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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

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

Accessible Access to Oracle Support

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

Conventions

The following text conventions are used in this document:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>boldface</strong></td>
<td>Boldface type indicates graphical user interface elements associated with an action, such as &quot;From the File menu, select Save.&quot; Boldface also is used for terms defined in text or in the glossary.</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>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.</td>
</tr>
<tr>
<td><strong>monospace</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>UPPERCASE</strong></td>
<td>Uppercase in the regular text font indicates the name of a utility unless the name is intended to be a specific case.</td>
</tr>
<tr>
<td>{}</td>
<td>Braces within syntax enclose a set of options that are separated by pipe symbols, one of which must be selected, for example: {option1</td>
</tr>
<tr>
<td>Convention</td>
<td>Meaning</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>[ ]</td>
<td>Brackets within syntax indicate an optional element. For example in this syntax, the SAVE clause is optional: CLEANUP REPLICA_GROUP _NAME [ , SAVE count]. Multiple options within an optional element are separated by a pipe symbol, for example: [option1</td>
</tr>
</tbody>
</table>

Related Information

The Oracle GoldenGate Product Documentation Libraries are found at


Additional Oracle GoldenGate information, including best practices, articles, and solutions, is found at:

Oracle GoldenGate A-Team Chronicles
Introduction

This chapter introduces the Release Notes for Oracle GoldenGate 19c (19.1.0).

Oracle GoldenGate 19c (19.1.0) release supersedes Oracle GoldenGate 12c (12.3.0.1) release.

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

1.1 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:


1.2 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.

1.3 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

1.4 Product Documentation

For complete documentation on Oracle GoldenGate 19c (19.1.0), go to https://docs.oracle.com/en/middleware/goldengate/core/index.html.

1.5 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:

Lifet ime Support Policy for Oracle GoldenGate

1.6 Licensing Information

Detailed information regarding license compliance for Oracle Fusion Middleware is available at:

Licensing Information
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.

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

2.1 New Features

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

- Critical Security Updates 19c (19.1.0) - September 2019
- Release 19c (19.1.0) - September 2019
- Release 19c (19.1.0) - May 2019 Initial Release

2.1.1 Critical Security Updates 19c (19.1.0) - September 2019

**Critical Security Fixes**

This release includes critical security fixes including the following CVEs. Oracle strongly recommends that you upgrade to this release of Oracle GoldenGate.

**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

2.1.2 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 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. This feature is controlled using the TRANLOGOPTIONS TRACKSCHEMACHANGES parameter.

2.1.3 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 various Key Management Services (KMS) such as OCI and Oracle Key Vault to centralize and manage encryption keys. See Using a KMS with Oracle GoldenGate MA.

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
- INFO 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 control 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)

**UPSERT Operation Support**
UPSERT operation type support is available. An UPSERT operation works like an INSERT operation however, if an INSERT row already exists, the operations changes to UPDATE instead of INSERT.
This is controlled by the INSERTUPSERTS parameter and is disabled by default. It’s supported only by Kafka at this time.

**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 restarting Extract**
This feature allows the current Extract restart position to allow Replicats to maintain a more recent source restart position and minimize the redo retention periods. This enhancement 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 the 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. 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 endianness of the server where the Integrated Extract is running is different from the endianness 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.

2.2 Default Behavior Changes

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

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

2.2.1 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.

2.2.2 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
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.

2.3 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

2.3.1 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 12c (12.3.0.1) will be used for Oracle GoldenGate for SQL Server going forward.

2.3.2 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.
Known Issues and Workarounds

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

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

### 3.1 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.

3.2 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.
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 19c (19.1.0) - September 2019**
- **Release 19c (19.1.0) - May 2019 Initial Release**

## 4.1 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 parameterized 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.

4.2 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.