Oracle® GoldenGate
11g Release 2 (11.2.1.0.1)
Release Notes

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New Features in 11.2.1

Database-specific enhancements

DB2 z/OS

The default character conversion for Extract on z/OS has been changed. In version 11.2 and later, column data from any ASCII-encoded tables will be converted to EBCDIC by default. Prior to version 11.2, the default was that no conversion would be done. Also, as of version 11.2, character conversion is no longer supported in Extract data pumps. This includes the conversion of the input trail data as well as the trail data that is output from a data pump.

MySQL

The following are now supported for MySQL:

- WARNLONGTRANS parameter
- SEND EXTRACT command with FORCETRANS, SHOWTRANS, and SKIPTRANS

Oracle

Extract can now be used in *integrated capture mode* with an Oracle database. Extract integrates with an Oracle database log mining server to receive change data from that server in the form of logical change records (LCR). Extract can be configured to capture from a local or downstream mining database. Because integrated capture is fully integrated with the database, no additional setup is required to work with Oracle RAC, ASM, and TDE. In addition, it supports more data and storage types as compared to classic capture, and the support is more transparent. Additional benefits apply. See also the **Parameters** and **Commands** sections. Integrated capture can be used to capture changes from Oracle RDBMS versions starting with 11.2.0.3 with the 11.2.0.3 Database specific bundle patch for Integrated Extract 11.2.x (Doc ID 1411356.1). It can also be used to capture changes from Oracle versions starting with 10.2.0.4 in a downstream mining deployment.

Extract can still be configured to capture directly from the redo logs for any supported Oracle version. This configuration is now called *classic capture mode*. In this mode, Extract integrates with Oracle RMAN to manage log retention. The only change to this feature is that ADD EXTRACT no longer automatically enables log retention. You must first issue DBLOGIN, then REGISTER EXTRACT with the LOGRETENTION option. To disable log retention, you must first issue DBLOGIN, then UNREGISTER EXTRACT with the LOGRETENTION option. Log retention continues to be the default, and an error is generated if REGISTER EXTRACT is not issued before ADD EXTRACT. All other functionality remains the same.

SQL Server

The following are now supported for SQL Server:

- WARNLONGTRANS parameter
- SEND EXTRACT command with FORCETRANS, SHOWTRANS, and SKIPTRANS

Sybase

The following are now supported for Sybase:

- WARNLONGTRANS parameter
- SEND EXTRACT command with FORCETRANS, SHOWTRANS, and SKIPTRANS

Other enhancements

General

- GoldenGate now supports Advanced Encryption Security (AES) in commands and parameters to support the encryption of passwords, trails, and data transfer across TCP/IP. BLOWFISH encryption is still available but recommended only for backward compatibility.
- GoldenGate now supports up to 5,000 concurrent Extract and Replicat processes per instance of Manager.
- The default trail size was increased to 100 MB
- GoldenGate now provides built-in conflict detection and resolution routines to support bi-directional and multi-master configurations. New parameters are provided to capture before images from the transaction log, to specify columns for which the before image is used in the Replicat WHERE clause, and to specify conflict types, resolutions, and column groups. Records that generate a conflict are automatically sent to an exceptions MAP statement if one exists, without the need for REPERROR to be set to EXCEPTION. See the **Parameters** section for new parameters that support CDR.
- GoldenGate is enhanced to support the globalization of data and object names. This support is as follows:
    - Oracle GoldenGate processes catalog, schema, table and column names in their native language as determined by the character set encoding of the source and target databases. This processing is extended to the parameter files and command interpreter, where they are processed according to the operating system locale. These objects appear in their native language format throughout the client interface, on the console, and in files.
    - The Oracle GoldenGate apply process (Replicat) supports the conversion of data from one character set to another when the data is contained in character column types. Character-set conversion support is limited to column-to-column mapping as performed with the COLMAP or USEDEFAULTS clauses of a TABLE or MAP statement. It is not supported by the column-conversion functions, by SQLEXEC, or by the TOKENS feature.
    - Oracle GoldenGate supports text input and output in the default character set of the host operating system for the following: Console, command-line input and output, FORMATASCII, FORMATSQL, FORMATXML parameters, text files such as parameter files, data-definitions files, error log, process reports, discard files, and other human-readable files that are used by Oracle GoldenGate users to configure, run, and monitor the Oracle GoldenGate environment.
- GoldenGate is now case aware and performs case-sensitive comparisons if the database is case-sensitive or if the database uses double quotes to enforce case-sensitivity. If the system or database is case-insensitive, Oracle GoldenGate converts case-insensitive names to the case in which they are stored when required for mapping purposes. See the Oracle GoldenGate documentation for more information about specifying case-sensitive object names in parameter files.

- A new USEANSIQUOTES parameter was added to reverse the usage of double and single quotes. Currently, literal text is supplied in double quotes. USEANSIQUOTES applies SQL-92 rules, where double quotes denotes literal strings, and single quotes denote an object name, if required to enforce case sensitivity.
- GoldenGate now supports the use of the question mark (?) wildcard to replace a single character.
- Changes were made to the TCP/IP components to:
    - Support IPv6 internet protocol by default. Oracle GoldenGate switches to IPv4 if IPv6 is not supported by the source or target system. You can use the new USEIPV6 parameter to force the use of Internet Protocol version 6 (IPv6) by for TCP/IP connections and skip the IPv4 fallback step.
    - Make port assignment more reliable. Now, Collector finds and binds a port based on the list sent by Manager from DYNAMICPORTLIST. Formerly, Manager performed this task. This enhancement is transparent to users.

Column Conversion Functions

- A new @DDL function returns the name and owner of an object in a DDL record, the type of object that was affected, the operation type, and the first 200 characters of the DDL statement.
- New STATS and DELTASTATS options of @GETENV return DDL and DML statistics for one or more tables.

User Exits

- User exit logic provides globalization support for:
    - character-based database metadata, such as the names of catalogs, schemas, tables, and columns
    - the values of character-type columns, such as CHAR, VARCHAR2, CLOB, NCHAR, NVARCHAR2, and NCLOB, as well as string-based numbers, date-time, and intervals.
    - To use this support, you must recompile your user exits to use userdecs.h version 3.

- The following are the globalization enhancements for user exits:
    - The user exit has its own session character set. This is defined by the new GET_SESSION_CHARSET and SET_SESSION_CHARSET callback functions. The caller process provides conversion between character sets if the character set of the user exit is different from the hosting context of the process.
    - To enable this support in user exits, there is the new GET_DATABASE_METADATA callback function code. This function enables the user exit to get database metadata, such as the locale and the character set of the character-type data that it exchanges with the process that calls it (Extract, data pump, Replicat). It also returns how the database treats the case-sensitivity of object names, how it treats quoted and unquoted names, and how it stores object names.
    - Oracle GoldenGate provides several new macros that can be called by the user exit to check the metadata of database object names.
    - The input parameter ascii_or_internal is now column_value_mode to more accurately describe the character format of the data. It now has the following new or renamed values:
        - EXIT_FN_RAW_FORMAT (formerly EXIT_FN_INTERNAL_FORMAT) specifies the canonical format.
        - EXIT_FN_CHAR_FORMAT (formerly EXIT_FN_ASCII_FORMAT) specifies ASCII format.
        - EXIT_FN_CNVTED_SESS_FORMAT (new) specifies the character set of the user exit.
    - New result codes were added:
        - EXIT_FN_RET_SESSION_CS_CNV_ERR: A ULIB_ERR_INVALID_CHAR_FOUND error was returned and the character-set conversion routine failed.
        - EXIT_FN_RET_NO_SRCDB_INSTANCE: The source database could not be found.
        - EXIT_FN_RET_NO_TGTDB_INSTANCE: The target database could not be found.
        - EXIT_FN_RET_BAD_DATE_TIME: A date, timestamp, or interval type of column contains an invalid date or time value.
        - EXIT_FN_RET_BAD_NUMERIC_VALUE: A numeric type of column contains an invalid numeric value.
    - Additional user exit enhancements are:
        - New EXIT_CALL_ABORT_TRANS call type is valid when the RECOVERYOPTIONS mode is APPEND (the default). It enables the user exit to abort or discard a transaction that was left incomplete when the writer process stopped, and then to recover and resume processing at the start of the previous completed transaction.
        - EXIT_CALL_BEGIN_TRANS call type is called just before a BEGIN record of a transaction that is read by a data pump or just before the start of a Replicat transaction.
        - EXIT_CALL_END_TRANS call type is called just after an END record of a transaction that is read by a data pump or just after the last record in a Replicat transaction.
        - New function codes GET_CATALOG_NAME_ONLY, GET_SCHEMA_NAME_ONLY, and GET_TABLE_NAME_ONLY to return portions of the fully qualified table name.

Parameters

- For DB2 on z/OS, two new parameters are available:
    - Use the ASCIIMIXEDCCSID parameter to specify that the data to be captured is exclusively from ASCII tables with mixed CCSID enabled.
    - Use the EBCDICMIXEDCCSID parameter to specify that data to be captured is exclusively from EBCDIC tables with mixed CCSID enabled.

      The ASCIITOEBCDIC parameter now should only be used to support backward compatibility in cases where the input trail file was created by an Extract version prior to v10.0. It is ignored for all other cases, because ASCII to EBCDIC conversion is currently the default.
- DBOPTIONS DECRYPTPASSWORD now supports decryption of AES encryption.
- DDLOPTIONS DEFAULTUSERPASSWORD and PASSWORD now support AES encryption.
- DECRYPTTRAIL and ENCRYPTTRAIL now support AES encryption.
- ENABLEMONITORAGENT was renamed to ENABLEMONITORING.
- MAP has the following new options to support the CDR feature for Oracle bi-directional replication:
    - GETBEFORECOLS specifies columns for which you want the before image to be captured and written to the trail upon an update or delete operation.
    - RESOLVECONFLICT specifies how Replicat handles conflicts on operations made to the tables in the MAP statement. Resolutions are available for the most commonly encountered conflicts. For more information, see the MAP parameter in the reference documentation.
    - COMPARECOLS specifies which columns are used for conflict detection when Replicat is configured for conflict detection and resolution.
- The EVENTACTIONS option of TABLE and MAP contains the following new or enhanced actions:
    - IGNORE now includes a RECORD option to force the process to ignore only the event record but process everything else in the transaction. RECORD is the default.
    - SUSPEND pauses the process so that it retains the active context of the current run and can still respond to SEND commands that are issued in GGSCI. When a process is suspended, the INFO command shows it as RUNNING, and the RBA field shows the last checkpoint position. To resume processing, issue the SEND <group> command with the new RESUME option.
    - SHELL has two forms: The basic form executes a basic shell command that is sent to the system in its literal value. SHELL with the new VAR clause supports parameter passing in a shell command.
- EVENTACTIONS is now an option of the DDL parameter. It causes the Extract or Replicat process take a defined action based on a DDL record in the transaction log or trail. The DDL event is triggered if the DDL record is eligible to be written to the trail by Extract or a data pump, or to be executed by Replicat, as determined by the other filtering options of the DDL parameter.
- TRANLOGOPTIONS has the following new or enhanced options:
    - ASMUSER now supports AES encryption.

    - MININGUSER specifies a user name and password for Extract to use to log into a downstream Oracle mining database when Extract is in integrated capture mode. It supports AES encryption.
    - FETCHPARTIALXML fetches the full XML document, instead of using the partial change document from the redo log. By default, the logmining server sends Extract a whole or partial XML document, depending on whether all or part of the source document was updated.
    - INTEGRATEDPARAMS passes parameters for the logmining server to the mining database when Extract is in integrated capture mode.
- RMTHOST and RMTHOSTOPTIONS have new options that enable to use the asynchronous *streaming* IP protocol by default, and fall back on the synchronous protocol if the sending or receiving system does not support it.
    - STREAMING enables streaming. The receiver (Collector) does not send an acknowledgement to the sender (primary Extract or data pump) for any data packet unless the packet contains a flag requesting a response. Because this method omits acknlowledgements, it is faster than the synchronous protocol.
    - NOSTREAMING enables the synchronous internet protocol. The sender sends a packet and then waits for the receiver to acknowledge it, before sending the next packet. This method is more reliable than streaming, but slower, especially where there is already high network latency.
- The ENCRYPT option of RMTHOST and RMTHOSTOPTIONS now supports AES encryption.
- USERID now supports AES encryption.
- The following parameters are added for globalization support:
    - CHARSET: Valid for Extract, Replicat, DEFGEN, Manager, GLOBALS, specifies an alternative character set to use for a parameter file in the event that the local platform does not support a required character or characters in the default character set. By default, the character set of the operating system is used to read parameter files. CHARSET options also are available for other parameters that create files, where the file now can be created in the specified character set.
    - SESSIONCHARSET: Valid for GLOBALS, sets the character set for the database login session of all local processes.
    - USEANSISQLQUOTES: Enables the use of double quotes for literal strings and single quotes for object names.
- A new ALLOWNONVALIDATEDKEYS parameter was added for GLOBALS so that Extract, Replicat, and GGSCI commands can be configured to allow primary keys that are not validated, or keys that are invalid, to be used by as a unique identifier. This parameter overrides the key selection criteria that is used by . When it is enabled, will use NON VALIDATED and NOT VALID primary keys as a unique identifier.
- GENLOADFILES and FORMATASCII have a new CHARSET option to specify the encoding of ASCII characters in Oracle NCHAR columns. The valid value is UTF8.

Commands

- MININGDBLOGIN supplies user credentials for Extract to log into a downstream Oracle mining database when Extract is in integrated capture mode.

- REGISTER EXTRACT with the DATABASE option is issued after DBLOGIN or MININGDBLOGIN to establish database logmining server to support integrated capture.
- UNREGISTER EXTRACT with the DATABASE option removes the database logmining server.
- ADD EXTRACT has the following changes:
    - This command no longer automatically registers Extract with the database for LOGRETENTION. Now you must explicitly register the Extract by using the REGISTER EXTRACT command with the LOGRETENTION option.
    - The INTEGRATED TRANLOG option specifies to add the Extract in integrated capture mode.
    - The THREADS option must be set to 1 when using integrated capture.
- ALTER EXTRACT has new options to support changing from classic capture to integrated capture, or from integrated capture to classic capture:
    - UPGRADE INTEGRATED TRANLOG converts an Extract that currently is in classic capture mode to the integrated capture mode.
    - DOWNGRADE INTEGRATED TRANLOG converts an Extract that currently is in integrated capture mode to classic capture mode.
- INFO EXTRACT now displays the current Extract capture mode. The new UPGRADE and DOWNGRADE options show whether Extract can be upgraded to integrated capture mode or downgraded to classic capture mode, as applicable.
- SEND EXTRACT has the following changes:
    - It has a new RESUME option to direct Extract to resume processing after an EVENTACTIONS with SUSPEND was triggered.
    - It now shows the status of SUSPENDED when Extract is suspended as a result of EVENTACTIONS.
    - It has a new TRACE OFF <file name> option to support the EVENTACTIONS feature.
- STATUS EXTRACT also now displays the status of SUSPENDED.
- SEND REPLICAT has the following changes:
    - It has a new RESUME option to direct Replicat to resume processing after an EVENTACTIONS with SUSPEND was triggered.
    - It now shows the status of SUSPENDED when Extract is suspended as a result of EVENTACTIONS.
    - It has a new TRACE OFF <file name> option to support the EVENTACTIONS feature.
- STATUS REPLICAT also now displays the status of SUSPENDED.
- ENCRYPT PASSWORD now supports the AES encryption standard.
- INFO TRANDATA now shows whether Oracle supplemental logging is enabled and shows any columns that are being logged supplementally.
- DBLOGIN now has a SESSIONCHARSET option that sets the character set of the GGSCI session for all subsequent commands.

Utilities

- DEFGEN is enhanced to support globalization. The following are new parameters for DEFGEN:
    - NOEXTATTR is a command line parameter that supports backward compatibility with versions that are older than Release 11.2.1, which do not support character sets other than ASCII and do not support case-sensitivity or object names that are quoted with spaces.
    - UPDATECS is a command line parameter that updates the character set of an existing definitions file.
    - CHARSET generates the definitions file in the specified character set.

Documentation enhancements and corrections

A new Error Messages Guide is now available. This document contains the cause and action of errors, warnings, and informational messages that are written to the event log. This guide is available with the other published documentation.

Deprecated parameters and commands

- The CACHEBUFFERSIZE option of the BR parameter is now deprecated.
- TRANLOGOPTIONS _OPTIMIZEROWMIGRATION is now the default. And the parameter has been removed.

Documentation Addendum

This section serves as an addendum to the Oracle GoldenGate for Windows and UNIX Administration Guide and Reference Guide. It includes items that have not been covered in the manuals due to changes made to the product or the documentation after the documentation has been published.

_IGNORETSERECORDS(Oracle) has been moved to an internal parameter and should not be used unless instructed to by Oracle Support.

This parameter causes Extract to ignore transaction records that contain data that is encrypted with Tablespace Encryption (TSE). This parameter prevents Extract from abending when Extract is not configured properly to support the capture of TSE data. Regardless of how many TSE records are ignored, Extract generates only one warning message in its current run. Ignoring TSE records can have the following consequences:

- It can cause an entire transaction to be discarded, which in turn might cause DML on non-encrypted tables in the transaction to get skipped and become out of synchronization between source and target. The non-encrypted data gets skipped because the change vector (5.1) that contains the xid and object id is encrypted, even though the table itself is not in an encrypted tablespace.
- Encrypted records can be generated on objects that are outside TSE when TSE is deployed, and these also will be affected by this parameter.

Due to the nature of the data loss that can be encountered by skipping any record that is encrypted in the log, this parameter is only to be used with guidance from qualified Oracle support or development personnel. To configure Extract to support TSE, see the Oracle GoldenGate Oracle Installation and Setup Guide.

Documentation Errata

This section contains corrections to errors in the documentation that were found after this version of the documentation was published.

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Installation and Upgrades

The installation file downloaded from Oracle is not compressed using gzip, instead it is a standard .zip file. To uncompress the download, please use the following methods:

- Windows – Please use winzip or other method that can support files with the .zip extension.
- Unix / Linux – Please use the 'unzip' command utility to uncompress the downloaded file.
- Mainframe – Please use the 'unzip' command utility to uncompress the downloaded file.

If you do not have any of these utilities on the server, you can download them from Oracle's website at http://updates.oracle.com/unzips/unzips.html

For upgrade instructions, see the separate *Oracle GoldenGate for Windows and UNIX Upgrade Instructions*.

Corrected Problems

For questions on specific bugs or ticket numbers, please consult Oracle Customer Support. SR is the Oracle Support SR number, and BugDB is the bug identification number.

Version 11.2.1.0.1 – 7 May 2012

13846553 - EXTRACT IS VERY SLOW AFTER FLUSHING LARGE NUMBER OF SEQUENCES

13830145 - TRAIL FILE IS CORRUPTED WITH SQLEXEC LOG MSG DUE TO CONFLICT WITH REPORTROLLOVER

13775124 - MSSQL EXTRACT ABEND WHEN DOING A UPDATE ON A COMPRESSED TABLE

13636576 - @GETENV ("LASTERR", "DBERRMSG") IS NOT WORKING PROPERLY IN THE REPLICAT

13623775 - ALLOW DB2LUW XML COLUMNS TO BE IGNORED BY EXTRACT

13560335- WARNLONGTRANS SKIPEMPTYTRANS CAUSES EXTRACT TO ABEND

13530053 - EXTRACT IS HUNG WITH WARNING OGG-00720 WAITING FOR BYTES TO BE FLUSHED TO ARCH

13520711 - ERROR OGG-01028 ORA-28360: SECURITY MODULE INTERNAL ERROR

13498907 - MEMPOOL TOTAL MEMORY INCORRECTLY DISPLAYED IN REPORT FILE

13497923 - SYBASE EXTRACT FAILS WITH "OGG-00868 CANNOT CONVERT INTERNAL DATA TYPE TO CHAR"

13431884 - PERFORMANCE DEGRADATION AFTER UPGRADE TO OGG 11.1.1.1.2 BUILD

12914602 - UCS2 COLUMN NOT RECOGNIZED BY REPLICAT FROM DEFINITIONS FILE

11801306 - EXTRACT ABENDING OGG UPGRADE FROM 10.4.0.33 TO 11.1.1.0.8

11061438 - REPLICAT PURGEOLDEXTRACTS TRIES TO PURGE TRAILS STARTING WITH -000001

9969804 - REPLICAT ABNDED:BAD COLUMN LENGTH (1502) ...., MAXIMUM ALLOWABLE LENGTH IS 1500.

9669344 - PUMP CHECKPOINT RBA IS LARGER THAN LOCAL TRAILFILE SIZE, AFTER SERVER CRASH

Version 11.2.1.0.0 – 9 Feb 2012

First release

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.

To view the Oracle GoldenGate Knowledge Base

1. Go to http://support.oracle.com.
2. Select your language and then log in with your email and Oracle password.
3. Click the **Knowledge** tab.

You can:

- Browse the Oracle GoldenGate knowledge base by typing "Oracle GoldenGate" in **Browse Any Product** or by selecting **Middleware>Business Intelligence>GoldenGate** under **Browse Knowledge**.
- Type a search word or phrase in **Search Knowledge Base** to search for a specific topic. If needed, use the **Product Category** option under **Refine Search** to narrow the scope of the results to just Oracle GoldenGate tickets (**Middleware>Business Intelligence>GoldenGate**). Use other options as needed.
- **Refine Search** contracts and expands with every search refinement that you make, and then refreshes the refinement options and results each time for further action, if needed.

If you need help with My Oracle Support, click **Help** at the top of the application window.

To open a service request

1. Click the **Service Requests** tab.
2. Click **Create SR**.
3. Complete the form, referring to the **Help** at the top of the application window if necessaary.