Oracle® Database Appliance

Simulator Labs

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Oracle Database Appliance Simulator Labs, Release 19.26 for Linux x86-64

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Primary Author: Aparna Kamath

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Preface

Oracle Database Appliance is an optimized, prebuilt database system that is easy to deploy, operate, and manage. By integrating hardware and software, Oracle Database Appliance eliminates the complexities of nonintegrated, manually assembled solutions. Oracle Database Appliance reduces the installation and software deployment times from weeks or months to just a few hours while preventing configuration and setup errors that often result in suboptimal, hard-to-manage database environments.

Audience

This guide is intended for anyone who configures, maintains, or uses Oracle Database Appliance:

- System administrators
- Network administrators
- Database administrators
- Application administrators and users

This book does not include information about Oracle Database architecture, tools, management, or application development that is covered in the main body of Oracle Documentation, unless the information provided is specific to Oracle Database Appliance. Users of Oracle Database Appliance software are expected to have the same skills as users of any other Linux-based Oracle Database installations.

Documentation Accessibility

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Access to Oracle Support

Oracle customer access to and use of Oracle support services will be pursuant to the terms and conditions specified in their Oracle order for the applicable services.

Related Documents

For more information about Oracle Database Appliance, go to `http://www.oracle.com/goto/oda/docs` and click the appropriate release.

For more information about using Oracle Database, go to http://docs.oracle.com/database/ and select the database release from the menu.

For more information about Oracle Integrated Lights Out Manager 3.2, see https://docs.oracle.com/cd/E37444_01/.

For more details about other Oracle products that are mentioned in Oracle Database Appliance documentation, see the Oracle Documentation home page at http://docs.oracle.com.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action or terms defined in the text.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.
# prompt	The pound (#) prompt indicates a command that is run as the root user.

1

Setting Up the Oracle Database Appliance Simulator

Understand the tasks for setting up, deploying, and patching Oracle Database Appliance.

The Oracle Database Appliance X8-2 simulator application is a container-base simulator on Oracle Cloud Infrastructure (OCI) that simulates the operation of an Oracle Database Appliance X8-2 single-node or high-availability (2 nodes) system. You must have an OCI account to run the Oracle Database Appliance simulator. When you launch the Oracle Database Appliance simulator on the OCI Marketplace, a simulator VM is started in your tenancy. If you use the Always Free OCI account, due to the 1 GB memory limitation, it is recommended that you set up the simulator with the single-node option. Following are the steps to set up the simulator environment so that you can run the Oracle Database Appliance hands-on labs to learn how to deploy, patch, and manage an Oracle Database Appliance.

- Prerequisites for Setting up the Simulator
  Understand the prerequisites for setting up the Oracle Database Appliance simulator.
- Installing the Simulator
  Follow these steps to install the simulator.
- Accessing the Oracle Database Appliance Simulator
  Follow these steps to access the simulator.
- Creating a Restore Point or Snapshot for the Oracle Database Simulator
  You can create a restore point or snapshot at the end of a lab and go back to it, so you do not have to restart the lab from the beginning.
- About BUI Agent Certificate Issue
  Understand the common BUI issues you may encounter when setting up the Oracle Database Appliance simulator.
- Restarting the Simulator in a Container
  If the ODACLI commands fails, then check if the Oracle Database simulator is running in the container.

Prerequisites for Setting up the Simulator

Understand the prerequisites for setting up the Oracle Database Appliance simulator.

Requirements

- You must have an OCI account and credentials.
- You must also have the VM IP address to access the simulator VM and setup the environment for the Oracle Database Appliance hands-on labs.

Create a Key with PuTTYgen

If you use Putty to create a key, you must create a key with PuTTYgen:

1. Generate key of type RSA.
2. Save the private key.

3. Under Public key for pasting into OpenSSH `authorized_keys` file: copy all contents in the box and paste into a text file and save as a `.pub` file. This is the key you use when you setup the Oracle Database Appliance simulator instance.

> **Important:**
>
> You must configure network security rules first to access Oracle Database Appliance BUI.

Configure Network Security Rules

1. Open your OCI application VM and click on your VCN link above Virtual Cloud Network.
2. Click **Security Lists** in the left panel and click on the **Default Security List** for `your_vcn` in the middle of the screen.
3. Click **Add Ingress Rules** and fill in following information:

```
SOURCE TYPE :CIDR
SOURCE CIDR :  0.0.0.0/0
 IP PROTOCOL : TCP
```

4. Click **Add Ingress Rule**. Similarly add egress rule for outgoing traffic, if not already added.

Installing the Simulator

Follow these steps to install the simulator.

Podman is installed in the simulator VM by default.

1. Log into the simulator VM:

```
ssh -i key opc@IP address     (OCI public IP address)
```

2. Switch to `root` user:

```
$sudo -s
```

3. Navigate to the simulator directory, where 19.xx.0.0.0 is the release number.

```
# cd simulator_19.xx.0.0.0
```

4. Run the following command to make sure that podman is running:

```
# podman ps
```

5. You may see a default container running already, for example, `oda-1`. If that is the case, then you are set up to connect to the container to run the ODACLI commands already. Run the following command:

```
# ./connectContainer.sh -n odasim-1
```

6. No password is required for an OCI VM.

To access the Oracle Database Appliance simulator:

Ensure that you have access to the port number assigned to the container.

1. Go to the simulator log directory.

   ```
   cd ${SIMULATOR_HOME}//log
   ```

   where `SIMULATOR_HOME` is the directory from which you ran the `createOdaSimulatorContainer` command.

2. Run the `cat` command for the most recent log file.

   ```
   cat
   ODA Simulator system info:
   Executed on: 2023_06_14_06_33_PM
   Executed by:
   num= 1
   dept= oda
   hostpubip=

   USERS:
   Container : oda-1
   ODA Console: https://ip_of_simulator_machine :7095/mgmt/index.html
   ODA cli access: Connect to the host and run following command:
   sh connectContainer.sh -n oda-1
   ```

   Note the port number, for example, 7095.

Following are optional steps for manually managing the containers.

Note that if you are running the simulator standalone on a Linux system, then you must run the following steps.

1. Run the following command to make sure podman is running and to view which containers are running:

   ```
   # podman ps
   ```

2. If you see any unwanted container running, run the cleanup script to start fresh:

   ```
   # ./cleanup_odasimulator_sw.sh
   ```

3. Run the simulator setup script:

   ```
   # ./setup_odasimulator_sw.sh noportainer
   ```

   For always free OCI account with 1GB memory, it is recommended that you set up the simulator with one user and the single node option.

4. If a default container is not running, you can manually create a single node container for a user.

   ```
   # ./createOdaSimulatorContainer.sh -d oda -t single -o noportainer
   ```

5. A single container called oda-1 is created. To view the options, use the following command:

```
# ./createOdaSimulatorContainer.sh -help
```

6. For standard OCI account with minimum 2GB memory, it is recommended that you set up the simulator with the high-availability option:

```
# ./createOdaSimulatorContainer.sh -d oda -t ha -o noportainer
```

7. For each Oracle Database Appliance X8-2-HA simulator user, two containers, oda-1-node0 and oda-1-node1, are created. Ignore any warning messages about Agent or Zookeeper. Ensure that you can connect to the container. Note the assigned port numbers in the following output. The port numbers are necessary for logging into the simulator Browser User Interface (BUI).

```
ODA Simulator system info:
Executed on: 2023_06_11_03_23_PM
Executed by:
num= 1
dept= oda
hostpubip= ip_of_simulator_machine

USERS:
Container : oda-1-node0
ODA Console: https://ip_of_simulator_machine:7095/mgmt/index.html
ODA cli access: Connect to the host and run following command:
sh connectContainer.sh -n oda-1-node0
Container : oda-1-node1
ODA Console: https://ip_of_simulator_machine:7097/mgmt/index.html
ODA cli access: Connect to the host and run following command:
sh connectContainer.sh -n oda-1-node1
```

After you have completed the labs, you must clean up the environment by deleting the user containers. The following command deletes instances `oda-1-node0` and `oda-1-node1`:

```
#  ./deleteOdaSimulatorContainer.sh -t ha -i 1 -n 1 -d oda
```

Clean up your log files from the lab by deleting your logs in the `/simulator_19.26.0.0.0/log` directory. To completely reset the lab, run the following command:

```
# ./cleanup_odasimulator_sw.sh
```

This deletes all the containers and the volumes.

Accessing the Oracle Database Appliance Simulator

Follow these steps to access the simulator.

For CLI access, connect by SSH to the simulator VM, connect by `sudo` to `root`, and connect to the container, for example, `odasim-1`. No password is required.

```
# ./connectContainer.sh -n odasim-1
```

For a high-availability system, you can access both nodes, for example, `oda-1-node0` , `oda-1-node1`.

```
# ./connectContainer.sh -n oda-1-node1
```

For BUI access, use the VM IP address and port number, for example, 7095, 7097.

```
# https://server_IP:xxxx/mgmt/index.html
```

Creating a Restore Point or Snapshot for the Oracle Database Simulator

You can create a restore point or snapshot at the end of a lab and go back to it, so you do not have to restart the lab from the beginning.

For example, once you complete Lab 3, you create a restore point at the beginning of Lab 4. During Lab 4, if there is any error, then you can go back to the restore point at the beginning of Lab 4 instead of starting from Lab 1 again. To create a snapshot, run the following command from the simulator directory:

```
# ./snapshot.sh
Usage: snapshot.sh [-c | -r  | -l]  [] | -
h



Options:


  create  [ha|single]         Create a new snapshot of the
simulator

  restore   [ha|single]       Restore the simulator to a previous snapshot
  list  [ha|single]           List all snapshots created with their IDs
  help, -h                    Display this help and exit is mandatory. You
only need the name of the environment without 'node0' or 'node1' in case the
simulator environment is HA is either 'ha' or 'single'. Default is 'single'
```

Use this script to create and restore snapshots of the Oracle Database Appliance simulator. This is useful when trying different scenarios or for creating backups.

```
# ./snapshot.sh create oda-1
/scratch/user/simulator_19.26_ade/simulator_19.26.0.0.0/snapshots.dat doesn't
exist. Creating a new one...
Snapshot with ID: 1 has been created successfully. Timestamp: Wed Jun 22
14:01:24 PDT 2023
# ./snapshot.sh list oda-1
ID      CONTAINER NAME            DEPLOYMENT TYPE  TIMESTAMP
1       oda-1                     single           Wed Jun 22 14:01:24 PDT
2023
```

```
#  ./snapshot.sh restore 1 oda-1
Snapshot with ID: 1 has been restored successfully!
```

About BUI Agent Certificate Issue

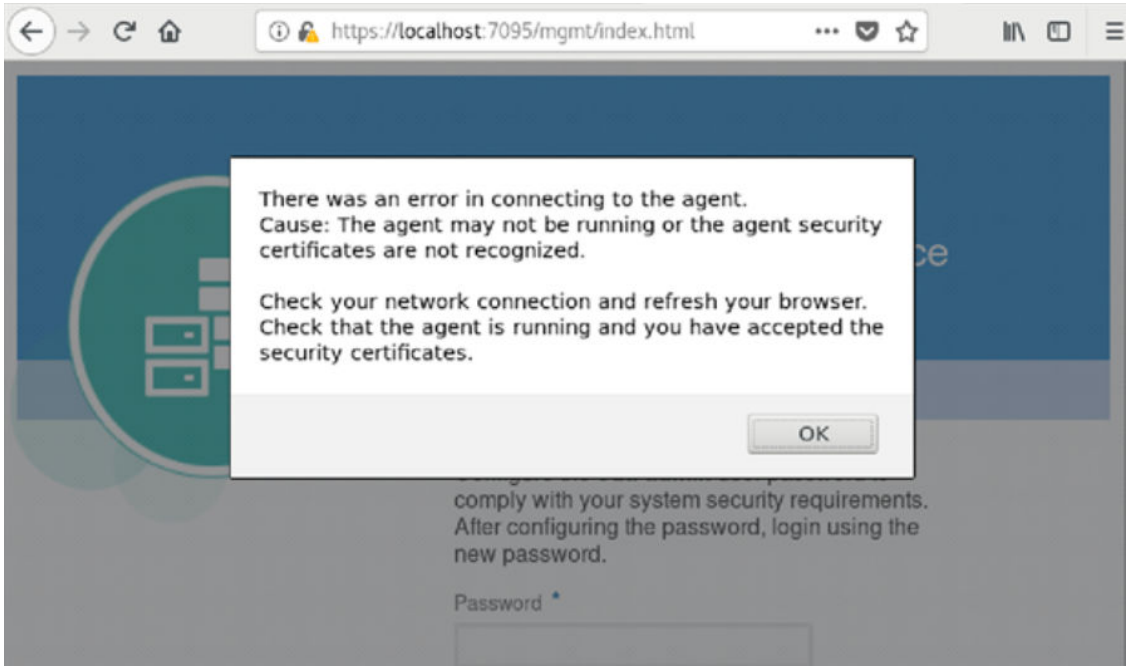
Understand the common BUI issues you may encounter when setting up the Oracle Database Appliance simulator.

Requirements

You may encounter a BUI Agent Certificate Issue. See the following example:

```
https://server IP:7095/mgmt/index.html
Your assigned port number maybe different
```

You may see a BUI agent security certificate error message:



To fix it, you must add a certificate exception to the BUI agent port, with is your assigned port number -1. In this case, the port number is 7094.

```
https://server IP:7094
( Your port number maybe different)
```

Go through the certificate exception process and add the exception. Then go back to your assigned port.

```
https://server IP:7095/mgmt/index.html
```

Go through the certificate exception process again and add the exception. Then you can access the BUI to create the appliance.

Restarting the Simulator in a Container

If the ODACLI commands fails, then check if the Oracle Database simulator is running in the container.

Run the following command to check the status of the simulator:

```
# /opt/oracle/dcs/bin/statusOdaStack.sh
```

If the simulator is not running, then start the simulator as follows:

```
# /opt/oracle/dcs/bin/startOdaStack.sh
```

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Connecting to the Oracle Database Appliance OCI Lab Environment

Understand the tasks for connecting to the lab environment.

About Oracle Database Appliance Simulator Lab Exercises

Understand the Oracle Database Appliance simulator lab exercises.

The exercises in this guide use a container-based Oracle Database Appliance simulator to perform these labs. Performing deployment and patching on an actual ODA would require you to have your own system, and would take a rather long time. The simulator provides a similar experience, but is faster, and you get your own simulator to complete the labs. The simulator simulates an Oracle Database Appliance X8-2 single node or a high-availability (2-node) database appliance.

If you are using the simulator in the OCI Marketplace with an Always Free OCI Account, the memory is limited to 1GB. In this case, set up the simulator with the single-node option due to memory limitation. For more information, refer to the Readme.

Keep in mind this is a simulation. Not all features are supported by the simulator, and no database is actually created and running. Unlike on an actual appliance, the simulator may not display an error if you enter invalid data, and some of the detailed output and screen shots displayed in the command output may not be apply to an actual appliance.

Some command line operations require specifying long UUIDs or file names. Use copy/paste to enter long entries. If you accidentally exit the simulator, simply reconnect to it. It will remember your state.

After the Oracle Database Appliance simulator is set up in the OCI VM, you must log into the Oracle Database Appliance simulator VM with your credentials or key. You can perform the labs in this book with both Command Line Interface (CLI) and a web Browser User Interface (BUI) similar to how you work on an actual Oracle Database Appliance.

Requirements for Oracle Database Appliance Simulator Lab Exercises

Understand the requirements for running Oracle Database Appliance simulator lab exercises.

You need a web browser on your local system to perform the BUI tasks in the labs. Make sure you have the public Oracle Database Appliance simulator VM IP address and the simulator container port number (for example, 7095).

Make sure to log in as odaadmin with **Enable Multi-User Access** checked. You need a console on your local system to connect to the Oracle Database Appliance simulator container and switch to `odaadmin` (`su odaadmin`) user to run the CLI commands in the labs. Make sure you have the container name (for example, `odasim-1`). By default, a container called `odasim-1` is created. Firefox and Chrome are the recommended web browsers for this lab. If you run into BUI agent credential issue, refer to the Troubleshooting section in the Readme document for details.

Connecting to the Simulator Using the BUI

Follow these steps to connect to the simulator.

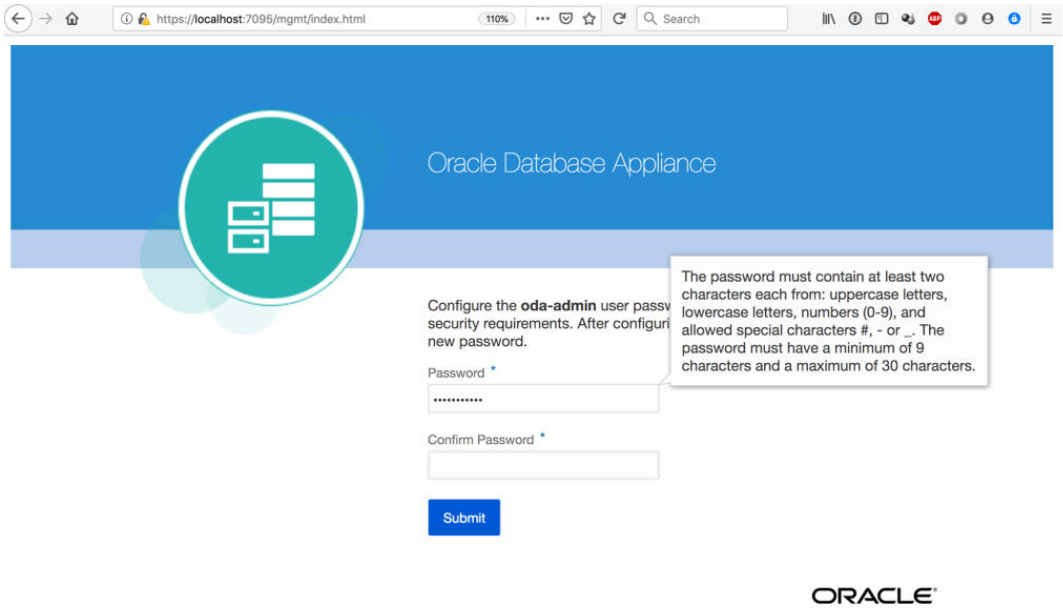
Connect to the simulator as follows:

1. Use the OCI VM public IP address and port number to log into the Browser User Interface (BUI) and enable multi-user access:

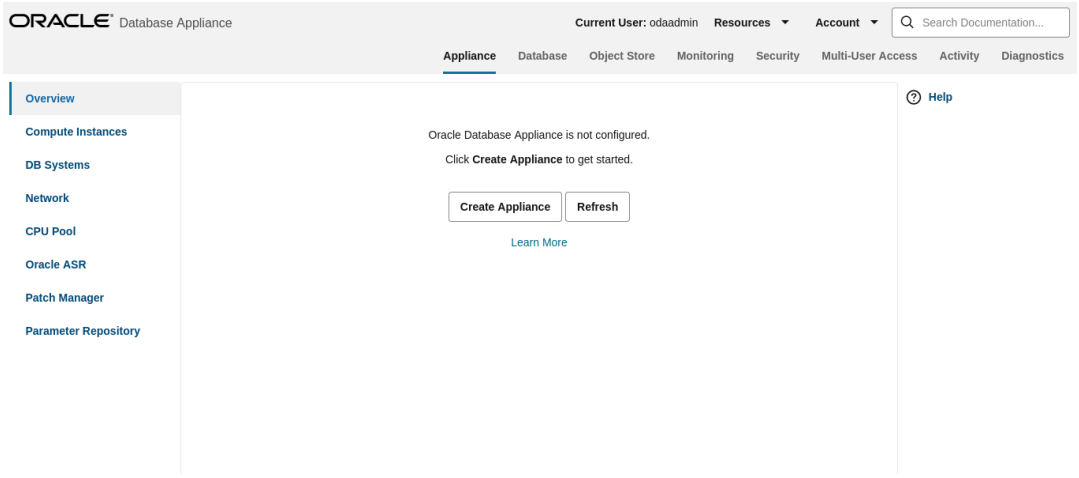
   `https://`*`IP Address`*`:xxxx/mgmt/index.html (for example: 7095)`

2. You must first complete running the `odacli configure-firstnet` command and then run the `odacli update-repository` command in the Lab 1 (using CLI). Note that if you run into BUI agent credentials issue, refer to the Troubleshooting section in the Readme document for details.

3. Set a new password based on the required rules. For simplicity, you can use a password similar to `WELcome12##` or use your own unique password.



4. You can then login as `odaadmin` with the new password.
The Appliance page is displayed after you log into Oracle Database Appliance.



Connecting to the Simulator Using ODACLI Commands

Follow these steps to connect to the simulator using ODACLI commands.

Run the following script to connect to the container. This script is usually located in the simulator directory (for example, simulator_19.xx.0.0.0).

1. To access the default single node simulator (for example, `odasim-1`), run the following command. You need to switch to the `odaadmin` user with earlier password you set with the Browser UI to run the CLI commands.

```
# ./connectContainer.sh -n odasim-1
[root@odasim-1 /]# su odaadmin
[odaadmin@odasim-1 /]$
```

2. Or if you have created a 2-node Oracle Database Appliance (high-availability) simulator, you can access each node independently. To access the first node (node0), run the following command.

```
# ./connectContainer.sh -n oda-1-node0
[root@oda-1-node0 /]#
```

3. To access the second node (`node1`), run the following command:

```
# ./connectContainer.sh -n oda-1-node1
[root@oda-1-node1 /]#
```

> **Note:**
>
> ake sure you have a command line window and a web browser open for the lab exercises as some lab exercises require ODACLI command line input and entries in the web browser (BUI).

3

Oracle Database Appliance Simulator Lab Exercises

Perform these simulator lab exercises.

The lab exercises use a mix of command line and web-based administration tools. On the BUI, if you encounter any certificate warnings, simply accept them. Note in the output examples below, the text you type is in bold, and the text output in the simulator is not. Note that some examples in the lab may show steps for a 2-node high-availability simulator, and if you are running a single-node simulator, then you can ignore the information for the second node.

- Lab 1 - Deploy Appliance
  Simulator lab exercise to deploy Oracle Database Appliance.
- Lab 2 - Manage Databases
  In this lab, we will create and delete databases in the appliance. We can do this using the command line (CLI) or BUI.
- Lab 3 - Patch and Update
  If you just completed Lab 2, the simulator should have two databases, `db3` and `db4`.
- Lab 4 - Virtualization: Create Application and Database KVMs
  Virtualization provides many benefits to customers such as cost savings through consolidation and better resource utilization, Virtual Machine (VM) isolation that provides better security, and KVM license hard partitioning support.
- Lab 5 - Multi-User Access
  Oracle Database Appliance Multi-User Access can enhance the security of your appliance and provide an efficient mechanism for role separation.
- Lab 6 - Monitoring and Resources
  Use either the command line or the BUI to monitor Oracle Database Appliance software, hardware, and feature usage.

Lab 1 - Deploy Appliance

Simulator lab exercise to deploy Oracle Database Appliance.

- Step 1 - Add the Appliance to the Network
  On an actual appliance, after you first install Oracle Database Appliance into your data center rack, you must configure it to use the IP address your network administrator has assigned it.
- Step 2 - Update the Repository with the Oracle Database Appliance Software
  When you receive your Oracle Database Appliance, you must download the Oracle software prior to deployment from *My Oracle Support*.
- Step 3 - Enable Multi-User Access
  You can deploy the appliance using either the BUI or the command line. The command line is useful for scripted and silent installations. This lab uses the BUI.
- Step 4 - Deploy the Appliance
  You can deploy the appliance using either the BUI or the command line. The command line is useful for scripted and silent installations. This lab uses the BUI.

- Step 5 - Validate the Deployment
  Validate the deployment.
- Step 6 - Networking
  Check the network.

Step 1 - Add the Appliance to the Network

On an actual appliance, after you first install Oracle Database Appliance into your data center rack, you must configure it to use the IP address your network administrator has assigned it.

The easiest way to do this is to first configure Oracle ILOM using a network or serial connection. Oracle Database Appliance includes a command odacli configure-firstnet to make it very easy to get Oracle Database Appliance on the network. Once your appliance is on the network, you can complete the rest of the deployment steps from any networked computer.

> **Note:**
>
> You must use ODACLI command to set up the network before you log into the Browser User Interface (BUI).

Run the network configuration command `odacli configure-firstnet` at the Linux prompt. Respond to the prompts as in the example below. Since this is a simulation, to configure the network, you can use any IP address (for example, 192.168.0.100) to complete this step.

```
[root@xx ~]$  odacli configure-firstnet
bonding interface is:
Using bonding public interface (yes/no) [yes]:
Select the Interface to configure the network on () [btbond1]:
Configure DHCP on btbond1 (yes/no) [no]:
INFO: You have chosen Static configuration
Use VLAN on btbond1 (yes/no) [no]:
Enter the IP address to configure : 192.168.0.100
Enter the Netmask address to configure : 255.255.255.0
Enter the Gateway address to configure[192.168.0.1] :
INFO: Restarting the network
Shutting down interface :           [  OK  ]
Shutting down interface em1:            [  OK  ]
Shutting down interface p1p1:           [  OK  ]
Shutting down interface p1p2:           [  OK  ]
Shutting down loopback interface:               [  OK  ]
Bringing up loopback interface:    [  OK  ]
Bringing up interface :     [  OK  ]
Bringing up interface em1:    [  OK  ]
Bringing up interface p1p1: Determining if ip address 192.168.16.24 is
already in use for device p1p1...    [ OK  ]
Bringing up interface p1p2: Determining if ip address 192.168.17.24 is
already in use for device p1p2...    [ OK  ]
Bringing up interface btbond1: Determining if ip address 192.168.0.100 is
already in use for device btbond1...     [  OK  ]
INFO: Restarting the DCS agent
```

> **Note:**
>
> If this is an Oracle Database Appliance X8-2-HA system, then you must run the command `odacli configure-firstnet` on the second node (`node1`). Log into `node1` and run the command `odacli configure-firstnet` again. You can use 192.168.0.101 for the IP address for `node1`.

Step 2 - Update the Repository with the Oracle Database Appliance Software

When you receive your Oracle Database Appliance, you must download the Oracle software prior to deployment from *My Oracle Support*.

Refer to the *Oracle Database Appliance Release Notes* for the latest Oracle Database Appliance release, for details about the patches to download. Specifically, you must download the Oracle Grid Infrastructure Clone files, Oracle Database Clone files, and the Server Patch Bundle.

For our lab exercises, the simulated versions of these files in the simulator already exist. For the labs, you will first deploy the Oracle Database Appliance with the Oracle Database Appliance release 19.25 patches, and then in the third lab you will patch the Oracle Database Appliance and databases to the latest 19.26 release.

The clone files are listed below. The other file in the directory contains patches, and will be used in the patching lab. Note about file paths: you must specify the full path of the files you specify in the `odacli update-repository` command.

Table 3-1 Oracle Database Appliance Patches

Filename	Description
odacli-dcs-19.25.0.0.0-*date*-DB-19.25.0.0.zip	Oracle Database 19.25 Clone Files
odacli-dcs-19.25.0.0.0-*date*-GI-19.25.0.0.zip	Oracle Grid Infrastructure 19.25 Clone Files
odacli-dcs-19.26.0.0.0-*date*-ODAVM-19.26.0.0.zip	DB 19.26 DB System Template (used in lab 4)
oda-sm-19.26.0.0.0-*date*-server.zip	Oracle Database Appliance 19.26 Patch Bundle (used in lab 3)
odacli-dcs-19.26.0.0.0-*date*-DB-19.26.0.0.zip	DB 19.26 Clone Files (used in lab 3)
odacli-dcs-19.26.0.0.0-*date*-GI-19.26.0.0.zip	Oracle Grid Infrastructure 19.26 Clone Files (used in lab 3)

You must update the Oracle Database Appliance repository, so that Oracle Database Appliance knows about the files. Run the odacli update-repository command for each clone file.

Hint: to reduce amount of manual typing and typing errors, use copy and paste functions to copy the file name or tab function to auto complete a file name. Also, use the up arrow to repeat the previous command, and then edit the file name.

Note: On an actual Oracle Database Appliance, you must update the DCS agent first, before updating the repositories. It is release dependent, so check the patching steps in the *Oracle Database Appliance Deployment and User's Guide* for your hardware model.

On an actual Oracle Database Appliance, local boot drive storage space is limited. It is recommended that you copy only the Oracle Grid Infrastructure clone file first, update the repository, deploy the Oracle Database Appliance, and then copy the database clone files to Oracle ACFS storage to deploy databases. Check the latest Oracle Database Appliance documentation for the steps.

Go to the command line window and entering the following odacli commands.

```
$ odacli update-repository -f /opt/oracle/dcs/patchfiles/odacli-
dcs-19.25.0.0.0-date-GI-19.25.0.0.zip

{

  "jobId" : "4d428b05-a33f-4fe0-82ec-56849503aa28",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.25.0.0.0-date-
GI-19.25.0.0.zip",
  "reports" : [ ],
  "createTimestamp" : "December 8, 2024 00:05:38 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedTime" : "December 8, 2024 00:05:38 AM UTC"
}


$ odacli update-repository -f /opt/oracle/dcs/patchfiles/odacli-
dcs-19.25.0.0.0-date-DB-19.25.0.0.zip
{
  "jobId" : "bb1caa66-7d19-4de1-a074-f475f4a2505a",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.25.0.0.0-date-
DB-19.25.0.0.zip",
  "reports" : [ ],
  "createTimestamp" : "December 8, 2024 00:08:58 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedTime" : "December 8, 2024 00:08:58 AM UTC"
}
```

When you run commands using the ODACLI command line tool, most operations are asynchronous, meaning that they return a job ID immediately while the job runs in the background. This means that to get information on long running background jobs, you can query the status of the job. At this point, the clone files are all loaded into the repository, so we are ready to deploy the appliance and create a database.

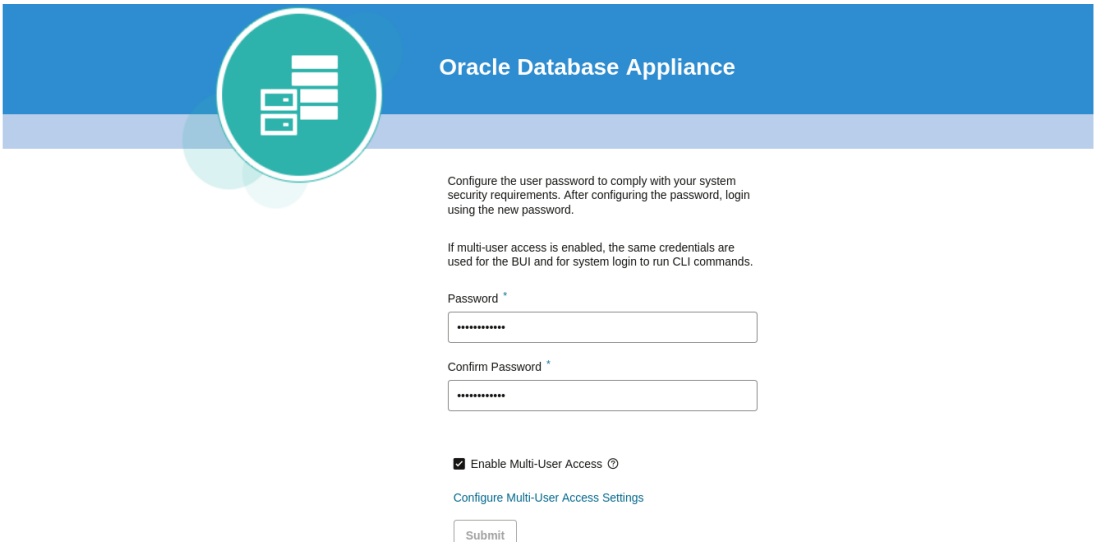
You can also use the Browser-based User Interface (BUI) to update the Oracle Database Appliance repository, by pasting the complete file path of the patch file or even clone file in the patch bundle location box of the Repository Manager in the web BUI. However, it is not necessary as you have used command line to update the repository (clone files) already.

Step 3 - Enable Multi-User Access

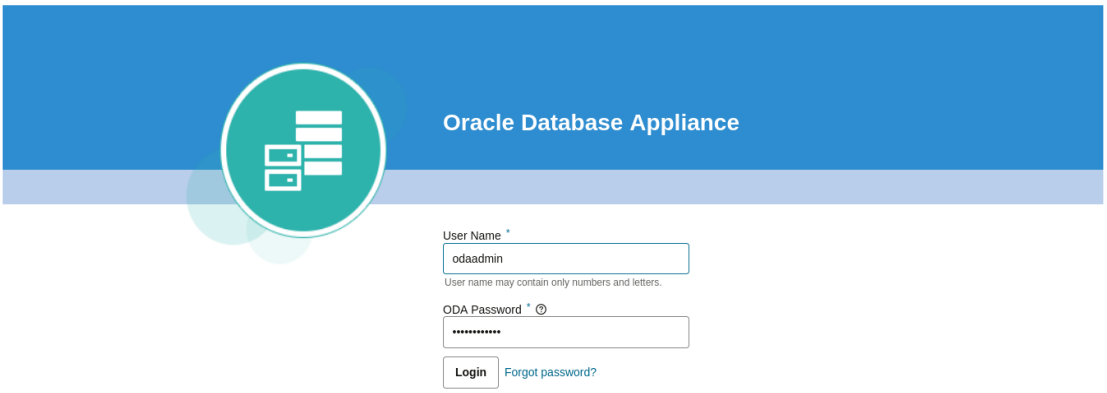
You can deploy the appliance using either the BUI or the command line. The command line is useful for scripted and silent installations. This lab uses the BUI.

After you configure the firstnet and update the repository, log into Oracle Database Appliance BUI using **odaadmin** and the previously-created password (for example, `WELcome12##`)

Multi-User access can only be enabled during initial provisioning of Oracle Database Appliance. Select the **Enable Multi-User Access** checkbox.



Log into BUI.

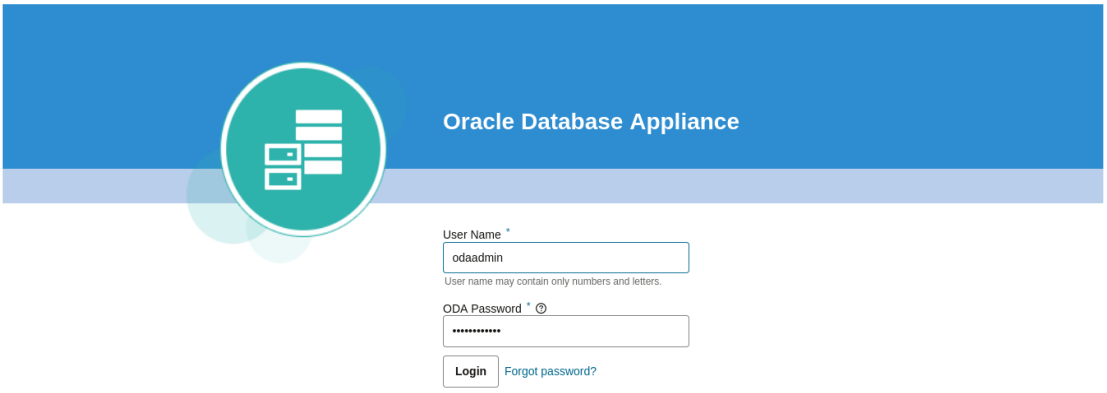


Step 4 - Deploy the Appliance

You can deploy the appliance using either the BUI or the command line. The command line is useful for scripted and silent installations. This lab uses the BUI.

After you configure the firstnet and update the repository, log into Oracle Database Appliance BUI using `odaadmin` and previously created password (for example, `WELcome12##`).

```
https://OCI public IP Address>:xxxx/mgmt/index.html
```



This takes you to the **Appliance** tab in the BUI. It should show that the appliance is not yet deployed.

Click **Create Appliance** to start the deployment wizard. Fill in the first page of the form as shown below. Most fields are self-explanatory. A possible exception is the Data Storage Percentage. This will affect how much space is allocated for backups. By default, 80% is allocated for data and 20% is allocated for archive logs. You can also specify a different percentage. Select Disk Group Redundancy as Flex. You can specify individual database storage redundancy later, either Mirror (double mirroring) or High (triple mirroring). Create a password. Be aware there is a password complexity test that will reject simple passwords such as test and other common variants. However, `WELcome12##` will work if you want to use that password for these lab exercises.

You can also load a configuration file, for example, `oda.json` that was saved previously to avoid manual entries. To create a configuration file, you manually fill in all the information then click **Save Configuration** at the end.

Click on each tab. In the Network Information page, you can configure the network for the public Client Access network here. Since this is a single node simulator, the information is pre-populated from the configure-firstnet process. You can also configure the Oracle ILOM network if you choose. Enter values for the IP Address, Subnet Mask, Gateway, and specify the interface to be used for the public network.

In the User and Group Selection screen, enter the 19xx ID. If multi-user access is enabled, you should enter the 9xxx IDs.

Next is the Database screen. Specify the database name and other database related information as shown below. Select DB Version as 19.26.0.0.250121.

To configure Oracle ASR, specify credentials here. This is also where you can save the configuration file, for example, `oda.json` for later use.

Click **Submit** to continue and click **Yes** in the confirmation box. This will bring up a link to the job status. Similar to ODACLI, operations are asynchronous, and return immediately with a job ID. That job ID can then be used to monitor progress. This allows the administrator to perform other tasks, if desired while the operations completes.

Click the job ID to see the status.

In the simulation, the deployment job status will complete within 1-2 minutes. You can see the various steps running, and their status changing to Success as they complete. Click the **Refresh** button to more quickly refresh the screen. In an actual appliance, the deployment takes about 60-90 minutes to complete.

Step 5 - Validate the Deployment

Validate the deployment.

Click on the **Database** tab at the top right of the BUI. The deployed database is displayed.

Click on the database name for more details about the database. Drill down to the Database Home to see information about the database home.

You can also verify that the appliance is properly deployed by clicking the **Appliance** tab to see more details.

Step 6 - Networking

Check the network.

You can check the network by clicking on the **Network** tab on the BUI Appliance page.

You can also create a new VLAN by clicking **Create Network** and specifying the network information.

Click on the **Create** button, then submit the job.

This concludes Lab 1.

Lab 2 - Manage Databases

In this lab, we will create and delete databases in the appliance. We can do this using the command line (CLI) or BUI.

You must complete Lab 1 before starting Lab 2.

- Step 1 - Create a new database using the BUI
  Uses the BUI to create a new database.
- Step 2 - View the Databases and Database Homes Using the CLI
  This lab uses ODACLI to view databases and database homes.
- Step 3 - Delete a Database
  This lab uses the BUI to delete a database.
- Step 4 - Create a Database with the CLI
  This lab uses ODACLI to create a database.

- Step 5 - Delete and Recreate a Database
  This lab uses ODACLI to delete a database.
- Step 6 - Create a CPU Pool for a Database
  This lab uses the BUI to create a CPU pool.
- Step 7 - Delete a Database Home
  You can delete a database home using the BUI or the command line. This lab uses BUI to delete a database home.
- Step 8 - Create Database Backups on Local Disk, External NFS Storage, or on Oracle Cloud
  Backing up and restoring Oracle databases on Oracle Database Appliance involves two simple steps: Create a backup policy and attach the backup policy to a database.

Step 1 - Create a new database using the BUI

Uses the BUI to create a new database.

On the Oracle Database Appliance BUI, click the **Database** tab in the web page. You will see the database `db1` created during deployment.

In the upper right-hand corner, there is a **Create Database** button. Click it. It brings up the Create Database wizard.

Choose **Create Database**, and click **Next**.

Specify the **DB Name**, for example, `db2`, and if you are creating a CDB, a **PDB Name**. Also remember to scroll down and enter a password that would in an actual appliance be used for SYS, SYSTEM, and PDB Admin.

When finished, click on the **Create** button. Click **Yes** to confirm. Beware of the password complexity checker—"`WELcome12##`" will pass the test.

This will bring up a link to the job status. Similar to ODACLI, operations on the BUI are asynchronous, and return immediately with a job ID. That job ID can then be used to monitor progress. This allows the administrator to perform other tasks if desired while long running operations complete.

Click the job ID to see the status. In the simulation, the job will complete within 30 seconds. You can see the various steps running, and their status changing to Success as they complete. Click the **Refresh** button to refresh the screen more quickly.

On an actual appliance, these steps take about 20 minutes to complete.

Once the operation completes, click on the **Database** tab at the top right of the web page. This should show the newly-created database.

See detailed database information by clicking on the database name, for example, `db2`. You can also view the newly-created home by clicking on the Database Home link in the left-hand column of the **Database** tab.

Step 2 - View the Databases and Database Homes Using the CLI

This lab uses ODACLI to view databases and database homes.

You can also manage databases from the command line. Go to the command line window. Use the odacli list-databases command to view your databases. Then use odacli describe-database

to see the details for a specific database. Be sure to use the database ID shown in the odacli list-databases command, not the ID shown in the example.

```
$ odacli describe-database -i d1e615c3-5855-4b19-9ad0-40b620ac5f13

Database details
----------------------------------------------------------------
      ID: d1e615c3-5855-4b19-9ad0-40b620ac5f13
            Description: db2
                DB Name: db2
             DB Version: 19.25.0.0.241015
                DB Type: SI
                DB Role: PRIMARY
   DB Target Node Name: node_0
             DB Edition: EE
                   DBID:
 Instance Only Database: false
                    CDB: false
               PDB Name:
   PDB Admin User Name:
           SEHA Enabled: false
                  Class: OLTP
                  Shape: odb1
                Storage: ASM
          DB Redundancy: MIRROR
           CharacterSet: AL32UTF8
  National CharacterSet: AL16UTF16
               Language: AMERICAN
              Territory: AMERICA
                Home ID: a1314be1-2c6f-411f-b2c7-61444449f02b
       Console Enabled: false
  TDE Wallet Management:
            TDE Enabled: false
    Level 0 Backup Day: Sunday
    AutoBackup Enabled: true
               Created: December 8, 2024 1:18:48 AM UTC
         DB Domain Name: example.com
    Associated Networks:
```

Step 3 - Delete a Database

This lab uses the BUI to delete a database.

You can also delete a database from the **Database** tab. Click the **Database** tab to view the list of databases.

Click the **Action** dropdown to the right of the `db1` database, and then select **Delete**. Click **Yes** to confirm, and then close the status box.

The Database list should reflect the delete operation. Click **Refresh**, if necessary. After the database delete operation, only `db2` is left.

Step 4 - Create a Database with the CLI

This lab uses ODACLI to create a database.

There are many options you can specify when using the CLI to create a new database. Type `odacli create-database -h` to see the options. Note that only the database name is required. Create a new database and database home named db3 as follows. You will be prompted for a password for SYS, SYSTEM, and PDB admin. To meet password complexity requirements, use `WELcome12##` for this lab.

```
$ odacli create-database -n db3 -v 19.23.0.0.240416

Job details
----------------------------------------------------------------
                     ID:  2051bf5b-4815-4cd2-8d85-e51367ba3269
            Description:  Database service creation with db name: db3
                 Status:  Created
                Created:  December 8, 2024 1:45:49 AM UTC
                Message:
Task Name                                Start Time
End Time                           Status
---------------------------------------- ------------------------------------
---------------------------------- ----------
$ odacli describe-job -i 2051bf5b-4815-4cd2-8d85-e51367ba3269

Job details
----------------------------------------------------------------
                     ID:  2051bf5b-4815-4cd2-8d85-e51367ba3269
            Description:  Database service creation with db name: db3
                 Status:  Success
                Created:  December 8, 2024 1:45:49 AM UTC
                Message:
Task Name                                Start Time
End Time                           Status
---------------------------------------- ------------------------------------
---------------------------------- ----------
Validating dbHome available space         December 8, 2024 1:45:50 AM UTC
December 8, 2024 1:45:50 AM UTC    Success
Setting up ssh equivalance                December 8, 2024 1:45:50 AM UTC
December 8, 2024 1:45:50 AM UTC    Success
Setting up ssh equivalance               December 8, 2024 1:45:50 AM UTC
December 8, 2024 1:45:50 AM UTC    Success
Creating ACFS database home               December 8, 2024 1:45:51 AM UTC
December 8, 2024 1:45:51 AM UTC    Success
Validating dbHome available space         December 8, 2024 1:45:51 AM UTC
December 8, 2024 1:45:51 AM UTC    Success
Configuring user access to ACFS DBHome base storage December 8, 2024 1:45:51
AM UTC     December 8, 2024 1:45:51 AM UTC    Success
Creating DbHome Directory                 December 8, 2024 1:45:51 AM
```

In an actual appliance, this command would run a job in the background for approximately 40 minutes. As with the GUI, you can monitor the progress if you choose, but the Linux prompt returns immediately. Because this is a simulation, you should see your new database and

home almost immediately. Verify creation of the new database using the following odacli command:

```
$ odacli list-databases

ID                                       DB Name    DB Type  DB
Version           CDB        Class    Shape    Storage Status  DbHomeID
---------------------------------------- ---------- --------
------------------- ---------- -------- -------- ---------------------
----------------------------------------
d1e615c3-5855-4b19-9ad0-40b620ac5f13     db2        SI
19.25.0.0.241015     false      OLTP     odb1     ASM      CONFIGURED
a1314be1-2c6f-411f-b2c7-61444449f02b
324a42ea-bba2-477d-8bca-5a26af159f1c     db3        SI
19.25.0.0.241015     false      OLTP     odb1     ASM      CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2
```

> **Note:**
>
> When you log in as an `odaadmin` user and create a database, the database runs with the `odaadmin` user as the owner. It is recommended that you create the database logging in as an `oracle` user.

Step 5 - Delete and Recreate a Database

This lab uses ODACLI to delete a database.

You can also use CLI to delete a database. Run odacli delete-database to remove database `db2`. Be sure to use the ID of your `db2` database, which is likely different from the one in this workbook. Note that you can also use the database name instead of the ID.

```
$ odacli delete-database -i d1e615c3-5855-4b19-9ad0-40b620ac5f13
{
  "jobId" : "ccde4700-3c1e-423a-8079-477f49f8cd5f",
  "status" : "Running",
  "message" : null,
  "reports" : [ {
    "taskId" : "TaskZJsonRpcExt_10048",
    "taskName" : "Validate db d1e615c3-5855-4b19-9ad0-40b620ac5f13 for
deletion",
    "taskResult" : "OK",
    "startTime" : " December 8, 2024 01:49:40 AM UTC",
    "endTime" : " December 8, 2024 01:49:40 AM UTC",
    "status" : "Success",
    "taskDescription" : null,
    "parentTaskId" : "TaskSequential_10046",
    "jobId" : "ccde4700-3c1e-423a-8079-477f49f8cd5f",
    "tags" : [ ],
    "reportLevel" : "Info",

$  odacli list-databases
ID                                       DB Name    DB Type  DB
Version           CDB        Class    Shape    Storage    Status
```

```
DbHomeID
---------------------------------------- ---------- --------
------------------- ---------- -------- -------- ---------- ------------
----------------------------------------
324a42ea-bba2-477d-8bca-5a26af159f1c     db3        SI
19.25.0.0.241015     false      OLTP     odb1     ASM        CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2
```

Using the CLI, create a new database `db4`.

```
$ odacli create-database -n db4 -v 19.23.0.0.240416

Enter SYS, SYSTEM and PDB Admin user password:
Retype SYS, SYSTEM and PDB Admin user password:

Job details
----------------------------------------------------------------
                     ID:  aa259376-4ac0-474a-8730-8c8e1c8ac504
            Description:  Database service creation with db name: db4
                 Status:  Created
                Created:  December 8, 2024 1:51:50 AM UTC
                Message:
Task Name                                Start Time
End Time                                 Status
---------------------------------------- ----------------------------------
---------------------------------- ----------

# odacli list-databases

ID                                       DB Name    DB Type  DB
Version           CDB        Class    Shape    Storage    Status
DbHomeID
---------------------------------------- ---------- --------
------------------- ---------- -------- -------- ---------- ------------
----------------------------------------
324a42ea-bba2-477d-8bca-5a26af159f1c     db3        SI
19.25.0.0.241015     false      OLTP     odb1     ASM        CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2
deac01db-eaa8-4f4e-a511-aea042be3a18     db4        SI
19.25.0.0.241015     false      OLTP     odb1     ASM        CONFIGURED
c3c63738-703e-4c1d-98de-95b551b67468
```

Step 6 - Create a CPU Pool for a Database

This lab uses the BUI to create a CPU pool.

You can create a CPU pool for a bare-metal database to improve CPU resource management and quality of service for a database.

Click the Appliance tab, then click **CPU Pool** on the left, and then click **Create**.

Specify the CPU Pool Name as `cpupool1`, select CPU Pool Type as Bare Metal, and Number of CPU Cores as 2, then click **Create**.

You can see that CPU Pool `cpupool1` has been created.

Step 7 - Delete a Database Home

You can delete a database home using the BUI or the command line. This lab uses BUI to delete a database home.

Go to the **Database** tab, then click on the Database Home to see all the database homes. Click on **Actions**, then click **Delete** (for example, `home1`).

You can see that the database home is deleted.

Step 8 - Create Database Backups on Local Disk, External NFS Storage, or on Oracle Cloud

Backing up and restoring Oracle databases on Oracle Database Appliance involves two simple steps: Create a backup policy and attach the backup policy to a database.

To back up to an external NFS storage, you must create an NFS mount point first.

To back up to the Oracle Cloud, you must obtain and create Object Store credentials first. A default backup policy is created but it is not associated with the database unless you explicitly modify the database and attach the policy.

To create a new backup policy, click on the **Backup Policy** tab and then click **Create**.

Then, name the Backup Policy (for example, DiskBackup), Backup Destination (Internal FRA/Local Disk or External FRA/External NFS Storage or Object Store/Oracle Cloud), and Recovery Window in days, then click **Create**.

To back a database to an external NFS storage, you need to specify a mount point such as `/u03/app/oracle/oradata/nfs_backup`.

You can see the DiskBackup policy has been created.

Next, you select the database, for example, `db4`, that you want to backup. Attach the bakup policy to the `db4` database by clicking **Modify** under Actions.

Assign a CPU pool to `db4` at the same time.

Select DiskBackup as the Backup Policy and `cpupool1` as the CPU pool for `db4`, and then click **Modify**.

Once the job is completed, you can verify that the backup policy is listed under Database Information of the database, for example, `db4`. You can also see that a CPU pool is assigned to `db4`.

Once this configuration is completed, Oracle Database Appliance will start backing up the database to the disk regularly and produce backup reports. Click on the database name to view the database details and then switch to the Backup Information tab.

You can also click **Manual Backup**, then click **Start** to back up a database manually.

You can see the details of the Backup Report by clicking on the Backup Report ID.

In addition to backing up to local disk, you can back up to Oracle Cloud or NFS location. To back up databases in Oracle Database Appliance to Oracle Cloud, you must obtain Object Store credentials first.

Once you have your credentials, click the **Object Store** tab, then click **Create**.

Enter the required Object Store Credentials including the name.

You can now create a backup policy, specify the Object Store as the backup destination, and attach a database to the policy. Oracle Database Appliance will start backing up the database to the Oracle Cloud regularly.

This concludes Lab 2.

Lab 3 - Patch and Update

If you just completed Lab 2, the simulator should have two databases, `db3` and `db4`.

For Lab 3, you will use the CLI to update the repository and BUI to update the Oracle Database Appliance infrastructure including the server. You will also use the BUI to patch a database home from release 19.25 to 19.26.

Starting with Oracle Database Appliance release 19.11, patching of Oracle Database Appliance is out-of-place. The new Oracle Grid Infrastructure home will be placed on the local system/boot drive, and all new database homes will be placed on Oracle ACFS file system on the data drives. In an Oracle Database Appliance high-availability system, the database homes will be placed on the shared storage.

Note: On an actual Oracle Database Appliance, you may have to update the server repository and the DCS agent before updating the database and Oracle Grid Infrastructure clone files in the repositories. This is release dependent, so check the patching steps in the Oracle Database Appliance documentation first.

- Step 1 - Update the Oracle Database Appliance Repository with Latest Patches
  You must download the server patch file for Oracle Database appliance release 19.26.
- Step 2 - Update the DCS Agent (If not done already)
  The next step is to update the DCS agent on both nodes for a high-availability system with the BUI, before updating the server. Use ODACLI to update the DCS agent.
- Step 3 - Update the Server
  The next step is to update the server. The server update includes firmware, operating system, and Oracle Grid Infrastructure updates.
- Step 4 - Patch a Database: Update a Database to point to a New Database Home
  Because you may not want to patch all databases at once, first identify which database home corresponds to which database.

Step 1 - Update the Oracle Database Appliance Repository with Latest Patches

You must download the server patch file for Oracle Database appliance release 19.26.

Refer to the *Oracle Database Appliance Release Notes* for the latest Oracle Database Appliance patches.

The server patch updates the firmware and operating system. You must patch the server before you patch the databases. When patching databases, you can choose to patch a subset, if required. However, it is recommended to patch all databases to keep them current.

For this lab, we have downloaded simulated release 19.26 patches for the server, Oracle Grid Infrastructure, and database clone files to your simulator.

You must update the repositories with the latest server patch, Oracle Grid Infrastructure, and database clone files, as well as additional applicable database clone files. For example, if you

plan to patch Oracle Database from release 19.25 to 19.26, you must update the repository with the 19.25 Oracle Grid Infrastructure and database clone files first.

Before you start patching the server, you can check the current installed components from the BUI. Go to the **Infrastructure Patching** tab. Note all the installed 19.25 components. Since you have not updated the repository to 19.26, all components are displayed as up to date. Next, update the server repository. The server patch file is oda-sm-19.26.0.0.0-*date*-server.zip.

```
$ odacli update-repository -f /opt/oracle/dcs/patchfiles/oda-sm-19.26.0.0.0-
date-server.zip

{
  "jobId" : "b3794603-4fbb-42a4-89ee-791d420e68a6",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/oda-sm-19.26.0.0.0-date-server.zip",
  "reports" : [ ],
  "createTimestamp" : "December 8, 2024 06:29:42 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedTime" : "December 8, 2024 06:29:42 AM UTC"
}
```

For an actual Oracle Database Appliance, you may need to update the DCS agent first, before updating repository with the 19.26 Oracle Grid Infrastructure and database clone files, if you want to create a 19.26 database or patch a database to 19.26. See the *Oracle Database Appliance Deployment and User's Guide* for your hardware model.

Run the following commands to update the Oracle Database Appliance repository with these patches. You must use the full path for the file names.

```
$ odacli update-repository -f /opt/oracle/dcs/patchfiles/odacli-
dcs-19.26.0.0.0-date-GI-19.26.0.0.zip

{
  "jobId" : "529141f1-c5fb-42a6-ad1e-0b5540781a71",
  "status" : "Waiting",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.26.0.0.0-date-
GI-19.26.0.0.zip",
  "reports" : [ ],
  "createTimestamp" : "December 8, 2024 06:32:43 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedTime" : "December 8, 2024 06:32:43 AM UTC"
}

$ odacli update-repository -f /opt/oracle/dcs/patchfiles/odacli-
dcs-19.26.0.0.0-date-DB-19.26.0.0.zip

{
  "jobId" : "6478c708-bef8-4d5a-83a6-b411fe9b3e7d",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.26.0.0.0-date-
DB-19.26.0.0.zip",
  "reports" : [ ],
  "createTimestamp" : "December 8, 2024 06:33:13 AM UTC",
  "resourceList" : [ ],
```

```
  "description" : "Repository Update",
  "updatedTime" : "December 8, 2024 06:33:13 AM UTC"
}
```

After you update the repository, you can use the web console to see the 19.26.0.0.0 available component versions.

Step 2 - Update the DCS Agent (If not done already)

The next step is to update the DCS agent on both nodes for a high-availability system with the BUI, before updating the server. Use ODACLI to update the DCS agent.

From the BUI, go to the **Appliance** tab, click **Infrastructure Patching**, and click **Refresh** to check the DCS Agent status.

1. In the BUI, click **Appliance** and then click **Infrastructure Patching** on the lefthand pane.
2. Using ODACLI, update the DCS agent:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcsagent -v 19.26.0.0.0
```

Step 3 - Update the Server

The next step is to update the server. The server update includes firmware, operating system, and Oracle Grid Infrastructure updates.

Follow these steps to update the server:

1. Using ODACLI, update the DCS admin, DCS components, and DCS agent:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcsadmin  -v 19.26.0.0.0
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcscomponents -v
19.26.0.0.0
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcsagent -v 19.26.0.0.0
```

   If the DCS components are updated, then the message `"status" : "Success"` is displayed on the command line. For failed updates, fix the error and then proceed with the update.

> **Note:**
>
> You must log into the Browser User Interface again after running the `odacli update-dcscomponents` command.

2. In the BUI, click the **Appliance** tab, and then click **Infrastructure Patching** on the lefthand pane.
3. In the SERVER section, view the Component Details. If you just updated the Patch Repository, click **Refresh**.

   After the patch is uploaded to the Patch Repository, the Component Details on the page are updated with the Installed Version and Available Version for each component.
4. Click **Precheck** to run patching prechecks. On an actual appliance, you must run the patching prechecks before updating the server and other components. Click **View Pre-**

check Reports to view the patching prechecks report. If there are no errors in the report, then click **Apply Patch** to begin the job to patch the server components. For high-availability systems, when updating the server on the bare metal system, you can select the **Node to Update**. You can choose the node that you want to update or you can choose to update both nodes.

> **Note:**
>
> Since this is a simulator, the prechecks report is not generated.

5. In the STORAGE section, click **Refresh** to refresh the Component Details. Click **Precheck** to run patching prechecks. You must run the patching prechecks before updating the storage components. Click **View Pre-check Reports** to view the patching prechecks report. If there are no errors in the report, then click **Apply Patch** to begin the job to patch the storage components. Click **View Jobs** for the job status.

> **Note:**
>
> Since this is a simulator, the prechecks report is not generated.

For high-availability environment, you can select the **Rolling** check box to perform rolling patching of storage components.

Patching an actual Oracle Database Appliance will take some time, whereas the simulator speeds up the whole process. The Linux prompt returns immediately, and the patch runs in the background. You can monitor the progress of the patch job by checking the **Activity** tab.

Step 4 - Patch a Database: Update a Database to point to a New Database Home

Because you may not want to patch all databases at once, first identify which database home corresponds to which database.

You can use either the command `odacli update-dbhome` or the BUI to update the database homes, and thus the databases, running on the appliance. Each home is updated independently, giving you control over when you patch your databases.

To update the database homes using the BUI, follow these steps:

1. Navigate to the **Database Home** tab.
2. Select the database home you want to patch.
3. Select the **Patch Version** for the database home.
4. To patch multiple database homes, select each database home to be patched and the patch version for each database home.
5. Select the **Node to Update**. You can choose the node that you want to update or you can choose to update all nodes.
6. Click **Patch**. Select **Precheck** to run pre-checks before patching the database.

> **Note:**
>
> Since this is a simulator, the prechecks report is not generated.

7. On the Patch page, for the database to be patched, click **Actions** and select **Apply** to patch the database.

Now, we will use the CLI to patch database `db4`. The `odacli list-databases` command displays details about each database, its ID and its database home ID. Those database homes will be the ones we will patch by supplying the database home ID to the patching command. You can also see more information, such as the name of the database home, using the `odacli list-dbhomes` command.

```
$ odacli list-databases

ID                                       DB Name    DB Type  DB
Version           CDB        Class    Shape    Storage    Status
DbHomeID
---------------------------------------- ---------- --------
------------------- ---------- -------- -------- ---------- ------------
----------------------------------------
324a42ea-bba2-477d-8bca-5a26af159f1c     db3        SI
19.25.0.0.241015     false      OLTP     odb1     ASM        CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2
deac01db-eaa8-4f4e-a511-aea042be3a18     db4        SI
19.25.0.0.241015     false      OLTP     odb1     ASM        CONFIGURED
c3c63738-703e-4c1d-98de-95b551b67468

$ odacli list-dbhomes

ID                                       Name                 DB
Version                                  Home
Location                                 Status
---------------------------------------- --------------------
----------------------------------------
------------------------------------------- ----------
a1314be1-2c6f-411f-b2c7-61444449f02b     OraDB19000_home2
19.25.0.0.241015                         /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_2 CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2     OraDB19000_home3
19.25.0.0.241015                         /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_3 CONFIGURED
c3c63738-703e-4c1d-98de-95b551b67468     OraDB19000_home4
19.25.0.0.241015                         /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_4 CONFIGURED
```

```
$ odacli update-dbhome -i c3c63738-703e-4c1d-98de-95b551b67468 -v 19.26.0.0.0
{
  "jobId" : "af879f3e-9c50-4dfd-86db-5d380a42f8d2",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
```

```
  "createTimestamp" : " December 8, 2024 06:59:59 AM UTC",
  "resourceList" : [ ],
  "description" : "DB Home Patching: Home Id is
c3c63738-703e-4c1d-98de-95b551b67468",
  "updatedTime" : " December 8, 2024 06:59:59 AM UTC"
}
```

Use the clipboard to copy the DB home ID for `db4`. Then use the DB home ID with the `odacli update-dbhome` command to update the home for `db4`. Verify that the job has completed successfully using the command `odacli describe-job`.

```
$ odacli describe-job -i af879f3e-9c50-4dfd-86db-5d380a42f8d2

Job details
----------------------------------------------------------------
                     ID:  af879f3e-9c50-4dfd-86db-5d380a42f8d2
            Description:  DB Home Patching: Home Id is
c3c63738-703e-4c1d-98de-95b551b67468
                 Status:  Success
                Created:  December 8, 2024 6:59:59 AM UTC
                Message:

Task Name                                Start Time
End Time                                 Status
---------------------------------------- ----------------------------------
---------------------------------- ----------
Adding USER SSH_EQUIVALENCE               December 8, 2024 7:00:02 AM UTC
December 8, 2024 7:00:02 AM UTC    Success
Adding USER SSH_EQUIVALENCE               December 8, 2024 7:00:02 AM UTC
December 8, 2024 7:00:02 AM UTC    Success
```

Verify that database home `db4` is updated to the release 19.26. You can use either the BUI or CLI for verification.

```
# odacli list-dbhomes
ID                                       Name                 DB
Version                                  Home
Location                                 Status
---------------------------------------- --------------------
----------------------------------------
---------------------------------------- ----------
a1314be1-2c6f-411f-b2c7-61444449f02b     OraDB19000_home2
19.25.0.0.241015                         /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_2 CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2     OraDB19000_home3
19.25.0.0.241015                         /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_3 CONFIGURED
c3c63738-703e-4c1d-98de-95b551b67468     OraDB19000_home4
19.26.0.0.250121                         /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_4 CONFIGURED
```

You can also use the BUI to update the database homes by navigating to the **Database** tab and then selecting the Database Home on the left panel. You have already updated database `db4` by pointing to a new home using the command line.

This concludes Lab 3.

Lab 4 - Virtualization: Create Application and Database KVMs

Virtualization provides many benefits to customers such as cost savings through consolidation and better resource utilization, Virtual Machine (VM) isolation that provides better security, and KVM license hard partitioning support.

Kernel-based VM (KVM) is an industry standard virtualization technology that is also used in Oracle Cloud and other public clouds.

You will use Oracle Database Appliance BUI to create an application KVM, called Compute Instance, and a database KVM, called Database System.

- Step 1 - Create an Application KVM (Compute Instance)
  Understand the steps to create an application KVM.
- Step 2 - Create a Database KVM (Database System)
  Understand the steps to create a database KVM.

Step 1 - Create an Application KVM (Compute Instance)

Understand the steps to create an application KVM.

Before you create an application KVM on Oracle Database Appliance, you must create the following:

- CPU Pool
- VM Storage
- Virtual Disk
- Virtual Network

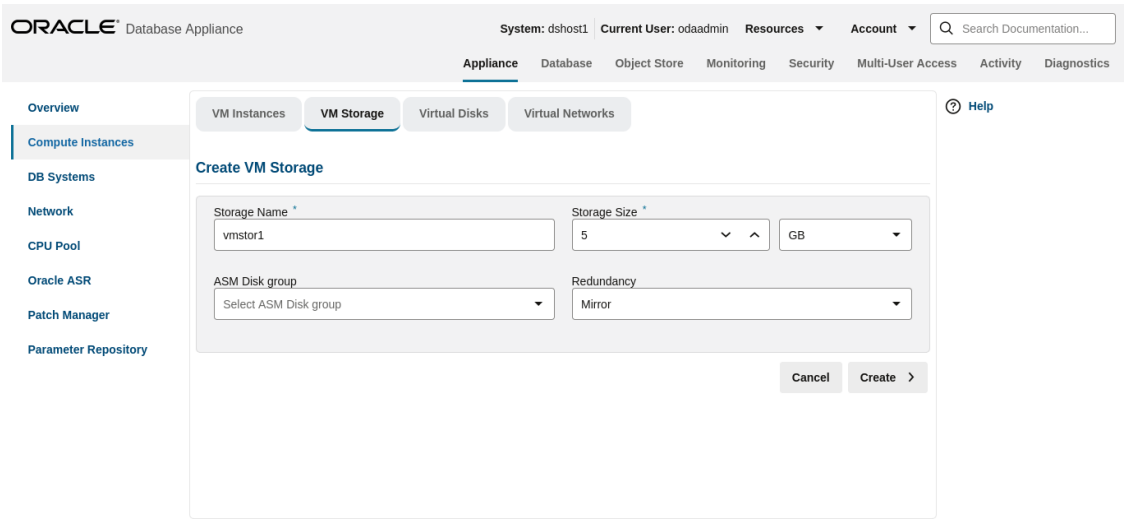
You must create a guest operating system (Linux or Windows) ISO image to create the application KVM instance. After that, you must configure the guest operating system, networking (set IP address) so that you can access the VM to install applications. You can also modify and delete an application KVM.

First, create a CPU Pool for the application KVM. In the BUI, click **CPU Pool**, and then click **Create**. Enter the following information, then click **Create**.

You can see the CPU pool `cpupool1` is created. A CPU pool is optional and not required to create an application KVM.

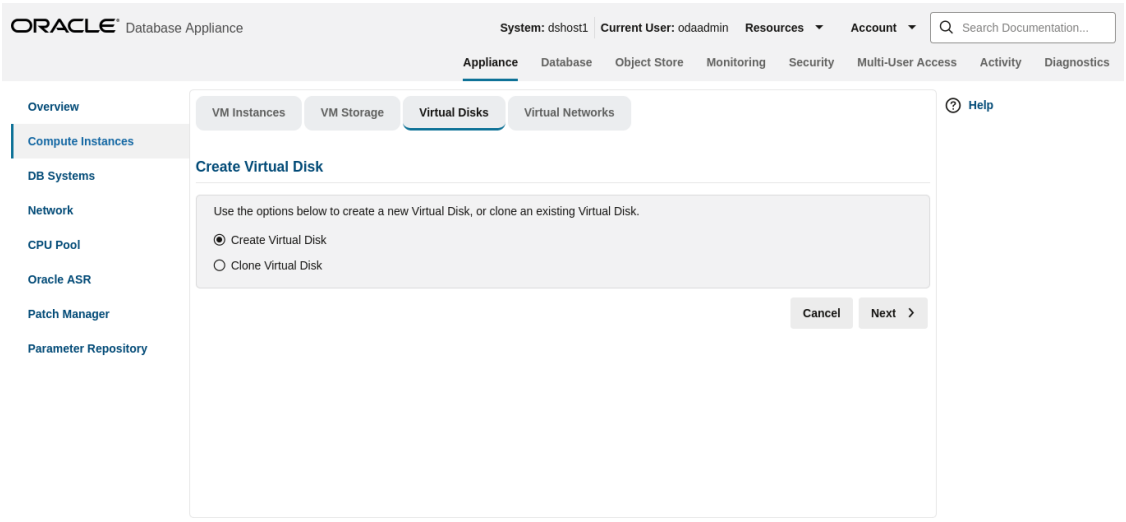
Next, create the VM Storage.

Select the **VM Storage** tab, and then click **Create VM Storage**.

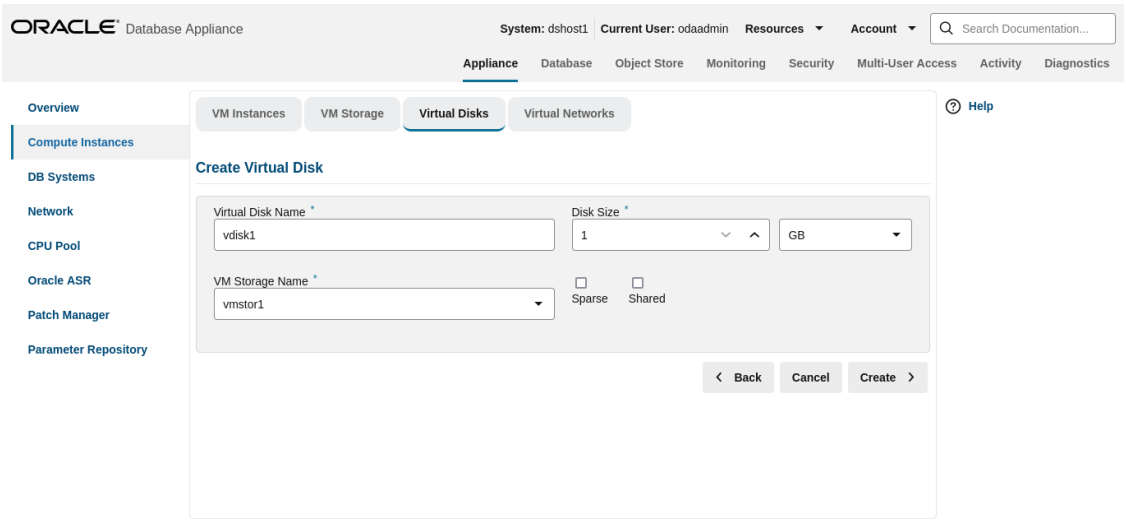


Enter the following information for `vmstor1`, and then click **Create**. VM Storage can be used by different application KVMs. You can see `vmstor1` is created.

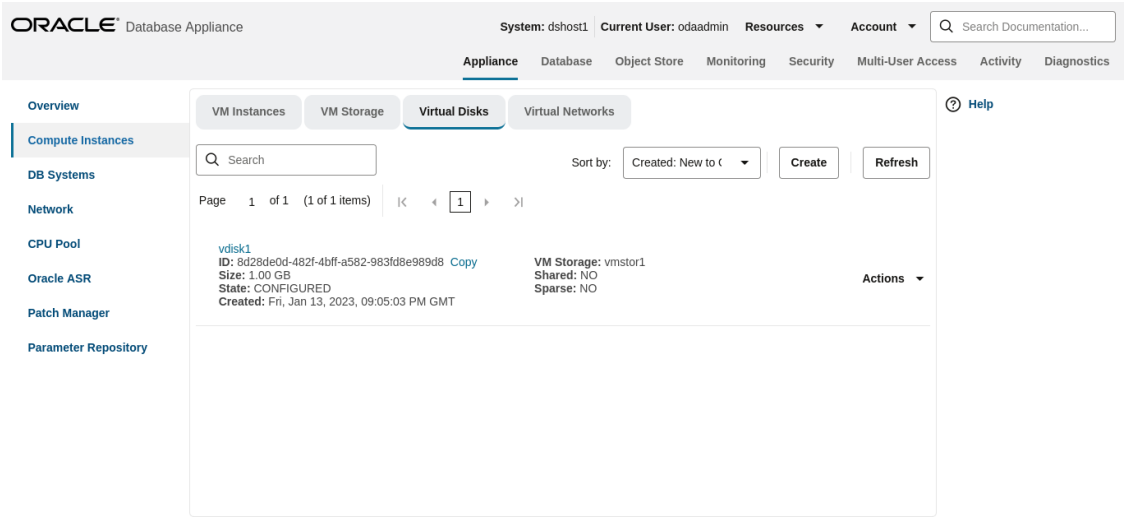
Next, create a virtual disk vdisk to be used by the application KVM. Select the **Virtual Disks** tab and click **Create Virtual Disk**.



Select **Create Virtual Disk**, then click **Next**.



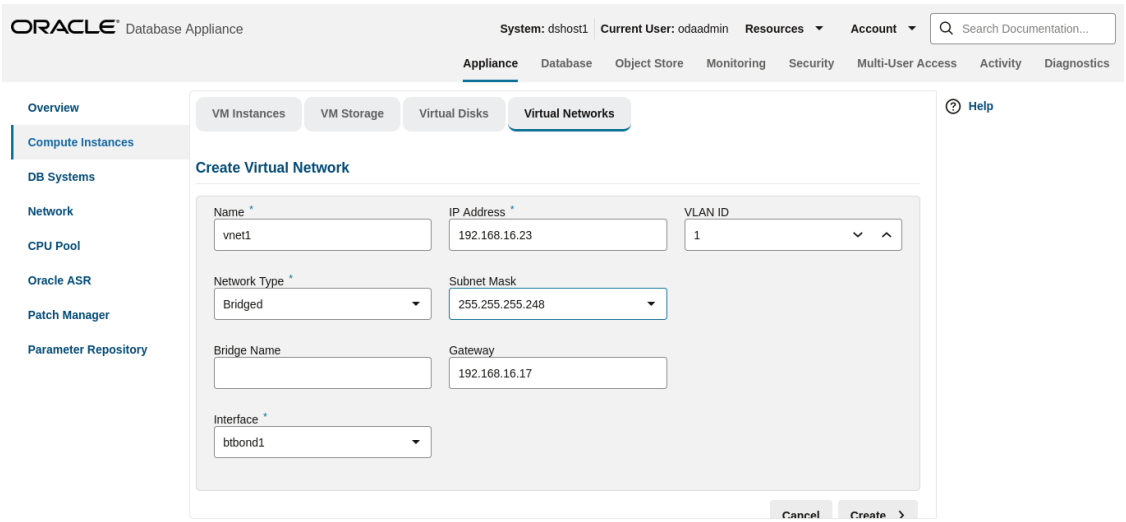
Enter the following information for `vdisk1`, and then click **Create**. You can see `vdisk1` is created.



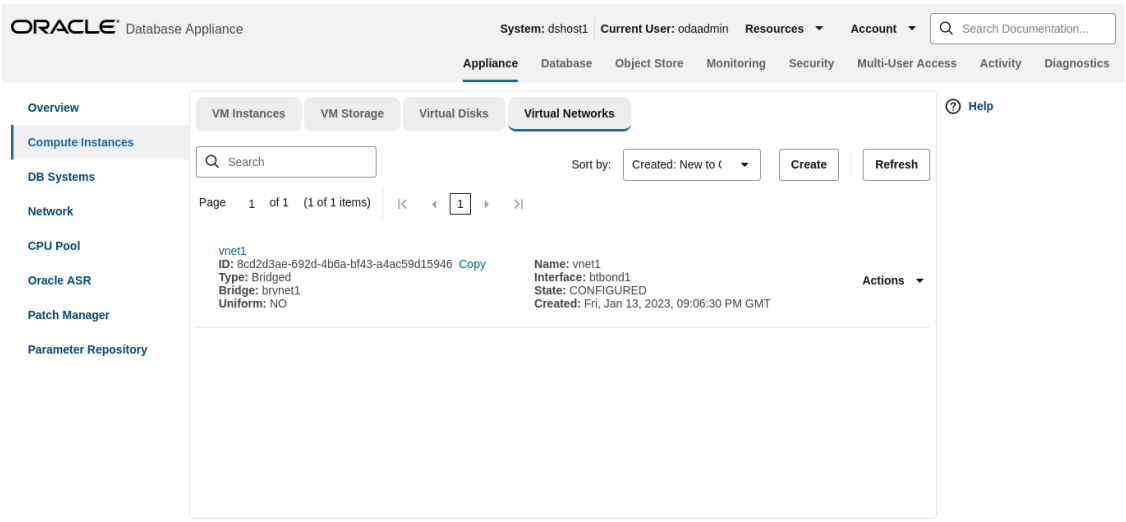
Create a virtual network for the KVM:

Select the **Virtual Networks** tab, and then click **Create Virtual Network**.

Specify the Virtual Network information, then click **Create**.

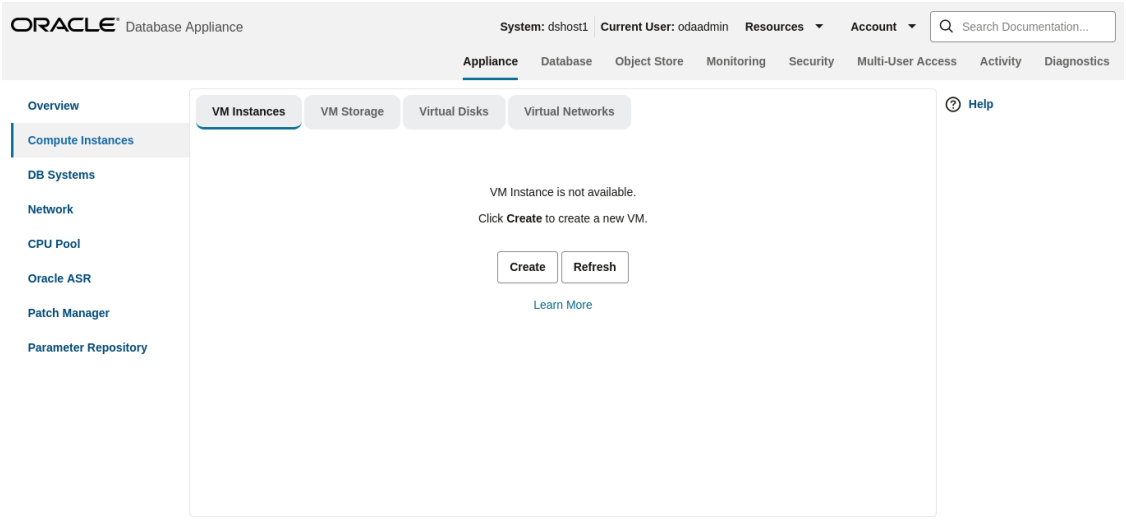


You can see the virtual network `vnet1` is created.

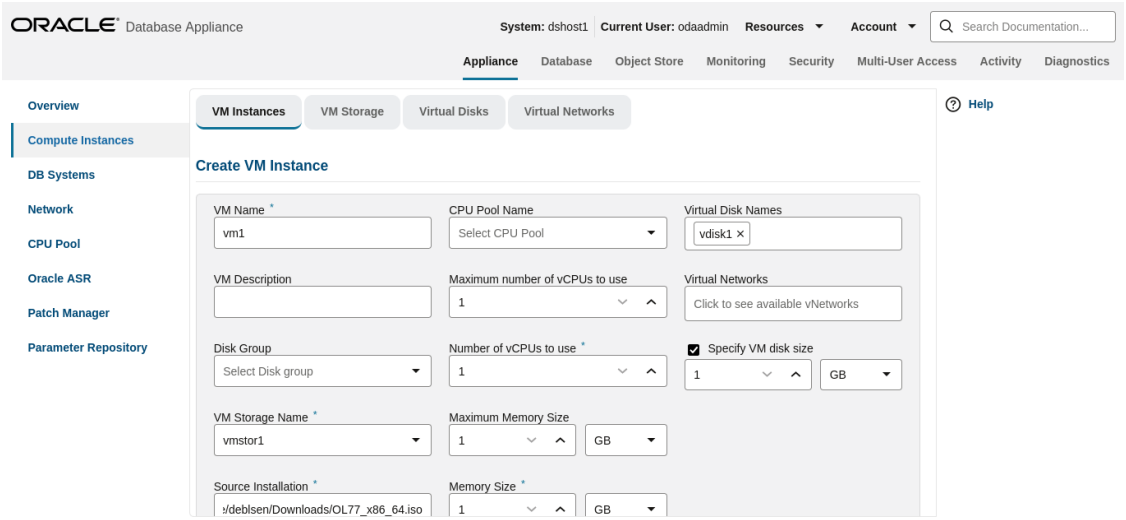


Create an application KVM (Compute Instance):

Select the **VM Instances** tab, and then click **Create**.

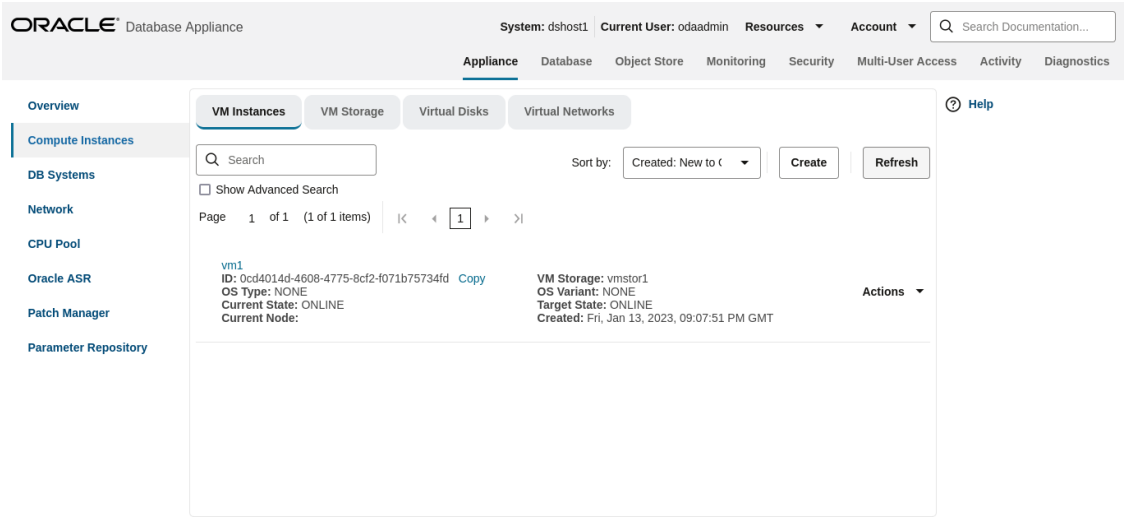


Select **Create VM Instance**, then click **Next**.



Specify the information for `vm1`, then click **Create**. Note the Source Installation path to the Linux ISO image. Note that the VM disk size is 10GB. VM disk is the local system boot disk where the Linux image is installed.

You can see `vm1` instance is created.



You can see the detailed information by clicking on `vm1`.

If you want to modify the VM instance, then click the **VM Instance** tab. For `vm1`, click the Actions dropdown and then click **Modify**.

To delete an application KVM, from the **VM Instances** tab, click the Actions dropdown, and then click **Delete**.

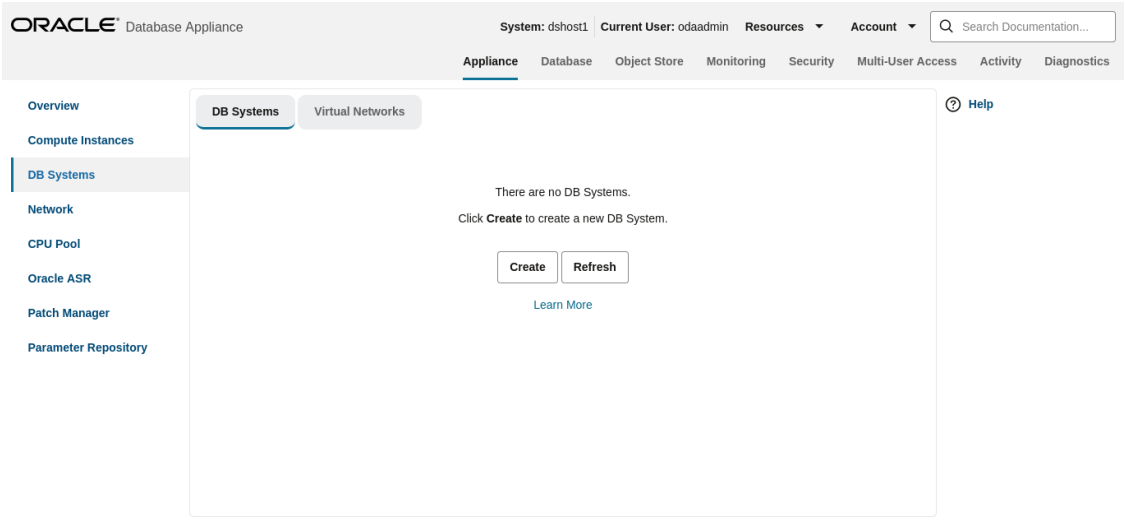
Step 2 - Create a Database KVM (Database System)

Understand the steps to create a database KVM.

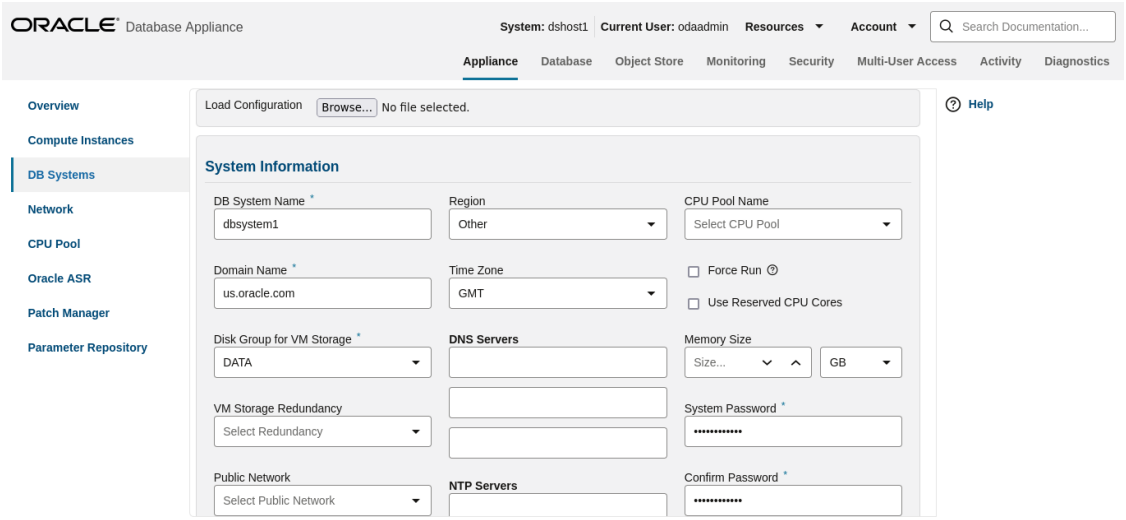
To create a database KVM (Database System) in Oracle Database Appliance, you must first download the DB system image (database VM template) into the appliance, then update the repository so that the database VM template is saved in Oracle Database Appliance.

```
$  odacli update-repository -f /opt/oracle/dcs/patchfiles/odacli-
dcs-19.26.0.0.0-date-ODAVM-19.26.0.0.zip
{
  "jobId" : "2d45004d-923b-45d9-b27c-cfbda391edb6",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.26.0.0.0-date-
ODAVM-19.26.0.0.zip",
  "reports" : [ ],
  "createTimestamp" : "December 8, 2024 07:45:04 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedTime" : "October 26, 2022December 8, 2024 07:45:05 AM UTC"
}
```

In the BUI, select **DB Systems** on the left, and click **Create**.

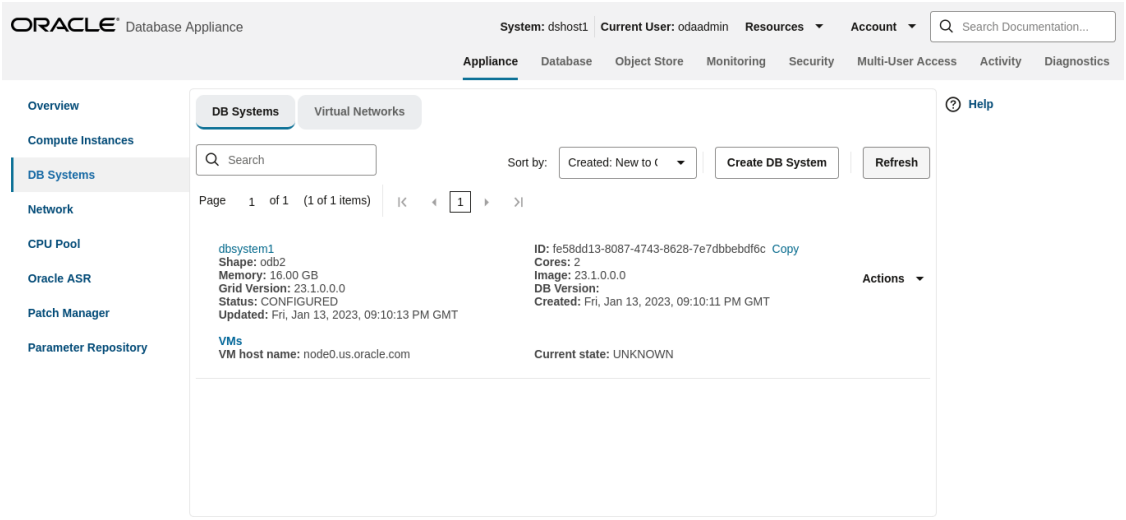


Enter the System Information, Network Information, CPU Pool and Database Information, then click **Create**.



Note the database shape selected will determine the number of CPU cores assigned to the database. A database CPU pool is automatically created, or a database CPU Pool can be selected. A default network is also be automatically assigned to the database, or a network can be selected. Make sure CDB is selected.

You can see that a database KVM `dbsystem1` is created.



You can find the details for `dbsystem1` by clicking on it.

You can modify the DB System by clicking Actions and then selecting **Modify**.

You can change the database shape from `odb2` (2 cores) to `odb4` (4 cores).

Click the **DB Systems** tab on the left to verify that `dbsystem1` has 4 cores now.

This concludes Lab 4.

Lab 5 - Multi-User Access

Oracle Database Appliance Multi-User Access can enhance the security of your appliance and provide an efficient mechanism for role separation.

With multi-user access, you can provide separate access to database administrators to manage databases and create multiple users with different roles that restrict them from accessing resources created by other users and restrict the set of operations they can perform.

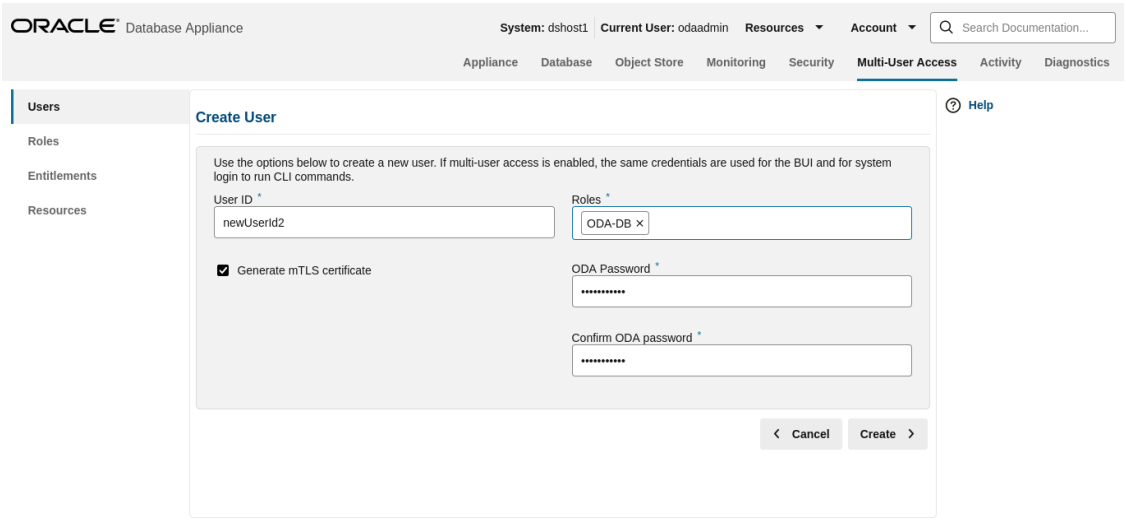
In this lab, you will create two new users, `user1` and `user2`, assign a resource, for example, database to `user1`, then create a database using `user2`. You will verify that both users have access to different resources.

- Step 1 - Create New Users
  Understand the steps to create new users.
- Step 2 - Grant a Resource to a User
  Understand the steps to grant a resource to a user.
- Step 3 - Create a Resource by a User
  Understand the steps to create a resource.

Step 1 - Create New Users

Understand the steps to create new users.

Navigate to the **Multi-User Access** tab in the BUI. Create a new user, `user1`, and provide a temporary password. The password for `user1` must be changed on the first login.



Go to the **Users** tab on the left to verify that the new user, `user1`, is created.

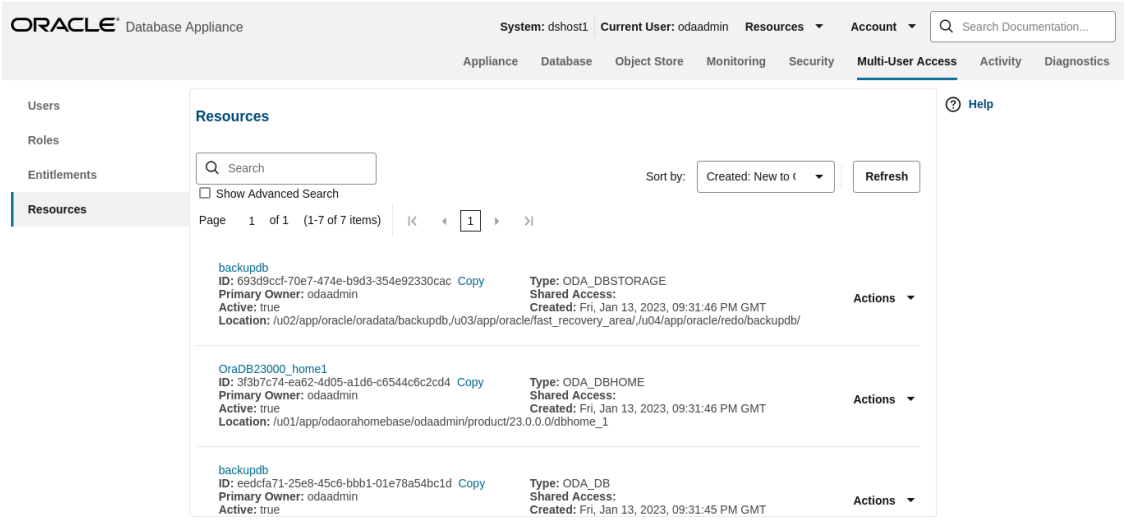
Create a second user, `user2` using the same process.

Go to the **Users** tab on the left to verify that `user2` is created.

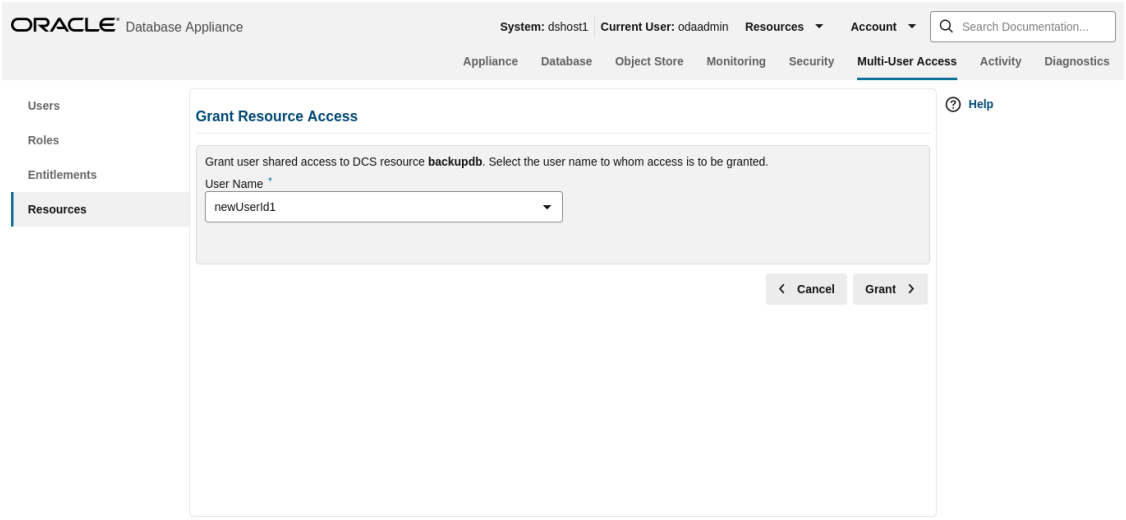
Step 2 - Grant a Resource to a User

Understand the steps to grant a resource to a user.

You will grant a resource, `db5`, to `user1`. Go the **Resources** tab on the left, click on **Show Advanced Search**, select `ODA_DB`, and click **Search**. On `db5`, click **Actions**, and then select **Grant Resource Access**.



In the User Name drop-down, select `user1`, then click **Grant**.



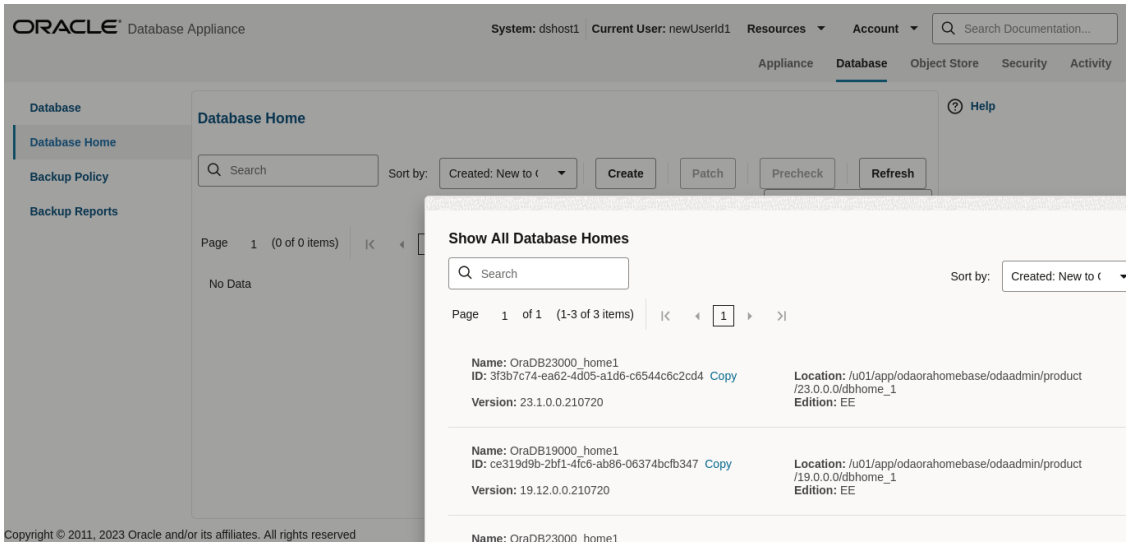
To verify that `user1` has access to `db5`, click on the **Resources** tab on the left again. Note that `user1` now has shared access to `db5`. Note that this database was originally created by the `odaadmin` user.

> **Note:**
>
> When you create a new user, you cannot grant or revoke access for that user immediately after creation since the user is in inactive state. The drop down list for user selection is read-only which means you can only select from an existing list of users. The ODA-DB user was not listed in the drop down at first because the ODA-DB user was in an inactive state. Once the user account is activated, it is listed the Grant and Revoke access list.

Log in as `user1` to verify access to `db5`.

Specify the temporary password created by the `odaadmin` user, and you are prompted to provide a new password. You can use a password similar to `WELcome12##` or create your own.

When you log in with the new password, note that the Current User is displayed as `user1`. Note that there are fewer tabs on the top for `user1`.



Click on the **Database** tab, and note that `user1` has access to `db5`.

Step 3 - Create a Resource by a User

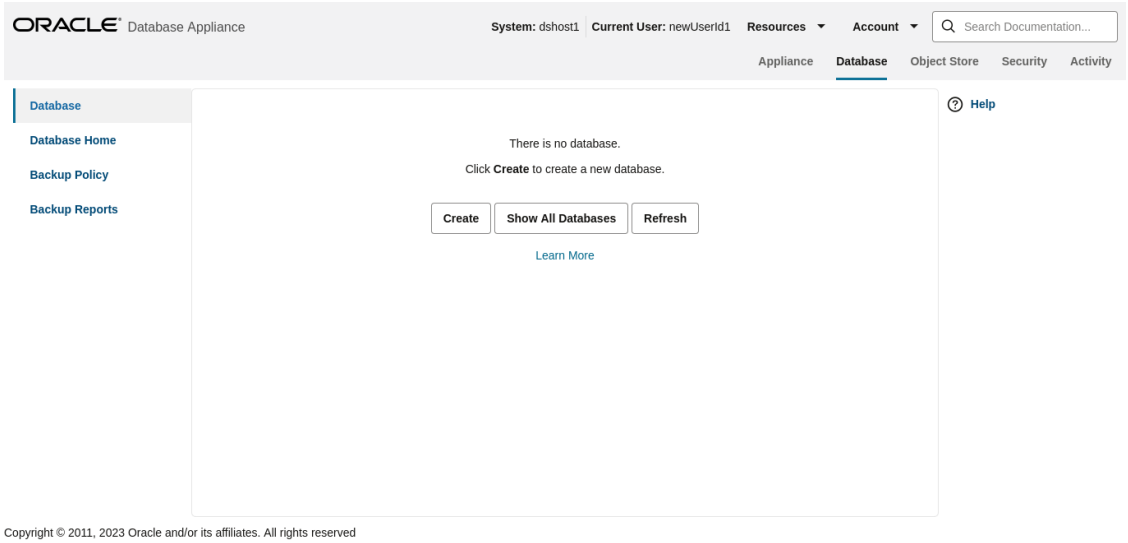
Understand the steps to create a resource.

Log in as `user2`, create a database, and have exclusive access to the database. First, log in as `user2` with the temporary password created by `odaadmin`.

A new password for `user2` is required. You can use a password similar to `WELcome12##`, or create your own.

Log in as `user2` with the new password.

Click on the **Database** tab. There are no database available to `user2`. Click **Create Database**.



Create a new database, `user2db1`.

Click **Create** and verify that the database is created.

Log in as `user1` to verify that `user1` does not have access to `user2db1`.

You can verify that `user1` only has access to `db5`.

Log in as `odaadmin` to review resources and user access.

When logged in as the `odaadmin` user, you can view all the databases.

Click on the **Multi-User Access** tab, then click on the **Resources** tab on the left. Use the Advanced Search feature and search for `ODA_DB`, You can see the Primary Owner of the database and Shared Access users for the databases. The `user1` has access to `db5`, and `user2` has access to `user2db1`.

This concludes Lab 5.

Lab 6 - Monitoring and Resources

Use either the command line or the BUI to monitor Oracle Database Appliance software, hardware, and feature usage.

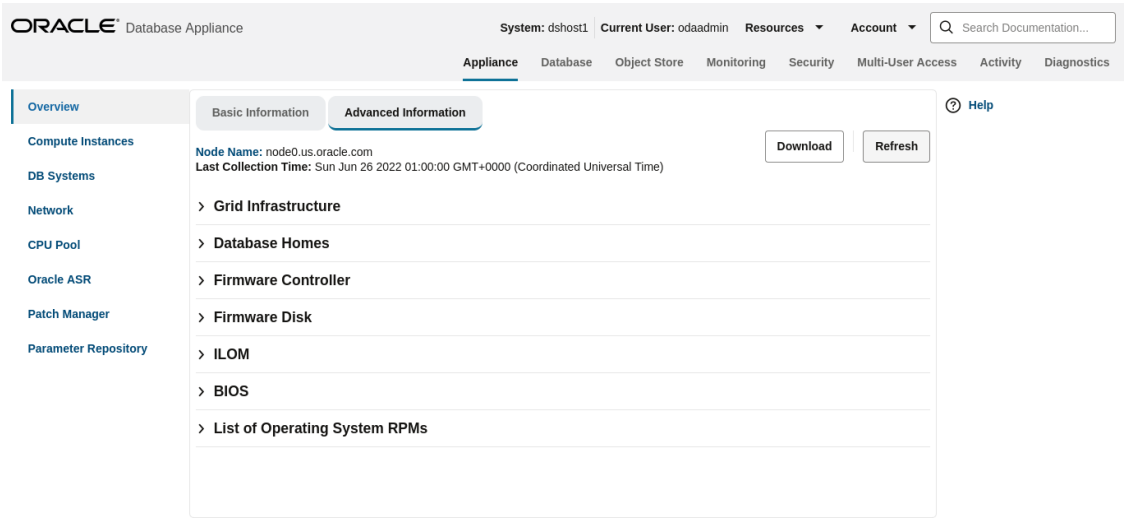
Oracle Database Appliance also provides security reports, diagnostic information, and context sensitive online help (documentation, FAQ, blogs). An Oracle Enterprise Manager plug-in is available if you want to use Oracle Enterprise Manager to monitor your IT infrastructure. This lab will demonstrate how to monitor Oracle Database Appliance with BUI and ODACLI commands.

- Step 1 - Advanced Information, Security Reports, Diagnostics, Online Help
  Understand how to view resources in the BUI.
- Step 2 - Hardware Monitoring and Feature Tracking
  The BUI displays Oracle Database Appliance hardware status and tracks feature usage including High Water Marks.
- Step 3 - Review Appliance Configuration
  ODACLI assists in the fast deployment, patching, and easy management of Oracle Database Appliance.
- Step 4 - Review Storage Configuration
  Review the following odaadmcli commands that provide information about Oracle Database Appliance configuration.
- Step 5 - Review Network Status
  Review the following odaadmcli commands that provide information about Oracle Database Appliance configuration.

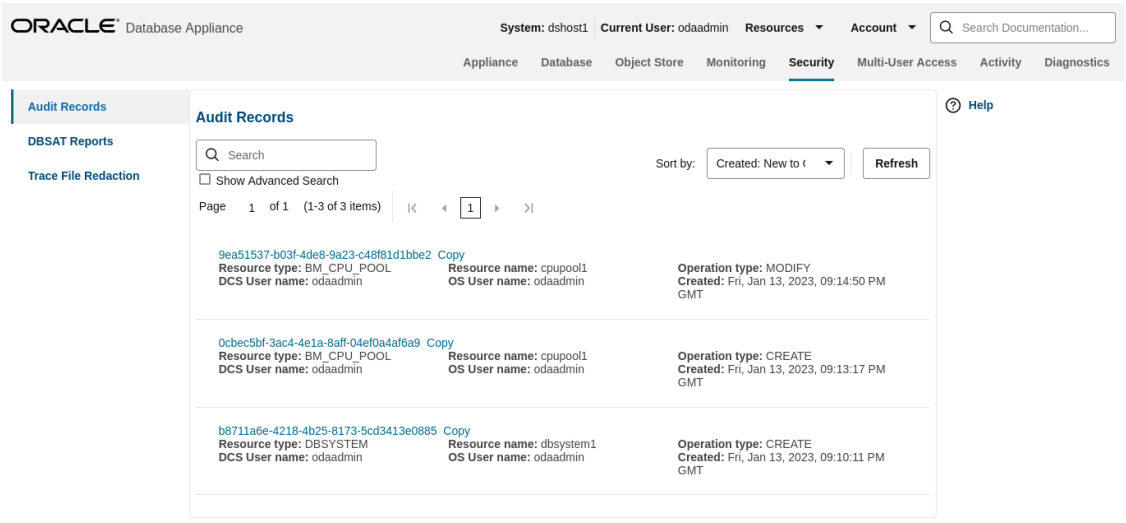
Step 1 - Advanced Information, Security Reports, Diagnostics, Online Help

Understand how to view resources in the BUI.

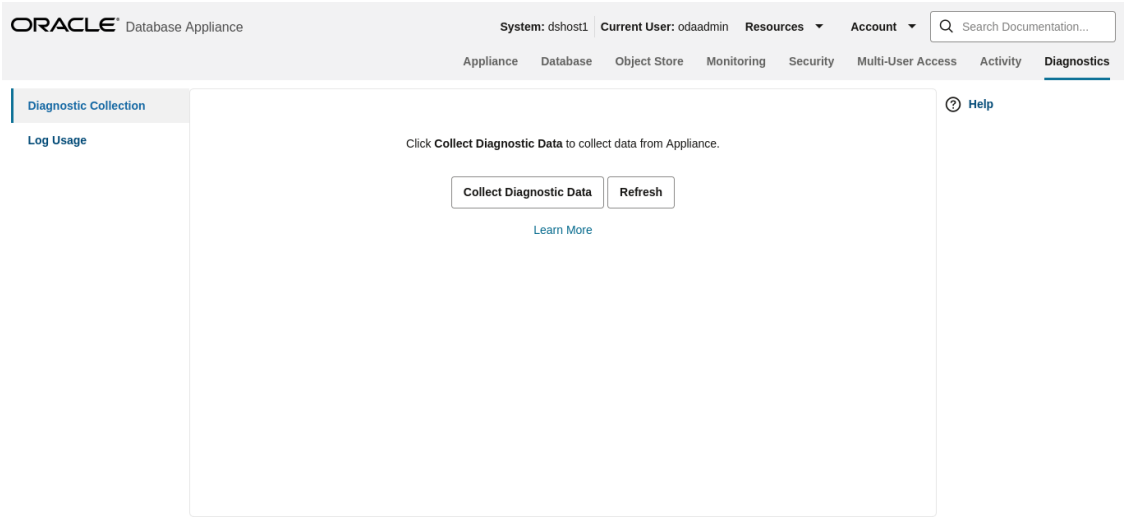
To view the Oracle Database Appliance software components, click on the **Advanced Information** tab on the Appliance Overview page.



To view security-related information, click on the **Security** tab on the Appliance page.



To view diagnostic and log usage information, click on the **Diagnostics** tab on the Appliance page.



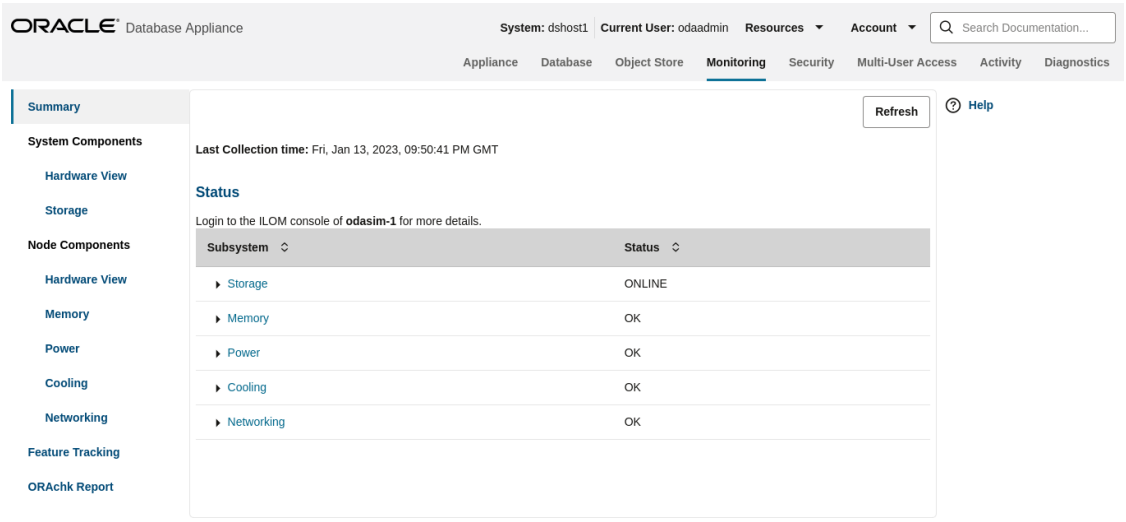
To view context sensitive in-line help information, click on **Help**.

You can also click inside the search box on the top right corner to search the Oracle Database Appliance documentation by topics.

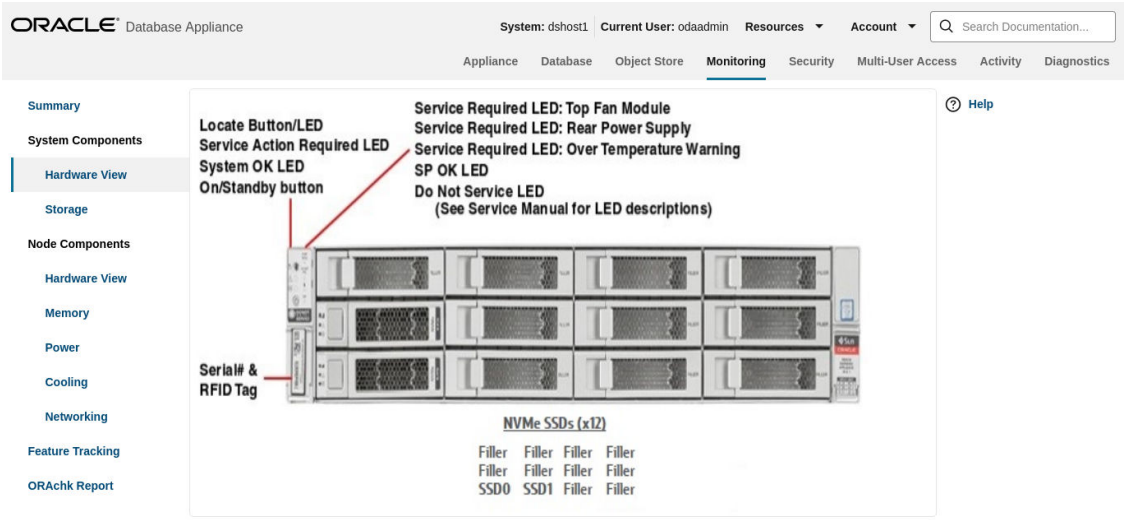
To view online help information such as Oracle Database Appliance documentation, FAQ, and blogs, click on the **Resources** tab on the Appliance page.

Step 2 - Hardware Monitoring and Feature Tracking

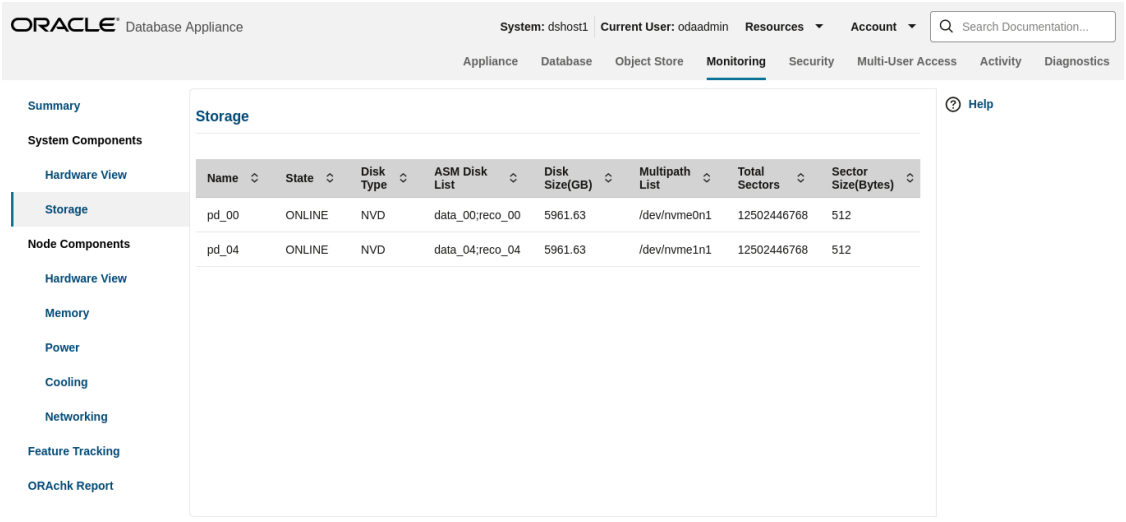
The BUI displays Oracle Database Appliance hardware status and tracks feature usage including High Water Marks.



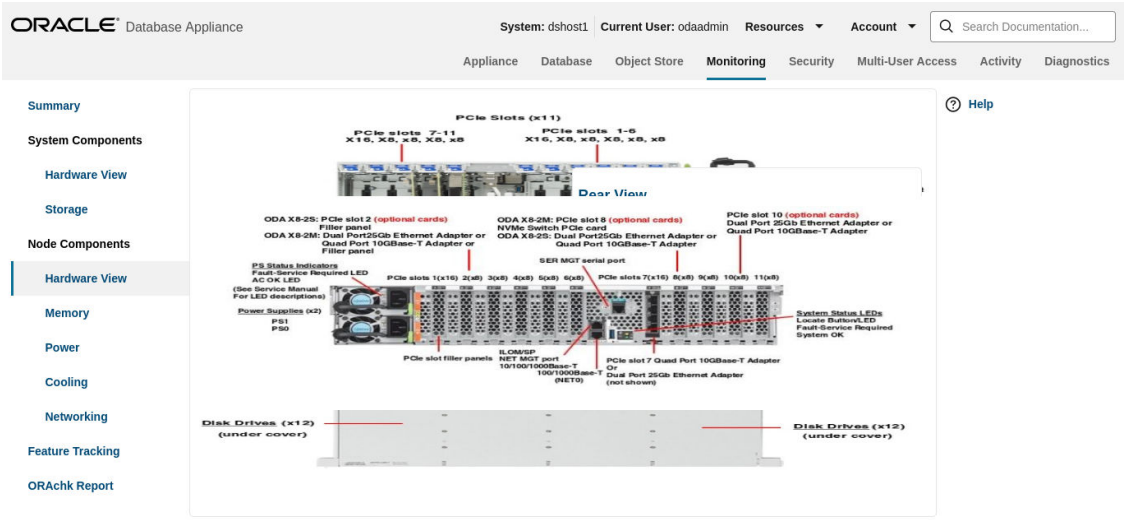
Hardware Status



Storage Configuration

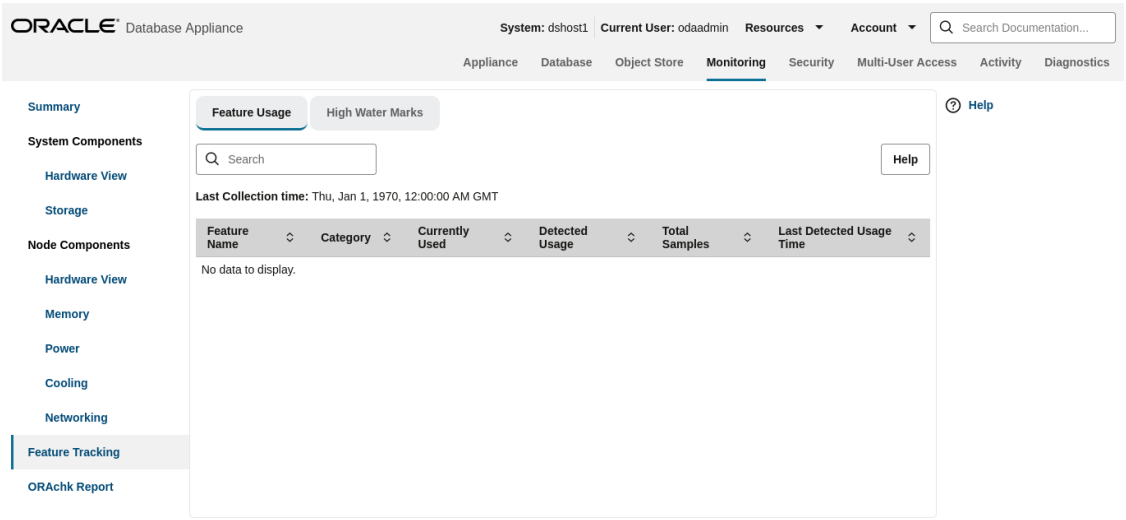


Hardware View



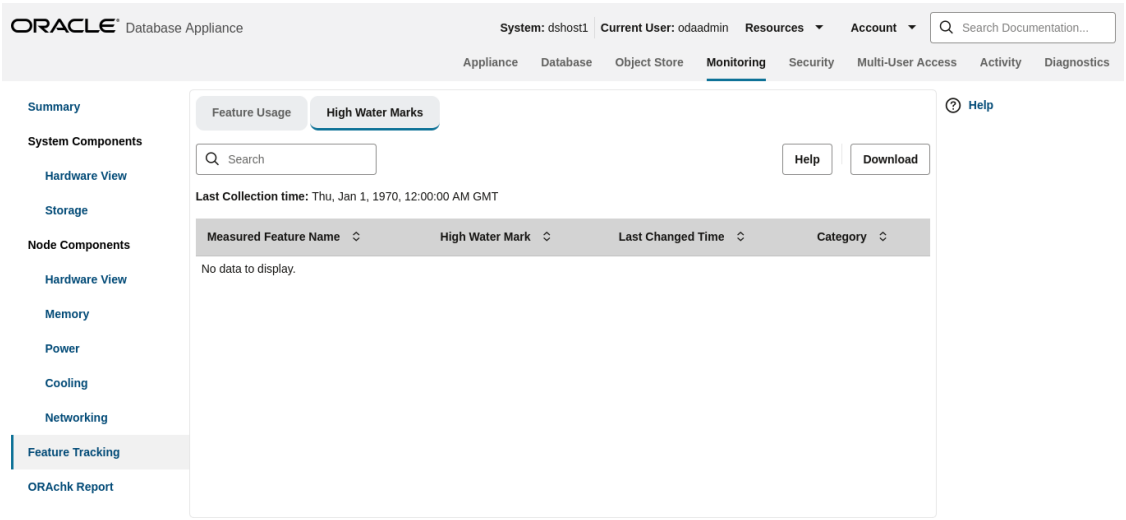
Feature Tracking

The Feature Tracking output displayed in the simulator may not match the display on an actual Oracle Database Appliance. Following is a sample output:



High Water Marks

The High Water Marks output displayed in the simulator may not match the display on an actual Oracle Database Appliance.



Step 3 - Review Appliance Configuration

ODACLI assists in the fast deployment, patching, and easy management of Oracle Database Appliance.

The Oracle Database Appliance command line interfaces (odacli, odaadmcli) are tools that can also be used to install, configure, and interrogate the status of Oracle Database Appliance.

Review the following `odaadmcli` commands that provide information about Oracle Database Appliance configuration. The sample output displayed in the simulator may not match exactly with the sample output on an actual appliance. For more details, refer to the Oracle Database Appliance documentation library for the latest release.

> **Note:**
>
> The Oracle Database Appliance simulator does not support `odaadmcli` commands. The `odaadmcli` command examples in this guide are representative of the sample output when running the `odaadmcli` commands on an actual Oracle Database Appliance deployment.

Command: odaadmcli show server

Description: Displays the server/node status, including Oracle ILOM IP address, firmware version, power consumption, and other details. This is helpful for an at-a-glance view of basic server and node information.

```
$ sudo odaadmcli show server

        Power State              : On
        Open Problems            : 0
        Model                    : ODA X7-2-HA
```

```
         Type                      : Rack Mount
         Part Number               : ODA X7-2-HA
         Serial Number             : 1750XD0003
         Primary OS                : Not Available
         ILOM Address              : 10.145.203.81
         ILOM MAC Address          : 00:10:E0:DA:CD:66
         Description               : Oracle Database Appliance X7-2 High
Availability 1750XD0003
         Locator Light             : Off
         Actual Power Consumption  : 302 watts
         Ambient Temperature       : 20.250 degree C
         Open Problems Report      : System is healthy
```

Command: odacli describe-system

Description: Displays Oracle Database Appliance deployment status.

```
$ sudo odacli describe-
system



Appliance
Information

----------------------------------------------------------------


                     ID:
oda


Platform:

        Data Disk Count:
9

         CPU Core Count:
36

               Created: December 8, 2024 8:25:14 PM
GMT



System
Information

----------------------------------------------------------------


                   Name:
oda
```

```
            Domain Name:
example.com

              Time Zone:
GMT

             DB Edition:
EE

            DNS Servers:
1.1.1.1

            NTP
Servers:



Disk Group
Information

---------------------------------------------------------------


DG Name                   Redundancy
Percentage

------------------------ ------------------------
------------

Data                      Flex
80

Reco                      Flex
20

Redo                      High
100

Flash                     Flex                     100
```

Command: odaadmcli show processor

Description: This command displays information about the CPUs running in the system.

```
$ sudo odaadmcli show
processor



      NAME  HEALTH HEALTH_DETAILS PART_NO. LOCATION
MODEL                          MAX_CLK_SPEED TOTAL_CORES ENABLED_CORES
      CPU_0 OK     -              SR3AX    P0 (CPU 0) Intel(R) Xeon(R) Gold
6140 CP 2.300 GHz       18        NA
```

```
      CPU_1 OK     -              SR3AX    P1 (CPU 1) Intel(R) Xeon(R) Gold
6140 CP 2.300 GHz       18        NA
```

Command: odaadmcli show memory

Description: This command displays information about the memory.

```
$ sudo odaadmcli show memory

NAME HEALTH HEALTH_DETAILS PART_NO. SERIAL_NO. LOCATION MANUFACTURER
MEMORY_SIZE CURR_CLK_SPEED ECC_Errors

DIMM_0 OK - 3A4K40BB2-CTD 00CE021743373400D8 P0/D0 Samsung 32 GB 2666 MHz 0
DIMM_11 OK - 3A4K40BB2-CTD 00CE02174337340065 P0/D1 Samsung 32 GB 2666 MHz 0
DIMM_12 OK - 3A4K40BB2-CTD 00CE0217433734000D P1/D0 Samsung 32 GB 2666 MHz 0
DIMM_14 OK - 3A4K40BB2-CTD 00CE02174237318364 P1/D2 Samsung 32 GB 2666 MHz 0
DIMM_16 OK - 3A4K40BB2-CTD 00CE0217423731A19A P1/D4 Samsung 32 GB 2666 MHz 0
DIMM_19 OK - 3A4K40BB2-CTD 00CE02174237318394 P1/D7 Samsung 32 GB 2666 MHz 0
DIMM_2 OK - 3A4K40BB2-CTD 00CE02174337340078 P0/D2 Samsung 32 GB 2666 MHz 0
DIMM_21 OK - 3A4K40BB2-CTD 00CE0217423731A195 P1/D9 Samsung 32 GB 2666 MHz 0
DIMM_23 OK - 3A4K40BB2-CTD 00CE02174237318365 P1/D1 Samsung 32 GB 2666 MHz 0
DIMM_4 OK - 3A4K40BB2-CTD 00CE0217433734007B P0/D4 Samsung 32 GB 2666 MHz 0
DIMM_7 OK - 3A4K40BB2-CTD 00CE02174337340013 P0/D7 Samsung 32 GB 2666 MHz 0
DIMM_9 OK - 3A4K40BB2-CTD 00CE02174337340101 P0/D9 Samsung 32 GB 2666 MHz 0
```

Command: odaadmcli show power

Description: This command displays information about the power details for the appliance.

```
$ sudo odaadmcli show power
NAME           HEALTH HEALTH_DETAILS PART_NO. SERIAL_NO. LOCATION INPUT_POWER
OUTPUT_POWER INLET_TEMP EXHAUST_TEMP
Power_Supply_0 OK - 7333459 465824T+1647D30456 PS0 Present 135 watts 20
degrees C 42.500 degree C
Power_Supply_1 OK - 7333459 465824T+1647D30762 PS1 Present 146 watts 20
degrees C 51.500 degree C
```

Command: odaadmcli show cooling

Description: This command displays information about the cooling of the appliance.

```
$ sudo odaadmcli show cooling

NAME HEALTH HEALTH_DETAILS LOCATION FAN % FAN SPEED

Fan_0 OK - FM0 35 % 6900 RPM
Fan_1 OK - FM0 34 % 5900 RPM
Fan_10 OK - FM2 32 % 6200 RPM
Fan_11 OK - FM2 31 % 5500 RPM
Fan_12 OK - FM3 32 % 6300 RPM
Fan_13 OK - FM3 31 % 5500 RPM
Fan_14 OK - FM3 32 % 6300 RPM
Fan_15 OK - FM3 31 % 5500 RPM
Fan_2 OK - FM0 36 % 6800 RPM
Fan_3 OK - FM0 34 % 5900 RPM
```

```
Fan_4 OK - FM1 35 % 6800 RPM
Fan_5 OK - FM1 34 % 5900 RPM
Fan_6 OK - FM1 32 % 6300 RPM
Fan_7 OK - FM1 29 % 5100 RPM
Fan_8 OK - FM2 32 % 6300 RPM
Fan_9 OK - FM2 31 % 5500 RPM
```

Step 4 - Review Storage Configuration

Review the following odaadmcli commands that provide information about Oracle Database Appliance configuration.

Command: odaadmcli show disk

Description: This command is helpful for getting a view into the device mapping and current state of the hard disks. The output lists the drives in the ODA X7-2-HA.

```
$ sudo odaadmcli show disk
```

```
             NAME                PATH
TYPE                     STATE                STATE_DETAILS
             e0_pd_00            /dev/sdbv
HDD                      ONLINE               Good
             e0_pd_01            /dev/sdbw
HDD                      ONLINE               Good
             e0_pd_02            /dev/sdbx
HDD                      ONLINE               Good
             e0_pd_03            /dev/sdby
HDD                      ONLINE               Good
             e0_pd_04            /dev/sdbz
HDD                      ONLINE               Good
             e0_pd_05            /dev/sdca
HDD                      ONLINE               Good
             e0_pd_06            /dev/sdcb
HDD                      ONLINE               Good
             e0_pd_07            /dev/sdcc
HDD                      ONLINE               Good
             e0_pd_08            /dev/sdcd
HDD                      ONLINE               Good
             e0_pd_09            /dev/sdce
HDD                      ONLINE               Good
             e0_pd_10            /dev/sdcf
HDD                      ONLINE               Good
             e0_pd_11            /dev/sdcg
HDD                      ONLINE               Good
             e0_pd_12            /dev/sdch
HDD                      ONLINE               Good
             e0_pd_13            /dev/sdci
HDD                      ONLINE               Good
             e0_pd_14            /dev/sdcj
HDD                      ONLINE               Good
             e0_pd_15            /dev/sdck
SSD                      ONLINE               Good
             e0_pd_16            /dev/sdcl
SSD                      ONLINE               Good
```

```
              e0_pd_17              /dev/sdcm
SSD                       ONLINE                  Good
              e0_pd_18              /dev/sdcn
SSD                       ONLINE                  Good
              e0_pd_19              /dev/sdco
SSD                       ONLINE                  Good
              e0_pd_20              /dev/sdcp
SSD                       ONLINE                  Good
              e0_pd_21              /dev/sdcq
SSD                       ONLINE                  Good
              e0_pd_22              /dev/sdcr
SSD                       ONLINE                  Good
              e0_pd_23              /dev/sdcs
SSD                       ONLINE                  Good
```

Command: odaadmcli show diskgroup

Description: Lists Oracle ASM disk groups configured on Oracle Database Appliance.

DATA is where the database data files are stored.

FLASH is where the hot files or small databases can be placed to improve performance.

RECO is where the backups, archive logs, and redo logs of the database are stored.

REDO is where the redo logs of the database are stored.

```
$ sudo odaadmcli show diskgroup

DiskGroups
----------
DATA
FLASH
RECO
REDO
```

Command: odaadmcli show fs

Description: Lists the details of the Oracle Database Appliance X8-2 file systems, including total Space, Free Space, Disk Group, and other details.

The sample output displayed in the simulator may not match exactly with the sample output on an actual appliance. For more details, refer to the Oracle Database Appliance documentation library for the latest release.

```
$ sudo odaadmcli show fs

 Type     Total Space      Free Space  Total DG Space   Free DG Space
Diskgroup Mount Point
 ext3          30109M          25254M               -
-           /
 ext3            476M            405M               -
-           /boot
 ext3           60347M          22117M               -
-           /opt
 ext3          100665M          72839M               -
-           /u01
```

```
 acfs            5120M           4625M      112116480M      111977204M
DATA /opt/oracle/dcs/commonstore
```

Command: odaadmcli show raidsyncstatus

Description: Lists the status of the boot disk HW RAID.

```
$  sudo odaadmcli show raidsyncstatus

Raid Type  Raid Device      Partitions      RaidStatus Recovery
RecoveryPercentage
 S/W Raid          md0      sdb2 sda2            UU
No                      N/A
 S/W Raid          md1      sdb3 sda3            UU
No                      N/A
```

Command: odaadmcli show storage

Description: The following command displays the storage controllers and drives.

```
$ sudo odaadmcli show storage


==== BEGIN STORAGE DUMP ========
Host Description: Oracle Corporation:ORACLE SERVER X7-2
Total number of controllers: 2
              Id         = 0
              Serial Num = 500605b00d3e88c0
              Vendor     = LSI Logic
              Model      = ORCL-EXT-SAS3
              FwVers     = 13.00.00.00
              strId      = mpt3sas:3b:00.0
              Id         = 1
              Serial Num = 500605b00d3e8450
              Vendor     = LSI Logic
              Model      = ORCL-EXT-SAS3
              FwVers     = 13.00.00.00
              strId      = mpt3sas:5e:00.0

Total number of expanders: 2
              Id         = 0
              Serial Num = 50800200022f163f
              Vendor     = ORACLE
              Model      = DE3-24C
              FwVers     = 0306
              strId      = Secondary
              WWN        = 50800200022e41be
              Id         = 1
              Serial Num = 50800200022f163f
              Vendor     = ORACLE
              Model      = DE3-24C
              FwVers     = 0306
              strId      = Primary
              WWN        = 50800200022e447e
```

```
Total number of PDs: 24
              /dev/sdaa       HGST             HDD 9796gb slot:  0  exp:
0   H7210A520SUN010T
              /dev/sdab       HGST             HDD 9796gb slot:  1  exp:
0   H7210A520SUN010T
              /dev/sdac       HGST             HDD 9796gb slot:  2  exp:
0   H7210A520SUN010T
              /dev/sdad       HGST             HDD 9796gb slot:  3  exp:
0   H7210A520SUN010T
              /dev/sdae       HGST             HDD 9796gb slot:  4  exp:
0   H7210A520SUN010T
              /dev/sdaf       HGST             HDD 9796gb slot:  5  exp:
0   H7210A520SUN010T
              /dev/sdag       HGST             HDD 9796gb slot:  6  exp:
0   H7210A520SUN010T
              /dev/sdah       HGST             HDD 9796gb slot:  7  exp:
0   H7210A520SUN010T
              /dev/sdai       HGST             HDD 9796gb slot:  8  exp:
0   H7210A520SUN010T
              /dev/sdaj       HGST             HDD 9796gb slot:  9  exp:
0   H7210A520SUN010T
              /dev/sdak       HGST             HDD 9796gb slot: 10  exp:
0   H7210A520SUN010T
              /dev/sdal       HGST             HDD 9796gb slot: 11  exp:
0   H7210A520SUN010T
              /dev/sdam       HGST             HDD 9796gb slot: 12  exp:
0   H7210A520SUN010T
              /dev/sdan       HGST             HDD 9796gb slot: 13  exp:
0   H7210A520SUN010T
              /dev/sdao       HGST             HDD 9796gb slot: 14  exp:
0   H7210A520SUN010T
              /dev/sdap       HGST             SSD 3200gb slot: 15  exp:
0   HBCAC2DH2SUN3.2T
              /dev/sdaq       HGST             SSD 3200gb slot: 16  exp:
0   HBCAC2DH2SUN3.2T
              /dev/sdar       HGST             SSD 3200gb slot: 17  exp:
0   HBCAC2DH2SUN3.2T
              /dev/sdas       HGST             SSD 3200gb slot: 18  exp:
0   HBCAC2DH2SUN3.2T
              /dev/sdat       HGST             SSD 3200gb slot: 19  exp:
0   HBCAC2DH2SUN3.2T
              /dev/sdau       HGST             SSD  800gb slot: 20  exp:
0   HBCAC2DH4SUN800G
              /dev/sdav       HGST             SSD  800gb slot: 21  exp:
0   HBCAC2DH4SUN800G
              /dev/sdaw       HGST             SSD  800gb slot: 22  exp:
0   HBCAC2DH4SUN800G
              /dev/sdax       HGST             SSD  800gb slot: 23  exp:
0   HBCAC2DH4SUN800G
==== END STORAGE DUMP =========
```

Step 5 - Review Network Status

Review the following odaadmcli commands that provide information about Oracle Database Appliance configuration.

Command: odaadmcli show network

Description: Displays the MAC address, health status, and temperature of the network ports.

```
$ sudo odaadmcli show network

        NAME           HEALTH HEALTH_DETAILS LOCATION PART_NO MANUFACTURER
MAC_ADDRESS        LINK_DETECTED
DIE_TEMP
        Ethernet_NIC_0 OK     -              NET0     i210    INTEL
00:10:E0:DA:CD:62  no (em1)      N/A
        Ethernet_NIC_1 OK     -              NET1     BCM57417Broadcom
00:10:E0:DA:CD:63  yes (em2)     N/A
        Ethernet_NIC_2 OK     -              NET2     BCM57417Broadcom
00:10:E0:DA:CD:64  yes (em3)     N/A
        Ethernet_NIC_3 -      -              NET3     X540    INTEL
00:0A:F7:CF:36:38  yes (p1p2)    -
        Ethernet_NIC_4 -      -              NET4     X540    INTEL
00:0A:F7:CF:36:30  yes (p1p1)    -
```

This concludes Lab 6.

Glossary

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