Preface

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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Issue date and version
Edition 1.0: February 2022

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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

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<th>Version and level</th>
<th>Classification</th>
<th>Feature</th>
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<td>Additional Operating System Support for Client Feature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Additional Operating System Support for Server Assistant Feature</td>
</tr>
</tbody>
</table>

1.1 Features Added in 14

This section explains new features and improvements in FUJITSU Enterprise Postgres 14.

1.1.1 Operation

This section explains the new features and improvements related to operation:

- Connection Manager

1.1.1.1 Connection Manager

Connection Manager is now available to the following client drivers:

- ODBC driver
- JDBC driver

See

Refer to Connection Manager User's Guide for details.

1.1.2 OSS

This section explains the new feature related to OSS:

- PostgreSQL rebase
- Update of OSS provided

1.1.2.1 PostgreSQL Rebase

The PostgreSQL version that FUJITSU Enterprise Postgres is based on is 14.0.

See

1.1.2.2 Update of OSS Provided

The OSS provided by FUJITSU Enterprise Postgres have been updated.

See

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

1.1.3 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

1.1.3.1 Additional Operating System Support for Server Feature

The following additional operating system is supported:

- SLES 15 SP3

See

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

1.1.3.2 Additional Operating System Support for Client Feature

The following additional operating system is supported:

- SLES 15 SP3

See

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

1.1.3.3 Additional Operating System Support for Server Assistant Feature

The following additional operating system is supported:

- SLES 15 SP3

See

Refer to "Required Operating System" in the Installation and Setup Guide for Server Assistant for details.
Chapter 2 Compatibility Information

This chapter explains incompatible items and actions required when migrating from an earlier version to FUJITSU Enterprise Postgres 14. Check compatibility before migrating and take the appropriate action.

2.1 Installation/Setup Incompatibility

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Removing Operating System Support</td>
<td>Y</td>
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<tr>
<td>Changing kernel parameter settings when an instance is created with WebAdmin</td>
<td>Y</td>
</tr>
<tr>
<td>Removing Operating System Support</td>
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<tr>
<td>Changing the way OSS is set up</td>
<td>Y</td>
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<td>Modifying Pgpool-II Installation Handling</td>
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<tr>
<td>Changing Core and Log File Paths when Instance is Created with WebAdmin</td>
<td>Y</td>
</tr>
<tr>
<td>Renaming WebAdmin Services</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists
N: Incompatibility does not exist

2.1.1 Removing Operating System Support

Incompatibility

In FUJITSU Enterprise Postgres 13 or later, the following operating systems have been removed.
- RHEL7.7 and later minor version
- RHEL8.1

Action method
None.

2.1.2 Changing kernel parameter settings when an instance is created with WebAdmin

Incompatibility

For FUJITSU Enterprise Postgres 13 and later, changes kernel parameter settings for WebAdmin instance creation.

FUJITSU Enterprise Postgres 12 SP1 or earlier

<table>
<thead>
<tr>
<th>Kernel Parameters</th>
<th>Value</th>
<th>Calculated Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHMMAX</td>
<td>If currentValue &lt; calculatedValue, configure the calculated value</td>
<td>{(1800 + 270 * max_locks_per_transaction) * max_connections + (1800 + 270 * max_locks_per_transaction) * autovacuum_max_workers + (770 + 270 * max_locks_per_transaction) * max_prepared_transactions +}</td>
</tr>
<tr>
<td>Kernel Parameters</td>
<td>Value</td>
<td>Calculated Value</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>((\text{shared_buffer}) + (16 * 1024 * 1024) + (770 * 1024)) * 1.05)</td>
</tr>
<tr>
<td>SHMALL</td>
<td>Specify currentValue + calculatedValue</td>
<td>((\text{SHMMAX} / \text{PAGESIZE}) + 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(\text{PAGESIZE} = 4K)</td>
</tr>
<tr>
<td>SEMMNI</td>
<td>Specify currentValue + calculatedValue</td>
<td>(\lceil (\text{max_connections} + \text{autovacuum_max_workers} + 4) / 16 \rceil)</td>
</tr>
<tr>
<td>SEMMNS</td>
<td>Specify currentValue + calculatedValue</td>
<td>(\lceil (\text{max_connections} + \text{autovacuum_max_workers} + 4) / 16 \rceil * 17)</td>
</tr>
</tbody>
</table>

**FUJITSU Enterprise Postgres 13 or later**

<table>
<thead>
<tr>
<th>Kernel Parameters</th>
<th>Value</th>
<th>Calculated Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHMMAX</td>
<td>Do not change value</td>
<td>-</td>
</tr>
<tr>
<td>SHMALL</td>
<td>Do not change value</td>
<td>-</td>
</tr>
</tbody>
</table>
| SEMMNI            | Specify currentValue + calculatedValue | - For instances of FUJITSU Enterprise Postgres 11:
\[
\lceil (\text{max\_connections} + \text{autovacuum\_max\_workers} + \text{max\_worker\_processes} + 5) / 16 \rceil
\]
- For Fujitsu Enterprise Postgres 12 and later instances:
\[
\lceil (\text{max\_connections} + \text{autovacuum\_max\_workers} + \text{max\_wal\_senders} + \text{max\_worker\_processes} + 5) / 16 \rceil
\]
| SEMMNS            | Specify currentValue + calculatedValue | - For instances of FUJITSU Enterprise Postgres 11:
\[
\lceil (\text{max\_connections} + \text{autovacuum\_max\_workers} + \text{max\_worker\_processes} + 5) / 16 \rceil * 17
\]
- For Fujitsu Enterprise Postgres 12 and later instances:
\[
\lceil (\text{max\_connections} + \text{autovacuum\_max\_workers} + \text{max\_wal\_senders} + \text{max\_worker\_processes} + 5) / 16 \rceil * 17
\]

**Action method**
None.

### 2.1.3 Removing Operating System Support

**Incompatibility**
In FUJITSU Enterprise Postgres 12 SP1 or later, the following operating systems have been removed.
- SLES 12 SP4
2.1.4 Changing the Way OSS is Set Up

Incompatibility
FUJITSU Enterprise Postgres 12 or 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.


Action method
None.

2.1.5 Modifying Pgpool-II Installation Handling

Incompatibility
For FUJITSU Enterprise Postgres 12 or 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.


Action method
None.

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

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

FUJITSU Enterprise Postgres 11
Log File Path: /var/tmp/fse_version/instanceAdminUser_instanceNamePortNumber/log
Core File Path: /var/tmp/fse_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/fse_version/instanceAdminUser_instanceNamePortNumber/log
Core File Path: /var/tmp/fse_version/instanceAdminUser_instanceNamePortNumber/core
version: product version_WA_architecture
[Example]
Log File Path: /var/tmp/fsep_120_WA_64/naomi_myinst27599/log
Core File Path: /var/tmp/fsep_120_WA_64/naomi_myinst27599/core
2.1.7 Renaming WebAdmin Services

Incompatibility

In FUJITSU Enterprise Postgres 12 or 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 or later
- fsep_xSPz_WA_64_WebAdmin_Port1
- fsep_xSPz_WA_64_WebAdmin_Port2

Action method

None.

2.2 Application Migration Incompatibility

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<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Changing the display result when data masking is applied to NaN, infinity, -infinity</td>
<td>Y</td>
</tr>
<tr>
<td>Changing the Valid Range of Identifiers Defined by the DECLARE STATEMENT statement</td>
<td>Y</td>
</tr>
<tr>
<td>Changing Precompile Results</td>
<td>Y</td>
</tr>
<tr>
<td>Changing the Trigger Replacement Process</td>
<td>Y</td>
</tr>
<tr>
<td>Removing Java Support</td>
<td>Y</td>
</tr>
<tr>
<td>Changed to Error when Running an Operator or Function that Returns non Data Types for Masking Type</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists
N: Incompatibility does not exist

2.2.1 Changing the display result when data masking is applied to NaN, infinity, -infinity

Incompatibility

In FUJITSU Enterprise Postgres 14, the display result when data masking is applied to NaN, infinity, and -infinity will be changed.

FUJITSU Enterprise Postgres 13 or earlier

If the float type NaN, infinity, and -infinity are partially masking with (9,1,2), the following will be displayed.

NaN : 99
Infinity : 99
-Infinity : 99
FUJITSU Enterprise Postgres 14 or later

If the float type NaN, infinity, and -infinity are partially masking with (9,1,2), the following will be displayed.

\[
\begin{align*}
\text{NaN} & : \text{NaN} \\
\text{Infinity} & : \text{Infinity} \\
\text{-Infinity} & : \text{-Infinity}
\end{align*}
\]

Action method

If the application is analyzing the SQL masking output result, please consider the non-numeric output result and correct it.

2.2.2 Changing the Valid Range of Identifiers Defined by the DECLARE STATEMENT statement

Incompatibility

In FUJITSU Enterprise Postgres 14 will change the valid range of identifiers defined by a DECLARE STATEMENT statement in ecpg/ecobpg.

FUJITSU Enterprise Postgres 13 or earlier

The valid range is now per process.

FUJITSU Enterprise Postgres 14 or later

The valid range is now per file.

Action method

None.

2.2.3 Changing Precompile Results

Incompatibility

In FUJITSU Enterprise Postgres 14 removed the ECPGdeclare/ECPGopen function. Therefore, results precompiled from earlier versions of FUJITSU Enterprise Postgres will not be available in FUJITSU Enterprise Postgres 14.

Action method

Rebuild the application.

2.2.4 Changing the Trigger Replacement Process

Incompatibility

In FUJITSU Enterprise Postgres 14 will change restricted triggers to not be supported by replace operations (OR REPLACE).

FUJITSU Enterprise Postgres 13 or earlier

You can replace a constraint trigger.

[Example]

```sql
=# CREATE OR REPLACE CONSTRAINT TRIGGER my_constraint_trigger AFTER DELETE ON my_table 
-# FOR EACH ROW 
-# EXECUTE PROCEDURE funcA(); 
CREATE TRIGGER
```

FUJITSU Enterprise Postgres 14 or later

It does not support replacing a constraint trigger.

[Example]
CREATE OR REPLACE CONSTRAINT TRIGGER my_constraint_trigger AFTER DELETE ON my_table
-# FOR EACH ROW
-# EXECUTE PROCEDURE funcA();
ERROR: CREATE OR REPLACE CONSTRAINT TRIGGER is not supported

Action method
None.

2.2.5 Removing Java Support

Incompatibility
In FUJITSU Enterprise Postgres 13 or later, the following Java have been removed.
- Java SE 6
  Also, the JDBC driver file 'postgresql-jdbc4.jar' for JDK 6 or JRE 6 isn’t installed.

Action method
None.

2.2.6 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

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Changing the Output of the Status Mode of the cm_ctl Command</td>
<td>Y</td>
</tr>
<tr>
<td>Rename column &quot;master_pid&quot; in pgx_loader_state to &quot;leader_pid&quot;</td>
<td>Y</td>
</tr>
<tr>
<td>Adding a Message to Output when the Database Server watchdog detects that the Connection Manager is down</td>
<td>N</td>
</tr>
<tr>
<td>Change the Error Information when the Connection Manager re-executes SQL on the Failed Connection</td>
<td>N</td>
</tr>
<tr>
<td>Changing the Value of the Category Column in the pg_settings view</td>
<td>Y</td>
</tr>
<tr>
<td>Changing pgx_stat_lwlock of the Statistics View</td>
<td>Y</td>
</tr>
<tr>
<td>Changing the Behavior of pgx_rcvall</td>
<td>Y</td>
</tr>
<tr>
<td>Mirroring Controller no longer retries to monitor database processes when they are detected as down</td>
<td>Y</td>
</tr>
<tr>
<td>Changing the Name and Parameter Name of the Mirroring Controller Post-Promote Command</td>
<td>Y</td>
</tr>
<tr>
<td>Changing Mirroring Controller User Command Input Values</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists  
N: Incompatibility does not exist

#### 2.3.1 Changing the Output of the Status Mode of the cm_ctl Command

##### Incompatibility

Changes the display of the output of the status mode of the cm_ctl command.

(If it has been modified by the P number PH21029, and you have applied an urgent fix that includes it, FUJITSU Enterprise Postgres 14 will work.)

When the cm_ctl command was executed in status mode, there was omission of the output of the header "pid" displayed in "application_information" which outputs the information of the application.

Correct the following in PH21029.

- Add ':' to 'application_information' to output application information  
  Output "application_information:"
- Add the header "pid" output to "application_information"  
  Outputs "pid" whose header information is missing.
- Changes the number of digits in the numeric portion of `connected_time`
  Change the display start position of the date and time connected to the conmgr process to correct the gap between the start position of the header and the numeric part. (5 digits backward)

This fix causes the following incompatibilities when running the `cm_ctl` command in status mode:
- Add ":" to the display of "application_information"
- Display the header "pid" in "application_information"
- Change the output start position of the "connected_time" header of "application_information"
- Change the start of the date and time output of "connected_time" in "application_information" to 5 digits later.

**FUJITSU Enterprise Postgres 13 or earlier**

<table>
<thead>
<tr>
<th>application_information</th>
<th>addr</th>
<th>port</th>
<th>connected_time</th>
</tr>
</thead>
<tbody>
<tr>
<td>addr 99999 21655 2021-10-20 09:18:51</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FUJITSU Enterprise Postgres 14**

<table>
<thead>
<tr>
<th>application_information:</th>
<th>addr</th>
<th>port</th>
<th>pid</th>
<th>connected_time</th>
</tr>
</thead>
<tbody>
<tr>
<td>addr 99999 21655 2021-10-20 09:18:51</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When analyzing the output of the `cm_ctl` command in status mode in a batch or shell script, it may not work correctly if the header is referenced and the third is "connected_time".

For example, when identifying a row of data (numeric part), a string up to the header "addr", "port", and "connected_time" one row before is searched for and identified.

**Action method**

If you are using a batch or shell script to parse the output of the `cm_ctl` command in status mode, modify it to take into account the number of digits in the header and numeric part of the output.

### 2.3.2 Rename column "master_pid" in pgx_loader_state to "leader_pid"

**Incompatibility**

In FUJITSU Enterprise Postgres 14 renames column "master_pid" to "leader_pid" in the pgx_loader_state table.

**Action method**

None.

### 2.3.3 Adding a Message to Output when the Database Server watchdog detects that the Connection Manager is down

**Incompatibility**

In FUJITSU Enterprise Postgres 13 SP1, when using the Connection Manager, if the database server watchdog detects that the Connection Manager is down, it will output a message to the database server.

Incompatibilities may occur if:

1) The application server is using the Connection Manager.
2) The database server is running the watchdog process.
3) 1) Application server or Connection Manager goes down.
2.3.4 Change the Error Information when the Connection Manager re-executes SQL on the Failed Connection

Incompatibility

In FUJITSU Enterprise Postgres 13 SP1 allows an application using the Connection Manager to change the error information when attempting to execute SQL again on a connection that the Connection Manager has determined to be in error due to a database error. The changed error information is included in the error presented in "Errors when an Application Connection Switch Occurs and Corresponding Actions" for each client driver in "Application Development Guide".

Incompatibilities may occur if the following conditions are met:

1) The application uses one of the following drivers. and
   - libpq (C Library)
   - ECPG (Embedded SQL in C)
2) You are using the Connection Manager. and
3) The database server to which the application in 1) was connected goes down. and
4) The Connection Manager notifies the application in 1) of an error when the database is down in 3). and
5) The application in 1) does not disconnect from the database server that is down, but executes SQL using the connection.

Action method

Consider that the above error may be returned during the SQL error determination process.

Also, if you encounter an error about switching application destinations as described in "Errors when an Application Connection Switch Occurs and Corresponding Actions" for each client driver in "Application Development Guide", you should explicitly disconnect and reconnect or rerun the application.
2.3.5 Changing the Value of the Category Column in the pg_settings view

Incompatibility

For FUJITSU Enterprise Postgres 13, change the value of the category column in the pg_settings view.

FUJITSU Enterprise Postgres 12 SP1 or earlier

<table>
<thead>
<tr>
<th>Original value</th>
<th>wrong value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset Options</td>
<td>Fujitsu Enterprise Postgres Parameters</td>
</tr>
<tr>
<td>Customized Options</td>
<td>Preset Options</td>
</tr>
<tr>
<td>Developer Options</td>
<td>Customized Options</td>
</tr>
</tbody>
</table>

This is an incorrect result because it is different from the original value.

FUJITSU Enterprise Postgres 13 or later

The correct value is the category column in the pg_settings view.

Action method

Replaces the category column in the pg_settings view with the values before migration, so that the results are the same as before migration.

2.3.6 Changing pgx_stat_lwlock of the Statistics View

Incompatibility

In FUJITSU Enterprise Postgres 13, change the wait event name displayed in the lwlock_name column of the statistics view pgx_stat_lwlock.

Wait Event Name

<table>
<thead>
<tr>
<th>FUJITSU Enterprise Postgres 12 SP1 or earlier</th>
<th>FUJITSU Enterprise Postgres 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>clog (*1)</td>
<td>XactBuffer</td>
</tr>
<tr>
<td>commit_timestamp (*1)</td>
<td>CommitTSBuffer</td>
</tr>
<tr>
<td>subtrans (*1)</td>
<td>SubtransBuffer</td>
</tr>
<tr>
<td>multixact_offset (*1)</td>
<td>MultiXactOffsetBuffer</td>
</tr>
<tr>
<td>multixact_member (*1)</td>
<td>MultiXactMemberBuffer</td>
</tr>
<tr>
<td>async (*1)</td>
<td>NotifyBuffer</td>
</tr>
<tr>
<td>oldserxid (*1)</td>
<td>SerialBuffer</td>
</tr>
<tr>
<td>wal_insert (*1)</td>
<td>WALInsert</td>
</tr>
<tr>
<td>buffer_content (*1)</td>
<td>BufferContent</td>
</tr>
<tr>
<td>buffer_io (*1)</td>
<td>BufferIO</td>
</tr>
<tr>
<td>replication_origin (*1)</td>
<td>ReplicationOriginState</td>
</tr>
<tr>
<td>replication_slot_io (*1)</td>
<td>ReplicationSlotIO</td>
</tr>
<tr>
<td>proc (*1)</td>
<td>LockFastPath</td>
</tr>
<tr>
<td>buffer_mapping (*1)</td>
<td>BufferMapping</td>
</tr>
<tr>
<td>lock_manager (*1)</td>
<td>LockManager</td>
</tr>
<tr>
<td>predicate_lock_manager (*1)</td>
<td>PredicateLockManager</td>
</tr>
<tr>
<td>parallel_hash_join (*1)</td>
<td>ParallelHashJoin</td>
</tr>
<tr>
<td>parallel_query_dsa (*1)</td>
<td>ParallelQueryDSA</td>
</tr>
</tbody>
</table>
### 2.3.7 Changing the Behavior of pgx_rcvall

**Incompatibility**
In FUJITSU Enterprise Postgres 13, change the pgx_rcvall command to fail if the -e option of the pgx_rcvall command specifies a future time or if the -n option specifies a list appointment that does not exist.

Fujitsu Enterprise Postgres 12 SP1 or earlier
All archived WALs are applied for recovery if the -e option of the pgx_rcvall command specifies a time in the future, or if the -n option specifies a list appointment that does not exist.

Fujitsu Enterprise Postgres 13 or later
The pgx_rcvall command fails if the -e option of the pgx_rcvall command specifies a time in the future, or if the -n option specifies a list appointment that does not exist.

**Action method**
Specify recovery objectives correctly, if necessary.

### 2.3.8 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.
2.3.9 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 or 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.

2.3.10 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 JDBC Drive Incompatibility

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Changing the targetServerType Value</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists
N: Incompatibility does not exist
2.4.1 Changing the targetServerType Value

**Incompatibility**

In FUJITSU Enterprise Postgres 13, the value of targetServerType specified in the connection string was changed. Therefore, the previously used values are no longer available.

**Action method**

If you specified a value for targetServerType, change the value as follows:

<table>
<thead>
<tr>
<th>Server Selection Order</th>
<th>FUJITSU Enterprise Postgres 12 SP1 or earlier</th>
<th>FUJITSU Enterprise Postgres 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Server</td>
<td>master</td>
<td>primary</td>
</tr>
<tr>
<td>Standby Server</td>
<td>slave</td>
<td>secondary</td>
</tr>
<tr>
<td>Prefer Standby Server</td>
<td>preferSlave</td>
<td>preferSecondary</td>
</tr>
<tr>
<td>Any</td>
<td>any</td>
<td>any</td>
</tr>
</tbody>
</table>

2.5 ODBC Drive Incompatibility

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Cannot specify prefer-read for target_session_attrs</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists
N: Incompatibility does not exist

2.5.1 Cannot specify prefer-read for target_session_attrs

**Incompatibility**

FUJITSU Enterprise Postgres 14 users will not see the "prefer-read" radio button in the "Target_Session_Attrs" item of the data source option selection screen.

**Action method**

Select prefer-standby.

2.6 C Library (libpq) Migration Incompatibility

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Changing when &quot;prefer-read&quot; is Specified for the target_session_attrs Parameter</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists
N: Incompatibility does not exist
2.6.1 Changing when "prefer-read" is Specified for the target_session_attrs Parameter

Incompatibility
In FUJITSU Enterprise Postgres 14 changes the attach server priority if any of the following servers are specified simultaneously with "prefer-read" as the target_session_attrs parameter:
- Primary server (default_transaction_read_only = ON)
- Standby server

FUJITSU Enterprise Postgres 13 or earlier
The primary server (default_transaction_read_only = ON) and standby servers have the same priority.

FUJITSU Enterprise Postgres 14 or later
Standby servers connect in preference to primary servers (default_transaction_read_only = ON).

Action method
None.

2.7 oracle_fdw Incompatibility

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Changing the Oracle Client Version</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists
N: Incompatibility does not exist

2.7.1 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 libclnsh.so.11.1 does not exist in OCI library, create a symbolic link named libclnsh.so.11.1.

2.8 pgaudit Incompatibility

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Changing to Output Extra NEW and OLD Values in the Audit Log when the Trigger Function Executes</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists
N: Incompatibility does not exist
2.8.1 Changing to Output Extra NEW and OLD Values in the Audit Log when the Trigger Function Executes

Incompatibility

In FUJITSU Enterprise Postgres 13, the trigger function additionally outputs NEW and OLD values to the audit log when the `pgaudit.log_parameter` is set to on.

FUJITSU Enterprise Postgres 12 SP1 or earlier

The following (18) does not output the values of NEW, OLD.

[Example]

```
AUDIT: SESSION,WRITE,2020-09-03 07:07:39 UTC,
[local],9775,psql,k5user,postgres,3/536,1,2,INSERT,,TABLE,public.trig_audit,,
"INSERT INTO trigAudit SELECT 'U', now(), user, OLD.*, NEW.*",
trig_audit AFTER ROW UPDATE 92027 trig_test trig_test public 0 f aaaa
```

FUJITSU Enterprise Postgres 13 or later

NEW, OLD values are output.

[Example]

```
AUDIT: SESSION,WRITE,2020-09-03 07:07:39 UTC,
[local],9775,psql,k5user,postgres,3/536,1,2,INSERT,,TABLE,public.trig_audit,,
"INSERT INTO trigAudit SELECT 'U', now(), user, OLD.*, NEW.*",
trig_audit AFTER ROW UPDATE 92027 trig_test trig_test public 0 f aaaa
```

Action method

If you are using an application that works by monitoring the string that the trigger function output to the audit log, modify the application to work with the NEW and OLD values.

2.9 WebAdmin Incompatibility

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Cannot specify prefer-read for target_session_attrs</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists

N: Incompatibility does not exist

2.9.1 Cannot specify prefer-read for target_session_attrs

Incompatibility

FUJITSU Enterprise Postgres 14 will no longer allow prefer-read to target_session_attrs as a connection method to an upstream server that is specified when creating an instance of a standby server.
Action method
Specify prefer-standby.

2.10 Connection Manager Incompatibility

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-migration version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Behavior change when &quot;read-write&quot; is specified for the target_session_attrs parameter</td>
<td>Y</td>
</tr>
</tbody>
</table>

Y: Incompatibility exists
N: Incompatibility does not exist

2.10.1 Behavior change when "read-write" is specified for the target_session_attrs parameter

Incompatibility
FUJITSU Enterprise Postgres 13 or earlier
May be connected to primary server (default_transaction_read_only = ON).
FUJITSU Enterprise Postgres 14 or later
It is not connected to the primary server (default_transaction_read_only = ON).

Action method
For FUJITSU Enterprise Postgres 13 and earlier, specify "primary" for the target_session_attrs parameter.
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</tr>
</thead>
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</tr>
<tr>
<td>Features Added in 14</td>
</tr>
</tbody>
</table>