How to Upgrade Oracle Software and Databases from Oracle Version 10.2.0.1/10.2.0.3 to 10.2.0.4 for Ex Libris Applications

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Before You Upgrade

This section lists the prerequisites for upgrading and describes the pre-upgrade procedures that you should perform.

Upgrade Prerequisites

The upgrade of your Oracle software and databases must be performed by a local DBA only.

Before starting an upgrade, a full backup of all Oracle 10 software and databases is absolutely necessary.

For all platforms, all operating system requirements must be met before starting the upgrade process. If you are working with an AIX operating system, the following are the system requirements for this patch set:

- Operating system – AIX version 5.2 or 5.3
- Operating system patches – IY73570: IBM C++ Runtime Environment Components for AIX PTF

Note: If you have XL C installed on your system, apply the following patch in addition to the above-mentioned required patch: **IY73568: XL C Enterprise Edition V7.0 for AIX PTF**. If you have XL C/C++ installed on your system, apply the following patch in addition to the above-mentioned required patch: **IY73569: XL C/C++ Enterprise Edition V7.0 for AIX PTF**.

Oracle 10.2.0.4 has been tested and can be implemented for the following Ex Libris applications that work with Oracle 10g. For information as to whether the application and application version

with which you are working supports Oracle 10g, refer to the documentation for your application.

Pre-Upgrade Procedure

Before you upgrade, you must perform the following procedure.

1. Log on to the Oracle server as an Oracle user (typically `oracle`).
2. Use the following command to determine which operating system is installed on the Oracle server:

   ```
   Uname -a
   ```

   Note that the packages on the Ex Libris FTP server (ftp.exlibris.co.il) are compatible with the following operating systems: Linux, Sun Solaris, and AIX.
3. Download the appropriate package from the `/oracle/102/<platform>/quick` directory on the Ex Libris FTP server. Note that this download can take quite a long time.
4. Place the package in a temporary directory, such as `/exlibris/ftp_from_exlibris`.
5. Extract the package using the following:
   - the `tar` utility, if your Oracle server is running on a Linux platform
   - the `gnu_tar` utility, if your Oracle server is running on a Sun Solaris platform
   - the `gnu_tar_aix` utility, if your Oracle server is running on an AIX platform

   For detailed instructions on using these utilities, see step 7 in Upgrading Oracle Software.

   The `tar` utility is available with your operating system installation. The `gnu_tar` and `gnu_tar_aix` utilities are available on the FTP server, along with the Oracle packages.

   If you are working with the `gnu_tar_aix` utility, you must rename it to `gnu_tar` after downloading it. If you are working with either `gnu_tar` utility, you must change permissions after downloading the utility. To do so, use the following commands:

   ```
   cd /exlibris/ftp_from_exlibris
   chmod +x gnu_tar*
   ```

Note: Make sure that the `oraInst.loc` file resides on the Oracle server – in the `/var/opt/oracle` directory on a Sun Solaris OS and in the `/etc` directory on a Linux OS. The contents of the `oraInst.loc` file are as follows:

```
inventory_loc=/exlibris/app/oracle/product/102/oraInventory
inst_group=dba
```

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Upgrading Your Oracle Software and Database

This section describes how to upgrade your Oracle software, as well as each database associated with Oracle 102.

Upgrading Oracle Software

The upgrade instructions below relate to a standard Oracle installation in the `/exlibris/app/oracle/product/102` directory. These instructions are relevant for customers using the quick upgrade package, according to Ex Libris recommendations.

To upgrade your Oracle software:

1. Log on to the Oracle server as an application user (for example, `aleph`, `metalib`, `dtl`, or `verde`).
2. Shut down the Ex Libris applications associated with Oracle 102.
3. Shut down all Oracle 10 databases.
4. Log on again to the Oracle server as an Oracle user (typically `oracle`).
5. Stop the Oracle listener:

   ```
   lsnrctl stop
   ```

Note: You do not have to stop the listener processes related to other Oracle versions (8 or 10).

6 Back up the existing database and listener configurations:

```
cd $ORACLE_HOME
tar -cf ./../conf102.tar ./dbs ./network/admin/listener*
./network/admin/tnsnames*
```

7 Back up the current Oracle software located in the `/exlibris/app/oracle/product/102` directory and remove or rename it:

```
cd $ORACLE_HOME/..
```

`mv 102 10203` (or `10201`, if this is your current version)

8 Extract the Oracle 10204 quick upgrade package from the temporary directory in which you placed it to the `/exlibris/app/oracle/product` directory:

```
cd /exlibris/app/oracle/product
```

Use the following commands:

- For Sun Solaris platforms:

  ```
  cat /exlibris/<ftp_from_exlibris>/ora10204s_solaris.tar.gz_* | gnu_tar
  -xzvf –
  ```

- For Linux platforms:

  ```
  cat /exlibris/<ftp_from_exlibris>/ora_10204s_linux.tar.gz_* | tar -xzvf –
  ```

- For AIX platforms:

  ```
  cat /exlibris/<ftp_from_exlibris>/ora10204s_aix.tar.gz_* | gnu_tar
  -xzvf –
  cd $ORACLE_HOME
  vi .cshrc
  ```

  Add the following lines:

  ```
  limit memoryuse 2045680
  limit datasize 1048576
  ```

  Log on as a root user and run the following command:

  ```
  /usr/sbin/slibclean
  ```

Note: The new Oracle version includes a revised `.chsrc` file for the Oracle 10 user.

9 Restore the original configuration of the databases and listener:

```
cd $ORACLE_HOME
tar -xf ./../conf102.tar
```

10 Open the `.cshrc` file under `$ORACLE_HOME` and change the `ORACLE_SID` environment variable to the appropriate variable.

11 Change permissions for the Oracle binary files:

```
chmod +s $ORACLE_HOME/bin/oracle
cd  $ORACLE_HOME
find . -type d | xargs chmod +x
find .         | xargs chmod +r
```

Upgrading Oracle Databases

The procedures in this section should be performed for each database associated with the upgraded Oracle home.

Running the Pre-Upgrade Information Tool

You should analyze the database prior to the upgrade by running the Pre-Upgrade Information Tool. The Pre-Upgrade Information Tool is an SQL script that is available with Oracle Database 10.2.

To run the Pre-Upgrade Information Tool:

1 As an Oracle user (typically `oracle`), start the database in `UPGRADE` mode:

```
SQL> sqlplus '/as sysdba'
SQL> STARTUP UPGRADE
```

2 Set the system to spool results to a log file for later analysis:

```
SQL> SPOOL upgrade_info.log
```

3 Run the Pre-Upgrade Information Tool:

```
SQL> @?/rdbms/admin/utlu102i.sql
```

4 Turn off the spooling of script results to the log file:

```
SQL> SPOOL OFF
```

5 Check the output of the Pre-Upgrade Information Tool in the `upgrade_info.log` file.

The following is an example of the output generated by the Pre-Upgrade Information Tool:

```
Oracle Database 10.2 Upgrade Information Utility    02-04-2008 11:48:11
*******************************************************************
Database:
*******************************************************************
--> name:       X102040
--> version:    10.2.0.1.0
compatible: 10.2.0.1
blocksize:  8192
*******************************************************************
Tablespaces: [make adjustments in the current environment]
*******************************************************************
```

```
SYSTEM tablespace is adequate for the upgrade.
.... minimum required size: 505 MB
.... AUTOEXTEND additional space required: 15 MB
UNDOTBS1 tablespace is adequate for the upgrade.
.... minimum required size: 401 MB
.... AUTOEXTEND additional space required: 376 MB
SYSAUX tablespace is adequate for the upgrade.
.... minimum required size: 265 MB
.... AUTOEXTEND additional space required: 15 MB
TEMP tablespace is adequate for the upgrade.
.... minimum required size: 58 MB
.... AUTOEXTEND additional space required: 38 MB
EXAMPLE tablespace is adequate for the upgrade.
.... minimum required size: 69 MB
**************************************************************
Update Parameters: [Update Oracle Database 10.2 init.ora or spfile]
**************************************************************
WARNING: --> "shared_pool_size" needs to be increased to at least 167772160
WARNING: --> "java_pool_size" needs to be increased to at least 67108864
**************************************************************
Components: [The following database components will be upgraded orinstalled]
**************************************************************
--> Oracle Catalog Views         [upgrade]  VALID
--> Oracle Packages and Types    [upgrade]  VALID
JServer JAVA Virtual Machine [upgrade]  VALID
--> Oracle XDK for Java          [upgrade]  VALID
--> Oracle Java Packages         [upgrade]  VALID
--> Oracle Text                  [upgrade]  VALID
--> Oracle XML Database          [upgrade]  VALID
--> Oracle Workspace Manager     [upgrade]  VALID
--> Oracle Data Mining           [upgrade]  VALID
--> Messaging Gateway            [upgrade]  VALID
--> OLAP Analytic Workspace      [upgrade]  VALID
--> OLAP Catalog                 [upgrade]  VALID
--> Oracle OLAP API              [upgrade]  VALID
--> Oracle interMedia            [upgrade]  VALID
--> Spatial                      [upgrade]  VALID
--> Oracle Ultra Search          [upgrade]  VALID
--> Oracle Label Security        [upgrade]  VALID
--> Expression Filter            [upgrade]  VALID
--> EM Repository                [upgrade]  VALID
--> Rule Manager                 [upgrade]  VALID

PL/SQL procedure successfully completed.
```

The following sections provide explanations of each of the sections in the Pre-Upgrade Information Tool output:

Database

This section displays global database information about the current database, such as the database name and release number prior to the database upgrade.

Tablespaces

This section displays a list of tablespaces in the current database. For each tablespace, the tablespace name and minimum required size is displayed. In addition, a message is displayed indicating whether the tablespace is adequate for the upgrade. If the tablespace does not have enough free space, space must be added to the tablespace in the current database. Tablespace adjustments must be made before the database is upgraded.

Update/Obsolete/Deprecated Parameters

These sections display a list of initialization parameters in the parameter file of the current database that should be adjusted before the database is upgraded. The adjustments must be made to the Oracle Database 10.2 `init.ora` or `spfile`. (For instructions on how to change Oracle parameters, refer to the *How to Change Oracle Database 10g Parameters* document.)

Components

This section displays a list of database components that are upgraded or installed when the current database is upgraded.

Upgrading a 10.2 Database

After you install the patch set, you must perform the procedure below on every database associated with the upgraded Oracle home.

Note: If you start a database for normal operation without running the `catupgrd.sql` script as described below, **ORA-01092: ORACLE instance terminated. Disconnection forced** errors will occur and the error **ORA-39700: database must be opened with UPGRADE option** will appear in the alert log file.

To upgrade a 10.2 database:

1. For single-instance installations, start the Oracle Net listener using the following command:

   ```
   lsnrctl start
   ```

2. As an Oracle user (typically `oracle`), use SQL*Plus to log on to the database as the `SYS` user with `SYSDBA` privileges:

   ```
   $ sqlplus '/as sysdba'
   SQL> SHUTDOWN IMMEDIATE
   ```

3. Enter the following SQL*Plus commands:

   ```
   SQL> STARTUP UPGRADE
   SQL> SPOOL patch.log
   SQL>set pause off
   SQL> @?/rdbms/admin/catupgrd.sql
   ```

To tune in the background:

```
cd rdbms/admin
sqlplus sys/exlibris2005 as sysdba  @ catupgrd.sql >& patch.log &

SQL> SPOOL OFF
```

4 Review the `patch.log` file for errors and inspect the list of components that is displayed at the end of the `catupgrd.sql` script. This list provides the version and status of each `SERVER` component in the database. If necessary, rerun the `catupgrd.sql` script after correcting any problems.

5 Restart the database:

```
SQL> SHUTDOWN IMMEDIATE
SQL> STARTUP
```

6 Run the `utlrp.sql` script to recompile all invalid PL/SQL packages now (instead of doing so when the packages are accessed for the first time):

```
SQL> @?/rdbms/admin/utlrp.sql
```

Note: This step is optional, but recommended.

---

7 Run the following commands to check the status of all the components after the upgrade:

```
SQL> SELECT COMP_NAME, VERSION, STATUS FROM   SYS.DBA_REGISTRY;
```

The status of all the components should be `VALID`, indicating a successful upgrade.

Once the upgrade is finished, start up an Ex Libris application and perform sanity checks.