

# **Oracle® GoldenGate**

Windows and UNIX Upgrade Instructions  
11g Release 1 Patch Set 1 (11.1.1.1)

**E22505-01**

September 2011

**ORACLE**

Copyright © 2008, 2009, 2011 Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this software or related documentation is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, duplication, disclosure, modification, and adaptation shall be subject to the restrictions and license terms set forth in the applicable Government contract, and, to the extent applicable by the terms of the Government contract, the additional rights set forth in FAR 52.227-19, Commercial Computer Software License (December 2007). Oracle USA, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

This software is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications which may create a risk of personal injury.

If you use this software in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure the safe use of this software. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software in dangerous applications.

Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

This software and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

## Contents

Who should perform the upgrade.....	4
Determine if you need to make parameter or environment changes.....	4
Preventing lag during upgrades.....	4
Preinstallation instructions for Oracle Enterprise Edition sources .....	4
Installing new Oracle sequence support.....	5
Upgrading to v11.1.1.1 from v11.1.1.0.0 (source, target, or both) .....	6
Upgrading to v11.1.1.1 from v10.4.x (source, target, or both).....	8
Upgrading to v11.1.1.1 from version 10.0.x and earlier .....	10
(Oracle) Rebuilding the DDL environment to a clean state.....	13
Customer Support .....	14

## Who should perform the upgrade

**Important:** Upgrades to Oracle GoldenGate should be performed by an administrator who has thorough knowledge of the commands that are necessary to control processes and obtain status information.

## Determine if you need to make parameter or environment changes

Before doing the upgrade procedure, please read the *New Features* section of the Oracle GoldenGate version 11.1.1.1 Release Notes to determine whether the new release affects the following in your configuration:

- new default process behavior
- parameters that changed or were deprecated
- parameters that were added to support a desired new feature
- new data type support that might require changes to TABLE or MAP statements
- interaction with native database components that might require some database changes

You should familiarize yourself with the new features before you start the upgrade, so that you are prepared to make any required changes in your environment. You can get more information about how to implement new features in the Oracle GoldenGate installation guides, Administrator's Guide, and Reference Guide.

## Preventing lag during upgrades

You will be stopping the Oracle GoldenGate processes during the upgrade. To prevent startup delays that can cause lag, it is best to have all of your parameter changes made ahead of time, so that they are ready when you restart the processes. You should not make parameter changes while a process is running, but you can:

1. Make a copy of the parameter file.
2. Make edits to the copy.
3. After you shut down the processes during the upgrade procedure, copy the old parameter file to a new name (to save it as backup).
4. Copy the new parameter file to the old parameter file's name.

## Preinstallation instructions for Oracle Enterprise Edition sources

These instructions apply to Enterprise Edition v10.2 and higher. For Oracle GoldenGate on these versions, Extract now manages log retention by default. With this new feature, you should be aware of the following:

- The upgrade will automatically register each of your Extract processes with the database, which will start retaining the logs based on the current recovery requirements for each process.

- An Oracle Streams Capture process will be created for each Extract process and will have the same name as that process. These Capture processes are non-functional and can operate concurrently with other local Oracle Streams installations.
- In order for the upgrade to succeed, you will need to assign the Extract user some additional privileges. These privileges are as follows:

<b>Oracle 10.2</b>	<p>Run package to grant Streams admin privilege.</p> <pre>exec dbms_streams_auth.grant_admin_privilege('&lt;user&gt;')</pre> <p>Grant INSERT into logmnr_restart_ckpt\$.</p> <pre>grant insert on system.logmnr_restart_ckpt\$ to &lt;user&gt;;</pre> <p>Grant UPDATE on streams\$_capture_process.</p> <pre>grant update on sys.streams\$_capture_process to &lt;user&gt;;</pre> <p>Grant the 'become user' privilege.</p> <pre>grant become user to &lt;user&gt;;</pre>
<b>11.1 and 11.2.0.1</b>	<p>Run package to grant Streams admin privilege.</p> <pre>exec dbms_streams_auth.grant_admin_privilege('&lt;user&gt;')</pre> <p>Grant the 'become user' privilege.</p> <pre>grant become user to &lt;user&gt;;</pre>
<b>11.2.0.2 and later</b>	<p>Run package to grant Streams admin privilege.</p> <pre>exec dbms_goldengate_auth.grant_admin_privilege('&lt;user&gt;')</pre>

If you do not want to use the log-retention feature, use the TRANLOGOPTIONS parameter with the new LOGRETENTION option set to DISABLED in the Extract parameter file before you start your Extract groups.

For more information about the log-retention feature, see the Oracle GoldenGate for Oracle Installation and Setup Guide, and also the TRANLOGOPTIONS parameter documentation in the Oracle GoldenGate Windows and UNIX Reference Guide.

## Installing new Oracle sequence support

Oracle GoldenGate version 11.1.1.1 contains improved sequence support. To enable this support, you must install some database procedures that support the new FLUSH SEQUENCE command.

Follow these instructions on the **source** and **target** systems.

1. On the source and target Oracle systems, connect to SQL\*Plus as SYSDBA.

2. If you already assigned a database user to support the Oracle GoldenGate DDL replication feature, you can skip this step. Otherwise, on both systems create a database user that can also be the DDL user.

```
SQL> CREATE USER DDLuser IDENTIFIED BY password;  
SQL> GRANT CONNECT,RESOURCE,DBA TO DDLuser;
```

3. In the GLOBALS file on the source and target systems (create one if needed), add the following parameter to designate the DDL schema. (If you already have this parameter, skip this step.)

```
GGSCHEMA <schema>
```

4. On both systems, run the **sequence.sql** script from the root of the Oracle GoldenGate installation directory. This script creates some procedures for use by Oracle GoldenGate processes. (Do not run them yourself.) You are prompted for the schema information that you created in the first step.

```
SQL> @sequence.sql
```

5. On the source system, grant EXECUTE privilege on the **updateSequence** procedure to a database user that can be used to issue the DBLOGIN command. Remember or record this user. You use DBLOGIN to log into the database prior to issuing the FLUSH SEQUENCE command, which calls the procedure.

```
SQL> GRANT EXECUTE on DDLuser.updateSequence TO DBLOGINuser;
```

6. On the target system, grant EXECUTE privilege on the **replicateSequence** procedure to the Replicat database user.

```
SQL> GRANT EXECUTE on DDLuser.replicateSequence TO Replicatuser;
```

Immediately after you start the Oracle GoldenGate processes for the first time, issue the FLUSH SEQUENCE command for each sequence (or with a wildcarded name). This command alters the sequence to generate redo data. Replicat uses this redo to create an initial synchronization point. **You are prompted for this command in the upgrade steps.**

## Upgrading to v11.1.1.1 from v11.1.1.0.0 (source, target, or both)

1. Install v11.1.1.1 of Oracle GoldenGate into a new directory by following the directions for a new installation for your database and platform. You do **not** need to create the sub-directories; just complete the steps to the point where the programs are expanded. See the installation instructions for your supported database.
2. (*Oracle source database*) For any Extract that is configured with the Bounded Recovery feature (the default, introduced in Oracle GoldenGate v.11.1.1), the new Extract might need to start processing from the normal recovery checkpoint, rather than the bounded recovery checkpoint. Unless you have very long-running open transactions that span multiple log files, it should not make a difference which

checkpoint is used. However, if the first record of the oldest open transaction at the time that you stop Extract is in a log that no longer is on the system, be prepared to restore all of the archives back to, and including, that one. To avoid having to restore so many logs, you can use the SEND EXTRACT command with the SHOWTRANS option to view long-running transactions that apply to the Extract that you are upgrading. If any of them can be terminated or forced to the trail as-is, make a note of the transaction ID (shown in the SHOWTRANS output) and then use SEND EXTRACT with the SKIPTRANS or FORCETRANS option to clean them up.

```
GGSCI> SEND EXTRACT <group>, SHOWTRANS  
GGSCI> SEND EXTRACT <group>, SKIPTRANS <ID> [THREAD <n>] [FORCE]
```

3. *Oracle source database if using DDL replication:* There are changes to the Oracle GoldenGate DDL triggers and objects that need to be rebuilt. This procedure creates a new DDL environment, but removes DDL history. To preserve the continuity of source and target structures, stop DDL activity on the source database and allow Replicat to apply the changes that are in the trail to the target. To determine when Replicat is finished, issue the following command until you see a message that there is no more data to process.

```
INFO REPLICAT <group>
```

4. Stop all of the Oracle GoldenGate processes, starting with Extract and Replicat processes, and then the Manager process.

```
GGSCI> STOP EXTRACT <group>  
GGSCI> STOP REPLICAT <group>  
GGSCI> STOP MANAGER
```

5. *(Oracle source database)* If you have long-running open transactions, use the following command in GGSCI to determine the oldest archive log that you might need to restore when Extract starts. The **Recovery Checkpoint** field shows the oldest log needed for recovery.

```
GGSCI> INFO EXTRACT <group>, SHOWCH
```

6. Move the files and programs that you expanded from your new directory into your existing Oracle GoldenGate directory.
7. *Oracle source database if using DDL replication:* Follow the instructions on page 13 to rebuild the Oracle GoldenGate DDL environment to a clean state and then return to these steps.
8. *Oracle GoldenGate upgrades on DB2 z/OS:* You might need to re-set the "a" attribute for the Extract process and its DLLs to APF-authorize them to use the privileged API. For more information, see the installation instructions in the Oracle GoldenGate Installation and Setup Guide for DB2 z/OS.

9. Start all of the Oracle GoldenGate processes, starting with Manager, and then Extract and Replicat.

```
GGSCI> START MANAGER
GGSCI> START EXTRACT <group>
GGSCI> START REPLICAT <group>
```

10. If you need to restore any log files, Extract will abend with an error that indicates the log to restore. Restore the logs back to, and including that log, and then restart Extract.
11. (Oracle, if replicating sequences) Issue the following command immediately after starting Extract to generate redo that Replicat uses to synchronize the sequences. You can use an asterisk wildcard for any or all characters in the name of a sequence (but not the owner).

```
FLUSH SEQUENCE <owner.sequence>
```

## Upgrading to v11.1.1.1 from v10.4.x (source, target, or both)

1. Install v11.1.1.1 of Oracle GoldenGate into a new directory by following the directions for a new installation for your database and platform. You do not need to create the sub-directories; just complete the steps to the point where the programs are expanded. See the installation instructions for your supported database.
2. *Oracle source database if using DDL replication:* There are numerous changes to the Oracle GoldenGate DDL triggers and objects, so they must be rebuilt. This procedure creates a new DDL environment, but removes DDL history. To preserve the continuity of source and target structures, stop DDL activity on the source database and allow Replicat to apply the changes that are in the trail to the target. To determine when Replicat is finished, issue the following command until you see a message that there is no more data to process.

```
INFO REPLICAT <group>
```

3. Stop all of the Oracle GoldenGate processes, starting with Extract and Replicat processes, and then the Manager process.

```
GGSCI> STOP EXTRACT <group>
GGSCI> STOP REPLICAT <group>
GGSCI> STOP MANAGER
```

4. Move the files and programs that you expanded from your new directory into your existing Oracle GoldenGate directory.



5. *Oracle GoldenGate upgrades on SQL/MX*: An internal change to the checkpoint storage format requires that you perform the following steps:

- Alter the primary SQL/MX Extract process (that reads the transaction logs) to write to a new trail sequence number.

```
ALTER EXTRACT <group name> ETROLLOVER
```

- Issue the INFO EXTRACT command with DETAIL for the primary SQL/MX Extract to verify the trail sequence number.

```
INFO EXTRACT <group name>, DETAIL
```

- Reposition the associated Extract data pumps and Replicat processes to start at the new trail sequence number.

```
ALTER EXTRACT <pump name>, EXTSEQNO <seqno>, EXTRBA <RBA>  
ALTER REPLICAT <group name>, EXTSEQNO <seqno>, EXTRBA <RBA>
```

- From the Oracle GoldenGate installation directory, run the **convchk** program for the primary SQL/MX Extract to convert the checkpoints to the new format.

```
./convchk <Extract group name>
```

Note: If the checkpoints are not converted, the primary SQL/MX Extract process will abend at startup and will ignore all data in the transaction log.

6. *Oracle source database if using DDL replication*: Follow the instructions on page 13 to rebuild the Oracle GoldenGate DDL environment to a clean state and then return to these steps.
7. *Oracle GoldenGate upgrades on DB2 z/OS*: You might need to re-set the "a" attribute for the Extract process and its DLLs to APF-authorize them to use the privileged API. For more information, see the installation instructions in the Oracle GoldenGate Installation and Setup Guide for DB2 z/OS.
8. Start all of the Oracle GoldenGate processes, starting with Manager, and then Extract and Replicat.

```
GGSCI> START MANAGER  
GGSCI> START EXTRACT <group>  
GGSCI> START REPLICAT <group>
```

9. (Oracle, if replicating sequences) Issue the following command immediately after starting Extract to generate redo that Replicat uses to synchronize the sequences. You can use an asterisk wildcard for any or all characters in the name of a sequence (but not the owner).

```
FLUSH SEQUENCE <owner.sequence>
```

## Upgrading to v11.1.1.1 from version 10.0.x and earlier

These instructions apply only to upgrades from Oracle GoldenGate versions that are earlier than v10.4.x, including v10.0.x.

### Upgrading in the correct order on z/OS

These instructions apply only to Oracle GoldenGate upgrades for **DB2 for z/OS**, and they only apply if upgrading from **v9.5 or earlier**. These steps provide guidelines to determine the correct order for applying the upgrade. **If you are upgrading from v10.0.x for DB2 on z/OS, skip this section.**

1. If upgrading Oracle GoldenGate on a z/OS source system that moves data to a non-z/OS target, upgrade the target system first, and then upgrade the source system. No parameter changes are required for any component. You can remove any ASCII TO EBCDIC or EBCDIC TO ASCII parameters after all of the old data (from before the upgrade) has been processed.
2. If upgrading Oracle GoldenGate on a z/OS source system that moves data to a NonStop target, upgrade the source system first. No parameter changes are required for Replicat, but the following changes are required for Extract, because the Replicat for a NonStop system does not perform automatic conversion:
  - If not using a data pump, or if using a data pump with the PASSTHRU parameter, add EBCDIC TO ASCII to the primary Extract parameter file before restarting Extract after the upgrade.
  - If using a data pump with NOPASSTHRU (the default), add EBCDIC TO ASCII to the data pump parameter file before restarting Extract after the upgrade. No changes are needed for the primary Extract.
  - If upgrading Oracle GoldenGate on a NonStop source system that moves data to a z/OS target, upgrade them in any order. However, Replicat will continue to require the parameter ASCII TO EBCDIC, because Extract on NonStop does not currently write the character format to the trail.

### To upgrade only the target from v10.0.x and earlier

1. Install v11.1.1.1 of Oracle GoldenGate into a new directory by following the directions for a new installation for your database and platform. You do not need to create the sub-directories; just complete the steps to the point where the programs are expanded. See the installation instructions for your supported database.
2. Stop Replicat and then Manager.

```
GGSCI> STOP REPLICAT <group>  
GGSCI> STOP MANAGER
```

3. Remove the CACHESTATEMENTS option of BATCHSQL if being used in the Replicat parameter file.
4. Move the files and programs that you expanded from your new directory into your existing Oracle GoldenGate directory.
5. Start Manager and then Replicat.

```
GGSCI> START MANAGER  
GGSCI> START REPLICAT <group>
```

### To upgrade only the source, or both source and target, from v10.0.x and earlier

There were major functionality changes in Oracle GoldenGate v10.4.x that affect Extract and the trail format, which are also present in v11.1.1.1. To upgrade directly from v10.0.x (the last version before 10.4) to v11.1.1.1, follow these steps.

1. Install v11.1.1.1 of Oracle GoldenGate into a new directory by following the directions for a new installation for your database and platform. You do not need to create the sub-directories; just complete the steps to the point where the programs are expanded. See the installation instructions for your supported database.
2. *Oracle source database if using DDL replication:* There are numerous changes to the Oracle GoldenGate DDL triggers and objects, so they must be rebuilt. This procedure creates a new DDL environment, but removes DDL history. To preserve the continuity of source and target structures, stop DDL activity on the source database and allow Replicat to apply the changes that are in the trail to the target. To determine when Replicat is finished, issue the following command until you see a message that there is no more data to process.

```
INFO REPLICAT <group>
```

3. Stop all of the Oracle GoldenGate processes, starting with Extract and Replicat processes, and then the Manager process.

```
GGSCI> STOP EXTRACT <group>  
GGSCI> STOP REPLICAT <group>  
GGSCI> STOP MANAGER
```

4. Move the files and programs that you expanded from your new directory into your existing Oracle GoldenGate directory.
5. *Oracle source database if using DDL replication:* Follow the instructions on page 13 to rebuild the Oracle GoldenGate DDL environment to a clean state and then return to these steps.
6. *Oracle GoldenGate upgrades on DB2 z/OS:* You might need to re-set the "a" attribute for the Extract process and its DLLs to APF-authorize them to use the privileged API. For more information, see the installation instructions in the Oracle GoldenGate Installation and Setup Guide for DB2 z/OS.
7. Remove the TRANSMEMORY parameter from any Extract parameter file. This applies to all platforms except NonStop SQL/MX and z/OS.
8. Remove the CACHESTATEMENTS option of BATCHSQL if being used in the Replicat parameter file.
9. Start only the Manager process.

```
GGSCI> START MANAGER
```

10. *If not upgrading the target to v11.1.1.1:* Modify the Extract that is sending data to the target (usually a data pump but could be the primary Extract) to include the FORMAT RELEASE option in the RMTTRAIL parameter. This includes the online Extracts and initial-load Extracts. This ensures that the trails that the new version of Oracle GoldenGate writes are backwards compatible with the downstream Oracle GoldenGate environments and that the downstream Replicats can process the data.

```
RMTTRAIL <trail> FORMAT RELEASE {9.0 | 9.5 | 10.4}
```

11. A new Oracle GoldenGate trail header was added in v10. To switch to this new format successfully, roll over *each trail* by issuing the following command to *all* of the appropriate Extract and data-pump groups:

```
ALTER EXTRACT <group>, ETROLLOVER
```

12. Start all of the Extract and data-pump groups:

```
GGSCI> START EXTRACT <group>
```

13. (Oracle, if replicating sequences) Issue the following command immediately after starting Extract to generate redo that Replicat uses to synchronize the sequences.

You can use an asterisk wildcard for any or all characters in the name of a sequence (but not the owner).

```
FLUSH SEQUENCE <owner.sequence>
```

## **(Oracle) Rebuilding the DDL environment to a clean state**

These steps completely remove, and then reinstall, the Oracle GoldenGate DDL objects in preparation for an upgrade to Oracle GoldenGate v11.1.1.1.

1. After stopping the source Oracle GoldenGate processes, change directories to the Oracle GoldenGate installation directory.
2. Run SQL\*Plus and log in as a user that has SYSDBA privileges.
3. Disconnect all sessions that ever issued DDL. Otherwise the database might generate an ORA-04021 error.
4. Run the `ddl_disable` script to disable the DDL trigger.
5. Run the `ddl_remove` script to remove the Oracle GoldenGate DDL trigger, the DDL history and marker tables, and other associated objects. This script produces a `ddl_remove_spool.txt` file that logs the script output and a `ddl_remove_set.txt` file that logs current user environment settings in case they are needed for debugging.
6. Run the `marker_remove` script to remove the Oracle GoldenGate marker support system. This script produces a `marker_remove_spool.txt` file that logs the script output and a `marker_remove_set.txt` file in case they are needed for debugging.
7. Run the `marker_setup` script to reinstall the Oracle GoldenGate marker support system. You will be prompted for the name of the Oracle GoldenGate schema.
8. Run the `ddl_setup` script. You will be prompted for:
  - The name of the Oracle GoldenGate DDL schema.
  - The installation mode. Use the INITIALSETUP mode. This mode drops and recreates existing DDL objects before creating new objects.
9. Run the `role_setup` script to recreate the Oracle GoldenGate DDL role.
10. Grant the role that you created to all Oracle GoldenGate users under which the following Oracle GoldenGate processes run: Extract, Replicat, GGSCI, and Manager. You might need to make multiple grants if the processes have different user names.
11. Run the `ddl_enable.sql` script to enable the DDL trigger.

12. Return to the upgrade procedure that you are following.

## **Customer Support**

Oracle GoldenGate is fully committed to providing timely, high-quality service to all of our customers. Our support analysts can be contacted via email, and live assistance is available over the phone or through interactive online support sessions. For support contact information please go to <http://support.oracle.com>.