FUJITSU

Fujitsu Enterprise Postgres 18 for x86

Installation and Setup Guide for Client

Windows/Linux

Preface

Purpose of this document

This document describes how to install, uninstall and set up the "Fujitsu Enterprise Postgres client feature".

Intended readers

This document is intended for those who install and operate Fujitsu Enterprise Postgres.

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

- PostgreSQL
- SQL
- Windows

- PostgreSQL
- SQL
- Linux

Structure of this document

This document is structured as follows:

Chapter 1 Overview of Installation

 Describes the features that can be installed, and provides an overview of installation methods

Chapter 2 Installation and Uninstallation of the Windows Client

 Describes how to install the Fujitsu Enterprise Postgres client feature (Windows client)

Chapter 3 Installation and Uninstallation of the Linux Client

 Describes how to install the Fujitsu Enterprise Postgres client feature (Linux client)

Chapter 4 Setup

 Describes the setup procedures to be performed after installation completes

Appendix A Installation and Uninstallation of the Linux Client (Compatibility)

 Describes how to install (interactive mode/silent mode) the Fujitsu Enterprise Postgres client feature (Linux client)

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Contents

Chapter 1 Overview of Installation

This chapter provides an overview of Fujitsu Enterprise Postgres installation.

1.1 Features that can be Installed

Fujitsu Enterprise Postgres provides features to enable access to the database from a variety of platforms and languages, as the connection environment for the client and the database server.

The following table shows the relationship between the platforms and the features provided.

Platform	JDBC	ODBC	.NET Data Provider	C language (libpq)	Embedded SQL (ECPG) in C language	Embedded SQL (ECOBPG) in COBOL	Python language (psycopg)	Connection Manager	High-speed data load	pgAdmin	Pgpool-II	ldap2pg	pgBackRest
Windows	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y (*1)			
Linux	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y

Y: Supported

*1: Provides features for Windows clients (64bit).

Chapter 2 Installation and Uninstallation of the Windows Client

This chapter explains how to install and uninstall the Windows client.

2.1 Operating Environment

This section describes the operating environment required to use the Windows client.

2.1.1 Required Operating System

One of the following operating systems is required to use the Windows client:

Table 2.1 Operating systems

Operating system name
- Windows(R) 11 Home
- Windows(R) 11 Education
- Windows(R) 11 Pro
- Windows(R) 11 Enterprise
- Microsoft(R) Windows Server(R) 2016 Datacenter
- Microsoft(R) Windows Server(R) 2016 Standard
- Microsoft(R) Windows Server(R) 2016 Essentials
- Microsoft(R) Windows Server(R) 2019 Datacenter
- Microsoft(R) Windows Server(R) 2019 Standard
- Microsoft(R) Windows Server(R) 2019 Essentials
- Microsoft(R) Windows Server(R) 2022 Datacenter
- Microsoft(R) Windows Server(R) 2022 Standard
- Microsoft(R) Windows Server(R) 2022 Essentials
- Microsoft(R) Windows Server(R) 2025 Datacenter
- Microsoft(R) Windows Server(R) 2025 Standard
- Microsoft(R) Windows Server(R) 2025 Essentials

The following components of Windows Server(R) 2016, Windows Server(R) 2019, Windows Server(R) 2022 and Windows Server(R) 2025 are not supported:

- Server Core

- Nano Server

- Windows Server Container

2.1.2 Related Software

The following table lists the software compatible (that can operate) with the Windows client.

Before using any of these, confirm that the OS supports the software.

Table 2.2 Related software

No.	Software name	Version
1	Visual Studio	2017 2019 2022
2	.NET	8.0
3	.NET Framework	4.8
4	C compiler (*1)	-
5	JDK or JRE	JDK 8 JRE 8 JDK 11 JRE 11 JDK 17 JRE 17 JDK 21 JRE 21
6	NetCOBOL	(*2)
	NetCOBOL for .NET	(*3)
7	Python (*4)	3.11 3.12 3.13

*1: Only operations using the C compiler provided with the operating system are guaranteed.

*2: NetCOBOL is available in the following editions:

  - NetCOBOL Base Edition V11.0.1 or later

  - NetCOBOL Standard Edition V11.0.1 or later

  - NetCOBOL Professional Edition V11.0.1 or later

  - NetCOBOL Enterprise Edition V11.0.1 or later

*3: NetCOBOL for .NET is available in the following editions:

  - NetCOBOL Base Edition for .NET V7.0.0 or later

  - NetCOBOL Standard Edition for .NET V7.0.0 or later

  - NetCOBOL Enterprise Edition for .NET V7.0.0 or later

*4: Select Python 32-bit/64-bit depending on the Windows client you are using.

Information

The following JDKs or JREs are available:

  - JDK or JRE shipped with the Interstage Application Server

  - JDK shipped with the Enterprise Application Platform

  - Oracle JDK or JRE

  - An OpenJDK that has passed the Java TCK (Technology Compatibility Kit)

It is recommended that the JDK or JRE included with Interstage Application Server and Enterprise Application Platform is used.

You need the following Python packages:

Package name	Remarks
typing_extensions	Install 4.12.2.
tzdata	Install 2024.2.

Note

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The following programs are installed during installation of Fujitsu Enterprise Postgres. Do not uninstall it because it is required for Fujitsu Enterprise Postgres to work.

- Microsoft Visual C++ 2015-2022 Redistributable version 14.44.35211.0

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The following table lists servers that can be connected to the Windows client.

When connecting to a server product with a different version from this client function, only the range of functions provided by the server product version is available.

Table 2.3 Connectable servers

OS	Software name
Windows	- Fujitsu Enterprise Postgres Advanced Edition 10 or later , up to 18
	- Fujitsu Enterprise Postgres Standard Edition 9.6 or later , up to 18
Linux	- Fujitsu Enterprise Postgres Advanced Edition 10 or later , up to 18
	- Fujitsu Enterprise Postgres Standard Edition 9.6 or later , up to 18
Solaris	- FUJITSU Software Enterprise Postgres Standard Edition 9.6

2.1.3 Excluded Software

Fujitsu Enterprise Postgres

The Windows client cannot coexist with the Fujitsu Enterprise Postgres Community Edition (hereafter, "CE") client.

Other products

There are no exclusive products.

2.1.4 Required Patches

No patches are required.

2.1.5 Hardware Environment

The following hardware is required to use the Windows client.

Memory

At least 256 MB of memory is required.

Mandatory hardware

None.

2.1.6 Disk Space Required for Installation

The disk space shown below is required for new installation of the Windows client.

At the Windows (32-bit) client installation destination:

370 MB

At the Windows (64-bit) client installation destination:

1990 MB

Windows system drive:

310 MB

2.1.7 Supported System Environment

This section describes the supported system environment.

TCP/IP protocol

Fujitsu Enterprise Postgres supports version 4 and 6 (IPv4 and IPv6) of TCP/IP protocols.

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

File system

You can install Fujitsu Enterprise Postgres only if the system folder is an NTFS volume.

2.1.8 Versions of Open-Source Software Used as the Base for Fujitsu Enterprise Postgres Drivers

For the version of open-source software that Fujitsu Enterprise Postgres each driver is based on, refer to "OSS Supported by Fujitsu Enterprise Postgres" in the General Description.

2.2 Installation

This section explains how to install the Windows client.

🔰 Note
. . . .

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.
. . . .

2.2.1 Pre-installation Tasks

This section describes the operations to be performed before installing the Windows client.

Check the disk space

Ensure that there is sufficient disk space to install the Windows Server Assistant.

Refer to "2.1.6 Disk Space Required for Installation" for information on disk space requirements.

hosts file settings

Using an editor, add the IP address and server name of the connected server to the \System32\drivers\etc\hosts file in the folder where Windows is installed.

For Windows(R) 11, start an editor such as Notepad from [Run as administrator] and edit.

Check the installed product and determine the installation method

In [Start] menu, click [All apps], then [Fujitsu], and then [Uninstall (middleware)]. In the displayed window, check the installed products.

If the Windows client is already installed, determine the installation method to use:

- Reinstallation

- Multi-version installation

The shortcuts displayed on the [Start] menu might be arranged differently depending on the operating system.

Remove applied updates(For Reinstallation)

Use the following procedure to remove applied fixes.

If you install the product without removing the fix, you will apply the same version of the fix with the same fix number, resulting in an error that has already been applied. Remove the fix and then reinstall.

1. Display the applied updates

Execute the following command to display the applied updates:

```
C:\Program Files (x86)\Fujitsu\UpdateAdvisor\UpdateAdvisorMW>uam showup
```

2. Remove the updates

Execute the command below to remove the updates. If an update with the same update number was applied more than once, the updates are removed in order, starting from the highest version number.

```
C:\Program Files (x86)\Fujitsu\UpdateAdvisor\UpdateAdvisorMW>uam remove -i update-number
```

Confirm service

The Windows Installer service must be running.

Confirm Path system environment variable

Ensure that the Path system environment variable includes "%SystemRoot%\system32".

2.2.2 Pre-installation Considerations

This section describes points that the user must take into account prior to installation.

- The remote desktop service is installed in application server mode, 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.

Before installation:

```
CHANGE USER /INSTALL
```

After installation:

```
CHANGE USER /EXECUTE
```

- The following window may be displayed when the installation program is executed.
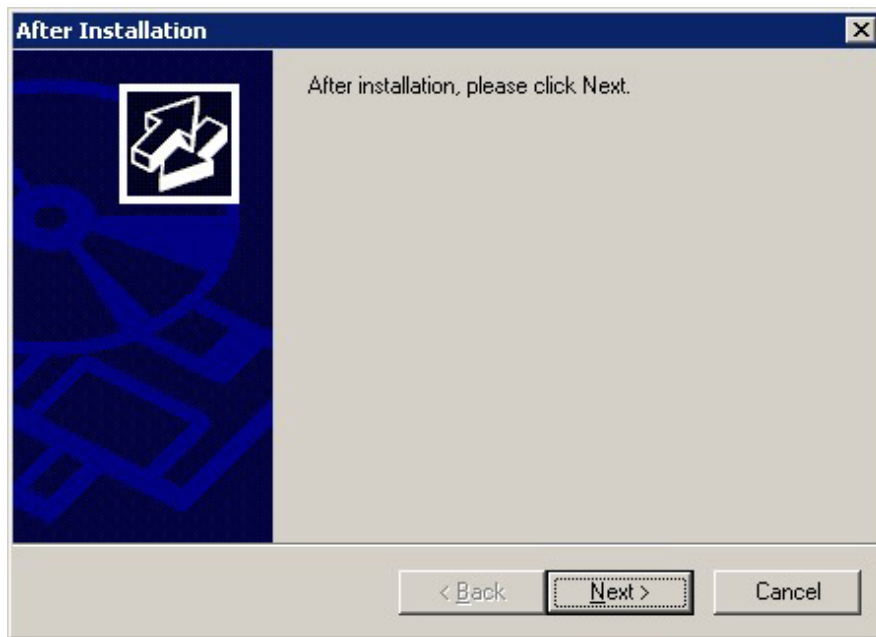
If the above window is displayed, follow the procedure below:

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

2. Click [Next] in the [InstallShield Wizard Complete] window.

3. The following window is displayed. Click [Finish].

Information

- If the [User Account Control] dialog box is displayed when installation or uninstallation starts, click [Yes] to continue the operation.

  If [No] is clicked, the [Error] dialog box will be displayed because continuing is not permitted.
  Click [Retry] in the displayed [Error] dialog box to proceed with installation or uninstallation. To end operations, click [Cancel].

- If installation or uninstallation is suspended or processing terminates abnormally, the [Program Compatibility Assistant] dialog box may be displayed.
  If this happens, click [This program installed correctly] or [This program uninstalled correctly] and continue operation.

2.2.3 Installation in Interactive Mode

The installation procedure is described below.

 Point

For installation in interactive mode, default values are set for the installation information. The following settings can be changed for a new installation or a multi-version installation:

- Installation folder

1. Stop applications and programs

Reinstallation requires stopping applications and programs.

Before starting the installation, stop the following:

- Applications that use the product

- Connection Manager

- pgAdmin

2. Insert the DVD

Insert the client program DVD into the DVD drive.

3. Run the installation

The installation menu is displayed. Click [Installation].

4. Select the product to install

Select the product to install, and then click [Next].
If a selected product can only be reinstalled, refer to "6. Check the settings".

 Information

- When installing the Fujitsu Enterprise Postgres Client (32 bit), do not specify a destination folder under the environment ProgramFiles variable.

- If multi-version installation is possible, the [Select Installation Method] window is displayed for each selected product. Select "Multi-version installation" and click [Next].

5. Confirm the contents for installation

The [Confirm installation] window will be displayed.

Click [Next] to start the installation.

To modify the settings, select [Modify], and then click [Next]. Follow the on-screen instructions.

6. Check the settings

The [Confirm installation] window will be displayed for reinstallation, or if the installation information is modified.

Click [Install] to start the installation.

To modify the settings again, click [Back].

7. Completion of installation

The completion window is displayed. Click [Finish].

2.2.4 Installation in Silent Mode

Installation in silent mode can be performed only when the installation method is one of the following:

- New installation

- Multi-version installation

See
. . . .

Refer to the Fujitsu Enterprise Postgres product website for information on installation in silent mode, such as the installation parameters and error messages.
. . . .

The installation procedure is described below.

1. Insert the DVD

Insert the client program DVD into the DVD drive.

The [Install Menu] window is displayed. Click [Finish].

2. Create an installation parameters CSV file

Consider the server type or 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
        :
```

Information
. . . .

- When installing the Fujitsu Enterprise Postgres Client (32 bit), do not specify a destination folder under the environment ProgramFiles variable.

- The template for the installation parameters CSV file is "*Z*:\sample\sample_windows.csv (*Z* is the drive into which the DVD is inserted.).
. . . .

3. Start the command prompt

In Windows, right-click [Command Prompt] and then select [Run as administrator].

4. Run the installation

Execute the following command:

```
Z:\>silent.bat c:\temp\inspara.csv
```

Z: The drive into which the DVD is inserted.

c:\temp\inspara.csv: The installation parameter CSV file name.

If the silent installer ends in an error, a message is output to the log file and return values are returned.

2.3 Uninstallation

This section describes the procedure for uninstalling the Windows client.

2.3.1 Uninstallation in Interactive Mode

The uninstallation procedure is described below.

To uninstall, log in with an account with administrator privileges, or switch to an account with administrator privileges, and then uninstall.

If an error occurs while the product is being uninstalled, refer to "Uninstall (middleware) Messages" in the Fujitsu Enterprise Postgres product website, and take the required action.

1. Stop applications and programs

Before starting the uninstallation, stop the following:

- Applications that use the product

- Connection Manager

- pgAdmin

2. Start the Uninstall (middleware) tool

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

The shortcuts displayed on the [Start] menu might be arranged differently depending on the operating system.

3. Select the software

Select the product to be uninstalled from [Software Name], and then click [Remove].

4. Start the uninstallation

Click [Uninstall].

5. Finish the uninstallation

The uninstallation completion window is displayed. Click [Finish].

The installation folder may remain after uninstallation. If it is not required, delete it.

6. Stop the Uninstall (middleware) tool

The [Uninstall (middleware)] window is displayed. Click [Close].

2.3.2 Uninstallation in Silent Mode

The uninstallation procedure is described below.

To uninstall, log in with an account with administrator privileges, or switch to an account with administrator privileges, and then execute the command.

Refer to the Fujitsu Enterprise Postgres product website for information on uninstallation in silent mode, such as the error messages.

1. Stop applications and programs

Before starting the uninstallation, stop the following:

- Applications that use the product

- Connection Manager

- pgAdmin

2. Start the command prompt

In Windows, right-click [Command Prompt] and then select [Run as administrator].

3. Start the uninstaller

Execute the command below.

The installation folder may remain after uninstallation. If it is not required, delete it.

Example

```
X:> installFolder\suninst.bat
```

X: Drive on which the product is installed

Chapter 3 Installation and Uninstallation of the Linux Client

This chapter explains how to install and uninstall the Linux client.

3.1 Operating Environment

This section describes the operating environment required to use the Linux client.

3.1.1 Required Operating System

One of the following operating systems is required to use the Linux client:

- RHEL8.6 or later minor version

- RHEL9.2 or later minor version

- SLES 15 SP4 or later minor version

3.1.1.1 Packages Required for RHEL8

The following packages are required for operations on RHEL8.

Package name	Remarks
bzip2-libs	Required when using pgBackRest.
glibc	-
libnsl2	-
libcurl	Required when using using OAuth authentication.
libgcc	-
libmemcached	Required when using Pgpool-II.
libstdc++	-
libtool-ltdl	Required when using ODBC drivers
libzstd	-
lz4-libs	Required when using pgBackRest.
ncurses-libs	-
nss-softokn-freebl	-
rsync	Required when using Pgpool-II.
unixODBC	Required when using ODBC drivers Install 2.3 or later.
unzip	-
xz-libs	-
zlib	-

3.1.1.2 Packages Required for RHEL9

The following packages are required for operations on RHEL9.

Package name	Remarks
bzip2-libs	Required when using pgBackRest.

Package name	Remarks
glibc	-
libcurl	Required when using using OAuth authentication.
libnsl2	-
libgcc	-
libmemcached-awesome	Required if Pgpool-II is used.
libstdc++	-
libtool-ltdl	Required if you are using an ODBC driver.
libzstd	-
lz4-libs	Required when using pgBackRest.
ncurses-libs	-
nss-softokn-freebl	-
rsync	Required if Pgpool-II is used.
unixODBC	Required if you are using an ODBC driver. Install 2.3 or later.
Unzip	-
xz-libs	-
zlib	-

3.1.1.3 Packages Required for SLES 15

The following packages are required for operations on SLES 15.

Package name	Remarks
glibc	-
glibc-32bit	-
libcurl4	Required when using using OAuth authentication.
libbz2-1	Required when using pgBackRest.
libfreebl3	-
libgcc	-
libltdl7	Required when using ODBC drivers.
liblz4-1	Required when using pgBackRest.
liblzma5	-
libmemcached	Required when using Pgpool-II.
libncurses5	-
libstdc++6	-
libz1	-
libzstd1	-
rsync	Required when using Pgpool-II.
unixODBC	Required when using ODBC drivers. Install 2.3 or later.
unzip	-

3.1.2 Related Software

The following table lists the software required to use the Linux client.

Table 3.1 Related software

No.	Software name	Version
1	.NET	8.0
2	C compiler (*1)	-
3	JDK or JRE	JDK 8 JRE 8 JDK 11 JRE 11 JDK 17 JRE 17 JDK 21 JRE 21
4	NetCOBOL	(*2)
5	Python	3.11

*1: Only operations using the C compiler provided with the operating system are guaranteed.

*2: NetCOBOL is available in the following editions(Not supported because NetCOBOL does not work in a SLES environment):

- NetCOBOL Base Edition V12.2.0 or later

- NetCOBOL Standard Edition V12.2.0 or later

- NetCOBOL Enterprise Edition V12.2.0 or later

Information

The following JDKs or JREs are available:

- JDK or JRE shipped with the Interstage Application Server

- JDK shipped with the Enterprise Application Platform

- Oracle JDK or JRE

- An OpenJDK that has passed the Java TCK (Technology Compatibility Kit)

It is recommended that the JDK or JRE included with Interstage Application Server and Enterprise Application Platform is used.

You need the following Python packages:

Package name	Remarks
typing_extensions	Install 4.12.2.

The following table lists servers that can be connected to the Linux client.

When connecting to a server product with a different version from this client function, only the range of functions provided by the server product version is available.

Table 3.2 Connectable servers

OS	Software name
Windows	- Fujitsu Enterprise Postgres Advanced Edition 10 or later , up to 18
	- Fujitsu Enterprise Postgres Standard Edition 9.6 or later , up to 18
Linux	- Fujitsu Enterprise Postgres Advanced Edition 10 or later , up to 18
	- Fujitsu Enterprise Postgres Standard Edition 9.6 or later , up to 18
Solaris	- FUJITSU Software Enterprise Postgres Standard Edition 9.6

3.1.3 Excluded Software

Fujitsu Enterprise Postgres

The Linux client cannot coexist with the Fujitsu Enterprise Postgres Community Edition (hereafter, "CE") client.

Other products

There are no exclusive products.

3.1.4 Required Patches

There are no required patches.

3.1.5 Hardware Environment

The following hardware is required to use the Linux client.

Memory

At least 160 MB of memory is required.

Mandatory hardware

None.

3.1.6 Disk Space Required for Installation

The following table lists the disk space requirements of the corresponding directories for new installation of the Linux client. If necessary, increase the size of the file system.

Disk space required for installation

Table 3.3 RHEL

Directory	Required disk space Unit: MB
/etc	1
/var	1
Installation destination of the client (64-bit)	180
Installation destination of Pgpool-II	30
Installation destination of ldap2pg	20
Installation destination of pgBackRest	40

*1: Uninstall (middleware) must be installed.

Table 3.4 SLES

Directory	Required disk space Unit: MB
/etc	1
/var	1
Installation destination of the client (64-bit)	170
Installation destination of Pgpool-II	30
Installation destination of ldap2pg	20
Installation destination of pgBackRest	30

*1: Uninstall (middleware) must be installed.

3.1.7 Supported System Environment

This section describes the supported system environment.

TCP/IP protocol

Fujitsu Enterprise Postgres supports version 4 and 6 (IPv4 and IPv6) of TCP/IP protocols.

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

3.1.8 Versions of Open-Source Software Used as the Base for Fujitsu Enterprise Postgres Drivers

For the version of open-source software that Fujitsu Enterprise Postgres each driver is based on, refer to "OSS Supported by Fujitsu Enterprise Postgres" in the General Description.

3.2 Installation

This section explains how to install the Linux client.

Note
. . . .

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.

. . . .

3.2.1 Pre-installation Tasks

Check the system environment for the following before the Linux client is installed.

Check the disk capacity

Check if sufficient free disk space is available for installing the Linux client.

Refer to 3.1.6 Disk Space Required for Installation" for information on disk space requirements.

If sufficient free disk space is unavailable, reconfigure disk partitions.

Executable Users

Installation and uninstallation is performed by superuser.

On the system, run the following command to become superuser.

```
$ su -
Password:******
```

3.2.2 Installation from RPM Package

The installation procedure is described below.

1. Stop applications and programs

Reinstallation requires stopping applications and programs.

Before starting the installation, stop the following:

- Applications that use the product

- Connection Manager

- pgBadger

- Pgpool-II

- ldap2pg

- pgBackRest

2. Mount the DVD drive

Insert the client program DVD into the DVD drive, and then execute the following command:

Example

```
# mount -t iso9660 -r -o loop /dev/dvd /media/dvd
```

Here /dev/dvd is the device name for the DVD drive (which may vary depending on your environment), and /media/dvd is the mount point (which may need to be created before calling the command).

3. Run the installation

The RPM packages required to install each product are stored under the mount point where you mounted the DVD.

The following shows a list of packages and the path of the storage directory.

Install all packages for the product you are installing.

Product name	Package storage directory	Package name
Client	CLIENT64/Linux/packages/<os>	FJSVfsep-client-*.rpm
Pgpool-II	PGPOOL2/Linux/packages/<os>	FJSVfsep-pgpool2-*.rpm
pgBackRest	PGBACKREST/Linux/packages/<os>	FJSVfsep-pgbackrest-*.rpm
ldap2pg	LDAP2PG/Linux/packages/<os>	FJSVfsep-ldap2pg-*.rpm

<os> is the OS of the operating environment. Depending on your system requirements, refer to RHEL8, RHEL9, or SLES15.

*is the detailed name of the package, version, OS, etc.

The default installation directory names are:

To specify a path different from the default installation directory, you can use the following characters:

```
[a-zA-Z0-9], -,, and /
```

Product name	Installation directory name (default)
Client	/opt/fsepv<x>client64
Pgpool-II	/opt/fsepv<x>pgpool-II
pgBackRest	/opt/fsepv<x>pgbackrest
ldap2pg	/opt/fsepv<x>ldap2pg

"<x>" is the product version.

🅿 Point

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We recommend that you install the packages for each product in a batch.

You can use "*" to specify a package name, or you can install all packages in a batch by specifying all package names side by side.

....

Example

To install the client product in a RHEL8 environment, run the following command:

```
# cd /media/dvd/CLIENT64/Linux/packages/RHEL8
# rpm -ivh FJSVfsep-client-*.rpm
```

Use --prefix to specify a path different from the default installation directory.

4. Check the installed product

Check the installed products by following the procedure below.

Example

Displays the name of the installed package.

```
# rpm -qa | grep FJSVfsep
```

For detailed package information, run the following command:

```
# rpm -qi package name
```

Example

In the path, "<x>" and "<x0z>" refer to the x and z of x SPz, which is expressed as the product version. For products without SPz, <x0z> is <x00>.

```
# rpm -qi FJSVfsep-client-essential-<x>-<x0z>-0.el8.x86_64
Name        : FJSVfsep-client-essential-<x>
Version     : <x0z>
Release     : 0.el8
Architecture: x86_64
Install Date: ddd MMM DD hh:mm:ss YYYY
Group       : Applications/Databases
Size        : XXX
License     : Fujitsu Limited
Signature   : (none)
Source RPM  : FJSVfsep-client-essential-<x>-<x0z>-0.el8.src.rpm
Build Date  : ddd MMM DD hh:mm:ss YYYY
Build Host  : XXXXXXXXXX
Relocations : /opt/fsepv<x>client64
Packager    : Fujitsu Limited
Vendor      : Fujitsu Limited
URL         : https://www.fujitsu.com
```

```
Summary      : Fujitsu Enterprise Postgres Client(64bit) <x>
Description :
Fujitsu Enterprise Postgres Client Essential Package
```

3.3 Uninstallation

This section describes the procedure for uninstalling the Linux client.

Information

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If you installed interactive mode/silent mode, uninstall interactive mode/silent mode. Refer to "A.3 Uninstallation" for more information.

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3.3.1 Uninstallation RPM Packages

The uninstallation procedure is described below.

1. Stop applications and programs

Before starting the uninstallation, stop the following:

- Applications that use the product

- Connection Manager

- pgBadger

- Pgpool-II

- ldap2pg

- pgBackRest

2. Check the installed product

Check the installed products by following the procedure below.

Example

Displays the name of the installed package.

```
# rpm -qa | grep FJSVfsep
```

For detailed package information, run the following command:

```
# rpm -qi Package Name
```

3. Start the uninstaller

Uninstall all packages for the product to be uninstalled.

Refer to the table in "3.2.2 Installation from RPM Package" for the package set for each product.

The installation directory may remain after uninstallation. Delete them if they are not needed.

```
# rpm -e package name
```

Point

. . . .

We recommend that you uninstall the packages of the products to be uninstalled in batches for each product.

. . . .

Example

The following shows an example of uninstalling a client product.

```
# rpm -qa | grep FJSVfsep-client
FJSVfsep-client-essential-*
FJSVfsep-client-core-*
FJSVfsep-client-core-openssl-*
FJSVfsep-client-jdbc-*
FJSVfsep-client-odbc-*
FJSVfsep-client-dotnet-*
FJSVfsep-client-conmgr-*
FJSVfsep-client-psycopg-*
# rpm -e FJSVfsep-client-psycopg-<x> FJSVfsep-client-conmgr-<x> FJSVfsep-client-dotnet-
<x> \
FJSVfsep-client-odbc-<x> FJSVfsep-client-jdbc-<x> FJSVfsep-client-core-openssl-<x>
FJSVfsep-client-core-<x> \
FJSVfsep-client-essential-<x>
```

*is the version, OS, and so on.

"<x>" indicates the version.

Chapter 4 Setup

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

4.1 Configuring Environment Variables

Configure the following environment variables when using client commands.

W

4.1.1 Windows

PATH environment variable

Add "*installationFolder*\bin".

PGLOCALEDIR environment variable

Add "*installationFolder*\share\locale".

Examples of environment variable configurations are shown below.

Example

Note that "*<x>*" indicates the product version.

```
> SET PATH=%ProgramFiles%\Fujitsu\fsepv<x>client64\bin;%PATH%
> SET PGLOCALEDIR=%ProgramFiles%\Fujitsu\fsepv<x>client64\share\locale
```

L

4.1.2 Linux

PATH environment variable

Add "*installationDirectory*/bin".

MANPATH environment variable

Add "*installationDirectory*/share/man".

PGLOCALEDIR environment variable

Add "*installationDirectory*/share/locale".

Examples of environment variable configurations are shown below.

Example

Note that "*<x>*" indicates the product version.

```
$ PATH=/opt/fsepv<x>client64/bin:$PATH ; export PATH
$ MANPATH=/opt/fsepv<x>client64/share/man:$MANPATH ; export MANPATH
$ PGLOCALEDIR=/opt/fsepv<x>client64/share/locale ; export PGLOCALEDIR
```

L

4.2 Setting Up and Removing OSS

This section explains how to set up OSS supported by Fujitsu Enterprise Postgres.

If you want to use OSS supported by Fujitsu Enterprise Postgres, follow the setup procedure.

If you decide not to use the OSS supported by Fujitsu Enterprise Postgres, follow the removing procedure.

> 📖 **Information**
>
> ....
>
> In this section, the applicable database that enables the features of each OSS is described as "postgres".
>
> ....

Refer to "OSS Supported by Fujitsu Enterprise Postgres" in the General Description for information on OSS other than those described below.

🇱 4.2.1 pgBackRest

This feature is not available for instances created with WebAdmin. It is available only for operation using server commands.

The pg_rman, pgx_dmpall, and pgx_rcvall commands cannot be used when using pgBackRest because of conflicting shell commands to set archive_command.

4.2.1.1 Setting Up pgBackRest

1. Install pgBackRest.

   To use the pgbackrest command on the same host as the Fujitsu Enterprise Postgres server, install pgBackRest using the server program DVD. If you want to use the pgbackrest command on a different host than the Fujitsu Enterprise Postgres server, install pgBackRest using the client program DVD.

2. Set the environment variable PATH for pgBackRest.

   The pgBackRest material is stored under /opt/fsepv<x>pgbackrest. Set the environment variable PATH to the storage location/bin of the pgBackRest material to be used.

   ```
   $ export PATH=/opt/fsepv<x>pgbackrest/bin:$PATH
   ```

3. Perform pgBackRest setup.

   Refer to "User Guides" in the pgBackRest website (https://pgbackrest.org/) for details.

4.2.1.2 Removing pgBackRest

1. Sets parameters in the postgresql.conf file.

   Reverses the information specified during setup

2. Restart Fujitsu Enterprise Postgres.

3. If it was set to perform periodic backups, unset it.

4.2.1.3 Servers to which pgBackRest can Connect

The following table lists server that pgBackRest can connected to.

Table 4.1 Connectable server

OS	Product name
Linux	- Fujitsu Enterprise Postgres Advanced Edition 18
	- Fujitsu Enterprise Postgres Standard Edition 18

🇱 4.2.2 ldap2pg

PostgreSQL supports LDAP authentication and can be used on both Linux and Windows. You can use an LDAP server to authenticate users, but you must first create a role for the database server.

ldap2pg allows users registered with the LDAP server to be synchronized with Fujitsu Enterprise Postgres roles, so that the above database server roles can be created automatically. This allows you to centrally manage roles on the LDAP server. Note that ldap2pg only supports Linux.
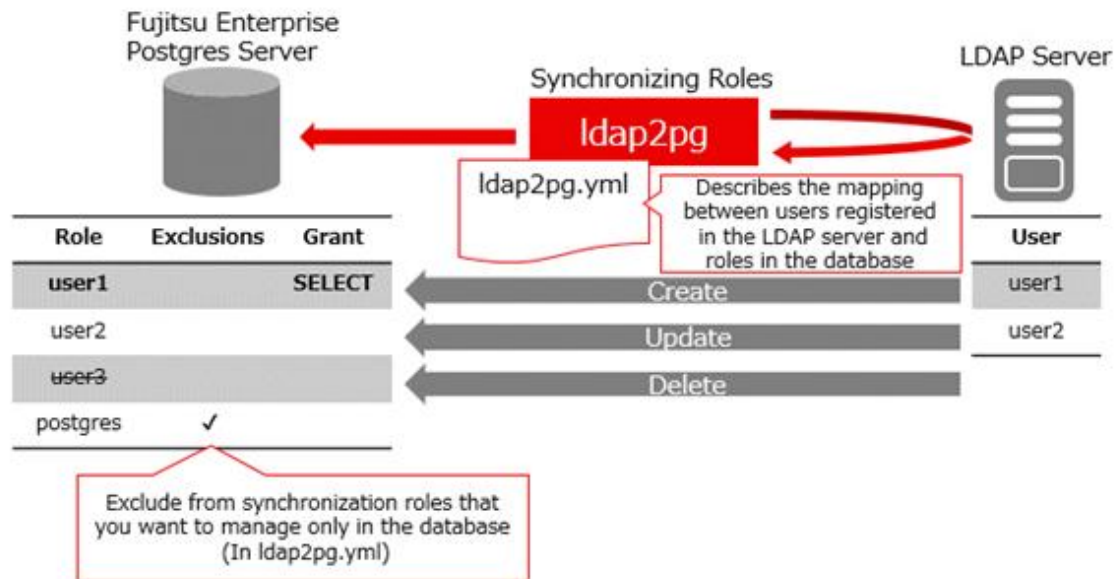
Users registered with the LDAP server and Fujitsu Enterprise Postgres roles are synchronized when the ldap2pg command is executed, based on the ldap2pg.yml that defines these mappings. If a role defined in ldap2pg.yml does not exist in Fujitsu Enterprise Postgres, it is created, and any roles not defined in ldap2pg.yml are removed. Roles that would be difficult to update or delete, such as database administrator roles that do not work with LDAP servers, can be excluded from synchronization by setting them to ldap2pg.yml.

The key points of operation are explained below.

Timing of Synchronization

Synchronize when the LDAP server user changes so that the database server is always up to date. Therefore, you must synchronize periodically to automatically propagate the LDAP server information, or manually propagate it as the LDAP server changes.

If you synchronize periodically, ensure that the synchronization interval is an acceptable time lag before LDAP server changes are propagated to the database server. This is because, even when fully synchronized, ldap2pg accesses the LDAP server and database to check for changes. For example, run the ldap2pg command periodically every 5 minutes or so.

If you use cron, for example, to run automatically on a regular basis, you should log the standard output and standard error output of ldap2pg using settings or redirects such as cron. You can check the log to see if ldap2pg was interrupted or if an unexpected role was removed.

If you want to synchronize immediately or if you want to control the synchronization timing yourself, synchronize manually.

Enhanced Security in Combination with Confidentiality Management

ldap2pg can also manage database privileges, but it cannot manage granular units such as tables and rowsets. Combined with the confidentiality management, which allows such configuration and allows auditing of privilege settings, it provides robust security measures.

For the settings for using ldap2pg in combination with the confidentiality management, refer to "4.2.2.4 Configuration with Confidentiality Management".

4.2.2.1 Setting Up ldap2pg

1. Install ldap2pg
   Install ldap2pg using the client program DVD.

2. Set the environment variable PATH for ldap2pg.

```
$ export PATH=/opt/fsepv<x>ldap2pg/bin:$PATH
```

3. Define a database role on the database server that has superuser privileges as the executor of ldap2pg. For more information about defining roles, refer to "CREATE ROLE" in "Reference" in the PostgreSQL Documentation for information on the CREATE ROLE.

4. Perform ldap2pg setup.
Refer to "Configuration" or "Cookbook" in the ldap2pg document (https://ldap2pg.readthedocs.io/en/latest/) for details.

5. Set roles that are defined and used only by the database, such as database administrators not managed by an LDAP server, or roles that exclude synchronization, as defined by Fujitsu Enterprise Postgres.
Add the settings to roles_blacklist_query in the ldap2pg.yml file.

Fujitsu Enterprise Postgres-specific roles to add:

- pgx_update_profile_status, and roles that inherit from pgx_update_profile_status (Role for streaming replication of the Policy-based Login Security)

- pgx_cgroup_role_* (Confidentiality role for the confidentiality management)

When the Database Server is redundant

In a database redundancy environment, specify "primary" for the target_session_attrs parameter. You can also specify "read-write".

4.2.2.2 Removing ldap2pg

1. If you have set ldap2pg to run periodically, unset it.

2. Uninstall ldap2pg. Refer to "3.3 Uninstallation" for more information.

3. If you have defined a role on the database server specifically for running ldap2pg, remove that role.

4.2.2.3 Using ldap2pg to Synchronize Database Roles

Describes how to use ldap2pg to synchronize users of an LDAP server with a database server as database roles.

1. Edit the ldap2pg.yml file, for example if you want to grant access to a role that synchronizes with an LDAP user. For information on ldap2pg.yml, refer to the following document:
https://ldap2pg.readthedocs.io/en/latest/config/

2. Use environment variables to specify information about the connection destination to the LDAP server or database.
https://ldap2pg.readthedocs.io/en/latest/cli/#environment-variables
The user who connects to the database server must be the user created during the setup procedure. Connections to LDAP servers support LDAP-initiated environment variables and ldaprc files, while database access supports PG-initiated environment variables available in libpq. These environment variables are used to configure the connection.

3. Run ldap2pg with the check option to verify that the role being modified matches the role being modified.

4. Run ldap2pg with the --real option to synchronize roles with the database server.

5. Configure LDAP server users and database roles to synchronize periodically after the initial synchronization.
Prepare the script that sets the environment variables and the script that synchronizes the roles that you performed in steps 2 and 4, and register the script in the cron job so that the script that synchronizes the roles references the environment variables and synchronizes the roles.

[Configuration Examples for cron]

```
SHELL=/bin/bash
*/5 * * * * source /home/postgres/env.sh && . /home/postgres/sample.sh >> /home/postgres/
sample.log 2>&1
```
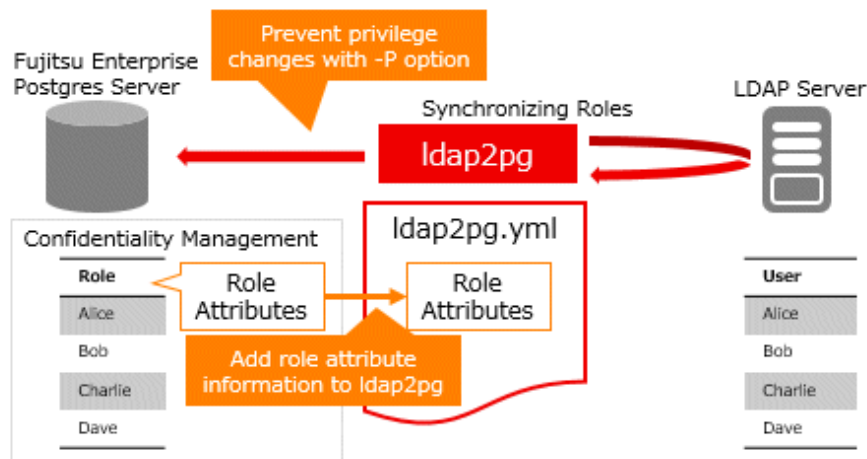
4.2.2.4 Configuration with Confidentiality Management

It combines ldap2pg with confidentiality management to provide detailed access control. There is overlap between the role management capabilities of ldap2pg and the confidentiality management. When used in combination, use ldap2pg and confidentiality management to separate role management:

Feature	Role Management Segregation
ldap2pg	Add, remove, and managing role membership
Confidentiality Management	Set role attributes, grant and revoke privileges, and audit them

To separate role management between ldap2pg and confidentiality management, do the following:

- Add attribute information for confidentiality management roles to the ldap2pg configuration file (ldap2pg.yml) so that the attributes of roles set for confidentiality management are not updated by running ldap2pg

- Run ldap2pg with the -P option to prevent deletion of confidentiality groups and role relationships in the confidentiality management when ldap2pg is run.

The configuration flow for ldap2pg combined with the confidentiality management is as follows.

Introduction

Configure the necessary settings to run ldap2pg as described in the following procedure.

1. Design user-role mappings on the LDAP server to create a list of roles that should be managed by the confidentiality management.

2. To create an yml file:

   a. Specify the settings for retrieving and synchronizing the listed objects from the LDAP server.

   b. Write a confidentiality management role starting with pgx_cgroup_role_ in roles_blacklist_query.

   c. Ensure that the grant and revoke privileges settings are not listed in the yml file.

3. Stop synchronization if it is already running using ldap2pg.

4. Create a role as described in "4.2.2.3 Using ldap2pg to Synchronize Database Roles".

5. Refer to "Confidentiality Management" in the "Security Operations Guide" and perform all necessary tasks.
   During this process, all the roles in the list of roles are registered in the confidentiality groups of the confidentiality management.

6. Modify the yml file so that ldap2pg does not update the attributes of the roles you have confidentiality management. Refer to "Settings When You Change the Attributes or Privileges of a role in a Confidentiality Groups" for a sample script that prints an yml file.

7. If you have already done regular synchronization using ldap2pg, try again.

Operation

Use the following procedure to manipulate roles according to your situation.

Adding an ldap2pg Role to a Confidentiality Groups

1. Creates a confidentiality management confidentiality groups.

2. Run ldap2pg with the -P option to create the LDAP server user as a database role.

3. Add the role you added above to the confidentiality groups.

4. Reflect the confidentiality management configuration in ldap2pg.yml, referring to the "Example of Applying Role Attributes".

Example of Applying Role Attributes

1. Use the following example to execute SQL and retrieve the settings for each role:
For all roles, this example retrieves the LOGIN attribute, the role attributes of the confidentiality management, and the membership of the confidentiality management role. If you want to change the settings to suit your environment, rewrite the SQL, such as modifying the 'LOGIN' part of the SQL Execution Example, or modify the Example of Run Results directly.

[SQL Execution Example]

```
SELECT '- name: ' ||pgxgr.name || chr(10) || '  options: ' || pgxgr.opt ||
chr(10) || '  parent: ' || chr(10) || '    - ' ||
string_agg(pgxgr.cgrorolename, chr(10) || '    - ')
FROM  (SELECT pgxg.cgrorolename,
         concat_ws(' ',
         'LOGIN',
         CASE pgxg.cgrosuperuser WHEN true THEN 'SUPERUSER' END,
         CASE pgxg.cgrocreatedb WHEN true THEN 'CREATEDB' END,
         CASE pgxg.cgrocreaterole WHEN true THEN 'CREATEROLE' END,
         CASE pgxg.cgroreplication WHEN true THEN 'REPLICATION' END,
         CASE pgxg.cgrobypassrls WHEN true THEN 'BYPASSRLS' END) AS opt,
         pgxroles.name
       FROM pgx_confidential_group pgxg,
      (SELECT pgxr.crolmatid as matid, pgxr.crolgroid as groid,  pgxr.crolname
AS name FROM pgx_confidential_role pgxr ) as pgxroles
       WHERE pgxg.cgromatid = pgxroles.matid and pgxg.cgroid = pgxroles.groid)
pgxgr
GROUP BY pgxgr.name, pgxgr.opt;
```

[Example of Run Results]

```
- name: alice
    options: LOGIN CREATEDB
   parent:
    - pgx_cgroup_role_000000000000000001
- name: bob
   options: LOGIN CREATEDB
   parent:
    -pgx_cgroup_role_000000000000000001
- name: charlie
   options: LOGIN CREATEDB CREATEROLE
   parent:
    - pgx_cgroup_role_000000000000000002
- name: dave
```

```
      options: LOGIN CREATEDB CREATEROLE
      parent:
       - pgx_cgroup_role_000000000000000002
```

2. Put the setting of roles at the top of the rules in ldap2pg.yml based on the information in the above settings. If it is not at the top, the configuration information that synchronizes with the LDAP server takes effect, and the confidentiality management configuration does not take effect.

Settings When You Change the Attributes or Privileges of a role in a Confidentiality Groups

1. Confidentiality management modifies role attributes and privileges information.

2. Create a script to retrieve the confidentiality management configuration information and register it in a cron job so that the changed information is automatically reflected in the yml file.
The following is an example shell script:.
Please change the settings to suit your environment.
The shell script shown here consists of two configuration files, ldap2pg_pre.yml and ldap2pg_after.yml, and the confidentiality management configuration information (In the sample, it is output to confidential_roles.yml) that is reflected in yml. Combine these three files to create the ldap2pg.yml file.
ldap2pg_pre.yml is the information to be placed before the confidentiality management configuration information in ldap2pg.yml, and contains the postgres section and up to "roles:" in the rules section. ldap2pg_after.yml is information to be placed after tthe confidentiality management configuration information in ldap2pg.yml, and contains information about roles not managed by the confidentiality management.

[Example of Shell Script]

ldap2pg_pre.yml : Provides information about the postgres section

```
version: 6

#
#      1.   P O S T G R E S   I N S P E C T I O N
#
#   See https://ldap2pg.readthedocs.io/en/latest/postgres/
#
postgres:
# Exclude roles starting with postgres, pg that PostgreSQL uses internally
  roles_blacklist_query: [postgres, pg_*, pgx_update_profile_status,
pgx_cgroup_role* ]
  databases_query: [postgres]
(Omitted)
rules:
- description: "Setup static roles and grants."
  roles:
```

ldap2pg_after.yml : Provides information about roles that are not part of the confidentiality groups

```
  - names:
    - readers
    options: NOLOGIN
  - name: writers
    # Grant reading to writers
    parent: [readers]
    options: NOLOGIN
(Omitted)
```

sample.sh : A script that outputs information about confidentiality groups to confidential_roles.yml and combines them into a single yml file

```
#!/bin/bash
```

- 27 -

```
psql -h localhost -p 27500 -d postgres -U postgres -A -t <<EOF > /home/postgres/
confidential_roles.yml
SELECT ' - name: ' ||pgxgr.name || chr(10) || '    options: ' || pgxgr.opt ||
chr(10) || '    parent: ' || chr(10) || '    - ' || string_agg(pgxgr.cgrorolename,
chr(10) || '    - ')
FROM  (SELECT pgxg.cgrorolename,
         concat_ws(' ',
         'LOGIN',
         CASE pgxg.cgrosuperuser WHEN true THEN 'SUPERUSER' END,
         CASE pgxg.cgrocreatedb WHEN true THEN 'CREATEDB' END,
         CASE pgxg.cgrocreaterole WHEN true THEN 'CREATEROLE' END,
         CASE pgxg.cgroreplication WHEN true THEN 'REPLICATION' END,
         CASE pgxg.cgrobypassrls WHEN true THEN 'BYPASSRLS' END) AS opt,
         pgxroles.name
      FROM pgx_confidential_group pgxg,
      (SELECT pgxr.crolmatid as matid, pgxr.crolgroid as groid,  pgxr.crolname AS
name FROM
pgx_confidential_role pgxr ) as pgxroles
      WHERE pgxg.cgromatid = pgxroles.matid and pgxg.cgroid = pgxroles.groid) pgxgr
GROUP BY pgxgr.name, pgxgr.opt;
EOF
cat /home/postgres/ldap2pg_pre.yml /home/postgres/confidential_roles.yml /home/
postgres/ldap2pg_after.yml > /home/postgres/ldap2pg.yml

#Run  ldap2pg -P -c ldap2pg.yml to update retrieved role information
```

Information

If you want to manually apply the attribute or privilege information of a role that has been changed in confidentiality management to ldap2pg.yml, obtain the change information and apply it to ldap2pg.yml, referring to "Example of Applying Role Attributes".

Adding Roles Created with ldap2pg to a Confidentiality Groups

1. Create a role to add to the confidentiality groups in ldap2pg.

2. Add the database role you created in step 1 to the existing confidentiality groups.

3. Reflect the newly added role's confidentiality management settings in ldap2pg.yml, as shown in "Example of Applying Role Attributes".

Information

If cron automatically reflects changes to the confidentiality groups in ldap2pg.yml, stop cron and add the newly added database role to the confidentiality groups.

Removing Roles Added in ldap2pg from a Confidentiality Groups

1. Remove the role you want to remove from the confidentiality groups.

2. Reflect changes to confidentiality management in ldap2pg.yml, referring to "Example of Applying Role Attributes".

3. Execute ldap2pg with the -P option to reflect.

Point

If you deleted the confidentiality matrix and the confidentiality groups, perform steps 2 and 3 above.

 See

- If you accidentally delete a role managed by confidentiality management using the ldap2pg, refer to "How to Check Confidentiality Objects and Roles" in the Security Operation Guide to recover the role managed by confidentiality management.

- If you accidentally delete the confidentiality role in ldap2pg, refer to "Creating a Confidentiality Management Role" in the Security Operations Guide to recover.

4.2.2.5 Servers to which ldap2pg can Connect

The following table lists server that ldap2pg can connected to.

Table 4.2 Connectable server

OS	Product name
Linux	- Fujitsu Enterprise Postgres Advanced Edition 18
	- Fujitsu Enterprise Postgres Standard Edition 18

Appendix A Installation and Uninstallation of the Linux Client (Compatibility)

This chapter explains how to install and uninstall (interactive mode/silent mode) the Linux client.

A.1 Operating Environment

This section describes the operating environment required to use the Linux client.

A.1.1 Packages Required for RHEL8

In addition to the "3.1.1.1 Packages Required for RHEL8", you need:

Package name	Remarks
glibc.i686	Required by installer.
redhat-lsb	Required by installer.
sudo	Required by installer.

A.1.2 Packages Required for RHEL9

In addition to the "3.1.1.2 Packages Required for RHEL9", you need:

Package name	Remarks
glibc.i686	Required by installer.
sudo	Required by installer.

A.1.3 Packages Required for SLES 15

In addition to the "3.1.1.3 Packages Required for SLES 15", you need:

Package name	Remarks
JRE 8	Required by installer. The following JREs are available: - Oracle JRE Use the 64-bit version. - OpenJDK Past the Java TCK (Technology Compatibility Kit)
libstdc++6-32bit	Required for silent installation.
sudo	Required by installer.

A.1.4 Disk Space Required for Installation

The following table lists the disk space requirements of the corresponding directories for new installation of the Linux client. If necessary, increase the size of the file system.

Disk space required for installation

Table A.1 RHEL

Directory	Required disk space Unit: MB
/etc	1 + 1 (*1)

Directory	Required disk space Unit: MB
/var	1 + 2 (*1)
/opt	300 (*1)
Installation destination of the client (64-bit)	220
Installation destination of Pgpool-II	40
Installation destination of ldap2pg	30
Installation destination of pgBackRest	40

*1: Uninstall (middleware) must be installed.

Table A.2 SLES

Directory	Required disk space Unit: MB
/etc	1 + 1 (*1)
/var	1 + 2 (*1)
/opt	10 (*1)
Installation destination of the client (64-bit)	200
Installation destination of Pgpool-II	40
Installation destination of ldap2pg	30
Installation destination of pgBackRest	40

*1: Uninstall (middleware) must be installed.

A.2 Installation

This section explains how to install the Linux client.

Note

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.

A.2.1 Pre-installation Tasks

Check the system environment for the following before the Linux client is installed.

Check the disk capacity

Check if sufficient free disk space is available for installing the Linux client.

Refer to "A.1.4 Disk Space Required for Installation" for information on disk space requirements.

If sufficient free disk space is unavailable, reconfigure disk partitions.

Set JAVA_HOME (SLES only)

Ensure that JRE 8 is installed, and export the JAVA_HOME environment variable.

```
#export JAVA_HOME="Jre8InstallDir"
```

Executable Users

Installation and uninstallation is performed by superuser.

On the system, run the following command to become superuser.

```
$ su -
Password:******
```

Check the installed product and determine the installation method

Using the operation shown below, start Uninstall (middleware), and check the installed products.

Example

```
# /opt/FJSVcir/cimanager.sh -c
Loading Uninstaller...


Currently installed products
1. productName
2. productName

Type [number] to select the software you want to uninstall.
[number,q]
=>q



Exiting Uninstaller.
```

If the Linux client is already installed, determine the installation method to use:

- Reinstallation

- Multi-version installation

Remove applied updates(For Reinstallation)

Use the following procedure to remove applied fixes.

If you install the product without removing the fix, you will apply the same version of the fix with the same fix number, resulting in an error that has already been applied. Remove the fix and then reinstall.

1. Checking the environment variable LD_LIBRARY_PATH

   If the installation directory/lib is set in the environment variable LD_LIBRARY_PATH for the running user, remove the installation directory/lib from LD_LIBRARY_PATH.

2. Display the applied updates

   Execute the following command to display the applied updates:

   ```
   # /opt/FJSVfupde/bin/uam showup
   ```

3. Remove the updates

   Execute the command below to remove the updates. If an update with the same update number was applied more than once, the updates are removed in order, starting from the highest version number.

   ```
   # /opt/FJSVfupde/bin/uam remove -i update-number
   ```

A.2.2 Installation in Interactive Mode

The installation procedure is described below.

> **P Point**
. . . .

- The following characters can be used as input values:

  Alphanumeric characters, hyphens, commas and forward slashes

- For installation in interactive mode, default values are set for the installation information. The following settings can be changed for a new installation or a multi-version installation:

  - Installation directory

. . . .

1. Stop applications and programs

Reinstallation requires stopping applications and programs.

Before starting the installation, stop the following:

- Applications that use the product

- Connection Manager

- pgBadger

- Pgpool-II

- ldap2pg

- pgBackRest

2. Mount the DVD drive

Insert the client program DVD into the DVD drive, and then execute the following command:

Example

```
# mount -t iso9660 -r -o loop /dev/dvd /media/dvd
```

Here /dev/dvd is the device name for the DVD drive (which may vary depending on your environment), and /media/dvd is the mount point (which may need to be created before calling the command).

If the DVD was mounted automatically using the automatic mount daemon (autofs), "noexec" is set as the mount option, so the installer may fail to start. In this case, use the mount command to remount the DVD correctly, and then run the installation. Note that the mount options of a mounted DVD can be checked by executing the mount command without any arguments.

3. Run the installation

Execute the following command:

Example

```
# cd /media/dvd
# ./install.sh
```

In the example above, /media/dvd is the DVD mount point.

4. Select the product to install

The list of installation target products is displayed.
Type the number for the product to be installed, or "all", and press Enter.

> **Information**
. . . .

If the selected product has already been installed, a window for selecting reinstallation or multi-version installation is displayed for each product. Follow the on-screen instructions to select the installation method.

. . . .

5. Check the settings

The window for checking the installation information is displayed as shown below.

Type "y" and press Enter to start the installation.

To change the settings, type "c" and press Enter, and follow the on-screen instructions. This option is not displayed if there is no information that can be modified.

6. Check the changed settings

If the installation information has been modified, the new installation information is displayed.

Type "y" and press Enter to start the installation.

To change the settings again, type "c" and press Enter.

7. Finish the installation

When the installation is complete, a message is displayed showing the status.

If installation was successful, the following message is displayed:

```
Installed successfully.
```

If an error occurs during the installation, read the error message and remove the cause of the error, and then reexecute the install.sh command.

A.2.3 Installation in Silent Mode

Installation in silent mode can be performed only when the installation method is one of the following:

- New installation

- Multi-version installation

See
....

Refer to the Fujitsu Enterprise Postgres product website for information on installation in silent mode, such as the installation parameters and error messages.
....

The installation procedure is described below.

1. Mount the DVD drive

Insert the client program DVD into the DVD drive, and then execute the following command:

Example

```
# mount -t iso9660 -r -o loop /dev/dvd /media/dvd
```

Here /dev/dvd is the device name for the DVD drive (which may vary depending on your environment), and /media/dvd is the mount point (which may need to be created before calling the command).

If the DVD was mounted automatically using the automatic mount daemon (autofs), "noexec" is set as the mount option, so the installer may fail to start. In this case, use the mount command to remount the DVD correctly, and then run the installation. Note that the mount options of a mounted DVD can be checked by executing the mount command without any arguments.

2. 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
     :
```

Information

The templates for the installation parameters CSV file is "*mountPoint*/sample/sample_linux.csv"

3. Run the installation

Execute the following command:

Example

```
# cd /media/dvd
# ./silent.sh /home/work/inspara.csv
```

In the example above, /media/dvd is the DVD mount point, and /home/work/inspara.csv is the installation parameter CSV.

If the silent installer ends in an error, a message is output to the log file and return values are returned.

A.3 Uninstallation

This section describes the procedure for uninstalling the Linux client.

Point

On SLES, before uninstallation, ensure that JRE 8 is installed, and export the JAVA_HOME environment variable.

```
#export JAVA_HOME="Jre8InstallDir"
```

A.3.1 Uninstallation in Interactive Mode

The uninstallation procedure is described below.

If an error occurs while the product is being uninstalled, refer to "Uninstall (middleware) Messages" in the Fujitsu Enterprise Postgres product website, and take the required action.

1. Stop applications and programs

Before starting the uninstallation, stop the following:

- Applications that use the product

- Connection Manager

- pgBadger

- Pgpool-II

- ldap2pg

- pgBackRest

2. Start the Uninstall (middleware)

Execute the following command:

```
# /opt/FJSVcir/cimanager.sh -c
```

3. Select the product

Enter the number for the product to be uninstalled, and press Enter.

4. Start the uninstallation

To start the uninstallation, type "y" and press Enter.

To display the list of products again, type "b" and press Enter.

5. Finish the uninstallation

If uninstallation is successful, the message below is displayed.

The installation directory may remain after uninstallation. If it is not required, delete it.

```
Uninstalling...

productName is being uninstalled now.
    100% ############################


The following products have been uninstalled successfully:
    productName

Uninstallation of "productName" has completed successfully.



Exiting Uninstaller.
```

A.3.2 Uninstallation in Silent Mode

The uninstallation procedure is described below.

Refer to the Fujitsu Enterprise Postgres product website for information on uninstallation in silent mode, such as the error messages.

1. Stop applications and programs

Before starting the uninstallation, stop the following:

- Applications that use the product

- Connection Manager

- pgBadger

- Pgpool-II

- ldap2pg

- pgBackRest

2. Run the uninstallation

Execute the following command:

The installation directory may remain after uninstallation. If it is not required, delete it.

Example

```
# /opt/fsepv<x>client64/setup/suninst.sh
```

In the example above, /opt/fsepv<x>client64 is the installation directory, and "<x>" indicates the product version.

```
# /opt/fsepv<x>pgpool-II/setup/suninst.sh
```

In the example above, /opt/fsepv<x>pgpool-II/setup is the name of the installation directory in which the Pgpool-II is installed.

```
# /opt/fsepv<x>ldap2pg/setup/suninst.sh
```

In the example above, /opt/fsepv<*x*>ldap2pg/setup is the name of the installation directory in which the ldap2pg is installed.

```
# /opt/fsepv<x>pgbackrest/setup/suninst.sh
```

In the example above, /opt/fsepv<x>pgbackrest/setup is the name of the installation directory in which the pgBackRest is installed.

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