

# FUJITSU Enterprise Postgres 12 on IBM LinuxONE™



## Release Notes

Linux

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# Preface

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## **Purpose of this document**

This document provides release information for FUJITSU Enterprise Postgres.

## **Structure of this document**

This document is structured as follows:

### [Chapter 1 New Features and Improvements](#)

Explains the new features and improvements in this version.

### [Chapter 2 Compatibility Information](#)

Provides information regarding compatibility.

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# Contents

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|  |    |
|--|----|
| Chapter 1 New Features and Improvements.....   | 1  |
| 1.1 Features Added in 12.....  | 1  |
| 1.1.1 OSS.....   | 1  |
| 1.1.1.1 PostgreSQL Rebase.....   | 1  |
| 1.1.1.2 Update of OSS Provided.....  | 1  |
| 1.1.2 Platform Enhancement.....  | 1  |
| 1.1.2.1 Additional Operating System Support for Server Feature.....  | 2  |
| 1.1.2.2 Additional Operating System Support for Client Feature.....  | 2  |
| 1.1.2.3 Additional Operating System Support for Server Assistant Feature.....                                  | 2  |
| 1.1.3 Operation.....   | 2  |
| 1.1.3.1 Database Multiplexing Improvements.....  | 2  |
| 1.1.3.2 Connection Manager.....  | 3  |
| 1.1.3.3 IBM Z Hardware Security Module Integration with Transparent Data Encryption.....                       | 3  |
| 1.1.4 Performance.....   | 3  |
| 1.1.4.1 Global Meta Cache.....   | 4  |
| 1.1.4.2 VACUUM/TRUNCATE Improvements.....  | 4  |
| Chapter 2 Compatibility Information.....   | 5  |
| 2.1 Installation/Setup Incompatibility.....  | 5  |
| 2.1.1 Changing the Way OSS is Set Up.....  | 5  |
| 2.1.2 Modifying Pgpool-II Installation Handling.....   | 5  |
| 2.1.3 Changing Core and Log File Paths when Instance is Created with WebAdmin.....                             | 5  |
| 2.1.4 Renaming WebAdmin Services.....  | 6  |
| 2.2 Application Migration Incompatibility.....   | 6  |
| 2.2.1 Changed to Error when Running an Operator or Function that Returns non Data Types for Masking Type.....  | 6  |
| 2.3 Operation Migration Incompatibility.....   | 7  |
| 2.3.1 Mirroring Controller no Longer Retries to Monitor Database Processes when they are Detected as Down..... | 7  |
| 2.3.2 Changing the Name and Parameter Name of the Mirroring Controller Post-Promote Command.....               | 8  |
| 2.3.3 Changing Mirroring Controller User Command Input Values.....   | 8  |
| 2.4 oracle_fdw Incompatibility.....  | 8  |
| 2.4.1 Changing the Oracle Client Version.....  | 9  |
| Index.....   | 10 |

# Chapter 1 New Features and Improvements

This chapter explains FUJITSU Enterprise Postgres new features and improvements added in this version.

Table 1.1 New features and improvements

| Version and level | Classification       | Feature   |
|-------------------|----------------------|---|
| 12                | OSS                  | <a href="#">PostgreSQL Rebase</a>   |
|                   |                      | <a href="#">Update of OSS Provided</a>  |
|                   | Platform enhancement | <a href="#">Additional Operating System Support for Server Feature</a>                      |
|                   |                      | <a href="#">Additional Operating System Support for Client Feature</a>                      |
|                   |                      | <a href="#">Additional Operating System Support for Server Assistant Feature</a>            |
|                   | Operation            | <a href="#">Database Multiplexing Improvements</a>  |
|                   |                      | <a href="#">Connection Manager</a>  |
|                   |                      | <a href="#">IBM Z Hardware Security Module Integration with Transparent Data Encryption</a> |
|                   | Performance          | <a href="#">Global Meta Cache</a>   |
|                   |                      | <a href="#">VACUUM/TRUNCATE Improvements</a>  |

## 1.1 Features Added in 12

This section explains new features and improvements in FUJITSU Enterprise Postgres 12.

### 1.1.1 OSS

This section explains the new feature related to OSS:

- PostgreSQL rebase
- Update of OSS provided

#### 1.1.1.1 PostgreSQL Rebase

The PostgreSQL version that FUJITSU Enterprise Postgres is based on is 12.1.



.....  
Refer to "PostgreSQL Version Used for FUJITSU Enterprise Postgres" in the Installation and Setup Guide for Server for details.  
.....

#### 1.1.1.2 Update of OSS Provided

The OSS provided by FUJITSU Enterprise Postgres have been updated.



.....  
Refer to "OSS Supported by FUJITSU Enterprise Postgres" in the General Description for details.  
.....

### 1.1.2 Platform Enhancement

This section explains the new features related to platform enhancement:

- Additional operating system support for server

- Additional operating system support for client
- Additional operating system support for server assistant

### 1.1.2.1 Additional Operating System Support for Server Feature

The following additional operating system is supported:

- RHEL8



.....  
Refer to "Required Operating System" in the Installation and Setup Guide for Server for details.  
.....

### 1.1.2.2 Additional Operating System Support for Client Feature

The following additional operating system is supported:

- RHEL8



.....  
Refer to "Required Operating System" in the Installation and Setup Guide for Client for details.  
.....

### 1.1.2.3 Additional Operating System Support for Server Assistant Feature

The following additional operating system is supported:

- RHEL8



.....  
Refer to "Required Operating System" in the Installation and Setup Guide for Server Assistant for details.  
.....

## 1.1.3 Operation

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This section explains the new feature related to OSS:

- Database Multiplexing Improvements
- Connection Manager
- IBM Z Hardware Security Module Integration with Transparent Data Encryption

### 1.1.3.1 Database Multiplexing Improvements

The database multiplexing introduces the following new features.

- Heartbeat monitoring of database processes

Monitoring retries no longer occur when a database process is detected as down.



.....  
Refer to "Server Configuration File for the Database Servers" in the Cluster Operation Guide (Database Multiplexing) for details.  
.....

- Faster detection time for heartbeat monitoring of the operating system or server

For database degradation using the arbitration server, if the database servers are unable to check their mutual statuses (due to a network error between database servers or server instability), then the database server queries the arbitration server for the status of the other database server.

Previously, when an arbitration server received a query, it inquired about the state of the other database server, but now the arbitration server can respond immediately to the query from the database server by periodically heartbeating the database server. Accordingly, reduced error detection time in heartbeat monitoring of the operating system or server.



See

.....  
Refer to "Tuning Abnormality Monitoring for Operations that Use an Arbitration Server for Automatic Degeneration" in the Cluster Operation Guide (Database Multiplexing) for details.  
.....

- WebAdmin Mirroring Controller integration

You can now set the heartbeat\_error\_action parameter to specify what happens when a heartbeat error is detected in the heartbeat monitoring of the operating system or server during Mirroring Controller setup in WebAdmin. You can also edit the settings after you set up Mirroring Controller. Accordingly, the database operation using WebAdmin becomes more flexible.



See

.....  
Refer to "Mirroring Controller Configuration" in the Cluster Operation Guide (Database Multiplexing) for details.  
.....

### 1.1.3.2 Connection Manager

With the Connection Manager features, replication operation can be continued without being aware of the connection destination of the applications.

The Connection Manager provides the following capabilities:

- When a client error occurs, force a reclaim of the SQL connection with the client.
- When a server error occurs, the application is notified as a SQL error.
- Applications connect to the appropriate server without being aware of the server state (Primary, Standby).



See

.....  
Refer to Connection Manager User's Guide for details.  
.....

### 1.1.3.3 IBM Z Hardware Security Module Integration with Transparent Data Encryption

Master encryption key management for transparent data encryption is provided by the IBM Z Hardware Security Module for added security.

It eliminates the need to reserve a server for keystore and password management.



See

.....  
Refer to "Protecting Storage Data Using Transparent Data Encryption" in the Operation Guide.  
.....

## 1.1.4 Performance

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This section explains the new feature added to improve performance:

- Global Meta Cache
- VACUUM/TRUNCATE improvements

### 1.1.4.1 Global Meta Cache

Before FUJITSU Enterprise Postgres 11, information about system catalogs and table definitions was cached in per-process memory. You can cache some of this information in shared memory by using the Global Meta Cache feature. This reduces overall system memory usage.



See

.....  
Refer to "Memory usage reduction by Global Meta Cache" in the General Description for details.  
.....

### 1.1.4.2 VACUUM/TRUNCATE Improvements

If VACUUM/TRUNCATE truncates empty pages and relation indexes at the end of a transaction, or if relations are truncated, improve processing time by doing the following:

- Reduce the number of scan loops when deleting a relation buffer
- Reduce the number of shared buffer scans

This reduces WAL apply time independent of the size of the shared buffer.

# Chapter 2 Compatibility Information

This chapter explains incompatible items and actions required when migrating from an earlier version to FUJITSU Enterprise Postgres 12. Check compatibility before migrating and take the appropriate action.

## 2.1 Installation/Setup Incompatibility

| Item  | Pre-migration version |
|---|-----------------------|
|   | 11                    |
| <a href="#">Changing the way OSS is set up</a>  | Y                     |
| <a href="#">Modifying Pgpool-II Installation Handling</a>                               | Y                     |
| <a href="#">Changing Core and Log File Paths when Instance is Created with WebAdmin</a> | Y                     |
| <a href="#">Renaming WebAdmin Services</a>  | Y                     |

Y: Incompatibility exists

### 2.1.1 Changing the Way OSS is Set Up

#### Incompatibility

FUJITSU Enterprise Postgres 12 and later do not place OSS extension modules in the executable directory. The OSS extension modules must be placed in the executable directory when you set up OSS.

Refer to "Setting Up and Removing OSS" in the Installation and Setup Guide for Server for details.

#### Action method

None.

### 2.1.2 Modifying Pgpool-II Installation Handling

#### Incompatibility

For FUJITSU Enterprise Postgres 12 and later, Pgpool-II is not automatically installed when you install the server. Therefore, if you want to take advantage of Pgpool-II, install it separately from the server installation.

The extension modules required for the database server are shipped with the server program. You should set up Pgpool-II on the database server side, even if Pgpool-II is to be used on a different server than the database server.

Refer to "Setting Up and Removing OSS" in the Installation and Setup Guide for Server for details.

#### Action method

None.

### 2.1.3 Changing Core and Log File Paths when Instance is Created with WebAdmin

#### Incompatibility

In FUJITSU Enterprise Postgres 12 and later, change the core and log file paths when creating an instance in WebAdmin.

FUJITSU Enterprise Postgres 11

Log File Path: `/var/tmp/fsep_version/instanceAdminUser_instanceNamePortNumber/log`

Core File Path: `/var/tmp/fsep_version/instanceAdminUser_instanceNamePortNumber/core`



*version*: product version\_edition\_architecture

[Example]

Log File Path: /var/tmp/fsep\_110\_AE\_64/naomi\_myinst27599/log

Core File Path: /var/tmp/fsep\_110\_AE\_64/naomi\_myinst27599/core

#### FUJITSU Enterprise Postgres 12

Log File Path: /var/tmp/fsep\_ *version* / *instanceAdminUser\_instanceNamePortNumber* / log

Core File Path: /var/tmp/fsep\_ *version* / *instanceAdminUser\_instanceNamePortNumber* / core

*version*: product version\_WA\_architecture

[Example]

Log File Path: /var/tmp/fsep\_120\_WA\_64/naomi\_myinst27599/core

Core File Path: /var/tmp/fsep\_120\_WA\_64/naomi\_myinst27599/log

#### Action method

None.

### 2.1.4 Renaming WebAdmin Services

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#### Incompatibility

In FUJITSU Enterprise Postgres 12 and later, change the service name registered when you set up WebAdmin.

##### FUJITSU Enterprise Postgres 11

fsep\_xSPz\_ *edition* \_64\_WebAdmin\_Port1

fsep\_xSPz\_ *edition* \_64\_WebAdmin\_Port2

##### FUJITSU Enterprise Postgres 12

fsep\_xSPz\_WA\_64\_WebAdmin\_Port1

fsep\_xSPz\_WA\_64\_WebAdmin\_Port2

#### Action method

None.

## 2.2 Application Migration Incompatibility

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| Item   | Pre-migration version |
|--|-----------------------|
|  | 11                    |
| <a href="#">Changed to Error when Running an Operator or Function that Returns non Data Types for Masking Type</a> | Y                     |

Y: Incompatibility exists

### 2.2.1 Changed to Error when Running an Operator or Function that Returns non Data Types for Masking Type

---

#### Incompatibility

In FUJITSU Enterprise Postgres 12, changed to error when running an operator or function that returns non Data Types for Masking type.

## FUJITSU Enterprise Postgres 11

In the following cases, the operator or function in 3) may be executed without masking.

This is an incorrect result because the data containing the masking column is performed without masking.

- 1) Create a Masking policy. and
- 2) Execute a SELECT statement. and
- 3) Execute an operator or function in the SELECT statement of 2). and
- 4) The operator or function argument of 3) includes a subquery. and
- 5) The operator or function argument of 3) contains the column to be protected created in 1). and
- 6) The operator or function of 3) returns a type not listed in "Data Types for Masking" in "Operation Guide".

## FUJITSU Enterprise Postgres 12 or later

Operator or function results of 3) in the following error.

```
ERROR: The output data type is incompatible with the confidential policy.  
HINT: Data type of the result value(s) produced by expression/function using confidential columns  
is not supported by Data masking module. Consider removing confidential columns from such  
expressions/functions.
```

This is correct because the operator or function returns a data type not listed in "Data Types for Masking" in "Operation Guide".

### Action method

Do one of the following to ensure that the results are identical to those of FUJITSU Enterprise Postgres 11:

- 1) Modify the Masking policy to prevent masking from being performed for the user executing the SQL.
- 2) Modify SQL to not use operators or functions that return types not listed in "Data Types for Masking" in "Operation Guide".

## 2.3 Operation Migration Incompatibility

---

| Item  | Pre-migration version |
|---|-----------------------|
|   | 11                    |
| <a href="#">Mirroring Controller no longer retries to monitor database processes when they are detected as down</a> | Y                     |
| <a href="#">Changing the Name and Parameter Name of the Mirroring Controller Post-Promote Command</a>               | Y                     |
| <a href="#">Changing Mirroring Controller User Command Input Values</a>   | Y                     |

Y: Incompatibility exists

### 2.3.1 Mirroring Controller no Longer Retries to Monitor Database Processes when they are Detected as Down

---

#### Incompatibility

For the FUJITSU Enterprise Postgres Mirroring Controller, change the heartbeat monitoring of the database process so that it does not retry monitoring when it detects down.

#### Action method

None.

## 2.3.2 Changing the Name and Parameter Name of the Mirroring Controller Post-Promote Command

---

### Incompatibility

In the FUJITSU Enterprise Postgres 12 Mirroring Controller, change the name of the post-promote command, which is the state transition command, and the parameter name in the server configuration file that specifies the post-promote command.

FUJITSU Enterprise Postgres 11

- Command Name  
post-promote command
- The parameter name in the server configuration file that specifies the post-promote command  
post\_promote\_command

FUJITSU Enterprise Postgres 12 or later

- Command Name  
post-switch command
- The parameter name in the server configuration file that specifies the post-promote command  
post\_switch\_command

### Action method

The post\_promote\_command parameter in the server configuration file continues to be available in FUJITSU Enterprise Postgres 12 and later. If specified in the server configuration file, it acts as a post-switch command. You cannot specify the post\_promote\_command and post\_switch\_command parameters at the same time.

## 2.3.3 Changing Mirroring Controller User Command Input Values

---

### Incompatibility

Arguments (Fixed value: primarycenter) have been added to the following user commands:

- Fencing command of the database server
- Arbitration command
- Post-switch command
- Pre-detach command
- Post-attach command

### Action method

If you are checking the number of arguments in a user command, increase the number of arguments by one.

## 2.4 oracle\_fdw Incompatibility

---

| Item   | Pre-migration version |
|--|-----------------------|
|  | 11                    |
| <a href="#">Changing the Oracle Client Version</a> | Y                     |

Y: Incompatibility exists

## 2.4.1 Changing the Oracle Client Version

---

### Incompatibility

FUJITSU Enterprise Postgres 12 change the version of the Oracle client used to build oracle\_fdw to 11.2.

### Action method

Use Oracle client version 11.2 or later.

Also,if a file named libclntsh.so.11.1 does not exist in OCI library, create a symbolic link named libclntsh.so.11.1.

# Index

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[C]  
Compatibility Information.....5

[F]  
Features Added in 12.....1