Oracle® Fusion Middleware

Oracle GoldenGate Release Notes for Windows and UNIX

12*c* (12.2.0.1)

E64454-08

July 2018

Oracle GoldenGate Release Notes for Windows and UNIX

This document describes the new features, major changes, and the known issues for the 12*c* (12.2.0.1) release of Oracle GoldenGate for the Windows and UNIX platforms. It includes the following sections:

New Features in 12*c* (12.2.0.1)

This section outlines the new features that are being introduced in this release. It is divided according to each database that this release supports, followed by new features that apply to all supported databases.

New Core Features for Oracle GoldenGate

This section describes core infrastructure changes that allow the features to span multiple databases in the Oracle GoldenGate 12.2.0.1:

New EXCLUDEHIDDENCOLUMNS parameter for Oracle GoldenGate Integrated Capture Mode

The `EXCLUDEHIDDENCOLUMNS` parameter disables all Oracle Database hidden columns including automatic CDR created timestamp columns. This parameter requires the Oracle GoldenGate 12.2 trail format and must not specify the `NO_OBJECTDEFS` parameter. The userexit callback structure is also updated to include the hidden column attributes.

Metadata Encapsulation

This feature stores and forwards metadata from the source to the target and encapsulates it in each of the trail files to provide you the following benefits:

- Extract embeds metadata records into each trail file before the first `SEQUENCE` or first DML of each table. The following two metadata records are added to the trail file:
  - Database Definition Record (DDR) — database character sets, time zone, and object name case-sensitivity information.
  - Table Definition Record (TDR) — table and column definition.
- With Oracle GoldenGate the metadata associated with each table in the replication process no longer requires the use of the `SOURCEDEFS` and `ASSUMETARGETDEFS` parameters. You can now configure replication without the need to define either of these parameters.
- You can now replicate Oracle DDL between two non-like Oracle schemas. For example, the target may have more columns than the source, such as a timestamp column.
- You can now replicate table with different column ordering without the need of `SOURCEDEFS`.
- Use of the Metadata Encapsulation feature is the default with the Oracle GoldenGate 12.2.0.1 release.
- You can easily switch between the old and new ways of resolving the table metadata by:
  - Using the new `USE_TRAILDEFS` GLOBALS parameter to control all pumps and Replicats.
  - Use the `OVERRIDE` option for individual `SOURCEDEFS` and `ASSUMETARGETDEFS` parameters in the pump or Replicat parameter files.

> **Note:**
>
> Heartbeat feature requires metadata encapsulation. Metadata encapsulation is enabled by default. If you disable it specifically, heartbeat will not function properly.

End to End Replication Lag

New built-in feature that provides end-to-end replication lag views without having to manually implement the heartbeat tables as described in article Doc ID 965415.1 *How to setup GoldenGate to Maintain a Heartbeat With the Database*. New commands were added to simplify this replication configuration and provide extra features including:

- Unidirectional lag from source to target.
- Automatically calculates replication flows for all replication topologies.
- Bidirectional lag when you setup in an Active-Active replication that provides both incoming and outgoing lag.
- The new Oracle GoldenGate Software Command Interface (GGSCI) command, `ADD HEARTBEATTABLE`, enables this feature. There is no need to update the parameter files of the replication processes to enable heartbeats.
- The new `GG_LAG` Database View allows you to view the end-to-end lag information.

Parameter Simplification

The use of Oracle GoldenGate parameters was simplified such that you can now:

- Get detailed help on a parameter using the `INFO PARAM` command, which gives you in-depth detail about the parameter and where it can be used.
- View all of the active parameters associated with the running process using the `SEND … GETPARAMINFO` command.
- Use the new `checkprm` utility to validate your parameter files. You can use `checkprm` to ensure the validity of your parameter files before you deploy the replication to avoid syntax errors.

Trail File Extension Increase

Extending the maximum number of trail files by 1000x by extending it from a 6 digits trail file to a 9 digit trail file. This 9 digits trail file format is now the default.

Automated Remote Trail File Recovery by Pump

Oracle GoldenGate extends its high availability capabilities by automatically handling when a target system is restored to a previous point in time. This feature also handles most cases where target trail files have been inadvertently deleted or corrupted. This is done by automatically regenerating the missing target trail data when the source trail

data is available and by intelligently skipping any duplicate transactions when applying the change data.

The trail recovery process has the ability to, in some cases, automatically rebuild trail files that are corrupt or missing. When an Extract, pump restarts, if the trail it is writing to is missing, the Extract pump will attempt to rebuild the missing trail file on the target system. This is done automatically using the checkpoint information for the process and the last valid trail file. The Replicat process automatically skips over any duplicate data in the trail files that have been rebuilt by the new trail recovery feature. This recovery will occur as long as there is at least 1 target trail from this sequence and that the trail files still exist on the source where the Extract pump is reading them.

This process can also be used to rebuild corrupt or invalid trail files on the target. Simply delete the corrupt trail file, and any trail files after that, and then restart the Extract pump. With this new behavior, Oracle recommends that `PURGEOLDEXTRACTS MINKEEP` rules are properly configured to ensure that there are trail files from the source that can be used to rebuild the target environment. This feature requires that Oracle GoldenGate release 12.1.2.1.8 or greater is used on both the source and target servers. Do *not* attempt to start the Replicat with `NOFILTERDUPTRANSACTIONS` because it will override this default behavior and may cause transactions that have already been applied to the target database to be applied again.

Performance Toolkit Monitor

The Performance Toolkit Monitor is introduced and provides new metrics for diagnostics and tuning including the following:

- CPU
- I/O
- Transactions in flight
- Cache memory usage and statistics
- Improved capture and apply performance

These metrics are recorded in a RESTful API for use in diagnosing issues by Oracle GoldenGate Support and Development. These metrics can be used to improve CPU efficiency thus reducing load on source and target databases.

You can obtain the free corresponding Java program to configure your own monitoring system at:

`http://www.oracle.com/technetwork/java/index.html`

> **Note:**
>
> Use of the Performance Toolkit Monitor requires an Oracle GoldenGate Management Pack license.

New Features for Oracle Database

In addition to the core features, there are multiple features specific to Oracle Databases and are described in this section.

XAG Integration

Oracle GoldenGate can be configured to be more aware of Oracle Grid Infrastructure Bundled Agents (XAG) to provide a high availability environment in a cluster configuration using the `XAGENABLE` parameter in the `GLOBALS` file. Not valid for HP NonStop platforms.

Instantiation SCN Support

Simplified the online migration with the integration with Oracle data pump. It will retain the SCN for each table and manage the point of apply for each table to better the instantiation process.

Invisible Column Support

Replication of invisible columns is now supported in Integrated Capture mode. Trail format release 12.2 is required.

Fetch from Oracle Active Data Guard Support

Integrated Extract now has the capability to fetch data from an Oracle Active Data Guard (ADG) Standby database eliminating any impact on the source database after Extract has reached a steady state.

New Features for SQL Server

The following are the new features that support SQL Server specifically.

Column Character Set Encoding Support

This allows replication between databases like SQL Server to an Oracle Database when there are multiple character set encodings per table.

Capture Support for Standard Edition

Capturing DML from SQL Server Standard Edition is introduced. In the previous GoldenGate 12.1.0 release, Oracle GoldenGate only supported capture of DML from SQL Server Enterprise Edition, due to the method of enabling Supplemental Logging, which is done using a feature only available to Enterprise Editions of SQL Server. Oracle GoldenGate now enables Supplemental Logging for Standard Edition instances using a different mechanism that is a feature of that edition. For more information, see *Installing and Configuring Oracle GoldenGate for SQL Server*.

Archived Log Mode Only

Capturing DML from only the SQL Server transaction log backups is introduced. Oracle GoldenGate can run on the database server in an Archived Log Mode (ALO) only configuration (includes Remote ALO Mode). Optionally, Oracle GoldenGate can be installed and run on a middle tier Windows server, which is the main advantage to this feature. For more information, see *Installing and Configuring Oracle GoldenGate for SQL Server*

Compressed Log Backups

Support for SQL Server 2014 Compressed Log Backups was added.

New Features for DB2 LUW

The following is the new feature that supports DB2 LUW specifically.

Temporal tables are now supported.

New Features for DB2 for i, Informix, MySQL, SQL/MX, Sybase, TimesTen, and PostgreSQL

There are no specific features related to the DB2 for i, MySQL, Sybase, TimesTen, and PostgreSQL databases and all core features are available with these databases.

Command Changes and Additions

This section contains information about new and updated Oracle GoldenGate commands as the result of new features or functionality changes in the product for this release.

- Automatic Heartbeat Table
- Metadata Extract Trail
- GGSCI

Enhanced Remote Trail Security

There is a new requirement if the target directory for incoming trails received from a remote site will *not* be residing in the GoldenGate installation `dirdat` directory or a `dirdat` subdirectory. You *must* use the `ALLOWOUTPUTDIR` parameter in the `GLOBALS` file to specify the target directory in these situations.

Automatic Heartbeat Table

These additions are the result of the new automatically generated heartbeat table.

- `[ENABLE | DISABLE]_HEARTBEAT_TABLE` — Specifies whether the Oracle GoldenGate process will be handling records from `GG_HEARTBEAT` table or not. When specified as a `GLOBALS`, it is true for the entire installation unless overridden by a specific process.
- `HEARTBEATTABLE` *`heartbeat_table_name`* — Specifies the fully qualified name of the heartbeat table. The name used to denote the heartbeat table will be used to create two other tables, *`heartbeat_table_name`*`_SEED` and *`heartbeat_table_name`*`_HISTORY`, respectively. Specifying one name will reserve all names used by the heartbeat infrastructure.

  If not specified, the value in `GGSCHEMA` is used for schema name and the `GG_HEARTBEAT` is used for the name of the heartbeat table.
- `ADD HEARTBEATTABLE {, FREQUENCY` *`frequency`*`, RETENTION_TIME` *`retention_time_interval`*`, PURGE_FREQUENCY` *`purge_frequency`*`}` — This command does the following:
  - Creates `GG_HEARTBEAT_SEED`, `GG_HEARTBEAT`, and `GG_HEARTBEAT_HISTORY` tables in the `GGSCHEMA` and adds supplemental logging for the `GG_HEARTBEAT` and `GG_HEARTBEAT_SEED` tables.
  - Inserts a row in `GG_HEARTBEAT_SEED` with only the `LOCAL_DATABASE` column populated and `NULL REMOTE_DATABASE`.
  - Creates a job `GG_UPDATE_HEARTBEATS` that periodically updates `HEARTBEAT_TIMESTAMP` in every row of the `GG_HEARTBEAT` table and `GG_HEARTBEAT_SEED`.
  - If frequency is not mentioned, a default of 60 seconds is used as the repeat interval.
  - Creates a `GG_PURGE_HEARTBEATS` scheduler jobs and the procedures that periodically purges the oldest rows in the table based on the retention time that is specified. This is not supported on SQL/MX.
  - Starts the scheduler jobs.
  - For Oracle, the `ADD HEARTBEATTABLE` has to be performed in every PDB that you are interested in generating heartbeats for in CDB mode.
  - Frequency is in seconds.

    Retention time is in days.

    Purge frequency is in days.
- `DELETE HEARTBEATTABLE` — Removes the `GG_UPDATE_HEARTBEATS` and `GG_PURGE_HEARTBEATS` jobs and the heartbeat tables if they exist.
- `ALTER HEARTBEATTABLE FREQUENCY` *`frequency`* — Changes the repeat interval of `GG_UPDATE_HEARTBEATS`.

  Alter frequency set to zero is equivalent to pausing the heartbeat. Heartbeat records can be resumed by altering frequency to a value greater than zero.
- `ALTER HEARTBEATTABLE RETENTION_TIME` *`retention_time_interval`* — Changes the heartbeat retention time specified (in days).
- `ALTER HEARTBEATTABLE PURGE_FREQUENCY` *`purge_frequency_interval`* — Changes the repeat interval of `GG_PURGE_HEARTBEATS` (in days).

- `DELETE HEARTBEATENTRY` *`process-name`* — Remove entries in the heartbeat table for processes that are no longer active.
- `INFO HEARTBEATTABLE` — Displays information about the heartbeat tables configured in the database.
- `LAG` — The `LAG` command was extended to include the new `GLOBAL` option that displays the lags in the `GG_LAGS` view.
- The Automatic Heartbeat functionality is not supported on MySQL version 5.5.

Metadata Extract Trail

This section contains information about Oracle GoldenGate commands as a result of the metadata Extract trail enhancements.

- `EXTFILE / EXTTRAIL / RMTFILE / RMTTRAIL` — The `OBJECTDEFS | NO_OBJECTDEFS` options are added to the `EXTFILE`, `EXTTRAIL`, `RMTFILE`, and `RMTTRAIL` commands to control whether or not to include the object definitions in the trail.

  When replicating from an Open Systems database to Oracle GoldenGate for HP NonStop (Guardian), specify format version below 12.2 to avoid including the object definitions in the trail since HP NonStop does not support processing object definitions from the trail.
- `SOURCEDEFS` — A new keyword, `OVERRIDE`, was added to `SOURCEDEFS` to request the application to use the definitions from the definitions file instead of the metadata. By default, the table definitions from the metadata records override the definitions from any `SOURCEDEFS` file.
- `ASSUMETARGETDEFS` — A new keyword, `OVERRIDE`, was added to `ASSUMETARGETDEFS` to request Replicat to use the definitions from the target database as the definitions for the trail records. By default, the table definitions from the metadata records override `ASSUMETARGETDEFS`.
- `SCANFORMETADATA` — This new Logdump command was added to scan for a specific metadata record.

GGSCI

This section contains information about Oracle GoldenGate commands as a result of the parameter parsing enhancements.

- `INFO PARAM` *`param_name`* — Displays the parameter definition information. The *`param_name`* specified can be a parameter, an option, or a full name that is part of the names concatenated together using period (.) as the delimiter. Following are the valid values:

  ```
  STREAMING
  RMTHOST.STREAMING
  RMTHOST
  RMTHOSTOPTIONS.STREAMING
  TRANLOGOPTIONS.INTEGRATEDPARAM.EAGER_SIZE
  ```

- `GETPARAMINFO` — Queries the runtime parameter values of a running instance, including Extract, Replicat, and Manager.

  The syntax is: `SEND MGR|`*`group_name`* `GETPARAMINFO [`*`param_name`*`] [-f `*`output_file`*`]`

  The default is to display all parameters in use (already queried by the application) and their current values. If a particular *`param_name`* is specified, then the output is filtered by that name. Optionally, the output can be redirect to a file specified by the `-f` option.
- The `ADD TRANDATA` and `ADD SCHEMATRANDATA` commands were enhanced to include the `PREPARESCN` option for the new Instantiation SCN Support feature.
- The `SET_INSTANTIATION_CSN` and `CLEAR_INSTANTIATION_CSN` commands were added to manually set and reverse instantiation.

Parameter Changes and Additions

This section contains information about new and updated Oracle GoldenGate parameters as the result of new features or functionality changes in the product for this release.

General Parameter Changes and Additions

This section contains information about changes to parameters that apply to all of the databases supported by this release of Oracle GoldenGate.

- A new `GLOBALS` parameter, `USE_TRAILDEFS | NO_USE_TRAILDEF`, was added to control where the data pump and Replicat processes obtain the table definitions when the trail files contain full table definitions; otherwise, these processes ignore the new parameters.

  `USE_TRAILDEFS` forces these processes to use the table definitions from the trail unless the `OVERRIDE` keyword is specified with `SOURCEDEFS` or `ASSUMETARGETDEFS`.

  `NO_USE_TRAILDEFS` forces these processes to follow the old behavior when resolving the table definitions; all table definitions from the trail files are ignored.
- A new `TABLE` option, `ATTRCHARSET`, was added to override the source UDT attribute level character set.
- A new Manager parameter, `VERIDATAREPORTAGE`, was added to control how long Veridata reports are kept.
- A new Manager parameter, `MONITORING_HEARTBEAT_TIMEOUT`, was added to set a process as non-responsive in a specified number of seconds.
- A new Manager parameter, `ACCESSRULE`, was added to set security access rules for Manager.
- A new Extract, Replicat, and Manager parameter, `PTKMONITORFREQUENCY`, was added to set the monitoring collection frequency interval.
- A new Extract, Replicat, and Manager parameter, `PTKCAPTUREPROCSTATS`, was added to enable the capture of process and thread statistics for the Performance Toolkit Monitor.

- A new DB2 for i Extract parameter, `TRAILCHARSETUNICODE`, was added to allow character sets that are supported by Oracle GoldenGate conversions to pass through unchanged.
- A new Manager parameter, `XAGENABLE`, was added to enable monitoring of Oracle Grid Infrastructure Bundled Agents (XAG) within Oracle GoldenGate.

Default Behavior Changes

This section contains changes in product behavior.

Release 12.2.0.1.1 - May 2018

Primary Key or reference key column name identifier are restricted to 30 characters
The key column name identifier cannot be more than 30 characters long but if the column name is not part of the key column, then it can be 255 characters long.

Release 12.2.0.1.1 - January 2016

Oracle GoldenGate 12c captures both the pre-change and post-change values for update operations in a single unified update record by default. In previous releases the default was to only capture the post-change value. Beginning in this release, custom SQL statements (`SQLEXEC`) now only execute once per update operation with the new default update format. Prior to this release, custom SQL statements would execute twice, once when encountering the pre-change value and once when encountering the post-change value. If you are using the Oracle GoldenGate 12c (12.1.*x* or 12.2.*x*) with the new unified update format, you can explicitly pass the pre or post-value to the custom SQL statement using the `@BEFORE`, `@AFTER`, and `@BEFOREAFTER` functions. Though Oracle GoldenGate 12.2.`x` attempts to use this new update format by default, the old format cam be preserved if there are conflicting parameters that would have previously generated two separate pre and post change records. In these cases, an informational message is logged in the report file.

Release 12.2.0.1 - Initial Release

- The default `EXTTRAIL` and `RMTTRAIL` file sizes have changed from 100MB to 500MB.
- When running an Extract against an Oracle database and all trail file formats are greater than or equal to Oracle GoldenGate 12.2.0.1 then the following parameters are enabled by default:

  ```
  LOGALLSUPCOLS
  UPDATERECORDFORMAT COMPACT
  ```

- If the trail contains the metadata records, a data pump can perform data conversion and transformation without requiring a `SOURCEDEFS` file or source database connection.
- Both `ASSUMETARGETDEFS` and `UPDATEMETADATA` are not required when the metadata records are embedded in the trail files. In addition, Oracle GoldenGate for Oracle supports active-active DDL replication among more than two systems.

- CSN-based duplication suppression is now enabled on the Replicat side by default.
- Extract does not support writing trails in format in the 9.0, 9.5, and 10.0 releases.

  Pump and Replicat support reading all trail versions. For incoming trails that are in format release version 9.0, 9.5, and 10.0, the Pump writes in that same format release version.
- Extract `TABLE` clause parameter with the `TARGET` option no longer abends when the `TARGET` table definition is not found. Extract assumes that the target table structure is exactly same as the source, including all column names; it works just like renaming the table name from source to target table.
- The `USENATIVEOBJSUPPORT` option of the `TRANSLOGOPTIONS` parameter is now enabled by default if supported.
- The `OUTPUTFILEUMASK` parameter specifies an octal umask for Oracle GoldenGate processes to use when creating all files. Previously it only effected trail files and discard files.
- The `CHARMAP` parameter no longer needs to be placed on the first line of the parameter file.
- The new DB2 for i Extract parameter, `TRAILCHARSETUNICODE`, changes the behavior of Extract text data conversions. See the *Reference for Oracle GoldenGate for Windows and UNIX* for details.
- The `ADD TRANDATA` command was changed such that you must use a comma rather than a space (as in previous releases) with the `EXCLUDELONG | INCLUDELONG` options. For example:

  ```
  ADD TRANDATA <schema.table name>, EXCLUDELONG
  ```
- The `FETCHUSERID` and `FETCHUSERIDALIAS` parameters were added to indicate which ADG Standby database should be used when Extract needs to fetch data.
- New options, `FETCHCHECKFREQ`, `FETCHRETRYCOUNT`, and `FETCHTIMEOUT`, were added to `EXTRACT DBOPTIONS` to control Oracle Active Data Guard fetch operations. The `ADGAPPLYCHECKFREQ` and `ADGCRETRYCOUNT` options were added to `TRANLOGOPTIONS`.
- The `MAPINVISIBLECOLUMNS` and `NOMAPINVISIBLECOLUMNS` parameters were added to control whether or not Replicat includes invisible columns in Oracle target tables for default column mapping.
- The metadata associated with each table in the replication process no longer requires the use of the `SOURCEDEFS` and `ASSUMETARGETDEFS` parameters. You can now configure replication without the need to define either of these parameters, see Metadata Extract Trail.
- The default is trail file sequence number is 9 digits.
- The `EAGER_SIZE` option default size was changed to 15100. Valid for Oracle integrated Replicat only and it is part of the `DBOPTIONS INTEGRATEDPARAMS` syntax. In addition, you can use the `NOUSERID` capability for Oracle downstream integrated Extract so that a connection to the source database during runtime is not required.
- Classic Extract on ADG when the ADG is behind Extract was changed to become consistent with Integrated Extract when waiting to fetch. This means it will, by

default, wait 30 seconds if no MRP or no progress then abend. Classic Extract does not report when it is waiting for ADG to catch up.

- For Teradata, Extract and DDL are no longer supported.

Release 12.2.0.1.1: November 2017

- The `STREXT` function uses character semantics and number of characters to extract a portion from a string.
- The `NOSUPPRESSTRIGGERS` option in `DBOPTIONS` supports both Integrated Replicat and Classic Replicat.

Installation

All Oracle GoldenGate Installing and Configuring Guide, that include all prerequisites, are found at:

`http://docs.oracle.com/goldengate/c1221/gg-winux/index.html`

Oracle Database Upgrades

This section contains information about upgrading Oracle GoldenGate with Oracle Databases in this new release.

- Oracle GoldenGate 12.2.0.1.1 for Oracle Database is a major release and must be installed using the Oracle Universal Installer (OUI). There is no opatch upgrade path from Oracle GoldenGate for Oracle Database release 12.2.0.1.0 to release 12.2.0.1.1. If you have already installed release 12.2.0.1.0, then Oracle recommends that you wait for the next bundle patch.
- When you are upgrading Oracle GoldenGate from release 12.1.2.1.0 to 12.2.0.1.0 and have enabled monitoring and created the data store (`CREATE DATASTORE` in GGSCI), the best practice is to delete the data store before performing the upgrade (`DELETE DATASTORE` in GGSCI). After the upgrade, recreate the data store can (`CREATE DATASTORE` in GGSCI).

  You can upgrade without first deleting the data store as long as you do not start any Manager processes before you delete then recreate data store. Otherwise, Manager will fail to start after the upgrade.

Deprecated Parameters and Commands

This section contains information about the parameters and commands that are no longer used in this new release.

- SQL Server: The `TRUSTEDCONNECTION` option of the `DBOPTIONS` parameter is deprecated.
- The `DOWNCRITICAL` parameter is deprecated.
- The `NOHEADERS` parameter is deprecated.

- The `WILDCARDRESOLVE` and `DYNAMICRESOLUTION | NODYNAMICRESOLUTION` parameters are deprecated. With the availability of metadata in trail, immediate resolution no longer makes sense in some configurations (since the metadata may not be available at startup, because it will arrive in the trail at a later point) so these parameters were deprecated.

  `SOURCEISTABLE` Extracts continue to always use `IMMEDIATE` resolution exclusively. All other configurations will default to `DYNAMIC` resolution.

  Pump and Replicat can still be configured with `IMMEDIATE` resolution if `ASSUMETARGETDEFS` or `SOURCEDEFS` is specified with the `OVERRIDE` option, since in these situations trail metadata is not used so all source metadata must be available at startup and immediate resolution is possible.

  Other specifications of `WILDCARDRESOLVE` or `DYNAMICRESOLUTION` (specifying `DYNAMIC` for `SOURCEISTABLE` Extract or `IMMEDIATE` for Pump or Replicat without `ASSUMETARGETDEFS`, `OVERRIDE`, or `SOURCEDEFS OVERRIDE`) causes the process to output a warning and ignore the specification. Instead, the default is used, which is `IMMEDIATE` for `SOURCEISTABLE` Extract and `DYNAMIC` for all others.
- The two options for the `RECOVERYOPTIONS` parameter, `APPENDMODE` and `OVERWRITEMODE` are deprecated and no longer supported.
- The `LEGACYLOBREADING` option of the `TRANLOGOPTIONS` parameter is deprecated.
- The `FILESPEC` argument (for SQL Server) of the `TRANLOGOPTIONS ALTARCHIVELOGDEST` parameter is deprecated.
- The `MAXFILES` of the `RMTHOST` parameter is deprecated.

Corrected Problems

For questions on specific bugs or ticket numbers, consult Oracle Customer Support. SR is the Oracle Support SR number, and BugDB is the bug identification number. This section contains the following sections:

Release 12.2.0.2.2 — 20 July 2018

Bug 28213528 - Sybase: Oracle GoldenGate Extract process hangs until stopped manually and restarted

An issue where the Extract process hangs and is in idle state indefinitely because Sybase's LTM reader gets stuck while reading the transaction log was fixed.

Release 12.2.0.1.160223 — 19 February 2016

Bug 22352402 - Oracle: Pump Extract abends with OGG-02765 Trail format version must be 12.2 or higher

An issue with Oracle GoldenGate release 12.2 or greater extracting with an 11g release trail format abending during the pump was corrected.

Bug 22455149 - Oracle: Coordinated replicat abends with ORA-1403 even with fix for bug 21885590

An issue with coordinated Replicat with no `THREADRANGE` columns specified, resulting in each incoming record being mapped to differently so that the records could not be coordinated so inserts and updates were out of order was fixed.

Bug 21481506 - SQL Server: Extract Appears to be capturing Replicat's transactions.

An issue when there is a capture process on a database that also has Replicat writing to it and the `CP_BEFORE` event action is executed in the Replicat, the capture process incorrectly capturing the Replicated transaction was fixed.

Bug 21562399 - Informix: Replicat abends with an_ggInvalidMemoryAccess_abort: Buffer overflow error

An issue with the LOB native data type for Oracle Database matching with the Informix interval type causing Replicat to fail in the interval type and later abending with a memory violation was fixed.

Release 12.2.0.1.1 — 20 January 2016

Bug 20778054 - Informix: Extract capturing `GGSPKUPDATE` as `Fieldcomp`

An issue with Informix Extract capturing `GGSPKUPDATE` as `Fieldcomp` was fixed.

Bug 19764186 - SQL/MX: Replicat not writing the correct values in the discard file

An issue with an incorrect return value test on `map_column()` causing the discard value for a bad column to contain the previous columns' value was fixed.

Release 12.2.0.1.0 — Initial Release

Initial release.

Known Issues

For questions on specific bugs or ticket numbers, consult Oracle Customer Support. `SR` is the Oracle Support SR number, and `BugDB` is the bug identification number. The information in this section is divided into the following releases:

Release 12.2.0.1.1: September 2017

Bug 26020817 - Oracle GoldenGate Extract Timestamp Does Not Adjust After DST Change

An Extract has an actual lag value + 3600 seconds (1 hour) when there is a time transition from DST to Non-DST (in November of every year). This recurs during 1 A.M. to 2 A.M. Non-DST.

Workaround

None.

Bug 25992725 - INSERTALLRECORDS doesn't work for UNIFIED Trails from UPDATERECORDFORMAT

When building a table using `INSERTALLRECORDS`, Replicat works fine when the trail is configured before or after image update records, separately. However, when `UPDATERECORDFORMAT FULL` is used, only the after image is inserted from the UNIFIED update record.

Workaround

Do not use `UPDATERECORDFORMAT FULL`.

Bug 25367761 IR Doesn't Support Duplicate MAP

`ALLOWDUPTARGETMAP` is not supported in IR.

Workaround

You have the following alternates to using duplicate MAP:

- Use single MAP statement with conditional `COLMAPS()`.
- Use classic or coordinated Replicat.

Release 12.2.0.1.1 — 20 January 2016

Tables with SDO_GEOMETRY Support

Tables with SDO_GEOMETRY data types are not supported for initial loads if the trail file format is 12.2. The work around is to use a 12.1 format by setting the `FORMAT RELEASE 12.1` option in the Extract parameter file.

Initial Loads with Integrated Replicat Support

Integrated Replicat does not support initial loads using Oracle GoldenGate trail files.

Informix Replicat Tables Without a Primary Key

Attempting to use Replicat tables that do not have a primary key can result in the Replicat abending with a `No data found` error. You can overcome this issue with one of the following workarounds:

- Use a primary key in your Replicat table.
- Use `REPERROR` parameter in the target parameter file.

Document Restrictions/Possible Data Loss Apply Partition Maintenance DDLs

Applying PMOP DDLs where the source/target tables do not share the same partitioning methodology/definition leads to failed DDLs and possibly data loss. You can avoid this issue by first confirming that partitioning scheme (method) on the source and target are identical prior to issuing PMOP DDLs. If they are not identical you must either avoid issuing PMOP DDLs or avoid replicating them.

CHARMAP with UTF-16 Does Not Work Prior To Release 12.1.2.1.12

CHARMAP with UTF-16 does not work properly in the Oracle GoldenGate versions prior to release 12.1.2.1.12.

Release 12.2.0.1.0 — Initial Release

`LAG EXTRACT` against Integrated Extract

A `LAG EXTRACT` command issued against an Integrated Extract does not report a zero (0) second lag. To verify that there are no pending transactions still in the system, use `INFO ALL` in GGSCI to show the zero lag.

`checkpoint``_lox` Table for checkpoint tables

The *`checkpoint`*`_lox` table is an "overflow" table for the checkpoint table and is only populated only when a large number of transactions share the same CSN. In most cases, the *`checkpoint`*`_lox` table is empty.

Teradata Replicats using BATCHSQL

The Teradata ODBC driver does not allow a single SQLExecute request exceeding 1 MB. This limitation can result in suspended batches and eventually a reduction in Replicat rate (throughput). You can overcome this issue with one of the following workarounds:

- Reduce the number of operations per batch. For example, use the `OPSPERBATCH` option.
- Run separate Replicat processes for table's with a large number of columns by setting `OPSPERBATCH` to a smaller value.For tables with a smaller number of columns, you can set `OPSPERBATCH` to a larger value to improve the throughput for such tables.

MySQL Server Crash

When a MySQL server crashes, the binary log may not be in a consistent state. The following are two possibilities when a MySQL server crashes:

- The next binary log file is created. After reaching the end of the current binary log file, Extract jumps to the next log file then starts processing the log.
- The next binary log file is *not* created. After reaching the end of the current binary log file, Extract errors with a warning. Extract cannot finish processing all the records that are in memory because there may be records that have not been put in the trail file so it will not abend.

Sybase Replicat Processes in BatchSQL Mode

For Sybase databases that support BatchSQL mode, when there is a single delete statement in the batch that is conflicting, Sybase processes the statement with return status of success. Since the server does not return any error, Replicat is not switching to Normal mode so the CDR statistics are not updated. This is an issue with Sybase not applicable to those versions of Sybase that do not support BatchSQl.

Getting Help with My Oracle Support

Use My Oracle Support to find knowledge solutions, workarounds, and other information that is reported by customers, partners, and Oracle employees. My Oracle Support also enables you to open a Service Request. If a patch is required to resolve a service request, you will receive instructions on how to download it from My Oracle Support.

> **Note:**
>
> If you purchased Oracle GoldenGate and support through a distributor, contact your distributor instead of attempting to create a service request through My Oracle Support.

Viewing the Oracle GoldenGate Knowledge Base

To view the Oracle GoldenGate Knowledge Base, follow these steps:

1. Browse to the My Oracle Support web site at `http://support.oracle.com`.
2. Select your language and then log in with your email and Oracle password.
3. Click the **Knowledge** tab.
4. In the **Select a product or product line** field, enter **GoldenGate**, and then select an Oracle GoldenGate product from the context-sensitive list to narrow your results. (You may have to wait a few seconds for this list to appear).
5. In the **Enter search terms** field, enter a search keyword or multiple keywords to focus the query.

Additional information about how to use this tab is obtained by clicking **Help**.

Creating an Oracle GoldenGate Support Request Ticket

If you cannot find an answer to your question or problem in the Knowledge Base, you can open a support request ticket with Oracle Support by following these steps:

1. Browse to the My Oracle Support web site at `http://support.oracle.com`.
2. Select your language, and then sign in with your credentials. If you have not done so, you will have to register to use this web site.
3. Click the **Service Requests** tab.
4. Click **Create SR**.
5. Use the Create Service Request wizard to complete and submit your SR. Additional information about how to use this tab is obtained by clicking **Help**.

Oracle® Fusion Middleware Oracle GoldenGate Release Notes for Windows and UNIX, 12*c* (12.2.0.1)
E64454-08

This guide is intended for installers, database administrators, and system administrators who are installing, configuring and running Oracle GoldenGate.

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.

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 *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 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*}.
[ ]	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*].

The Oracle GoldenGate Product Documentation Libraries are found at

Oracle GoldenGate

Oracle GoldenGate Application Adapters

Oracle GoldenGate for Big Data

Oracle GoldenGate Plug-in for EMCC

Oracle GoldenGate Monitor

Oracle GoldenGate for HP NonStop (Guardian)

Oracle GoldenGate Veridata

Oracle GoldenGate Studio

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

Oracle GoldenGate A-Team Chronicles