# Oracle® Fusion Middleware

# Release Notes for Oracle GoldenGate

19c (19.1.0)
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Oracle Fusion Middleware Release Notes for Oracle GoldenGate, 19c (19.1.0)

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# Preface

This document describes the new features, major changes, and known issues for this release of Oracle GoldenGate.

- Documentation Accessibility
- Conventions
- Related Information

## Documentation Accessibility

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### Accessible Access to Oracle Support

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## Conventions

The following text conventions are used in this document:

| Convention | Meaning |
|---|---|
| **boldface** | Boldface type indicates graphical user interface elements associated with an action, such as "From the File menu, select **Save**." Boldface also is used for terms defined in text or in the glossary. |
| *italic*<br>*italic* | Italic type indicates placeholder variables for which you supply particular values, such as in the parameter statement: `TABLE` *`table_name`*. Italic type also is used for book titles and emphasis. |
| `monospace`<br>`MONOSPACE` | Monospace type indicates code components such as user exits and scripts; the names of files and database objects; URL paths; and input and output text that appears on the screen. Uppercase monospace type is generally used to represent the names of Oracle GoldenGate parameters, commands, and user-configurable functions, as well as SQL commands and keywords. |
| UPPERCASE | Uppercase in the regular text font indicates the name of a utility unless the name is intended to be a specific case. |
| { } | Braces within syntax enclose a set of options that are separated by pipe symbols, one of which must be selected, for example: `{`*`option1`* `\|` *`option2`* `\|` *`option3`*`}`. |

| Convention | Meaning |
| --- | --- |
| [ ] | Brackets within syntax indicate an optional element. For example in this syntax, the `SAVE` clause is optional: `CLEANUP REPLICAT` *`group_name`* `[, SAVE` *`count`*`]`. Multiple options within an optional element are separated by a pipe symbol, for example: `[`*`option1`* `\|` *`option2`*`]`. |

# Related Information

The Oracle GoldenGate Product Documentation Libraries are found at

https://docs.oracle.com/en/middleware/goldengate/index.html

For additional information on Oracle GoldenGate, refer to:

https://www.oracle.com/middleware/technologies/goldengate.html

https://www.oracle.com/database/technologies/high-availability/oracle-database-maa-best-practices.html

# 1
# Introduction

This chapter introduces the Release Notes for Oracle GoldenGate.

**Topics:**


- Latest Release Information
- Purpose of this Document
- Certification Information
- Product Documentation
- Oracle Support
- Licensing Information


## Latest Release Information

This document is accurate at the time of publication. Oracle will update the release notes periodically after the software release. You can access the latest information and additions to these release notes on the Oracle Technology Network at:

http://www.oracle.com/technetwork/indexes/documentation/index.html

## Purpose of this Document

This document contains the release information for Oracle Fusion Middleware Release for Oracle GoldenGate.

Oracle recommends you review its contents before installing, or working with the product.

## Certification Information

To see versions of platforms and related software for which Oracle GoldenGate is certified and supported, go to http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

## Product Documentation

For complete documentation on Oracle GoldenGate, go to https://docs.oracle.com/en/middleware/goldengate/core/index.html.

## Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support at https://support.oracle.com

The Error Correction policy and patching support policy has been revised. See the following MOS (Doc ID 2545229.1) article for details:

Lifetime Support Policy for Oracle GoldenGate

# Licensing Information

Detailed information regarding license compliance for Oracle GoldenGate is available here:

Licensing Information in the *Oracle GoldenGate Licensing Information* guide.

# 2
# What's New in this Release

This chapter describes the features, enhancements, and changes made to Oracle GoldenGate. Oracle updates the release notes periodically after the software release. This document is accurate at the time of publication.


- Patch Installation
- New Features
- Default Behavior Changes
- Deprecated and Desupported Features and Parameters


## Patch Installation

This section describes the updates made to patch installation process for Oracle GoldenGate Microservices and Classic architectures.

**Topics:**


- Release 19c (19.0.0.230418) - April 2023


### Release 19c (19.0.0.230418) - April 2023

**Oracle GoldenGate Microservices and Classic architecture deployments**

**Download and install the latest OPatch release**
Download the latest OPatch release from: How To Download And Install The Latest OPatch(6880880) Version (Doc ID 274526.1).
Download the most recent release of OPatch in a directory, and keep a note of this installation directory. See Installing Patches for Oracle GoldenGate Microservices Architecture to know more about installing patches for Oracle GoldenGate Microservices architecture.
See Patching for Classic Architecture to know more about installing patches for Oracle GoldenGate Classic architecture.

## New Features

This section describes the critical security updates, new features, and enhancements made to Oracle GoldenGate.


- JDK Version Requirement with OUI and OPatch
- Critical Security Updates 19c (19.1.0.0.210720): July 2021
- Critical Security Updates 19c (19.1.0.0.201013): October 2020
- Critical Security Updates 19c (19.1.0): July 2020
- Critical Security Updates 19c (19.1.0)

- Release 19c (19.1.0.0.210720) - July 2021
- Release 19c (19.1.0.0.20228) - June 2021
- Release 19c (19.1.0.0.201013) - October 2020
- Release 19.1.0.0.200714 - July 2020
- Release 19.1.0.0.200414 - April 2020
- Release 19c (19.1.0) - September 2019
- Release 19c (19.1.0) - May 2019 Initial Release

## JDK Version Requirement with OUI and OPatch

The Oracle Universal Installer (OUI) that is used to install Oracle GoldenGate should be updated separately from the Oracle GoldenGate product to address any security vulnerability found in the JDK or Java components. You may follow the instructions provided in the MOS note Doc ID 2359395.1 to understand the requirements for installing or upgrading the default JDK/JRE.

## Critical Security Updates 19c (19.1.0.0.210720): July 2021

This release includes critical security fixes for various CVEs. Oracle strongly recommends that you upgrade to this release of Oracle GoldenGate.

`jquery-1.6.1.min.js` was removed to address the following CVEs:

**CVE-2011-4969**

**CVE-2012-6708**

**CVE-2015-9251**

**CVE-2019-11358**

**CVE-2020-11022**

**CVE-2020-11023**

## Critical Security Updates 19c (19.1.0.0.201013): October 2020

**Upgrade to JQUERY 3.5.1 to address CVE-2020-11022**
Upgrading to JQUERY 3.5.1 addresses CVE-2020-11022.

## Critical Security Updates 19c (19.1.0): July 2020

**Critical Security Fix**
Release 19c (19.1.0.0.4): Oracle strongly recommends upgrading to the latest OPatch utility to resolve **CVE-2020-9546**. Oracle GoldenGate components themselves are not impacted by **CVE-2020-9546**, only the OPatch utility, which is why the OPatch upgrade is recommended.

# Critical Security Updates 19c (19.1.0)

**Critical Security Fixes**
Release 19c (19.1.0.0.4): This release includes critical security fixes including the following CVEs. Oracle strongly recommends that you upgrade to this release of Oracle GoldenGate.
**CVE-2019-11358**: `JQUERY` upgrade to 3.4.0
**CVE-2018-11058**: The update for **CVE-2018-11058** also addresses the following:

- CVE-2016-0701
- CVE-2016-2183
- CVE-2016-6306
- CVE-2016-8610
- CVE-2018-11054
- CVE-2018-11055
- CVE-2018-11056
- CVE-2018-11057
- CVE-2018-15769

For more information, please refer to https://www.oracle.com/technetwork/security-advisory/cpujul2019-5072835.html.

# Release 19c (19.1.0.0.210720) - July 2021

**Oracle GoldenGate for Amazon RDS for SQL Server 2019 is supported**
Oracle GoldenGate supports Amazon RDS for SQL Server 2019.

# Release 19c (19.1.0.0.20228) - June 2021

**Oracle GoldenGate for Sybase is supported**
Oracle GoldenGate supports Sybase version 16.

# Release 19c (19.1.0.0.201013) - October 2020

**PostgreSQL on Azure is supported**
Oracle GoldenGate has been enhanced to support Azure database for PostgreSQL instance.

# Release 19.1.0.0.200714 - July 2020

**PostgreSQL**

**Extract support for PostgreSQL version 10 and above**
PostgreSQL enhanced to provide Extract support for PostgreSQL version 10 and above. This allows for the same heterogeneous replication that is common for all Oracle GoldenGate supported platforms, and you can replicate from PostgreSQL to Oracle. See the *Using Oracle GoldenGate for Heterogeneous Databases* to know more about supported features and requriements..

**SSL support for PostgreSQL**
Enhanced Oracle GoldenGate to enable configuring one-way and two-way SSL to connect to the database using GGSCI, Extract, Replicat and other processes.

**Support MONEY datatype for all locales**
Enhanced support for `MONEY` datatype for all locales.

**Amazon RDS for PostgreSQL support**
Amazon RDS for PostgreSQL remote capture and delivery is supported.

**Amazon Aurora PostgreSQL**
Amazon Aurora PostgreSQL remote capture and delivery is supported.

**Remote capture and delivery support**
Remote capture and delivery is supported for all PostgreSQL versions.

**Interval data type support**
Support for interval data type in capture and delivery.

**Heartbeat support**
Heartbeat support for PostgreSQL.

**WILDCARDRESOLVE DYNAMIC support**
Support for `wildcardresolve dynamic` is available.

**NLS globalization support for object names in PostgreSQL capture**
Capture and delivery supports globalization of object names and column data.

**Extract should capture the records after positioning by time is issued (BEGIN NOW)**
Extract supports positioning by `TIMESTAMP EOF`, `LSN`, and `START`.

**Bidirectional loop detection and support**
PostgreSQL supports bidirectional replication including various bidirectional filtering parameters (`GETREPLICATES`, `IGNOREREPLICATES` , `GETAPPLOPS`).

**Support for MANAGESECONDARYTRUNCATIONPOINT and NOMANAGESECONDARYTRUNCATIONPOINT**
PostgreSQL supports managing of secondary truncation point.

**Handling the unsupported data types**
Handling of unsupported datatypes.

**Change Data Capture and Initial Load Support**
Change Data Capture and initial load is supported by PostgreSQL capture.

**MariaDB**

**MariaDB 10.4 Support**
Local or remote capture and delivery are now supported for MariaDB 10.4.

**Amazon RDS support for MariaDB**
Amazon RDS for MariaDB for remote capture and delivery is now supported.

### SQL Server

**Amazon RDS for SQL Server is supported**
Remote capture and delivery is now supported for Amazon RDS for SQL Server.

### Teradata

**Support Delivery to Teradata 17.0**
Delivery to Teradata 17.0 is supported.

## Release 19.1.0.0.200414 - April 2020

### SQL Server

**SQL Server: Support capture and delivery for Azure SQL Database Managed Instance**
Oracle GoldenGate has been enhanced to support Azure SQL Database managed instance.

**SQL Server: Support capture and delivery for SQL Server 2019 Enterprise and Standard Editions**
Oracle GoldenGate has been enhanced to support SQL Server 2019.

### MySQL

**MySQL: Support capture and delivery for Azure Database for MySQL**
Oracle GoldenGate has been enhanced to support Azure Database for MySQL instance.

### DB2 LUW

**DB2 LUW: Support for DB2 LUW verison 11.5**
Oracle GoldenGate has been enhanced to support DB2 LUW version 11.5.

## Release 19c (19.1.0) - September 2019

### SQL Server

**SQL Server 2017 for Capture and Delivery is Supported**
Capture and delivery is supported for SQL Server 2017.

**New TRANLOGOPTIONS Parameter ALWAYSONREADONLYROUTING**
The `TRANLOGOPTIONS ALWAYSONREADONLYROUTING` parameter allows Extract for SQL Server to route its read-only processing to an available read-intent Secondary when connected to an Always On availability group listener.

**New FILEGROUP Option for ADD TRANDATA and GLOBALS File**
The `FILEGROUP` option can be used with `ADD TRANDATA` per table, or within the GLOBALS file to affect all tables added for `TRANDATA`, and creates the CDC staging tables on the listed filegroup rather than the database's default filegroup.

**TRANCOUNT Option with TRANLOGOPTIONS**
The new `TRANCOUNT` option allows you to set a specific number of transactions to be fetched from SQL Server CDC tables at a time.

#### New HEARTBEATTABLE Options

This feature allows installing the Oracle GoldenGate Heartbeat implementation for a database used as a target only, and does not enable features that would be necessary for a source database implementation of the Heartbeat table.
The following options are now available for heartbeat tables from the GGSCI Command Interface:

- `ADD HEARTBEATTABLE [TARGETONLY]`
- `ALTER HEARTBEATTABLE [TARGETONLY|NOTARGETONLY]`

#### Support for remote Capture/Delivery with Oracle GoldenGate on Linux, for SQL Server on Windows

Oracle GoldenGate for SQL Server can now run on Linux, providing remote Capture and Delivery support for SQL Server running on Windows.

#### Microsoft ODBC Driver Support

The Microsoft ODBC drivers for SQL Server are now supported by Extract and Replicat.

#### SQL Server CDC Object Versioning

Oracle GoldenGate now provides a version tracking subsystem to track the CDC objects that are placed on the database. If the version numbers don't match, the Extract abends with an error, which requires `TRANDATA` be reissued for existing tables previously enabled with supplemental logging.

### TimesTen

#### Delivery Support for Oracle TimesTen

Delivery support for Oracle TimesTen 18c for both Classic and Scaleout Architectures is available.

### DB2 z/OS

#### Online Schema Change Support

Support for online `CREATE TABLE`, `DROP TABLE` and `ADD`, `ALTER`, `DROP COLUMN` commands in the Extract without stopping and restarting the Extract to get the new table metadata for the Extract. Full table version history is supported. This feature is controlled using the `TRANLOGOPTIONS TRACKSCHEMACHANGES` parameter.

## Release 19c (19.1.0) - May 2019 Initial Release

### New Features in Oracle GoldenGate Microservices

#### Managing Encryption Using a Key Management Service in Oracle GoldenGate Microservices Architecture

Oracle GoldenGate Microservices Architecture provides integration with Oracle Key Vault (OKV) to centralize and manage encryption keys. Also see Using a KMS with Oracle GoldenGate.

#### Target-Initiated Paths

Target-initiated paths for microservices enable the Receiver Server to initiate a path to the Distribution Service on the target deployment and pull trail files. This feature allows the Receiver Server to create a target initiated path for environments such as Demilitarized Zone Paths (DMZ) or Cloud to on-premise,

where the Distribution Server in the source Oracle GoldenGate deployment cannot open network connections in the target environment to the Receiver Server due to network security policies.

**New Admin Client Commands**
The following Admin Client commands are added to Oracle GoldenGate 19c (19.1.0) to work with target-initiated distribution paths:

- `ADD RECVPATH`
- `START RECVPATH`
- `STOP RECVPATH`
- `DELETE RECVPATH`
- `ALTER RECVPATH`

This following commands are designed to support improved scripting (using the `OBEY` Admin Client command) so that the username and password does not need to be included in the script itself, and instead you can use an alias :

- `ADD CREDENTIALS`
- `INFO CREDENTIALS`
- `DELETE CREDENTIALS`

The command `UPGRADE HEARTBEATTABLE` is available to alter heartbeat table generated by the `ADD HEARTBEATTABLE` command using a previous Oracle GoldenGate release. The following commands have been added to allow users with security role to enable and disable services for any update operation by non-secure users.

- `DISABLE SERVICE`
- `ENABLE SERVICE`

The following commands used to controls Profiles that allow performing automatic start and restart for Extract and Replicat processes:

- `ADD PROFILE`
- `DELETE PROFILE`

The following commands are used to manage the encryption profile when using the Oracle Key Vault:

- `ADD ENCRYPTIONPROFILE`
- `DELETE ENCRYPTIONPROFILE`
- `ALTER ENCRYPTIONPROFILE`

**New column conversion function @BINTOBASE64**
New column conversion function to convert supplied binary data into BASE64 text.

**New LAG TASK feature**
Oracle GoldenGate Microservices now has the lag tasks feature in the Tasks tab, which allows you to set up the thresholds for lag in each Extract, Replicat, or Distribution Path processes.

**TLS 1.2 Support**
TLS 1.2 is now the default for secured deployments in Microservices.

#### New REST Endpoint to Retrieve Active Transactions and Current SCN Details

The REST API endpoints have been enhanced to retrieve active transaction and current system change number details from the database. These endpoints are used to enhance the file-based initial load process.
The REST API endpoints are accessed from the Administration Server and are:
Manage Instantiation CSN
`(/services/{version}/connections/{connection}/databases/{database}/{schema}/{table}/instantiationCsn)`
Retrieve Active Transaction Details
`(/services/{version}/connections/{connection}/activeTransactions)`

#### New HEARTBEATTABLE Option

The `UPGRADE HEARTBEATTABLE` option is now available for heartbeat tables from the GGSCI Command Interface:

### Oracle Database

#### Improved Initial Load in Microservices

The consistent SCN used for the initial load is automatically stored in the report file generated by an initial load Extract, so it can be used to precisely position the Extract and Replicat processes to avoid duplicate records.

#### Enhanced the Heartbeat Table to include details for rebuilding Extract

This feature allows Replicats to maintain a more recent source restart position and minimize the redo retention periods. This feature is enabled by default for new heartbeat tables. Existing heartbeat tables are upgraded to support this enhancement. The enhanced heartbeat tables interoperate with heartbeat tables in deployments running older version of Oracle GoldenGate.
With more recent restart positions, you can configure deleting tombstone tables for Automatic Conflict Detection Resolution (ACDR) tables (an Oracle-to-Oracle CDR feature) to be purged more aggressively. ACDR tombstone tables is only pertinent if you are rebuilding an Extract and using automatic CDR. For this feature to work, both the source and target versions of Oracle GoldenGate must be 19c or higher.

#### Cross Endian Support for Remote Integrated Extract

Cross endian interoperability for Integrated Extract is automatically enabled when the endianess of the server where the Integrated Extract is running is different from the endianess of the server where the Oracle instance is running.
When the Integrated Extract process is running in Oracle Database 19c with Oracle GoldenGate 19c, it can capture from redo logs with COMPATABILITY 11.2.0.4 or higher. This implies that an Oracle GoldenGate cloud environment configured on Linux can perform remote capture from any endian platform including Linux, Windows, AIX, Tru64, OpenVMS, solaris SPARC, Solaris x86, HP-UX, and so on, running Oracle Database. This also works with both multitenant and non-CDB architectures.

### DB2 for i

#### Support for TIMESTAMP (12)

Oracle GoldenGate for DB2 for i now supports TIMESTAMP (12)

#### DBOPTIONS Parameter USEDATABASEENCODING

The `DBOPTIONS USEDATABASEENCODING` parameter is introduced to allow Extract to store all text data in the trail in its native character encoding for non-DBCS data.

#### TRANLOGOPTIONS BUFSIZE Parameter is available with DB2 for i

The `TRANLOGOPTIONS BUFSIZE` parameter is available with DB2 for i.

#### Improved Extract throughput

Extract efficiency has been substantially improved over previous releases. Throughput is enhanced while reducing overall processing resources for the same workload. Difference in throughput between the default conversion of text to `UNICODE` and `'COLCHARSET(PASSTHRU,*')`, which does not convert text, has been substantially reduced for Oracle GoldenGate supported character sets.

#### Security Options

AES encryption, credential store, and Oracle Wallet are now available.

#### TRANLOGOPTIONS MAXAUTOCMTTRANSSIZE

This parameter sets the maximum number of records that are included in an implicitly created transaction. This affects the maximum number of records that are not part of an explicit transaction (have a 0 CCID) can be grouped together into a single implicit transaction.

#### CSN Requirements

System sequence number is no longer required for single journal Extracts. It is recommended that you use `RCVSIZOPT(*MAXOPT3)` for their journals to enable a full 64-bit journal sequence number which will eliminate the need to reset journal sequence numbers periodically.

#### DECFLOAT data type

`DECFLOAT` data type is supported.
Oracle GoldenGate can automatically map `DECFLOAT` to any other numeric datatype, however, it may have more precision or larger values. Ensure that target datatype can support the values that are being inserted into the source.
`@COMPUTE` on `DECFLOAT` can only be used on values that are 17 digits or fewer. You may need to use `@STRNUM` some cases.

#### Long Running Transactions (LRT) support

LRT features `SHOWTRANS`, `SKIPTRANS`, `FORCETRANS` are supported.

### DB2 LUW

#### Support for TIMESTAMP (12)

Oracle GoldenGate for DB2 LUW now supports TIMESTAMP (12).

#### DECFLOAT data type

`DECFLOAT` data type is supported.
Oracle GoldenGate can automatically map `DECFLOAT` to any other numeric datatype, however, it may have more precision or larger values. Ensure that target datatype can support the values that are being inserted into the source.
`@COMPUTE` on `DECFLOAT` can only be used on values that are 17 digits or fewer. You may need to use `@STRNUM` some cases.

#### LRT support

LRT features `SHOWTRANS`, `SKIPTRANS`, `FORCETRANS` is supported.

**DB2 z/OS**

**Online Schema Change Support**
Support for online `TABLE CREATE`, `DROP` and `ADD`, `ALTER`, `DROP COLUMN` commands in the Extract without stopping and restarting the Extract to get the new table metadata for the Extract. Full table version history is supported.

**Support for TIMESTAMP (12)**
Oracle GoldenGate for DB2 z/OS supports TIMESTAMP (12).

**Support for TIME ZONE WITH TIMESTAMP**
Oracle GoldenGate for DB2 z/OS now supports `TIME ZONE WITH TIMESTAMP`.

**LRT support**
LRT features `SHOWTRANS`, `SKIPTRANS`, `FORCETRANS` is supported.

**DECFLOAT data type**
`DECFLOAT` data type is supported.
Oracle GoldenGate can automatically map `DECFLOAT` to any other numeric datatype, however, it may have more precision or larger values. Ensure that target datatype can support the values that are being inserted into the source.
`@COMPUTE` on `DECFLOAT` can only be used on values that are 17 digits or fewer. You may need to use `@STRNUM` some cases.

**MySQL**

**Two-way SSL Support in MySQL Capture and Delivery**
Oracle GoldenGate for MySQL supports an SSL connection of Extract or Replicat to the MySQL database server.

**MySQL 8.0 Support**
Oracle GoldenGate supports MySQL 8.0.

# Default Behavior Changes

This section describes the default behavior changes made to Oracle GoldenGate in relation to the last release.

- Release 19.1.0.0.230418 - April 2023
- Release 19.1.0.0.200714 - September 2020
- Release 19c (19.1.0.0.200714) - July 2020
- Release 19c (19.1.0) - May 2020
- Release 19c (19.1.0) - September 2019
- Release 19c (19.1.0) - May 2019 Initial Release

# Release 19.1.0.0.230418 - April 2023

### Oracle

**Opatches bundled with JDK for Oracle**
The JDK is now packaged in the Oracle GoldenGate patch starting release version 21.10 and 19.1.0.0.230418. Please note that only `<GG_HOME>/jdk` directory is updated with the GoldenGate patch releases. See Doc ID 2359395.1 for more information and additional references for updating JDK either through GoldenGate patch or independently.
You still have the option to install the latest JDK patch into `<GG_HOME>/jdk` directory independently at any time. See Doc ID 1492980.1 for more information.

# Release 19.1.0.0.200714 - September 2020

### PostgreSQL

**Parameter TransactionErrorBehavior must be set to 2 while specifying data**
For PostgreSQL Replicat to be able to handle the database error conditions appropriately the value of the parameter `TransactionErrorBehavior` must be set to 2. It is a required parameter for Oracle GoldenGate, which needs to be specified inside the `odbc.ini` file under the DSN. Following is a sample DSN specifying the parameter:

```
[ODBC]
IANAAppCodePage=4
InstallDir=/u01/ggate

[pgdsn]
Driver=/u01/ggate/lib/GGpsql25.so
Description=DataDirect 7.1 PostgreSQL Wire Protocol
Database=mypgdb
HostName=mypghost
PortNumber=5432
LogonID=mypguser
Password=**********
TransactionErrorBehavior=2
```

To know more, see https://media.datadirect.com/download/docs/odbc/allodbc/index.html#page/odbc/transaction-error-behavior.html

# Release 19c (19.1.0.0.200714) - July 2020

### PostgreSQL

**DEFERAPPLYINTERVAL not working as expected for PostgreSQL Replicat**
If the time zone is not same for the database and operating system, then Replicat waits until the local GMT time of the source system is greater than record commit timestamp + `DEFERAPPLYINTERVAL` delay.

**Replicat is unable to identify the checkpoint table when created in mixed case after Replicat restart**
The checkpointtable name must be in lower case without quote and without any special character in it.

# Release 19c (19.1.0) - May 2020

**Oracle GoldenGate Configuration Assistant doesn't run if there is a space in the Oracle GoldenGate home directory name**
Oracle GoldenGate Configuration Assistant (OGGCA) on Windows does not run if the Oracle GoldenGate home directory name or `OGG_HOME` has space in it, for example `OGG HOME`.

# Release 19c (19.1.0) - September 2019

**INFO HEARTBEATTABLE**
The `INFO HEARTBEATTABLE` command for SQL Server now reports heartbeat frequency interval, purge frequency interval, and retention time.

**TRANLOGOPTION QUERYTIMEOUT default value**
For SQL Server, the default `QUERYTIMEOUT` has been extended from 30 seconds to 300 seconds.

**Adding Validation After DDL Change**
Extract for SQL Server will abend if it detects a difference in table structure between the source table and the Change Data Capture table.

**TLS 1.2 Connection Support**
For SQL Server, TLS 1.2 connection support, if enabled, is provided automatically by the Extract and Replicat.

**Prerequisites for Using Oracle GoldenGate 19c with MySQL**
Oracle GoldenGate for MySQL has a dependency on OpenSSL library, so availability of OpenSSL library is a prerequisite.
Linux: Set `LD_LIBRARY_PATH` to include the path where OpenSSL library is installed.
Windows: For MySQL 8.0 and higher, the OpenSSL library is shipped with MySQL server and is kept in the `\bin` directory of the MySQL home directory. You must ensure that the location of the OpenSSL is added to the path environment variable. For example, `D:\path\to\MySQLServer_install_dir\bin` directory needs to be added to the `PATH` environment variable.
Alternatively, you can install the latest MySQL C++ connector (MySQL 8.0 or greater), which contains OpenSSL library and make sure that the location of the OpenSSL is added to the path environment variable. For example, `C:\Program Files\MySQL\Connector C++ 8.0\lib64` directory needs to be added to the `PATH` environment variable.
With MySQL 5.7 or less, you need to install the latest MySQL C++ connector (MySQL 8.0 or greater), which contains the OpenSSL library and make sure that location of the OpenSSL is added to the `PATH` environment variable. For example: `C:\Program Files\MySQL\Connector C++ 8.0\lib64` directory needs to be added to the `PATH` environment variable.
Oracle GoldenGate for MySQL 8.0 has a dependency on OpenSSL library so the availability of this library is a prerequisite. You need to ensure that the library is

installed on the system running Oracle GoldenGate and path to this library is set appropriately.

**No pattern restriction for Oracle GoldenGate user name but maximum length is 512 characters**
Constraints for Oracle GoldenGate user name have been removed but the maximum length is 512 characters. For Basic and Certificate type users there are no constraints on special characters for the user name in REST API.
However, in the Microservice Architecture web interface, the user name can only include specific special characters for a Basic type user. These characters are:
at sign (`@`), period (`.`) , dash (`-`), comma (`,`), underscore (_), number sign (`#`), dollar sign (`$`), plus sign (`+`), backslash (`\`), slash (`/`), equal sign (`=`), less than sign (`<`), or greater than sign (`>`).

# Release 19c (19.1.0) - May 2019 Initial Release

**Microservices implementation requires stronger passwords**
The passwords for users in Microservices implementation require stronger passwords, with a capital letter, a number, and a special character.

**Trail File Format**
After Extract update, if a newer trail file format is specified then the primary Extract will automatically rollover to the next trail file and writer in the specified trail file format. There is no need to run the `ALTER EXTRACT ETROLLOVER` command.

**Extract Default Trail File Version**
The primary Extract writes trail file in the same format as existing trail file format when you upgrade to Oracle GoldenGate 19c, unless you explicitly specify the trail file format version using the `FORMAT RELEASE` option. This behavior change prevents subsequent Replicat to abend if replicat is not upgraded.

**_INFINITYTOZERO parameter is no longer required**
The `_INFINITYTOZERO` parameter is no longer required. When Oracle GoldenGate detects the `+INF` or `-INF` values in an Oracle numeric field, it is handled automatically as if this parameter is already set.
If the target is Oracle Replicat 19c release, +INF, and -INF are applied properly. For all other databases including older Oracle Replicat, 0 value is applied.

**Oracle TIMESTAMP WITH TIME ZONE capture**
`TIMESTAMP` with `TIMEZONE` with region ID data is now supported for `FETCH` and initial load. For details, see `TRANLOGOPTIONS` in *Reference for Oracle GoldenGate*
This feature is enabled automatically if needed and you no longer need to specify `TRANLOGOPTIONS INCLUDEREGIONID`. For non-Oracle target, use `TRANLOGOPTIONS INCLUDEREGIONIDWITHOFFSET` to convert region ID to time offset from UTC.

**GETCTASDML option default setting**
`GETCTASDML` option available with `TRANLOGOPTIONS` parameter is enabled by default.

**NOALLOWNULLABLEKEYS default setting**

The default setting for the `NOALLOWNULLABLEKEYS` parameter is set to `true`.
This feature has been created to help customers easily identify tables that may be problematic due to multiple `NULL` values being allowed in a key column.

**Change in Binlog Format Support**
(MySQL only) Capture silently ignores the `binlog` events that are not written in the `ROW` format instead of abending when it detects a `binlog_format` other than `ROW`.

# Deprecated and Desupported Features and Parameters

This section describes the deprecated and no longer supported features of Oracle GoldenGate.

- Release 19c (19.1.0) - September 2019
- Release 19c (19.1.0) - May 2019 Initial Release

## Release 19c (19.1.0) - September 2019

### SQL Server

**DBOPTIONS SQLNCLI11**
For `DBOPTIONS`, the `DRIVER SQLNCLI11` parameters have been deprecated. TLS 1.2 connection support, if enabled, is provided automatically with an Extract and Replicat.

**Classic Extract for SQL Server**
The transaction log based Extract (Classic Extract) is desupported and the Extract that uses Change Data Capture (CDC Extract) that was introduced with Oracle GoldenGate 12*c* (12.3.0.1) will be used for Oracle GoldenGate for SQL Server going forward.

## Release 19c (19.1.0) - May 2019 Initial Release

**ADD HEARTBEATTABLE NOADDTRANDATA**
`NOADDTRANDATA` option of `ADD HEARTBEATTABLE` has been deprecated.

### Oracle Database

**TRANLOGOPTIONS INCLUDEREGIONID**
`TRANLOGOPTIONS INCLUDEREGIONID` parameter is deprecated. The parameter is not required to capture Oracle `TIMESTAMP` with `TIME ZONE` with region ID time zone value. If the parameter is specified, a warning message is issued at startup. `TIMESTAMP` with `TIMEZONE` with region ID data is now supported for `FETCH` and initial load. For details, see `TRANLOGOPTIONS` in *Reference for Oracle GoldenGate*.

# 3
# Known Issues and Workarounds

This chapter describes the known issues at the time of release.


- Release 19c (19.1.0.0.200714) — October 2021
- Release 19.1.0.0.210420 — May 2021
- Release 19.1.0.0.201013 — October 2020
- Release 19c (19.1.0) - September 2020
- Release 19.1.0.0.200714 - August 2020
- Release 19.1.0.0.200714 - July 2020
- Release 19.1.0.0.200414 - June 2020
- Release 19.1.0.0.200414 - April 2020
- Release 19.1.0.0.200204 - 4 February 2020
- Release 19c (19.1.0) - October 2019
- Release 19c (19.1.0) - September 2019
- Release 19c (19.1.0) — May 2019 Initial Release


## Release 19c (19.1.0.0.200714) — October 2021

**Bug 33407415: PostgreSQL - Extract writes incorrect record in trail with Default logging enabled at the table level**

Tables that are configured to be captured by Extract where the FULL Replica Identity logging is *not* set, can cause downstream Replicat problems when encountering Update and Delete operations, causing the Replicat to abend.

**Workaround**

Run the `ADD TRANDATA` command with the `ALLCOLS` option for any table configured to be captured by Extract, regardless of whether the table has a Primary Key or not. This ensures that the table has FULL Replica Identity logging.

## Release 19.1.0.0.210420 — May 2021

**Bug 32795888: SQL Server - ADD HEARTBEATTABLE fails on Azure SQL DB Managed Instance and gives incorrect error message that TARGETGONLY is required**

The `ADD HEARTBEATTABLE`/`ALTER HEARTBEATABLE NOTARGETONLY` commands do not work for an Azure SQL Database Managed Instance, and reports an incorrect error message that `TARGETONLY` is required, when attempting to use one of these commands.

**Workaround**

None.

**Bug 32791333: Sybase - Heartbeat feature is not supported in Sybase versions 15.7 and 16.1**

The heartbeat feature is not supported with Sybase 15.7 and 16.1 database versions. The following error occurs when you try to add a heartbeat table:

```
2021-04-13 08:50:31 ERROR OGG-10513 The job scheduler
database(sybmgmtdb)does not exist.
Configure database sybmgmtdb and add Oracle GoldenGate replication
user with correct role to create and run the heart beat job.
```

**Workaround**

None.

# Release 19.1.0.0.201013 — October 2020

**Bug 31792776: PostgreSQL - Extract abends with the "Positioning sequence ID is out of order" error**
Extract abends with the error `Positioning sequence ID is out of order`.

**Workaround**
Alter the Extract by using the `flush LSN` reported in the last Extract run reported file.

**Bug 29910461: DB2 for i - Pump abends with the error " ERROR OGG-01224 TCP/IP error 79 (Connection refused) "**
Oracle GoldenGate Pump may fail with the connection refused error if the number of Pump processes that have been started is more than 50.

**Workaround**
Start less Pump processes at one time.

**Bug 31460112: DB2 LUW - X Endian Extract stopped with the error "An invalid parameter "piStartLRI" was passed to the "db2ReadLog" read log API"**
This error may occur while reading log records from a remote database for DB2 LUW in a cross-endian environment.

**Workaround**
None.

**Bug 31637694: Oracle - Replicat skips inserts after an Oracle GoldenGate restart**
If `GROUPTRANSOPS` is set to 1, then the records may be skipped when Replicat sees a `RESTART_ABEND`.

**Workaround**
Set `GROUPTRANSOPS` greater than 1 or remove its setting.

# Release 19c (19.1.0) - September 2020

**Bug 31652978: Oracle - Extract is missing INSERTS randomly for one of the active/live table for batch job load**

Classic Extract cannot be used to capture from Exadata platforms. To capture from Exadata, Exadata Cloud Service or Exadata Cloud at Customer, or any Exadata cloud service, you must use integrated Extract.

**Workaround**

None.

**Bug 31922955: Generic - LANG=en_US.UTF-16 is not supported**

When `LANG` is set at the operating system level to `en_US.UTF-16`, it causes GGSCI to hang. The setting of `en_US.UTF-8` is allowed. For example, the setting in Linux, which would cause GGSCI or Admin Client to han is:

```
[celclnx29]/bugmnt3/am/celclnx29/SRx.xxxxxxxxxxx/user/gg122> echo $LANG
en_US.UTF-16
```

**Workaround**

None.

**Bug 31799288: Oracle - Tablespace encryption is not supported with classic Extract**

Tablespace encryption is not supported with classic Extract for Oracle database 19c.

**Workaround**

None.

**Bug 31768942: ADB-S - The SHARE option doesn't work for PerPDB capture**

The `SHARE` option is ignored when registering an Extract for PerPDB although the registration is successful.

**Workaround**

None.

# Release 19.1.0.0.200714 - August 2020

**Bug 31732282 - PostgreSQL: User-defined types are not supported**

Oracle GoldenGate for PostgreSQL does not support User Defined Data Types (UDT).

**Workaround**

Don't use tables which have user-defined data types or exclude such tables from Extract or Replicat parameter file.

**Bug 31730629: PostgreSQL - Capture from materialized views is not supported**

Capturing records from materialized views is not supported.

**Workaround**

Do not use materialized views in the Extract parameter file.

**Bug 31730647: PostgreSQL - Cannot distinguish null and empty string in UPDATE record**

PostgreSQL Extract cannot distinguish the `VARCHAR` column data for empty string or null data if it's inserted as an empty string or NULL data and later updated with NULL or empty string or the other way round.

**Workaroud**

Use the `NOCOMPRESSUPDATES` parameter.

**Bug 31730664: PostgreSQL - The default plugin test_decoding.so must be present in the PostgreSQL installation for Oracle GoldenGate Extract to capture WAL records**

Default `test_decoding` plugin must be available in the PostgreSQL instillation directory. If it is an existing database setup and you cannot find `test_decoding.so` under the database `LIB` folder then you must download the `test_decoding.so` from the following location

If database version is PostgreSQL 11:

```
sudo yum install postgresql11-contrib
```

If database version is PostgreSQL 10:

```
sudo yum install postgresql10-contrib
```

**Workaround**

None.

# Release 19.1.0.0.200714 - July 2020

**Bug 31097457: PostgreSQL - Bind bit/varbit types as char/varchar instead of binary**

In initial load mode, the bit varying data can be prefixed with 0s in cases where the actual data is less than the length defined on the source bit varying column. The length of the data is rounded to nearest 8-multiple by prefixing 0s.

**Workaround**

None

### Bug 31326961: PostgreSQL - Timestamp data containing AD or BC tags or YEAR component with more than 4 digits is not being captured correctly

The seconds field in the timezone component is not is written to trail when the data is applied on target PostgreSQL `TIMESTAMPTZ` column, causing a mismatch in the data between source and target.

#### Workaround

None.

### Bug 31326068 - Mismatch in TimestampTZ data when the data captured from the database has seconds in the timezone component

The seconds part of the timezone component in the received data is not considered in the target databsae. For example, if the received data has timezone component data `1900-03-03 02:02:02.123 +03:59:56`, the 56 seconds in timezone gets ignored and a mismatch of 56 seconds is observed.

#### Workaround

If the timezone parameter in the `postgresql.conf` file is `utc` this problem does not occur.

### Bug 31146341: PostgreSQL - An error occurs if the target database table has an Identity Always column created with the GENERATED ALWAYS AS IDENTITY clause

The following error is be thrown if the target database table has an Identity Always column created with clause `GENERATED ALWAYS AS IDENTITY.

```
2020-05-09 21:46:39 ERROR OGG-00551 Database operation failed: Preparing
statement (INSERT INTO "public"."int1_nokey" ("id",...). ODBC error: SQLSTATE
37000 native database error 3624914. [Oracle][ODBC PostgreSQL Wire Protocol
driver][PostgreSQL]ERROR: VERROR; cannot insert into column "col3"(Detail Column
"col3" is an identity column defined as GENERATED ALWAYS.; Hint Use OVERRIDING
SYSTEM VALUE to override.; File d:\pginstaller.auto\postgres.windows-
x64\src\backend\rewrite\rewritehandler.c; Line 826; Routine rewriteTargetListIU;
[Oracle][ODBC PostgreSQL Wire Protocol driver][PostgreSQL]Failed transaction.
The current transaction rolled back.
```

#### Workaround

If there are any conflicts or collisions in the rows due to change in the seed value of the identity column, you can do the following to correct it:

1. Find the sequence name that is operating on the auto-increment column in the problematic table.

   ```
   select pg_get_serial_sequence('fruits','id') where table is “fruits” and
   auto-increment column name is “id”
   pg_get_serial_sequence
   --------------------------------
   "public.fruits_id_seq"
   ```

2. Find the default increment of the seed value for the auto-increment column.

```
select increment from information_schema.sequences where
sequence_name= 'fruits_id_seq' and sequence_schema='public';
```

3. Change the seed value of the auto-increment column by using the following query:

```
SELECT SETVAL('fruits_id_seq', (SELECT MAX(id) + increment FROM
fruits));
```

4. Start Replicat.

**Bug 31521207: PostgreSQL - Data corruption when converting BIT data into Char/Varchar Data Type**

Mapping the PostgreSQL source column of `BIT` type with length 1 (`BIT` or `BIT(1)` or `VARBIT(1)` types) onto a target `CHAR` or `VARCHAR` type column is not supported.

**Workaround**

Use the source bit type column with length more than 1.

**Bug 31528537: PostgreSQL - Replicat abends with invalid input syntax for type numeric when replicating to @token**

Extract from PostgreSQL does not support `SQLEXEC` with a SQL query having `DATE` or `TIMESTAMP` column in the `WHERE` clause.

**Workaround**

None.

**Bug 31204771: PostgreSQL - DBLOGIN generates the error “Error parsing connect string at offset 51' when using password in special chars”**

`DBLOGIN` generates an error due to limitations with password recognition.

**Workaround**

There is no workaround for this issue but the following limitations should be considered:

- When password has a special character it should be quoted with double quotes.
- Password string must not use a semicolon as a special character. If semicolon is used then it is treated as the field separator in the connection string, which the driver interprets as a connection option causing the connection to fail.
- You must not use the password with semicolon while creating `USERIDALIAS` also.

**Bug 31216309: PostgreSQL - Extract is unable to register from the standby database when native replication is enabled**

Capture from standby database is not supported.

**Workaround**

None.

**Bug 31560266: MySQL - ADD HEARTBEATTABLE message needs to be corrected for MySQL, MariaDB Amazon Aurora, Amazon RDS**

If the database user does not have `EVENT` permissions within the database, an incorrect message lists to `GRANT EVENT` to *`user@databasename`*.

**Workaround**

Grant `EVENT` permissions on *`user@hostname`* and if running against Amazon Aurora or Amazon RDS, set the `event_scheduler` variable to ON via a new or non-default, parameter group.

# Release 19.1.0.0.200414 - June 2020

**Bug 31455294: DB2 z/OS - Oracle GoldenGate 19c (19.1.0.4) Extract causes LPAR and DB2 to crash**

If Oracle GoldenGate 19c (19.1.0) is installed for DB2 z/OS but a prior installation of the Oracle GoldenGate 12c (12.3.0.1) stored procedures are referenced by the Oracle GoldenGate 19c (19.1.0) installation or not properly replaced, it is possible that an ECSA corruption could occur, which could lead to a fatal abend of the entire LPAR. If you upgrade Oracle GoldenGate, it must be confirmed that the new executables in the DB2 z/OS PDSE are properly installed or that a new name for them is used and referenced in the new Stored Procedure and UDTF definitions.

**Workaround**

Ensure that the installation is performed correctly.

**Bug 30328936: DB2 z/OS - Extract intermittently abends with the error "OGG-06550 Unable to position in log buffer"**

When LOBs are present in one or more tables in the Extract or `NOAPIFILTER` is issued, Extract may abend intermittently with the error `OGG-06550 Unable to position in log buffer`.

**Workaround**

You need to add the following to the Extract configuration:

```
TRANLOGOPTIONS APIBUFSIZE 100000
```

If the issue persists, slowly increase the value until it stops. This value must not be higher than the output BLOB column size defined for the `OGGREADB` user-defined table function. This directly affects the size of the ECSA buffer allocated on the DB2 z/OS system, so it is recommended that you increase this value only as much as required. If you decide to change the `APIBUFSIZE` then it shouldn't be larger than the value of the `BUFSIZE` parameter, which has a default value of 1MB.

# Release 19.1.0.0.200414 - April 2020

**Bug 31202227 - Azure Database for MySQL: Extract abends after second or third heartbeat seed record in the heartbeat table**

Extract abends with the following error after the second or third update to the `hb_seed table` when connecting remotely to Azure Database for MySQL.

```
ERROR OGG-01161 Bad column index (-4096) specified for
tablemysrcdb.gg_heartbeat_seed, max columns = 17..
```

**Workaround**

Ensure that the `binlog_row_image` system variable is set to `FULL`.

# Release 19.1.0.0.200204 - 4 February 2020

**Bug 30033958 - DB2 z/OS: Truncate table not captured by Extract**

The `TRUNCATE IMMEDIATE` performed on a source database does not reflect in the target database.

**Workaround**

`GETTRUNCATES` are required in the Extract parameter file to see the change at the target. Also, remove the `IMMEDIATE` parameter from the `TRUNCATE` command.

**Bug 31195430 - TRANLOGOPTIONS EXCLUDETAG does not work with Parallel DML operations**

Trail records from PDML transaction are missing tag data/token.

**Workaround**

None

# Release 19c (19.1.0) - October 2019

**Bug 30427030 - Oracle: The VIEW PARAMS and VIEW REPORT commands fail in the Admin Client**

When running Admin Client on Windows Server, the `VIEW PARAMS` and `VIEW REPORT` commands fail when using the standard viewer utility.

**Workaround**

To resolve this issue, execute the following command within Admin Client:

```
SET PAGER notepad
```

# Release 19c (19.1.0) - September 2019

**Bug 30328936 - DB2 z/OS: Extract intermittently abends with the error "OGG-06550 Unable to position in log buffer"**

When LOBs are present in one or more tables in the Extract or `NOAPIFILTER` is issued, Extract may abend intermittently with the error `"OGG-06550 Unable to position in log buffer"`.

**Workaround**

You need to add the following to the Extract configuration:

```
TRANLOGOPTIONS APIBUFSIZE 100000
```

If the issue persists, slowly increase the value until it stops. This value must not be higher than the output BLOB column size defined for the OGGREADB user-defined table function. This directly affects the size of the ECSA buffer allocated on the DB2 z/OS system, so it is recommended to increase this value only as much as is necessary. If you decide to change the `APIBUFSIZE` then it shouldn't be larger than the value of the `BUFSIZE` parameter, which has a default value of 1MB.

**Bug 29541089 - SQL Server: Extract capture rates slower for SQL Server 2017 compared to earlier versions**

An issue which may cause degradation with Oracle GoldenGate Capture rates for Microsoft SQL Server 2016/2017 has been raised with Microsoft.

**Workaround**

None.

**Bug 30222937 - SQL Server: Incorrect message regarding SQL Server Agent when Extract does not have SYSADMIN rights**

When Extract is connected to the SQL Server instance with a login that is not a member of the sysadmin server role, a message is displayed that states that the SQL Agent is not running, which may or may not be correct, as the login does not have the permissions to actually determine the status of SQL Agent.

**Workaround**

Grant the login used by Extract to be a member of the `SYSADMIN` server role, or manually confirm that SQL Agent is running and ignore the warning in the Extract's report file.

**Bug 30222904 - SQL Server: Extract abends without error when permissions issue with AlwaysOn Secondary replica database**

When Extract is configured with `TRANLOGOPTIONS ALWAYSONREADONLYROUTING`, using a DSN connection through the listener, and the Always On group is configured for read-only routing, the Extract abends without any error if the login used by Extract has not been mapped to the database user on the secondary replica database.

#### Workaround

Create the same login or password used by the Extract on the secondary instances and grant the login `SYSADMIN` rights.

#### Bug 29209870 - SQL Server: SQL Server CDC TRANDATA does not support period in database or table names

`ADD TRANDATA` for Oracle GoldenGate for SQL Server does not support periods in the database or table names.

#### Workaround

None.

#### Bug 29882931 - MySQL: Replicat Abends if the SOURCEDEF Parameter is used while upgrading from the Oracle GoldenGate 18c release to the 19c release

Oracle GoldenGate Replicat abends with the error `"OGG-01163 Bad column length (6) specified for column ID"`, if you use the `SOURCEDEF` parameter while upgrading from the Oracle GoldenGate 18c release to the 19c release.

#### Workaround

Do not use the `SOURCEDEF` parameter while upgrading.

#### Bug 27028084 - MySQL: Binary Log File Size in Remote Capture

For remote capture in Oracle GoldenGate MySQL, binary log files greater than 4 GB in size are not supported. Consequently, while positioning an offset, an offset greater than 4294967295 is also not supported.

#### Workaround

None.

#### Bug 30023717 - Oracle: Parallel Replicat occasionally fails with ORA-1403 when processing transactions with extremely high number of inter-dependencies

In rare situations of a transaction with a high number of potential dependencies, Parallel Replicat abends with the error `ORA-1403: "no data found"`.

#### Workaround

Restart Replicat. The original transactions will correctly be applied while maintaining global data consistency.

#### Bug 30207560 - Oracle: GGSERR log file cannot rollover on Windows when Oracle GoldenGate processes are open

The `ggserr.log` file is configured to automatically rollover after a default or modified size. However for Oracle GoldenGate on Windows, the `ggserr.log` file cannot rollover when there are processes running.

**Workaround**

Stop all running Extracts, Pumps, Replicats, then restart them. This will allow the `ggserr.log` to rollover.

**Bug 30250118 - Oracle: AIX and Solaris stats for auto-CDR doesn't report back correctly**

When Sharding is implemented on Oracle GoldenGate 19c on AIX or Solaris with Oracle database 18c, auto-CDR doesn't report back stats correctly.

**Workaround**

None.

# Release 19c (19.1.0) — May 2019 Initial Release

**Bug 27938481 : Error message not generated when ALLOWDUPTARGETMAP with different KEYCOLS is used in Parallel Replicat**

Oracle GoldenGate doesn't generated an error message for `ALLOWDUPTARGETMAP` with different `KEYCOLS`, which is not supported in non-integrated parallel Replicat. `ALLOWDUPTARGETMAP` is not supported in integrated parallel Replicat and in integrated Replicat. `ALLOWDUPTARGETMAP` with different `KEYCOLS` is supported in classic and coordinated Replicat.

**Workaround**

None.

**Bug 29761322 - Oracle: Multibyte CLOB encoding is incorrect when Extract writes 12.2 trail format after software upgrade to 18.1 or later**

When Extract writes multibyte CLOB data to the trail in the same format as the existing trail file format, Extract writes MBCS CLOB data in incorrect encoding. This happens when the trail file format is 12.2 or older or `FORMAT RELEASE` is used to specify a format that is older than 12.2.

**Workaround**

Perform an explicit `ETROLLOVER` after software upgrade if the current trail file format is 12.2 and there are multibyte CLOBs.

**Bug 25890033 - DB2 for i: Issue with multi-journal support**

It is still recommended that Extracts on DB2 for i read from a single journal. However, this does have a side effect that if Heartbeat is enabled, that the heartbeat tables must be journaled to the same journal as the data journal being used for replication.

**Workaround**

It is recommended that you use `DELETE`/`ADD TRANDATA` for the heartbeat table to enable journaling to the correct journal.

### Bug 29778593 - DB2 LUW, DB2 for i, DB2 z/OS, Teradata: Heartbeat lag command does not display incoming and outgoing paths

Heartbeat lag command does not display incoming and outgoing paths. However, the heartbeat and heartbeat history tables contain the valid data.

#### Workaround

None.

# 4
# Bugs Fixed and Enhancements

This chapter describes the bugs fixed and enhancements at the time of release.

The Bug number is the number of the BugDB ticket. For questions on specific tickets or issues, consult Oracle Support.


- Release 19.23.0.0.240416 - April 2024
- Release 19.22.0.0.240124 - January 2024
- Release 19.22.0.0.240116 - January 2024
- Release 19.21.0.0.231103 - November 2023
- Release 19.21.0.0.231017 - October 2023
- Release 19.20.0.0.230805 - August 2023
- Release 19.20.0.0.230718 - July 2023
- Release 19.1.0.0.230422 - April 2023
- Release 19.1.0.0.230418 - April 2023
- Release 19.1.0.0.230207 - February 2023
- Release 19.1.0.0.230120 - January 2023
- Release 19.1.0.0.230117- January 2023
- Release 19.1.0.0.221021 - October 2022
- Release 19.1.0.0.220831 - August 2022
- Release 19.1.0.0.220719 - July 2022
- Release 19.1.0.0.220419 - April 2022
- Release 19.1.0.0.220222 - April 2022
- Release 19.1.0.0.220118 — January 2022
- Release 19.1.0.0.211019 — October 2021
- Release 19.1.0.0.210720 - July 2021
- Release 19.1.0.0.210420 — May 2021
- Release 19.1.0.0.210228 — March 2021
- Release 19.1.0.0.201013 — October 2020
- Release 19.1.0.0.200714 — July 2020
- Release 19.1.0.0.200414 — June 2020
- Release 19.1.0.0.200414 — April 2020
- Release 19.1.0.0.200204 — 4 February 2020
- Release 19c (19.1.0) - October 2019

- Release 19c (19.1.0) - September 2019
- Release 19c (19.1.0) - May 2019 Initial Release

# Release 19.23.0.0.240416 - April 2024

**Bug 36250403: Amazon Aurora PostgreSQL - Oracle GoldenGate queries that use 'SHOW/SET' in upper case reports an error that superuser is required**

Fixed an issue with the Precise Instantiation process for PostgreSQL where Oracle GoldenGate queries written in upper case caused an error indicating that a superuser or replication role user is required.

**Bug 35514782: Db2 for i - Extract is fetching from sequence 1 when altering the Extract with sequence number only**

Fixed an issue with the alter Extract process that fetches the records from LSN value 1 and ignores the specified sequence number.

**Bug 35665808: Exadata Cloud at Customer (Gen2) - Size of checkpoint tables dramatically increase during 4 and half hours**

Fixed an issue with parallel Replicat that was causing the size of the checkpoint table to increase tremendously.

**Bug 35978782: Exadata on Premise - Initial load Extract abended with error "OGG-00663 OCI Error ORA-01406: fetched column value was truncated"**

Fixed an issue with Extract abending with error, `OGG-00663 OCI Error ORA-01406: fetched column value was truncated` for `nvarchar2` data type.

**Bug 36229965: Exadata on Premise - Integrated Extract captured Replicat transactions since replication marker was missing**

Fixed an issue of missing tag with the `RANGE` function that was causing integrated Extract to not filter Replicat transactions.

**Bug 34812191: Microsoft SQL Server - Support capture and delivery for SQL Server 2022**

Added support for capture and delivery for SQL Server 2022.

**Bug 36154619: Microsoft SQL Server - Deletion of the initial load Extract fails with DBLOGIN required**

Fixed the issue of `DBLOGIN` command required to delete the initial load Extract.

**Bug 31011157: Oracle - "BR Previous Recovery Checkpoint" does not get updated after alter and restart the Extract**

Corrected the `BR Previous Recovery Checkpoint` to `BR Startup Recovery Checkpoint` in the `SHOWCH` command.

**Bug 34711188: Oracle - Integrated Replicat reports a warning "OGG-02544 Unhandled error ORA-26786 & ORA-01403 For CLOB Data With DBRUs 19.14 And Up"**

Fixed an issue with the `WHERE` clause that was causing the integrated Replicat to display the warning, `OGG-02544 Unhandled error ORA-26786 & ORA-01403 For CLOB Data With DBRUs 19.14 And Up`.

**Bug 34973701: Oracle - REST API shows incorrect lag value for parallel Replicat**

Fixed an issue with parallel Replicat displaying higher and incorrect lag value.

**Bug 35273507: Oracle - Replicat abends with error "OGG-01296 error mapping with PR integrated with widetable + OLTP compession"**

Fixed an issue with Replicat abending with error, `OGG-01296 error mapping with PR integrated with widetable + OLTP compession`.

**Bug 36042072: Oracle - Replicat displays an "out of cursors" error when processing records from a partitioned table impacted by an online DDL**

Fixed an issue with Replicat generating an out of cursors error when processing a system partitioned table with several `INSERT` statements.

**Bug 36205348: Oracle - Initial load Extract hung on tables with more than 32k partitions**

Fixed a performance issue with initial load Extract when table partitions exceed 32000.

**Bug 33499616: PostgreSQL - Extract abends on insert for table with serial column with error OGG-30069**

Updated the error message when the column metadata could not be retrieved from the PostgreSQL database due to Oracle GoldenGate Extract user's insufficient privileges on the table.

**Bug 35575990: PostgreSQL - Extract fails to parse the record when colon is part of the column name**

Fixed an issue with Extract failing to parse records when column name includes a colon (:).

**Bug 31593244: Generic - Incorrect Replicat lag reported when monitored via REST API**

Fixed incorrect lag issues from `INFO REPLICAT STATUS`, `SEND REPLICAT`, and `GETLAG` commands that were caused by time zone difference between Replicat and the target database.

**Bug 35660296: Generic - Add stats to show the number of update/delete ops with no valid unique index**

Fixed an issue to show statistics of update and delete operations with valid unique index value.

**Bug 36172552: Generic - REST API metrics for parallel Replicat "mappedTotalTruncates" shows wrong count when truncate is performed**

Fixed an issue with REST API metrics, `mappedTotalTruncates` for parallel Replicat displaying wrong value when the truncate process is performed.

**Bug 36307633: Generic - Getting false "Down" alerts for Oracle GoldenGate targets from OEM/OGG plugin**

Fixed an issue with the Performance Monitoring Service that was generating false down alerts for non-responsive or busy processes that have not sent a heartbeat for a short period.

**Bug 36327419: Generic - Ping LCRs in integrated Extract is occasionally responsible for huge lag**

Fixed an issue with Extract reporting excessive incorrect lag if it receives an erroneous ping LCR.

# Release 19.22.0.0.240124 - January 2024

**Bug 36073476: Oracle - Certify GoldenGate on OEL9/RHEL9 for Oracle database 19c**

Added support for Oracle GoldenGate on OEL9/RHEL9 for Oracle database release 19c.

# Release 19.22.0.0.240116 - January 2024

**Bug 35427338: DB2 z/OS - Extract did not capture after alter datatypes (promoted)**

Fixed an issue with Extract not capturing changes after altering tables and/or columns, when using `TRANLOGOPTIONS TRACKSCHEMACHANGES` and `TRANLOGOPTIONS APIFILTER` commands.

**Bug 35491874: Exadata on Premise - DDL statements preceded by comments generate extract core dump**

Fixed an issue with Extract abending when processing DDL statements that are preceded by comments.

**Bug 35767560: Exadata on Premise - Extract abends with error "OGG-06615 Oracle redo compatible version 19.20.0 is not supported"**

Fixed the compatibility version calculations that were causing the integrated Extract to abend with error, `OGG-06615 Oracle redo compatible version 19.20.0 is not supported`.

**Bug 35874800: MySQL - Replicat is unable to apply data on target when FETCHMODCOLS parameter is used on LOB column**

Fixed an issue with Replicat unable to apply data on the target when `FETCHMODCOLS` parameter is used on `LOB` datatype column.

**Bug 35887121: MySQL - Extract during initial load for 1GB data is not captured for LONGBLOB and LONGTEXT datatypes**

Fixed an issue with Extract not being captured for `LONGBLOB` and `LONGTEXT` datatypes during the initial load process for 1GB data.

**Bug 29039470: Oracle - Replicat abends with error ORA-904 after renaming a column**

Fixed an issue of Replicat abending with error, `ORA-904` after renaming a column in the table.

**Bug 30587981: Oracle - Replicat abends while processing comment on column DDL**

Fixed an issue of mapping different base table names on source and target databases that caused Replicat to abend while processing the `COMMENT ON COLUMN` DDL.

**Bug 31845901: Oracle - OGG v19.x- ulg.sql shows "all column logging" in dba_log_groups**

Fixed an issue with `ulg.sql` file creating `ALL COLUMN LOGGING` log group on being re-run.

**Bug 33638397: Oracle - Display exact Replicat model used in report file**

Fixed an issue with the Extract or Replicat report file not listing the exact Extract or Replicat type.

**Bug 33770537: Oracle - SCHEMATRANDATA command generates an error "ORA-06564 adding SCHEMATRANDATA with PREPARECSN NONE on lower case table name"**

Fixed an issue of schemas that contain table names in lowercase with double quotation marks ("), generating an error with the `ADD SCHEMATRANDATA` command used with `PREPARECSN` parameter with value `NONE`.

**Bug 34804430: Oracle - Replicat is not able to process datatype SYS.ANYDATA with an opaque value**

Fixed an issue with Replicat not processing the `SYS.ANYDATA` datatype with an `OPAQUE` value.

**Bug 34997772: Oracle - Replicat incorrectly formats values when the NSK originated trails has table metadata and SYSKEY column**

Fixed an issue with Replicat incorrectly formatting numeric data when replicating the trail files with table metadata and `SYSKEY` columns, from HP NonStop to Oracle.

**Bug 35195530: Oracle - Integrated Replicat abends with error "ORA-01843: not a valid month for 1899-12-31 or 1899-12-30 or 1899-12-29 date data"**

Fixed an issue with the source database timezone and session timezone values that was causing integrated Replicat to abend with an error, `ORA-01843: not a valid month for 1899-12-31 or 1899-12-30 or 1899-12-29 date data`.

**Bug 35601091: Oracle - Integrated Replicat abends with error "OGG-01112 Unexpected condition in processReplicatLoop at line 1578"**

Fixed an issue with Extract using the `TARGET` keyword and with different structures of source and targets tables, was causing the Replicat to abend with the error, `OGG-01112 Unexpected condition in processReplicatLoop at line 1578`.

**Bug 35639628: Oracle - On-premise per PDB Extract is not capturing DDL/DML when streams_pool_size is set to 0**

Set the default parameters correctly for on-premise per PDB Extract.

**Bug 35666217: Oracle - DDL for public synonym is not captured when exclude all is specified in DDL clause**

Fixed an issue with `CREATE PUBLIC SYNONYM` DDL not being captured if DDL`EXCLUDE ALL` command is included in the Extract parameter file.

**Bug 35782788: Oracle - OGGCA is not using response file OGG_SOFTWARE_HOME for the service manager**

Fixed an issue with the Oracle GoldenGate Configuration Assistant (OGGCA) not using the `OGG_SOFTWARE_HOME` response file for the Service Manager.

**Bug 35938863: Oracle - TLS cipher uninstall capability for an existing deployment**

Fixed an issue with OGGCA to allow selection of atleast one mandatory cipher suite.

**Bug 36067679: Oracle - The BR checkpoint is not used by Extract on forcestop**

Fixed an issue with Extract not using the `BR Checkpoint` option on encountering the `FORCESTOP` option.

**Bug 31625466: TimesTen - Replicat reports error "OGG-1014 parameter [NOTRIMSPACES]/[TRIMSPACES] is not valid for this configuration"**

Added TimesTen support for the `[NOTRIMSPACES]/[TRIMSPACES]` parameters.

**Bug 32785364: Generic - Ggserror log prints wrong time offset timestamp**

Fixed an issue with the time offset in the `ggserr.log` not accounting for day-light saving.

**Bug 34012362: Generic - Add logging for rollbacks**

Added diagnostic improvements and rollback logging to trace rollbacks.

**Bug 34394921: Generic - Add tracing for parser errors**

Added diagnostic tracing for identifying and diagnosing parser errors.

**Bug 34426814: Generic - Output of INFO EXTRACT/REPLICAT, DETAIL through GGSCI in Japanese environment is garbled**

Fixed an issue with the output of the `INFO` command in the Japanese environment, which was displaying garbage output values.

**Bug 34717189: Generic - Grant DDL processing for unrelated table by integrated Extract**

Fixed performance issues with integrated Extract processing `GRANT DDL` for unrelated tables, when `DDL MAPPED` is enabled, on high latency Oracle GoldenGate hub topology implementation.

**Bug 34749779: Generic - Replicat binary function has wrong data in Linux**

Fixed an issue with the character data replicated from Tandem to Oracle using the `@BINARY()` function being padded with '0's (zeros) instead of spaces.

**Bug 34803625: Generic - Update drop-down menu to create an encryption profile with OKV version 21.4**

Added support for OKV version 21.4 on the Encryption Profile Creation page of the Admin Server WebUI.

**Bug 35360186: Generic - For GG 21.9 MA only, report file for Replicat main process is being displayed in the adminsrvr report file section**

Fixed an issue with Admin Server displaying only the main process in the Report file section for coordinated Replicat.

**Bug 35514317: Generic - Improvement to generate message when partial lobs seen with INSERTALLRECORDS command**

Updated the error message that gets displayed when using `INSERTALLRECORDS` command with partial lob updates.

**Bug 35787151: Generic - Authorization information missing when starting DistPath if OGG_CLIENT_TLS_CAPATH is set in the server's environment**

Fixed an issue with DistPath authorization process that was failing due to the setting of `OGG_CLIENT_TLS_CAPATH` and `OGG_CLIENT_TLS_CERTPATH` options.

**Bug 35796458: Generic - For user exit, Extract does not return same record after setting MORE_RECS flag in PROCESS_RECORD callback**

Fixed an issue with the `MORE_RECS` flag not working in the `PROCESS_RECORD` callback function.

# Release 19.21.0.0.231103 - November 2023

**Bug 35364524 - Db2 for z/OS: Replace the z/OS Admin Task Scheduler**

Replaced the Admin Task Scheduler with another sub-task process, which monitors the ECSA memory when the Extract is completed.

**Bug 35651578: Db2 for z/OS - Extract's "begin now" option does not work after patching to April'23 RU**

Fixed a timestamp issue that was causing the Extract to not start with the `BEGIN NOW` option on a non-data sharing Db2 system.

**Bug 35905291: Db2 for z/OS - More memory manager parameters are required to configure legacy JCL**

Added support for additional JCL parameters to be passed to the memory monitor task.

# Release 19.21.0.0.231017 - October 2023

**Bug 35858877: MariaDB - Replicate process failed frequently without any error or warning messages**

Fixed an issue with Replicat failing frequently when tables contain large number of `bit` data type columns.

**Bug 34922587: Microsoft SQL Server - Extract is deleted when logged in to the wrong database**

Fixed an issue where Extract was deleted if the user logged in to a wrong database in a Classic Architecture deployment.

**Bug 35406535: Oracle - BR files not getting cleared upon BR cancel and disabled**

Fixed an issue with BR files not being removed if BR is canceled and/or disabled.

**Bug 35510169: Oracle - Oracle GoldenGate fails when there are Scheduler_job_arg tables**

Fixed an issue with Replicat failing to process the `scheduler_job_arg` tables.

**Bug 35524848: Oracle - Parallel Replicat is not scaling and displays OGG-10178 warning in the report**

Fixed an issue with parallel Replicat when using `INSERTUPDATE` command that was causing the Replicat to issue the `OGG-10178` warning and preventing it from scaling.

**Bug 34336451: PostgreSQL - Set the option keepalive =1 in the connection field**

Fixed the issue of idle TCP connections getting disconnected by setting the `KeepAlive` option to `1` in the `Connection` field.

**Bug 35076537: PostgreSQL - Extract getting abended with positioning sequence ID out of order error for BYTEA and TEXT data types**

Fixed an issue with Extract abending with the error `OGG-04036 Positioning sequence ID is out of order` for `BYTEA` and `TEXT` data types.

**Bug 35367684: PostgreSQL - The initial load Extract does not capture the VARCHAR column without any explicit length, defined as unique key**

Fixed an issue with initial load Extract not capturing the data of the `VARCHAR` column defined without any explicit length but defined as a unique key and `DBOPTIONS MAXLOBKEYLEN` option is undefined.

**Bug 35771974: Teradata - Delivery to Teradata fails with error "ODBC error: SQLSTATE 37000 native database error -3885 The column has been referenced twice."**

Fixed an issue with the `HANDCOLLISION`S command process logic that caused the missing primary key updates to generate an error on the target database.

# Release 19.20.0.0.230805 - August 2023

**Bug 35619119: Db2 for i - Extract loses the first open transaction when it restarts**

Fixed an issue with Extract skipping the first open transaction when restarted with an open transaction.

# Release 19.20.0.0.230718 - July 2023

**Bug 34900665: Db2 for z/OS - Change heartbeat purge frequency to be more conformant with other databases for Db2 for z/OS and Db2 LUW**

Increased the heartbeat purge frequency for Db2 for z/OS and Db2 LUW databases to a maximum of 199 days.

**Bug 34978924: MySQL - The DBLOGIN command fails when there is * in the password**

Fixed an issue with the `DBLOGIN` command failing to connect with the database if the password contains an asterisk (*).

**Bug 34262780: Oracle - Integrated Replicat fails with error "OGG-00664 OCI error ORA-01406"**

Fixed an issue of small buffer size of `SOURCE_TRASACTION_ID` option that was causing integrated Replicat to fail with error `OGG-00664 OCI error ORA-01406`.

**Bug 34277295: Oracle - Integrated Extract fails with error "OGG-01112 in DDLEXT_process_extract for GRANT ddl"**

Fixed an issue with integrated Extract failing with error OGG-01112 for `GRANT` DDL on `FLASHBACK ARCHIVE` clause.

**Bug 34294074: Oracle - Parallel Replicat abends intermittently with error OGG-00418**

Fixed an issue with parallel Replicat mappers abending due to idle connection timeout or connection not working.

**Bug 34913680: Oracle - Manager abends with hardware capability error "(CA_SUNW_HW_1) unsupported: 0x10000400 [CBCOND VIS3]"**

Fixed an issue with the manager abending with the hardware capability error.

**Bug 35401796: Oracle - Integrated Replicat crashes with message "*** stack smashing detected ***: /opt/ogg/classic/19/commbank04/19c/replicat terminated"**

Fixed a memory corruption issue that occurs when the source database is a PDB and there is a timezone difference between the source and target databases, which causes integrated Replicat to crash with the stack smashing detected message.

**Bug 35479053: Sybase Adaptive Server Enterprise - Unable to run the ADD/ALTER extract commands to reposition checkpoints to page and row**

Fixed an issue with the `ADD/ALTER` commands not being able to reposition checkpoints to page and row.

**Bug 35290862: PostgreSQL - GoldenGate does not detect Primary Key for tables with multiple indexes**

Fixed an issue with Extract and Replicat not detecting primary key of some tables with multiple indexes.

**Bug 32131835: Generic - Enhance logdump to optionally disable all column data output**

Added new command, `COLUMNINFO` with on and off parameters for Logdump utility to enable or disable column data output.

**Bug 35164853: Generic - When the GLOBALS file is not present, the AllowNullableKeys command is effectively true**

Fixed an issue of incorrect default option in absence of a GLOBALS file by making `NOALLOWNULLABLEkEYS` as the correct default.

**Bug 35225748: Generic - Extract registration information getting removed from microservices metadata**

Fixed an issue of Extract registration information being removed from the microservices metadata.

**Bug 35401164: Generic - Added a new TRANLOGOPTIONS UNSUPPORTEDLCROPTION parameter**

Added a new option, `UNSUPPORTEDLCROPTION`, to the `TRANSLOGOPTIONS` command to include details of unsupported LCR's in Integrated Extract in the Extract discard file.

**Bug 35350661: Generic - Modify recvsrvr /targets and /targets/path endpoints**

Modified `/targets` endpoint information in receiver service and `/targets/<path>` endpoint information for individual paths to remove duplicate and dead path information.

# Release 19.1.0.0.230422 - April 2023

**BUG 30372831: Generic - Deprecate ADD TRANDATA parameters that are incompatible with auto capture**

Deprecated `NOKEY` and `NOSCHEDULINGCOLUMNS` options of `ADD TRANDATA` command in GGSCI and AdminClient because of non-compatibility with the auto capture capability.

# Release 19.1.0.0.230418 - April 2023

**Bug 33893019: Db2 for i - Extract abends with character set conversion failure, src ibm-937 to tgt UTF-8**

Fixed an issue with Extract abending on failed character set conversion.

**Bug 32906940: DB2 z/OS - The remote capture fails against version 11 with OGG 21.3 and 21.1**

Fixed an issue of Extract failing due to missing log record, in database version 11 with Oracle GoldenGate 21.3 and 21.1 releases.

**Bug 34129948: Db2 z/OS - Unexpected return code 0 when the monitor task has started and fails due to a security issue**

Fixed an issue with the Extract returning 0 for a monitor task that started but failed due to a security issue.

**Bug 34423223: Db2 z/OS - The Extract's performance drops by 7X in latest 23.1 MAIN label 220717**

Fixed the Extract's performance issue due to change in the IBM's terminate program code.

**Bug 34997922: Db2 z/OS - Extract is abending with a stack smashing event**

Fixed an issue with Extract abending with a stack smashing event.

**Bug 35069862: Db2 z/OS - Customers have found the positioning code is very slow and more so with tape archive logs**

Fixed an issue with Extract taking a long time to search for the configure position in the log.

**Bug 35080022: Db2 z/OS - Extract continues in a loop when a Db2 archive log does not exist**

Fixed an issue with Extract that goes in to a loop to find the LSN value in an non-existent old archive log.

**Bug 35055861: Exadata Cloud at Customer (Gen2) - The DROP PARTITION skipped by OCI GGS Extract at intermediate database**

Fixed an issue with the `DROP PARTITION` DDLs being skipped by Oracle GoldenGate OCI Extract at the intermediate database level.

**Bug 31445469: Exadata on Premise - Using classic Replicat, the LOGBSN value present in the trail file is not propagated to the checkpoint table**

Fixed an issue with classic Replicat process where the `LOGBSN` value is present in the trail file but is not propagated to the checkpoint table.

**Bug 34791431: Exadata on Premise - Replicat inserts garbage characters in CLOB column when characterset is source database is set to CESU-8**

Fixed an issue with Replicat writing data of `CLOB` datatype incorrectly (as garbage characters) for a multibyte database when Extract automatically writes a trail file in a lower Oracle GoldenGate release to maintain compatibility but the trail file metadata is not compatible with the lower release version.

**Bug 35097023: Exadata on Premise - Parallel Replicat abends with error 1403 and skips transactions and continues progressing after two auto restart attempts from the manager**

Fixed an issue with parallel Replicat abending with error 1403, on incorrectly reading the low watermark value from the checkpoint table, and incorrectly filters out transactions on restart.

**Bug 31607593: Microsoft SQL Server - Automatically remove OracleGGExtractCheckpiont record for an Extract when that Extract is deleted**

Added support to automatically delete the OracleGGExtractCheckpiont record for an Extract when this Extract is deleted.

**Bug 34884991: MySQL - Replicat abends with error "ogg-01163 bad column length (2058) specified for column"**

Fixed an issue with Oracle Replicat abending with error, `OGG-01163 Bad column length (2058) specified for column`, due to binary length being incorrectly set in the source database.

**Bug 34982288: MySQL - Replicat failed with error "SQL error 1292 - Incorrect datetime value (daylight savings?)"**

Modified timestamp type to datetime type in the heartbeat table to fix an issue with Replicat abending due to incorrect datetime value.

**Bug 34696417: Oracle - GGSCI dumps core after overflowing command buffer**

Fixed a core dump issue with GGSCI when writing large amounts of text with GGSCI commands.

**Bug 34760678: Oracle - Parallel integrated Replicat consumes higher PGA with large # of appliers leading to PGA limit breach/4036**

Fixed an issue with parallel integrated Replicat consuming high PGA with large number of appliers, breaching the PGA limit.

**Bug 34816950: Oracle - Extract abended with error "OGG-01275 CACHEMGR: No more items in object uid: <>, items: <>, size: <>, co: <>."**

Fixed an issue with the classic Extract abending with the error, `OGG-01275 CACHEMGR: No more items in object uid: <>, items: <>, size: <>, co: <>.`

**Bug 34851353: Oracle - Parallel Replicat is missing transactions randomly which is causing data integrity issue**

Fixed an issue with parallel Replicat that uses `AFTERCSN` and the `SPLIT_TRANS_RECS` parameter is set, skipping transactions when rollback happens due to an error.

**Bug 34989598: Oracle - Extract dumping core when encountering large number of DDLs**

Fixed a core dump issue with Extract when large number of DDLs are executed at the source database.

**Bug 35019370: Oracle - Usernames containing ampersand not displayed in MSA GUI**

Fixed an issue with the MA's Admin server not able to display successfully added usernames that contain an ampersand (&).

**Bug 34949477: Sybase - The INFO TRANDATA command shows error "Binding results validating transaction logging mode"**

Fixed an issue with the `INFO TRANDATA` command that generates an error when used on a table containing an `IMAGE` data type in Sybase 16.0 SP3 release.

**Bug 34406231: Generic - Secure recvsrvr exhibits unbounded memory consumption**

Fixed an issue with Receiver service (`recvsrvr`) consuming unlimited memory resources when running for extended time period.

**Bug 34626040: Generic - Replicat abends when trying to use _LOW_WATERMARK_UPDATE_TIME parameter in the parameter file**

Fixed an issue with the `_LOW_WATERMARK_UPDATE_TIME` parameter that caused Replicat to abend.

**Bug 35161065: Generic - Modifying distribution path tcpRcvBuf or tcpSndBuf prevents path starting and causes Distsrvr to fail with core dump**

Fixed an issue with distribution path failing to restart and Distribution Server also failing with core dump, when modifying the distribution path to set the values of `tcpRcvBuf` and/or `tcpSndBuf` parameters while distribution path is still running.

**Bug 35164838: Generic - Error "OGG-02818 ORA-00904:"BANNER_FULL": invalid identifier" is displayed**

Fixed an issue with Oracle GoldenGate release version 19 displaying an error, `"ORA (status = 904-ORA-00904: "BANNER_FULL": invalid identifier)"`, when connecting to the database version 11 or 12.

# Release 19.1.0.0.230207 - February 2023

**Bug 31733563: PostgreSQL - The TRANLOGOPTIONS FITLERTABLE parameter is not working when schema name is specified in double quotes**

Fixed an issue with `TRANLOGOPTIONS FILTERTABLE` parameter not working when schema name is specified in double quotes.

# Release 19.1.0.0.230120 - January 2023

**Bug 30955775: PostgreSQL - Replicat abends with error "OGG-00252 - ODBC driver does not adequately support stored procedures (level=1)"**

Added support for stored procedures in the DataDirect ODBC driver for PostgreSQL.

**Bug 34876956: PostgreSQL - Extract abends with error "OGG-04049 Detected metadata mismatch for column col05 of type double precision, in table postgres.iltble. Expected length 8, actual length 16"**

Fixed an issue with initial load Extract abending because of metadata mismatch for `Double Precision` column type.

# Release 19.1.0.0.230117- January 2023

**Bug 34485118: Db2 for i - Journal name or current journal receiver not displayed occasionally**

Fixed an issue with message OGG-06613 not being displayed on resetting a journal.

**Bug 33870429: Db2 LUW - Replace database related error message format with ODBCUTIL error messaging format**

Replaced the local functions handling database errors with `ODBCUTILL_CHECK_ERR` function.

**Bug 34908570: Db2 LUW - Initial load Extract on Db2 fails**

Fixed an issue with initial load Extract failing on all Db2 databases due to unsupported data type.

**Bug 33322903: Db2 z/OS - Research and create a way to run a separate z/OS thread to deallocate ECSA**

Fixed the Extract behavior so that it schedules a task to manage shared memory on the database, so that it will be released at a normal end, at an abend, and if the Extract cores or is killed.

**Bug 33575670: Db2 z/OS - The new parameter db2_scheduler_userid does not always get set**

Fixed an issue with the setting of the administrative task parameter, `db2_scheduler_userid` if `TRANSLOPGOPTIONS` command is not specified.

**Bug 33851427: Microsoft SQL Server - Extract abends on lower permissions when executing EXEC sys.sp_cdc_help_jobs**

Fixed an issue with Extract abending with error `DBO privileges are required` when the supplied credential do not have the database owner role.

**Bug 34701351: Microsoft SQL Server - Initial load Extract getting abended on SQL_VARIANT - discarding record**

Fixed an issue with initial load Extract abending when unsupported data type, `SQL_VARIANT` is used in the table.

**Bug 34734445: Microsoft SQL Server - Extract initial load is slow in capturing tables with LOB columns**

Fixed an issue with initial load Extract taking more time due to incorrect cursor type and concurrency mode used for tables with LOB columns.

**Bug 34050875: MySQL - For remote capture, Oracle GoldenGate should be able to handle the binary log of size greater than 4 GB**

Fixed an issue with remote capture not able to handle the binary log of size greater than 4 GB.

**Bug 31425169: Oracle - Integrated Extract fails with ERROR OGG-02078**

Removed the `_NOREADAHEAD` parameter from `TRANSLOGOPTIONS` command that was causing the Extract to fail.

**Bug 31581999: Oracle - The Service Manager registered as system daemon did not come up after host reboot**

Fixed an issue with availability of the Service Manager on restart.

**Bug 33647060: Oracle - The Performance Metrics Service will not start on AIX when some network interfaces are not up**

Fixed an issue with Performance Metrics Service not starting on AIX till some of the network interfaces are not properly captured into the `ifAddr` structure.

**Bug 34450666: Oracle - Extract consuming lots of memory even though there is not much activity on the database**

Fixed a memory leak issue in integrated Extract.

**Bug 34468353: Oracle - PDB change table capture process runs into a CACHEMGR error, Extract goes into hang/stale state due to mutex lock**

Fixed an issue with Extract going into a hang/stale state due to mutex lock.

**Bug 34580723: Oracle - Memory leak in coordinated and classic Replicat**

Fixed a memory leak issue in coordinated and classic Replicat processes on using the `@GETENV` function when source and target are container databases with different names.

**Bug 32233712: Generic - The Retry process reading the trail file with status 509 error**

Fixed an issue with the retry process trying to read a corrupted trail file.

**Bug 34644950: Generic - The GETENV ('DELTASTATS','TABLE'...) command returning zero in cdr exception when mapping from pdb to pdb**

Fixed an issue with mapping PDB process when `GETENV` command returns zero in a CDR exception.

**Bug 34677478: Generic - The Service Manager does not respond when deployment has special characters**

Fixed an issue with action buttons on the Service Manager interface not responding when the deployment name includes a special character (.).

# Release 19.1.0.0.221021 - October 2022

**Bug 30600424: Db2 z/OS - The ALTER EXTRACT command should use the term LSN instead of EXTRBA**

Added the keyword `LSN` for the `ALTER EXTRACT` command.

**Bug 33931952: Db2 z/OS - Restore Db2 version 9.1 support so customers with Db2 versions 9 and 10 can migrate off of those platforms.**

Restored support for Db2 version 9.1 for customers to successfully migrate from older versions using Oracle GoldenGate release 19.1.

**Bug 29400201: Db2 LUW - Add support for capture of graphic/vargraphic/dbclob datatypes in non-unicode database**

Added support for `graphic`, `vargraphic`, and `dbclob` data types in Extract for non-unicode database.

**Bug 33851705: Db2 LUW - Possibility of a DDL mismatch in Extract**

Added support for `migrated delete to empty page` record type to correct a possible DDL mismatch.

**Bug 34488932: Exadata on Premise - PMSRVR data store getting corrupted**

Fixed an issue of the LMDB datastore not updating the metrics and getting corrupted.

**Bug 34530777: Exadata on Premise - Replicat hanging in GGS environment and reporting high CPU**

Fixed an issue with the `DDLOPTIONS REMOVECOMMENTS` parameter that causes Replicat to hang.

**Bug 33523611: Microsoft SQL Server - The ADD HEARTBEATTABLE command generates an error on heartbeat table creation with TRIM function**

Fixed an issue with the `ADD HEARTBEATTABLE` command generating an error when used with the `TRIM` function to create a heartbeat table.

**Bug 33952632: Microsoft SQL Server - Support Microsoft ODBC Driver 18 for SQL Server**

Added support for Microsoft ODBC Driver version 18 for SQL Server to Oracle GoldenGate for SQL Server.

**Bug 34568201: Microsoft SQL Server - DELETE/ADD TRANDATA command generates errors when non-Azure connections are made after making a connection to an Azure SQL Server database**

Fixed an issue with version compatibility check when connecting to Azure SQL Server database and then to on-premise or managed instance of SQL Server.

**Bug 32921956: MySQL - NOFILTERDUPTRANSACTIONS is not working as expected**

Fixed an issue with the `_csnfiltering` parameter not taking effect on restarting Replicat.

**Bug 33878956: Oracle - GGSCI command prompt not displaying PDB name after patch 33376981**

Fixed an issue with the `DBLOGIN` command not displaying the PDB name after installing the patch 33376981.

**Bug 32453277: Oracle - Data missed during initial load due to underlying error ORA-1555**

Fixed an issue with the initial load Extract not abending due to underlying error, `ORA-01555: snapshot too old`, but results in missing data in the target table.

**Bug 34014805: Oracle - Formatting issue in 'SEND <ext_name> SHOWTRANS TABULAR' output**

Fixed an issue with the display of the `XID` and `Items` fields in the output of the `SEND` *`extract name`* `SHOWTRANS TABULAR` command from GGSCI.

**Bug 34249351: Oracle - Integrated apply mode does not support operation code 100 (error OGG-02505)**

Fixed an issue with integrated Replicat generating error OGG-02505 when using the `GETTRUNCATES` parameter and `AUTOCDR` option set on the target table.

**Bug 34335657: Oracle - Heartbeat table feature is not working from Oracle GoldenGate February 2022 release**

Fixed an issue with the heartbeat table process not working due to non-default `heartbeattable` name specified in the `GLOBALS` file and seed table not being processed.

**Bug 33917539: PostgreSQL - Set BatchMechanism=2 Programmatically on ODBC connection.**

Fixed an issue with the performance of ODBC array operations for `INSERT/UPDATE/DELETE` statements.

**Bug 34398525: PostgreSQL - Upgrade DataDirect ODBC driver to version 08.02.2033 (B1016, U0751)**

Added support for the new DataDirect ODBC Driver version 08.02.2033 (B1016, U0751).

**Bug 34466942: PostgreSQL - The varchar(4000) column got omitted from the before image**

Fixed an issue with CDR in Replicat failing to preserve the inline LOB data value in the before image of the record.

**Bug 34428238: Teradata - Replicat abends with error "OGG-00551 Database operation failed: Preparing statement (UPDATE %T SET %S WHERE %W...)"**

Fixed an issue with Replicat abending due to a failed non-operational (NOOP) detection process.

**Bug 33701099: Generic - CDATA tag not around large column data**

Fixed an issue of missing `CDATA` tag around DDL statements for the `XML _AUDIT_VAULT` format.

**Bug 34466195: Generic - Parallel Replicat intermittently takes too long to stop when using SPLIT_TRANS_RECS parameter**

Fixed an issue with parallel Replicat intermittently taking 10+ minutes to stop when configured with the `SPLIT_TRANS_RECS` parameter.

**Bug 34513929: Generic - CVS issue: Add support for "Delete record to empty page" record type in Db2 LUW database**

Added support for `Delete record to empty page` record type.

# Release 19.1.0.0.220831 - August 2022

**Bug 32862043: Exadata on Premise - Extract abends with error "OGG-25119 Failed to create missing sub-directories"**

Fixed an issue with the `RMTTRAIL` parameter resulting in Extract abending with error, `OGG-25119 Failed to create missing sub-directories`.

# Release 19.1.0.0.220719 - July 2022

**Bug 33493969: Db2 z/OS - Extract abends with error "OGG-00796 unexpected IFI error 00e60830"**

Fixed an issue of Extract abending with an unexpected error with code "00e60830".

**Bug 33828352: MariaDB - Extract capture from MariaDB fails with error "OGG-04049 Detected metadata mismatch for column"**

Fixed an issue of Extract abending for `TIMESTAMP` datatype because mismatch between the metadata and actual data length.

**Bug 33770841: SQL Server - The DBLOGIN command to Microsoft SQL Server is not working when password has special characters**

Fixed an issue with login to Microsoft SQL Server database using the `DBLOGIN` command when password contains special characters, * and ?.

**Bug 33793123: SQL Sever - The FILTERTABLE statement cannot interpret wildcard values after an underscore in the table name.**

Fixed the issue with the FILTERTABLE command not being able to interpret the wildcard character specified after an underscore in the table name.

**Bug 34116993: SQL Server - Extract hangs with error "SQLSTATE 08S01 native database error 104"**

Fixed an issue where the Extract hangs when one of the helper thread detects a fatal error, such as connection disconnected error.

**Bug 34183376: SQL Server - Replicat is slow in executing the UPDATE and DELETE commands when datetime/datetime2 column is part of the key**

Fixed an issue of unexpected casting of `datetime` and `datetime2` datatypes to `varchar (max)` that was delaying the execution of the `UPDATE` and `DELETE` commands, when these columns are part of the key.

**Bug 29717473: MySQL - Enable customers to skip unrecognized events that are logged into MYSQL transaction log**

Fixed an issue with Extract abending because of unrecognized binlog events introduced in MySQL server version later than 8, by providing the `skipunknownevent` parameter.

**Bug 33211888: MySQL - Support for multiple FILTERTABLES in the Extract**

Added support to configure multiple filter tables in the Extract parameter file.

**Bug 32078475: Oracle - Column REPLICAT_NAME of view DBA_GOLDENGATE_INBOUND is empty for Integrated Replicat**

Fixed an issue with "`select REPLICAT_NAME from ALL GOLDENGATE INBOUND`" statement not returning any value for Integrated Replicat.

**Bug 33825749: Oracle - Integrated Replicat fails with ORA-600 error with an argument(knalfConvertXid:1) during initial load replication**

Fixed an issue of Integrated Replicat failing with the error "ORA-600" if a `SOURCEISSTABLE` trail file has been pumped and an Integrated Replicat has been used on it.

**Bug 34002607: Oracle - Integrated Extract seeing open transaction due to ALTER DATABASE command**

Fixed an issue of an orphaned transaction in Integrated Extract when executing the `ALTER DATABASE` command.

**Bug 34148778: Oracle - Extract is not capturing table rename operation/command**

Fixed an issue of the `RENAME TABLE` command not being written to the trail file.

**Bug 33211894: PostgreSQL - Support multiple FILTERTABLES in Extract**

Extract enhanced to support multiple filter tables in the Extract parameter file.

**Bug 33636116: PostgreSQL - Extract keeps running but stops capturing**

Fixed an issue where the Extract kept running but stopped capturing records to the trail file.

**Bug 33748762: PostgreSQL - Extract abends with the error "OGG-04016 with error status 16,002"**

Fixed an issue with Extract abending with the error, `OGG-04016 with error status 16,002`.

**Bug 33801732: PostgreSQL - Database hangs during shutdown if the Extract is running**

Fixed an issue with the database server hanging during shutdown if the Extract is still running when the database is shutdown.

**Bug 33946655: PostgreSQL - Oracle GoldenGate Extract to Aurora PostgreSQL fails with errors, OGG-00551 and OGG-00145**

Fixed an issue of incorrect database configuration handle being checked for errors.

**Bug 34038178: PostgreSQL - Extract reported canceling statement due to statement timeout**

Disabled the `statement_timeout`, `idle_in_transaction_session_timeout` (for all PostgreSQL database versions) and `idle_session_timeout` (for PostgreSQL database version 14 and later) attributes, which were causing timeout issues in Extract and Replicat.

**Bug 34119732: PostgreSQL - Replicat is encountering no data found issue**

Fixed the duplicate target mapping detection issue with Replicat when wildcard and non-wildcard mapping is configured between two different case-sensitivity databases.

**Bug 33552966: TimesTen - Oracle GoldenGate delivery to TimesTen database not setting session/connection charset to match the DB charset**

Fixed the issue of session/connection character set not matching the database character set (`DBCharset`).

**Bug 33636046: TimesTen - Oracle GoldenGate cannot go back in time, once the rows has been propagated on the TimesTen database**

Fixed an issue with non-durable commit process of TimesTen database that resulted in data loss.

**Bug 32716759: Generic - SQLEXEC and SQLEXECONBEFOREIMAGE command's behavior with respect to UnifiedUpdate trail records.**

Fixed issues with inconsistent behavior of `SQLEXEC` command in processing a SQL update and generating the `UnifiedUpdate` trail files, and with `SQLEXECONBEFOREIMAGE` command for not getting the before image values correctly.

**Bug 33488637: Generic - Service Manager incorrectly restarts services**

Fixed an issue with the Service Manager not being able to detect already running services and incorrectly restarts them.

**Bug 33591162: Generic - Replicat is inserting an ASCII '0' value instead of a true NULL value in Oracle GoldenGate 19c target but not in 11g database target**

Fixed an issue with Replicat inserting a "0" (zero) instead of a true NULL value by adding the new `_ZEROTONULL` option to convert strings that start with `\0` to `NULL` for Oracle database

**Bug 33915722: Generic - Unable to run the STOP PMRSVR command**

Fixed an issue with Performance Metrics server hanging on shutdown.

**Bug 34014874: Generic - Oracle GoldenGate generates XML files with invalid characters**

Fixed an issue with Extract generating XML files with invalid characters.

**Bug 34212042: Generic - Cannot add new users to Oracle GoldenGate deployment**

Updated an error message to indicate that new users cannot be added to the secure store if the `cwallet.bak` file exists in it.

# Release 19.1.0.0.220419 - April 2022

**Bug 32876526: Generic - Improve logging of LCR values for integrated Replicat**

Added activity logging for dumping of DML and procedural LCR data values for integrated Replicat.

**Bug 33272560: Generic - LMDB size limit should not be fixed at 1GB**

Increased the size limit of the Lightning Memory-Mapped database to unlimited when it is used by `PMSrvr` datastore.

**Bug 33287206: Generic - PR Merger intermittent core dumps when receiving messages from workers**

Fixed an issue of PR Merger intermittent core dumps when it receives messages from workers.

**Bug 33847292: Generic - The DDL(text) function used in EVENTACTION parameter gets truncated**

Fixed an issue with the `@DDL(text)` function to return the complete value instead of the first 200 characters.

**Bug 33400286: Generic - ADD EXTRACT with SOURCEISTABLE option for initial load fails with the error OGG-30115**

Fixed an issue of add initial load Extract with the `SOURCEISTABLE` option, if the table contains an invalid number.

**Bug 33540234: Generic - Replicat hangs with "waiting at EOF" warning**

Fixed an issue with the Replicat process hanging because the trail file was not closed properly.

**Bug 31669209: Db2 for LUW - Undefined object warning causes almost all heartbeat commands to fail**

Fixed an issue with the heartbeat process of Db2 database.

**Bug 33629511: Db2 z/OS - Issue with LRSNTIMEDELTA parameter**

Fixed an issue with the `LRSNTIMEDELTA` parameter not getting added into the startup `LRSN` properly, causing the Extract to start at the wrong location or may not find the startup `LRSN` in the Db2 logs.

**Bug 33746251: Oracle ADB-S - Extract reports open transactions related to Federation DMLs even after commits were sent by LogMiner**

Fixed an issue with Federation Sync Transactions causing Extract to hang port switchover in the ADB-S environment.

**Bug 31840929: Oracle - Updating description in coordinated Replicat thread does not update the description in the corresponding child threads**

Fixed an issue where updating the description in the main coordinated Replicat thread did not update the description in the corresponding child threads.

**Bug 32796406: Oracle - DI Extract abends without any error message in report file in unsupported configuration**

Added an error message for DI Extract when invalid parameter combination of `SQLEXEC` and `NOUSERID` is used in the parameter file.

**Bug 32950446: Oracle - Alter classic Extract with Begin Timestamp abends with error ORA-01036 OR ORA-01403**

Fixed an issue with the altering classic Extract process abending when started with `BEGIN` option.

**Bug 33110174: Oracle - Replicat - DDL conversion option from default byte to character semantics**

Fixed an issue with Replicat `DDLOPTIONS` parameter by adding a new option `NLSLENGTHSEMANTICS` that can be set to `CHAR`, `BYTE`, or `DEFAULT`. When set to `CHAR` or `BYTE`, it will override the `NLS_LENGTH_SEMANTICS` setting in a DDL trail record.

**Bug 33201508: Oracle - Extract generates duplicate records when using transformation**

Fixed an issue with the Extract Table statement with a target value, which preceded a duplicate map, was not considered as a duplicate.

**Bug 33324312: Oracle - Text changes to be done in the error OGG-01896 for Oracle GoldenGate version 19.x and lower**

Updated the warning message to indicate that the error OGG-01896 is only applicable to classic Extract.

**Bug 33659088: Oracle - When integrated Replicat abends, include dba_apply_error in report file**

Fixed an issue of `DBA_APPLY_ERROR` messages not being generated when integrated Replicat abends.

**Bug 33697211: Oracle - Coordinated and parallel Replicat processes are vulnerable when running on Solaris/SPARC environment**

Fixed an issue of coordinated and parallel Replicats abending when scanning ports using any of the network tools, such as nmap on Solaris and SPARC environments.

**Bug 33884867: SQL Server - Extract abends with "OGG-00551 Database operation failed: Execute direct. ODBC error: SQLSTATE 22007 native database error 241. [Microsoft][ODBC Driver 17 for SQL Server]["**

Fixed an issue with translating data from different languages by setting the session language as `us_english` for manager connection.

# Release 19.1.0.0.220222 - April 2022

**Bug 33756665: Db2 for i - Failed to create a checkpoint table**

Fixed an issue with Extract failing to create the checkpoint table while using independent auxiliary storage pools `/DAHAIASP`.

**Bug 20513471: Oracle - Replicat should filter DDL using CSN for all the cases**

Enhanced Replicat filtering of DDL using CSN for all cases of DDL filtering.

**Bug 33834951: Oracle - Extract abends with the error "CACHEMGR: filecaching: pthread_created failed: errno: 11 (Resource temporarily unavailable) "**

Fixed an issue with Extract abending with the error `CACHEMGR: filecaching: pthread_created failed: errno: 11 (Resource temporarily unavailable)`.

**Bug 33793099: Generic - Tracking heartbeat table schema administration simplification**

Simplied the heartbeat table schema administration to support different heartbeat table schemas in the source and target databases in a single deployment.

**Bug 33794237: Generic - Rebuild libdb-18.1.so library to remove OpenSSL dependency**

Fixed an issue with BDB library (`libdb-18-1.so`) dependency on OpenSSL.

**Bug 33794517: Generic - Included correct FIPS libraries in Oracle database 19c available on OEL7 and AIX7**

Added the correct FIPS libraries in Oracle database available on OEL7 and AIX7.

# Release 19.1.0.0.220118 — January 2022

**Bug 33206894: Generic - Group and show aggregated parallel Replicat Mappers/ Appliers Cache Manager statistics**

Fixed the Replicat Mappers/Applies Cache Manager statistics to group and show aggregated values.

**Bug 32177752: Generic - ScaSharedContext extend --prop/--value to support JSON array and object**

Enhanced the configuration properties with JSON object or array type to be updated using the command line options `--prop/--value`.

**Bug 33588242: Generic - Prevent classic Extract from abending with the error "OGG-30068 Table ... has a default sequence column which is not supported"**

Fixed an issue with classic Extract abending when a sequence default column value is encountered.

**Bug 33033338: Generic - Incorrect SSL send size from SSL channel when using RECVPATH**

Fixed an issue with target initiated path (RECVPATH) reporting an error about an unrecognized command and prematurely stopping during operation.

**Bug 30995568: Generic - Wrong value is shown for stored procedure stats in parallel Replicat**

Fixed an issue with stored procedure not working correctly in parallel Replicat.

**Bug 31994709: Generic - Coordinated and Parallel Replicat cannot start after changing Oracle GoldenGate home directory name**

Fixed an issue with coordinated and parallel Replicat failing to start after the Oracle GoldenGate home directory name is changed.

**Bug 33011343: Generic - Multiple pumps from NSK to NSK to open system dynamic collector use more ports**

Fixed an issue with multiple Pump processes being started at the same time, abending with connection refused error, when the remote system is heavily loaded.

**Bug 33327100: Generic - The Operator role is not working as expected in Microservices Architecture**

Fixed an issue with the Operator role allowing configurations such as deletion of parameter files, adding or modifying tasks, which are aligned with Administrator role.

**Bug 33270938: Generic - Rollback should not happen when disabling GROUPTRANSOPS**

Added `COORDNOMETADATABARRIER` to disable metadata data change event being used as a transaction barrier in coordinated Replicat.

**Bug 33134621: Generic - Relative path with exttrail parameter not working on OCI hosts**

Fixed `EXTTRAIL` with relative path, which was failing to create output trail file when the full path length was long.

**Bug 32154847: Db2 for i: Checkpoint time is not correctly adjusted after DST change**

Fixed lag reporting when DST changes happen.

**Bug 33478888: Db2 for i - Delete TRANDATA failing with unknown error**

Fixed multiple issues in `ADD TRANDATA`, `INFO TRANDATA`, and `DELETE TRANDATA` commands.

**Bug 31976112: Db2 for i - TARGETONLY command supported with HEARTBEATTABLE**

`TARGETONLY` is supported with `HEARTBEATBEAT` commands.

**Bug 33421004: Db2 for i - Incorrect lag for heartbeat in bi-directional scenario**

Fixed incorrect lag for heartbeat in bi-directional use cases.

**Bug 32708834: Db2 LUW - Report DPF information when DPF is in use**

DPF detection and reporting is enabled now, to detect if the DPF setup is used.

**Bug 33113885: Db2 LUW - Extract parameter 'logdumpoption' is broken in cross endian set up**

Fixed the Extract parameter `logdumption` in cross endian platforms.

**Bug 33152226: Db2 for z/OS - Extract abends with the error "OGG-30115 An unavailable resource was encountered at position 000000000D056516BB22"**

Fixed an issue with Extract abending after running for a while with the unavailable resource message.

**Bug 30236475: Db2 for z/OS - Timestamp not available for current checkpoint, recovery checkpoint, and startup checkpoint**

Fixed the `showch` checkpoint report showing invalid negative numbers for the LSN values and the timestamps showing the status as `Not Available`.

**Bug 32857040: Db2 for z/OS - Need to report more LSN, LRSN, RBA information for the first log record on startup**

Fixed the Extract report to display RBA or URID at startup to easily restart at the same RBA position or at the same transaction.

**Bug 32431397: Db2 for z/OS - Extract failed with no error**

The `transmemory` parameter is deprecated to prevent Extract from failing without error and causing a hard crash.

**Bug 32440880: Db2 for z/OS - Extract abends with the 04E error and reason 00C90101 "a Terminate is done followed by NEXT, not FIRST"**

Fixed Extract abending with the IBM S04E error and reason code 00C90101.

**Bug 33462670: Db2 for z/OS - Extract abends due to an error in /gg_home1/extract': corrupted size vs. prev_size: 0x0000556c4b55a910**

Fixed an issue with Extract abending while processing multiple view DDL in the same transaction.

**Bug 33191472: Db2 for z/OS - Character conversion error when calling SYSPROC routine**

Fixed an issue with Extract and other services failing with a character conversion error.

**Bug 33092381: MySQL - Extract shows incorrect lag at checkpoint**

Fixed intermittent spikes in the Extract lag at checkpoint.

**Bug 33634810: Oracle Autonomous Database - Parallel Replicat abends with the error "OGG-01112 Unexpected condition in HandleTransaction"**

Fixed an issue with parallel Replicat abending with the error OGG-01112 Unexpected condition in HandleTransaction after encountering a RestartAbend record.

**Bug 32904384: Oracle - GGSCI crash/dump a core when gglog.xml is renamed; retrace testing is blocked - regression**

Fixed an issue with retrace testing being blocked when the gglog.xml file is renamed.

**Bug 32978874: Oracle: Oracle GoldenGate Microservices Architecture contains wrong destination path filters after moving chunk to a new shard**

Fixed an issue with `DISTPATH` rulesets not getting updated or `DISTPATH` not making progress.

**Bug 33193847: Oracle - Nonintegrated Replicat fails to apply large JSON doc when the underlying storage is BLOB column**

Fixed an issue with nonintegrated Replicats failing to apply large BLOBs with check constraint of `JSON` format `OSON`.

**Bug 32852905: Oracle - DBLOGIN returns the error "OCI Error DPI (status = 7-DPI-007: invalid OCI handle or descriptor)." when account doesn't exist**

Fixed the behavior of a DPI error message occuring instead of an Oracle error message when `DBLOGIN` is attempted for a user that doesn't exist.

**Bug 33060154: Oracle - Improve defaults for memory size and checkpointed interval during REGISTER EXTRACT**

Fixed `_CHECKPOINT_FREQUENCY` to `5x MAX_SGA_SIZE` for the integrated Extract outbound server.

**Bug 32078541: Oracle - Replicat abended due to the error "OGG-00446 OCI Error ORA-01407: cannot update for checkpoint table"**

Fixed an issue with Replicat abending with the error `OGG-00446 OCI Error ORA-01407: cannot update]] ("GG"."CHECKPOINT"."CURRENT_DIR") to NULL`.

**Bug 32586512: Oracle - Replicat hangs during replication of a sequence**

Fixed an issue with Replicat hanging during replication of sequence.

**Bug 31866454: PostgreSQL - Support for JSON data type in PostgreSQL**

JSON data type support is available with PostgreSQL.

**Bug 32619862: PostgreSQL - When replicating from Oracle GoldenGate for PostgreSQL to Oracle GoldenGate for BigData, Heartbeat is not working**

Fixed an issue with heartbeat not working when replicating from Oracle GoldenGate for PostgreSQL to Oracle GoldenGate for BigData.

**Bug 33407390: PostgreSQL - Incorrect Replicat Message regarding supported levels of trail record compression**

Message corrected for primary key table with Replica Identity set as `DEFAULT`.

**Bug 33431184: PostgreSQL - Table with no PK and with replica identity DEFAULT need to ignore delete operation**

Fixed Extract to prevent it from abending when a table with no primary key as has the Replica Identity set as `DEFAULT`.

**Bug 33384768: PostgreSQL - ALTER EXTRACT with timestamp is not working as expected**

Fixed an issue with altering Extract with current or future timestamp.

**Bug 32885359: SQL Server - Missing UTF8 database character set support for SQL Server 2019**

Support UTF8 collation in SQL Server 2019.

**Bug 33495042: SQL Server - Remote Extract throughput is slow over network with >1ms latency**

Improved remote Extract throughput when connecting over network with latency >=1ms.

**Bug 32920449: SQL Server - Extract has performance issues**

Fixed the performance issue in CDC Extract when statistics are disabled at the database level.

**Bug 32752676: SQL Server - Support Multiple TRANLOGOPTIONS FILTERTABLE parameters in Extract**

Enhanced functionality to provide support for multiple filter tables with wildcard, which can be specified using `TRANLOGOPTIONS FILTERTABLE` *`table_name`*.

# Release 19.1.0.0.211019 — October 2021

**Bug 32718671: Oracle - Parallel Replicat ignoring DROP PUBLIC SYNONYM**

Fixed an issue with parallel Replicat ignoring `DROP PUBLIC SYNONYM`.

**Bug 32909984: Oracle - Extract Pump generates incorrect trail record with 'OUTPUTFORMAT TEXT' parameter for negative numbers**

Fixed an issue where negative number with precision writes wrong value to the non-binary trails.

**Bug 33165985: Oracle Exadata - Extract mapping is not working for Autonomous Databases**

Fixed an issue with integrated and initial load Extract generating the error `"ORA-65011: Pluggable database ... does not exist` when the Autonomous Database name is in mixed case.

**Bug 30739999: Oracle - The sequence.sql script errors if user does not have SYSDBA privileges for Autonomous Database**

Fixed an issue with the `sequence.sql` script, which generated errors if a user didn't have SYSDBA privileges for the Autonomous Database.

**Bug 32590699: Oracle - Initial load Extract abends with the error "OGG-00735 Error converting Oracle numeric value to ASCII for column <name>"**

Fixed an issue with intial load Extract failing if a table contained an invalid number.

**Bug 32919984: Oracle - PMSRVR crashes when using LMDB and a parallel Replicat is present**

Fixed an issue with PMSRVR crashing when using LMDB when a parallel Replicat is present.

**Bug 32323766: Oracle - Encryption key name is shown as null when used for encryption in the Microservice Architecture web interface**

Fixed an issue with the Administration Server web interface showing the encryption key name value as null when used for encryption.

**Bug 32601895: Oracle - Authentication error on Windows**

Fixed an issue with a session login error occuring in the Microservices Architecture web interface on Windows.

**Bug 31350053: Oracle - Parallel Replicat REST API shows incorrect lag (0 seconds)**

Fixed an issue with parallel Replicat reporting last operation lag as 0.

**Bug 32900977: Oracle - START/STOP all ER processes from Administration Server web interface is not working**

Fixed an issue with the START/STOP all ER processes option in the Administration Server web interface generating the error "OGG-12059 - Internal error, a pointer could not be retrieved".

**Bug 31798796: Oracle - User is logged out almost immediately after logging in to Microservices Architecture web interface**

Fixed an issue where user sessions log off immediately after logging in when using the Microservices Achitecture web interface.

**Bug 33216300: Oracle - Administraiton Server Process Information page should allow the display of previous report files as well as discard files**

Enhanced the Administration Server Process Information page to allow displaying of previous report files and discard files.

**Bug 33132559: Oracle - Process Information page in the Administration Server web interface hangs**

Fixed an issue where the Process Information page of the Administration Server web interface hangs.

**Bug 32520627: DB2 LUW - Extract abended with Error indexOutOfRangeError at line n**

Fixed an issue with DDL change not being detected if the table DDL is changed.

**Bug 32602192: DB2 LUW - Extract failed to capture the value from all columns**

Fixed an issue with Extract failing to capture all the values from columns when the insert of the migrated update has first record to an empty page.

**Bug 33090993: DB2 z/OS - Extract abending without any error**

Fixed an issue with Extract shutting down without giving an error after mapping a table and its keys.

# Release 19.1.0.0.210720 - July 2021

**Bug 31798180: Generic - Coordinated Extract should abend instead of "WARNING OGG-25213 table has default sequence column"**

Converted warning message into Extract abend when table has default sequence column.

**Bug 30207560 - Generic - GGSERR Log file cannot rollover on Windows when OGG Processes are open**

Fixed an issue with `ggserr.log` file (on Windows), failing to rollover with a message similar to `"Unable to rename file C:\OGG19\ggserr.log" to "C:\OGG19.1\ggserr.log.1"(error 32, The process cannot access the file because it is being used by another process.)."`

**Bug 32847295: Generic - In Oracle GoldenGate Microservices, the Operator role is not working as expected, allowing create or delete of Extracts and Replicats**

Fixed permission issues for Extract and Replicats in the Administration Service.

**Bug 32512903: Oracle - Procedural replication mapping causes the error "OGG-02544 Unhandled error (ORA-19031: XML element or attribute does not match any in type"**

Fixed the issue with procedural replication causing errors such as `ORA-19031: XML element or attribute does not match any in type` or `ORA-25215: user_data type and queue type do not match`.

**Bug 32644918: Oracle - Parallel Replicat generates the error "OGG-02092 indexOutOfRangeError [0/0] in ggs::Coord::Applier::ExecuteTransaction"**

Fixed an issue with parallel Replicat generating the error "`OGG-02092 Unexpected condition in indexOutOfRangeError at line 50. Index 0 out of range. Number of elements: 0. in ggs::Coord::Applier::ExecuteTransaction`" when searching for metadata.

**Bug 30404574: Oracle - The INFO PMSRVR command shows BDB datastore when LMDB is enabled when using Oracle GoldenGate Classic Architecture**

Fixed an issue with the INFO PMSRVR command shwoing the BDB datastore when LMDB is enabled for Classic Architecture.

**Bug 31188252 - When DISPATH metadata is not loaded correctly, it appears as running but it's not**

Fixed an issue with `DISTPATH` incorrectly showing as running when the metadata for the `DISTPATH` is not loaded correctly.

**Bug 31647619: Oracle - Total-Truncates operation status is displaying in Total-unsupported in REST API**

Fixed the issue with Total-truncates stats being reported in Total-unsupported.

**Bug 32671982: Oracle - Add Unique ids for labels missing ids in Distribution Server GUI Page**

Fixed an issue with labels missing unique IDs in the Distribution Server web interface.

**Bug 32672061: Oracle - Add Unique ids for labels missing ids in Service Manager GUI Page**

Fixed the issue with labels missing unique IDs in the Service Manager web interface.

**Bug 32187628: Oracle: In the Administration Server web interface the View and Refresh Intervals option is not available when zoom-in is greater than 150%**

Fixed the Administration Service web interface view and refresh interval options section, which wasn't available when zoom-in is greater than 150%.

**Bug 32253742: Oracle - Initial load Extract needs file/trail fields and EXTFILE parameter**

Fixed the initial load Extract required file or trail fields and the `EXTFILE` parameter.

**Bug 32822530: Oracle - Network problems message shouldn't appear if the server is not down**

Fixed the network problem message appearing when the service is not down.

**Bug 32870024: Oracle - Reloading the Administration Server's Process Information page from browser displays blank content**

Fixed the Process Information page in the Administration Server web interface, which appeared blank when the page was reloaded.

**Bug 32877044: Oracle - Administration Server web interface is showing wrong LAG details for Replicats**

Fixed the Administration Server web interface showing incorrect LAG details for Replicats.

**Bug 32881238: Oracle - Refresh Interval Option not displaying under Menu List of the Microservices's Home Pages while navigating from Administration Server Configuration/Profile/Diagnosis/Debug Log/Administrator pages**

Fixed the menu list to display the Refresh Interval Option for Distribution Server, Receiver Server, and Performance Monitoring Server when navigating from the Administration Server Configuration, Profile, Diagnosis, and Debug Log pages.

**Bug 32724986: Oracle - Extract hanging when the database instance is brought down while failover BACKUP is also down**

Fixed an issue with Extract abending when a failover is detected.

**Bug 32793561: Oracle - Observing Extract properties in FIPS enabled deployment gives a warning message**

Fixed an issue with Extract properties in FIPS enabled deployment displaying a warning message.

**Bug 32827405: Oracle - Deployment creation fails when FIPS is enabled and security is disabled**

Fixed the issue with deployment creation failing when FIPS is enabled and security is disabled.

**Bug 32829671: Oracle - Parallel Replicat crash and dump a core when abend with unique constraint violation**

Fixed an issue with parallel Replicat intermittently core dumping when stopped.

**Bug 32979114: DB2 LUW- Initial load Extract failure**

Fixed the `max_inline_len` for LOBs column being set to 2000.

**Bug 32902439: DB2 z/OS - Extract writing incorrect CHARSET causes Replicat to abend with the error "OGG-03534 Invalid character 'f1' at offset 0 for character set UTF-8"**

Fixed the issue with no charset value in trail metadata if the table was created prior to DB2 version 8.

**Bug 32466410: DB2 z/OS - Extract using LRSNTIMEDELTA hangs at recovery after restart**

Fixed the behavior of Extract abending when `LRSNTIMEDELTA` is used while restarting the Extract.

**Bug 32254188: DB2 z/OS: The SP and UDT statistics show have negative numbers**

Fixed the SP and UDT statistics so that they don't show negative numbers.

**Bug 32079019: PostgreSQL - Oracle GoldenGate Replication issue for CLOB datatype**

Fixed an issue with the native type validation being disabled for the records that capture read from the log.

**Bug 32108804: SQL Server - Replicat timezone offset didn't show correct**

Enhanced Oracle GoldenGate Replicat for SQL Server to add `@DATENOW('LOCAL')` to return current date and time in local timezone with timezone offset and add `@DATENOW('UTC')` to return current date and time in UTC timezone with +00:00 offset.

**Bug 32795888: Azure SQL Database - ADD HEARTBEATTABLE fails on Azure SQL DB Managed Instance and gives incorrect error message that TARGETGONLY is required**

Fixed an issue with `ADD/ALTER HEARTBEATTABLE` command incorrectly requiring the `TARGETONLY` parameter for Azure Managed Instance.

**Bug 32516012: SQL Server - Pump sends RMTTRAIL with different size on a record**

Fixed an issue with Data Pump sending RMTTRAIL with different sizes on a record when multiple trail files are used.

# Release 19.1.0.0.210420 — May 2021

**Bug 31071409: Generic - Add Instantiation CSN filtering start and end info message in Replicat report file**

Added instantiation CSN filtering start and end information message in Replicat report file.

**Bug 32435985: Generic - CMD table requests to update DISTPATH ruleset in Oracle GoldenGate Sharding not working for move chunk, split chunk, incr dpl**

Fixed an issue where `DISTPATH` rules were not being updated for move chunk, splitchunk, and incremental deployment.

**Bug 32131349: Generic - Triggers being fired when Replicat applies changes after TAF failover**

Fixed an issue with Replicat not able to failover successfully because of trigger issue after a TAF failover is invoked.

**Bug 32036730: Generic - Extract does not proceed any record after the erro ORA-12805 occurs**

Fixed an issue with classic Extract with RAC abending with the error `OCI Error ORA-12805: parallel query server died unexpectedly`

**Bug 30246124: Oracle - DML/DDL to tables with support_mode NONE should be automatically skipped**

Fixed an issue with Extract abending when unsupported table are captured by integrated Extract.

**Bug 32501929: Oracle - BLOCKCHAIN tables are not supported**

Fixed an issue with Extract capturing table marked as `no support` from support view.

**Bug 32357955: Oracle - Replicat parameter _EMPTYTOSPACE is not working**

Added the `_EMPTYTOSPACENULLABLE` parameter to replicate empty string `tospace` for NULLABLE columns.

**Bug 31907806: Oracle - Output from USEREXIT has extra spaces**

Fixed `TRIMSPACES` not working in `USEREXIT GET` column function.

**Bug 32197412: Oracle - Oracle GoldenGate 19c (19.1.0.4) Microservices does not honor Autorestart Max Retries and Retry Window**

Fixed an issue with Oracle GoldenGate Microservices Architecture not honoring autorestart Max Retries and Retry Window.

**Bug 31507455: Oracle - Extract doesn't write LOB columns data to BEFORE IMAGE for DELETE records**

Fixed the issue of parameter ordering involving `LOGSUPALLCOLS`.

**Bug 31425300: Oracle - Roman numerals is long data type is missed on target database**

Fixed an issue with replicating a `LONG` containing an invalid `CHAR` using integration Replicat when `DBCHARSET` is multibyte.

**Bug 31507116: Oracle - Parallel classic Replicat in Microservices fails with OGG-00919 Error in KEYCOLS clause**

Fixed an issue with parallel Replicat not writing keycols error to report file.

**Bug 31711659: Oracle - Parallel Replicat abends with ORA-1400 when using an INSERTALLRECORDS mapping**

Fixed an issue with parallel Replicat abending with the error ORA-1400 when using an `INSERTALLRECORDDS` mapping.

**Bug 32751728: DB2 z/OS - After applying patch, Extract abends with same error "OGG-01038 Cannot fetch required data from table *table_name* due to missing key columns"**

Fixed an issue with Extract abending with a missing key column error for a LOB table.

**Bug 32532571: MySQL - Extract abends with OGG-04036 Positioning sequence ID is out of order**

An issue with setting an internal transaction flag when encountering `FILTERTABLE` operations followed by `No-Op` operations was corrected.

**Bug 31957005: SQL Server: Differences in source table metadata with CDC Extract instance causes descrepency**

Fixed an issue with differences in base table and change tracking table DDL causing undefined behavior.

# Release 19.1.0.0.210228 — March 2021

**Bug 31941089: Oracle - Autonomous Database Extract failing to start when used with TRANLOGOPTIONS EXCLUDEUSER**

Fixed an issue with Extract failing to start when used with `TRANLOGOPTIONS EXCLUDEUSER`.

**Bug 31965449: Oracle - REPERROR(2291, TRANSDISCARD) is not working as expected**

Fixed an issue where `ORA-02291` or `ORA-02292` were embedded in `ORA-02091` and `REPERROR(2291, TRANSDISCARD)` or `REPERROR(2292, TRANSDISCARD)` were not working correctly.

**Bug 32465455: Oracle - Parallel Replicat abends with indexOutOfRangeError in ExecuteTransaction**

Fixed an issue with parallel Relpicat crashin in `ggs::Coord::Applier::MetadataCache::GetMap`.

**Bug 31960849: Oracle - SPLIT_TRAN_REC allows Foreign Key dependency to be incorrect**

Fixed an issue with `SPLIT_TRANS_RECS` allowing the Foreign Key dependency to be incorrect, which in turn, allowed part of the transaction to be scheduled sooner than it should occur.

**Bug 31626902: Oracle - Extract always shows UTC/GMT timestamp in SHOWTRANS output**

Fixed an issue with SHOWTRANS output for Extract showing start time of a transaction in GMT/UTC timezone only.

**Bug 32049242:Oracle - Parallel Replicat is abending intermittently while processing records with constraint violations**

Fixed an issue with parallel Replicat crashing sometimes if discard messages contain the `%s` characters.

**Bug 30680081:Oracle - Classic Extract performance issue on Oracle GoldenGate 18c and 19c only**

Fixed an issue with coordinated Extract capturing and processing all records even though they are tagged to be skipped.

**Bug 31940189: Oracle - Reorder filtering to filter, based on component/opcode prior to metadata lookup**

Oracle GoldenGate has been enhanced to reorder filtering to filter based on the component/opcode prior to metadata lookup.

**Bug 31680465: Oracle - INCLUDETAG Support not available**

`INCLUDETAG` support has been implemented.

**Bug 32444005: Oracle - Integrated Replicat OCIXStreamInLCRSend**

Fixed an issue with `lrggglwlm2crsend_solsp` or `lrggglwlm4crsend_solsp` failing with timezone settings.

**Bug 32351396: Oracle - Need support for multiple Service Managers registered under same OGG_HOME with XAG**

Oracle GoldenGate has been enhanced to use logical filenames when launching Service Manager.

**Bug 32319245: Oracle Exadata Cloud - Integrated Replicat abends with the error "OGG-00664 OCI Error ORA-26871: unexpected OCIXStreamInLCRSend call"**

Fixed the issue with integrated Replicat generating an error `OCI Error ORA-26871: unexpected OCIXStreamInLCRSend call (expecting]] OCIXStreamInChunkSend)` when attempting to set the database timezone and sending more data to the database, where the trail file has a different database timezone specified in the trail header to the PDB timezone.

**Bug 32401716: Oracle - GET /.../extracts/{extract} no longer returns registration CSN**

Fixed an issue with Extract not returning the registration CSN value.

**Bug 31460112: DB2 LUW - X Endian Extract stopped with the error "An invalid parameter "piStartLRI" was passed to the "db2ReadLog" read log API"**

Oracle GoldenGate now supports mix endian set up with DB2LUW on Windows 10 and Oracle GoldenGate on AIX.

**Bug 32228256: DB2 z/OS - Extract abends with the error "OGG-01038 Cannot fetch required data from table *tablename*"**

Fixed an issue with a BLOB not being fetched and replicated when there is a `VAR` or `BINARY` key column.

**Bug 31541257: DB2 z/OS - Protect against crashing an LPAR due to mismatch with DB2 z/OS executables**

Fixed an issue with stored procedure causing a crash of a DB2 or zOS LPAR if it uses bad pointers.

**Bug 31923063: DB2 z/OS - Change Extract to check SP/UDF versions and stop if they are incorrect**

Oracle GoldenGate protects users from accidentally using incorrect versions of the DB2 SQL procedures and the Extract, which can cause issues with DB2 or zOS.

**Bug 31980534: DB2 z/OS - The ddl_update.sh script fails with the error "OGGIFI00.UPDATE_MERGE". SQLSTATE=53099"**

Fixed an issue with the `ddl_update.sh` script generating the error `-20071 SQLSTATE 53099` when creating `UPDATE_MERGE`.

**Bug 32324679: DB2 z/OS - DB2 z/OS to Oracle initial load Extract generates garbage data**

Fixed data format and trail metadata CHARSET during initial load and online mode fetched columns.

**Bug 29926335: DB2 for i - UPGRADE CHECKPOINTTABLE not working on iSeries**

Fixed an issue with the `UPGRADE CHECKPOINTTABLE` command not working on DB2 for iSeries.

**Bug 31227988: DB2 for i - Trail file validation failed for colcharset feature**

Fixed an issue with `COLCHARSET PASSTHRU` not working as per core design.

**Bug 32447395: PostgreSQL - ADD TRANDATA is not working for more than 100 tables if wildcard is used**

Fixed an issue with `ADD`, `DELETE`, and `INFO TRANDATA` commands not working properly when wildcard is used with table name and there are more than 100 tables.

**Bug 32244769: PostgreSQL - Extract abends with the error "OGG-25548 Column index (24) is out of sequence for table"**

Fixed an issue with Extract abending when the table column is dropped and readded.

**Bug 32402946: PostgreSQL - Extract abends with the error "OGG-25359 Could not connect to server with database 'xx', host 'xxx', port"**

Fixed an issue with Extract not being able to capture data from PostgreSQL source database, if the port number specified in the `ODBCINI` file is 5 digits.

**Bug 32130140: MySQL - Extract abends with the error "DDL: charset number 192, charset name is not supported in OGG-MySQL"**

Fixed an issue with Extract abending with the following error when DDL was changed on a table:

```
2020-11-05 15:11:59 ERROR OGG-00146 Call to VAMControl returned with error
status 600: VAM Client Report <CAUSE OF FAILURE : DDL: charset number 192,
charset name is not supported in OGG-MySQLWHEN FAILED : While initializing
events WHERE FAILED : MySQLBinLog Reader ModuleCONTEXT OF FAILURE : No
Information Available!>.
```

**Bug 32123618: SQL Server - After DST change, Extracts erroneously report 1 hour lags**

Fixed a issue with Extract incorrectly reporting a one hour lag when DST change occurred while the Extract was running and a constant lag when Oracle GoldenGate remote Extract captures from a server on a different timezone.

**Bug 30964666: SQL Server - Replicat reports two warnings for every insert with BATCHSQL in OLEDB mode for identity column table**

Fixed Replicat warnings, which occur when user performs insert with BATCHSQL in OLEDB mode for identity column table.

**Bug 32335569: SQL Server - Replicat is slow in applying delete and update when there is char/varchar column as part of the primary key**

Fixed performance issues due to index seeking, caused by `VARCHAR` key column being bound as `NVARCHAR`.

**Bug 32449231: SQL Server - ADD TRANDATA does not return error when schema used for GGSCHEMA does not exist in the database**

Fixed an issue with Trandata commands not returning any error if the GGSCHEMA does not exist in the database.

**Bug 30484169: Generic - REPLACEBADCHAR does not consider incomplete surrogate pairs as bad**

Fixed an issue with `REPLACEBADCHAR` ignoring to replace a low surrogate.

**Bug 31879230: Generic - Replicat abends when BATCHSQL and CDR are enabled**

Fixed an issue with Replicat encountering errors when applying records, with CDR and BATCHSQL enabled.

# Release 19.1.0.0.201013 — October 2020

**Bug 31689380: Oracle - Replicat without Checkpointtable does not maintain the checkpoint information correctly**

Fixed an issue with Integrated Replicat restarting from the wrong position when database checkpoint is not used.

**Bug 31709315: Oracle - PRIR and Auto CDR with RECORD_CONFLICTS greater than or equal to true transactions occuring twice**

Fixed an issue with PRIR and auto-CDR creating `RECORD_CONFLICTS` greater than or equal to `TRUE`, causing transactions to get applied twice.

**Bug 30920035: Oracle - Oracle GoldenGate supports Kerberos Authentication in Oracle DB LOGIN**

Oracle GoldenGate enhanced to support Kerberos Authentication during Oracle database login.

**Bug 30572581: Oracle - ALTER EXTRACT isn't taking specific time with BEGIN against Oracle GoldenGate 12c (12.3.0.1)**

Fixed the timezone calculation for minutes for classic Extract.

**Bug 30446367: Oracle - Working session for EXIT_CALL_PROCESS_RECORD not being called of while invoking USEREXIT**

Fixed `USEREXIT` not getting any record when the `USEREXIT` library has compatibility 3 and older.

**Bug 31551177: Oracle - GET_COL_METADATA_FROM_INDEX function not giving the correct value for is_nullable**

Fixed an issue with Extract not writing the correct value nullable column information to trail file.

**Bug 30806586: Oracle - Integrated Extract does not handle FORCETRANS**

Fixed an issue with `FORCETRANS` not working with integrated Extract.

**Bug 31278701: Oracle - Integrated Replicat fails with the error "ORA-00603 : knalkdLodCfGrpCols:numcols, when AUTO_CDR is enabled"**

Fixed an issue with all DML handlers being ignored when ACDR is enabled.

**Bug 28725556: Oracle - Extract SQLEXEC procedure abends with the error "ORA-4043 ON OGG 12.3 CAPTURE PROCESS"**

Fixed an issue with an Extract SQLEXEC procedure being unable to resolve the procedure in PDB.

**Bug 29742654: DB2 for i: Could not capture heatbeattable data**

Fixed an issue with Extract not being able to capture heartbeattable data.

**Bug 30473302: DB2 for i - Update SHOWTRANS output to be more DB2 for i specific**

Fixed an issue with `SHOWTRANS` operations to be more specific for DB2 for i Series.

**Bug 31898626: DB2 for i - Manager reports "Illegal instruction" and creates coredump on Power 7 system**

Fixed the build for Power 7 based systems to avoid an illegal instruction issue.

**Bug 30473302 - DB2 for i: Update SHOWTRANS output to be more DB2 i specific**

Fixed `SHOWTRANS` output to be more specific for DB2 for iSeries.

**Bug 31122004: DB2 z/OS - Extract consumes more CPU for the tables with LOB columns even though they are excluded**

An issue with more local CPU being consumed by Extract when processing tables with LOB type columns than for tables that do not have these, even if `COLSEXCLUDE` parameter is used for these columns, was fixed.

**Bug 31000610: DB2 z/OS - Extract abends after DDL when using TRACKSCHEMACHANGES**

Fixed an issue with Extract abending if it cannot find the history records when using `TRACKSCHEMACHANGES` in cases where the timezones of the Extract machine and DB2 are different.

**Bug 16814471: DB2 z/OS - DB2 z/OS version 10 support for temporal (history) tables**

Support for temporal history tables for DB2 z/OS version 10 has been added.

**Bug 31386231: DB2 z/OS - Check LPAR connection on extract restart and reallocate ECSA as needed.**

Fixed an issue when connecting Oracle GoldenGate to a data sharing configuration that spans multiple LPARs, recording of ECSA used may not be done correctly resulting in ECSA leaking without notification.

**Bug 31526548: DB2 z/OS - Batch DDL operations causes apparent timing issue finding DDL history**

Fixed the version 0 history record being ignored when searching the history table.

**Bug 31587607: DB2 z/OS - Extract recovery checkpoint stuck after transaction abort**

Fixed an issue with DB2 changing the position of the DB2 crash abort transaction commit or abort log records in an unexpected way.

**Bug 31871467: MySQL - Oracle GoldenGate remote capture for MySql abends without any error**

Fixed an issue where Extract was crashing when GEOMETRY data type was part of a table, even when the table is not in the capture list.

**Bug 31792776: PostgreSQL - Extract abends with the error "Positioning sequence ID is out of order"**

Fixed transactions for which `BEGIN CSN` is less than the last highest processed CSN.

**Bug 31794343: PostgreSQL - Delivery fails with the error "OGG-00551 Database operation failed: Preparing statement"**

Fixed an issue with Replicat abending with the error "`Current transaction is aborted, commands ignored until end of transaction block`".

**Bug 31591273: Generic - Trail format on metadata byte order are different for Oracle GoldenGate 12.2 and 12.3**

Fixed an issue when setting the `TRAILBYTEORDER` parameter in the Extract parameter file has no effect.

**Bug 31098304: Generic - Classic Extract incorrectly reports the row is compressed**

Fixed an issue with classic Extract incorrectly reporting a previously clustered row as compressed, which causes an abend.

**Bug 31782581: Generic - ADD KEYCOLS support to DEFGEN**

`KEYCOLS` option is added to `DEFGEN` to generate DEFS file corresponds to ER `TABLE`/`MAP` clause `KEYCOLS` option.

**Bug 31650786: Generic - Replicat FILTER filters rows that should not be filtered**

Fixed an issue with Replicat filter removing rows that should not be filtered.

**Bug 31131773: Generic - Improve resiliency when upstream LAD temporarily not in status VALID on startup**

Fixed an issue with Extract abending if on startup a downstream Extract detects the upstream LAD is not in a VALID status.

**Bug 31780753: Generic - Replicat abends with the error "indexOutOfRangeError at line 50. Index 1 out of range. Number of elements: 1"**

Fixed an issue with Replicat failing if a trail file has an incorrect metadata entry.

# Release 19.1.0.0.200714 — July 2020

**Bug 30638977: PostgreSQL - Support for interval data type**

Added delivery support for Interval data type.

**Bug 26812342 - PostgreSQL Replicat timestamps are being cutoff at the 6th character**

Fixed an issue with Oracle GoldenGate not supporting `TIMESTAMP` with timezone and `TIMESTAMP` without timezone columns if they are defined with some explicit precision, for example, `TIMESTAMP(p)` and `TIMESTAMP(p)` with timezone columns.

**Bug 29856640: Oracle - Extract does not honor the global parameter EXCLUDEWILDCARDOBJECTSONLY when filtering by partition name**

Fixed an issue with Extract not honoring the global parameter `EXCLUDEWILDCARDOBJECTSONLY` when filtering by partition name.

**Bug 31367261: Oracle - STATS report rate shows incorrect total rows**

Fixed an issue with the `GGSCI STATS` command showing rate stats for an Extract printing totals instead of the rates for the latest section.

**Bug 30838154: Oracle - Integrated Extract potentially causes seg-fault with large record**

Fixed an issue with record size over the default internal buffer size causing seg-fault.

**Bug 31175404: Oracle: Oracle GoldenGate register fails when lowercase PDB names are used.**

Added support for lowercase PDB names in Oracle GoldenGate.

**Bug 30633479: Oracle - Replicat not applying records when having more than 46 lines**

Fixed an issue with Replicat not applying records with more than 46 lines.

**Bug 30838154: Oracle - Integrated Extract potentially causes seg-fault with large record**

Fixed an issue where seg fault occurs when the record size is higher than the default internal buffer size.

**Bug 29166143: Oracle - AdminClient INFO EXTRACT output doesn't provide process file information**

Fixed an issue with the `INFO EXTRACT` command in AdminClient not providing the process file information.

**Bug 30902327: Oracle - Integrated Extract doesn't fetch or write one of the LOB column randomly**

Fixed an issue with Extract abending when using the parameter `NOCOMPRESSDELETEFETCHMISSINGCOLS`.

**Bug 30911868: Oracle - DEFERAPPLYINTERVAL Parameter Not Working**

Fixed an issue with `DEFERAPPLYINTERVAL` having a value greater than 2147 seconds not getting deferred.

**Bug 31143243: Oracle - Parallel Integrated Replicat core dumps with error "OGG-01112 Unexpected condition in HandleTransaction after applying patch 31034483"**

Fixed an issue with crash ocurring when `DEFERAPPLYINTERVAL` and `SPLIT_TRANS_RECS` are used with Parallel Integrated Replicat.

**Bug 31107854: Oracle - SDO_GEOMETRY column is not replicated correctly**

Fixed an issue with SDO_GEOMETRY columns getting ignored in Oracle GoldenGate 19c Replicat when trail format are of Oracle GoldenGate 12c.

**Bug 31010508: Oracle - Extract abends with the erro "OGG-01112 Unexpected condition in DDLEXT_process_extract at line xxx"**

Fixed Extract error while processing `ALTER VIEW DDL`.

**Bug 31003735: Oracle - Extract is abending while dealing with Index Organized Tables (IOT)**

Fixed an issue with Partition Table that is an Index-organized table uses the correct partition name and partition ID instead of the system generated or maintained index segment name and ID.

**Bug 30861743: Oracle - Extract generates ALTFORMAT token even after excluding the LOB column when using DBMS_LOB package**

Fixed an issue with LOB column `COLSEXCEPT` list writing ALTERNATE format tokens in the trail file for LOB operations.

**Bug 30903771: Oracle - Extract abends with new partition parameter**

Fixed an issue with Integrated Extract abending unexpectedly when it almost reaches the trail's maximum size and partition parameter is used.

**Bug 31113468: Oracle - Module is not showing Replicat name from Oracle GoldenGate 19c version**

Fixed an issue with module value in session information is not having the Replicat group name.

**Bug 31013450: Oracle - Difference in results for FORMATASCII, OUTPUTFORMAT, and PLACEHOLDERS**

Fixed an issue where the name is missing for the placeholder column when using `OUTPUTFORMAT` with `PLACEHOLDERS` and `NAMES`.

**Bug 31040907: Oracle - Latest messages are written in GGSERR.LOG.1**

Fixed an issue where a RollingFileAppender that writes to a shared file, such as `ggserr.log`, can ocasionally write to a rolled over file.

**Bug 31062378: SQL Server - Extract generates a warning even though the Oracle GoldenGate CDC Cleanup job exists and is running**

Fixed an issue where Extract reported `WARNING OGG-05283` that it could not retrieve Change Data Capture cleanup settings for the database when SQL Server Transactional Replication is enabled.

**Bug 30030259: MySQL - Outgoing_heartbeat_ts,outgoing_extract_ts,outgoing_routing_ts,outgoing_replicat_ts should be empty or null for Unidirectional Heartbeat configuration**

Fixed an issue with `outgoing_heartbeat_ts`, `outgoing_extract_ts`, `outgoing_routing_ts`, and `outgoing_replicat_ts` not being empty or null for Unidirectional heartbeat configurations.

**Bug 30030081: MySQL - Incoming_heartbeat_age value shows negative in GG_LAG_HISTORY table**

Fixed an issue with `incoming_heartbeat_age` value being negative in `GG_LAG_HISTORY` table.

**Bug 31202227: Azure Database for MySQL - Extract abends after 2nd or 3rd heartbeat seed record in the heartbeat table**

Fixed an issue where Extract abends with the error `OGG-01161 Bad column index specified for table`. Issue is due to the `binlog_row_image` variable not set to `FULL` and a proper error message is now supplied.

**Bug 31190369: MySQL - The column case changed from lower to upper after upgrading Oracle GoldenGate from 12c (12.3.0.1) to 19c (19.1.0)**

Fixed an issue wherein trail metadata for the column name changed from lower to upper case after upgrading from Oracle GoldenGate 12c (12.3.0.1) to 19c (19.1.0).

**Bug 31441320: DB2 z/OS - DDL update script fails for DB2 V12 FL100**

Fixed an issue where `ddl_update.sh` fails with `SQLCODE = -4743` when using DB2 v12 at `FL100`.

**Bug 31114345: DB2 z/OS -Extract abends when processing LOB cols**

Fixed an issue with Extract abending after issuing the switching `APIFILTER` mode message when an LOB is encountered.

**Bug 31381472: DB2 z/OS - Only the first of multiple alters for different tables in the same transaction is put in history**

Fixed an issue with Extract not sending multiple tables to DDL History processing for alters.

**Bug 31170155: DB2 z/OS - Oracle GoldenGate does not always change the IDs for a dropped and recreated table causing history errors**

Fixed an issue with missing latest version of table in DDL history when there are several versions with identical version numbers differing chiefly in `version_ts`.

**Bug 31213929: DB2 z/OS: Updates to DB2 explain tables causing an abend**

Fixed an issue with Extract crashing when `EXPLAIN` commands causes unusual changes to the system table.

**Bug 31305105: DB2 z/OS - Change ddl_update.sh to eliminate duplicates error**

Fixed an issue with `ddl_update.sh` generating the error indicating that the operation cannot be performed to avoid duplicate entries.

**Bug 31208291: DB2 z/OS - DDL history insert statement displayed as unsigned int instead of signed short**

Fixed an issue with activity logging showing that SQL query on inserting to DDL history table may show large positive integers for DBID and OBID instead of small negative numbers.

**Bug 31040380: DB2 z/OS - Extract "Lag at chkpt" value is always 00:00:00 Even though lag is there**

Fixed display of checkpoint lag from GGSCI.

**Bug 31316835: DB2 z/OS - Remove SQL Warnings when attempting to add duplicate rows to ddl history**

Fixed an issue when running multiple Extracts with `TRACKSCHEMACHANGES`, there may be warnings in the Extract report regarding an attempt to insert a row that violates a unique index.

**Bug 31123944: DB2 z/OS: Bad log record header encountered on DB2 12.1**

Fixed the record header issue in DB2 12.1.

**Bug 31350725: DB2 LUW - Change Heartbeat History trigger's compound SQL(compiled) statement to compound SQL(inlined)**

Fixed an issue with `HEARTBEAT HISTORY` table trigger getting updated with compound SQL inlined statement.

**Bug 31177621: DB2 LUW - DB2 LUW 11.5 Extract abends with the error "Invalid row type 2005 was received while creating a LFM row for an LFM record type"**

Fixed an issue with LFM records not processing correctly if table has ERS data.

**Bug 30883131: DB2 LUW - OGG-02092 Unexpected condition in indexOutOfRangeError at line 51**

Fixed an issue with ERS records processing.

**Bug 31066223: DB2 LUW - Updating varchar column with empty string to null**

Fixed an issue with updating null flag of a column.

**Bug 31222222: DB2 for i - Extract not able to capture records**

Fixed an issue with Extract skipping first record upon initial positioning.

**Bug 29902799 - DB2 for i - Misleading error "OGG-00551 Database operation failed: Fetching DDM table rec length" occurs for a table that doesn't exist**

Fixed an issue with initial load Extract not displaying a proper error message for a table that does not exist in the database.

**Bug 31454801: Teradata - Coordinated Replicat abends with a SQL error "2631, Transaction Aborted due to Deadlock"**

Fixed an issue where unchanged primary key is put into set clause, which escalates row level lock to table level lock causing deadlock.

# Release 19.1.0.0.200414 — June 2020

**Bug 31305105: DB2 z/OS - Change ddl_update.sh to eliminate duplicates error**

Fixed an issue with `ddl_update.sh` to eliminate the duplicate rows in table.

> **Note:**
>
> Due to some DB2 z/OS issues, if you are already using Oracle GoldenGate 19c (19.1.0) and have previously used `TRACKSCHEMACHANGES`, then you must run the new script `ddl_delete_dups.sh` to ensure that there are no duplicates in the history table. If you don't run the script and the unique index that protects against duplicates is not found, Extract will exit with a message indicating that the unique index is missing until the `ddl_delete_dups.sh` is run. An alternative would be to reorganize all the tables, drop the history table and then run `ddl_create.sh` followed by `ddl_update.sh`.

**Bug 31526548: DB2 z/OS - Batch DDL operations causes apparent timing issue finding DDL history**

Fixed an issue where due to a timing issue the 0th version of a table may not be found in some cases.

**Bug 30680258: DB2 z/OS - Extract memory corruption error**

Fixed an issue where Extract crashed with a memory corruption error when a table column is altered and statistics fields were changed.

**Bug 30729495 - DB2 z/OS: System table update for DDL is not getting added to history when not defined**

Fixed an issue with the history table not including historical information about system tables and column events.

**Bug 30734990: DB2 z/S - Oracle GoldenGate does not capture DB2 v12 transactions when using datasharing**

Fixed an issue with Oracle GoldenGate not replicating when connecting to a datasharing group for V11 and V12 with release level 100 data from one of the members.

**Bug 30782649: DB2 z/OS - Issue with using LRSNTIMEDELTA in Oracle GoldenGate 19c (19.1.0.4)**

Fixed an issue with `LRSNTIMEDELTA` parameter value not being used to adjust the starting LRSN.

**Bug 30796546: DB2 z/OS - Extract ABENDing due to a memory smashing event**

**Bug 30993340: DB2 z/OS - Nulls in the colname from the GG DDL HIST table shows that the alterations are not applied for the table**

Fixed an issue with the history table not getting updated properly when a table was altered more than once in a transaction.

**Bug 31056957: DB2 z/OS - DDL history not correctly updated after alter table drop column and reorganization**

Fixed an issue with column history is not getting updated correctly after drop column and reorg when using `TRACKSCHEMACHANGES`.

**Bug 31071657: DB2 z/OS: Extract abends with the error "OGG-00551 - SQLSTATE S1014 native database error -99999. - CLI0129E"**

Fixed an issue with Extract abending with the error `"OGG-00551 - SQLSTATE S1014 native database error -99999. - CLI0129E"`.

**Bug 31441320: DB2 z/OS - DDL update script fails for DB2 V12 FL100**

Fixed an issue with `ddl_update.sh` failing with the error `SQLCODE = -4743 when using DB2 v12 at FL100`

**Bug 31114345: DB2 z/OS - Extract abends when processing LOB cols**

Fixed an issue with Extract abending when an LOB is encountered and the log read mode is changed from `APIFILTER` to `NOAPIFILTER`.

**Bug 31381472: DB2 z/OS - Only the first of multiple alters for different tables in the same transaction is put in history**

Fixed an issue with Extract not sending multiple tables to DDL history processing for alters.

**Bug 31213929: DB2 z/OS - Updates to DB2 Explain tables causing an abend**

Fixed an issue with Extract abending when `EXPLAIN` commands cause unusual system table changes.

**Bug 31225570: DB2 z/OS - Duplicate entries in DDL history table.**

Fixed an issue with duplicate records appearing in DDL history table when running multiple Extracts.

**Bug 31208291: DB2 z/OS - DDL history insert statement displayed as unsigned int instead of signed short**

Activity logging shows that SQL query on inserting to DDL history table may show large positive integers for `dbid` and `obid` instead of small negative numbers.

**Bug 31040380: DB2 z/OS - Extract "Lag at chkpt" value is always 00:00:00 even though lag is there**

Fixed the display of checkpoint lag from GGSCI.

**Bug 31316835: DB2 z/OS: Remove SQL warnings when attempting to add duplicate rows to DDL history**

Warnings generated when running multiple Extracts with `TRACKSCHEMACHANGES` in the Extract report regarding an attempt to insert a row that violates a unique index can be ignored.

**Bug 31123944: DB2 z/OS - Bad log record header encountered on DB2 12.1**

Fixed an issue with record header in DB2 12.1.

# Release 19.1.0.0.200414 — April 2020

**Bug 30539518 - Oracle: Performance degradation with UDT columns in Extract/ Replicat processes**

Fixed an issue with top level `VARRAY` with parallel Replicat causing unsupported datatype fallback.

**Bug 30622974 - SQL Server: Replicat abends with OGG-05324 Oracle GoldenGate does not support SQL Server 2017 release version**

Fixed an issue with Replicat requiring CU4 for target SQL Server 2017. Also fixed the CU4 check to consider the minor number.

**Bug 30696013 - DB2 for i: ODBC Errors in Target (PostgreSQL) after upgrading Oracle GoldenGate to 12.3.0.1 in the source (IBM iSeries DB2)**

Fixed an issue with the time format in trail for DB2 for i not being according to the Oracle GoldenGate time format causing issues in processing the records containing TIME data types for some targets.

**Bug 30680258 - DB2 for z/OS: Extract memory corruption error**

Fixed an issue with Extract crashing and generating a memory corruption error when a table column was altered and statistics fields were changed.

**Bug 30703607 - Oracle: Oracle GoldenGate integrated Extract does not capture virtual column data on insert**

Fixed `FETCHCOLS` for virtual columns to work with integrated Extract.

**Bug 30729495 - DB2 z/OS: System table update DDL is not getting added to history when not defined**

Fixed the table DDL changes to be included in the history table regardless of whether they are in use by an Extract.

**Bug 30734990 - DB2 z/OS: Oracle GoldenGate does not capture DB2 v12 transaction when using data sharing**

Fixed an issue with log records not being replicated if you are not connected to the database.

**Bug 30782649 - DB2 z/OS: Issue with using LRSNTIMEDELTA in Oracle GoldenGate 19.1.0.0.4**

Fixed an issue where the `LRSNTIMEDELTA` parameter value is not being used to adjust the starting `LRSN`.

**Bug 30796546 - DB2 z/OS: Extract abending due to a memory smashing event**

Fixed an issue where a stack smashing error occurs when `TRACKSCHEMACHANGES` is in effect.

**Bug 30845653 - Oracle: Extract abends with OCI error when fetching LOB data for table**

Fixed potential multi-byte CLOB fetch data loss including initial load when trail file format is 12.2 or older.

**Bug 30993340 - DB2 z/OS: Oracle GoldenGate shows that the alterations for colname from the DDL history table were not applied with nulls in the colname**

Fixed an issue with the history table not being updated properly when a table was altered more than once in a transaction.

**Bug 31056957 - DB2 z/OS: DDL history table not correctly updated after alter table drop column and reorg**

Fixed an issue with column history not getting correctly updated after drop column and reorg when using `TRACKSCHEMACHANGES`.

**Bug 31071657 - DB2 z/OS: Extract abends with the error "OGG-00551 - SQLSTATE S1014 native database error -99999. - CLI0129E"**

Fixed an issue where Extract abends with the error "`GG-00551 - Database operation failed: Executing select to get object id from systables. ODBC error: SQLSTATE S1014 native database error -99999. [IBM][CLI Driver] CLI0129E An attempt to allocate a handle failed] because there are no more handles to allocate. SQLSTATE=S1014`"

> **Note:**
>
> Also see Installing on SQL Server, Installing DB2 LUW, and Installing for MySQL in *Installing Oracle GoldenGate* .

# Release 19.1.0.0.200204 — 4 February 2020

**Bug 30680258 - DB2 z/OS: Extract memory corruption error**

Fixed an issue with Extract crashing with a memory corruption error when a table column is altered and statistics fields are changed.

**Bug 30468226 - Oracle: Extract SEGV when handling DDL over 4M in size**

Fixed an issue with Extract generating `SEGV` when processing DDL more than 4M in size.

**Bug 30162025 - Oracle: Extract writes NULL value to non-NULL columns randomly**

Fixed an issue where classic Extract skips the final row piece causing missing values when an operation results in chained rows.

**Bug 29916615 - Oracle: Classic Extract misses capture of columns in Before Image**

Fixed an issue where the trail file is occasionaly missing the before values for a column that was added to a table.

**Bug 29557298 - Oracle: Replicat changes the relative path to absolute path after starting the process**

Fixed an issue with Replicat changing the trail name from relative path to absolute path.

**Bug 29162719 - SQL Server: Oracle GoldenGate for SQL Server pump fails with USEREXIT when reading NSK source trail**

Fixed an issue with `USEREXIT` crashing when processing `ENSCRIBE` trail file.

**Bug 29358314 - SQL Server: The parallel process does not work at GG12R3 (classic) at SQL server for initial load**

Fixed table distribution issue in initial load with multiple `RMTTASK`s where all tables are mapped to the last `RMTTASK` instead of the `RMTTASK` that is defined in the previous line of the `TABLE` statement.

**Bug 29869207 - Generic: Create_capture procedure should be called with double quoted source global name**

Fixed an issue with Extract generating an invalid qualified SQL error, when a user tries to register the Extract to a database that has dash (-) in the `SOURCEGLOBAL` name or starts with a number.

**Bug 30511946 - DB2 z/OS: The timestamps in the information format code to display a DB2 timestamp is not an empty string**

Fixed an issue with GGSCI `INFO EXTRACT` command not displaying the timestamp.

**Bug 30043836 - Oracle: Replicat abending without error**

Fixed an issue where Replicat crashes in `do_partial_lob_write_lobmem` with divide by zero.

**Bug 29500119 - Oracle: Unable to log in after upgrading Oracle GoldenGate Microservices Architecture 12c (12.3.0.1) to 18c**

Fixed an issue in Oracle GoldenGate to support reading and updating previous UserRegistry database records.

**Bug 30475749 - SQL Server - SQL Server: CDC Extract abends with the error "OGG-05253 The SQL Server provider has thrown an exception. Cannot create a row of size 8246 which is greater than the allowable maximum row size of 8060"**

Fixed an issue with SQL Server CDC Extract abending with the error "`OGG-05253 The SQL Server provider has thrown an exception. Cannot create a row of size 8246 which is greater than the allowable maximum row size of 8060`".

**Bug 30540184 - DB2 z/OS: Problem populating the DDL History table for Oracle GoldenGate 19c (19.1.0.4) for DB2 z/OS 12.1**

Fixed an issue where Oracle GoldenGate was unable to update the DDL history table due to an attempt to insert a `NULL` value in a non-null column.

**Bug 30494613 - DB2 z/OS: XID/TRANSACTIONID environment variables need to report the value correctly byte reversed on x64 Intel**

Fixed an issue on little endian systems displaying incorrect transaction number when using `@GETENV('TRANSACTION','XID')`.

**Bug 30534012 - SQL Server: Extract fails to start**

Fixed an issue with Extract issuing a versioning error when the Oracle GoldenGate CDC object versioning system is modified.

**Bug 30582001 - DB2 z/OS: Error mapping from DB2 Extract to Teradata Replicat**

Fixed the issue with incorrect value of `BIGINT` appearing replicated in the target table.

**Bug 30404307 - Oracle: Replicat applying incorrect date for column type TIMESTAMP WITH TIME ZONE**

Fixed an issue with timestamp with timezone dates earlier than 1970/01/01 getting incorrectly replicated.

# Release 19c (19.1.0) - October 2019

**Bug 29778593 - DB2 LUW, DB2 for i, DB2 z/OS: Heartbeat lag command does not display incoming and outgoing paths**

Fixed an issue with heartbeat lag command not displaying incoming and outgoing paths, while the heartbeat and heartbeat history tables contain valid data.

**Bug 30328936 - DB2 z/OS: Extract intermittently abends with the error "OGG-06550 Unable to position in log buffer"**

Fixed an issue with Extract abending intermittently with the error "`OGG-06550 Unable to position in log buffer`" when LOBs exist in one or more tables in the Extract or the `NOAPIFILTER` command is issued.

**Bug 30064580 - Oracle: Remote Extract abends when configured as cross-endian remote capture with DDL**

Fixed an issue with Integrated Extract abending because of DDLs in Oracle11*g* cross-endian environment.

**Bug 30023717 - Oracle: Parallel Replicat occasionally fails with the error ORA-1403 when processing transactions with extremely high inter-dependencies**

Fixed an issue with Replicat, which in rare situations involving transactions with many potential dependencies, attempts to apply transactions out of order, resulting in errors such as ORA-1403.

**Bug 30127319 - Oracle: Security scan is reporting vulnerability with microservices**

An issue where two spaces preceding `nosniff` are detected as a security issue was fixed.

**Bug 30096704 - DB2 z/OS: The IBM abend handling for the release ECSA is not working properly**

Fixed an issue where Extract abends when changed to use a different DB2 z/OS machine or LPAR while the recovery routine attempts to free ECSA memory.

# Release 19c (19.1.0) - September 2019

**Bug 29162719 - SQL Server: Pump fails with USEREXIT when reading NSK source trail**

Fixed a crash when the Pump Extract Abends while processing source trails from an NSK Enscribeuserexit.

**Bug 30058866 - SQL Server: Parameterized Queries within the SQL Server CDC Extract stored procedure**

Improved the Oracle GoldenGate CDC Capture stored procedure plan cache by implementing paramaterized queries instead of adhoc queries.

**Bug 29998828 - SQL Server: Oracle GoldenGate CDC Cleanup tasks deadlock with SQL Server CDC Capture job**

`ADD TRANDATA` has been improved to set `@supports_net_changes=0` when enabling supplemental logging for a table. This avoids creation of a net changes non-clustered index on the CDC staging table, which can cause deadlocks between the Oracle GoldenGate CDC cleanup task and the SQL Server Change Data Capture job.

**Bug 27787994 - SQL Server: Extract Abends with Incorrect Message when CDC Capture Job is missing**

Improved error message when starting Extract on SQL Server and the CDC job had been deleted even though CDC is enabled on the database.

**Bug 27045617 - SQL Server: Support Listener Connection in Always On with Read Only environment**

Oracle GoldenGate for SQL Server CDC has been enhanced to allow Extract to read the CDC transactions from secondary Replicat in Always On Ready Only environment using the `ALWAYSONREADONLYROUTING` option.

**Bug 29998662 - MySQL: Extract abends without any error with JSON data type in binlog**

An issue was fixed to stop Extract from abending and logging it in binlog when DML contains JSON data.

**Bug 30019799 – MySQL: Wrong values being written by the Kafka Replicat when sourced by a MySQL trail**

Fixed the metadata for character data types, which have binary collation to allow char data types to be treated as char only, irrespective of collation.

**Bug 29431472 - MySQL: Initial Load Extract does not capture time values when fractional seconds exist**

Fixed an issue with the MySQL initial load Extract to support fractional seconds in time value columns.

**Bug 30148328 - DB2 z/OS: Oracle GoldenGate Extract abends with the error "OGG-00808 Invalid sequence at line 5461 - type 4 cannot be first"**

Fixed an issue with Extract abending during an update when there is a missing log record for either a before image or an after image.

**Bug 30236475 - DB2 z/OS: Timestamp not available for current checkpoint, recovery checkpoint and startup checkpoint**

The `showch` checkpoint report has been enhanced to show proper LSN values in the format that can be used to position the Extract in GGSCI as well as properly formatted timestamps as appropriate in the checkpoint.

**Bug 29859132 - Teradata: ERROR OGG-10107 Parsing error: parameter [prefix] conflicts with parameter [suffix]**

Replicat for Teradata using `COLMATCH` parameter was fixed to support both the `PREFIX` and `SUFFIX` options.

**Bug 29851133 - Teradata: OGG-00453 DDL Replication is not supported for this database**

An issue that caused Replicat for Teradata to abend was fixed to correctly ignore and warn that DDL operations when source trail files contain DDL, are not supported.

# Release 19c (19.1.0) - May 2019 Initial Release

**Bug 29518912 - MySQL: Extract is hung and not moving forward**

Fixed an issue with remote capture not processing a commit in the query event, which was causing Extract to hang.

**Bug 28722244: Add CDR statistics to Admin Server GUI**

Conflict Detection and Resolution statistics have been added to the Administration Server web interface.

**Bug 28682226 - IE abends with the error -1017-ORA-01017 when using password with asterisk (*) / question mark(?**

Integrated Extract now allows passwords that contain an asterisk or question mark.

**Bug 27300722 - Replicat for DB2 abends with SQL error -330 Character conversion**

Fixed an issue with shift-in, shift-out characters due to the CCSID 937 character fields.

**Bug 27507726: The Default Value for Redo_Transport_Lag_Threshold Increased to Avoid Spurious Warnings**

The default value of the `redo_transport_lag_threshold` option used with `TRANLOGOPTIONS` has been increased to avoid any false warnings. The value has been increased from a default of 10 seconds to 30 seconds and the minimum allowed is now 15 seconds.

**Bug 27426540: Oracle GoldenGate Admin Client Enhanced to Allow Starting and Deleting all DISTPATHS With One Command**

The Admin Client available with Oracle GoldenGate 18c has been enhanced with the `START DISTPATH ALL` command that allows you to start all distribution paths and the `DELETE DISTPATH ALL` command that allows you to delete all distribution paths.

**Bug 27332805 - MySQL: Remote capture failover is automatically handled on CLI_SAFE_READ**

The issue where the MySQL Aurora server would disconnect Extract upon failover is fixed.

**Bug 29259846 - Oracle: Checkpoint format change and new syntax in convchk program**

An issue where Oracle RESETLOG SCN number needs to be changed from 32 bit to 64 bit has been fixed by changing checkpoint field size from 32bit to 64bit. This conversion occurs when you run the Extract after it is upgraded to Oracle GoldenGate 19c. The `convchk` program provides a new syntax is provided in case you need to downgrade the checkpoint file to use an older Extract.

**Bug 28873778 - Oracle: Automatic ETROLLOVER and ALTER INPUT TRAIL SEQNO Infrastructure with Distribution Server**

Distribution Server is enhanced to support automatic `ETROLLOVER` for both input and output trail files.

**Bug 28266744 - Oracle: Value assigned to a column in COLMAP is getting changed in target**

Fixed an issue when using the `COLMAP` function to map the target numeric column value without any check on the overflow or underflow during column mapping, causing incorrect values being mapped and inserted to the target column.

# 5

# Oracle GoldenGate on Marketplace 19c (19.1.0)

This section describes the bug fixes and known issues for Oracle GoldenGate on Marketplace 19c (19.1.0).

**Topic:**

- What's New in this Release
  This chapter describes the features, enhancements, and changes made to Oracle GoldenGate for Marketplace.
- Known Issues and Workarounds
  This chapter describes the known issues at the time of release.
- Bugs Fixed and Enhancements
  This chapter describes the bugs fixed and enhancements at the time of release.

## What's New in this Release

This chapter describes the features, enhancements, and changes made to Oracle GoldenGate for Marketplace.

**Topics:**

- Oracle GoldenGate on Marketplace New Features: May 2021
- Oracle GoldenGate on Marketplace New Features: November 2020
- Oracle GoldenGate on Marketplace New Features: September 2020
- Oracle GoldenGate on Marketplace New Features: August 2020
- Oracle GoldenGate on Marketplace New Features: June 2020
- Oracle GoldenGate on Marketplace New Features: December 2019

### Oracle GoldenGate on Marketplace New Features: May 2021

**Oracle Goldengate on Marketplace requires Terraform v0.12x**
By default Oracle GoldenGate on Marketplace 19c uses Terraform v0.12x. Any existing instance of Marketplace, needs to be upgraded to v0.12x. For details on the steps to upgrade, see Upgrading an Oracle Cloud Marketplace Image in *Using Oracle GoldenGate on Oracle Cloud Marketplace* guide.

## Oracle GoldenGate on Marketplace New Features: November 2020

**Oracle GoldenGate on Marketplace is available on OEL 7.8 Image :Oracle-Linux-7.8-2020.09.23-0 as the OS image which supports IMDSv2**
Oracle GoldenGate on Marketplace is available on OEL 7.8 Image: Oracle-Linux-7.8-2020.09.23-0 as the OS image, which includes support for Instance Metadata Service Version 2 (IMDSv2).

**Oracle GoldenGate on Marketplace is now available on Oracle GoldenGate 19.1.0.0.201013 including support for heterogeneous databases**
Oracle GoldenGate on Marketplace is now available on Oracle GoldenGate 19.1.0.0.201013 including support for heterogeneous databases: MySQL, DB2, and PostgreSQL.

## Oracle GoldenGate on Marketplace New Features: September 2020

**Oracle GoldenGate on Marketplace supports Oracle GoldenGate 19.1.0.0.200414 for DB2 z/OS and Oracle GoldenGate 19.1.0.0.200714 for PostgreSQL**
Oracle GoldenGate on Marketplace supports Oracle GoldenGate 19.1.0.0.200714 for PostgreSQL and Oracle GoldenGate 19.1.0.0.414 for DB2 z/OS.

## Oracle GoldenGate on Marketplace New Features: August 2020

**Oracle GoldenGate 19.1.0.0.200714 is now supported with Oracle GoldenGate on Marketplace**
Oracle GoldenGate on Marketplace now support Oracle GoldenGate 19.1.0.0.200714 including support for MySQL, SQL Server, and Oracle.

## Oracle GoldenGate on Marketplace New Features: June 2020

**Oracle Linux 7.8 in the Oracle GoldenGate Marketplace VM image is supported**
The Oracle GoldenGate Marketplace VM image using Oracle Linux 7.8 is available.

## Oracle GoldenGate on Marketplace New Features: December 2019

**Big Data**
Big Data released for Oracle GoldenGate on Marketplace.

**DB2**
DB2 released for Oracle GoldenGate on Marketplace.

# Known Issues and Workarounds

This chapter describes the known issues at the time of release.

- Release Oracle GoldenGate on Marketplace 19.1.0.0.200204 - June 2020

## Release Oracle GoldenGate on Marketplace 19.1.0.0.200204 - June 2020

**Bug 31203867 - No option to prevent users from creating ER processes from /u01/app/ogg on Marketplace**

There are two conflicting use cases for using GGSCI in the Oracle GoldenGate Marketplace environment where:

- No permission to perform changes to `/u01/app/ogg` using GGSCI.
- Allow changes to `/u01/app/ogg` using OPatch.

**Workaround**

The correct mechanism for using GGSCI in the Marketplace environment is the use of the `/usr/local/bin/ggsci` helper. For example, the command `ggsci oracle18` allows the user to enter the correct GGSCI environment for Oracle GoldenGate 19c for Oracle Database 18c.

**Bug 31169981 - SSH to the compute instance fails after upgrading Oracle GoldenGate**

After upgrading Oracle GoldenGate, SSH fails with the following error:

```
  WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED!     @
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
IT IS POSSIBLE THAT SOMEONE IS DOING SOMETHING NASTY!
Someone could be eavesdropping on you right now (man-in-the-middle attack)!
It is also possible that a host key has just been changed.
The fingerprint for the ECDSA key sent by the remote host is
SHA256:PrFC4QngjeBaLJxTYgURChESnTN+yqcDQVYSCCTbVOw.
Please contact your system administrator.
Add correct host key in /home/jmuntima/.ssh/known_hosts to get rid of this
message.Offending ECDSA key in /home/jmuntima/.ssh/known_hosts:32
ECDSA host key for 150.136.190.158 has changed and you have requested strict
checking.
Host key verification failed.
```

**Workaround**

After upgrade, remove the IP entry from `known_hosts`.

# Bugs Fixed and Enhancements

This chapter describes the bugs fixed and enhancements at the time of release.

The Bug number is the number of the BugDB ticket. For questions on specific tickets or issues, consult Oracle Support.

- Release Oracle GoldenGate on Marketplace 19.1.0.0.200414 - September 2020
- Bug Fixes Oracle GoldenGate on Marketplace 19.1.0.0.200414 - June 2020
- Bug Fixes Oracle GoldenGate on Marketplace 19.1.0.0.200204 - June 2020
- Bug Fixes Oracle GoldenGate on Marketplace 19c (19.1.0) - December 2019

## Release Oracle GoldenGate on Marketplace 19.1.0.0.200414 - September 2020

**Bug 31446924 - During Oracle GoldenGate Marketplace provisioning, the deployment is missing**

Fixed an issue where when creating a stack, a request to create two deployments doesn't create the first deployment and if the request is to create one deployment, then no deployment is created.

## Bug Fixes Oracle GoldenGate on Marketplace 19.1.0.0.200414 - June 2020

**Bug 31099258: Maintain Oracle Inventory for Oracle Marketplace Images**

Included Oracle Inventory information for Oracle GoldenGate for Oracle Database, so you can use OPatch to patch the Oracle GoldenGate installation manually on the VM instance.

## Bug Fixes Oracle GoldenGate on Marketplace 19.1.0.0.200204 - June 2020

**Bug 30737902: Oracle GoldenGate on Marketplace enhanced to place storage for Cache Manager (COM) and Bounded Recovery (BR) on a separate storage**

Oracle GoldenGate on Marketplace is enhanced to place the storage of COM and BR on a separate storage to reduce contention with other block storage volumes.

## Bug Fixes Oracle GoldenGate on Marketplace 19c (19.1.0) - December 2019

**Bug 30603968 - Oracle: Terraform apply fails when selected subnet does not have DNS enabled**

Fixed the issue with Terraform apply failing when selected subnet doesn't have DNS enabled.

**Bug 30599536 - Oracle: Resource Manager Terraform Apply fails when assign_public_ip is false**

Fixed the issue with Resource Manager Terraform apply failing when `assign_public_ip` is false.