

**Oracle® GoldenGate**  
DB2 for i Installation and Setup Guide  
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**ORACLE®**

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## CHAPTER 1

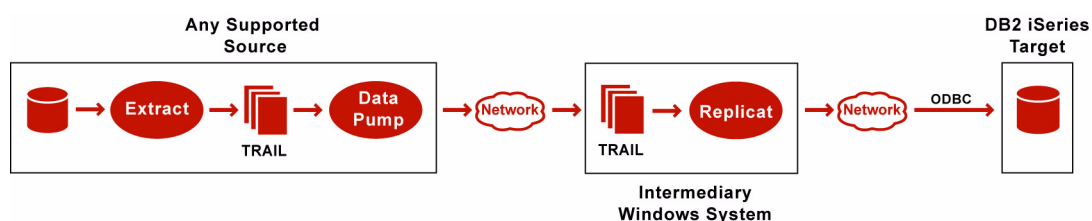
# System requirements and preinstallation instructions for Oracle GoldenGate

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## Supported platforms

Oracle GoldenGate supports the replication of data changes to a DB2 for i target from any database that is supported by Oracle GoldenGate as a source. Oracle GoldenGate operates on an intermediary Windows system and connects to the DB2 for i target through ODBC.

**Figure 1** Configuration for delivery to DB2 for i



Oracle GoldenGate supports the following iSeries versions:

- V5R4
- IBM i 6.1

Capture from DB2 for i is not supported.

Oracle GoldenGate for DB2 for i supports the filtering, mapping, and transformation of data unless noted otherwise in this documentation.

## Operating system requirements

### Software

- IBM i Access for Windows version V5R4 or V6R1 must be installed on the intermediary Windows system.
- If your tables include columns with binary CCSID 65535 data, de-select the “Convert binary data (CCSID 65535) to text” option when you install the ODBC driver. If the data in those columns is text, you can leave “Convert binary data (CCSID 65535) to text” enabled.

- Before installing Oracle GoldenGate on a Windows system, install and configure the Microsoft Visual C++ 2005 SP1 Redistributable Package. **Make certain it is the SP1 version of this package, and make certain to get the correct bit version for your server.** This package installs runtime components of Visual C++ Libraries. For more information, and to download this package, go to <http://www.microsoft.com>.

### **Memory requirements**

The GGSCI program uses the International Components for Unicode (ICU) libraries and thus requires a virtual memory allocation of 48 MB.

### **Disk requirements**

Assign the following free disk space:

- 50-150 MB, depending on the database and platform. This includes space for the compressed download file and space for the uncompressed files. You can delete the download file after the installation is complete.
- 40 MB for the working directories and binaries for each instance of Oracle GoldenGate that you are installing on the system. For example, to install two builds of Oracle GoldenGate into two separate directories, allocate 80 MB of space.
- Additional disk space on any system that hosts Oracle GoldenGate trails, which are files that contain the working data. The space that is consumed by the trails varies, depending on the volume of data that will be processed. A good starting point is 1 GB. See the following guidelines.

### **Storage for Oracle GoldenGate trails**

To prevent trail activity from interfering with business applications, assign a separate disk or file system to contain the trail files that Replicat will read. These files are created during processing to store all of the data that is captured by Oracle GoldenGate. The default size is 10 megabytes, but can be changed during the configuration process. Trail files accumulate but can be purged according to rules set with the PURGEOLDEXTRACTS parameter.

Trail files can reside on drives that are local to the Oracle GoldenGate installation, or they can reside on NAS or SAN devices. You will specify the location of the trails when you configure Oracle GoldenGate.

On the intermediary Windows system, provide enough disk space to handle data accumulation according to the purge rules set with PURGEOLDEXTRACTS. Even with PURGEOLDEXTRACTS in use, data will always accumulate on the target because it is transferred across the network faster than it can be applied to the target database.

### **To estimate required trail space**

1. Estimate the longest time that the network could be unavailable. Plan to store enough data to withstand the longest possible outage, because otherwise you will need to resynchronize the source and target data if the outage outlasts disk capacity.
2. Estimate how much transaction log volume your business applications generate in one hour.
3. Use the following formula to calculate the required disk space.

$$[\text{log volume in one hour}] \times [\text{number of hours downtime}] \times .4 = \text{trail disk space}$$

This equation uses a multiplier of 40 percent because only about 40 percent of the data in a transaction log is needed by Oracle GoldenGate.

**NOTE** This formula is a conservative estimate, and you should run tests once you have configured Oracle GoldenGate to determine exactly how much space you need.

### **TCP/IP**

- Configure the system to use TCP/IP services, including DNS.
- Configure the network with the host names or IP addresses of all systems that will be hosting Oracle GoldenGate processes and to which Oracle GoldenGate will be connecting. Host names are easier to use.
- Oracle GoldenGate requires the following unreserved and unrestricted TCP/IP ports:
  - One port for communication between the Manager process and other Oracle GoldenGate processes.
  - A range of ports for local Oracle GoldenGate communications: can be the default range starting at port 7840 or a customized range of up to 256 other ports.
- Keep a record of the ports you assigned to Oracle GoldenGate. You will specify them with parameters when configuring the Manager process.
- Configure your firewalls to accept connections through the Oracle GoldenGate ports.

### **Other operating system requirements**

To use Oracle GoldenGate user exits, install the C/C++ Compiler, which creates the programs in the required shared object or DLL.

### **Operating system permissions**

The Manager process can run as a Windows service, or it can run interactively as the current user. The Manager process requires:

- full control over the files and folders within the Oracle GoldenGate directories.
- full control over the trail files, if stored in a location other than the Oracle GoldenGate directory.

The programs that capture and replicate data (Extract and Replicat) run under the Manager account; therefore run Manager as a member of the local System Administrators group if possible.

To monitor Oracle GoldenGate processing accurately, do not permit other applications or processes to operate as the Oracle GoldenGate user.

## **Supported datatypes**

Oracle GoldenGate supports all of the IBM DB2 for i data types with the following exceptions:

GRAPHIC

VARGRAPHIC  
DBCLOB  
DATALINK  
DISTINCT

## **Non-supported operations or functionality**

Oracle GoldenGate functionality that operates only on data in the trail is generally supported, such as numerical or date conversion functions, but anything that requires access to the database is not supported, such as Oracle GoldenGate SQLEXEC. The following also are not supported:

- Replication of DDL to IBM DB2 for i
- Active-active configurations
- The Replicat BATCHSQL parameter

## CHAPTER 2

# Installing Oracle GoldenGate



## Installation overview

These instructions are for installing Oracle GoldenGate for the first time. Installing Oracle GoldenGate installs all of the components required to run and manage the processing (exclusive of any components required from other vendors, such as drivers or libraries) and it installs the Oracle GoldenGate utilities. The installation process takes a short amount of time.

### Upgrades

To upgrade Oracle GoldenGate from one version to another, follow the instructions on <http://www.oracle.com/technology/software/products/goldengate/index.html>.

### New installations

To install Oracle GoldenGate for the first time, the following steps are required:

- Downloading Oracle GoldenGate
- Installing the Oracle GoldenGate software

**NOTE** Before proceeding, make certain that you have reviewed the System Requirements.

## Downloading Oracle GoldenGate

1. Navigate to <http://edelivery.oracle.com>.
2. On the **Welcome** page:
  - Select your language.
  - Click **Continue**.
3. On the **Export Validation** page:
  - Enter your identification information.
  - Accept the **Trial License Agreement** (even if you have a permanent license).
  - Accept the **Export Restrictions**.
  - Click **Continue**.





4. On the **Media Pack Search** page:
  - Select the **Oracle Fusion Middleware** Product Pack.
  - Select the platform on which you will be installing the software.
  - Click **Go**.
5. In the **Results List**:
  - Select the.
  - Click **Continue**.
6. On the **Download** page:
  - Click **Download** for each component that you want. Follow the automatic download process to transfer the mediapack.zip file to your system.

**NOTE** Before installing the software, review the release notes for any new features, new requirements, or bug fixes that affect your current configuration.

## Installing Oracle GoldenGate on Windows

You will be installing Oracle GoldenGate on the intermediary Windows system. Do not attempt to install it on the iSeries machine.

### Installing the Oracle GoldenGate files

1. Unzip the downloaded file(s) by using WinZip or an equivalent compression product.
2. Move the files in binary mode to a folder on the drive where you want to install Oracle GoldenGate. *Do not* install Oracle GoldenGate into a folder that contains spaces in its name, even if the path is in quotes, for example C:\“Oracle GoldenGate”.
3. From the Oracle GoldenGate folder, run the GGSCI program.
4. In GGSCI, issue the following command to create the Oracle GoldenGate working directories.

```
CREATE SUBDIRS
```

5. Issue the following command to exit GGSCI.

```
EXIT
```

### Specifying a custom Manager name

You must specify a custom name for the Manager process if either of the following is true:

- you want to use a name for Manager other than the default of GGSMGR.
- there will be multiple Manager processes running as Windows services on this system, such as one for the Oracle GoldenGate replication software and one for Oracle GoldenGate Veridata. Each Manager on a system must have a unique name. Before proceeding further, verify the names of any local Manager services.

**To specify a custom Manager name**

1. From the directory that contains the Manager program, run GGSCI.
2. Issue the following command.  

```
EDIT PARAMS ./GLOBALS
```
3. In the file, add the following line, where <name> is a one-word name for the Manager service.  

```
MGRSERVNAME <name>
```
4. Save the file. The file is saved automatically with the name GLOBALS, *without a file extension*. Do not move this file. It is referenced during installation of the Windows service and during data processing.

**Installing Manager as a Windows service**

By default, Manager is not installed as a service and can be run by a local or domain account. However, when run this way, Manager will stop when the user logs out. When you install Manager as a service, you can operate it independently of user connections, and you can configure it to start manually or at system start-up.

**To install Manager as a Windows service**

1. (Recommended) Log on as the system administrator.
2. Click **Start > Run**, and type **cmd** in the **Run** dialog box.
3. From the directory that contains the Manager program that you are installing as a service, run the **install** program with the following syntax:

```
install <option> [...]
```

**Where:** <option> is one of the following:

**Table 1**    **INSTALL options**

Option	Description
ADDEVENTS	Adds Oracle GoldenGate events to the Windows Event Manager. By default, Oracle GoldenGate errors are generic. To produce more specific error content, copy the following files from the Oracle GoldenGate installation directory to the SYSTEM32 directory.  category.dll ggsmmsg.dll

**Table 1    INSTALL options (continued)**

Option	Description
ADDSERVICE	<p>Adds Manager as a service by the name specified in the GLOBALS file, if one exists, or by the default of GGSMGR. ADDSERVICE configures the service to run as the Local System account, the standard for most Windows applications because the service can be run independently of user logins and password changes. To run Manager as a specific account, use the USER and PASSWORD options.<sup>1</sup></p> <p>The service is installed to start at system boot time (see AUTOSTART). To start it after installation, either reboot the system, or start the service manually from the Services applet of the Control Panel.</p>
AUTOSTART	Specifies that the service created with ADDSERVICE is to be started at system boot time. This is the default unless MANUALSTART is used.
MANUALSTART	Specifies that the service created with ADDSERVICE is to be started manually through GGSCI, a script, or the Services applet of the Control Panel. The default is AUTOSTART.
USER <name>	<p>Specifies a domain user account for executing Manager. For &lt;name&gt;, include the domain name, a backward slash, and the user name, for example HEADQT\GGSMGR.</p> <p>By default, the Manager service is installed to use the Local System account.</p>
PASSWORD <password>	Specifies the password for the user specified with USER.

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<sup>1</sup> A user account can be changed by selecting the Properties action from the Services applet of the Windows Control Panel.

4. (Windows Server 2008) If Windows User Account Control (UAC) is enabled, you are prompted to allow or deny the program access to the computer. Select **Allow** to enable the install program to run. This installs the Manager service with a local system account running with administrator privileges. No further UAC prompts will be encountered when running Manager if installed as a service.

**NOTE** If Manager is not installed as a service, Oracle GoldenGate users will receive a UAC prompt to confirm the elevation of privileges for Manager when it is started from the GGSCI command prompt. Running other Oracle GoldenGate programs also will trigger a prompt.

### Configuring Manager and other processes

- To use Oracle GoldenGate, you must configure the Manager process. You must specify a TCP/IP port for Manager to use, and you can specify optional parameters that control dynamic port assignments, trail file maintenance, and other properties.
- To configure other required processes, Oracle GoldenGate security, and other features that enable you to customize Oracle GoldenGate, see the *Oracle GoldenGate Windows and UNIX Administrator's Guide*.

## Uninstalling Oracle GoldenGate

This procedure assumes that you no longer need the data in the Oracle GoldenGate trails, and that you no longer need to preserve the current Oracle GoldenGate environment. To preserve your current environment and data, make a backup of the Oracle GoldenGate directory and all subdirectories before starting this procedure.

### To uninstall Oracle GoldenGate from a Windows machine

1. (Suggested) Log on as the system administrator or as a user with permission to issue Oracle GoldenGate commands and to delete files and directories from the operating system.
2. From the Oracle GoldenGate installation folder, run GGSCI.
3. Stop all Oracle GoldenGate processes.
4. Stop the Manager program or service.
5. Exit GGSCI.
6. Click **Start > Run**, and type cmd in the **Run** dialog box to open the command console.
7. Change directories to the Oracle GoldenGate installation directory.
8. Run the install program using the following syntax.

```
install deletesevents deleteservice
```

This command stops Oracle GoldenGate events from being reported to the Windows Event Manager and removes the Manager service.

9. Delete the CATEGORY.DLL and GGSMSG.DLL files from the Windows SYSTEM32 folder.
10. Delete the Oracle GoldenGate installation folder.
11. Drop any Oracle GoldenGate-related objects from the database as needed.

## CHAPTER 3

# Preparing the system for Oracle GoldenGate

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## Configuring the ODBC driver

Follow these directions to configure ODBC (Open Database Connectivity), which Replicat will use to connect to the IBM DB2 for i target.

### Creating a DSN

Establish a system data source name (DSN) on each target system where Oracle GoldenGate will interface with a DB2 for i database. A DSN stores information about how to connect to the database.

#### To create a DSN on Windows

1. Download and install the ODBC driver for IBM DB2 for i on the intermediary Windows system.
2. On the Windows system, click **Start > Settings > Control Panel**.
3. Double-click **Administrative Tools**.
4. Double-click **Data Sources (ODBC)** to open the **ODBC Data Source Administrator** dialog box.
5. Select the **System DSN** tab, and then click **Add**.
6. Under **Create New Data Source**, select the iSeries Access ODBC Driver.
7. Click **Finish**. The **Create a New Data Source** wizard is displayed.
8. Supply the following:
  - **Name:** Add the iSeries host name or TCP/IP address.
  - **Description:** (Optional) Type a description of this data source.
9. Repeat these steps on the other systems where Oracle GoldenGate will interact with IBM DB2 for i.

### Preventing multiple connections

By default, Oracle GoldenGate creates a new connection for catalog queries. You can prevent this extra connection by using the DBOPTIONS parameter with the NOCATALOGCONNECT option.

### Improving Replicat performance over ODBC

To improve the throughput of the Replicat process, consider using multiple trails associated with parallel Replicat processes. Because each Replicat uses a single ODBC session, multiple sessions might be necessary to achieve reasonably high delivery rates.

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## APPENDIX 1

# Oracle GoldenGate installed components



This appendix describes the programs, directories, and other components created or used by the Oracle GoldenGate software in the Oracle GoldenGate installation directory. Additional files not listed here might be installed on certain platforms. Files listed here might not be installed on every platform.

## Oracle GoldenGate Programs and Utilities

This section describes programs installed in the root Oracle GoldenGate installation directory.

**NOTE** Some programs may not exist in all installations. For example, if only capture or delivery is supported by Oracle GoldenGate for your platform, the extract or replicat program will not be installed, respectively. Likewise, special files might be installed to support a specific database.

**Table 2 Programs and utilities**

Program	Description
cobgen	Generates source definitions based on COBOL layouts. Used for Oracle GoldenGate for Datawise on Stratus.
convchk	Converts checkpoint files to a newer version.
ddlcob	Generates target DDL table creation statements based on COBOL layouts. Used for Oracle GoldenGate for Datawise on Stratus.
defgen	Generates data definitions and is referenced by Oracle GoldenGate processes when source and target tables have dissimilar definitions.
emslnt	Sends event messages created by Collector and Replicat on Windows or UNIX systems to EMS on NonStop systems.
extract	Performs capture from database tables or transaction logs or receives transaction data from a vendor access module.
ggmxinstall	Oracle GoldenGate installation script for the SQL/MX database.



**Table 2 Programs and utilities (continued)**

Program	Description
ggsci	User interface to Oracle GoldenGate for issuing commands and managing parameter files.
ggsmgr.jcl ggsmgr.proc ggsmgrst.jcl ggsmgrst.proc	Start the Oracle GoldenGate Manager process from a batch job or the operator console on a z/OS system. Installed to support DB2 z/OS databases.
install	Installs Oracle GoldenGate as a Windows service and provides other Windows-based service options.
keygen	Generates data-encryption keys.
logdump	A utility for viewing and saving information stored in extract trails or files.
mgr	(Manager) Control process for resource management, control and monitoring of Oracle GoldenGate processes, reporting, and routing of requests through the GGSCI interface.
replicat	Applies data to target database tables.
reverse	A utility that reverses the order of transactional operations, so that Replicat can be used to back out changes from target tables, restoring them to a previous state.
server	The Collector process, an Extract TCP/IP server collector that writes data to remote trails.
vamserv	Started by Extract to read the TMF audit trails generated by TMF-enabled applications. Installed to support the NonStop SQL/MX database.

## Oracle GoldenGate subdirectories

This section describes the subdirectories of the Oracle GoldenGate installation directory and their contents.

**NOTE** Some directories may not exist in all installations.

**Table 3 Subdirectories**

Directory	Description
dirchk	<p>Contains the checkpoint files created by Extract and Replicat processes, which store current read and write positions to support data accuracy and fault tolerance. Written in internal Oracle GoldenGate format.</p> <p>File name format is &lt;group name&gt;&lt;sequence number&gt;.&lt;ext&gt; where &lt;sequence number&gt; is a sequential number appended to aged files and &lt;ext&gt; is either cpe for Extract checkpoint files or cpr for Replicat checkpoint files.</p> <p>Do not edit these files.</p> <p>Examples: ext1.cpe rep1.cpr</p>
dirdat	<p>The default location for Oracle GoldenGate trail files and extract files that are created by Extract processes to store extracted data for further processing by the Replicat process or another application or utility. Written in internal Oracle GoldenGate format.</p> <p>File name format is a user-defined two-character prefix followed by either a six-digit sequence number (trail files) or the user-defined name of the associated Extract process group (extract files).</p> <p>Do not edit these files.</p> <p>Examples: rt000001 finance</p>
dirdef	<p>The default location for data definitions files created by the DEFGEN utility to contain source or target data definitions used in a heterogeneous synchronization environment. Written in external ASCII. File name format is a user-defined name specified in the DEFGEN parameter file.</p> <p>These files may be edited to add definitions for newly created tables. If you are unsure of how to edit a definitions file, contact Oracle GoldenGate technical support.</p> <p>Example: defs.dat</p>
dirout	This directory is not used any more.



**Table 3 Subdirectories (continued)**

Directory	Description
dirpcs	<p>Default location for status files. File name format is &lt;group&gt;.&lt;extension&gt; where &lt;group&gt; is the name of the group and &lt;extension&gt; is either pce (Extract), pcr (Replicat), or pcm (Manager).</p> <p>These files are only created while a process is running. The file shows the program name, the process name, the port number, and the process ID.</p> <p>Do not edit these files.</p> <p>Examples: mgr.pcm ext.pce</p>
dirprm	<p>The default location for Oracle GoldenGate parameter files created by Oracle GoldenGate users to store run-time parameters for Oracle GoldenGate process groups or utilities. Written in external ASCII format. File name format is &lt;group name/user-defined name&gt;.prm or mgr.prm.</p> <p>These files may be edited to change Oracle GoldenGate parameter values after stopping the process. They can be edited directly from a text editor or by using the EDIT PARAMS command in GGSCI.</p> <p>Examples: defgen.prm finance.prm</p>
dirrec	<p>Not used by Oracle GoldenGate.</p>
dirrpt	<p>The default location for process report files created by Extract, Replicat, and Manager processes to report statistical information relating to a processing run. Written in external ASCII format.</p> <p>File name format is &lt;group name&gt;&lt;sequence number&gt;.rpt where &lt;sequence number&gt; is a sequential number appended to aged files.</p> <p>Do not edit these files.</p> <p>Examples: fin2.rpt mgr4.rpt</p>
dirtmp	<p>The default location for storing large transactions when the size exceeds the allocated memory size. Do not edit these files.</p>
dirver	<p>An Oracle GoldenGate Veridata directory. Not used unless this software is installed in the Oracle GoldenGate location.</p>

## Other Oracle GoldenGate files

This section describes other files, templates, and objects created or installed in the root Oracle GoldenGate installation directory.

**NOTE** Some files may not be installed in your environment, depending on the database and OS platform.

**Table 4 Other files**

Component	Description
bcpfmt.tpl	Template for use with Replicat when creating a run file for the Microsoft BCP/DTS bulk-load utility.
blowfish.txt	Blowfish encryption software license agreement.
category.dll	Windows dynamic link library used by the INSTALL program.
chkpt_<db>_create.sql	Script that creates a checkpoint table in the local database. A different script is installed for each database type.
db2cntl.tpl	Template for use with Replicat when creating a control file for the IBM LOADUTIL bulk-load utility.
ddl_cleartrace.sql	Script that removes the DDL trace file. (Oracle installations)
ddl_disable.sql	Script that disables the Oracle GoldenGate DDL trigger. (Oracle installations)
ddl_enable.sql	Script that enables the Oracle GoldenGate DDL trigger. (Oracle installations)
ddl_ora9.sql	A script that gets tablespace information from an Oracle 9 database.
ddl_ora10.sql	A script that disables the Oracle recyclebin and gets tablespace information from an Oracle 10 database.
ddl_pin.sql	Script that pins DDL tracing, the DDL package, and the DDL trigger for performance improvements. (Oracle installations)
ddl_remove.sql	Script that removes the DDL extraction trigger and package. (Oracle installations)
ddl_setup.sql	Script that installs the Oracle GoldenGate DDL extraction and replication objects. (Oracle installations)
ddl_status.sql	Script that verifies whether or not each object created by the Oracle GoldenGate DDL support feature exists and is functioning properly. (Oracle installations)

**Table 4 Other files (continued)**

Component	Description
ddl_tracelevel.sql	Script that sets the level of tracing for the DDL support feature. (Oracle installations)
debug files	Debug text files that may be present if tracing was turned on.
demo_<db>_create.sql	Script that creates demonstration tables in the database associated with the Oracle GoldenGate installation.
demo_<db>_insert.sql	Script that inserts initial test data into the demonstration tables.
demo_<db>_misc.sql	Script that simulates transaction activity on the demonstration tables.
ENCKEYS	User-created file that stores encryption keys. Written in external ASCII format.
exitdemo.c	User exit example.
ggmessage.dat	Data file that contains error, informational, and warning messages that are returned by the Oracle GoldenGate processes. The version of this file is checked upon process startup and must be identical to that of the process in order for the process to operate.
ggserr.log	File that logs processing events, messages, errors, and warnings generated by Oracle GoldenGate.
ggsmsg.dll	Windows dynamic link library used by the INSTALL program.
GLOBALS	User-created file that stores parameters applying to the Oracle GoldenGate instance as a whole.
help.txt	Help file for the GGSCI command interface.
LGPL.txt	Lesser General Public License statement. Applies to free libraries from the Free Software Foundation.
libxml2.dll	Windows dynamic link library containing the XML library for the Oracle GoldenGate XML procedures.
libxml2.txt	License agreement for libxml2.dll.
marker.hist	File created by Replicat if markers were passed from a NonStop source system.
marker_remove.sql	Script that removes the DDL marker table. (Oracle installations)

**Table 4 Other files (continued)**

Component	Description
marker_setup.sql	Script that installs the Oracle GoldenGate DDL marker table. (Oracle installations)
marker_status.sql	Script that confirms successful installation of the DDL marker table. (Oracle installations)
params.sql	Script that contains configurable parameters for DDL support. (Oracle installations)
pthread-win32.txt	License agreement for pthread-VC.dll.
pthread-VC.dll	POSIX threads library for Microsoft Windows.
role_setup.sql	Script that creates the database role necessary for Oracle GoldenGate DDL support. (Oracle installations)
sqlldr.tpl	Template for use with Replicat when creating a control file for the Oracle SQL*Loader bulk-load utility.
start.prm stop.prm	z/OS parmlib members to start and stop the Manager process.
startmgr stopmgr	z/OS Unix System Services scripts to start the Manager process from GGSCI.
startmgrcom stopmgrcom	z/OS system input command for the Manager process.
tcperrs	File containing user-defined instructions for responding to TCP/IP errors.
usrdecs.h	Include file for user exit API.
zlib.txt	License agreement for zlib compression library.

## Oracle GoldenGate checkpoint table

When database checkpoints are being used, Oracle GoldenGate creates a checkpoint table with a user-defined name in the database upon execution of the ADD CHECKPOINTTABLE command, or a user can create the table by using the chkpt\_<db>\_create.sql script, where <db> is the type of database.

Do not change the names or attributes of the columns in this table. You can change table storage attributes as needed.

**Table 5 Checkpoint table definitions**

Column	Description
GROUP_NAME (primary key)	The name of a Replicat group using this table for checkpoints. There can be multiple Replicat groups using the same table.
GROUP_KEY (primary key)	A unique identifier that, together with GROUPNAME, uniquely identifies a checkpoint regardless of how many Replicat groups are writing to the same table.
SEQNO	The sequence number of the checkpoint file.
RBA	The relative byte address of the checkpoint in the file.
AUDIT_TS	The timestamp of the checkpoint position in the checkpoint file.
CREATE_TS	The date and time when the checkpoint table was created.
LAST_UPDATE_TS	The date and time when the checkpoint table was last updated.
CURRENT_DIR	The current Oracle GoldenGate home directory or folder.

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