

# Exadata Database Service

## Patching Database Home Software

Customer  
Responsibility

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# 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

Database Home: [My19cDBhome3](#)

Oracle Database Software Images Custom Database Software Images

Patch description	Status	Version	Release date
Apr 2024 19c Database patch	Available	19.23.0.0.0	Sun, Apr 28, 2024, 07:29:03 UTC
Jan 2024 19c Database patch	Available	19.22.0.0.0	Mon, Jan 29, 2024, 12:05:22 UTC
Oct 2023 19c Database patch	Available	19.21.0.0.0	Mon, Oct 23, 2023, 09:19:22 UTC

Showing 3 items < 1 of 1 >

Precheck  
Apply  
Copy OCID

Run Precheck and  
Apply Database Patch  
when ready

## 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

Select a Database Software Image

A database software image is a file containing a pre-configured Oracle Database software version, used to make software installation quicker and easier. Oracle-published images are generally available versions of Oracle Database. Custom database images are user-configured versions of Oracle Database that contain a specified list of software updates and patches.

Image Type

Oracle Database Software Images  
These images contain generally available versions of Oracle Database software.

Custom Database Software Images  
These images are created by your organization and contain customized configurations of software updates and patches.

Select a compartment  
MyDemo

Region  
Germany Central (Frankfurt)

Select a Database version  
19c

Display name	State	Oracle Database version	Created
MyCustom19cDBImage	Available	19.22.0.0	Thu, May 23, 2024, 12:10:35 UTC

- ❑ **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

Database Home: MyDemo19cDBHome

Oracle Database Software Images Custom Database Software Images

Select a compartment  
MyDemo

Region  
Germany Central (Frankfurt)

Display name	State	Oracle Database version	Created
MyCustom19cDBImage	Available	19.22.0.0	Thu, May 23, 2024, 12:10:35 UTC

Showing 1 item < 1 of 1 >

Precheck  
Apply  
Copy OCID



# Move Database to a new Database Home

The screenshot displays the Oracle Cloud console interface for a database named 'MyExaDB'. The 'More actions' menu is open, highlighting the 'Move to Another Home' option. A red arrow points from this menu item to a modal dialog box titled 'Move Database to Another Home'.

**Database Information:**

- DB connection: Performance Hub, Restore, Configure automatic backups, More actions
- Database information: Tags
- General information
  - Lifecycle state: Available
  - OCID: ...Host: ...Size: ...Cost: ...
  - Created: Mon, May 20, 2024, 17:32:22 UTC
  - Database unique name: MyExaDB
  - Oracle SID Prefix: MyExaDB
  - Character Set: AL32UTF8
  - National Character Set: AL16UTF16
- Database version
  - Database software image: MyCustom39cDbImage
  - Database Home: MyCustom39cDbHome
  - Database version: 19.22.0.0.0
  - Last Updated: Not Applicable

**Backup:**

- Automatic backup: Enabled
- Health: Protected
- Data loss exposure: 8 m 20 s
- Last failed backup: None
- Last completed backup: Sun, Jul 28, 2024, 05:17:16 UTC
- Next scheduled backup: 4:00AM - 6:00AM UTC
- Space used for recovery window: 59.67 GB
- Backup destination: Autonomous Recovery Service
- Real-time data protection: Disabled
- Protection policy: 30-day (30-day recovery window) Edit policy

**Data Guard:**

- Status: Not enabled

**Associated services:**

- Database Management: Not enabled Enable
- Ops Insights: Not enabled Enable

**Encryption:**

- Encryption Key: Oracle-managed key

**Move Database to Another Home Dialog:**

- Source Database Home
  - Source Database Home: My19cDbHome3
  - Source Database Version: 19.20.0.0.0
  - Last Version Updated on: Wed, May 22, 2024, 17:37:28 UTC
- Target Database Home
  - MyCustom19cDbHome (19.22.0.0.0)
  - Database Version: 19.22.0.0.0
- Buttons: Move Database, 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

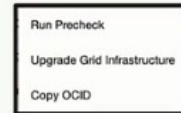
## Upgrade Grid Infrastructure Software

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# Grid Infrastructure (GI) Upgrade



## 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

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Responsibility

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# 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

**DB** My12cCDB

DB connection Performance Hub Restore Configure automatic backups More actions

Database information Tags

General information

Lifecycle state: Available

OCID: ... Show Copy

Created: Fri, May 24, 2024, 11:44:08 UTC

Database unique name: My12cCDB\_DemoDB

Oracle SID Prefix: My12cCDB

Character Set: AL32UTF8

National Character Set: AL16UTF16

Encryption Key: Not specified

Database version

Database software image: None

Database Home: MyDemo12cDBHome

Database version: 12.2.0.1.231017

Last Updated: Not Applicable View

Backup

Automatic backup

Last failed backup

Last completed

Next scheduled

Incremental backup

Backup destination: Object Storage

Backup retention period: 7 days

Data Guard

Status: Not enabled

Associated services

Database Management: Not enabled Enable

Ops Insights: Not enabled Enable

Encryption

Encryption Key: Oracle-managed key

- 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 database 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









