



Informatica® Multidomain MDM
10.1 and later

Zero Downtime Installation Guide for IBM DB2

Informatica Multidomain MDM Zero Downtime Installation Guide for IBM DB2
10.1 and later
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Preface

Follow the instructions in the Informatica® *Multidomain MDM Zero Downtime Installation Guide* to set up a zero downtime environment for Multidomain MDM. Zero Downtime is an optionally licensed feature that enables you to minimize disruptions while you upgrade Multidomain MDM. In addition to the installation steps, the guide also includes pre-installation and post-installation requirements.

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CHAPTER 1

Configure Zero Downtime

This chapter includes the following topics:

- [Zero Downtime Overview, 7](#)
- [Zero Downtime Replication with Two Systems, 8](#)
- [Review the Requirements, 9](#)
- [Plan the Replication Project for IBM DB2 Database , 9](#)
- [Port Numbers Used by Oracle GoldenGate, 11](#)

Zero Downtime Overview

When you need to ensure uninterrupted access to master data, implement a zero downtime environment. In a zero downtime environment, you can maintain access to data in the MDM Hub Store while you upgrade Multidomain MDM. You need a source database in a production environment and a target database in a secondary environment. When the data changes in the source database, the changes are replicated to the target database.

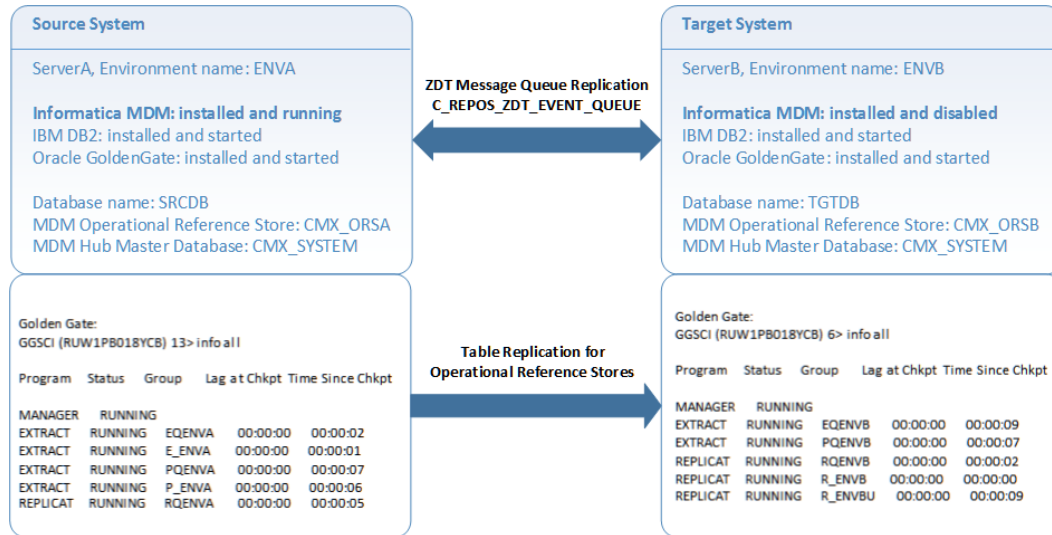
When you need to upgrade Multidomain MDM, you make the target database active while you update the source database. After you finish updating Multidomain MDM, you can replicate the changes that occurred in the target database to the source database.

You use Oracle GoldenGate to configure and manage a zero downtime environment for Multidomain MDM. For more information about Oracle GoldenGate, visit the Oracle website.

Zero Downtime Replication with Two Systems

When an organization maintains parallel environments, you run Multidomain MDM on two systems. Data is replicated from the source system to the target system. Multidomain MDM uses Oracle GoldenGate for replication.

The following image shows an example of a source system and a target system:



The installed versions of Multidomain MDM and the database software must be the same on the source system and the target system. The MDM Hub Master Database name must be the same on both systems. The Operational Reference Store schema or user name can be different, but the structure of the schemas must be identical.

Oracle GoldenGate replicates the tables in an Operational Reference Store in one direction, from the source system to the target system. The events in the ZDT Message Queue are replicated in both directions.

ZDT Replication Scenarios

The following are some ZDT replication scenarios:

Multi ORS Replication

When using multiple ORS schemas within the same Oracle instance, each ORS will use its own set of Golden Gate processes. The setup steps detailed in section A would be executed for each pair of ORS schemas to be replicated.

Non ORS Schemas

For Golden Gate replication of non-ORS schema, a separate set of Golden Gate processes would be manually setup to handle replication of the objects in this schema. This would be handled as a normal non-Informatica MDM Hub Golden Gate replication effort.

Note: If you upgrade non-ZDT schemas for use in ZDT-enabled environment, you need to run update_javasp.sql after you upgrade the schema to 9.0 (using the sip_ant process).

Non ORS Tables in the Same Schema as the ORS

Tables that are not natively part of an Informatica MDM Hub ORS, would be handled with a separate set of Golden Gate processes, just as with the non-ORS schema. This object could be handled by the same Golden Gate processes as the non-ORS schemas.

Review the Requirements

Install the required software on the source system and on the target system. Ensure that you install the same versions of the required software on both systems.

You need the following software:

- Multidomain MDM version 10.1 or later with a supported version of IBM DB2
- Microsoft Visual C++ 2010 Redistributable Package (x86) installed as administrator:
<http://www.microsoft.com/en-us/download/details.aspx?id=5555>
- Use the supported Oracle GoldenGate version for DB2 *release*, where *release* matches the installed version of DB2, downloaded from:
<http://www.oracle.com/technetwork/middleware/goldengate/downloads/index.html>
For information about the supported GoldenGate version, access the Product Availability Matrix (PAM) at <https://network.informatica.com/community/informatica-network/product-availability-matrices>.

Plan the Replication Project for IBM DB2 Database

When you plan your database replication project, identify the values to use for the source system and the target system. For example, you need to know system information, database names, schema names, and user credentials.

The instructions, scripts, and stored procedures use example values. Replace the example values with the values for your systems.

Tip: For quick reference, print the following tables and write in the values for your systems.

IBM DB2 Database Values

Identify the values to use for the IBM DB2 databases on the source system and the target system.

The following table describes the required information:

Required Information	Description	Source System Example Values	Target System Example Values
Database host name or IP address	The IP address or host name of the system that hosts the IBM DB2 database. The best practice is to run the target database on a separate host.	10.111.22.33	10.222.44.55
Database port number	The port number that the IBM DB2 database uses.	50000	50000
Database name	The name of the source database and the target database. The names must be different.	SRCDB	TGTDB
Database administrator user name	The user name of the database administrator.	DB2ADMIN	DB2ADMIN
Database administrator user password	The user password.	-	-

MDM Hub Store Values

Identify the values to use for the MDM Hub Store on the source system and the target system.

The following table describes the required information:

Required Information	Property Name	Description	Source System Example Values	Target System Example Values
Master database name	n/a	The name of the master database in the Hub Store. The master database name must be the same on source and target.	CMX_SYSTEM	CMX_SYSTEM
Operational Reference Store database user name	n/a	The name of the database user for the Operational Reference Store. The database user name can be different on source and target.	MDM_SAMPLE	MDM_SAMPLE
Operational Reference Store database user password	n/a	The user password.	-	-
Operational Reference Store database schema	SCHEMA_NAME	The name of the schema for the Operational Reference Store. The schema name can be different on source and target, but the schema must be identical.	MDM_SAMPLE	MDM_SAMPLE
Operational Reference Store debug log path	DEBUG_FILE_PATH	The directory to contain debug logs.	C:/TEMP	C:/TEMP
Operational Reference Store debug log file name	DEBUG_FILE_NAME	The name of the debug log file.	cmx_debug_SRCD B.log	cmx_debug_TGTD B.log

Oracle GoldenGate Values

Identify the values to use for Oracle GoldenGate on the source system and the target system.

The following table describes the required information:

Required Information	Property Name	Description	Source System Example Values	Target System Example Values
Oracle GoldenGate host name or IP address	PUMP_RMTHOST	The IP address or host name of the system that hosts Oracle GoldenGate. Same as the Database host name or IP address.	10.111.22.33	10.222.44.55
Oracle GoldenGate port number	PUMP_MGRPORT	Port used by Oracle GoldenGate.	7400	7800
Oracle GoldenGate installation path	GG_HOME_PATH	Path where Oracle GoldenGate is installed.	C:/GG_SRC	C:/GG_TGT
Oracle GoldenGate user name	n/a	A user for Oracle GoldenGate that belongs to the groups DB2ADMINS and DB2USERS.	GG	GG
Oracle GoldenGate user password	n/a	The user password.	-	-
Replication indicator	REPLICATION_TARGET_IND	The replication indicator that identifies the target system.	0	1

Port Numbers Used by Oracle GoldenGate

When the source database and target database reside on different servers, you must open the ports that are used by Oracle GoldenGate. You need one port for Oracle GoldenGate Manager plus one port for each process you run.

For Zero Downtime, you run Oracle GoldenGate Manager and five processes in each environment. Therefore, you need six open ports on the active environment and six open ports on the passive environment. By default, the Oracle GoldenGate port range is 7809-7820.

For information about specifying ports for remote network communications, see the following topics in the *Oracle® GoldenGate Administering Oracle GoldenGate for Windows and UNIX*:

- Maintaining Ports for Remote Connections through Firewalls:
https://docs.oracle.com/goldengate/1212/gg-winux/GWUAD/wu_manager.htm#GWUAD142
- Creating the Manager Parameter File:
https://docs.oracle.com/goldengate/1212/gg-winux/GWUAD/wu_manager.htm#GWUAD145

CHAPTER 2

Prepare the Environment for IBM DB2 Databases

This chapter includes the following topics:

- [Create a User for Oracle GoldenGate on Windows, 12](#)
- [Prepare the IBM DB2 Databases, 13](#)
- [Install Zero Downtime, 14](#)
- [Enable Debug Logging, 14](#)
- [Install Oracle GoldenGate for IBM DB2, 15](#)
- [Update the Parameters File with User Credentials, 16](#)
- [Install Oracle GoldenGate as a Windows Service, 17](#)
- [Install Stored Procedures, 18](#)
- [Configure the Environment to Run Stored Procedures, 18](#)
- [Edit and Run Scripts for IBM DB2 Database, 19](#)

Create a User for Oracle GoldenGate on Windows

Create a dedicated user for Oracle GoldenGate on both the source system and the target system. You can use the same user name on both systems or different user names. Assign the user to the groups DB2ADMINS and DB2USERS. A database administrator must grant DBA permissions to this user.

The following steps describe how to set up a user on a Windows system. The steps might vary based on the version of Windows that you use.

1. On the source system, open **Control Panel**, and click **Administrative Tools**.
2. Double-click **Computer Management**.
3. In the Computer Management window, expand **Local Users and Groups**.
4. Right-click **Users** and select **New User**.
5. In the New User dialog box, type a user name, such as GG.
6. Clear the **User must change password at next login** check box.
7. Select the **User cannot change password** check box.
8. Select the **Password never expires** check box.

9. Click **Create**.
The New User dialog box closes, and the GG user appears in the list.
10. Assign the user to user groups.
 - a. In the **Computer Management** window, right-click the **GG** user.
 - b. In the **GG Properties** dialog box, click **Member Of**.
 - c. Click **Add**.
 - d. In the **Select Groups** dialog box, specify the following groups: **DB2USERS** and **DB2ADMNS**.
 - e. Click **OK**.
The dialog box closes.
 - f. In the **GG Properties** dialog box, click **OK**.
11. Repeat all steps on the target system.
12. A database administrator must grant DBA privileges to this user on both systems.
GRANT DBADM ON DATABASE TO USER GG
The user can now use stored procedures and the db2readlogAPI.

Prepare the IBM DB2 Databases

Back up the IBM DB2 source database that contains the MDM Hub Store. Then copy and restore the backup on the target database. When you are finished, the target database has the same tablespaces as the source database.

1. On the source system, navigate to the following directory:
<MDM installation directory>/hub/server/database/stored_procs/db2/zdt/samples/SOURCE
2. Open the 0_PREPARE_DB_FOR_REPLICATION.db2 stored procedure in an editor. Replace the example values with values for your source database, and save the file.
3. Run the stored procedure.
C: /> db2 -tvf 0_PREPARE_DB_FOR_REPLICATION.db2
The stored procedure turns off transaction mode, sets the directory for log files, and creates a backup of the database.
4. Copy the backup file to a directory on the target system. Make a note of the timestamp in the file name. For example, given a backup name of SRCDB.0.DB2.NODE0000.CATN0000.20150917213129.001, use 20150917213129 as the backup timestamp.
5. On the target system, navigate to the directory that contains the saved backup.
6. Restore the source database into the target database and create a generic restore script. In the following command, substitute the names of the databases as necessary and specify the timestamp of the backup:
D:\zdt\BACKUPS\SRADB> db2 "RESTORE DB srcdb TAKEN AT backup timestamp INTO tgtdb REDIRECT GENERATE SCRIPT restore_2tgtdb.db2"
7. Open the generic restore script restore_2tgtdb.db2 in an editor. Specify a directory path on the target system for the log files and data files.
 - LOGTARGET 'D:/db2data/tgtdb/logs'

- NEWLOGPATH 'D:/db2data/tgtadb/LOGS'
 - For each tablespace: FILE 'D:/db2data/tgtadb/<tablespace name>/<dat file name>.dat'
8. Save the file.
 9. Drop the target database.
D:\> db2 drop db tgtadb
 10. Restore the target database.
D:\zdt\BACKUPS\SRCDB> db2 -tvf restore_2tgtadb.db2
- The restore process creates all the tablespaces in the specified directory.

Install Zero Downtime

Install the zero downtime (ZDT) stored procedures in both the source database and the target database. If the stored procedures exist on a system, the installation script overwrites the stored procedures. All stored procedures are obfuscated.

1. On the source system, navigate to the following directory:
<MDM installation directory>/hub/server/bin
2. Run the following script:
../hub/server/bin > sip_ant install_zdt
3. When prompted, specify values for the **source database**. For values and a description of each property, see your planning document.
4. Run the following script again:
../hub/server/bin > sip_ant install_zdt
5. When prompted, specify values for the **target database**. For values and a description of each property, see your planning document.

Enable Debug Logging

After you install Zero Downtime, enable debug logging on both the source database and the target database.

1. In a database tool, connect to the source database.
2. Select the schema for the Operational Reference Store, for example, MDM_SAMPLE.
3. Run the following commands on the schema. Substitute source system values for the example values.

```
UPDATE C_REPOS_DB_RELEASE SET DEBUG_FILE_PATH='C:\TEMP',
  DEBUG_FILE_NAME='cmx_debug_SRCDB.log', DEBUG_IND=1, DEBUG_LEVEL=500

SET PATH MDM_SAMPLE, CURRENT PATH
```

4. Verify that logging works on the source system.
 - a. Run the following command:
CALL CMXLOG.DEBUG('TEST')
 - b. Navigate to the directory that you specified and open the cmx_debug_SRCDB.log file.

- c. Verify that there is a recent entry that ends with the following text: GG::DEBUG:TEST
5. In the database tool, connect to the target database.
6. Select the schema for the Operational Reference Store, for example, MDM_SAMPLE.
7. Run the following commands on the schema. Substitute target system values for the example values.


```
UPDATE C_REPOS_DB_RELEASE SET DEBUG_FILE_PATH='C:\TEMP',
  DEBUG_FILE_NAME='cmx_debug_TGTDB.log', DEBUG_IND=1, DEBUG_LEVEL=500

SET PATH MDM_SAMPLE, CURRENT PATH
```
8. Verify that logging works on the target system.

Install Oracle GoldenGate for IBM DB2

Install Oracle GoldenGate on the source system. Repeat the installation on the target system.

Note: For system requirements and alternative installation instructions, see the Oracle GoldenGate documentation on the Oracle website.

1. Copy the downloaded Oracle GoldenGate .zip file to the system.
2. Extract the .zip file to a local directory named GGS.
3. From a command prompt, navigate to the GGS directory.
4. Start the Oracle GoldenGate Command Interpreter for DB2.


```
C:/GGS > start ggsci.exe
```
5. In the **Oracle GoldenGate Command Interpreter for DB2** window, edit global parameters.
 - a. At the GGSCI prompt, enter the following command:


```
GGSCI > EDIT PARAM ./GLOBALS
```

 An editor opens.
 - b. Click **Yes** to create a file named GLOBALS.
 - c. In the file, type one of the following lines of text:
 - For the source system, type: MGRSERVNAME SRCGGSMGR
 - For the target system, type: MGRSERVNAME TGTGGSMGR
 - d. Save and close the file.
6. Create subdirectories.


```
GGSCI> CREATE SUBDIRS
```

The command creates the following files and directories under the GGS directory:

Files	Directory Name
Parameter files	dirprm
Report files	dirrpt
Checkpoint files	dirchk

Files	Directory Name
Process status files	dirpcs
SQL script files	dirsql
Database definitions files	dirdef
Extract data files	dirdat
Temporary files	dirtmp
Stdout files	dirout

7. Create a parameters file.
 - a. Enter the following command:

```
GGSCI > EDIT PARAM MGR
```

An editor opens.
 - b. Click **Yes** to create a file named `mgr.prm`.
 - c. In the file, type `PORT` and then specify the port number that Oracle GoldenGate uses. You can use a different port number on the source system and on the target system.

```
PORT 7800
```
 - d. Save and close the file.
8. Start the Oracle GoldenGate Manager.

```
GGSCI > start mgr
```

The **Oracle GoldenGate Manager for DB2** window opens. A message confirms that the Manager is started on the specified port.
9. Repeat all steps on the other system.

Update the Parameters File with User Credentials

On the source system and on the target system, encrypt the password for the Oracle GoldenGate user that you created on the system. Then add a statement to the parameters file.

Oracle GoldenGate Manager must be running.

1. Encrypt the password for the user.
 - a. From the **Oracle GoldenGate Command Interpreter for DB2** window, log in to the source database as the Oracle GoldenGate user.

In the following command, replace the example values with your system values.

```
GGSCI > DBLOGIN SOURCEDB SRCDB UERID GG PASSWORD password
```
 - b. Use Blowfish encryption to encrypt the password.

```
GGSCI > ENCRYPT PASSWORD password BLOWFISH ENCRYPTKEY DEFAULT
```
 - c. Copy the encrypted password.
 - d. Disconnect from the database.

2. On the source system, Open the parameter file.

```
GGSCI > edit param mgr
```
3. In the file, type the following command. Replace the example values with your system values. Paste the encrypted password into the text.

```
SOURCEDB SRCDB, UERID GG, PASSWORD encrypted password, BLOWFISH ENCRYPTKEY DEFAULT
```
4. Save and close the file.
5. If you use the same Oracle GoldenGate user name and password on the target database, you do not need to encrypt the password again. You can skip this step. If the password is different, perform the following substeps.
 - a. Log in to the target database as the Oracle GoldenGate user.
 In the following command, replace the example values with your system values.

```
GGSCI > DBLOGIN SOURCEDB TGTDB UERID GG PASSWORD password
```
 - b. Use Blowfish encryption to encrypt the password.

```
GGSCI > ENCRYPT PASSWORD password BLOWFISH ENCRYPTKEY DEFAULT
```
 - c. Copy the encrypted password.
 - d. Disconnect from the database.
6. On the target system, open the parameter file.

```
GGSCI > edit param mgr
```
7. In the file, type the following command. Replace the example values with your system values. Paste the encrypted password into the text.

```
SOURCEDB TGTDB, UERID GG, PASSWORD encrypted password, BLOWFISH ENCRYPTKEY DEFAULT
```
8. Save and close the file.

Install Oracle GoldenGate as a Windows Service

You can install Oracle GoldenGate as a Windows service on the source system and on the target system. The service name comes from the `GLOBALS` file.

1. On the source system, if the Oracle GoldenGate Manager is running, shut down the server by closing the **Oracle GoldenGate Manager for DB2** window.
2. At a command prompt, navigate to the GGS directory and enter the following command:

```
C:/GGS > INSTALL.EXE ADDEVENTS ADDSERVICE MANUALSTART
```
3. Start the Oracle GoldenGate Command Interpreter for DB2.

```
C:/GGS > start ggsci.exe
```
4. In the **Oracle GoldenGate Command Interpreter for DB2** window, start the Oracle GoldenGate Manager.

```
GGSCI > start mgr
```
5. In Task Manager, verify that the `SRCGGSMGR` service is running.
6. Repeat all steps on the target system. In Task Manager, the service name is `TGTGGSMGR`.

Install Stored Procedures

Stored procedures for Zero Downtime reside in the repository table C_REPOS_ZDT_STATUS. The table is empty until you run a script to add the stored procedures to the table.

On each system, find and edit the 1_INSTALL_ZDT.db2 script file. Replace the example values with values that reflect the Multidomain MDM environment, such as specifying the local or remote environment name, the remote manager port, and the local or remote schema name. Run the script.

1. On the source system, navigate to the following directory:

```
<MDM installation directory>/database/db2/zdt/samples/SOURCE
```

2. Open the script 1_INSTALL_ZDT.db2.

3. Replace the example values with system values. See your planning document for system values.

Note: The REPLICATION_TARGET_IND must be 0 on the source system.

4. Save the file.

5. Run the script:

```
../database/db2/zdt/samples/SOURCE > db2 -tvf 1_INSTALL_ZDT.db2
```

6. On the source system, navigate to the following directory:

```
<MDM installation directory>/database/db2/zdt/samples/TARGET
```

7. Open the script 1_INSTALL_ZDT.db2.

8. Replace the example values with system values. See your planning document for system values.

Note: The REPLICATION_TARGET_IND must be 1 on the target system.

9. Save the file.

10. Run the script:

```
../database/db2/zdt/samples/TARGET > db2 -tvf 1_INSTALL_ZDT.db2
```

Configure the Environment to Run Stored Procedures

To be able to run stored procedures through the Oracle GoldenGate user, configure the source database and the target database.

1. On the source system, enter the IBM DB2 command interface.

```
C: > db2
```

Note: In the following commands, replace the example values with your system values. See your planning document for values.

2. Log in to the database as the Oracle GoldenGate user.

```
db2 => DBLOGIN SOURCEDB SRCDB UERID GG PASSWORD password
```

3. Set the schema to your schema name.

```
db2 => set schema MDM_SAMPLE
```

4. Update the PATH to include the schema.

```
db2 => set PATH MDM_SAMPLE, current path
```

5. Set the connection properties to the database.

```
db2 => CALL CMXZDT.SET_GGCONN_PROPERTIES('SRCDB','GG','password')
```

6. Verify that you can run an Oracle GoldenGate command from DB2.

```
db2 => CALL CMXZDT.GGSCI_EXEC(?,?,?, 'START MGR', 1)
```

The command calls the Oracle GoldenGate Command Interpreter for DB2. The first three parameters stand in for the connection parameters that you specified in the previous command. The fourth parameter contains the command to start the Oracle GoldenGate Manager. The last parameter causes the Oracle GoldenGate Command Interpreter for DB2 to establish a connection to the database.

7. Repeat all steps on the target system. Where you see SRCDB, substitute the name of the target database.

Edit and Run Scripts for IBM DB2 Database

Multidomain MDM ships with two sets of scripts for IBM DB2. One set for the source database, and one set for the target database.

Note: After you run each script, check for errors. If you see errors, navigate to the GGS directory and open the ggseerr.log. You can try starting processes manually from the **Oracle GoldenGate Command Interpreter for DB2** window by typing `start *`.

1. On the source system, navigate to the following directory:

```
<MDM installation directory>/database/db2/zdt/samples/SOURCE
```

2. Open each of the following files in the SOURCE directory, edit the example values to match your source system values, and save the files.

```
2_CONFIGURE_EVENT_QUEUE.db2
3_START_EVENT_QUEUE.db2
4_CONFIGURE_EXTRACT.db2
5_CONFIGURE_SEQUENCES.db2
6_START_EXTRACT.db2
```

3. Navigate to the following directory:

```
<MDM installation directory>/database/db2/zdt/samples/TARGET
```

4. Open each of the following files in the TARGET directory, edit the example values to match your target system values, and save the files.

```
2_CONFIGURE_EVENT_QUEUE.db2
3_START_EVENT_QUEUE.db2
4_CONFIGURE_REPLICAT.db2
5_CONFIGURE_SEQUENCES.db2
6_START_REPLICAT.db2
```

5. Run scripts to configure the event queue.

- a. From the SOURCE directory, run:

```
.../SOURCE > db2 -tvf 2_CONFIGURE_EVENT_QUEUE.db2
```

- b. From the TARGET directory, run:

```
.../TARGET > db2 -tvf 2_CONFIGURE_EVENT_QUEUE.db2
```

If you open the **Oracle GoldenGate Command Interpreter for DB2** window and type `info all`, you can see that the scripts configure two EXTRACT processes and one REPLICAT process. The processes are stopped.

6. Run scripts to start the event queue.
 - a. From the SOURCE directory, run:

```
.../SOURCE > db2 -tvf 3_START_EVENT_QUEUE.db2
```
 - b. From the TARGET directory, run:

```
.../TARGET > db2 -tvf 3_START_EVENT_QUEUE.db2
```
 - c. On the source system, in the **Oracle GoldenGate Command Interpreter for DB2** window, type `info all`.

The two EXTRACT processes and the REPLICAT process are running.
 - d. On the target system, in the **Oracle GoldenGate Command Interpreter for DB2** window, type `info all`.

The two EXTRACT processes and the REPLICAT process are running.
 - e. To verify that the event queue is working, open the `C:/TEMP/cmx_debug_SRCDB.log` file on the source system and the `C:/TEMP/cmx_debug_TGTDB.log` file on the target system. In the **Oracle GoldenGate Command Interpreter for DB2** window, type `stop rquesnva`. Verify that the last line in both debug logs records the event: `Message type "STOPPED" received from "rquesnva"`. Restart the process.
7. Run scripts to configure the EXTRACT and REPLICAT processes. The first script creates a file that is called `mdm_sample.def` on the source system. The second script copies the `mdm_sample.def` file to the target system.
 - a. From the SOURCE directory, run:

```
.../SOURCE > db2 -tvf 4_CONFIGURE_EXTRACT.db2
```

Note: The script might take some time to complete. The script updates all the tables in the Operational Reference Store schema that participate in replications.

You can watch the progress of the script by opening the `C:/TEMP/cmx_debug_SRCDB.log` file. You can see a record of the updated table definitions by opening the `c:/GSS/dirprm/mdm_sample.def` file on the source system.
 - b. From the TARGET directory, run:

```
.../TARGET > db2 -tvf 4_CONFIGURE_REPLICAT.db2
```

The script copies the `mdm_sample.def` file from the source system to the target system `c:/GSS/dirprm` directory. The changes are applied to the target database.
8. Run scripts to configure sequences. Sequencing distinguishes between rows inserted in the source database versus rows inserted in the target database.
 - a. From the SOURCE directory, run:

```
.../SOURCE > db2 -tvf 5_CONFIGURE_SEQUENCES.db2
```

When rows are inserted into the source database, an odd number is added to the sequence number.
 - b. From the TARGET directory, run:

```
.../TARGET > db2 -tvf 5_CONFIGURE_SEQUENCES.db2
```

When rows are inserted into the target database, an even number is added to the sequence number.
9. Run scripts to start the EXTRACT and REPLICAT processes.
 - a. From the SOURCE directory, run:

```
.../SOURCE > db2 -tvf 6_START_EXTRACT.db2
```

b. From the TARGET directory, run:

```
.../TARGET > db2 -tvf 6_START_REPLICAT.db2
```

10. The configuration is complete. To verify that the processes are running, in the **Oracle GoldenGate Command Interpreter for DB2** window on both systems, type `info all`. In a successful configuration, all processes are in the running state.

CHAPTER 3

Removing ZDT Replication

This chapter includes the following topic:

- [Remove ZDT Replication on IBM DB2, 22](#)

Remove ZDT Replication on IBM DB2

You can remove Zero Downtime from your environment.

1. On the source system, connect to GGSCI.
2. Log in and stop all processes. Substitute source system values for the example values.

```
GGSCI> DBLOGIN SOURCEDB srcdb USERID gg PASSWORD password
GGSCI> STOP *
```

3. Verify that all EXTRACT and REPLICAT processes are stopped.

```
GGSCI> INFO ALL
GGSCI> DELETE *
GGSCI> DELETE CHECKPOINTTABLE MDM_SAMPLE.GGS_EVENT_CHECKPOINT
GGSCI> DELETE CHECKPOINTTABLE MDM_SAMPLE.GGS_CHECKPOINT
GGSCI> STOP MGR
GGSCI> EXIT
```

4. If you installed Oracle GoldenGate as a Windows service, delete the service.

```
INSTALL.EXE DELETEEVENTS DELETESERVICE
```

5. To reduce transaction log space use, run the following script:

```
--#SET TERMINATOR ~
CONNECT TO SRCDB USER gg USING password
~
SET SCHEMA MDM_SAMPLE
~
SET PATH MDM_SAMPLE, CURRENT PATH
~
SET SERVEROUTPUT ON
~
CALL DBMS_OUTPUT.ENABLE(1024000)
~
BEGIN
  DECLARE stmt VARCHAR(1000);
  FOR f1 AS c1 CURSOR WITH HOLD FOR
  SELECT
    TABSCHEMA, TABNAME, DATACAPTURE
  FROM
    SYSCAT.TABLES
  WHERE
    TABSCHEMA = CURRENT SCHEMA
    AND TYPE = 'T'
```

```
        AND DATACAPTURE <> 'N'  
    DO  
        SET stmt = 'ALTER TABLE '||TRIM(CURRENT SCHEMA)||'. '||f1.TABNAME||' DATA  
CAPTURE NONE';  
        CALL DBMS_OUTPUT.PUT_LINE(stmt);  
        COMMIT;  
    END FOR;  
END  
~  
COMMIT  
~
```