

Opatch Maintenance

You can perform Oracle Database in-place one-off and single-instance patch maintenance using OPatch.

Note:

As a best practice to simplify maintenance and avoid potential issues, Oracle strongly recommends that you perform database maintenance using a new Oracle home and out-of-place patching. This is the preferred deployment choice for patching operations.

- [Checks and Prerequisites for Using OPatch for Single Instance](#)
Download the patch, and before you perform software maintenance, review the guidelines and prerequisites for your planned deployment scenario.
- [Check System Requirements](#)
Before you start OPatch, check to ensure that you have required environment dependencies.
- [Detect and Resolve Interim Patch Conflicts](#)
You must detect and resolve any interim (one-off) patch conflicts before running OPatch.
- [Update Software on a Single-Instance Database Using OPatch](#)
After any patch conflicts are resolved, you can proceed with updating your software manually using OPatch.
- [Load Modified SQL Files into the Database](#)
When you use OPatch to perform database maintenance, you must run the `datapatch` tool manually so that the tool can load modified SQL files into the database.
- [Upgrade Oracle Recovery Manager Catalog](#)
If you are using the Oracle Recovery Manager, then the catalog needs to be upgraded.
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Checks and Prerequisites for Using OPatch for Single Instance

Download the patch, and before you perform software maintenance, review the guidelines and prerequisites for your planned deployment scenario.

Note:

Before starting to apply a maintenance Release Update or interim patch, Oracle strongly recommends that you take a backup of any Oracle home binaries, Grid home binaries, and the central Oracle Inventory (oraInventory that can be affected by the update). For further information, see:

[How to Perform ORACLE_HOME Backup? \(Doc ID 565017.1\)](#)

Download and Unzip the Patch

Oracle recommends that you download and use the latest released OPatch version. Download the latest version from My Oracle Support:

[My Oracle Support patch 6880880](#)

For exact instructions to install OPatch, follow the readme included with the tool download.

See Also:

For detailed OPatch documentation, including any known issues, see:

[Primary Note For OPatch \(Doc ID 293369.1\)](#)

Guidelines for OPatch Maintenance

Release Updates (RUs) from Automated Release Update (ARU) or My Oracle Support are cumulative. That is, the content of all previous RUs for a given software release are included in the latest RU. To increase performance by deleting inactive patches, Oracle recommends that you run OPatch with the `listorderedinactivepatches` and `deleteinactivepatches` options. For more information, see:

[OPatch 12.2.0.1.37+ Introduces a New Feature to Delete Inactive Patches in the ORACLE_HOME/patch_storage Directory \(Doc ID 2942102.1\)](#)

directory.

To use OPatch to install the latest software update for your Oracle software, the software home must have the latest release software already installed. For example, to install the latest RU for Oracle Database 23ai, you must first have installed Oracle Database 23ai in the Oracle home where you want to apply the most recent RU. You can find more information about your patch requirements and options in the Download Reference for software updates:

[Assistant: Download Reference for Oracle Database/GI Update, Revision, PSU, SPU\(CPU\), Bundle Patches, Patchsets and Base Releases \(Doc ID 2118136.2\)](#)

Patches typically include Java Development Kit (JDK) fixes released since the previous RU, and will update the JDK in the Oracle home.

The `UTL_URI.ESCAPE` function is now compliant with RFC 3896 and will treat "#" as a reserved character. For more information, see:

[UTL_URI.ESCAPE function is now compliant with RFC 3896 and will treat "#" as a reserved character \(Doc ID 2981395.1\)](#)

Validating the Oracle Inventory on Oracle Grid Infrastructure and Oracle RAC Cluster Members

Before beginning patch application, check the consistency of inventory information for the Grid home and each Oracle home that you plan to patch. Run this command as the respective Oracle home owner to check the consistency, where `<ORACLE_HOME>` is the Oracle home or Grid home:

```
$ <ORACLE_HOME>/OPatch/opatch lsinventory -detail -oh <ORACLE_HOME>
```

If this command succeeds, then it lists the Oracle components that are installed in the home. Save the output so that you have the status of the inventory before you start the patch application.

If this command fails, then contact Oracle Support for assistance.

Check System Requirements

Before you start OPatch, check to ensure that you have required environment dependencies.

Ensure that the `$PATH` definition has the following executables:

- `make`
- `ar`
- `ld`
- `nm`

The location of these executables depends on your operating system. On many operating systems, they are located in `/usr/ccs/bin`. Ensure that your path environment includes the location of the executables. For example:

```
export PATH=$PATH:/usr/ccs/bin
```

Detect and Resolve Interim Patch Conflicts

You must detect and resolve any interim (one-off) patch conflicts before running OPatch.

Oracle recommends that you use the "Patch Recommendations and Patch Plans" features on the **Patches & Updates** tab in the My Oracle Support search results page for a patch search. These features are the fastest and easiest way to determine whether you have interim patches in the Oracle home that conflict with a Release Update (RU), and to obtain the conflict resolution patches that you will require. The "Patch Recommendations and Patch Plans" features work in conjunction with the My Oracle Support Configuration Manager. You can find recorded training sessions for these features on My Oracle Support:

[My Oracle Support How-to Video Training Series \(Doc ID 603505.2\)](#)

If you choose not to use My Oracle Support Patch Plans, then My Oracle Support Conflict Checker tool enables you to upload an OPatch inventory and check the patches that you want to apply to your environment for conflicts.

For details about using this tool, see:

[How to Use the My Oracle Support Conflict Checker Tool for Patches Installed with OPatch. \(Doc ID 1091294.1\)](#)

The procedure to use the tool is as follows:

1. Download the patch from Oracle Support. Patches are zip archive file format files in the form `<patchnumber>_<version>_<platform>.zip`, where `<patchnumber>` is the eight-digit number of the patch, `<version>` is the release of the Oracle software for which the patch is provided, and `<platform>` is the operating system platform for which the patch can be applied. For example: `p12345678_23.0.0.0.0_Linux-x86-64`.
2. Unzip the patch, and use the OPatch command `opatch prereq CheckConflictAgainstOHWithDetail` to find if any currently installed interim patches conflict with the patch being installed. For example, if the patch is `p12345678_23.0.0.0.0_Linux-x86-64`:

```
unzip p12345678_23.0.0.0.0_Linux-x86-64.zip
cd % ARU_TrackingBug %
opatch prereq CheckConflictAgainstOHWithDetail -ph ./
```
3. Review the report. If there are conflicts, then the report indicates the patches that conflict and the patches that are a superset.

4. Resolve the patch conflicts for each conflicting patch. Determine if a conflict resolution patch is already available, and if you need to request a new conflict resolution patch or if the conflict may be ignored. If you require additional conflict resolution patches, then you must wait until they become available before proceeding further.

To resolve patch conflicts, use the following My Oracle Support document:

[Database Patch Conflict Resolution \(Doc ID 1321267.1\)](#)

After you resolve patch conflicts, or receive any interim conflict resolution patches, you can proceed with updating your Oracle software.

Update Software on a Single-Instance Database Using OPatch

After any patch conflicts are resolved, you can proceed with updating your software manually using OPatch.

Oracle recommends that you use the latest OPatch version for your Oracle software release.

Follow these steps for a single-instance database:

1. Shut down the database and all listeners associated with the Oracle home that you are updating. For more information about shutting down the database and listeners, see *Oracle Database Administrator's Guide*.
2. Set your current directory to the directory where the patch is located and then run the OPatch utility by entering the following commands, where *<patchnumber>* is the eight-digit number of the patch, *<version>* is the release of the Oracle software for which the patch is provided, and *<platform>* is the operating system platform for which the patch can be applied.

```
unzip p<patchnumber>_<version>_<platform>.zip
cd p<patchnumber>_<version>_<platform>
opatch apply
```

For example:

```
unzip p12345678_23.0.0.0.0_Linux-x86-64.zip
cd p12345678_23.0.0.0.0_Linux-x86-64
opatch apply
```

Wait for the patch update to complete successfully.

If there are errors, refer to "Known Issues"

3. After the patch is installed successfully, if you obtained patch conflict resolution interim patches after checking for patch conflicts, then apply them now.

After installing the patch s needed, complete these steps:

1. Load modified SQL files into the database, as explained in "Load Modified SQL Files into the Database" .
2. Upgrade Oracle Recovery Manager Catalog, as explained in "Upgrade Oracle Recovery Manager Catalog" .
3. Check bug fixes that may change an existing optimizer execution plan, as explained in [Managing "installed but disabled" bug fixes in Database Release Updates using DBMS_OPTIM_BUNDLE \(Doc ID 2147007.1\)](#)

If there are errors, refer to "Known Issues".

Load Modified SQL Files into the Database

When you use OPatch to perform database maintenance, you must run the `datapatch` tool manually so that the tool can load modified SQL files into the database.

Datapatch is the patching tool that completes the post-patch SQL actions for RDBMS patches, such as running scripts to load modified SQL files into the database registry. Datapatch identifies the postinstallation steps required after the database is updated, and applies and removes or rolls back SQL changes in the database as required. Unlike a maintenance operation with OPatchAuto, which calls Datapatch automatically to complete post-patch actions after the new binary patch is installed and the database is restarted, you must run Datapatch manually after running OPatch.

For more information about Datapatch, see:

- [Datapatch: Database 12c or later Post Patch SQL Automation \(Doc ID 1585822.1\)](#)
 - [Datapatch User Guide \(Doc ID 2680521.1\)](#)
1. For your databases running on the same Oracle home in the multitenant environment being patched, run the `datapatch` tool. In this example, we run `datapatch` with the `-sanity_checks` option:

```
% sqlplus /nolog
SQL> Connect / as sysdba
SQL> startup
SQL> alter pluggable database all open;
SQL> quit
% cd $ORACLE_HOME/OPatch
% ./datapatch -sanity_checks
% ./datapatch -verbose
```

Oracle highly recommends that you run `datapatch` with the `-sanity_checks` option. When started with this option, `datapatch` runs a series of environment and database checks to validate if conditions are optimal for patching. Results are shown on screen with severity and recommendations for potential actions you can take. For more information about this feature, see:

[Datapatch User Guide \(Doc ID 2680521.1\)](#)

Oracle also recommends that you run `datapatch` on all pluggable databases (PDBs) in the multitenant environment at the same time. However, you can choose to run `datapatch` on individual pluggable databases. If you choose to do this, then

datapatch is run only on the multitenant container database (CDB) and opened pluggable databases (PDBs). You then are required to update the PDBs that are not updated at this time by using the `alter pluggable database` statement, and running the `datapatch` tool again at a later time to complete post-patch SQL actions on those PDBs. See:

[Multitenant Unplug/Plug Best Practices \(Doc ID 1935365.1\)](#)

The `datapatch` utility runs apply scripts to load the modified SQL files into the database. An entry is added to the `dba_registry_sqlpatch` view, recording the patch application.

2. In the `dba_registry_sqlpatch` view, verify that the **Status** for the `APPLY` is `SUCCESS`. For any other status, see:

[Troubleshooting Assistant:12c Datapatch Issues \(Doc ID 2335899.2\)](#)

3. After `datapatch` completes, check its output to see if it has reported any errors. The output of `datapatch` contains log file locations for the patches installed. You can find all the relevant log files of that particular `datapatch` process in the same directory as `sqlpatch_invocation.log`. Check the initial lines of the output for "Log file for this invocation:"

Related Topics

- [What does datapatch do when you have different components in PDBs?](#)

Upgrade Oracle Recovery Manager Catalog

If you are using the Oracle Recovery Manager, then the catalog needs to be upgraded.

The `UPGRADE CATALOG` command must be entered twice to confirm the upgrade.

Enter the following commands:

```
$ rman catalog username/password@alias
RMAN> UPGRADE CATALOG;
RMAN> UPGRADE CATALOG;
RMAN> EXIT;
```

Known Issues

Learn how to find if an issue you have encountered while running OPatch is a known issue.

For information about known OPatch issues, see:

[Primary Note For OPatch \(Doc ID 293369.1\)](#)

For issues documented after the release of the Release Update (RU) or patch version that you have installed, review the README for the Release Update (RU) or patch version that you have installed.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

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Oracle Database Single-Instance Oracle Database Maintenance with OPatch , Release 23ai and Later Releases

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