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Contents

Preface

Audience	v
Documentation Accessibility	v
Related Resources	v
Conventions	v

1 Purpose of These Release Notes

2 Issues Affecting All Platforms for Oracle Database 23ai

2.1 Restrictions for Oracle AI Vector Search	2-1
2.2 Restrictions for JavaScript Object Notation and JSON-Relational Duality Views	2-3
2.3 Property Graph Features That Work With Oracle Database 23ai	2-5
2.4 Unrestricted Bulk Transactions	2-5
2.5 Deprecated and Desupported Features for Oracle Database	2-5
2.6 Other Readmes, Release Notes, or Installation Guides	2-5
2.7 Open Bugs Affecting All Platforms	2-5
2.7.1 SQL Execution Known Bugs	2-6
2.7.1.1 Bug 36001671	2-6
2.7.2 Upgrade Known Bugs	2-6
2.7.2.1 Bug 37169626	2-6

3 Issues Affecting Linux for Oracle Database 23ai

3.1 Unsupported Products for Oracle Database 23ai	3-1
3.2 Product Support	3-1
3.3 Known Issues and Bugs for Oracle Linux 8 and Red Hat Enterprise Linux 8	3-1
3.3.1 Bug 36756459	3-2
3.4 Open Bugs Affecting Linux	3-2
3.4.1 Bug 36326543	3-2
3.4.2 Bug 35517929	3-2

4 Issues Affecting Microsoft Windows for Oracle Database 23ai

4.1 Known Issues and Bugs Affecting Oracle Instant Client 23ai for Microsoft Windows	4-1
4.1.1 Unzip Issue with Windows Oracle Instant Client Package	4-1

5 Issues Affecting Microsoft Windows for Oracle Database 23ai Free

5.1 Known Issues and Bugs Affecting Oracle Database 23ai Free for Microsoft Windows	5-1
5.1.1 Bug 35706665	5-1

6 Issues Affecting Oracle Instant Client 23ai for macOS (ARM64)

6.1 Unsupported Features and Components	6-1
6.2 Known Issues and Bugs Affecting Oracle Instant Client 23ai for macOS (ARM64)	6-1
6.2.1 Advanced Queuing Operations Error	6-1

Preface

This document describes last-minute features and changes that are not included in the Oracle Database Documentation Library for Oracle Database 23ai.

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Resources](#)
- [Conventions](#)

Audience

This document is relevant only to Oracle Database 23ai and documents new features, changes, unsupported products, preinstallation requirements, generic and platform-specific bug fixes, and known issues that are not included in the Oracle Database documentation library.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Related Resources

Refer to the following documentation for more information related to this release:

- <http://docs.oracle.com/en/database/database.html>
- For licensing information, refer to *Oracle Database Licensing Information User Manual*.
- Additional readme or release notes files also exist. Refer to [Other Readmes, Release Notes, or Installation Guides](#).

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Purpose of These Release Notes

More recent versions of some Oracle Database 23ai documentation may be available in either HTML or PDF format.

Updates to this release note document can occur after it is released. Check for updates to this document and view other Oracle documentation at:

<http://docs.oracle.com/en/database/database.html>

For licensing information, refer to *Oracle Database Licensing Information User Manual*.

Additional readme or release notes files also exist. Refer to the [Other Readmes, Release Notes, or Installation Guides](#).

Issues Affecting All Platforms for Oracle Database 23ai

These topics contain last-minute features and changes that affect all platforms for Oracle Database 23ai.

- [Restrictions for Oracle AI Vector Search](#)
The following are restrictions for Oracle AI Vector Search in Oracle Database 23ai.
- [Restrictions for JavaScript Object Notation and JSON-Relational Duality Views](#)
The following are general restrictions for JavaScript Object Notation (JSON) and restrictions for JSON-relational duality views in Oracle Database 23ai.
- [Property Graph Features That Work With Oracle Database 23ai](#)
Oracle Graph Server and Client Release 24.4 works with the following Property Graph features of Oracle Database 23ai.
- [Unrestricted Bulk Transactions](#)
The following are restrictions for Unrestricted Bulk Transactions in Oracle Database 23ai.
- [Deprecated and Unsupported Features for Oracle Database](#)
Oracle Database 23ai introduces behavior changes for your database in addition to new features.
- [Other Readmes, Release Notes, or Installation Guides](#)
Refer to the following Oracle products and the location of their associated readme, release notes, or installation guide for additional information.
- [Open Bugs Affecting All Platforms](#)
This section describes known bugs in Oracle Database 23ai that affect all platforms.

2.1 Restrictions for Oracle AI Vector Search

The following are restrictions for Oracle AI Vector Search in Oracle Database 23ai.

- The feature Open Neural Network Exchange (ONNX) is only supported on the x86-64 Linux and Arm platforms. ONNX is not supported on Microsoft Windows.
- To size the Vector Pool, use the `VECTOR_MEMORY_SIZE` initialization parameter. You can dynamically modify this parameter at the following levels:
 - At the multitenant container database (CDB) level, `VECTOR_MEMORY_SIZE` specifies the current size of the Vector Pool. Reducing the parameter value evicts vector usage that exceeds the new size.
 - At the pluggable database (PDB), level `VECTOR_MEMORY_SIZE` specifies the maximum Vector Pool usage allowed by a PDB. Reducing the parameter value evicts vector usage that exceeds the new quota.
- [Table-Level Support](#)
 - Truncate or move table operations are supported but will mark global vector indexes unusable.

- Partition management (PMOP) operations (for example, DROP, TRUNCATE, EXCHANGE, MERGE, MOVE, COALESCE, and SPLIT) are supported but will mark global vector indexes unusable.
- Adding a hash partition will also mark global vector indexes unusable. However, adding a range or list partition will not mark global vector indexes unusable.
- Vector columns are not supported either in or as the following:
 - * Index organized tables (IOTs) (neither as a primary key or as a non-key column)
 - * Clusters or cluster tables
 - * Global temporary tables
 - * Blockchain tables
 - * Immutable tables
 - * Partitioning and subpartitioning keys
 - * Primary and foreign keys
 - * Unique and check constraints
 - * Default value
 - * Modify column
 - * Manual segment space management (MSSM) tablespace (only a SYS user can create vectors as BasicFiles in MSSM tablespace)
 - * Continuous Query Notification (CQN) queries
 - * Non-vector indexes such as B-tree, bitmap, reverse key, text, spatial indexes
- For local Inverted Flat File (IVF) indexes:
 - * ADD non-hash vector indexes are supported but will mark vector indexes unusable.
 - * All other PMOP operations are not supported and return an error when attempted.
- Type-Level Support

Vector column specification does not support the following:

 - Encryption clause
 - SecureFiles storage clause
- Query-Level Support
 - The partition row-limiting clause does not use vector indexes.
 - There is limited cost-based optimization support for vector indexes.
 - SQL constructs with vector columns do not support the following:
 - * Distinct, Count Distinct
 - * Order By, Group By
 - * Join condition
 - * Comparison operators (for example, >, <, =)
- Index-Level Support
 - Vector indexes do not support the following:
 - * External tables
 - * IOTs

- * Clusters or cluster tables
- * Global temporary tables
- * Blockchain tables
- * Immutable tables
- * Materialized views
- There is no support for the following:
 - * Function-based vector index
 - * Alter index DDL for vector indexes
 - * Online creation of vector indexes
- The latest python-oracledb, node-oracledb, JDBC, ODP.NET, and OCI drivers enable native binds.
 - All other SQL drivers need to use CLOBs or VARCHAR2 for binds and for vector definitions.
 - Oracle clients from release 19c and release 21c will see vectors as CLOBs.
- Integration with the following is not supported:
 - Vector indexes with transportable tablespaces are not supported with Oracle Data Pump.
 - Oracle Database Advanced Queuing
 - Oracle Database Gateways
- A maximum of 65535 dimensions is supported.
- Data redaction is not supported for the `VECTOR` data type. Specifically, you cannot:
 - Add a data redaction policy on a vector column.
 - Alter a table to modify a column to the `VECTOR` data type if the column has a redaction policy defined on it.

2.2 Restrictions for JavaScript Object Notation and JSON-Relational Duality Views

The following are general restrictions for JavaScript Object Notation (JSON) and restrictions for JSON-relational duality views in Oracle Database 23ai.

General Restrictions for JavaScript Object Notation (JSON)

- JSON collection views are not supported in this release.

Restrictions for Oracle GoldenGate Replication of JSON-Relational Duality Views

- Direct loads (`INSERT /*+APPEND*/`) are downgraded to conventional or serial inserts.
- Oracle Data Pump `EXPORT` does not export the `ENABLE LOGICAL REPLICATION` clause in the `CREATE DUALITY VIEW` and `ALTER DUALITY VIEW` statements.
- Executing `DBMS_METADATA.GET_DDL` on a duality view does not show the `ENABLE OR DISABLE LOGICAL REPLICATION` clause.
- On base tables of a duality view with replication enabled:

- Oracle Data Pump direct path load is downgraded to conventional inserts.
- Direct load (`INSERT /*+APPEND*/`) is downgraded to conventional or serial inserts.
- Parallel DMLs (PDMLs) are downgraded to conventional inserts.
- Bulk DDLs, like `TRUNCATE TABLE` and `ALTER TABLE PARTITION`, return an error.
- Logical replication cannot be enabled on a duality view that has generated fields or a sub-object without an identifier (for example, primary key, unique key, identity column, or the field `_id`).

Restrictions for JSON-Relational Duality Views

- The following tables can only participate in a JSON-relational duality view using read-only generated fields:
 - System-partitioned tables
 - Partitioned-extended tables
 - Sharded tables
 - Views (except editioning views). Views include materialized views and duality views.
 - External tables
 - Hybrid partitioned tables
 - Global or private temporary tables
 - Remote tables (for example, tables over database links)
- Updates of duality views across database links are not supported.
- You cannot create a functional index, JSON search index, or JSON multivalue index on the `DATA` column of a duality view.
- The use of a JSON search index on the column of an underlying table is not supported.
- Virtual private database (VPD) and Oracle Real Application Security (RAS) on duality views are not supported.
- VPD on underlying tables are supported only if all statements (`INSERT`, `UPDATE`, `DELETE`, or `SELECT`) are included in the policy. However, when all statement types are not included in the VPD policy, there is no error returned but DML and query results may be unexpected or may fail.
- Transparent Sensitive Data Protection is not supported with duality views and underlying tables.
- Table columns of a duality view cannot be redacted if the redacted columns are part of the ETAG.
- Because JSON-relational duality views rely on JSON type, a 19c or earlier SQL*Plus client cannot be used for queries, DML or other SQL operations that use the `DATA` column which is of data type `JSON`.
- Duality views cannot be created on base tables with textual JSON columns (`VC2/CLOB/BLOB` with `IS-JSON` constraint) in the base table.
- The same subquery cannot be used multiple times to define nested JSON structures (object or array) in the same parent object.
- Fine-grained auditing policies are not supported with duality views.
- DML error logging is not supported with duality views.

2.3 Property Graph Features That Work With Oracle Database 23ai

Oracle Graph Server and Client Release 24.4 works with the following Property Graph features of Oracle Database 23ai.

- Native representation of graphs in Oracle Database.
- Support for the ISO/IEC SQL Property Graph Queries (SQL/PGQ) standard.
- Use JSON collections as a graph data source.
- Use Native Representation of Graphs in Oracle Database with Graph Tools.

See the topics [SQL Property Graphs](#) and [Visualizing GRAPH_TABLE Queries on SQL Property Graphs](#) in *Oracle Database Graph Developer's Guide for Property Graph*.

2.4 Unrestricted Bulk Transactions

The following are restrictions for Unrestricted Bulk Transactions in Oracle Database 23ai.

For this release, the Unrestricted Bulk Transactions feature is:

- Not compatible with In-Memory Undo (IMU). IMU is already disabled for Oracle RAC.
- Not compatible with distributed and clusterwide global transactions.

2.5 Deprecated and Desupported Features for Oracle Database

Oracle Database 23ai introduces behavior changes for your database in addition to new features.

Changes in behavior include deprecated and desupported initialization parameters, options, syntax, and the deprecation and desupport of features and components. For more information, see the *Oracle Database Upgrade Guide*.

2.6 Other Readmes, Release Notes, or Installation Guides

Refer to the following Oracle products and the location of their associated readme, release notes, or installation guide for additional information.

- *Oracle APEX Release Notes*
- *Oracle APEX Installation Guide*.

2.7 Open Bugs Affecting All Platforms

This section describes known bugs in Oracle Database 23ai that affect all platforms.

- [SQL Execution Known Bugs](#)

This section describes SQL Execution known bugs in Oracle Database 23ai that affect all platforms.

- [Upgrade Known Bugs](#)

This section describes Upgrade known bugs in Oracle Database 23ai that affect all platforms.

2.7.1 SQL Execution Known Bugs

This section describes SQL Execution known bugs in Oracle Database 23ai that affect all platforms.

- [Bug 36001671](#)

2.7.1.1 Bug 36001671

When the TIME_BUCKET function is used for timestamp with time zone, there may be a timestamp overflow issue resulting in error ORA-01877 due to the time zone conversion in the TIME_BUCKET function calculation. For example:

```
SQL> ALTER SESSION SET NLS_TIMESTAMP_TZ_FORMAT='syyyy-mm-dd hh24:mi:ss tzr
tzd';
Session altered.
SQL> SELECT TIME_BUCKET(TIMESTAMP '9999-12-15 10:00:00 +02:00', 'P1M',
TIMESTAMP '9999-08-01 01:30:00 +5:00', END) AS tmbkt_res;

ORA-01877: string is too long for internal buffer
no rows selected
```

For the TIME_BUCKET function for timestamp with time zone, the timestamp with time zone is converted into UTC, all calculation are done in UTC, and then the result in UTC is converted into the ORIGIN time zone. The error is raised in the last step when converting the result in UTC into the ORIGIN time zone. This is an existing timestamp with time zone conversion issue. See the query below that raises the same error:

```
SQL> SELECT TIMESTAMP '9999-12-31 20:30:00 +00:00' AT TIME ZONE '+5:00';

ORA-01877: string is too long for internal buffer
no rows selected
```

Workaround

None.

2.7.2 Upgrade Known Bugs

This section describes Upgrade known bugs in Oracle Database 23ai that affect all platforms.

- [Bug 37169626](#)

2.7.2.1 Bug 37169626

During upgrade, when modifying the types of SQL Monitor type hierarchy, the dictionary tables for inheritance can get corrupted. This affects some of the types and the data of the related tables (for example, WRI\$_REPT_COMPONENTS). This results in error ORA-30625: method dispatch on NULL SELF argument is disallowed when SQL Monitor APIs are invoked.

Workaround

Install the fix for this bug 37169626 prior to database upgrade. If upgrade is run without this fix, run the script `fix_sql_monitor_metadata.sql` as the SYS user in each upgraded container.

3

Issues Affecting Linux for Oracle Database 23ai

These topics contain last-minute features and changes for Linux for Oracle Database 23ai.

- [Unsupported Products for Oracle Database 23ai](#)
This topic describes products or features that are unavailable for Oracle Database 23ai.
- [Product Support](#)
This topic describes the supported products or features for Oracle Database 23ai.
- [Known Issues and Bugs for Oracle Linux 8 and Red Hat Enterprise Linux 8](#)
This section contains information about issues related to Oracle Linux 8 and Red Hat Enterprise Linux 8:
- [Open Bugs Affecting Linux](#)
This topic contains last-minute features and changes for Oracle Database 23ai.

3.1 Unsupported Products for Oracle Database 23ai

This topic describes products or features that are unavailable for Oracle Database 23ai.

- DBnest is not supported on Oracle Linux 8 with the Unbreakable Enterprise Kernel 7: 5.15.0-202.135.2.el8uek.x86_64 or later and Red Hat Enterprise Linux 8: 5.15.0-202.135.2.el8uek.x86_64 or later.
- DBnest is only supported on Linux cgroup v1. By default, Oracle Linux 8 with the Unbreakable Enterprise Kernel 7: 5.15.0-202.135.2.el8uek.x86_64 or later and Red Hat Enterprise Linux 8: 5.15.0-202.135.2.el8uek.x86_64 or later boot with cgroup v2.

3.2 Product Support

This topic describes the supported products or features for Oracle Database 23ai.

- For Oracle Database 23ai on Oracle Linux 9 Red Hat Compatible Kernel (RHCK), Oracle ASMLIB V3 is supported on kernel version 5.14.0-362.8.1.el9_3 or later only.

3.3 Known Issues and Bugs for Oracle Linux 8 and Red Hat Enterprise Linux 8

This section contains information about issues related to Oracle Linux 8 and Red Hat Enterprise Linux 8:

- [Bug 36756459](#)

3.3.1 Bug 36756459

If you use Oracle Database Configuration Assistant (DBCA) with Oracle Data Guard to carry out a database move operation, then you must move the Data Guard Broker configuration files before starting your database move operation.

The default location for the `DB_BROKER_CONFIG` files is in the `dbs` directory in the earlier release Oracle Database Oracle home. When you use a database move operation to carry out a database move of database instances using Oracle Data Guard, you must move the `DG_BROKER_CONFIG` files to a mount point location outside of the earlier release Oracle home. Also ensure that the `DG_BROKER_CONFIG_FILE` parameters specify that location, instead of a location in the Oracle home.

Tasks Before Starting Your Database Move Operation using Oracle DBCA

To enable access to the `DB_BROKER_CONFIG` files during a rolling upgrade, you must complete the following tasks before starting the database move operation.

1. Before you start the database move operation, set the Oracle Data Guard files `DG_BROKER_CONFIG_FILE1` and `DG_BROKER_CONFIG_FILE2` to a separate mount point on your server that is outside of the Oracle home path for either the source or target Oracle Database Oracle homes.
2. Complete a successful database move operation of your earlier release Oracle home to the new Oracle Database release.

3.4 Open Bugs Affecting Linux

This topic contains last-minute features and changes for Oracle Database 23ai.

- [Bug 36326543](#)
- [Bug 35517929](#)

3.4.1 Bug 36326543

On Oracle Linux 9.2, the listener fails to start due to issues with `getaddrinfo()` if the `/etc/hosts` has an entry in the order IPv4 and IPv6 addresses when the same host name and listener are configured with IPv6 address and `ip=v6_only`.

Workaround

Change the order of the address in the `/etc/hosts` entry with IPv6 first and then IPv4.

3.4.2 Bug 35517929

Static linking demos fail during compilation on Oracle Database 23ai on Oracle Linux 9 and Red Hat Enterprise Linux 9.

Workaround:

Oracle Database 23ai supports only Dynamic linking demos on Oracle Linux 9 and Red Hat Enterprise Linux 9.

4

Issues Affecting Microsoft Windows for Oracle Database 23ai

These topics contain last-minute features and changes for Microsoft Windows for Oracle Database 23ai and Oracle Instant Client 23ai.

- [Known Issues and Bugs Affecting Oracle Instant Client 23ai for Microsoft Windows](#)
The following section contains information about a known issue affecting Oracle Instant Client 23ai for Microsoft Windows.

4.1 Known Issues and Bugs Affecting Oracle Instant Client 23ai for Microsoft Windows

The following section contains information about a known issue affecting Oracle Instant Client 23ai for Microsoft Windows.

- [Unzip Issue with Windows Oracle Instant Client Package](#)

4.1.1 Unzip Issue with Windows Oracle Instant Client Package

The `unzip -t` operation on the Windows Oracle Instant Client 23ai package results in an error.

Workaround

Do not use `unzip -t`. Use `unzip <windows_pkg_name>` instead.

5

Issues Affecting Microsoft Windows for Oracle Database 23ai Free

These topics contain last-minute features and changes for Microsoft Windows for Oracle Database 23ai Free.

- [Known Issues and Bugs Affecting Oracle Database 23ai Free for Microsoft Windows](#)
The following section contains information about a known issue affecting Oracle Database 23ai Free for Microsoft Windows.

5.1 Known Issues and Bugs Affecting Oracle Database 23ai Free for Microsoft Windows

The following section contains information about a known issue affecting Oracle Database 23ai Free for Microsoft Windows.

- [Bug 35706665](#)

5.1.1 Bug 35706665

Upgrading from Oracle Database 21c XE to Oracle Database 23ai Free may detect one or more invalid objects.

Workaround

Ignore these invalid objects and proceed with the upgrade.

6

Issues Affecting Oracle Instant Client 23ai for macOS (ARM64)

This topic contains last-minute features and changes for Oracle Instant Client 23ai for macOS (ARM64).

- [Unsupported Features and Components](#)
The following features or components are not supported on Apple macOS (ARM64):
- [Known Issues and Bugs Affecting Oracle Instant Client 23ai for macOS \(ARM64\)](#)
The following section contains information about a known issue affecting Oracle Instant Client 23ai for Apple macOS (ARM64).

6.1 Unsupported Features and Components

The following features or components are not supported on Apple macOS (ARM64):

- Pro*FORTRAN
- Pro*COBOL
- Oracle Database 23ai Vector Operations

6.2 Known Issues and Bugs Affecting Oracle Instant Client 23ai for macOS (ARM64)

The following section contains information about a known issue affecting Oracle Instant Client 23ai for Apple macOS (ARM64).

- [Advanced Queuing Operations Error](#)

6.2.1 Advanced Queuing Operations Error

During Advanced Queuing (AQ) operations you might encounter the following error:

ORA-24912: Listener Thread failed

Workaround

Add the en0 inet IP address and host name to the /etc/hosts file: *IP_address host_name*.

You can obtain the en0 inet IP address by running the ipconfig getifaddr en0 command in the terminal.

You can obtain the host name by running the hostname -f command in the terminal.