

Fujitsu Enterprise Postgres 17

Release Notes

Linux

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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.

[Chapter 3 Program Updates](#)

Explains updates incorporated in this version.

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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

Version and level	Classification	Feature
17	OSS	PostgreSQL Rebase
		OSS Updates Provided
	Performance	Scheduling of an aggressive freeze for tuples (VACUUM FREEZE)
	Operation	Vector-enabled database

1.1 Features Added in 17

This section explains new features and improvements in Fujitsu Enterprise Postgres 17.

1.1.1 OSS

This section explains the new feature related to OSS:

- PostgreSQL Rebase
- OSS Updates Provided

1.1.1.1 PostgreSQL Rebase

The PostgreSQL version that Fujitsu Enterprise Postgres is based on is 17.0.

1.1.1.2 OSS Updates Provided

The OSS provided by Fujitsu Enterprise Postgres has been updated.



See

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

1.1.2 Performance

This section describes new features related to Performance.

- Scheduling of an aggressive freeze for tuples (VACUUM FREEZE)

1.1.2.1 Scheduling of an aggressive freeze for tuples (VACUUM FREEZE)

The following functions have been added.

- Add vacuum freezing statistics to help schedule aggressive freeze for tuples (VACUUM FREEZE) to avoid work stoppages when autovacuum does not perform freezing of transaction IDs in time.
- Provide scripts to perform efficient aggressive freeze for tuples (VACUUM FREEZE).



See

Refer to "Scheduling of an aggressive freeze for tuples (VACUUM FREEZE)" in the Operation Guide.

1.1.3 Operation

This section describes new features related to Operation.

- Vector-enabled database

1.1.3.1 Vector-enabled database

It captures the peripheral OSS pgvector, allowing vector storage and similarity searching to work.



See

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

Chapter 2 Compatibility Information

This chapter explains incompatible items and actions required when migrating from an earlier version to Fujitsu Enterprise Postgres 17. Check compatibility before migrating and take the appropriate action.

2.1 Installation/Setup Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Removing Old llvm Support for JIT compilation	Y	Y	Y	Y	Y
Removing Operating System Support for Client Feature	Y	Y	Y	Y	Y
Removing Operating System Support for Server Feature	Y	Y	Y	Y	Y
Removing Operating System Support for Server Assistant Feature	Y	Y	Y	Y	Y
Python Version Changes Required When Using PL/Python	Y	Y	Y	Y	Y
How max_wal_senders is calculated	Y	Y	Y	N	N
How max_worker_processes is calculated	Y	Y	Y	N	N
Removing Old llvm Support for JIT compilation	Y	Y	N	N	N

Y: Incompatibility exists

N: Incompatibility does not exist

2.1.1 Removing Old llvm Support for JIT compilation

Incompatibility

In Fujitsu Enterprise Postgres 17, the following llvm which JIT compilation can use have been removed.

[RHEL8]

- llvm version 12

[SLES 15]

- llvm version 7

Action method

None.

2.1.2 Removing Operating System Support for Client Feature

Incompatibility

In Fujitsu Enterprise Postgres 17 or later, the following operating systems have been removed.

- RHEL8.5 or earlier
- SLES 15 SP4 or earlier

Action method

None.

2.1.3 Removing Operating System Support for Server Feature

Incompatibility

In Fujitsu Enterprise Postgres 17 or later, the following operating systems have been removed.

- RHEL8.5 or earlier
- SLES 15 SP4 or earlier

Action method

None.

2.1.4 Removing Operating System Support for Server Assistant Feature

Incompatibility

In Fujitsu Enterprise Postgres 17 or later, the following operating systems have been removed.

- RHEL8.5 or earlier
- SLES 15 SP4 or earlier

Action method

None.

2.1.5 Python Version Changes Required When Using PL/Python

Incompatibility

In Fujitsu Enterprise Postgres 17 or later, when operating on RHEL8, changes the required Python version to 3.9.x when using PL/Python based on the Python 3 language.

Action method

None.

2.1.6 How max_wal_senders is calculated

Incompatibility

In Fujitsu Enterprise Postgres 16 or later, Fujitsu Enterprise Postgres uses the following values from the value set for the max_wal_senders parameter:

Policy-based password management in a streaming replication environment : Number of direct downstream hot standby servers

Action method

If necessary add a value for the max_wal_senders parameter.

2.1.7 How max_worker_processes is calculated

Incompatibility

In Fujitsu Enterprise Postgres 16 or later, Fujitsu Enterprise Postgres uses the following values from the value set for the `max_worker_processes` parameter:

Default value to use : 1

Policy-based password management in a streaming replication environment with a hot standby server : 1

Action method

If necessary add a value for the `max_worker_processes` parameter.

2.1.8 Removing Old llvm Support for JIT compilation

Incompatibility

In Fujitsu Enterprise Postgres 15, the following llvm which JIT compilation can use have been removed.

- llvm version 11

Action method

None.

2.2 Application Migration Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Changing the OID of the Data Type (NCHAR type) that Handles National Characters	Y	Y	N	N	N

Y: Incompatibility exists

2.2.1 Changing the OID of the Data Type (NCHAR type) that Handles National Characters

Incompatible

In Fujitsu Enterprise Postgres 15, OIDs for national character data types (NCHAR types) have changed.

Action method

If you are using a national character data type (NCHAR type), recompile the application and run it with Fujitsu Enterprise Postgres 15 or later clients.

2.3 Operation Migration Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Deprecation of Some Encryption Algorithms in pgcrypto	Y	Y	Y	N	N
Deprecation of Certificates Signed Using SHA1	Y	Y	Y	N	N
Abolition of Message Numbers	Y	Y	N	N	N
Adding the key_name Column to the View pgx_tde_master_key	N	Y	N	N	N

Y: Incompatibility exists

N: Incompatibility does not exist

2.3.1 Deprecation of Some Encryption Algorithms in pgcrypto

Incompatibility

In Fujitsu Enterprise Postgres 16 and later, the PostgreSQL extension pgcrypto does not support the use of the encryption algorithm, which has become a legacy algorithm in the OpenSSL3 family, by default.

The encryption algorithms that are no longer available by default are:

- BF
- CAST5
- DES-ECB
- DES-CBC
- MD4
- Whirlpool

Action method

If you use a legacy OpenSSL provider, create an OpenSSL configuration file and set the parameters in postgresql.conf. Refer to "Settings for Using Legacy OpenSSL Providers" in the Installation and Setup Guide for Server for information .

2.3.2 Deprecation of Certificates Signed Using SHA1

Incompatibility

In Fujitsu Enterprise Postgres 16 and later, you cannot connect to a database server using a certificate signed using SHA1.

Action method

Resubmit the certificate used for certificate authentication with SHA2 or higher.

2.3.3 Abolition of Message Numbers

Incompatibility

In Fujitsu Enterprise Postgres 15, the message number output at the end of the message is abolished.

Message numbers are output for messages output by Mirroring Controller.

For FUJITSU Enterprise Postgres 14 SP1 or earlier

The message number was printed at the end of the message.

[example]

```
3D000: 2017-07-10 19:41:05 JST[13899]: [1-1] user=fepuser,db=fep,remote=127.0.0.1(51902)
app=[unknown] FATAL: database "fep" does not exist (10571)
```

For Fujitsu Enterprise Postgres 15

No message number is output at the end of the message.

[example]

```
3D000: 2023-04-10 19:41:05 JST [13899]: [1-1] user = fepuser,db = fep,remote = 127.0.0.1(51902)
app = [unknown] FATAL: database "fep" does not exist
```

Action method

None.

2.3.4 Adding the key_name Column to the View pgx_tde_master_key

Incompatibility

In Fujitsu Enterprise Postgres 15, add a key_name column to the view pgx_tde_master_key.

Action method

None.

2.4 pg_statsinfo Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Changing Simple Report Items	Y	Y	Y	Y	Y
Change the Contents of the bgwriter Table in the statsrepo Schema	Y	Y	Y	Y	Y
Rename Columns in statement Table in statsrepo Schema	Y	Y	Y	Y	Y
Change the Default Value of the stattarget Column of the column Table in the statsrepo Schema	Y	Y	Y	Y	Y

Y: Incompatibility exists

N: Incompatibility does not exist

2.4.1 Changing Simple Report Items

Incompatibility

In Fujitsu Enterprise Postgres 17, the following items have been removed from the BGWriter Statistics items output by the simple report function.

- Written Buffers By Backend (Average)

- Written Buffers By Backend (Maximum)
- Backend Executed fsync (Average)
- Backend Executed fsync (Maximum)

Action method

None.

2.4.2 Change the Contents of the bgwriter Table in the statsrepo Schema

Incompatibility

In Fujitsu Enterprise Postgres 17, remove buffers_backend and buffers_backend_fsync from the columns in the bgwriter table in the statsrepo schema.

Action method

None.

2.4.3 Rename Columns in statement Table in statsrepo Schema

Incompatibility

In Fujitsu Enterprise Postgres 17, rename the blk_read_time column to shared_blk_read_time and the blk_write_time column to shared_blk_write_time in the statement table of the statsrepo schema.

Action method

None.

2.4.4 Change the Default Value of the ststarget Column of the column Table in the statsrepo Schema

Incompatibility

In Fujitsu Enterprise Postgres 17, change the default value of the ststarget column of the column table in the statsrepo schema from "-1" to "NULL".

Action method

None.

2.5 pgaudit Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Repairing Unwanted Output in the Audit Log	Y	Y	Y	N	N

2.5.1 Repairing Unwanted Output in the Audit Log

Incompatibility

In Fujitsu Enterprise Postgres 16, we changed the audit log so that it no longer contains unwanted information at the end.

Fujitsu Enterprise Postgres 15 or earlier

Some audit logs contain unwanted content at the end.

[Example]

```
Input: INSERT INTO trig_test VALUES ('new value');
Part of the audit log: NOTICE:  AUDIT: SESSION,WRITE,,[local],,pg_regress/class,,baz,,
11,2,INSERT,,TABLE,public.trig_audit,, "INSERT INTO trig_audit SELECT 'I', now(), user, NULL,
NEW.*", (" "new value"")  trig_audit AFTER ROW INSERT 16484 trig_test trig_test public 0 f"
```

Fujitsu Enterprise Postgres 16

Prevent unwanted from being output to the audit log.

[Example]

```
Input: INSERT INTO trig_test VALUES ('new value');
Part of the audit log: NOTICE:  AUDIT: SESSION,WRITE,,[local],,pg_regress/class,,baz,,
11,2,INSERT,,TABLE,public.trig_audit,, "INSERT INTO trig_audit SELECT 'I', now(), user, NULL,
NEW.*", (" "new value"")"
```

Action method

None.

2.6 pg_dbms_stats Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Change in Execution Plan due to Fixed Height of Btree index	Y	Y	Y	N	N
Incompatibility of Import Features with Fixed Height of Btree index	Y	Y	Y	N	N

Y: Incompatibility exists

N: Incompatibility does not exist

2.6.1 Change in Execution Plan due to Fixed Height of Btree index

Incompatibility

Fixing statistics with the following features may change the execution plan because the height of the Btree index is now fixed as well:

- dbms_stats.lock_*
- dbms_stats.restore_*
- dbms_stats.import_*

Action method

If you want to run compatibility with Fujitsu Enterprise Postgres 15 and earlier, configure the following:

- pg_dbms_stats.use_tree_height
- pg_dbms_stats.lock_tree_height

2.6.2 Incompatibility of Import Features with Fixed Height of Btree index

Incompatibility

Statistics exported by the export function in pg_dbms_stats prior to Fujitsu Enterprise Postgres 15 cannot be imported using the legacy import function.

Action method

When importing statistics exported by the export function in pg_dbms_stats prior to Fujitsu Enterprise Postgres 15, use a function with the suffix "_no_tree_height" appended to its name.

2.7 orafce Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Interface changes due to enhancements to the DBMS_SQL package	Y	Y	Y	Y	Y

Y: Incompatibility exists

N: Incompatibility does not exist

2.7.1 Interface changes due to enhancements to the DBMS_SQL package

Incompatibility

In Fujitsu Enterprise Postgres 17, includes enhancements to the DBMS_SQL package. The I/O interfaces of some functions have changed accordingly.

Refer to "Compatibility with Oracle Databases" in Application Development Guide.

Action method

If you are using the DBMS_SQL package, you will need to switch to the same procedures as Fujitsu Enterprise Postgres 16 SP1 or earlier for Oracle database compatibility enhancements, or modify your application.

Refer to "Compatibility with Oracle Databases" in Application Development Guide.

2.8 WebAdmin Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Linux server behavior changes for login authentication	Y	Y	Y	Y	N
Changing the default value of the item 'Number of digits for floating values' which is set in the section 'SQL options'	Y	Y	Y	N	N

Y: Incompatibility exists

N: Incompatibility does not exist

2.8.1 Linux server behavior changes for login authentication

Incompatibility

In Fujitsu Enterprise Postgres 16 SP1, the security policy for accounts in the OS is now also in effect upon login authentication from WebAdmin.

As a result, the following events may occur:

- If the number of authentication failures exceeds the login failure limit, the OS account is also locked.

Action method

If your account is locked due to an authentication failure, ask your system administrator to unlock it.

To check whether a login failure occurred in WebAdmin, see the WebAdmin log in the following folder, and check whether a log containing "password is incorrect" was output.

/opt/fsepv<x>webadmin/log

2.8.2 Changing the default value of the item 'Number of digits for floating values' which is set in the section 'SQL options'

Incompatibility

In Fujitsu Enterprise Postgres 16, the default value of the item 'Number of digits for floating values' which is set in the section 'SQL options' in the view 'PostgreSQL configuration' is changed in order to match the default value of PostgreSQL.

Fujitsu Enterprise Postgres 15 or earlier

0

Fujitsu Enterprise Postgres 16 or later

1

Action method

Change the value of the item 'Number of digits for floating values', if necessary.

2.9 Confidentiality Management Incompatibility

Item	Pre-migration version				
	14	14 SP1	15	16	16 SP1
Changes due to Changes in the pg_dump Specification	N	N	Y	N	N
Changing Permission Settings by Changing the CREATEROLE Permission	N	N	Y	N	N
16Change due to Restriction of CREATEROLE Privilege	N	N	Y	N	N

Y: Incompatibility exists

N: Incompatibility does not exist

2.9.1 Changes due to Changes in the pg_dump Specification

Incompatibility

If you are using multiple non-superuser sensitivity confidentiality management role to manage the sensitivity matrix, run the product-provided policy configuration script to define a row-level security feature policy on the table provided by the sensitivity support feature to make the sensitivity management roles independent of each other.

In Fujitsu Enterprise Postgres 15 or earlier, the effects of this script could be retained and backed up by pg_dump, but as of Fujitsu Enterprise Postgres 16, policy settings can no longer be backed up.

Action method

In Fujitsu Enterprise Postgres 16 or later, if you are managing a sensitivity matrix using more than one confidentiality management role other than superuser, then immediately after restoring a clear-text dump file using pg_dump, run the following command as superuser to reapply the confidentiality management feature policy:

```
psql -f ${install_dir}/share/extension/pgx_confidential_management_support_policy.sql
```

2.9.2 Changing Permission Settings by Changing the CREATEROLE Permission

Incompatibility

In Fujitsu Enterprise Postgres 16, if you want to use a non-superuser role as a confidentiality management role, you may need to set additional permissions for the confidentiality management role.

Action method

The confidentiality management role must already have the privileges it expects to operate on, other than the CREATEROLE privilege.

[Example]

If the confidentiality management role "manager_role" is also going to work with CREATEDB privileges, it will also set CREATEDB privileges when the role is created, like this:

```
CREATE ROLE manager_role LOGIN CREATEROLE CREATEDB;
```

If the required permissions are not set, the sensitivity management API terminates abnormally with a message similar to the following:

```
ERROR: permission denied to create role
DETAIL: Only roles with the CREATEDB attribute may create roles with the CREATEDB attribute.
```

2.9.3 Change due to Restriction of CREATEROLE Privilege

Incompatibility

In Fujitsu Enterprise Postgres 16, if you want to use a non-superuser role as a secret management role, the permissions on the roles that can be set in the secret group are different, and the roles that you set in the secret group must be granted ADMIN OPTION permission on the secret confidentiality management role before they can be used.

Action method

Take one of the following actions:

- A role created with the privileges of the confidentiality management role is to be managed in the confidential group. This creates a role that grants only the ADMIN OPTIN privilege to the sensitive confidentiality management role.
- Grant ADMIN OPTION permission on the role to the sensitive management role before setting the managed role to the sensitive group.

[Example]

You want to grant only the ADMIN OPTION privilege for role "user_role1" to the confidentiality management role "manager_role".

```
GRANT user_role1 TO manager_role WITH ADMIN TRUE, INHERIT FALSE, SET FALSE;
```

If the required permissions are not set, the sensitivity management API terminates abnormally with a message similar to the following:

```
ERROR: permission denied to alter role
```

```
DETAIL: Only roles with the CREATEROLE attribute and the ADMIN option on role "user_role1" may  
alter this role.
```


Chapter 3 Program Updates

This version incorporates the following fixes:

- PostgreSQL 17



See

Refer to the PostgreSQL Global Development Group website for information on the updates implemented in the following releases:

[PostgreSQL 17]

<https://www.postgresql.org/docs/17/release-17.html>

In addition, issues that occurred in previous versions are also fixed.

Refer to the following for details of the program fixes included in this version and level.

Table 3.1 Fujitsu Enterprise Postgres 17 Program Updates

P number	Update summary
PH24153	When Mirroring Controller uses an arbitration server, the mc_ctl status command might terminate abnormally.
PH24182	When TCP communication such as connection connection is performed, communication may fail.
PH24183	The pgx_stat_lwlock system view shows incorrect contents in the lwlock_name column.
PH24224	Update security bug fixes absorbed by PostgreSQL 17.1 to Fujitsu Enterprise Postgres. <ul style="list-style-type: none">- CVE-2024-10976- CVE-2024-10977- CVE-2024-10978- CVE-2024-10979
PH24249	Update security bug fixes absorbed by PostgreSQL 17.2 to Fujitsu Enterprise Postgres. <ul style="list-style-type: none">- When CVE-2024-10978, which was absorbed in PostgreSQL 17.1, is applied, the role specified in SET ROLE does not take effect in the SQL command ALTER ROLE.

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