Oracle® Database

Recommended Patch Maintenance for Databases Deployed with Oracle Data Guard

Release 26ai

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Patch Delivery Methods for Oracle AI Database with Oracle Data Guard

To patch and maintain Oracle AI Database deployed with Oracle Data Guard on premises, Oracle recommends that you use Oracle Fleet Patching and Provisioning (FPP).

Overview of Oracle Fleet Patching and Provisioning

Fleet Patching and Provisioning (FPP) is the recommended maintenance method to use for Oracle Real Application Clusters and Oracle databases deployed with Oracle Data Guard.

About Oracle Al Database Release Update Patches

Oracle provides quarterly updates in the form of Release Updates (RUs) to release new features, upgrade existing features, enhance security, or fix problems with supported software.

 Fleet Patching and Provisioning for Oracle Real Application Clusters and Oracle Data Guard

For ease of deployment, Oracle recommends that you use Oracle Fleet Patching and Provisioning to maintain Oracle Real Application Clusters (Oracle RAC) and databases deployed with Oracle Data Guard.

 Start Database Maintenance for Oracle Data Guard with Fleet Patching and Provisioning

To perform maintenance, use the Oracle Fleet Patching and Provisioning (FPP) Server to complete the recommended image-based, out-of-place patching.

Oracle AI Database Maintenance with Gold Images Using Manual Mode
 Learn about the manual options available to you for performing regular database maintenance using Gold Images.

Patch Conflict Resolution

If you choose not to use Gold Image patch maintenance, then interim patches used in conjunction with other proactive maintenance methods, including custom Gold Images, may cause patch conflicts.

Patching Oracle Al Database and Oracle GoldenGate

When you use Oracle GoldenGate with Oracle Al Database, you must ensure that Oracle GoldenGate processes are shut down before patching the database.

Rolling Back RU Updates for Oracle RAC or Oracle Grid Infrastructure

To roll back an RU patch update performed with Fleet Patching and Provisioning, you move the database or infrastructure to the old Oracle home.

Overview of Oracle Fleet Patching and Provisioning

Fleet Patching and Provisioning (FPP) is the recommended maintenance method to use for Oracle Real Application Clusters and Oracle databases deployed with Oracle Data Guard.

Fleet Patching and Provisioning (FPP) is a full fledged automation engine for patching upgrade and provisioning. The central Oracle FPP Server can serve a fleet of databases and Grid Infrastructure from a single central server, making it easy to patch thousands of databases simultaneously. You can deploy a single Oracle FPP server for a given data center and use it to patch your entire fleet in that data center.

It has the following features

- Performs maintenance patching and software updates to Oracle databases (Oracle RAC, Oracle RAC One Node, and Single Instance), Oracle Grid Infrastructure, Oracle Restart, and Oracle Exadata Engineered Systems (DBNode, Storage Cells, and Network).
- Performs software upgrades to Oracle databases and Oracle Grid Infrastructure.
- Is designed with many advanced features to simplify global fleet standardization and management.

Related Topics

 Oracle Fleet Patching and Provisioning Features in Oracle Fleet Patching and Provisioning Administrator's Guide

About Oracle Al Database Release Update Patches

Oracle provides quarterly updates in the form of Release Updates (RUs) to release new features, upgrade existing features, enhance security, or fix problems with supported software.

Starting with Oracle AI Database 26ai, RUs are delivered in two formats:

- As a gold image that you can install out-of-place like a new software release.
- As a binary patch that you can apply in-place using OPatch or OPatchAuto.

You can apply out-of-place Oracle AI Database patches using the following steps:

1. Download the RU as a gold image.

- Create a new Oracle home (target) identical to the old Oracle home (source) in the same Oracle base as the source Oracle home, using runInstaller setupDBHomeAs.
- 3. Move Oracle AI Database from the old Oracle home to the new Oracle home.

After you move the database to the new Oracle home, all database services will start from the new home.

Related Topics

- Applying Out-of-Place Oracle Database Patches
- Creating a CDB with DBCA
- User Interface for PDB Relocation

Fleet Patching and Provisioning for Oracle Real Application Clusters and Oracle Data Guard

For ease of deployment, Oracle recommends that you use Oracle Fleet Patching and Provisioning to maintain Oracle Real Application Clusters (Oracle RAC) and databases deployed with Oracle Data Guard.

Oracle Fleet Patching and Provisioning (FPP) has been built from the ground up by the database development organization with Oracle databases and Oracle Exadata in mind. From day one, FPP has been using a centralized gold image out-of-place maintenance approach offering versatility and flexibility and MAA-compliant patching with support of the latest Oracle AI Database features.

Related Topics

- Oracle Fleet Patching and Provisioning
- Oracle Fleet Patching and Provisioning Overview

Start Database Maintenance for Oracle Data Guard with Fleet Patching and Provisioning

To perform maintenance, use the Oracle Fleet Patching and Provisioning (FPP) Server to complete the recommended image-based, out-of-place patching.

Oracle recommends that you use the Oracle Fleet Patching and Provisioning (FPP) server to manage software images and to patch Oracle databases deployed with Oracle Data Guard using image-based, out-of-place patching. The patching process moves the Oracle Real Application Clusters database and Oracle Data Guard from its existing software homes to target homes containing new software.

This topic shows you how to complete the following steps in your software maintenance:

- 1. Is an Oracle database or Oracle Data Guard software update required?
- To which Release Update (RU) should I update software for Oracle databases or Oracle Data Guard?

3. How can I perform the software update for Oracle databases or Oracle Data Guard?

Before you can update the Oracle Al Database or Oracle Data Guard software, you must build a gold image using the steps documented in the My Oracle Support document <u>Creating Gold Image for Oracle Al Database and Grid Infrastructure</u> <u>Installations (Doc ID 2915366.2)</u>. Be prepared to provide the following information:

- The results of running <code>opatch lsinventory</code> on the source Oracle home. These results show what patches have been applied, and provide additional information about the Oracle home.
- The target RU patch number that you want to apply, which you enter in the candidate patch input text box.
- Any recommended one-off patches you want installed with the target RU for your database release, such as those for Oracle Database 19c listed in the My Oracle Support document <u>Oracle Database 19c Important Recommended One-off</u> Patches (Doc ID 555.1) in the candidate patch input text box.
- Any additional patches you require for your application or deployment environment in the candidate patch input text box.
- To prepare for the software update, download the FPP gold image and import it into the source Oracle home.

The order of these steps is as follows:

- a. Download the gold image you have built to your FPP system.
- b. Import the gold image to the FPP server using the FPP command rhpctl import. For details about the import command, with reference to either a database image (ORACLEDBSOFTWARE) or Grid image (ORACLEGISOFTWARE), refer to rhpctl import image in *Oracle Fleet Patching and Provisioning Administrator's Guide*.
- c. Deploy a new target software home using the FPP command "rhpctl add workingcopy". For details about the add workingcopy command, refer to rhpctl add workingcopy in Oracle Fleet Patching and Provisioning Administrator's Guide.
- 2. Run Precheck for the Apply Software update

To prevent issues during the patch operation, run a precheck evaluation for moving the database or Oracle Grid Infrastructure to the new software home using the FPP command rhpctl move . . . -eval. For details about the move . . . -eval command options for database or Oracle Grid Infrastructure, refer to rhpctl move database or rhpctl move gihome in *Oracle Fleet Patching and Provisioning Administrator's Guide*.

Apply the RU update, moving the database or Oracle Grid Infrastructure to the new home.

Move the database or Oracle Grid Infrastructure to the new software home using the FPP command rhpctl move. For details about the move command options for database or Oracle Grid Infrastructure, refer to rhpctl move database or rhpctl move gihome in *Oracle Fleet Patching and Provisioning Administrator's Guide*.

4. After the software move operation is completed successfully, and you have verified the database or Oracle Grid Infrastructure functionality in the new target Oracle home or Grid home, remove the unused source software homes using the FPP command rhpctl delete workingcopy. For details about the delete workingcopy command, refer to rhpctl delete workingcopy in *Oracle Fleet Patching and Provisioning Administrator's Guide*.

↑ Caution

Only remove the source Oracle home after you verify the functionality of the relocated database or Oracle Grid Infrastructure in the new target home.

Related Topics

Patch Delivery Methods for Oracle Database

Oracle AI Database Maintenance with Gold Images Using Manual Mode

Learn about the manual options available to you for performing regular database maintenance using Gold Images.

- Creating a Gold Image for Database Maintenance
 - Learn how to obtain a Gold image for database maintenance using either Fleet Patching and Provisioning, or using manual patching.
- Setup Wizard Installation Options for Creating Images
 - Gold image-creation options to use with your Oracle Database or Oracle Grid Infrastructure installation setup wizards.

Creating a Gold Image for Database Maintenance

Learn how to obtain a Gold image for database maintenance using either Fleet Patching and Provisioning, or using manual patching.

Oracle recommends that you use Gold Image Release Updates (RUs) as part of your database maintenance plan. Gold Images promote a more stable and standardized environment, and simplify the maintenance process by providing a single installable software image that contains all critical fixes.

Example 1-1 How to obtain a Gold Image

- Downloading from My Oracle Support after following the procedure described in <u>Creating Gold Image for Oracle Database and Grid Infrastructure Installations</u> (Doc ID 2915366.2)
- Building a gold image from an existing Oracle software home that has been patched manually. For more details, see "Setup Wizard Installation Options for Creating Images" in your Oracle Database installation guide documentation.

After you obtain a gold image, you either can deploy it by using Fleet Patching and Provisioning, or by using the Database Setup Wizard.

Related Topics

- Setup Wizard Installation Options
- Enterprise Manager Cloud Control Database (DB) Plug-in 13.5 Release Update (RU) Bug List (Doc ID 2811987.1)
- Gold Image How To (Doc ID 2965269.1)

Setup Wizard Installation Options for Creating Images

Gold image-creation options to use with your Oracle Database or Oracle Grid Infrastructure installation setup wizards.

Options

In image-based installations, you can start your Oracle Database installation or Oracle Grid Infrastructure installations by running the setup wizards runInstaller and gridSetup.sh respectively. Both these wizards come with the following image-creation options.

Table 1-1 Image-Creation Options for Setup Wizard

| Option | Description |
|----------------------|---|
| -createGoldImage | Creates a gold image from the current Oracle home. |
| -destinationLocation | Specify the complete path, or location, where the gold image will be created. |
| -exclFiles | Specify the complete paths to the files to be excluded from the newly created gold image. |
| -help | Displays help for all the available options. |

For example:

./runInstaller -createGoldImage -destinationLocation /tmp/my_db_images -exclFiles /u01/app/oracle/product/23.0.0/dbhome_1/relnotes

./gridSetup.sh -createGoldImage -destinationLocation /tmp/
my_grid_images -exclFiles /u01/app/oracle/product/23.0.0/dbhome_1/
relnotes

Where:

/tmp/my db images is a temporary file location where the image zip file is created.

 $/ tmp/my_grid_images$ is a temporary file location where the image zip file is created.

/u01/app/oracle/product/23.0.0/dbhome_1/relnotes is the file to be excluded in the newly created gold image.

Patch Conflict Resolution

If you choose not to use Gold Image patch maintenance, then interim patches used in conjunction with other proactive maintenance methods, including custom Gold Images, may cause patch conflicts.

(i) Note

Oracle recommends that you use one of the Quarterly Gold Image deployment methods for database maintenance. With Gold Image deployment, patch conflict resolution and merges are included as part of the Gold Image creation. Custom gold images do not have this optimization.

For the quarterly proactive patches (Quarterly Exadata Patch, RU, and MRPs), Oracle proactively produces new interim patches for existing patches that would conflict. The new interim patches are usually released at the same time as the proactive patches.

For information about resolving patch conflicts, see the My Oracle Support notes for patch conflicts.

Related Topics

- My Oracle Support Patch Conflict Checker Overview
- How to Use the My Oracle Support Conflict Checker Tool for Patches Installed with **OPatch**
- Database Patch Conflict Resolution (Doc ID 1321267.1)

Patching Oracle AI Database and Oracle GoldenGate

When you use Oracle GoldenGate with Oracle AI Database, you must ensure that Oracle GoldenGate processes are shut down before patching the database.

When you patch Oracle Al Database, and you are using Oracle GoldenGate, you must disable all Oracle GoldenGate processes before starting to patch the database. The reason for this is that patches and upgrades can modify the RDBMS internal tables and views, which cause stored procedures that call them to be invalidated. All dependent objects are invalidated as well. You cannot use SQL queries alone on the database to ensure that GoldenGate processes such as Extract, Pump, or Replicat are shut down, because they run at the operating system level, and are managed by the GoldenGate software. At a high level, the process of checking for such processes is as follows:

1. Query the status of GoldenGate processes:

GGSCI> info all

2. Stop all processes

```
GGSCI> stop extract *
GGSCI> stop replicat *
.
.
```

The * wildcard stops all processes of that type. If you have other Oracle GoldenGate processes (for example, manager), ensure that they are stopped as well.

3. Run a GGSCI info all command

```
GGSCI> info all
```

You should see that all processes have the status STOPPED.

For enterprise automation, consider using shell scripts that use GGSCI commands and parse their output. To ensure Oracle GoldenGate processes are shut down, always use the GGSCI utility, and if necessary, combine this with operating system level and application-level checks.

For details about this procedure, refer to the Oracle GoldenGate documentation, and to My Oracle Support.

Related Topics

- Stopping Oracle GoldenGate Processes
- Do I Need To Disable The GoldenGate DDL Trigger Before An Oracle DB Upgrade or PSU patching? (Doc ID 971222.1)
- <u>Latest Oracle GoldenGate For Oracle Al Database & Oracle Database Patch</u> Recommendations (Doc ID 2193391.1)

Rolling Back RU Updates for Oracle RAC or Oracle Grid Infrastructure

To roll back an RU patch update performed with Fleet Patching and Provisioning, you move the database or infrastructure to the old Oracle home.

You can undo an RU update by moving the Oracle Real Application Clusters (Oracle RAC) database or Oracle Grid Infrastructure to the old software home using the Fleet Patching and Provisioning (FPP) command rhpctl move. When you use rhpctl move to undo the update, you change the sourcehome and desthome options so that sourcehome is the new release software home, and desthome is the old release software home.

Example 1-2 Rolling back an Oracle Grid Infrastructure update

In this example, the RU is rolled back for Oracle Grid Infrastructure, where gi_home is the source Grid home, and dest_path is the target Grid home:

rhpctl move gihome -sourcehome dest_path -desthome gi_home

Example 1-3 Rolling back an Oracle RAC home

In this example, the RU is rolled back for an Oracle RAC database, where <code>sourcehome</code> is the source Oracle RAC home, <code>dest_path</code> is the target Oracle RAC home, and <code>orcles</code> is the database name.

 $\begin{tabular}{ll} rhpctl move database -sourcehome $dest_path$ -desthome $source_home -dbname $orcles$ \end{tabular}$

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