2012:

1. Display the Control Panel
Right-click the [Start] screen, and then click [All apps] that is displayed at the bottom-right of the screen. In the [Apps] window, click [Control Panel].
2. Start the uninstaller
Click [Programs], and then click [Programs and Features].
In the program list, select the following program, and then click [Uninstall].
 - Symfoware Server Standard Edition (Open Interface) (64bit) V12.0.0

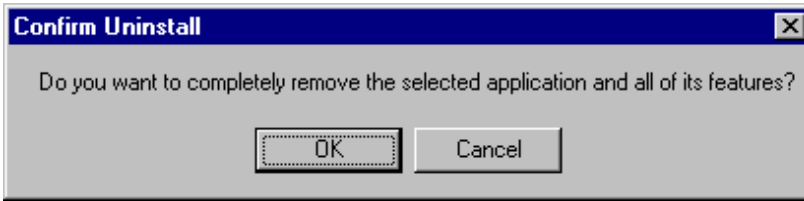
6. Run the uninstaller

In the [Welcome] window, select [Remove], and then click [Next].



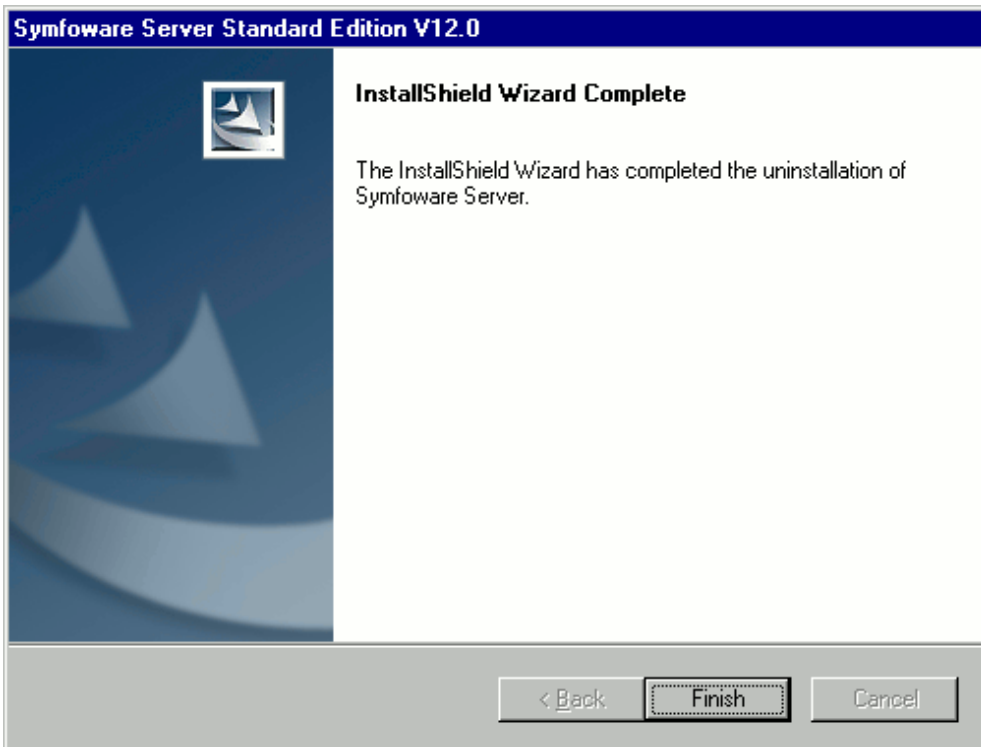
7. Delete Symfoware Server

The following window will be displayed. Click [OK].



8. Complete the uninstallation

The following window will be displayed. Click [Finish].



6.2 Uninstallation in Silent Mode

The uninstallation procedure is described below.

Note

- The installation folder may remain after uninstallation. If it is not required, delete it.
- In Windows Server(R) 2008 or Windows Server(R) 2008 R2, an empty folder may remain in the [Start] menu after uninstallation. In the [Start] menu, select [All Programs], right-click the product name that you uninstalled, and then click [Delete].
- If performing operation with WebAdmin, back up the following file before uninstallation. Instances will not be recognized by WebAdmin even if Symfoware Server is reinstalled after uninstallation. If performing operation with WebAdmin after reinstalling Symfoware Server, replace the following backed up file after installation.

install\Folder\gui\data\gui-instance

By replacing the above file in the installation folder after installation, the instance will be recognized by WebAdmin, and the recognized instance will be set to automatically start and stop.

To disable the automatic start and stop setting for an instance, select the service for the applicable instance in the Windows services window, and in [Startup Type], select [Manual].



See

Refer to the Installation and Setup Guide for Client when uninstalling the Symfoware Server client feature.

1. Stop all instances

Stop all instances that are using the product to be uninstalled.

When an instance was created with WebAdmin

In the [Monitor] window, click [Stop].

When an instance was created with the initdb command

Use the following procedure to stop a service:

- a. Display the [Services] window.

In the [Start] menu, select [Administrative Tools], and then click [Services].

- b. Stop the service

Select the instance name that you wish to stop from the services list, and click [Stop Service]. If you stop a service while applications and commands are running, Symfoware Server will force those applications and commands to close and will stop normally.

You can also stop a service by specifying the service name in the net stop command or sc stop command.

2. Stop WebAdmin

If you are using WebAdmin, stop WebAdmin.



See

Refer to "C.1.3 Stopping the Web Server Feature of WebAdmin" for details.

3. Unregister Windows services

Perform this step if the instance was created with the initdb command.

Unregister the instance registered in Windows services.

Use the unregister mode of the pg_ctl command to specify the registered service name and unregister the instance from Windows services.

Example

The following is an example showing execution of this command for the registered service name "Symfoware Server V12.0.0 inst1".

```
> pg_ctl unregister -N "Symfoware Server V12.0.0 inst1"
```



Note

You should unregister services before uninstalling Symfoware Server. If you uninstall Symfoware Server while services are running, several files will remain after the uninstallation.

If you have carried out the uninstallation without unregistering services beforehand, use the server command sc delete to unregister the services.

4. Delete registrations related to the event log

If you are outputting to the event log, a DLL registration mentioned in "4.2.5 Preparing for Output to the Event Log" has been performed.

To prevent unnecessary issues from occurring, you should delete this registration. Refer to "Server Administration", "Registering Event Log on Windows" in the PostgreSQL Documentation for details.

The following is an example showing deletion of the DLL registration for a 64-bit product under the default event source name.

```
regsvr32 /u "c:\Program Files\Fujitsu\symfoserver64\lib\pgevent.dll"
```

If using multiple instances

DLL registration is performed so that you can output messages corresponding to the event source name assigned by the user, allowing you to identify messages output to the event log by instance.

Since it is necessary to delete the DLL registration for each instance, delete the DLL registration by event source name.

The following is an example showing deletion of the DLL of a 64-bit product registered under the event source name "Symfoware Server inst1".

```
regsvr32 /u /i:"Symfoware Server inst1" "c:\Program Files\Fujitsu\symfoserver64\lib\pgevent.dll"
```

Note that this step is not required if the instance was created with WebAdmin.

If installing multiple versions

If the instances you created using this package have been set to output error logs to the event log, use the DLL path name that you took note of previously as explained in "4.2.5 Preparing for Output to the Event Log" to reregister the default event source name.

Note

Ensure to delete DLLs before the uninstallation. If you perform the uninstallation without doing so, you may not be able to delete the DLLs at a later time.

5. Run the uninstaller

The uninstallation must be performed by a user with administrator privileges (a user with an ID that belongs to the Administrators group).

Run suninst.bat to start uninstallation.

Example

```
> X:  
> i n s t a l l F o l d e r \ s u n i n s t . b a t
```

X: Drive on which the product is installed

6. Check the results

Uninstaller results will be output to the log file.

Log file

nnnn is the numeric part of the product V/L. For V12.0.0, that would be "1200".

64-bit products:

pathName:%TEMP%\SymfowareOpen_SV_64_*nnnn*.log

32-bit products:

pathName:%TEMP%\SymfowareOpen_SV_32_*nnnn*.log

Return values

The following return values are output:

Return value	Description
0	Uninstallation was successful.
63	Failed to delete the product information from "Uninstall (middleware)".
64	Failed to install because "Uninstall (middleware)" is running.
71	The InstallShield response file (.iss) does not exist, or contains an error.

Return value	Description
72	Failed to load the dynamic link library.
73	The InstallShield definition file (.ini) does not exist, or contains an error.
74	Failed to write to the registry.
79	Failed to read the registry.
83	Failed to delete the information from FJQSS.
128	A system error occurred.
129	Unsupported operating system.
144	Not executed with administrator privileges.

Appendix A Installation in Silent Mode

This appendix provides specifications for installation in silent mode.

A.1 Specification Format

The installation parameters CSV file, which is specified as the argument for the silent installer, has three columns per line in CSV format.

```
sectionName, parameterName, value
sectionName, parameterName, value
:
```

Enter the following settings in respective columns.

Item	Settings	Optional
<i>sectionName</i>	Specify the section name. There are two types of section names: "installInfo": Set the product information. "parameters": Set the parameter information for this product.	Mandatory
<i>parameterName</i>	Specify the parameter name. Each section has a valid parameter.	Mandatory
<i>value</i>	Specify the value.	Optional

Note

- Blank lines cannot be included.
- Section names and parameter names cannot be omitted.
- Undefined parameters cannot be set in lines where the section name is "installInfo". Also, note that the same parameter cannot be specified multiple times.
- Specify at least one line with the section name "parameters".
- Undefined parameters specified in lines within the "parameters" section will be ignored during execution. Note that when the same parameter is specified multiple times, the settings in the lowest line will be valid.
- The setting values for lines where the section name is "installInfo" may contain alphanumeric characters (at least one), and symbols, excluding double quotation marks (") and commas (,).
- Do not use the following characters in the setting values for lines with the section name "parameters".
\$ & ' = ^ ~ | @ ` [] ; < > / tab

Information

The template for the installation parameters CSV file is "dvdDrive\sample\sample.csv".

A.2 List of Parameters

This section describes the parameters that can be set for each section.

installInfo section

The parameters that can be set in the installInfo section are shown below.

No.	Type	Parameter		Description
1	Software ID	Parameter name	Name	Mandatory. Specify the software identifier. For this software, specify the following value: "Symfoware Server"
		Value/Range	String	
		Default value	None	

Information

- In addition to "Name", the following parameters can be used in the "installInfo" section.
 - softwareName
 - OS
 - Version
 - Edition
- Note that specifying a parameter name other than "Name" and the parameters listed above will result in an error.
- The values set in these parameters do not affect silent installation.

Example

The following specification example installs Symfoware Server Standard Edition (Open Interface) (64bit) V12.0.0:

```
installInfo,Name,Symfoware Server
```

parameters section

The parameters that can be set in the parameters section are shown below.

No.	Type	Parameter		Description
1	Installation destination of the server	Parameter name	ServerInstallPath	Optional. Specify the installation destination of the software. The root folder (such as C:\) cannot be specified.
		Value/Range	Path name	
		Default value	<ul style="list-style-type: none"> - 64-bit server product: C:\Program Files\Fujitsu\symfoser64 - 32-bit server product: <ul style="list-style-type: none"> - 64-bit operating system: C:\Program Files(x86)\Fujitsu\symfoser32 - 32-bit operating system: C:\Program Files\Fujitsu\symfoser32 	
2	Whether to install the client (32-bit)	Parameter name	Client32InstallExecute	Optional. Specify whether to run the installation of the client (32-bit).
		Value/Range	Y or N	

No.	Type	Parameter		Description
		Default value	Y	Y: Install N: Do not install
3	Installation destination of the client (32-bit)	Parameter name	Client32InstallPath	Optional. Specify the installation destination of the client (32-bit). The root folder (such as C:\) cannot be specified.
		Value/Range	Path name	
		Default value	C:\Program Files\Fujitsu \symfoclient32 or C:\Program Files (x86)\Fujitsu \symfoclient32	
4	Whether to install the client (64-bit)	Parameter name	Client64InstallExecute	Optional. Specify whether to run the installation of the client (64-bit). Y: Install N: Do not install This parameter is ignored on 32-bit operating systems.
		Value/Range	Y or N	
		Default value	Y	
5	Installation destination of the client (64-bit)	Parameter name	Client64InstallPath	Optional. Specify the installation destination of the client (64-bit). This parameter is ignored on 32-bit operating systems. The root folder (such as C:\) cannot be specified.
		Value/Range	Path name	
		Default value	C:\Program Files\Fujitsu \symfoclient64	
6	Whether to set up WebAdmin	Parameter name	WebSetupExecute	Optional. Specify whether to set up WebAdmin. Y: Install N: Do not install
		Value/Range	Y or N	
		Default value	Y	
7	Web server port number	Parameter name	WebPortNumber1	Optional. Specify the port number of the Web server.
		Value/Range	- Windows Server 2003 or Windows Server 2003 R2: 5001 to 49151 - Windows Server 2008, Windows Server 2008 R2, or Windows Server 2012: 1024 to 49151	
		Default value	26515	
8	WebAdmin internal port number	Parameter name	WebPortNumber2	Optional. Specify the WebAdmin internal port number.
		Value/Range	- Windows Server 2003 or Windows Server 2003 R2: 5001 to 49151	

No.	Type	Parameter		Description
			- Windows Server 2008, Windows Server 2008 R2, or Windows Server 2012: 1024 to 49151	
		Default value	26516	

Example

The following specification example installs Symfoware Server Standard Edition (Open Interface) (64bit) V12.0.0:

```
parameters,ServerInstallPath,C:\Program Files\Fujitsu\symfoser64
parameters,Client32InstallExecute,N
parameters,Client64InstallExecute,N
parameters,WebSetupExecute,Y
parameters,WebPortNumber1,26515
parameters,WebPortNumber2,26516
```

A.3 Messages and Return Values

Messages are output when errors are detected during parametric analysis.

If an error is detected during installation of the product, a message is output to the log:

Log file

"nnnn" refers to the numeric part of the product version and level. For example, V12.0.0 is written as "1200".

64-bit product

```
Server log file name: %TEMP%\SymfowareOpen_SV_64_nnnn.log
Client (64-bit) log file name: %TEMP%\SymfowareOpen_CL_64_nnnn.log
Client (32-bit) log file name: %TEMP%\SymfowareOpen_CL_32_nnnn.log
```

32-bit product

```
Server log file name: %TEMP%\SymfowareOpen_SV_32_nnnn.log
Client (64-bit) log file name: %TEMP%\SymfowareOpen_CL_64_nnnn.log
Client (32-bit) log file name: %TEMP%\SymfowareOpen_CL_32_nnnn.log
```

Messages and return values

CSV file errors

The following messages are output if errors are detected while parsing CSV files.

Return value	Message	Explanation and actions
4	CSV file error:code = 1, Invalid CSV error.	There is an error in the specification format of the CSV file.
4	CSV file error:code = 2, installInfo/Name is required.	Either installInfo or the Name parameter has not been specified.
4	CSV file error:code = 3, Invalid installInfo key.	There is an error in the installInfo specification. Or the section name is invalid.
4	CSV file error:code = 4, Duplicated installInfo key.	The same parameter has been defined more than once in installInfo. Or the section name is invalid.

Return value	Message	Explanation and actions
4	CSV file error:code = 5, Invalid character length.	No setting value is specified, or the specified string is too long.
4	CSV file error:code = 6, Invalid character format or encoding.	An invalid format or character set is being used for the character string.
4	CSV file error:code = 8, Parameter is required.	There is no line in the "parameters" section.
20	The input file does not exist.	The input file does not exist.
21	The value of @1@ is incorrect,the value is @2@.	The value is incorrect. Specify the correct value. The parameter name is displayed in @1@. The specified parameter is displayed in @2@.
22	The value same at @1@ and @2@ is specified.	The same value is specified in different parameters. Specify different values. The parameter name is displayed in @1@ and @2@.
23	The @2@ of @1@ already exists.	The path already exists. Specify a different path. The parameter name is displayed in @1@. The specified value is displayed in @2@.
24	Drive @2@ of @1@ does not exist.	The drive does not exist. Specify an existing drive. The parameter name is displayed in @1@. The specified value is displayed in @2@.
26	Port number @1@ is already used in the service file(/etc/services).	The port number is already being used. Specify an unused port number. The port number is displayed in @1@
29	USAGE : silent.sh inputfile	The argument specified in the command is incorrect. Specify the correct argument.

Product installer errors

The following return values are returned when errors occur while the product installer is running.

Return value	Explanation
0	Completed successfully.
62	The installation failed because there is product information remaining in "Uninstall (middleware)".
63	Failed to register product information in Uninstall (middleware).
64	Installation failed because Uninstall (middleware) is running.
65	Failed to install Uninstall (middleware).
70	An error occurred during conversion of a character string into a number.
71	The InstallShield response file (.iss) does not exist, or contains an error.
72	Failed to load the dynamic link library (DLL).
73	The InstallShield definition file (.ini) does not exist, or contains an error.
74	Failed to write to the registry.
77	Failed to set up components.
78	Failed to compare disk capacity.

Return value	Explanation
79	Failed to read the registry.
80	Failed to change the file permissions.
81	Failed to load symrdb.dll.
82	There is an error in the Binary parameters of the InstallShield definition file (.ini).
83	Failed to install FJQSS or register information.
84	Failed to set up WebAdmin.
85	Different editions of the same generation are installed.
86	A new StopChange version of the same generation is installed.
88	A conflicting product is installed.
128	A system error occurred.
129	Unsupported operating system.
136	The installation destination folder name has not been specified.
137	The installation destination has not been specified as a full path.
138	The specified path name contains invalid characters.
139	The specified drive cannot be recognized.
142	The installation destination has insufficient disk capacity.
144	The command was not executed with administrator privileges.
205	Unsupported window size.

A.4 CSV File Format

The format of CSV files is based on RFC4180, with the following specifications.

Records

- Separate each record with a "CRLF" newline (operation is not guaranteed with only a "CR" or "LF" newline).
- Specify a newline at the end of a file.
- Separate each field within a record with a comma ",".

Format	Record		
aaa,bbb,ccc	aaa	bbb	ccc

- If several commas are entered in succession, or if a comma precedes a newline, the data following the comma is regarded as empty.

Format	Record		
aaa,,ccc	aaa		ccc
aaa,bbb,	aaa	bbb	

- Headers cannot be specified

Format	Record		
	field1	field2	field 3
aaa,bbb,ccc	aaa	bbb	ccc

Appendix B Multi-Version Installation

This appendix describes how to install a version different from the one currently installed.

B.1 Installation in Interactive Mode

The procedure to perform a multi-version installation in interactive mode is the same as for an initial installation in interactive mode. Refer to "[3.1 Installation in Interactive Mode](#)" for details.

However, change the following information so that it does not duplicate that of currently-installed products:

- Installation folder
- Web server port number
- WebAdmin internal port number

B.2 Installation in Silent Mode

The procedure to perform a multi-version installation in silent mode is the same as for an initial installation in silent mode. Refer to "[3.2 Installation in Silent Mode](#)" for details.

However, change the installation parameters CSV file so that the following parameters do not duplicate those of the currently-installed Symfoware Server:

- ServerInstallPath
- Client32InstallPath
- Client64InstallPath
- WebPortNumber1
- WebPortNumber2

Appendix C Setting Up and Removing WebAdmin

This appendix describes how to set up and remove WebAdmin.

C.1 Setting Up WebAdmin

This section explains how to set up WebAdmin.

C.1.1 Setting Up WebAdmin

Follow the procedure below to set up WebAdmin.

1. Log in

Log in as a user that belongs to the Administrators group.

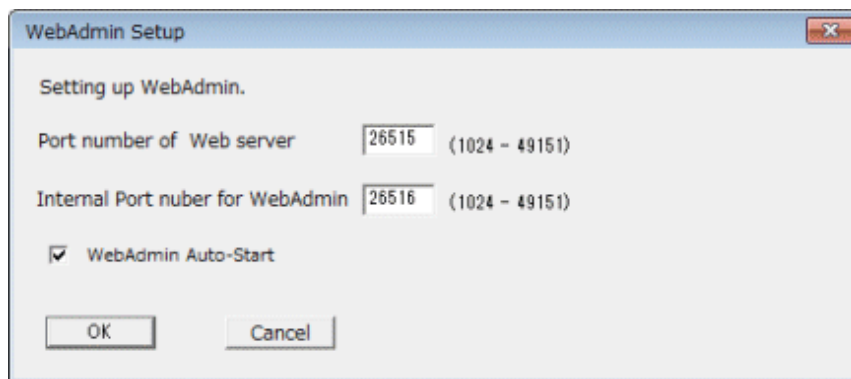
2. Display the setup window

Windows Server(R) 2003, Windows Server(R) 2003 R2, Windows Server(R) 2008 or Windows Server(R) 2008 R2:

In the [Start] menu, select [All Programs], select [*productName*], and then click [WebAdmin Setup].

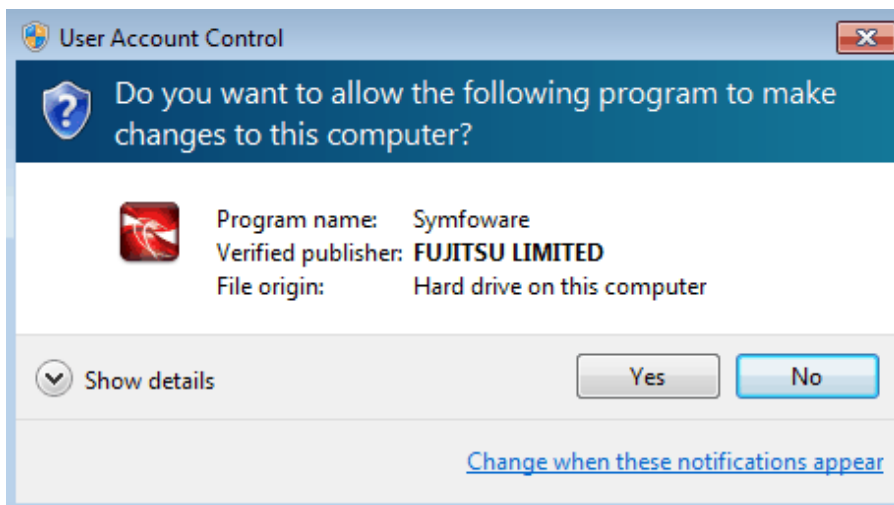
Windows Server(R) 2012:

In the [Start] screen, click [All apps]. In the Apps list, select [*productName*], and then click [WebAdmin Setup].



Note

If the same [User Account Control] dialog box as that shown below is displayed, click [Yes] to continue processing.



3. Specify the port number

Specify the following port numbers to be used in WebAdmin.

Refer to the services file. Only change to a different port number if the same port number is being used by another service.

Make a note of the port number for the Web server, because it will be required for activating the WebAdmin window.

Item	Value (recommended value)
Web server port number	26515
WebAdmin internal port number	26516
WebAdmin automatic start	Checked

Web server port number

- Specify an unused port number in the following range for the port number used for communication between the Web browser and Web server:
- Windows Server(R) 2003 or Windows Server(R) 2003 R2: 5001 to 49151
- Windows Server(R) 2008, Windows Server(R) 2008 R2, or Windows Server(R) 2012: 1024 to 49151
- The Web server port number is registered as a port number of the following service name in the services file:

64-bit product:

symfo_1200_SE_64_WebAdmin_Port1 or symfo_1200_LE_64_WebAdmin_Port1

32-bit product:

symfo_1200_SE_32_WebAdmin_Port1 or symfo_1200_LE_32_WebAdmin_Port1

WebAdmin internal port number

- Specify an unused port number in the following range for the port number used for communication between the Web server and WebAdmin runtime environment:
- Windows Server(R) 2003 or Windows Server(R) 2003 R2: 5001 to 49151
- Windows Server(R) 2008, Windows Server(R) 2008 R2, or Windows Server(R) 2012: 1024 to 49151
- The WebAdmin internal port number is registered as a port number of the following service name in the services file:

64-bit product:

symfo_1200_SE_64_WebAdmin_Port2 or symfo_1200_LE_64_WebAdmin_Port2

32-bit product:

symfo_1200_SE_32_WebAdmin_Port2 or symfo_1200_LE_32_WebAdmin_Port2

WebAdmin automatic start

Select whether or not to start WebAdmin when the machine is started.



Note

- Make a note of the Web server port number for use in the Windows firewall settings.
- Unused port numbers
In the operating system and other products, regardless of the information in the service file, unused port numbers may be automatically numbered and then used, or port numbers specified in environment files within products may also be used. Check the port numbers used by the OS and other products, and ensure that these are not duplicated.
- Access restrictions
Prevent unauthorized access and maintain security by using a firewall product, or the packet filtering feature of a router device, to restrict access to the server IP address and the various specified port numbers.

4. Prepare for setup

Click [OK] in the setup window, and after completing the WebAdmin setup, refer to "4.2 Preparations for Setup" and perform the required preparations for setting up Symfoware Server if using WebAdmin for operation.

C.1.2 Activating the Web Server Feature of WebAdmin

Follow the procedure below to activate the Web server feature of WebAdmin.

1. Display the Services window.

Windows Server(R) 2012:

In the [Start] screen, select [Administrative Tools], and then click [Services].

Other operating systems:

In the [Start] menu, select [Administrative Tools], and then click [Services].

2. Start the service

Select the displayed name "Symfoware WebAdmin *version*", and then click [Start Service].

You can also start the service by specifying the service name of the Web server feature of WebAdmin in the net start command or sc start command.

C.1.3 Stopping the Web Server Feature of WebAdmin

Follow the procedure below to stop the Web server feature of WebAdmin.

1. Display the Services window.

Windows Server(R) 2012:

In the [Start] screen, select [Administrative Tools], and then click [Services].

Other operating systems:

In the [Start] menu, select [Administrative Tools], and then click [Services].

2. Stop the service

Select the displayed name "Symfoware WebAdmin *version*", and then click [Stop Service].

You can also stop the service by specifying the service name of the Web server feature of WebAdmin in the net stop command or sc stop command.

C.2 Removing WebAdmin

This section explains how to remove WebAdmin.

This removal procedure stops WebAdmin and ensures that it no longer starts automatically when the machine is restarted.

To remove the setup, execute the command shown below.

Example

When Symfoware Server is installed in "C:\Program Files\Fujitsu\symfoserver64":

```
> C:
> cd C:\Program Files\Fujitsu\symfoserver64\gui\sbin
> WebAdminSetup --delete
```



Note

- The removal of the WebAdmin setup must be performed by a user with administrator privileges (a user ID that belongs to the Administrators group).

- In Windows Server(R) 2008, Windows Server(R) 2008 R2, or Windows Server(R) 2012, commands that require administrator privileges must be executed from the [Administrator: Command Prompt] window. Right-click [Command Prompt], and then select [Run as administrator] from the context menu to display the [Administrator: Command Prompt] window.



Appendix D Checking the Version of the Installed Product

To check the version of Symfoware Server installed, start the Uninstall (middleware) tool. The procedure for starting the tool is described below.

Windows Server(R) 2012:

Right-click in the [Start] screen, and then click [All apps]. In the Apps list, select [Fujitsu], and then click [Uninstall (middleware)].

Other operating systems:

In the [Start] menu, select [All Programs], select [Fujitsu], and then click [Uninstall (middleware)].

Appendix E Configuring Parameters

WebAdmin operates and manages databases according to the contents of the following configuration files:

- [postgresql.conf](#)

Contains various items of information that define the operating environment of Symfoware Server.

- [pg_hba.conf](#)

Contains various items of information related to client authentication.

These configuration files are deployed to a data storage destination. Data is written to them when the instance is created by WebAdmin and when settings are changed, and data is read from them when the instance is started and when information from the [Setting] menu is displayed.

Direct editing of each configuration file is possible with a text editor.



See

Refer to "Server Configuration" and "Client Authentication" in "Server Administration" in the PostgreSQL Documentation for information on the parameters.

postgresql.conf

Parameters that can be changed in WebAdmin

The postgresql.conf parameters that can be changed in WebAdmin are shown below:

Tab	WebAdmin item	Parameter
Character Code	Character Set	client_encoding
	Message Locale	lc_messages (*1)
Communication	Port Number	port
	Max Connection	max_connections
SQL Options	Interpretation of Expression = NULL	transform_null_equals
	Date Output Format	DateStyle (*2)
	Interval Oputput Format	IntervalStyle
	The number of digits for floating values	extra_float_digits
	Transaction Isolation Levels	default_transaction_isolation
	Currency Format	lc_monetary
	Date and Time Format	lc_time
Memory	Numerical Value Format	lc_numeric
	Sort Memory(Unit:KB)	work_mem
	Share Buffer(Unit:KB)	shared_buffers

*1: In the current version, you can only specify "C".

*2: If you specify "Postgres" as the output format, dates will be output in the "12-17-1997" format, not the "Wed Dec 17 1997" format used in the PostgreSQL Documentation.

Parameters set by WebAdmin

Parameters set by WebAdmin during instance startup are shown below (they will be ignored even if specified in postgresql.conf):

Parameter	Value
event_source	'symfo_version_userName_instanceName'
listen_addresses	*
log_destination	'stderr,eventlog'
logging_collector	on
log_line_prefix	'%e: %t [%p]: [%l-1] user = %u,db = %d,remote = %r app = %a '
log_directory	'userProfileFolder\localSettingsFolder\Fujitsu\symfo_version\instanceName\log' Example: If using Windows Server(R) 2008 R2, userProfileFolder\localSettingsFolder will be "C:\\Users\\userName\AppData\\Local".
log_filename (*1)(*2)	'logfile-%a.log'
log_truncate_on_rotation	on
log_rotation_age	1d

*1: The server logs are split into files based on the day of the week, and are rotated after each week.

*2) If the date changes while the instance is stopped, old logs are not deleted and continue to exist. Manually delete old logs that are no longer required to release disk space.

Parameters automatically set by WebAdmin according to the amount of memory

The postgresql.conf parameters automatically set according to the amount of installed memory, during the creation of instances by WebAdmin, are shown below:

Parameter	Value
shared_buffers	30% of the machine's installed memory
work_mem	30% of the machine's installed memory / max_connections / 2
effective_cache_size	75% of the machine's installed memory
maintenance_work_mem	10% of the machine's installed memory / (1 + autovacuum_max_workers)

When determining the values to be configured in the above parameters, you must take into account any anticipated increases in access volume or effects on performance during business operations, such as the number of applications and commands that will access the instance, and the content of processes. Also, note that in addition to Symfoware Server, other software may be running on the actual database server. You will need to determine the degree of priority for the database and other software, as well as the memory allocation size.

WebAdmin automatically configures complex parameter settings such as those mentioned above, based on the size of the internal memory of the machine. This enables maximum leverage of the machine memory to facilitate resistance against fluctuations during business operations.

Accordingly, the effects of the above-mentioned factors must be estimated and taken into account when determining and configuring parameter values, so that memory resources can be effectively allocated among other software or instances, and so that adverse effects can be mutually avoided. Refer to "Memory" in "Resource Consumption", and "Planner Cost Constants" in "Query Planning", under "Server Administration" in the PostgreSQL Documentation for information on parameter values and required considerations.

Parameter values can be modified using the WebAdmin [Setting] menu, or edited directly using a text editor.

If adding an instance, determine the parameter values, including for existing instances, and make changes accordingly.

Note

- Do not directly edit the following postgresql.conf parameters with a text editor, otherwise WebAdmin may not work properly if you make a mistake):
 - port
 - archive_mode
 - archive_command
 - wal_level
 - wal_sync_method
 - log_line_prefix
 - log_destination
 - logging_collector
 - log_directory
 - log_file_mode
 - log_filename
 - log_truncate_on_rotation
 - log_rotation_age
 - event_source
 - backup_destination
 - You must take care with the following parameter:
 - superuser_reserved_connections

Set it to a number that includes the 3 connections required in WebAdmin (the default is 3).
-

pg_hba.conf

Refer to "Client Authentication" in "Server Administration" in the PostgreSQL Documentation for information on content that can be configured in pg_hba.conf.

Note

- Use the following client authentication settings to allow the instance administrator to connect to the database using WebAdmin:
 - The connection type: "host"
 - The IP address is a loopback address ("127.0.0.1/32")
 - If you specify an item or value that cannot be set by WebAdmin when editing the pg_hba.conf file with a text editor, it will not be possible to reference that line from WebAdmin.
-

Appendix F Uninstall (middleware) Tool

The Uninstall (middleware) tool is a common tool for Fujitsu middleware products. It manages information about the Fujitsu middleware products installed, as well as launching the product uninstallers. However, it cannot be used to uninstall Symfoware Server.

Note

This tool manages information for other Fujitsu middleware products as well as for Symfoware Server. Do not uninstall this tool unless it is absolutely necessary.

If you need to uninstall this tool, use the following procedure:

1. Start the "Uninstall (middleware)" tool and check whether there are any other Fujitsu middleware products left on the system. Start the tool as below:

Windows Server(R) 2012:

Right-click in the [Start] screen, and then click [All apps]. In the Apps list, select [Fujitsu], and then click [Uninstall (middleware)].

Other operating systems:

In the [Start] menu, select [All Programs], select [Fujitsu], and then click [Uninstall (middleware)].

2. If no Fujitsu middleware products have been installed, execute the following uninstallation command:

```
%systemDrive%\FujitsuF4CR\bin\cirremove.exe
```

3. The following message will be displayed: "This software is a tool that is shared by all Fujitsu middleware products. Is it OK to delete it? [y/n]:". Enter 'y' to continue. The uninstallation process will finish in a few seconds.

4. After the uninstallation completes, the following directory and the files contained within will still remain, so delete it:

```
%systemDrive%\FujitsuF4CR
```

Appendix G Estimating Database Disk Space Requirements

This appendix describes how to estimate database disk space requirements.

G.1 Estimating Table Size Requirements

The following tables provide the formulas for estimating table size requirements.

Table G.1 Estimation formula when the record length is 2032 bytes or less

Item	Estimation formula (bytes)
(1) Record length	<p>$27(*1) + \text{NULL map} + \text{OID} + \text{column data}$</p> <p>NULL map: Number of columns / 8 (*2) OID: 4 for a table "WITH OID". The default is 0. Column data: Sum of column lengths</p> <p>*1: Record head section *2: Round the result up to the next integer.</p> <ul style="list-style-type: none"> - Because the column data is placed in boundaries of 8 bytes, you need to make an adjustment so that the sum of the record head section, NULL map and OID is a multiple of 8. For example, if the calculated length is $27 + 1 / 8$ (rounded up) + 0 = 28 bytes, add 4 to make the length 32 bytes. - Because the data of each column is placed in boundaries of the defined data type, take the boundary of each data type into account for the length of the column data. For example, the length of the column data in the table below will not be the sum of the data types, which is 37 bytes, but will instead be 64 bytes following boundary adjustment. Definition: create table tb1(c1 char(1), c2 long, c3 int, c4 box) Estimation: CHAR type 1 byte + boundary adjustment of 7 bytes for LONG type 8 bytes + LONG type 8 bytes + INT type 4 bytes + boundary adjustment of 12 bytes for BOX type 32 bytes + BOX type 32 bytes = 64 bytes - Because each record is placed in boundaries of 8 bytes, you need to make an adjustment so that the length of the column data is a multiple of 8. - If the calculated record length exceeds 2,032 bytes, the variable length data in the record might be compressed automatically. If so, use the estimation formulas in "Table G.2 Estimation formula when the record length exceeds 2032 bytes" to estimate the table size.
(2) Number of records per page	<p>$8168 (*1) / ((1) \text{ record length} + 4 (*2))$</p> <p>*1: Page length (8192) - page head (24) *2: Pointer length (4)</p> <ul style="list-style-type: none"> - Round the number of records per page calculated at (2) to the nearest integer.
(3) Number of pages required for storing records	<p>Total number of records / (2) number of records per page</p> <p>Round the number of pages required for storing records calculated at (3) to the nearest integer.</p>
(4) Amount of space	<p>(3) Number of pages required for storing records x page length x safety factor (*1)</p> <p>*1: Specify 2.0 or higher.</p>

Item	Estimation formula (bytes)
	- This is the safety factor assumed if vacuuming is performed for garbage collection in tables and indexes.

Table G.2 Estimation formula when the record length exceeds 2032 bytes

Item	Estimation formula (bytes)
(4) Amount of space	Total number of records x (1) record length x safety factor (*1) *1: Specify 2.0 or higher. - This is the safety factor assumed if vacuuming is performed for garbage collection in tables and indexes.

G.2 Estimating Index Size Requirements

This section provides the formulas for estimating index size requirements.

Open SQL provides five index types: B-tree, Hash, GiST, GIN, and SP-GiST (the same as PostgreSQL). If you do not specify the index type in the CREATE INDEX statement, a B-tree index is generated.

The following describes how to estimate a B-tree index.

A B-tree index is saved as a fixed-size page of 8 KB. The page types are meta, root, leaf, internal, deleted, and empty. Since leaf pages usually account for the highest proportion of space required, you need to calculate the requirements for these only.

Table G.3 Estimation formula when the key data length is 512 bytes or less

Item	Estimation formula (bytes)
(1) Entry length	8 (*1) + key data length (*2) *1: Entry head *2: The key data length depends on its data type (refer to "G.3 Sizes of Data Types" for details). Because each entry is placed in boundaries of 8 bytes, you need to make an adjustment so that the length of the key data is a multiple of 8. For example, if the calculated length is 28 bytes, add 4 to make the length 32 bytes. - If the key data length exceeds 512 bytes, key data may be automatically compressed. In this case, use the estimation formula given in "Table G.4 Estimation formula when the key data length exceeds 512 bytes" to estimate the key data length.
(2) Page size requirement	8152 (*1) *1: Page length (8192) - page header (24) - special data (16) = 8152
(3) Number of entries per page	(2) Page size requirement / ((1) entry length + 4 (*1)) *1: Pointer length - Round the number of entries per page calculated at (3) to the nearest integer.
(4) Number of pages required for storing indexes	Total number of records / (3) number of entries per page - Round the number of pages required for storing indexes calculated at (4) to the nearest integer.
(5) Space requirement	(4) Number of pages required for storing indexes x 8192 (*1) / usage rate (*2) *1: Page length *2: Specify 0.7 or lower.

Table G.4 Estimation formula when the key data length exceeds 512 bytes

Item	Estimation formula (bytes)
(5) Space requirement	Total number of records x key data length x compression ratio (*1) / usage rate (*2) *1: The compression ratio depends on the data value, so specify 1. *2: Specify 0.7 or lower as the usage rate.

G.3 Sizes of Data Types

This section lists the sizes of the data types.

G.3.1 Sizes of Fixed-Length Data Types

The following table lists the sizes of fixed-length data types.

Data type	Size (bytes)
SMALLINT (INT2)	2
INTEGER (INT4)	4
BIGINT (INT8)	8
REAL	4
DOUBLE PRECISION	8
SERIAL (SERIAL4)	4
BIGSERIAL (SERIAL8)	8
MONEY	8
FLOAT	8
FLOAT (1-24)	4
FLOAT (25-53)	8
TIMESTAMP WITHOUT TIME ZONE	8
TIMESTAMP WITH TIME ZONE	8
DATE	4
TIME WITHOUT TIME ZONE	8
TIME WITH TIME ZONE	12
INTERVAL	12
BOOLEAN	1
CIDR	IPv4: 7 IPv6: 19
INET	IPv4: 7 IPv6: 19
MACADDR	6
POINT	16
LINE	32
LSEG	32
BOX	32
CIRCLE	24

G.3.2 Sizes of Variable-Length Data Types

The following table lists the sizes of variable-length data types.

Data type	Size (bytes)	Remarks
path	Length of size portion + 12 + 16 x number of vertices	1) When carrying out division, round to the next integer. 2) If the real data length is less than 127, then the length of the size portion is 1 byte, otherwise it is 4 bytes. 3) The number of bytes per character depends on the character set (refer to "G.3.4 Number of Bytes per Character" for details).
polygon	Length of size portion + 36 + 16 x number of vertices	
decimal	Length of size portion + 2 + (integer precision / 4 + decimal precision / 4) x 2	
numeric		
bytea	Length of size portion + real data length	
character varying(n), varchar(n)	Length of size portion + number of characters x number of bytes per character	
character(n), char(n)	Length of size portion + n x number of bytes per character	
text	Length of size portion + number of characters x number of bytes per character	

G.3.3 Sizes of Array Data Types

The following table lists the sizes of array data types.

Data type	Size (bytes)	Remarks
Array	Length of size portion + 12 + 8 x number of dimensions + data size of each item	If the real data length is less than 127, then the length of the size portion is 1 byte, otherwise it is 4 bytes. - Example of estimation when array data is "ARRAY[[1,2,3],[1,2,3]]" Number of dimensions: 2 INTEGER data size: 4 Total size = 1+12+8x2+6x4 = 53

G.3.4 Number of Bytes per Character

The following table lists the number of bytes per character.

The given values relate to the common character sets EUC-JP and UTF8.

Character type	Character set	Number of bytes per character
ASCII	EUC_JP	1
Halfwidth katakana	EUC_JP	2
JIS X 0208 kanji characters	EUC_JP	2
JIS X 0212 kanji characters	EUC_JP	3
ASCII	UTF8	1
Halfwidth katakana	UTF8	3

Character type	Character set	Number of bytes per character
JIS X 0208 kanji characters	UTF8	3
JIS X 0212 kanji characters	UTF8	3

G.4 Estimating Transaction Log Space Requirements

This section provides the formula for estimating transaction log space requirements.

```
Transaction log space requirements = ( checkpoint_segments x 3 + 1 ) x 16 MB
```

However, if the update volume is extremely high (for example, due to a large data load and batch processing), disk writing at a checkpoint may not be able to keep up with the load, and a higher number of transaction logs than indicated here may temporarily be accumulated.

G.5 Estimating Archive Log Space Requirements

This section explains how to estimate archive log space requirements.

The archive log is an archive of the transaction logs from the time of a previous backup to the present, so it fluctuates depending on the backup period and the content of update transactions.

The longer the backup period and the more update transactions, the greater the space required for the archive log.

Therefore, measure the actual archive log space by using a test environment to simulate backup scheduling and database update in a real operating environment.

G.6 Estimating Backup Disk Space Requirements

This section provides the formula for estimating backup disk space requirements.

```
Backup disk space requirements = size of the database cluster + transaction log space requirements
                               + archive log space requirements
```


Appendix H Estimating Memory Requirements

This section describes the formulas for estimating Symfoware Server memory requirements.

Use the formula below to obtain a rough estimate of the memory amount used for Symfoware Server.

$$\text{symfowareServerRequiredMemory} = \text{sharedMemoryAmount} + \text{LocalMemoryAmount}$$

Shared memory amount

Refer to "Table: PostgreSQL Shared Memory Usage" in "Shared Memory and Semaphores" under "Server Administration" in the PostgreSQL Documentation for information on shared memory.

However, note that if instances have been created using WebAdmin, the parameters below will be configured automatically when the instances are created. Take this into account when calculating the shared memory size.

Parameter name	Set value
shared_buffers	30 percent of the internal memory of the machine.
max_connections	100
max_prepared_transactions	100

Local memory amount

$$\begin{aligned} \text{LocalMemoryAmount} = & \text{processStackArea} \\ & + \text{memoryUsedInDbSessionsThatUseTempTables} \\ & + \text{memoryUsedInDbSessionsThatPerformSortAndHashTableOperations} \\ & + \text{memoryUsedInMaintenanceOperations} \\ & + \text{baseMemoryUsedInEachProcess} \\ & + \text{memoryUsedPreparingForDataAccess} \end{aligned}$$

Process stack area

$$\begin{aligned} \text{processStackArea} \\ = & \text{max_stack_depth} \times (\text{max_connections} + \text{autovacuum_max_workers} + 9) \end{aligned}$$

This formula evaluates to the maximum value.

Actually it is used according to the growth of the stack.

In the formula above, 9 is the number of processes that perform roles specific to servers.

Memory used in database sessions that use temporary tables

$$\begin{aligned} \text{memoryUsedInDbSessionsThatUseTempTables} \\ = & \text{temp_buffers} \times \text{max_connections} \end{aligned}$$

This formula evaluates to the maximum value.

Memory is gradually used as temporary buffers are used, and is released when the session ends.

Memory used in database sessions that perform sort and hash table operations

$$\begin{aligned} \text{memoryUsedInDbSessionsThatPerformSortAndHashTableOperations} \\ = & \text{work_mem} \times \text{max_connections} \end{aligned}$$

This formula evaluates to the maximum value.

Memory is gradually used as operations such as sort are performed, and is released when the query ends.

Memory used in maintenance operations

$$\begin{aligned} \text{memoryUsedInMaintenanceOperations} \\ = & \text{maintenance_work_mem} \times (\text{numOfSessionsPerformingMaintenance} + \text{autovacuum_max_workers}) \end{aligned}$$

Note that 'maintenance operations' are operations such as VACUUM, CREATE INDEX, and ALTER TABLE ADD FOREIGN KEY.

Base memory used in each process

$$\begin{aligned} & \text{baseMemoryUsedInEachProcess} \\ & = 3\text{MB} \times (\text{max_connections} + \text{autovacuum_max_workers} + 9) \end{aligned}$$

This formula evaluates to the memory used when server processes are running.

In the formula above, 9 is the number of processes that perform roles specific to servers.

Memory used preparing for data access

$$\begin{aligned} & \text{memoryUsedPreparingForDataAccess} \\ & = \text{variationAmount} \times (\text{max_connections} + \text{autovacuum_max_workers} + 4) \\ & \text{where } \text{variationAmount} = \text{shared_buffers} / 8\text{KB} \times 4 \text{ bytes} \\ & \text{(note that 8KB is the page length, and 4 bytes is the size of page management data)} \end{aligned}$$

This formula evaluates to the memory required to access the database cache in the shared memory.

In the formula above, among the processes that perform roles specific to servers, 4 is the number of processes that access the database.

Appendix I Quantitative Limits

This appendix lists the quantitative limits of Symfoware Server.

Table I.1 Data size

Item	Limit
Data size per record for input data files (COPY statement, psql command \copy meta command)	Up to 800 megabytes (*1)
Data size per record for output data files (COPY statement, psql command \copy meta command)	Up to 800 megabytes (*1)
Output data file (pg_dump, pg_dumpall) size	Up to one terabyte
Sort work area size (under pgsqL_tmp)	Up to one terabyte
Core file size	Up to one terabyte

*1: Operation might proceed correctly even if operations are performed with a quantity outside the limits.

Table I.2 Length of identifier

Item	Limit
Database name	Up to 63 bytes (*1)(*2)
Schema name	Up to 63 bytes (*1)(*2)
Table name	Up to 63 bytes (*1)(*2)
View name	Up to 63 bytes (*1)(*2)
Index name	Up to 63 bytes (*1)(*2)
Table space name	Up to 63 bytes (*1)(*2)
Cursor name	Up to 63 bytes (*1)(*2)
Function name	Up to 63 bytes (*1)(*2)
Aggregate function name	Up to 63 bytes (*1)(*2)
Trigger name	Up to 63 bytes (*1)(*2)
Constraint name	Up to 63 bytes (*1)(*2)
Conversion name	Up to 63 bytes (*1)(*2)
Role name	Up to 63 bytes (*1)(*2)
Cast name	Up to 63 bytes (*1)(*2)
Collation sequence name	Up to 63 bytes (*1)(*2)
Encoding method conversion name	Up to 63 bytes (*1)(*2)
Domain name	Up to 63 bytes (*1)(*2)
Extension name	Up to 63 bytes (*1)(*2)
Operator name	Up to 63 bytes (*1)(*2)
Operator class name	Up to 63 bytes (*1)(*2)
Operator family name	Up to 63 bytes (*1)(*2)
Rewrite rule name	Up to 63 bytes (*1)(*2)
Sequence name	Up to 63 bytes (*1)(*2)
Text search settings name	Up to 63 bytes (*1)(*2)
Text search dictionary name	Up to 63 bytes (*1)(*2)

Item	Limit
Text search parser name	Up to 63 bytes (*1)(*2)
Text search template name	Up to 63 bytes (*1)(*2)
Data type name	Up to 63 bytes (*1)(*2)
Enumerator type label	Up to 63 bytes (*1)(*2)

*1: This is the character string byte length when converted by the server character set character code.

*2: If an identifier that exceeds 63 bytes in length is specified, the excess characters are truncated and it is processed.

Table I.3 Database object

Item	Limit
Number of databases	Less than 4,294,967,296 (*1)
Number of schemas	Less than 4,294,967,296 (*1)
Number of tables	Less than 4,294,967,296 (*1)
Number of views	Less than 4,294,967,296 (*1)
Number of indexes	Less than 4,294,967,296 (*1)
Number of table spaces	Less than 4,294,967,296 (*1)
Number of functions	Less than 4,294,967,296 (*1)
Number of aggregate functions	Less than 4,294,967,296 (*1)
Number of triggers	Less than 4,294,967,296 (*1)
Number of constraints	Less than 4,294,967,296 (*1)
Number of conversion	Less than 4,294,967,296 (*1)
Number of roles	Less than 4,294,967,296 (*1)
Number of casts	Less than 4,294,967,296 (*1)
Number of collation sequences	Less than 4,294,967,296 (*1)
Number of encoding method conversions	Less than 4,294,967,296 (*1)
Number of domains	Less than 4,294,967,296 (*1)
Number of extensions	Less than 4,294,967,296 (*1)
Number of operators	Less than 4,294,967,296 (*1)
Number of operator classes	Less than 4,294,967,296 (*1)
Number of operator families	Less than 4,294,967,296 (*1)
Number of rewrite rules	Less than 4,294,967,296 (*1)
Number of sequences	Less than 4,294,967,296 (*1)
Number of text search settings	Less than 4,294,967,296 (*1)
Number of text search dictionaries	Less than 4,294,967,296 (*1)
Number of text search parsers	Less than 4,294,967,296 (*1)
Number of text search templates	Less than 4,294,967,296 (*1)
Number of data types	Less than 4,294,967,296 (*1)
Number of enumerator type labels	Less than 4,294,967,296 (*1)
Number of default access privileges defined in the ALTER DEFAULT PRIVILEGES statement	Less than 4,294,967,296 (*1)

Item	Limit
Number of large objects	Less than 4,294,967,296 (*1)
Number of rows in tables defined by WITH OIDS	Less than 4,294,967,296 (*1)
Number of index access methods	Less than 4,294,967,296 (*1)

*1: The total number of all database objects must be less than 4,294,967,296.

Table I.4 Schema element

Item	Limit
Number of columns that can be defined in one table	Up to 1,600
Table row length	Up to 400 gigabytes
Number of columns comprising a unique constraint	Up to 32 columns
Data length comprising a unique constraint	Less than 2,000 bytes (*1)(*2)
Table size	Up to one terabyte
Search condition character string length in a trigger definition statement	Up to 800 megabytes (*1)(*2)

*1: Operation might proceed correctly even if operations are performed with a quantity outside the limits.

*2: This is the character string byte length when converted by the server character set character code.

Table I.5 Index

Item	Limit
Number of columns comprising a key (B-tree, GiST, GIN index)	Up to 32 columns
Key length	Less than 2,000 bytes (*1)

*1: This is the character string byte length when converted by the server character set character code.

Table I.6 Data types and attributes that can be handled

Item	Limit		
Character	Data length	Data types and attributes that can be handled (*1)	
	Specification length (n)	Up to 10,485,760 characters (*1)	
Numeric	External decimal expression	Up to 131,072 digits before the decimal point, and up to 16,383 digits after the decimal point	
	Internal binary expression	2 bytes	From -32,768 to 32,767
		4 bytes	From -2,147,483,648 to 2,147,483,647
		8 bytes	From -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
	Internal decimal expression		Up to 13,1072 digits before the decimal point, and up to 16,383 digits after the decimal point
	Floating point expression	4 bytes	From -3.4E+38 to -7.1E-46, 0, or from 7.1E-46 to 3.4E+38
		8 bytes	From -1.7E+308 to -2.5E-324, 0, or from 2.5E-324 to 1.7E+308
bytea		Up to one gigabyte minus 53 bytes	
Large object		Up to two gigabytes	

*1: This is the character string byte length when converted by the server character set character code.

Table I.7 Function definition

Item	Limit
Number of arguments that can be specified	Up to 100
Number of variable names that can be specified in the declarations section	No limit
Number of SQL statements or control statements that can be specified in a function processing implementation	No limit

Table I.8 Data operation statement

Item	Limit
Maximum number of connections for one process in an application (remote access)	4,000 connections
Number of expressions that can be specified in a selection list	Up to 1,664
Number of tables that can be specified in a FROM clause	No limit
Number of unique expressions that can be specified in a selection list/DISTINCT clause/ORDER BY clause/GROUP BY clause within one SELECT statement	Up to 1,664
Number of expressions that can be specified in a GROUP BY clause	No limit
Number of expressions that can be specified in an ORDER BY clause	No limit
Number of SELECT statements that can be specified in a UNION clause/INTERSECT clause/EXCEPT clause	Up to 4,000 (*1)
Number of nestings in joined tables that can be specified in one view	Up to 4,000 (*1)
Number of functions or operator expressions that can be specified in one expression	Up to 4,000 (*1)
Number of expressions that can be specified in one row constructor	Up to 1,664
Number of expressions that can be specified in an UPDATE statement SET clause	Up to 1,664
Number of expressions that can be specified in one row of a VALUES list	Up to 1,664
Number of expressions that can be specified in a RETURNING clause	Up to 1,664
Total expression length that can be specified in the argument list of one function specification	Up to 800 megabytes (*2)
Number of cursors that can be processed simultaneously by one session	No limit
Character string length of one SQL statement	Up to 800 megabytes (*1) (*3)
Number of input parameter specifications that can be specified in one dynamic SQL statement	No limit
Number of tokens that can be specified in one SQL statement	Up to 10,000
Number of values that can be specified as a list in a WHERE clause IN syntax	No limit
Number of expressions that can be specified in a USING clause	No limit
Number of JOINS that can be specified in a joined table	Up to 4,000 (*1)

Item	Limit
Number of expressions that can be specified in COALESCE	No limit
Number of WHEN clauses that can be specified for CASE in a simple format or a searched format	No limit
Data size per record that can be updated or inserted by one SQL statement	Up to one gigabyte minus 53 bytes
Number of objects that can share a lock simultaneously	Up to 256,000 (*1)

*1: Operation might proceed correctly even if operations are performed with a quantity outside the limits.

*2: The total number of all database objects must be less than 4,294,967,296.

*3: This is the character string byte length when converted by the server character set character code.

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