

Exadata Database Service

Patching Database Home Software

Customer
Responsibility



Database Home Patching

- Customers can use **Oracle provided database software images** or **custom database software images** to update the Database Home Software
 - **To update a database home :**
 - **Option 1:** Update an existing Database Home to the desired patch level which updates all of the databases using the Database Home
 - **Option 2:** Create a new Database Home with desired patch level and move a database to the new Database Home
- ❖ **Using the “Move to Another Home” function is the quickest way to patch a database.**

Database Home Patching

Update Database Home:

- Update Database Home using OCI Console or REST APIs
- Choose desired Database Home patch version from Oracle Standard or Custom Database Software Images
- Run **Precheck for update** prior to maintenance window to validate system readiness

Run Precheck and
Apply Database Patch
when ready

The screenshot shows a table of database patches for a specific Database Home. The table has columns for Patch description, State, Version, and Release date. Three patches are listed: 'Apr 2024 19c Database patch' (Available, 19.23.0.0, Sun, Apr 28, 2024), 'Jan 2024 19c Database patch' (Available, 19.22.0.0, Mon, Jan 29, 2024), and 'Oct 2023 19c Database patch' (Available, 19.21.0.0, Mon, Oct 23, 2023). A callout bubble points to the 'Precheck' button in the toolbar.

Patch description	State	Version	Release date
Apr 2024 19c Database patch	Available	19.23.0.0	Sun, Apr 28, 2024, 07:29:03 UTC
Jan 2024 19c Database patch	Available	19.22.0.0	Mon, Jan 29, 2024, 12:05:22 UTC
Oct 2023 19c Database patch	Available	19.21.0.0	Mon, Oct 23, 2023, 09:19:22 UTC

Showing 3 items < 1 of 1 >

Precheck

Apply

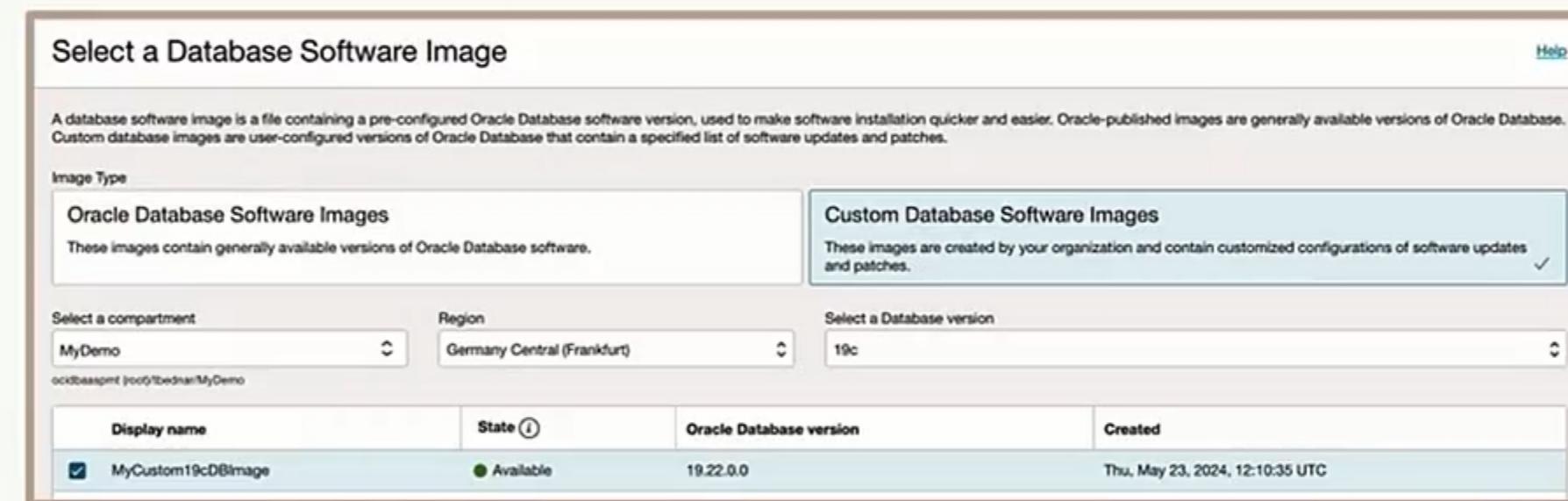
Copy OCID

Updates are done in a rolling manner across RAC database instances in the VM Cluster

- Update all databases in an existing Database Home
- You can update one database at a time by moving it to a new Database Home

Database Home Patching with Custom Images

- To update a database using a custom database software image there are 2 options:
 - **Option 1: Create Database Home** with custom database software image and move the databases individually to the new Database Home



- **Option 2: Update Database Home** by applying a custom database software image to it
 - ❖ This option causes all of the databases using the Database Home to be updated at the same time



Move Database to a new Database Home

The screenshot illustrates the process of moving a database to a new home. On the left, the 'Database Details' page for 'MyExaDB' is shown. A red arrow points from the 'Move to Another Home' option in the 'More actions' menu to the 'Move Database to Another Home' dialog box on the right.

Move Database to Another Home Dialog Box:

- Source Database Home:** My19cDbHome3, Version: 19.20.0.0, Last Updated: Wed, May 22, 2024, 17:37:28 UTC
- Target Database Home:** MyCustom19cDbHome (19.22.0.0) (highlighted with a red box)
- Database Version:** 19.22.0.0.0
- Buttons:** Move Database (highlighted with a red box), Cancel

❖ The Move Database cloud automation function is the easiest way to patch a database.

Grid Infrastructure & Database Home Patching Impact

Impact

- Zero database service downtime with RAC database rolling updates
- Maximum database compute performance and throughput is temporarily reduced while restarting RAC database instance
- To achieve zero application downtime, follow Exadata Cloud MAA best practices documentation for achieving continuous availability for applications

Exadata Database Service

Upgrade Grid Infrastructure Software

Customer
Responsibility



Grid Infrastructure (GI) Upgrade

Run Precheck
Upgrade Grid Infrastructure
Copy OCID

Upgrading the GI:

- ❑ Allows you to provision Oracle DB Homes and Databases with the most current Oracle Database software.
- ❑ Involves upgrading the GI software on all the compute nodes in the VM Cluster.
- ❑ Is performed in a rolling fashion, with only one node being upgraded at a time.
 - Database instances in the VM undergoing grid infrastructure upgrade will not be available
 - You can monitor the progress of the GI upgrade operation by viewing the associated work requests.
 - ❖ Oracle recommends running an **upgrade precheck** prior to the maintenance window.
 - ❖ **Note:** that the GI upgrade feature is not available, if you have an Exadata infrastructure maintenance operation scheduled to start within 24 hours of the upgrade.
- ❖ **Also note that the following Data Guard operations are not allowed on the VM cluster undergoing a GI upgrade:**
 - You cannot Enable Data Guard
 - Conduct a Switchover
 - Failover to the database using the VM cluster under going maintenance
 - Management operations such as starting, stopping or rebooting nodes, scaling CPU, provisioning or managing database homes or databases, restoring a database, or editing IORM settings.

Exadata Database Service

Upgrade Database

Customer Responsibility



Preparing for a Database Upgrade

- **Back up your database** and test the new software version on a test system before you upgrade your production database.
- **Run an upgrade precheck operation** before your upgrade maintenance window, so that you can discover and fix any issues before the time you plan to perform the upgrade.
- **Create an Oracle Database Home** that contains the target database software version to be used for the database upgrade.
 - ❖ You can use **Oracle-published software images or a custom database software image** based on your patching requirements to create the Database Home.
- **Ensure all pluggable databases** in the container database being upgraded **can be opened**.
- Oracle recommends **disabling automatic backups** and **performing an on-demand full backup** before you start the upgrade operation, since an upgrade operation cannot take place while an automatic backup operation is running.
- ❖ Note that after the database upgrade, **you cannot use automatic backups taken prior to the upgrade to restore the database to an earlier point in time**.

Understanding the Database Upgrade Process

During the database upgrade process, the following steps are automatically performed:

- 1) Conduct a **Precheck**.
- 2) Set a **Guaranteed Restore Point**, for use in the **Rollback process** in the event of an upgrade failure.
- 3) **Move the database** to a user-specified Oracle Database Home with the desired target software version.
- 4) **Runs the Database Upgrade Assistant (DBUA) software** to perform the upgrade.

Upgrade Database

Overview > Oracle Exadata Database Service on Dedicated Infrastructure > Exadata VM Clusters > Exadata VM Cluster Details > Database Home Details > Database Details

The screenshot shows the Oracle Database Details page for a database named 'My12cCDB'. The 'More actions' dropdown menu is open, and the 'Upgrade' option is highlighted with a red box. Other options in the menu include 'Create Database from last backup', 'Move to Another Home', 'Administer Encryption Key', 'Manage passwords', 'Last failed ba...', 'Last complete...', 'Add tags', 'Next schedule...', 'Terminate', and 'Except Su...'. The 'Backup' section shows 'Automatic ba...' and 'Last failed ba...'. The 'Data Guard' section shows 'Status: Not enabled'. The 'Associated services' section shows 'Database Management: Not enabled' and 'Ops Insights: Not enabled'. The 'Encryption' section shows 'Encryption Key: Oracle-managed key'. A red arrow points from the 'Upgrade' option in the dropdown menu to the 'Upgrade Database' button in the 'Upgrade Database' dialog box.

- On the **Database Details** page select **Upgrade Database** under **More Actions**
- Select the **target Oracle Database Version**
- Select the **target Database Home** for Upgrade
- **Run Precheck** and troubleshoot any issues
- Click **Upgrade Database**

Upgrade Database

An Oracle Grid Infrastructure patch is available for your Exadata Cloud Service instance. Oracle recommends patching the Grid Infrastructure before proceeding with the database upgrade.

To upgrade your Oracle Database software to a higher major feature release, select an Oracle Database version and a target Database Home in this dialog. The database is moved to the specified Database Home during the upgrade.

Oracle recommends creating an on-demand manual backup of your database before upgrading. See [To create an on-demand full backup of a database](#) for instructions.

Installed version

Database Home: MyDemo12cDBHome
Database Version: 12.2.0.1.231017

Select an Oracle Database version

19c

Only Oracle Database versions that are compatible with an upgrade from the current version are listed.

Select a target Database Home

MyCustom19cDbHome (19.22.0.0.0)

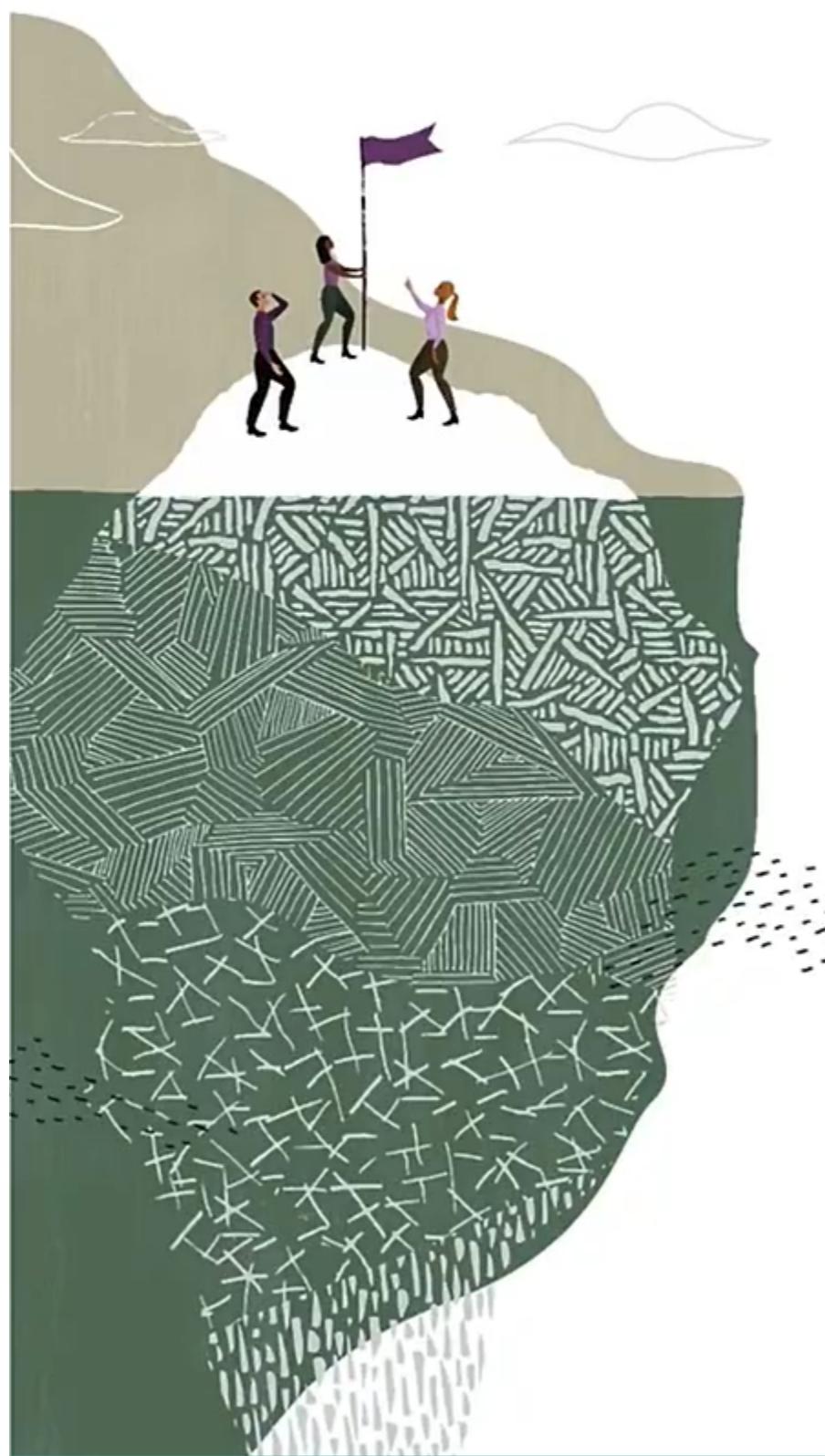
Only Database Homes using the selected Oracle Database version are listed.

Upgrade Database Run Precheck Cancel

Upgrade a Database with a Data Guard Association

- If your databases uses Data Guard, **you can upgrade the primary or the standby first.**
 - ❖ Standby First Patching & Upgrades are recommended
- **Upgrading a primary or standby will disable redo apply** during the upgrade operation.
 - ❖ Oracle recommends checking the redo apply and open mode configuration after upgrading.

Summary



In this lesson, you should have learned how to:

Create Custom Database & Grid Infrastructure Software Images

Create Database Home

Create Database

Perform PDB Management

Enable Data Guard

Perform User-Managed Maintenance Updates