

# Oracle® Database Appliance Simulator Labs



Release 19.19 for Linux x86-64

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The Oracle logo, consisting of the word "ORACLE" in white, uppercase, sans-serif font, centered within a solid red square.

ORACLE®

Oracle Database Appliance Simulator Labs, Release 19.19 for Linux x86-64

F78632-01

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# Contents

## Preface

---

Audience	v
Documentation Accessibility	v
Related Documents	vi
Conventions	vi

## 1 Setting Up the Oracle Database Appliance Simulator

---

Prerequisites for Setting up the Simulator	1-1
Installing the Simulator	1-2
Accessing the Oracle Database Appliance Simulator	1-5
Creating a Restore Point or Snapshot for the Oracle Database Simulator	1-5
About BUI Agent Certificate Issue	1-6
Restarting the Simulator in a Container	1-7

## 2 Connecting to the Oracle Database Appliance OCI Lab Environment

---

About Oracle Database Appliance Simulator Lab Exercises	2-1
Requirements for Oracle Database Appliance Simulator Lab Exercises	2-2
Connecting to the Simulator Using the BUI	2-2
Connecting to the Simulator Using ODACLI Commands	2-3

## 3 Oracle Database Appliance Simulator Lab Exercises

---

Lab 1 - Deploy Appliance	3-1
Step 1 - Enable Multi-User Access	3-2
Step 2 - Add the Appliance to the Network	3-3
Step 3 - Update the Repository with the Oracle Database Appliance Software	3-4
Step 4 - Deploy the Appliance	3-6
Step 5 - Validate the Deployment	3-9
Step 6 - Networking	3-10
Lab 2 - Manage Databases	3-11
Step 1 - Create a new database using the BUI	3-12

Step 2 - Delete a Database	3-14
Step 3 - View the Databases and Database Homes Using the CLI	3-15
Step 4 - Create a Database with the CLI	3-16
Step 5 - Delete and Recreate a Database	3-17
Step 6 - Create a CPU Pool for a Database	3-19
Step 7 - Delete a Database Home	3-21
Step 8 - Create Database Backups on Local Disk, External NFS Storage, or on Oracle Cloud	3-21
Lab 3 - Patch and Update	3-24
Step 1 - Update the Oracle Database Appliance Repository with Latest Patches	3-24
Step 2 - Update the DCS Agent (If not done already)	3-26
Step 3 - Update the Server	3-27
Step 4 - Patch a Database: Update a Database to point to a New Database Home	3-27
Step 5 - Upgrade a Database	3-30
Lab 4 - Virtualization: Create Application and Database KVMs	3-31
Step 1 - Create an Application KVM (Compute Instance)	3-31
Step 2 - Create a Database KVM (Database System)	3-36
Lab 5 - Multi-User Access	3-38
Step 1 - Create New Users	3-39
Step 2 - Grant a Resource to a User	3-39
Step 3 - Create a Resource by a User	3-40
Lab 6 - Monitoring and Resources	3-41
Step 1 - Advanced Information, Security Reports, Diagnostics, Online Help	3-42
Step 2 - Hardware Monitoring and Feature Tracking	3-43
Step 3 - Review Appliance Configuration	3-45
Step 4 - Review Storage Configuration	3-49
Step 5 - Review Network Status	3-53

## Index

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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](#)
- [Documentation Accessibility](#)
- [Related Documents](#)
- [Conventions](#)

## 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

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

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## 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/](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
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action or terms defined in the text.
<i>italic</i>	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-based 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 ODA CLI 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.

Docker 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 the docker is running:

```
# docker 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 ODA CLI 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: 2021_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 the docker is running and to view which containers are running:

```
#docker 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: 2021_04_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\_19.16.0.0.0/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:

<code>create [ha single]</code>	Create a new snapshot of the simulator
<code>restore [ha single]</code>	Restore the simulator to a previous snapshot
<code>list [ha single]</code>	List all snapshots created with their IDs
<code>help, -h</code>	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_19.12_ade/simulator_19.12.0.0.0/snapshots.dat
doesn't exist. Creating a new one...
Snapshot with ID: 1 has been created successfully. Timestamp: Wed Sep
22 14:01:24 PDT 2022
# ./snapshot.sh list oda-1
ID          CONTAINER NAME          DEPLOYMENT TYPE  TIMESTAMP
1           oda-1                   single           Wed Sep 22
14:01:24 PDT 2021
# ./snapshot.sh restore 1 oda-1
Snapshot with ID: 1 has been restored successfully!
```

## About BUI Agent Certificate Issue

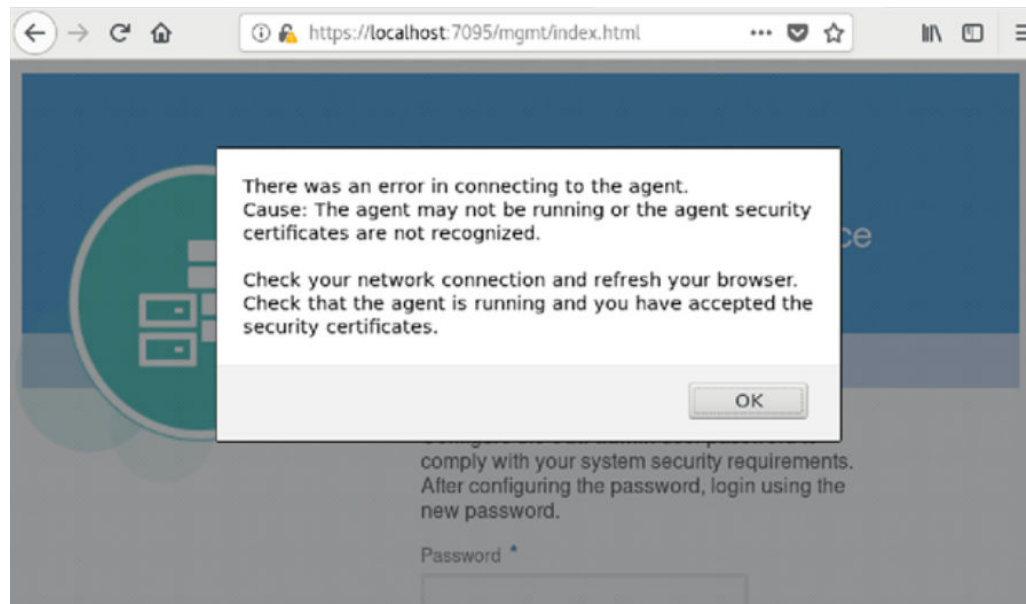
Understand the common BUI issues you may encounter when setting up the Oracle Database Appliance simulator.

### Requirements

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

```
https://server IP:7097/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 7097-1 or 7096.

```
https://server IP:7096
( 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:7097/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 ODA CLI 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
```

# 2

## 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.
- [Requirements for Oracle Database Appliance Simulator Lab Exercises](#)  
Understand the requirements for running Oracle Database Appliance simulator lab exercises.
- [Connecting to the Simulator Using the BUI](#)  
Follow these steps to connect to the simulator.
- [Connecting to the Simulator Using ODA CLI Commands](#)  
Follow these steps to connect to the simulator using ODA CLI commands.

### 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 UUIs 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.

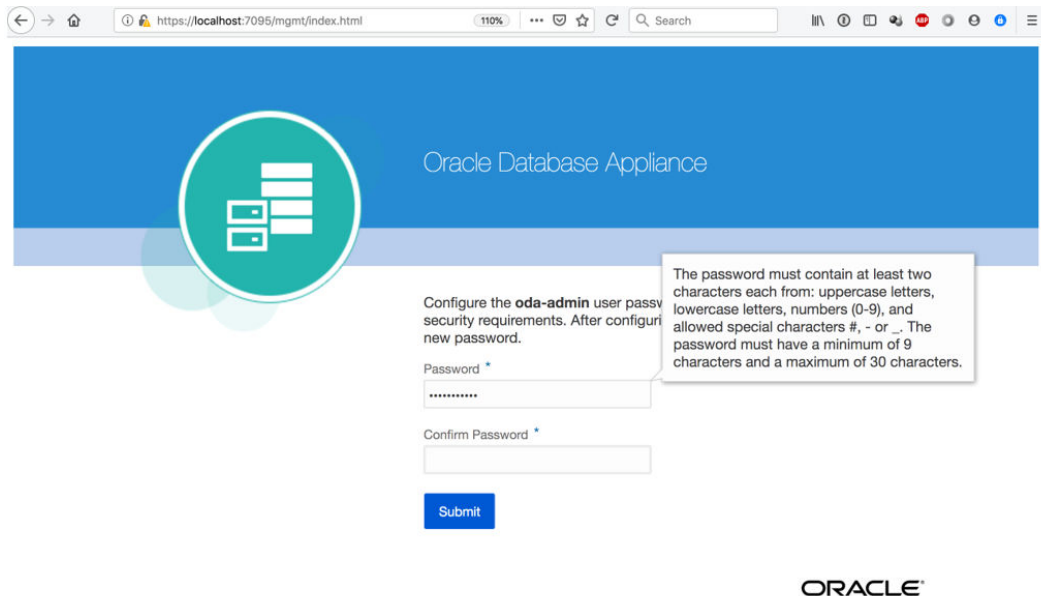
Connect to the simulator as follows:

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

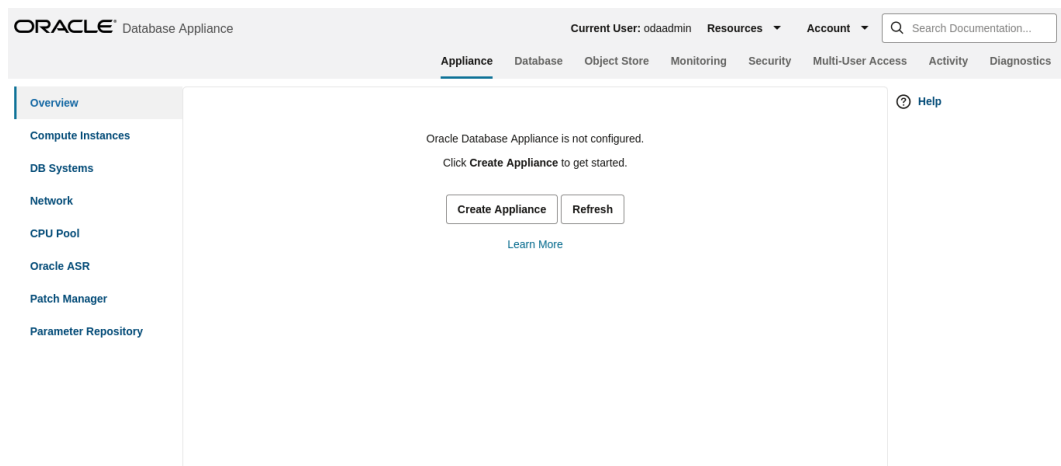
```
https://IP Address:xxxx/mgmt/index.html (for example: 7095)
```

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:**

Make sure you have a command line window and a web browser open for the lab exercises as some lab exercises require ODA CLI 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 - 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 2 - 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 3 - 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*.

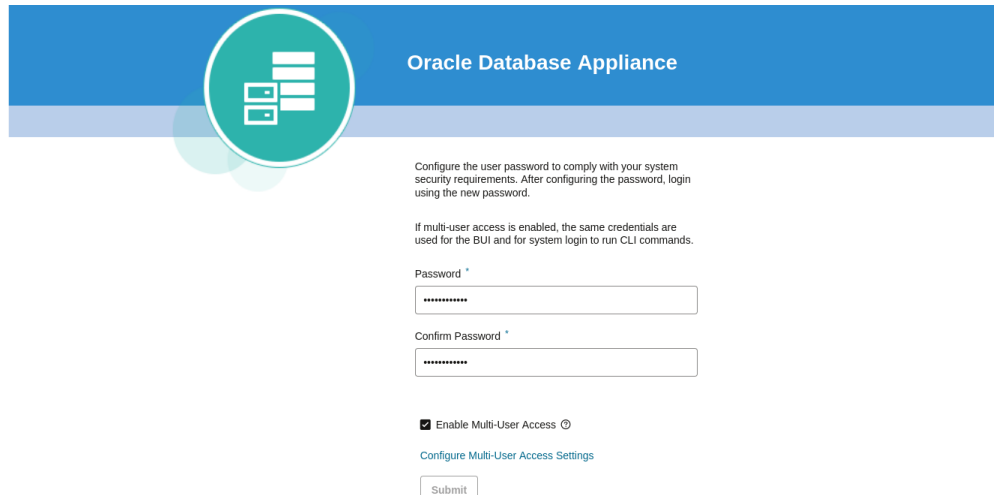
- [Step 4 - Deploy the Appliance](#)  
You can deploy the appliance using either the BUI or the command line. The command line is useful for scripted and silent installations. This lab uses the BUI.
- [Step 5 - Validate the Deployment](#)  
Validate the deployment.
- [Step 6 - Networking](#)  
Check the network.

## Step 1 - 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.



The screenshot shows the Oracle Database Appliance BUI configuration page. At the top, there is a blue header with the Oracle Database Appliance logo and title. Below the header, there is a green circular icon with a server rack. The main content area is white and contains the following text and form elements:

Configure the user password to comply with your system security requirements. After configuring the password, login using the new password.

If multi-user access is enabled, the same credentials are used for the BUI and for system login to run CLI commands.

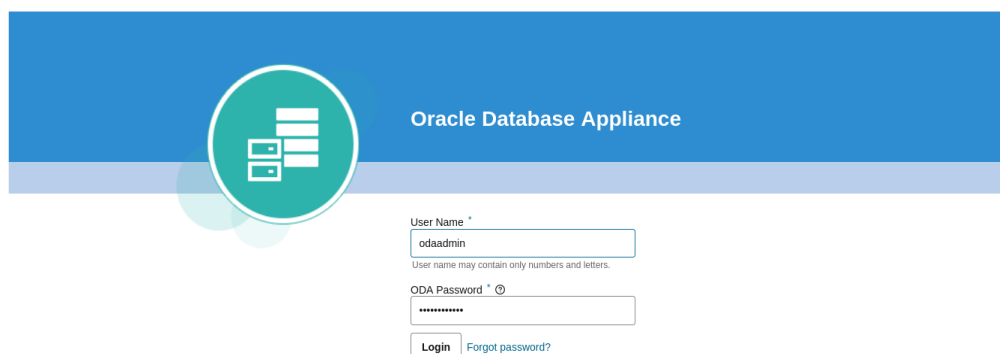
Password \*

Confirm Password \*

Enable Multi-User Access ⓘ

[Configure Multi-User Access Settings](#)

Log into BUI.



The screenshot shows the Oracle Database Appliance BUI login page. At the top, there is a blue header with the Oracle Database Appliance logo and title. Below the header, there is a green circular icon with a server rack. The main content area is white and contains the following text and form elements:

User Name \*

User name may contain only numbers and letters.

ODA Password \* ⓘ

[Forgot password?](#)

## Step 2 - 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 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.

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.

```
[oracle@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 plp1:      [ OK ]
Shutting down interface plp2:      [ OK ]
Shutting down loopback interface:   [ OK ]
Bringing up loopback interface:     [ OK ]
Bringing up interface :            [ OK ]
Bringing up interface em1:         [ OK ]
Bringing up interface plp1: Determining if ip address 192.168.16.24 is
already in use for device plp1...   [ OK ]
Bringing up interface plp2: Determining if ip address 192.168.17.24 is
already in use for device plp2...   [ 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 3 - 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 19.18 patches, and then in the third lab you will patch the Oracle Database Appliance and databases to the latest 19.19 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-19.18.0.0.0- <i>date</i> -DB-19.18.0.0.zip	Oracle Database 19.18 Clone Files
odacli-dcs-19.18.0.0.0- <i>date</i> -GI-19.18.0.0.zip	Oracle Grid Infrastructure 19.18 Clone Files
odacli-dcs-19.19.0.0.0- <i>date</i> -ODAVM-19.19.0.0.zip	DB 19.19 DB System Template (used in lab 4)
oda-sm-19.19.0.0.0- <i>date</i> -server.zip	Oracle Database Appliance 19.19 Patch Bundle (used in lab 3)
odacli-dcs-19.19.0.0.0- <i>date</i> -DB-19.19.0.0.zip	DB 19.19 Clone Files (used in lab 3)
odacli-dcs-19.19.0.0.0- <i>date</i> -GI-19.19.0.0.zip	Oracle Grid Infrastructure 19.19 Clone Files (used in lab 3)
odacli-dcs-12.1.0.2.0- <i>date</i> -DB-12.1.0.2.zip	DB 12.1 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-19.18.0.0.0-date-GI-19.18.0.0.zip  
  
{  
  "jobId" : "4d428b05-a33f-4fe0-82ec-56849503aa28",  
  "status" : "Running",  
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.18.0.0.0-date-  
GI-19.18.0.0.zip",  
  "reports" : [ ],  
  "createTimestamp" : "April 8, 2023 00:05:38 AM UTC",  
  "resourceList" : [ ],  
  "description" : "Repository Update",  
  "updatedAt" : "April 8, 2023 00:05:38 AM UTC"  
}  
  
$ odacli update-repository -f /opt/oracle/dcs/patchfiles/odacli-  
dcs-19.18.0.0.0-date-DB-19.18.0.0.zip  
  
{  
  "jobId" : "bb1caa66-7d19-4de1-a074-f475f4a2505a",  
  "status" : "Running",  
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.18.0.0.0-date-  
DB-19.18.0.0.zip",  
  "reports" : [ ],  
  "createTimestamp" : "April 8, 2023 00:08:58 AM UTC",  
  "resourceList" : [ ],  
  "description" : "Repository Update",  
  "updatedAt" : "April 8, 2023 00:08:58 AM UTC"  
}
```

When you run commands using the ODA CLI 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 patch manager in the web BUI. However, it is not

necessary as you have used command line to update the repository (clone files) already.

The screenshot shows the Oracle Database Appliance BUI interface. At the top, it displays 'ORACLE Database Appliance' and system information: 'System: dshost1', 'Current User: odaadmin', 'Resources', and 'Account'. A search bar is present on the right. The main navigation menu includes 'Appliance', 'Database', 'Object Store', 'Monitoring', 'Security', 'Multi-User Access', 'Activity', and 'Diagnostics'. On the left, a sidebar lists various management options: Overview, Compute Instances, DB Systems, Network, CPU Pool, Oracle ASR, Patch Manager (highlighted), and Parameter Repository. The main content area is titled 'Update Patch Repository' and contains the following text: 'Download the Oracle Database Appliance patch bundles from My Oracle Support and save the concatenated zip file in a directory on the appliance. For multi-node systems, save the concatenated file in a directory on each node. Then, enter a comma-separated list of absolute file paths (without spaces) for the patch bundles on the appliance.' Below this is a link for 'More Information available at Oracle Database Appliance Patches' and a note: 'Note: After updating the Patch Repository or components, refresh the page to display the latest information.' A form field labeled 'Patch Bundle Location: \*' is present, with a 'Required' label below it. An 'Update Repository' button is located at the bottom right of the form area.

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## 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##`).

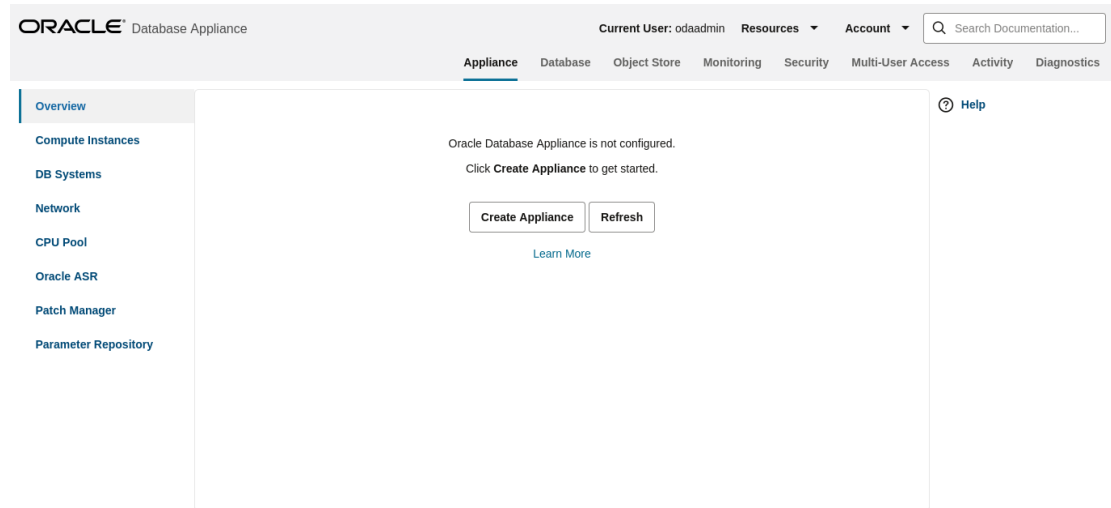
`https://OCI public IP Address>:xxxx/mgmt/index.html`

The screenshot shows the Oracle Database Appliance login page. It has a blue header with the Oracle Database Appliance logo and the text 'Oracle Database Appliance'. Below the header is a login form. The 'User Name' field contains 'odaadmin' and has a note below it: 'User name may contain only numbers and letters.' The 'ODA Password' field is masked with asterisks. There is a 'Login' button and a 'Forgot password?' link.

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ORACLE

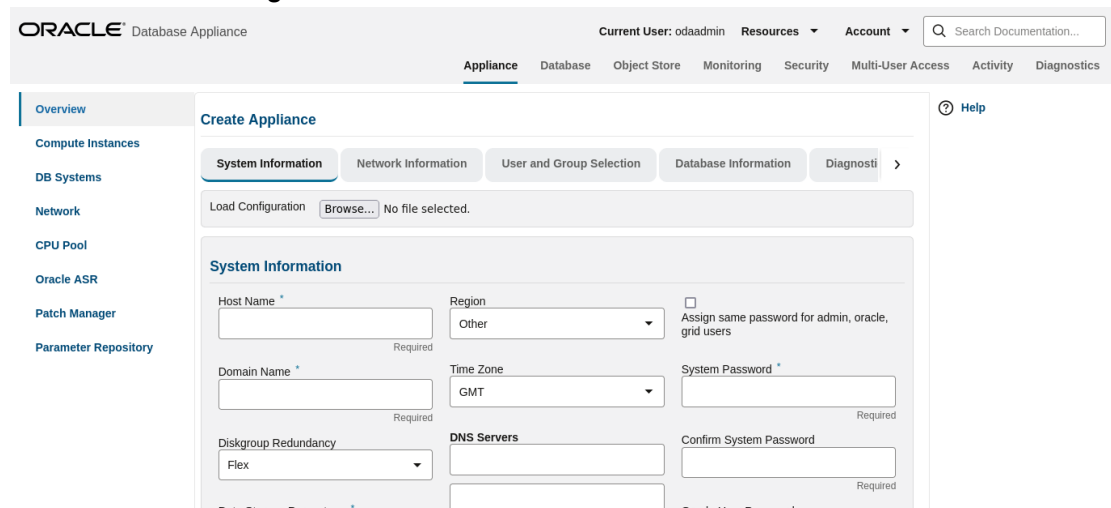
This takes you to the **Appliance** tab in the BUI. It should show that the appliance is not yet deployed.



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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.



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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.

The screenshot shows the 'Create Appliance' wizard in the Oracle Database Appliance interface. The 'Network Information' tab is selected. It contains a 'Load Configuration' section with a 'Browse...' button and the text 'No file selected.'. Below this is the 'Network Information' section with a note: 'Note: Use the command `odacli configure-firstnet` to configure the public network before creating the appliance. Configuring the public network provides the information needed for the Client Access Network.' The form is divided into two columns: 'Client Access Network' and 'ILOM Network'. The 'Client Access Network' section has fields for 'IP Address \*' (10.33.33.34), 'Subnet Mask \*' (255.255.240.0), and 'Gateway \*'. The 'ILOM Network' section has fields for 'ILOM Host Name' and 'IP Address'.

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In the User and Group Selection screen, enter the 19xx ID.

The screenshot shows the 'Create Appliance' wizard in the Oracle Database Appliance interface. The 'User and Group Selection' tab is selected. It contains a 'Load Configuration' section with a 'Browse...' button and the text 'No file selected.'. Below this is the 'User and Group Selection' section. It has two rows of radio buttons: 'Customize Users & Groups' with 'Yes' and 'No' options (where 'No' is selected), and 'Allow OS Role Separation' with 'Yes' and 'No' options (where 'Yes' is selected). At the bottom, there are buttons for 'Reset', '< Cancel', 'Save Configuration', and 'Submit >'.

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Next is the Database screen. Specify the database name and other database related information as shown below. Select DB Version as 19.19.

The screenshot shows the 'Create Appliance' wizard in the Oracle Database Appliance interface. The 'Database' tab is selected. It contains a 'Create Initial Database' section with 'Yes' selected. Below this is a 'Reload DB Version' button. The form is divided into three columns: 'DB Name \*' (db1), 'Database Edition' (Enterprise Edition), and 'SYS and PDB Admin User Password \*' (masked). The second row contains 'DB Unique Name' (empty), 'Database Class' (OLTP), and 'Confirm Password \*' (masked). The third row contains 'DB Version' (23.1.0.0.210720), 'Shape' (odb1(1 Core, 8GB Memory)), and 'Character Set' (AL32UTF8). The fourth row contains 'CDB' (Yes selected), 'Storage' (ASM), and 'National Character Set' (AL16UTF16). The fifth row contains 'PDB Name \*' (pdb1), 'Database Redundancy' (Mirror), and 'Language' (AMERICAN).

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

The screenshot shows the Oracle Database Appliance (ODA) web interface. The top navigation bar includes 'Appliance', 'Database', 'Object Store', 'Monitoring', 'Security', 'Multi-User Access', 'Activity', and 'Diagnostics'. The main content area is titled 'Create Appliance' and has several tabs: 'System Information', 'Network Information', 'User and Group Selection', 'Database Information', and 'Diagnostics'. The 'Diagnostics' tab is selected. Below the tabs, there is a 'Load Configuration' section with a 'Browse...' button and the text 'No file selected.'. The 'Diagnostics Information' section contains the following options:

- Redact sensitive information such as IP and MAC addresses, host names, user names, database and tablespace names, and ports in diagnostic collections.
  - Enable Trace File Redaction:  Yes  No
- Configure and enable Oracle Auto Service Request (Oracle ASR) now or later.
  - Enable ASR:  Yes  No
- ASR Type:  (dropdown menu)
- SNMP Version:  (dropdown menu)
- HTTP Proxy Used for Upload to ASR:  Yes  No

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Click **Submit** to continue and click **Yes** in the confirmation box. This will bring up a link to the job status. Similar to ODA CLI, 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. The web pages refresh every few seconds, so if the database does not show up at first, wait till the page refreshes.

Click on the database name for more details about the database. Click on the Database Home link in the left-hand column, when viewing the **Database** tab to see information about the database home. Note this may take up to a minute to display.

You can also verify that the appliance is properly deployed by clicking the **Appliance** tab to see more details. The view is similar to the screen displayed as follows, taking into account

that this is a simulation.

The screenshot shows the Oracle Database Appliance Basic Information page. The left sidebar contains navigation options: Overview, Compute Instances, DB Systems, Network, CPU Pool, Oracle ASR, Patch Manager, and Parameter Repository. The main content area is titled 'System Information' and displays the following details:

- ID: 8fa14ee1-ed11-455b-a69a-2122c8fc410e
- Platform: X8-2S
- Data Disk Count: 2
- CPU Core Count: 2
- DCS Agent: 23.1.0.0.0
- GI: 23.1.0.0.0
- Created: Fri, Jan 13, 2023, 09:01:24 PM GMT
- Host Name: dshost1
- Domain Name: us.oracle.com
- Time Zone: GMT
- DNS Servers:
- NTP Servers:

Below the system information is a 'Disk Group Information' section with a table header: Name, Redundancy, Physical Total Space, Physical Free Space, Logical Free Space. A 'Refresh' button is located at the bottom right of the table.

## Step 6 - Networking

Check the network.

You can check the network by clicking on the **Network** tab on the left hand pane in the BUI.

The screenshot shows the Oracle Database Appliance Network page. The left sidebar has 'Network' selected. The main content area displays a table with network information. The table has a search bar, a 'Sort by' dropdown set to 'Created: New to', and 'Create' and 'Refresh' buttons. The table shows one network entry:

Network Name	Created	Status	Network Type	Subnet Mask	Gateway	Interface Name	Interface Type	SCAN Name	SCAN IP Address	Node	IP Address	VIP Name	Actions
Public-network	Fri, Jan 13, 2023, 09:01:24 PM GMT	CONFIGURED	Public	255.255.240.0	10.33.32.1	tbond1	Bond	node0-scan	10.33.33.34	Node0	10.33.33.34	node0-vip	

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

information.

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

Following is an example that shows the backup VLAN is created.

Network Name	Created	Status	Network Type	Subnet Mask	Gateway	Interface Name	Interface Type	Node	IP Address	VIP Name	Actions
net1	Fri, Jan 13, 2023, 09:11:47 PM GMT	CONFIGURED	Backup	255.255.255.252	192.168.16.25	btbond1.100	VLAN	Node0	192.168.16.26		Actions
Public-network	Fri, Jan 13, 2023, 09:01:24 PM GMT	CONFIGURED	Public	255.255.240.0	10.33.32.1	btbond1	Bond	Node0	10.33.33.34	node0-vip	Actions

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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.

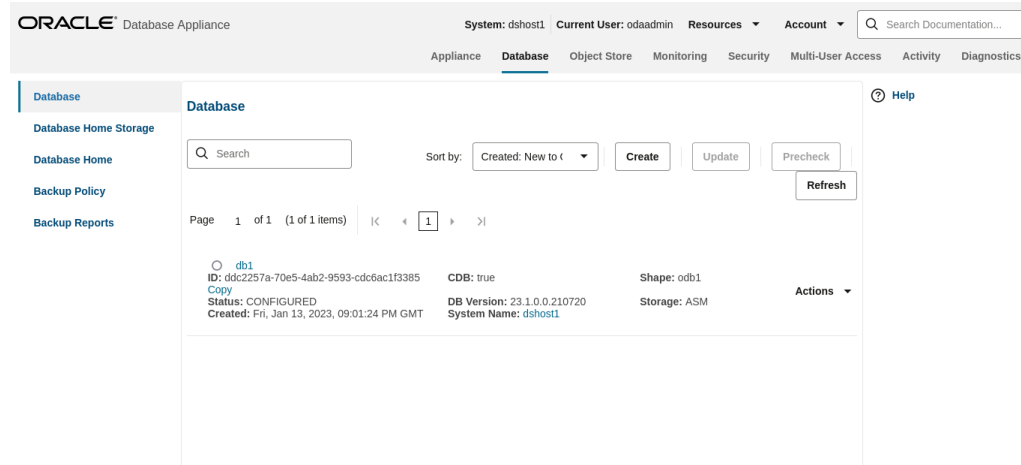
- [Step 1 - Create a new database using the BUI](#)  
Uses the BUI to create a new database.
- [Step 2 - Delete a Database](#)  
This lab uses the BUI to delete a database.
- [Step 3 - View the Databases and Database Homes Using the CLI](#)  
This lab uses ODACLI to view databases and database homes.

- [Step 4 - Create a Database with the CLI](#)  
This lab uses ODA CLI to create a database.
- [Step 5 - Delete and Recreate a Database](#)  
This lab uses ODA CLI 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.



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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**.

The screenshot shows the Oracle Database Appliance web interface. The top navigation bar includes 'System: dshost1', 'Current User: odaadmin', and 'Account'. The main menu has 'Database' selected. On the left, a sidebar lists 'Database', 'Database Home Storage', 'Database Home', 'Backup Policy', and 'Backup Reports'. The main content area is titled 'Create Database' and contains the following text: 'Use the options below to create a database, or clone a database. Database can be cloned from one appliance to another appliance, or to the same appliance.' Below this text are three radio buttons: 'Create a Database' (selected), 'Clone a Database from Backup', and 'Clone a Database'. At the bottom right of the form, there are 'Cancel' and 'Next' buttons.

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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.

The screenshot shows the 'Create Database' screen with the following configuration options filled out: 'DB Name' is 'db2', 'Database Edition' is 'Enterprise Edition', 'SYS and PDB Admin User Password' is masked with asterisks, 'DB Unique Name' is empty, 'Database Class' is 'OLTP', 'Confirm Password' is masked with asterisks, 'Use Existing DB Home' has 'No' selected, 'Shape' is 'odb1(1 Core, 8GB Memory)', 'Character Set' is 'AL32UTF8', 'DB Version' is '19.12.0.0.210720', 'Storage' is 'ACFS', 'National Character Set' is 'AL16UTF16', 'CDB' has 'No' selected, 'Database Redundancy' is 'Select Database Redundancy', and 'Language' is 'AMERICAN'. There is a 'Reload DB Version' button at the top left of the form area.

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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 ODA CLI, 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.

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

Once the operation completes, click on the **Appliance** tab and then the **Database** tab at the top right of the web page. This should show the newly-created database. The web pages refreshes every few seconds, so if the database does not show up at first, wait till the page refreshes.

Database Name	ID	Status	Created	CDB	DB Version	System Name	Shape	Storage	Actions
db2	854c1bcf-4aa2-492b-bc8a-0f74a2a19dcf	CONFIGURED	Fri, Jan 13, 2023, 09:27:29 PM GMT	false	19.12.0.0.210720	dshost1	odb1	ACFS	Actions
db1	ddc2257a-70e5-4ab2-9593-cdc6ac1f3385	CONFIGURED	Fri, Jan 13, 2023, 09:01:24 PM GMT	true	23.1.0.0.210720	dshost1	odb1	ASM	Actions

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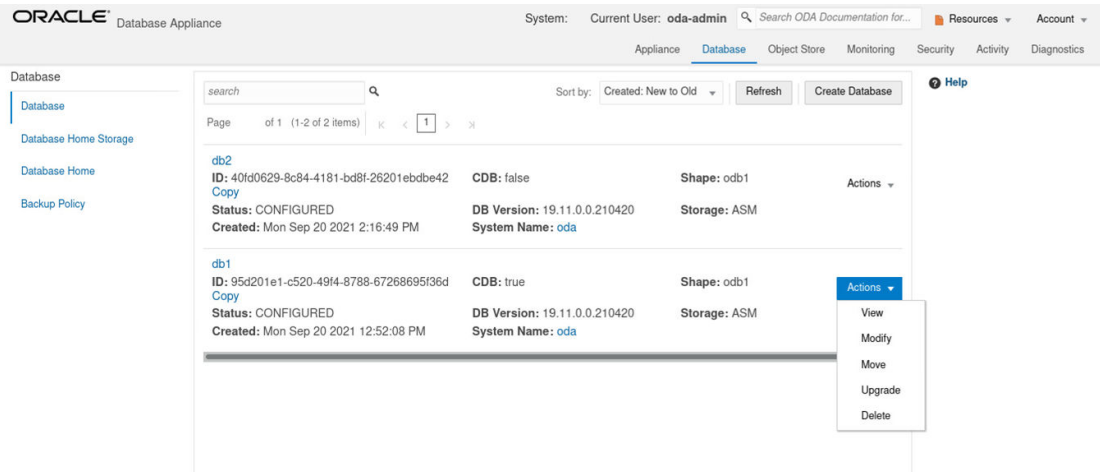
See detailed database information by clicking on the database name, for example, db2. You can also view the newly-created home by clicking on the Database Home link in the left-hand column of the **Database** tab.

## Step 2 - Delete a Database

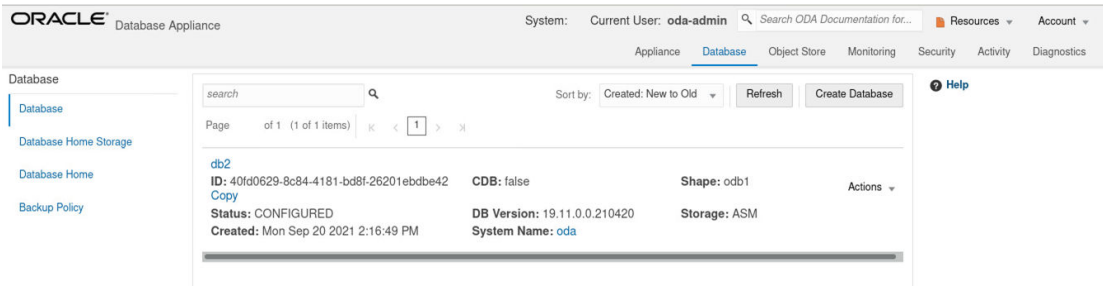
This lab uses the BUI to delete a database.

You can also delete a database from the **Database** tab. Click the **Appliance** tab and then **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 3 - 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: 19.17.0.0.221016
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: odbl
    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: April 8, 2023 1:18:48 AM UTC
  DB Domain Name: example.com
Associated Networks:

```

## 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 19.19.0.0.0
```

Job details

```

-----
ID: 2051bf5b-4815-4cd2-8d85-e51367ba3269
Description: Database service creation with db name: db3
Status: Created
Created: April 8, 2023 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: April 8, 2023 1:45:49 AM UTC
                Message:

Task Name                               Start Time
End Time                                 Status
-----
Validating dbHome available space        April 8, 2023 1:45:50 AM UTC
April 8, 2023 1:45:50 AM UTC    Success
Setting up ssh equivalance                April 8, 2023 1:45:50 AM UTC
April 8, 2023 1:45:50 AM UTC    Success
Setting up ssh equivalance                April 8, 2023 1:45:50 AM UTC
April 8, 2023 1:45:50 AM UTC    Success
Creating ACFS database home              April 8, 2023 1:45:51 AM UTC
April 8, 2023 1:45:51 AM UTC    Success
Validating dbHome available space        April 8, 2023 1:45:51 AM UTC
April 8, 2023 1:45:51 AM UTC    Success
Configuring user access to ACFS DBHome base storage April 8, 2023 1:45:51 AM
UTC      April 8, 2023 1:45:51 AM UTC    Success
Creating DbHome Directory                 April 8, 2023 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
19.19.0.0.230417      false    OLTP    odb1   ASM        CONFIGURED
a1314be1-2c6f-411f-b2c7-61444449f02b  db3      SI
324a42ea-bba2-477d-8bca-5a26af159f1c  odb1     ASM        CONFIGURED
19.19.0.0.230417      false    OLTP
ecfa440e-2482-40c1-8ccd-67316cd48ba2

```

## 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" : " April 8, 2023 01:49:40 AM UTC",
  "endTime" : " April 8, 2023 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
Status	DbHomeID	Storage	
324a42ea-bba2-477d-8bca-5a26af159f1c	db3	SI	
19.17.0.0.221016	false	OLTP	odb1
CONFIGURED	ecfa440e-2482-40c1-8ccd-67316cd48ba2	ASM	

```
$ 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" : " April 8, 2023 01:49:40 AM UTC",
    "endTime" : " April 8, 2023 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
Status	DbHomeID	Storage	

```
324a42ea-bba2-477d-8bca-5a26af159f1c    db3      SI
19.17.0.0.221016      false    OLTP    odb1     ASM      CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2
```

Using the CLI, create a new database db4.

```
$ odacli create-database -n db4 -v 19.19.0.0.0
```

```
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: April 8, 2023 1:51:50 AM UTC
Message:
```

```
Task Name          Start Time
End Time           Status
-----
```

```
# odacli list-databases
```

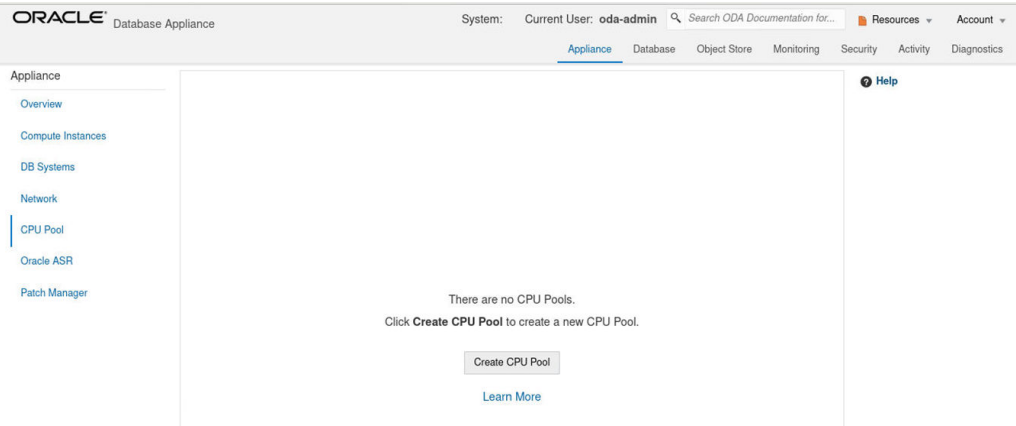
```
ID          DB Name  DB Type  DB
Version     CDB      Class    Shape   Storage  Status
DbHomeID
ID          DB Name  DB Type  DB
Version     CDB      Class    Shape   Storage  Status
DbHomeID
-----
324a42ea-bba2-477d-8bca-5a26af159f1c    db3      SI
19.19.0.0.230417      false    OLTP    odb1     ASM      CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2
deac01db-eea8-4f4e-a511-aea042be3a18    db4      SI
19.17.0.0.221016      false    OLTP    odb1     ASM      CONFIGURED
c3c63738-703e-4c1d-98de-95b551b67468
```

## Step 6 - Create a CPU Pool for a Database

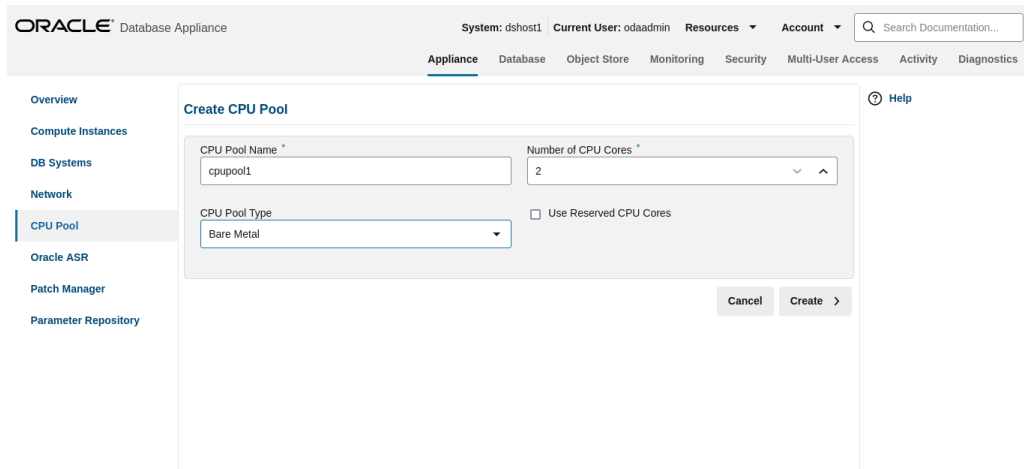
This lab uses the BUI to create a CPU pool.

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

Click **CPU Pool** on the left, then click **Create a CPU Pool**.

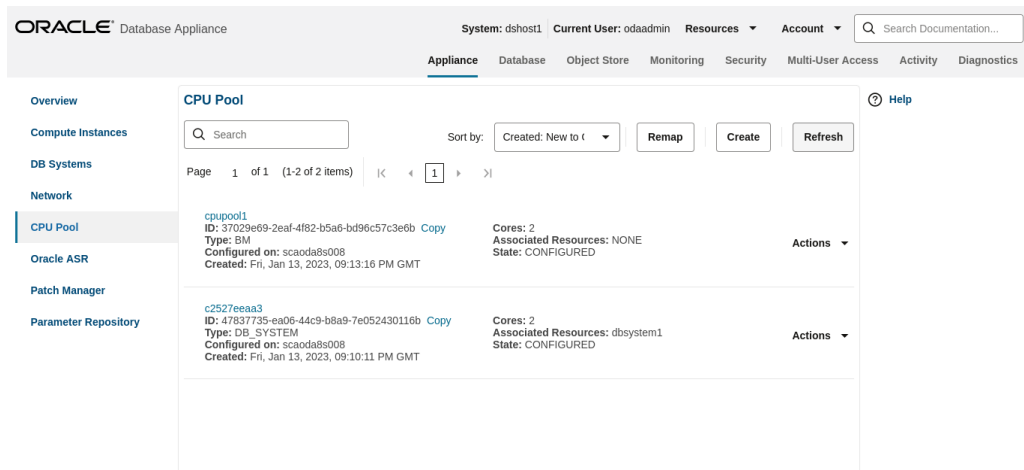


Specify the CPU Pool Name as `cpupool1`, select CPU Pool Type as Bare Metal, and Number of CPU Cores as 2, then click **Create**.



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



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## 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 on Delete DB Home (for example, home1).

The screenshot shows the Oracle Database Appliance BUI interface. The 'Database' tab is selected, and the 'Database Home' sub-tab is active. The page displays a list of database homes. The 'OraDB19000\_home1' entry is selected, and the 'Actions' dropdown menu is open, showing the 'Delete' option. The interface includes a search bar, a sort dropdown, and buttons for 'Create', 'Patch', 'Precheck', and 'Refresh'. The list of database homes includes details such as ID, Location, Edition, and Created date.

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You can see that the database home is deleted.

The screenshot shows the Oracle Database Appliance BUI interface after the deletion of the database home. The 'Database Home' sub-tab is active, and the list of database homes now only contains 'OraDB23000\_home1' and 'OraDB19000\_home1'. The 'OraDB19000\_home1' entry is no longer present in the list. The interface includes a search bar, a sort dropdown, and buttons for 'Create', 'Patch', 'Precheck', and 'Refresh'.

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## 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. There is a default backup policy associated with the database.

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

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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. The `db4` database has the default backup policy, so modify the database first 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. Database Information page You can see the backup reports under the Backups heading.

ORACLE Database Appliance System: dshost1 Current User: odaadmin Resources Account Search Documentation...

Appliance Database Object Store Monitoring Security Multi-User Access Activity Diagnostics

Database Database Home Storage Database Home Backup Policy Backup Reports

Backup Policy Search Sort by: Created: New to ( Create Refresh

Page 1 of 1 (1-2 of 2 items) System: Bare Metal

Name: bckp1 Destination: Internal FRA Compression Algorithm: BASIC Compression Enabled: true System Name: dshost1 Created: Fri, Jan 13, 2023, 09:22:50 PM GMT	ID: 03395f6a-cd98-4289-8546-96c1513a4764 Copy Recovery Window (days): 1 Crosscheck Enabled: true	Actions
Name: default Destination: Internal FRA Compression Algorithm: BASIC Compression Enabled: true System Name: dshost1 Created: Fri, Jan 13, 2023, 09:01:24 PM GMT	ID: ed1f007c-8c34-4a83-ad87-efb45727e766 Copy Recovery Window (days): 7 Crosscheck Enabled: true	Actions

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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. 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 Object Store Credential**.

Enter the required Object Store Credentials including the name.

ORACLE Database Appliance System: dshost1 Current User: odaadmin Resources Account Search Documentation...

Appliance Database Object Store Monitoring Security Multi-User Access Activity Diagnostics

Object Store Credentials Create Object Store Credential Help

Object Store Credential Name \* User Name \*  
oscn1 fn1.ln1@oracle.com

Endpoint URL \* Password \*  
https://swiftobjectstorage.us-ashburn-1.oraclecloud.com/v1/ \*\*\*\*\*

Tenant Name \* Confirm Password \*  
paasdevlbcssi \*\*\*\*\*

< Cancel Create >

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You can now create a backup policy, attach a database to the policy, and specify the Object Store as the backup destination. 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 19.18 to 19.19, and upgrade a database from release 12.2 to 19.19.

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 19.19.
- [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.
- [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 5 - Upgrade a Database](#)  
To upgrade a database from release 12.2 to 19.19, we must first create an Oracle Database release 12.2 database.

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

You must download the server patch file for Oracle Database appliance release 19.19.

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 19.19 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 19.18 to 19.19, you must update the repository with the 19.18 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 **Appliance** tab, click on Patch Manager on the left, and then click the **Update Server/Storage** tab. Note all the installed 19.18 components. Since you have not updated the repository to 19.18, all components are displayed as up to date. Next, update the server repository. The server patch file is `oda-sm-19.19.0.0.0-date-server.zip`.

```
$ odacli update-repository -f /opt/oracle/dcs/patchfiles/oda-sm-19.19.0.0.0-date-server.zip

{
  "jobId" : "b3794603-4fbb-42a4-89ee-791d420e68a6",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/oda-sm-19.19.0.0.0-date-server.zip",
  "reports" : [ ],
  "createTimestamp" : "April 8, 2023 06:29:42 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedAtTime" : "April 8, 2023 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 19.19 Oracle Grid Infrastructure and database clone files, if you want to create a 19.19 database or patch a database to 19.19. 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-19.19.0.0.0-date-GI-19.19.0.0.zip

{
  "jobId" : "529141f1-c5fb-42a6-ad1e-0b5540781a71",
  "status" : "Waiting",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.18.0.0.0-date-GI-19.18.0.0.zip",
  "reports" : [ ],
  "createTimestamp" : "April 8, 2023 06:32:43 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedAtTime" : "April 8, 2023 06:32:43 AM UTC"
}

$ odacli update-repository -f /opt/oracle/dcs/patchfiles/odacli-
```

```
dcS-19.18.0.0.0-date-DB-19.18.0.0.0.zip
```

```
{
  "jobId" : "6478c708-bef8-4d5a-83a6-b411fe9b3e7d",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.18.0.0.0-date-DB-19.18.0.0.0.zip",
  "reports" : [ ],
  "createTimestamp" : "April 8, 2023 06:33:13 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedAtTime" : "April 8, 2023 06:33:13 AM UTC"
}
```

```
$ odacli update-repository -f /opt/oracle/dcs/patchfiles/odacli-dcs-19.15.0.0.0-date-DB-12.2.0.1.zip
```

```
{
  "jobId" : "76e5156b-160f-41fc-b9aa-580992902d9f",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-12.1.0.2.0-date-DB-12.1.0.2.zip",
  "reports" : [ ],
  "createTimestamp" : "April 8, 2023 07:06:26 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedAtTime" : "April 8, 2023 07:06:27 AM UTC"
}
```

After you update the repository, you can use the web console to see the 19.19.0.0.0 available component versions.

Component	Installed Version	Available Version
OAK	23.1.0.0.0	up-to-date
GI ( OraGrid19000 )	23.1.0.0.0	up-to-date
DCSAGENT	23.1.0.0.0	up-to-date
OS	7.7	7.9
ILOM	4.0.3.80.r127198	5.0.0.22.r132877
BIOS	52001701	up-to-date
LOCAL CONTROLLER FIRMWARE ( c3 )	80000681	up-to-date
LOCAL CONTROLLER FIRMWARE ( c4 )	80003072	up-to-date
LOCAL CONTROLLER FIRMWARE ( c5 )	20.08.01.14	up-to-date
SHARED CONTROLLER FIRMWARE ( c0, c1 VDV1RL02 )		up-to-date
LOCAL DISK FIRMWARE ( c2d0, c2d1 )	1102	up-to-date

**Update Options:**

- Update Server
  - Ignore Precheck Failures
- Update Storage
  - Rolling

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## 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.

The DCS agent is the Oracle Database Appliance software that provides the intelligence and automation. In the patching screens, select **Update Server**, then click

Apply Patch, then click **Submit**, and then click **OK** in the Updating DCS Agent window.

The screenshot shows the Oracle Database Appliance BUI interface. The 'Component Details' tab is active for the 'odasim-1' component. A table lists the following components and their versions:

Component	Installed Version	Available Version
OAK	23.1.0.0.0	up-to-date
GI ( OraGrid19000 )	23.1.0.0.0	up-to-date
DCSAGENT	23.1.0.0.0	up-to-date
OS	7.7	7.9
ILOM	4.0.3.80.r127198	5.0.0.22.r132877
BIOS	52001701	up-to-date
LOCAL CONTROLLER FIRMWARE ( c3 )	80000681	up-to-date
LOCAL CONTROLLER FIRMWARE ( c4 )	80003072	up-to-date
LOCAL CONTROLLER FIRMWARE ( c5 )	20.08.01.14	up-to-date
SHARED CONTROLLER FIRMWARE ( c0, c1 )	VDV1RL02	up-to-date
LOCAL DISK FIRMWARE ( c2d0, c2d1 )	1102	up-to-date

Update Options:

- Update Server
  - Ignore Precheck Failures
- Update Storage
  - Rolling

Buttons for 'Precheck' and 'Updating Server...' are visible at the bottom right of the component details window.

From the BUI, go to the **Appliance** tab, click **Patch Manager**, and click **Refresh** to verify that the DCS Agent is up-to-date.

It is recommended that you run the prechecks for the operating system, Oracle ILOM, and Oracle Grid Infrastructure before patching by clicking **Precheck**. Note that the simulator output maybe different.

## 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.

To update the server, select Update Server, then click Apply Patch. After the job is completed, you can refresh the browser to see that Node0 has all 19.19 components installed, and everything is up-to-date.

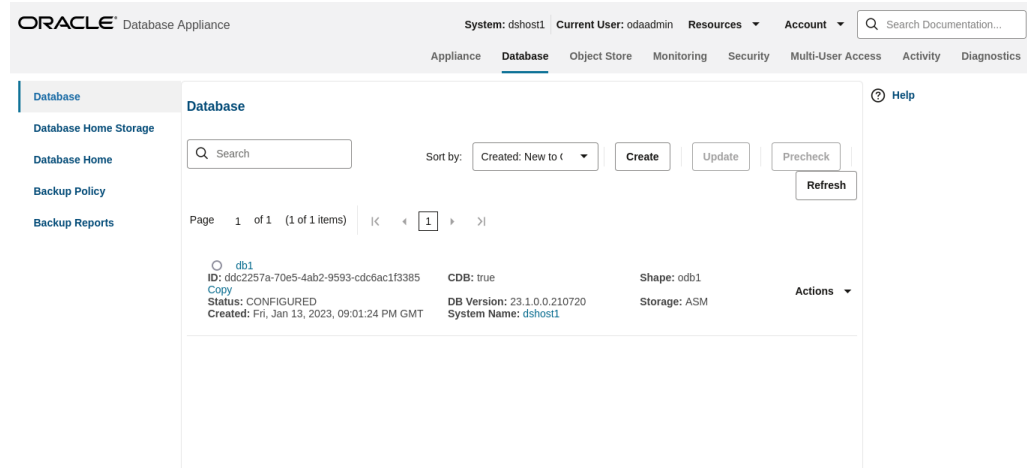
Patching an actual Oracle Database Appliance will take some time, whereas the simulator speeds up the whole process. The Linux prompt returns immediately, and the patch runs in the background. You can monitor the progress of the patch job by checking the **Activity** tab.

## 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.

To use the BUI to identify the database homes, go to the **Database** tab.

Click on the database name, for example, db4 to identify the database home ID for patching.



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Note the Database home ID, or the Database home location. You will need this to patch the database by pointing it to a home.

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.

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
Version          CDB      Class    DB Name  DB Type  DB
Status          DbHomeID

-----
-----
324a42ea-bba2-477d-8bca-5a26af159f1c    db3      SI
19.15.0.0.220419    false    OLTP    odb1     ASM
CONFIGURED    ecfa440e-2482-40c1-8ccd-67316cd48ba2
deac01db-eea8-4f4e-a511-aea042be3a18    db4      SI
19.15.0.0.220419    false    OLTP    odb1     ASM
CONFIGURED    c3c63738-703e-4c1d-98de-95b551b67468
```

```
$ odacli list-dbhomes
```

```
ID
Version          Name
Location        Home
Status          Status

-----
-----
a1314be1-2c6f-411f-b2c7-61444449f02b    OraDB19000_home2
```

```

19.15.0.0.220419 /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_2 CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2 OraDB19000_home3
19.15.0.0.220419 /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_3 CONFIGURED
c3c63738-703e-4c1d-98de-95b551b67468 OraDB19000_home4
19.15.0.0.220419 /u01/app/odaorahomebase/odaadmin/
product/19.0.0.0/dbhome_4 CONFIGURED

```

```

$ odacli update-dbhome -i c3c63738-703e-4c1d-98de-95b551b67468 -v 19.19.0.0.0
{
  "jobId" : "af879f3e-9c50-4dfd-86db-5d380a42f8d2",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : " April 8, 2023 06:59:59 AM UTC",
  "resourceList" : [ ],
  "description" : "DB Home Patching: Home Id is
c3c63738-703e-4c1d-98de-95b551b67468",
  "updatedAtTime" : " April 8, 2023 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: April 8, 2023 6:59:59 AM UTC
                Message:

```

Task Name	Start Time
End Time	Status
Adding USER SSH_EQUIVALENCE	April 8, 2023 7:00:02 AM UTC
April 8, 2023 7:00:02 AM UTC	Success
Adding USER SSH_EQUIVALENCE	April 8, 2023 7:00:02 AM UTC
April 8, 2023 7:00:02 AM UTC	Success

Verify that database home db4 is updated to the release 19.19. 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
19.17.0.0.221016                       /u01/app/odaorahomebase/
odaadmin/product/19.0.0.0/dbhome_2 CONFIGURED
ecfa440e-2482-40c1-8ccd-67316cd48ba2  OraDB19000_home3
19.17.0.0.221016                       /u01/app/odaorahomebase/
odaadmin/product/19.0.0.0/dbhome_3 CONFIGURED
c3c63738-703e-4c1d-98de-95b551b67468  OraDB19000_home4
19.17.0.0.221016                       /u01/app/odaorahomebase/
odaadmin/product/19.0.0.0/dbhome_4 CONFIGURED
```

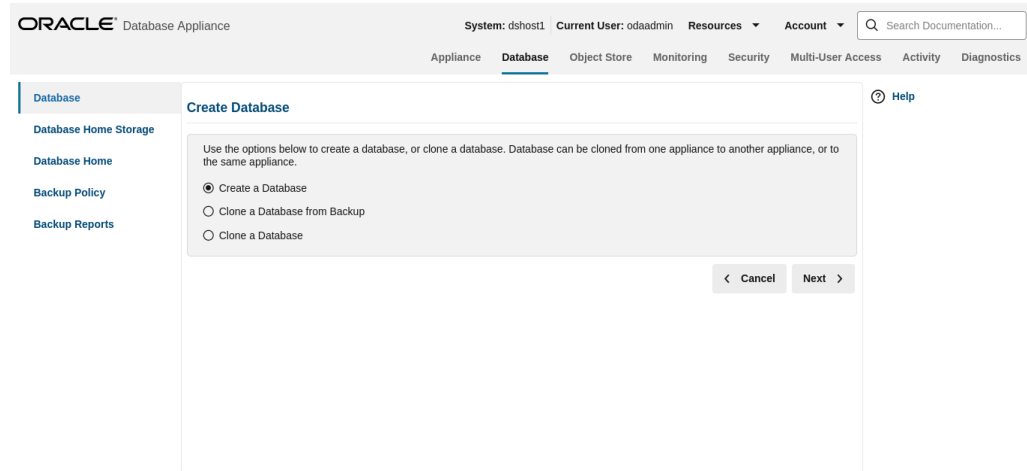
You can also use the BUI to update the database homes by clicking **Patch** on the left panel, and then selecting **Apply** in the Patch drop-down. You have already updated database db4 by pointing to a new home using the command line already.

This concludes Lab 3.

## Step 5 - Upgrade a Database

To upgrade a database from release 12.2 to 19.19, we must first create an Oracle Database release 12.2 database.

Create an Oracle 12.2 database db5. Select **Create a Database**, then click **Next**.

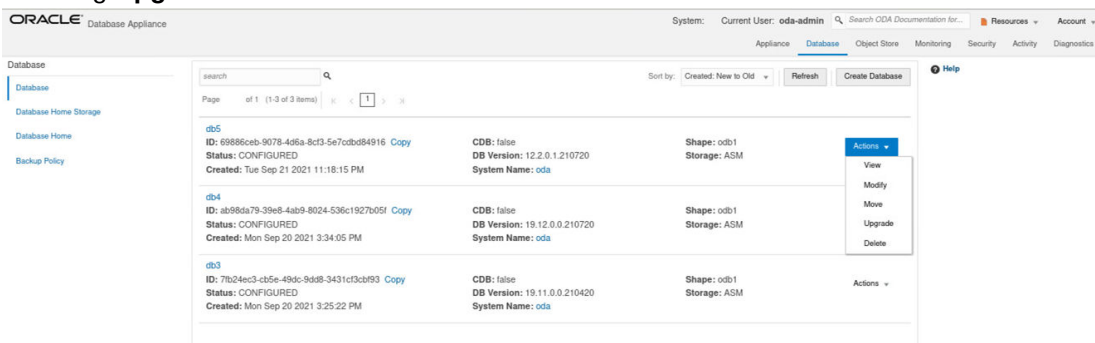


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Fill in the information and click **Create**.

You can see Oracle Database release 12.2 database db5 is created.

Now we will upgrade database db5 from release 12.2 to 19.19 by clicking Actions and then selecting **Upgrade**.



Then, select a new database home, for example, OraDB19000\_home4. Database upgrade is also an out-of-place operation, which means the existing home of the database is not modified.

You can verify that db5 is upgraded from Oracle Database release 12.2 to 19.19.

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 CPU Pool**. Enter the following information, then click **Create**.

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You can see the CPU pool `App1` 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**.

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Enter the following information for `vmstorage1`, and then click **Create**. VM Storage can be used by different application KVMs. You can see `vmstorage1` 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.

The screenshot shows the Oracle Database Appliance interface. At the top, it displays 'ORACLE Database Appliance' and system information: 'System: dshost1', 'Current User: odaadmin', 'Resources', and 'Account'. A search bar is on the right. The main navigation bar includes 'Appliance', 'Database', 'Object Store', 'Monitoring', 'Security', 'Multi-User Access', 'Activity', and 'Diagnostics'. On the left, a sidebar lists 'Overview', 'Compute Instances', 'DB Systems', 'Network', 'CPU Pool', 'Oracle ASR', 'Patch Manager', and 'Parameter Repository'. The 'Virtual Disks' tab is selected in the top navigation. The 'Create Virtual Disk' section contains the text: 'Use the options below to create a new Virtual Disk, or clone an existing Virtual Disk.' Below this are two radio buttons: 'Create Virtual Disk' (selected) and 'Clone Virtual Disk'. At the bottom right of the form are 'Cancel' and 'Next >' buttons.

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

This screenshot shows the 'Create Virtual Disk' screen with the form fields populated. The 'Virtual Disk Name' field contains 'vdisk1'. The 'Disk Size' field is set to '1' GB. The 'VM Storage Name' dropdown menu is set to 'vmstor1'. There are two checkboxes for 'Sparse' and 'Shared', both of which are currently unchecked. At the bottom of the form are three buttons: '< Back', 'Cancel', and 'Create >'.

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

The screenshot shows the Oracle Database Appliance interface. The 'Virtual Disks' tab is active, displaying a table with one entry:

Name	ID	Size	State	Created	VM Storage	Shared	Sparse
vdisk1	8d28de03-482f-4bff-a582-983fd8e989d8	1.00 GB	CONFIGURED	Fri, Jan 13, 2023, 09:05:03 PM GMT	vmstor1	NO	NO

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**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**.

The screenshot shows the 'Create Virtual Network' form in the Oracle Database Appliance interface. The form contains the following fields:

- Name: `vnet1`
- IP Address: `192.168.16.23`
- VLAN ID: `1`
- Network Type: `Bridged`
- Subnet Mask: `255.255.255.248`
- Bridge Name: (empty)
- Gateway: `192.168.16.17`
- Interface: `btbond1`

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You can see the virtual network `vmnet1` is created.

The screenshot shows the Oracle Database Appliance interface. The top navigation bar includes 'System: dshost1', 'Current User: odaadmin', 'Resources', and 'Account'. The main navigation menu has 'Appliance', 'Database', 'Object Store', 'Monitoring', 'Security', 'Multi-User Access', 'Activity', and 'Diagnostics'. The left sidebar lists 'Overview', 'Compute Instances', 'DB Systems', 'Network', 'CPU Pool', 'Oracle ASR', 'Patch Manager', and 'Parameter Repository'. The main content area is titled 'Virtual Networks' and shows a table with one entry:

ID	Name	Actions
8cd2d3ae-692d-4b6a-bf43-a4ac59d15946	vnet1	Copy

Additional details for `vnet1` are shown below the table:

- Type: Bridged
- Interface: libond1
- Bridge: brvnet1
- State: CONFIGURED
- Uniform: NO
- Created: Fri, Jan 13, 2023, 09:06:30 PM GMT

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### Create an application KVM (Compute Instance):

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

The screenshot shows the Oracle Database Appliance interface with the 'VM Instances' tab selected. The main content area displays a message: 'VM Instance is not available. Click Create to create a new VM.' Below the message are 'Create' and 'Refresh' buttons, and a 'Learn More' link.

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

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Specify the information for AppKVM1, 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 AppKVM1 instance is created.

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You can see the detailed information for AppKVM1 by clicking on AppKVM1.

If you want to modify the VM instance, then click the **VM Instance** tab. For AppKVM1, 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-19.19.0.0.0-date-ODAVM-19.19.0.0.zip
{
  "jobId" : "2d45004d-923b-45d9-b27c-cfbda391edb6",
  "status" : "Running",
  "message" : "/opt/oracle/dcs/patchfiles/odacli-dcs-19.19.0.0.0-date-ODAVM-19.19.0.0.zip",
  "reports" : [ ],
  "createTimestamp" : "April 8, 2023 07:45:04 AM UTC",
  "resourceList" : [ ],
  "description" : "Repository Update",
  "updatedAt" : "October 26, 2022April 8, 2023 07:45:05 AM UTC"
}
```

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

The screenshot shows the Oracle Database Appliance BUI interface. The top navigation bar includes 'System: dshost1', 'Current User: odaadmin', 'Resources', and 'Account'. The main content area is titled 'DB Systems' and contains a message: 'There are no DB Systems. Click Create to create a new DB System.' Below this message are two buttons: 'Create' and 'Refresh', and a 'Learn More' link. The left sidebar shows a list of navigation options: Overview, Compute Instances, DB Systems (selected), Network, CPU Pool, Oracle ASR, Patch Manager, and Parameter Repository.

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

The screenshot shows the Oracle Database Appliance BUI interface with the 'System Information' form. The form includes the following fields and options:

- DB System Name:
- Region:
- CPU Pool Name:
- Domain Name:
- Time Zone:
- Force Run:
- Use Reserved CPU Cores:
- Disk Group for VM Storage:
- DNS Servers:
- Memory Size:
- VM Storage Redundancy:
- System Password:
- Public Network:
- NTP Servers:
- Confirm Password:

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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 `dbssystem1` is created.

The screenshot shows the Oracle Database Appliance web interface. The top navigation bar includes 'System: dshost1', 'Current User: odaadmin', 'Resources', and 'Account'. The main content area is titled 'DB Systems' and shows a list of database systems. The first entry is 'dbssystem1' with the following details:

- Shape: odb2
- Memory: 16.00 GB
- Grid Version: 23.1.0.0.0
- Status: CONFIGURED
- Updated: Fri, Jan 13, 2023, 09:10:13 PM GMT
- ID: fe58dd13-8087-4743-8628-7e7dbbebd6c
- Cores: 2
- Image: 23.1.0.0.0
- DB Versions
- Created: Fri, Jan 13, 2023, 09:10:11 PM GMT
- VMs: VM host name: node0.us.oracle.com
- Current state: UNKNOWN

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You can find the details for `dbssystem1` 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 `dbssystem1` 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.

The screenshot shows the 'Create User' form in the Oracle Database Appliance BUI. The form is titled 'Create User' and includes the following fields and options:

- User ID \***: A text input field containing 'newUserid2'.
- Roles \***: A dropdown menu showing 'ODA-DB'.
- Generate mTLS certificate**
- ODA Password \***: A password input field with masked characters.
- Confirm ODA password \***: A second password input field with masked characters.

At the bottom right of the form, there are two buttons: '< Cancel' and 'Create >'. The page header shows 'ORACLE Database Appliance' and 'System: dshost1 Current User: odaadmin Resources Account'. The left sidebar has 'Users' selected.

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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**.

The screenshot shows the 'Resources' page in the Oracle Database Appliance BUI. The page has a search bar and a 'Show Advanced Search' checkbox. The resources are listed in a table:

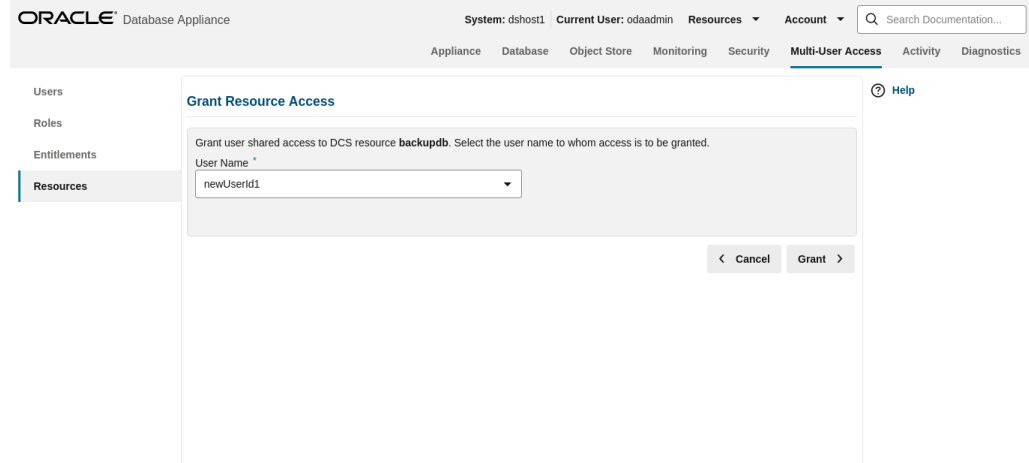
ID	Primary Owner	Active	Type	Shared Access	Location	Actions
693d9ccf-70e7-474e-b9d3-354e92330cac	odaadmin	true	ODA_DBSTORAGE	Created: Fri, Jan 13, 2023, 09:31:46 PM GMT	/u02/app/oracle/oradata/backupdb/u03/app/oracle/fast_recovery_area/u04/app/oracle/redo/backupdb/	Actions
3f3b7c74-ea62-4d05-a1d6-c6544c6c2cd4	odaadmin	true	ODA_DBHOME	Created: Fri, Jan 13, 2023, 09:31:46 PM GMT	/u01/app/odaorahomebase/odaadmin/product/23.0.0.0/ldbhome_1	Actions
eedcf71-25e8-45c6-bbb1-01e78a54bc1d	odaadmin	true	ODA_DB	Created: Fri, Jan 13, 2023, 09:31:45 PM GMT		Actions

The page header shows 'ORACLE Database Appliance' and 'System: dshost1 Current User: odaadmin Resources Account'. The left sidebar has 'Resources' selected.

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



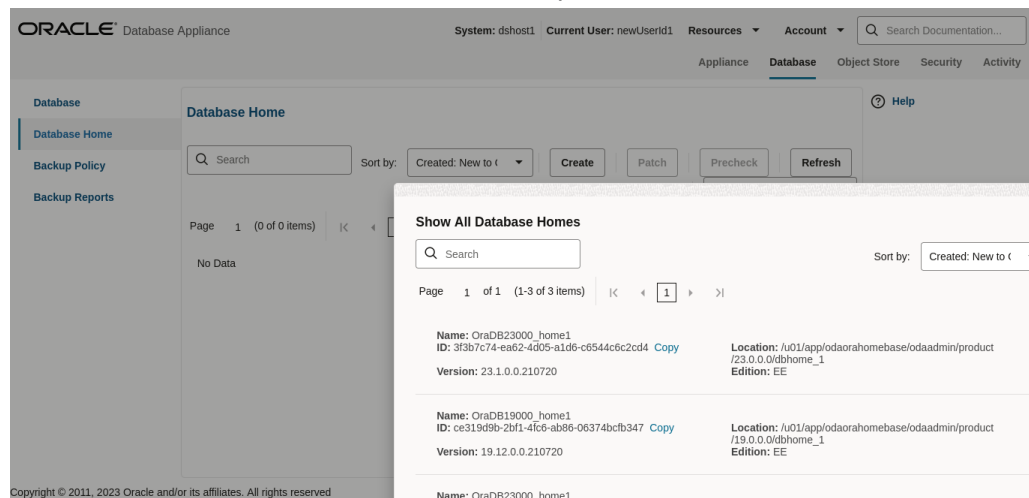
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To verify that `user1` has access to `db5`, click on the **Resources** tab on the left again. Note that `user1` now has shared access to `db5`. Note that this database was originally created by the `odaadmin` user.

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

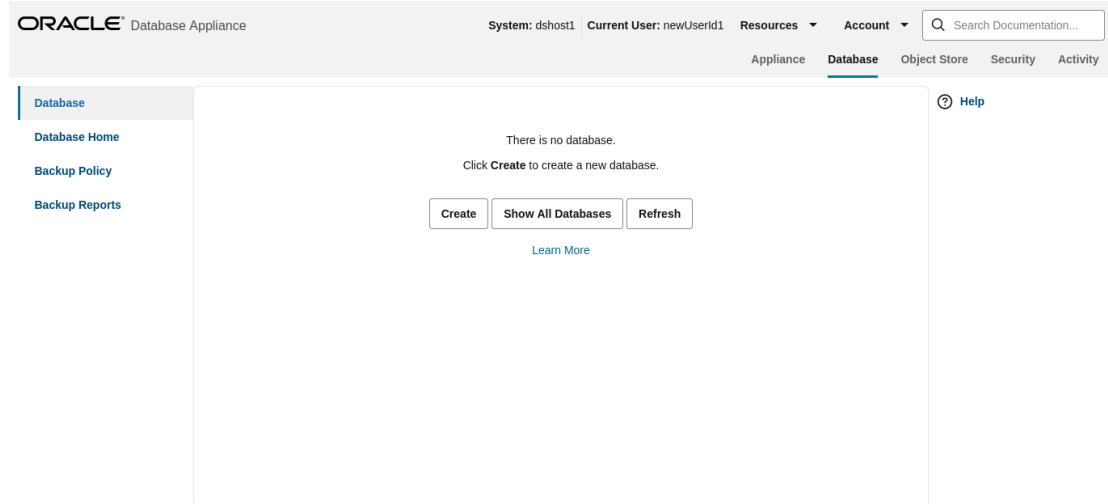
Understand the steps to create a resource.

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**.



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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.

The screenshot shows the Oracle Database Appliance BUI interface. At the top, it displays 'ORACLE Database Appliance' and system information: 'System: dshost1', 'Current User: odaadmin', 'Resources', and 'Account'. A search bar for documentation is on the right. Below the navigation tabs (Appliance, Database, Object Store, Monitoring, Security, Multi-User Access, Activity, Diagnostics), the 'Appliance' tab is selected. The 'Advanced Information' sub-tab is active, showing 'Node Name: node0.us.oracle.com' and 'Last Collection Time: Sun Jun 26 2022 01:00:00 GMT+0000'. A list of expandable sections includes Grid Infrastructure, Database Homes, Firmware Controller, Firmware Disk, ILOM, BIOS, and List of Operating System RPMs. 'Download' and 'Refresh' buttons are present.

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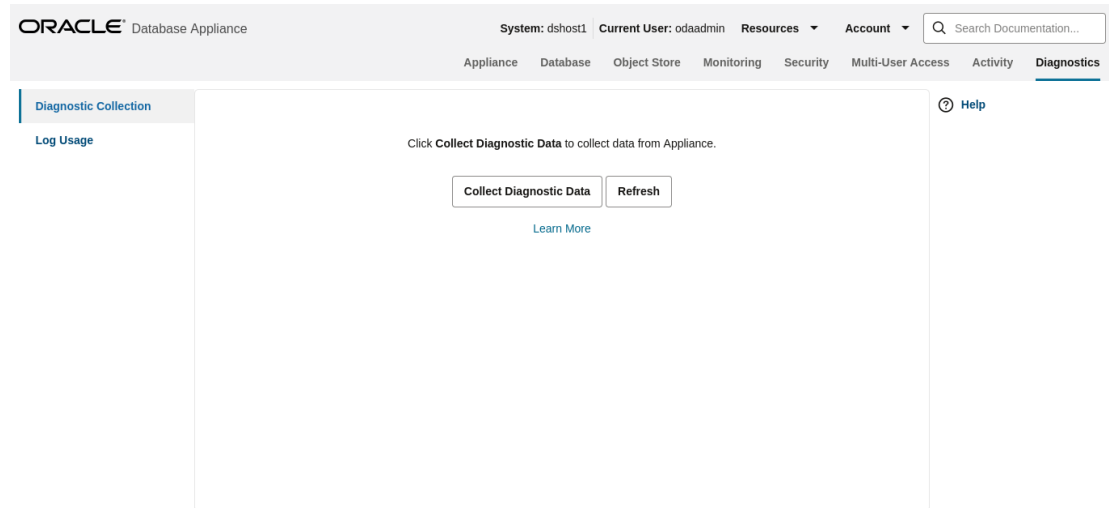
To view security-related information, click on the **Security** tab on the Appliance page.

The screenshot shows the Oracle Database Appliance BUI interface with the 'Security' tab selected. The 'Audit Records' section is active, displaying a search bar and a 'Show Advanced Search' checkbox. Below, a table lists audit records. The table has columns for ID, Resource type, Resource name, DCS User name, OS User name, and Operation type. Three records are shown, all created on Fri, Jan 13, 2023.

ID	Resource type	Resource name	DCS User name	OS User name	Operation type	Created
9ea51537-b03f-4de9-9a23-c48f81d1bbe2	BM_CPU_POOL	cpuPOOL1	odaadmin	odaadmin	MODIFY	Fri, Jan 13, 2023, 09:14:50 PM GMT
0bec5bf-3ac4-4e1a-8aff-04ef9a4af6a9	BM_CPU_POOL	cpuPOOL1	odaadmin	odaadmin	CREATE	Fri, Jan 13, 2023, 09:13:17 PM GMT
b8711a6e-4218-4b25-8173-5cd3413e0885	DBSYSTEM	dbsystem1	odaadmin	odaadmin	CREATE	Fri, Jan 13, 2023, 09:10:11 PM GMT

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



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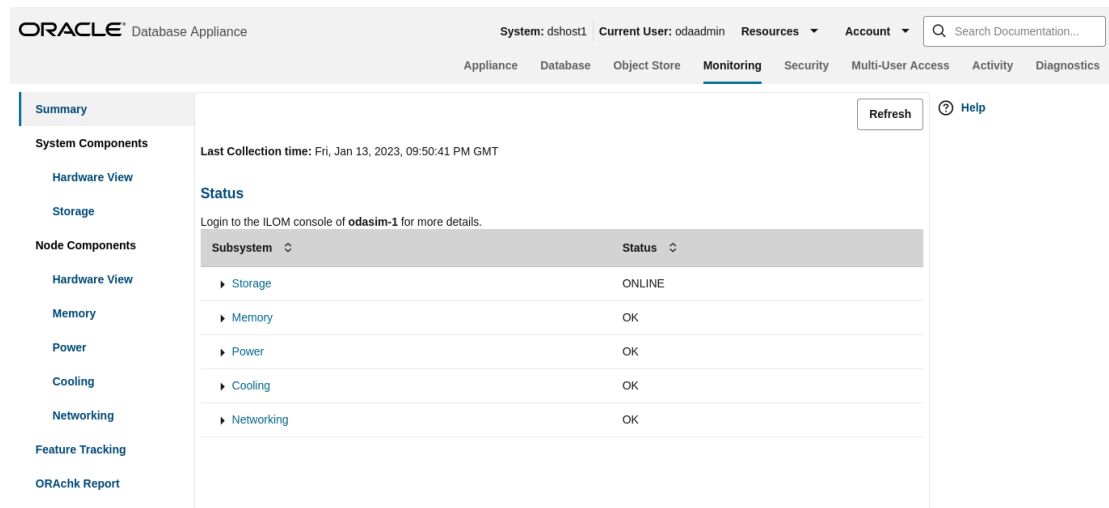
To view context sensitive in-line help information, click on **Help**.

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.



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## Hardware Status

ORACLE Database Appliance System: dshost1 Current User: odaadmin Resources Account Search Documentation...

Appliance Database Object Store **Monitoring** Security Multi-User Access Activity Diagnostics

Summary System Components Hardware View Storage Node Components Hardware View Memory Power Cooling Networking Feature Tracking ORAch Report

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## Storage Configuration

ORACLE Database Appliance System: dshost1 Current User: odaadmin Resources Account Search Documentation...

Appliance Database Object Store **Monitoring** Security Multi-User Access Activity Diagnostics

Summary System Components Hardware View **Storage** Node Components Hardware View Memory Power Cooling Networking Feature Tracking ORAch Report

Name	State	Disk Type	ASM Disk List	Disk Size(GB)	Multipath List	Total Sectors	Sector Size(Bytes)
pd_00	ONLINE	NVD	data_00,reco_00	5961.63	/dev/nvme0n1	12502446768	512
pd_04	ONLINE	NVD	data_04,reco_04	5961.63	/dev/nvme1n1	12502446768	512

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## Hardware View

ORACLE Database Appliance System: dshost1 Current User: odaadmin Resources Account Search Documentation...

Appliance Database Object Store **Monitoring** Security Multi-User Access Activity Diagnostics

Summary System Components Hardware View Storage Node Components **Hardware View** Memory Power Cooling Networking Feature Tracking ORAch Report

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## 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:

The screenshot shows the Oracle Database Appliance monitoring interface. The top navigation bar includes 'System: dshost1', 'Current User: odaadmin', 'Resources', and 'Account'. The main menu has 'Appliance', 'Database', 'Object Store', 'Monitoring' (selected), 'Security', 'Multi-User Access', 'Activity', and 'Diagnostics'. On the left, a sidebar lists 'Summary', 'System Components', 'Hardware View', 'Storage', 'Node Components', 'Hardware View', 'Memory', 'Power', 'Cooling', 'Networking', 'Feature Tracking' (selected), and 'ORAchK Report'. The main content area has two tabs: 'Feature Usage' (selected) and 'High Water Marks'. Below the tabs is a search bar and a 'Help' button. The text 'Last Collection time: Thu, Jan 1, 1970, 12:00:00 AM GMT' is displayed. A table with the following headers is shown: 'Feature Name', 'Category', 'Currently Used', 'Detected Usage', 'Total Samples', and 'Last Detected Usage Time'. The table content is empty, with the text 'No data to display.' below it.

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## High Water Marks

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

The screenshot shows the Oracle Database Appliance monitoring interface. The top navigation bar includes 'System: dshost1', 'Current User: odaadmin', 'Resources', and 'Account'. The main menu has 'Appliance', 'Database', 'Object Store', 'Monitoring' (selected), 'Security', 'Multi-User Access', 'Activity', and 'Diagnostics'. On the left, a sidebar lists 'Summary', 'System Components', 'Hardware View', 'Storage', 'Node Components', 'Hardware View', 'Memory', 'Power', 'Cooling', 'Networking', 'Feature Tracking' (selected), and 'ORAchK Report'. The main content area has two tabs: 'Feature Usage' and 'High Water Marks' (selected). Below the tabs is a search bar and 'Help' and 'Download' buttons. The text 'Last Collection time: Thu, Jan 1, 1970, 12:00:00 AM GMT' is displayed. A table with the following headers is shown: 'Measured Feature Name', 'High Water Mark', 'Last Changed Time', and 'Category'. The table content is empty, with the text 'No data to display.' below it.

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## 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.

**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
```

-----

```
oda ID:
```

```
Platform:
```

```
Data Disk Count:
9
```

```
CPU Core Count:
```

36

Created: July 19, 2022 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

TYPE          NAME          STATE          PATH          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/sdc1	
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
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



# Index

## S

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simulator, [1-2](#), [1-5](#), [1-7](#), [2-2](#), [2-3](#), [3-2-3-4](#), [3-6](#),  
[3-9](#), [3-10](#), [3-12](#), [3-14-3-17](#), [3-19](#), [3-21](#),

[3-24](#), [3-26](#), [3-27](#), [3-30](#), [3-31](#), [3-36](#), [3-39](#),  
[3-40](#), [3-42](#), [3-43](#), [3-45](#), [3-49](#), [3-53](#)