Oracle Corporation

Oracle Database Appliance

X7-2-HA Hands-on Lab Manual***

***Alle Informationen gelten gleichermaßen für ODA X8-2-HA

Rev 18.5v2

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ODA X7-2-HA Simulator Labs

We will use an Oracle Database Appliance (ODA) simulator to complete these labs. Performing deployment and patching on an actual ODA would require everyone to have their own system, and would take a rather long time. The simulator will provide a very similar experience, but is faster, and everyone gets their own simulator to complete the lab. The simulator simulates an ODA X7-2-HA, a 2-node database appliance.

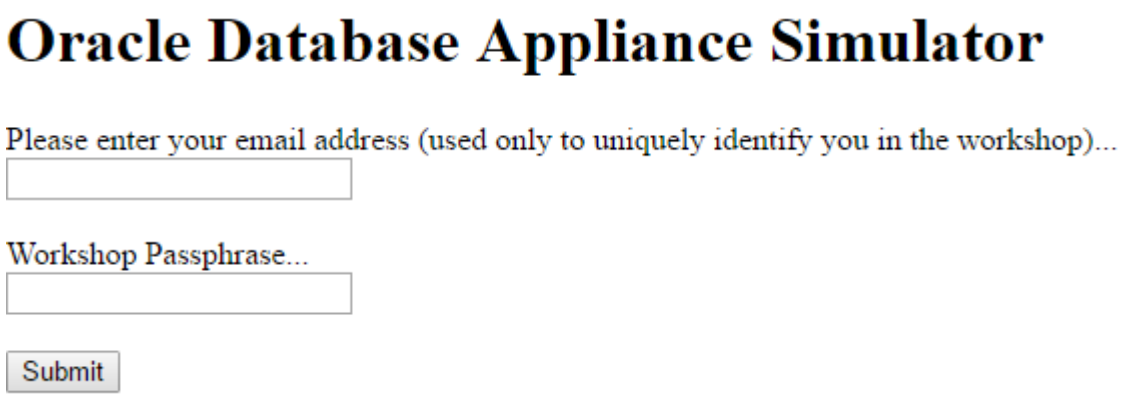
Keep in mind this is a simulation. Not all features are supported by the simulator, and no database is actually created and running. The simulator may be more forgiving than a real ODA if you enter invalid data, and some of the detailed output it provides may not be completely accurate. They may refer to incorrect server names, timestamps, IP addresses, etc. Output relevant to completing the workshop should be correct.

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

Connecting to the ODA Lab Environment

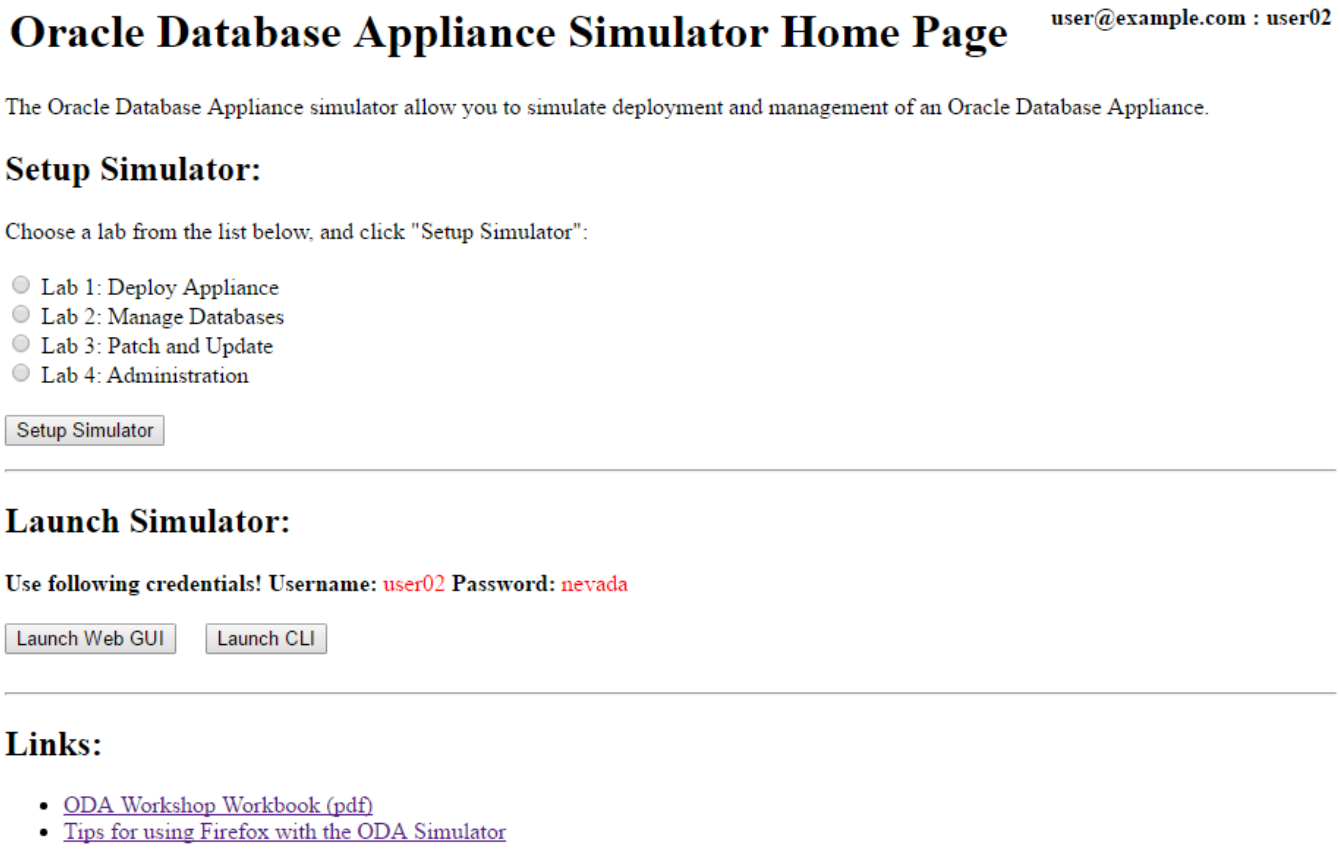
To connect to the ODA Simulator, open a web browser and connect to the URL provided by your workshop leader. Each participant will use a different simulator user, allowing you to work independently.

Chrome is the recommended web browser for this lab. Other browsers should work as well. If using Firefox, please visit the link on the simulator home page before attempting to use the simulator GUI.



Enter your email address and the workshop passphrase provided by your workshop leader. If your workshop leader did not provide you a workshop passphrase, you should not see the passphrase box and do not need to enter one. Clicking "Submit" will bring up the Simulator Home page. From here you can set up the simulator for a particular lab module, and launch

the ODA GUI and CLI tools. The page also provides you credentials to log in using the ODA tools.



Simulator Labs Overview

This workshop consists of the following four labs:

- Lab 1: Deploy Appliance
- Lab 2: Managing Databases
- Lab 3: Patch and Update
- Lab 4: Monitoring and Administration

Before you begin a lab, ensure the simulator is set up with the correct state for the lab you wish to complete. The labs are cumulative, so if you just completed the prior lab, the simulator should be properly set up. If you are doing any labs out of order, simply select the radio box on the simulator home page corresponding to the lab you wish to do, and click on "Setup Simulator" button. If you had been using the GUI and subsequently set up the simulator, please sign out and sign back in to ensure it reflects the changes in simulator state.

Labs will use a mix of command line and web-based administration tools. From the ODA Simulator Home Page, you will click on the "Launch Web GUI" or "Launch CLI" button to launch the administration tools. These tools will open in their own browser tabs. 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.

If using Firefox, please visit the link on the simulator home page before attempting to use the simulator GUI.

Lab 1: Deploy Appliance

From the ODA Simulator Home Page, select the set up button corresponding to "Lab 1: Deploy Appliance" and click "Setup Simulator." This will ensure the simulator is correctly set up for Lab 1.

Step 1: Put the ODA on the Network

After you first install the ODA into your data center rack, you must configure it to use the static IP address your network administrator has assigned it. The easiest way to do this is to first configuring ILOM via a network or serial connection. The ODA includes a simple script called "configure-firstnet" to make it very easy to get the ODA on the network. Once you've put the ODA on the network, you can complete all the rest of the deployment steps from any networked computer.

The "configure-firstnet" script is a command line tool, so open the CLI Simulator by clicking on the "Launch CLI" button on the home page, or, if you've already launched the CLI simulator, select that tab in your browser.

Log into the simulator, using the user and password listed on the simulator home page. In a real ODA, you would log in as root, or perform the command line actions using sudo. Since you are not logged in as root in the simulator, you should preface commands with 'sudo'.

Run the network configuration script by typing "sudo configure-firstnet" at the Linux prompt. Respond to the prompts as in the example below. Since we are only simulating configuring the network, you can use any IP address to complete this step.

For the ODA HA model, you'll need to do this on both nodes. You can log into the second node via the standard ILOM method or you can log in from the first node with use the known internal IP address of the second node.

For Lab 1, you'll only do this on one node.

```
$ sudo configure-firstnet
Using bonding public interface (yes/no) [yes]:
Select the Interface to configure the network on (btbond1) [btbond1]:
Configure DHCP on btbond1 (yes/no) [no]:no
INFO: You have chosen Static configuration
Use VLAN on btbond1 (yes/no) [no]:yes
Configure VLAN on btbond1, input VLAN ID [2 - 4094] 118
INFO: using network interface btbond1.118
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 btbond1:                [  OK  ]
Shutting down interface em1:            [  OK  ]
Shutting down interface p1p1:           [  OK  ]
Shutting down interface p1p2:           [  OK  ]
Shutting down loopback interface:               [  OK  ]
Bringing up loopback interface:    [  OK  ]
Bringing up interface btbond1:     [  OK  ]
Bringing up interface em1:    [  OK  ]
Bringing up interface p1p1: Determining if ip address 192.168.16.24 is
already in use for device p1p1...    [  OK  ]
Bringing up interface p1p2: Determining if ip address 192.168.17.24 is
already in use for device p1p2...    [  OK  ]
Bringing up interface btbond1.118: Determining if ip address
192.168.0.100 is already in use for device btbond1.118...     [  OK  ]
```

Step 2: Update the Repository with the ODA Software

The ODA does not ship with the database software pre-loaded, due to regulatory concerns. You must download the Oracle software prior to deployment from My Oracle Support. Go to the ODA documentation web site, the ODA Patch section of the Release Note will provide links to the ODA software. Specifically, we need to download the Grid Infrastructure Clone files, the RDBMS Clone files, and the Server Patch Bundle. We've already downloaded simulated versions of these files to each user's home directory. From you home directory, type 'ls' to view the files:

```
$ ls
oda-sm-18.5.0.0.0-190115-DB-12.2.0.1.zip  oda-sm-18.5.0.0.0-190115-GI-
18.5.0.0.zip
oda-sm-18.5.0.0.0-190115-DB-18.5.0.0.zip  oda-sm-18.7.0.0.0-190716-
server.zip
```

The clone files are listed below. The other file in the directory contain patches, and will be used in the patching lab.

Note about file paths: The odacli utility talks to an agent over a network connection. It is the agent that does the work. The agent does not know the odacli utility's current working directory, and doesn't even care if odacli is running on the same machine. For this reason, **you must specify the full path of the files you pass to the "odacli update-repository" command.**

Filename	Description
oda-sm-18.5.0.0.0-190115-GI-18.5.0.0.zip	Grid Infrastructure 18.5 Clone Files
oda-sm-18.5.0.0.0-190115-DB-18.5.0.0.zip	DB 18.5 Clone Files
oda-sm-18.5.0.0.0-190115-DB-12.2.0.1.zip	DB 12.2 Clone Files
oda-sm-18.7.0.0.0-190716-server.zip	ODA 18.7 Patch Bundle (used in lab 3)

After downloading the files to the ODA, you must update the ODA repository so it knows about the files. This is done with the 'odacli update-repository' command for each clone file (copy/paste is your friend). Be sure to substitute your own home directory (i.e., /home/user01) in the file path.

For a real ODA HA model, you'll need to do this on both nodes. You can log into the second node via the standard ILOM method or you can log in from the first node with use the known internal IP address of the second node.

For the purpose of this lab, you'll only do this on one node.

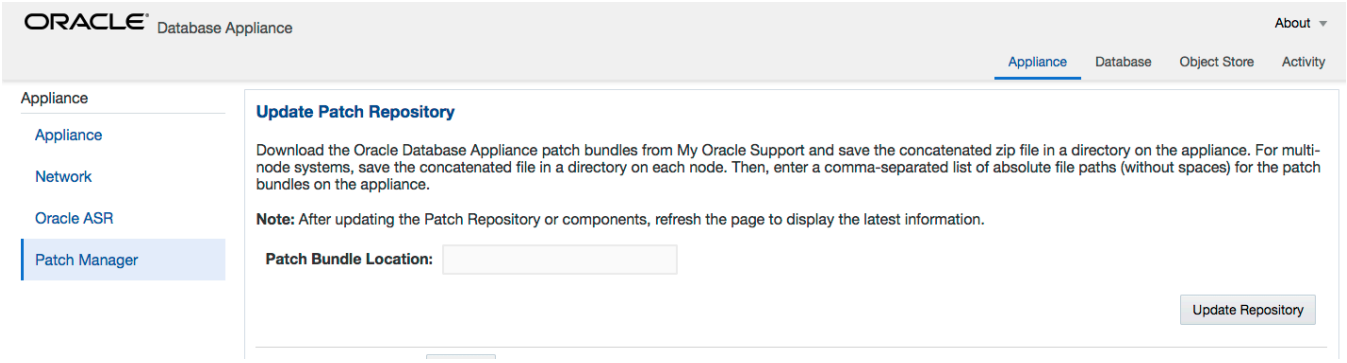
Hint: to reduce amount of manual typing and typing errors, use copy and paste functions to copy the file name or tab function to auto complete a file name. Also use the up arrow to repeat the previous command, then edit the file name.

```
$ sudo odacli update-repository -f /home/userxx/oda-sm-18.5.0.0.0-190115-GI-18.5.0.0.zip
{
  "jobId" : "ac771881-7715-4e63-be29-816737f7fec6",
  "status" : "Running",
  "message" : "Submitted the job for update repository",
  "reports" : [ {
    "taskId" : "TaskSequential_UR1",
    "taskName" : "Checking for user validity and permissions",
    "taskResult" : "User permissions looks fine!",
    "
… output deleted for brevity …

$ sudo odacli update-repository -f /home/userxx/oda-sm-18.5.0.0.0-190115-DB-18.5.0.0.zip
{
  "jobId" : "53848b6e-aa26-4411-97fc-6eb1a99d377d",
  "status" : "Running",
  "message" : "Submitted the job for update repository",
… output deleted for brevity …


$ sudo odacli update-repository -f /home/userxx/oda-sm-18.5.0.0.0-190115-DB-12.2.0.1.zip
{
  "jobId" : "c0042348-745a-4af1-b3ca-c52c8cbec504",
  "status" : "Running",
  "message" : "Submitted the job for update repository",
… output deleted for brevity …

$ sudo odacli update-repository -f /home/userxx/oda-sm-18.5.0.0.0-190115-DB-12.1.0.2.zip
{
  "jobId" : "53848b6e-aa26-4411-97fc-6eb1a99d377d",
  "status" : "Running",
  "message" : "Submitted the job for update repository",
… output deleted for brevity …
```

When you run commands using the odacli command line tool, most operations are asynchronous, meaning they return a job id immediately while the job runs in the background. This means that in order to get information on long running background jobs, you can query the status of the job. The simulator does not track state for most jobs, as we intentionally run them very quickly.

At this point, the clone files are all loaded into the repository, so we are ready to deploy the appliance and create a database.

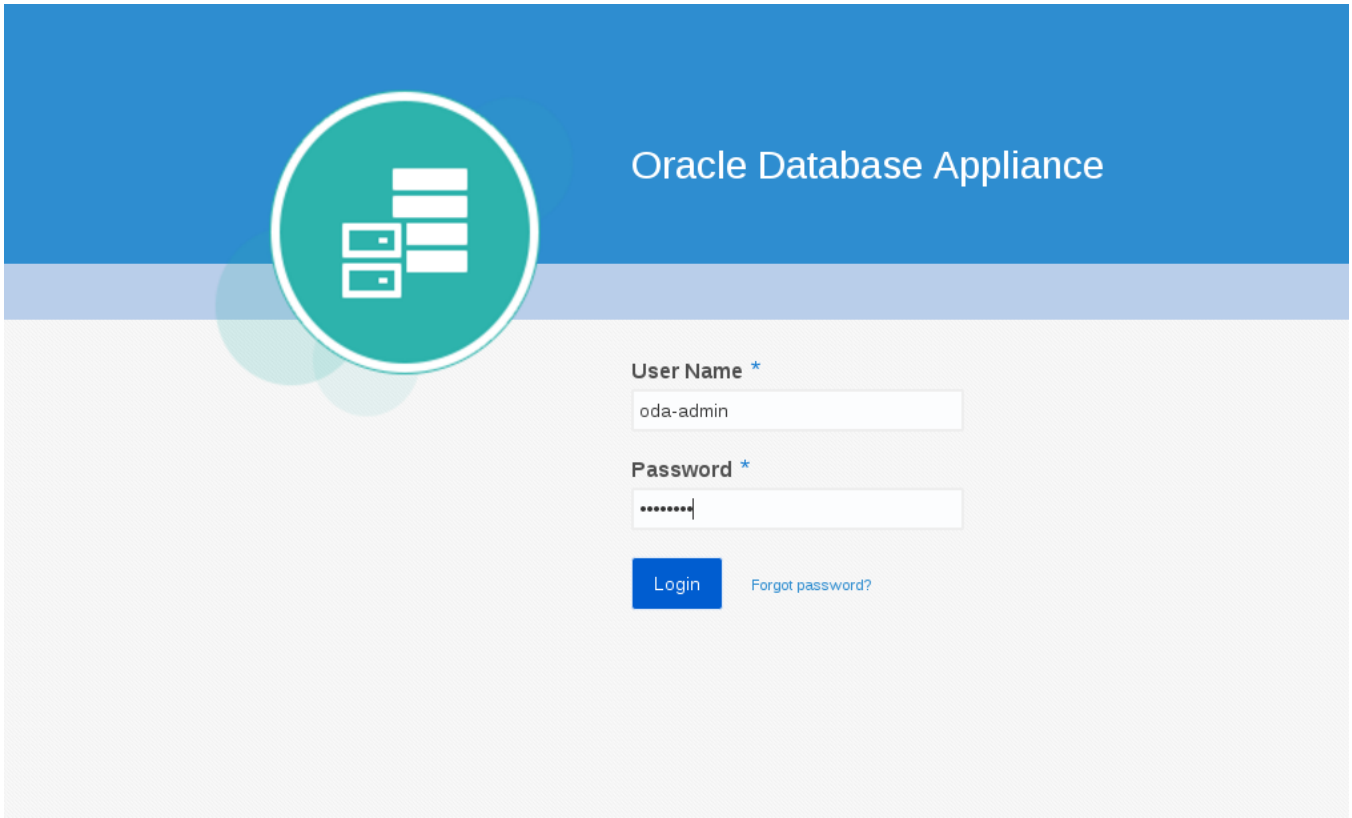
You can also use the web-based GUI (web console) to update the ODA repository, by pasting the complete file path of the patch file or even clone file in the patch bundle location box of the patch manager in the web console. However, it's not necessary as you have used command line to update the repository (clone files) already.



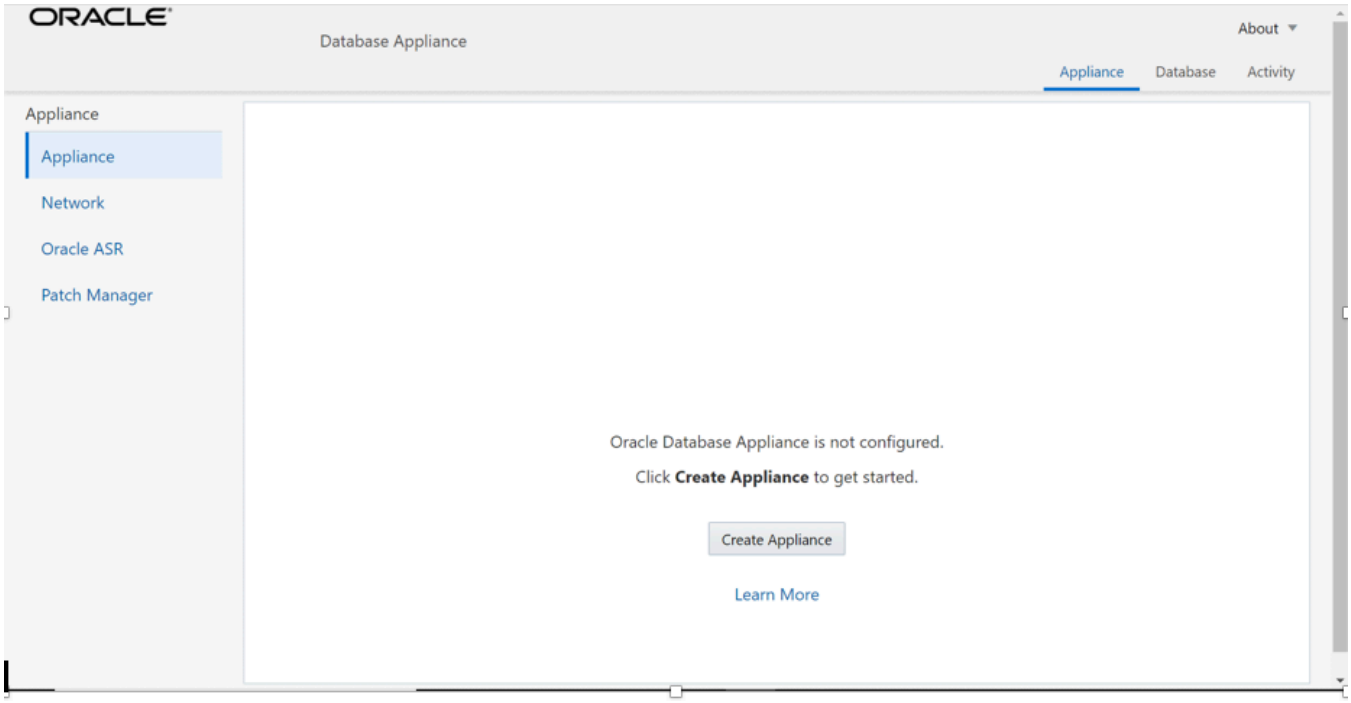
Step 3: Deploy the Appliance

A customer can deploy the appliance using either the web-based GUI, or the command line. The command line is useful for scripted and silent installations. Most customers (and this lab) will use the web-based GUI.

To start the web-based GUI tool, return to the ODA Simulator Home Page tab and click "Launch Web GUI" or select the Web GUI tab if it has already been launched. This will bring up the login page for the Web GUI, as shown below. ***Enter your user name and password as specified on the simulator home page.***



This will take you to the appliance tab of the ODA Appliance Manager. It should show that the appliance has not been deployed as shown below:



Click "Create Appliance" to start the deployment wizard. Fill in the first page of the form as shown below. Most fields should be 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 Diskgroup Redundancy "Flex", then you will be able specify individual database storage redundancy later, either Mirror (double mirroring) or High (triple mirroring). Create a password. Be aware the there is a password complexity test that will reject simple passwords like "test" and other common variants. However, "WElcome12##" will work with the simulator if you'd like to use that password.

You can also load a configuration file (e.g. oda.json) that was saved earlier to avoid manual entries. To create a configuration file, you manually fill in all the information then click "Save Configuration" at the end.

ORACLE Database Appliance

About

Appliance | Database | Object Store | Monitoring | Activity

Appliance

- Appliance
- Network
- Oracle ASR
- Patch Manager

Create Appliance

Load Configuration [Choose File] oda.json

System Information

System Name *: oda

Domain Name *: example.com

Region: Other

Time Zone: GMT

Diskgroup Redundancy: Flex

Data Storage Percentage *: 80

System Password *: ••••••••••

Confirm Password *: ••••••••••

DNS Servers: 1.1.1.1

NTP Servers:

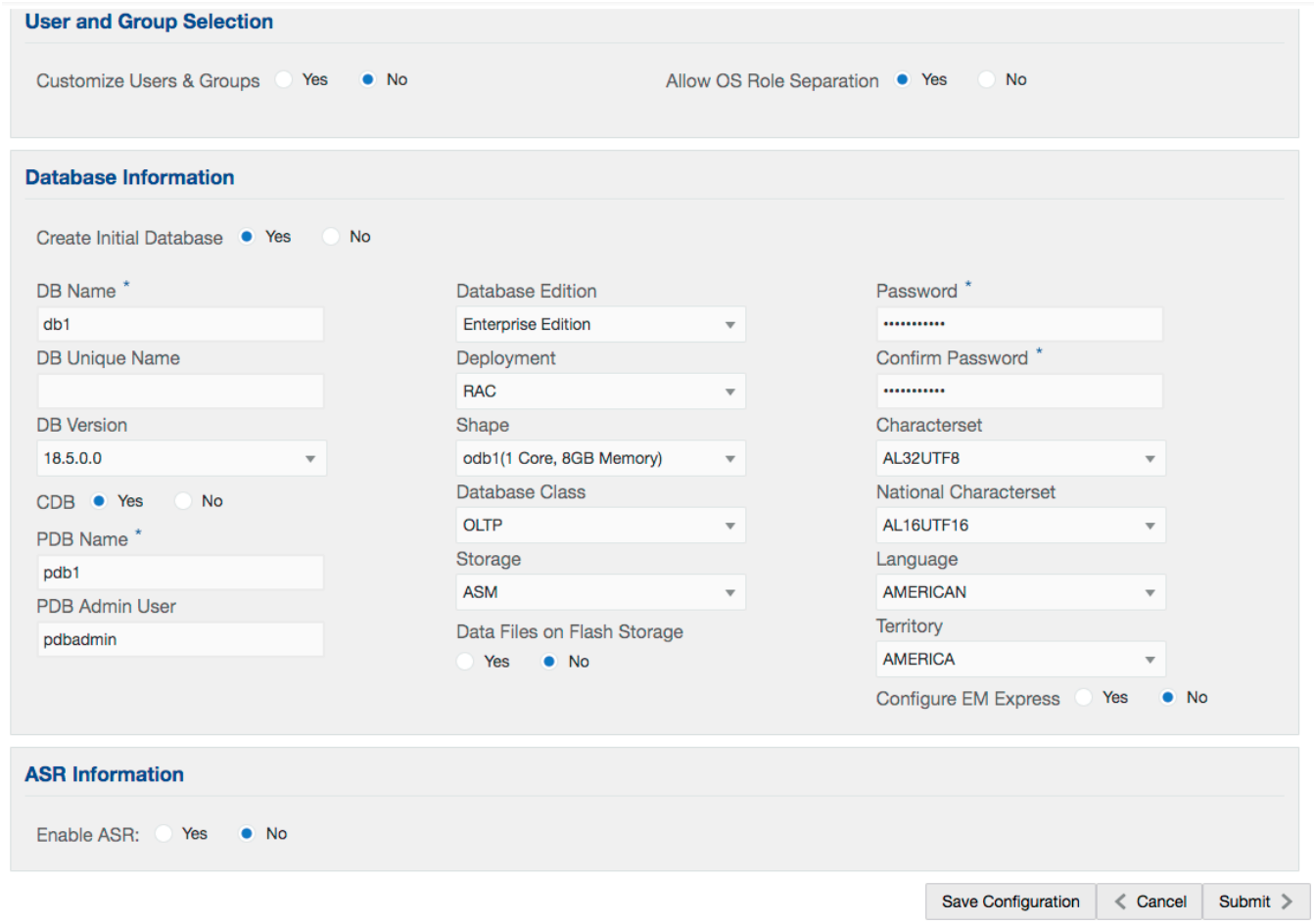
Scroll down to continue. This brings up the Network screen. You can configure the network for the public "Client Access" network here. You can also configure the VIPs, SCAN, and the ILOM network if you choose. Enter values for the IP Address, Subnet Mask, Gateway, and specify the interface to be the public network.

Network Information

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.

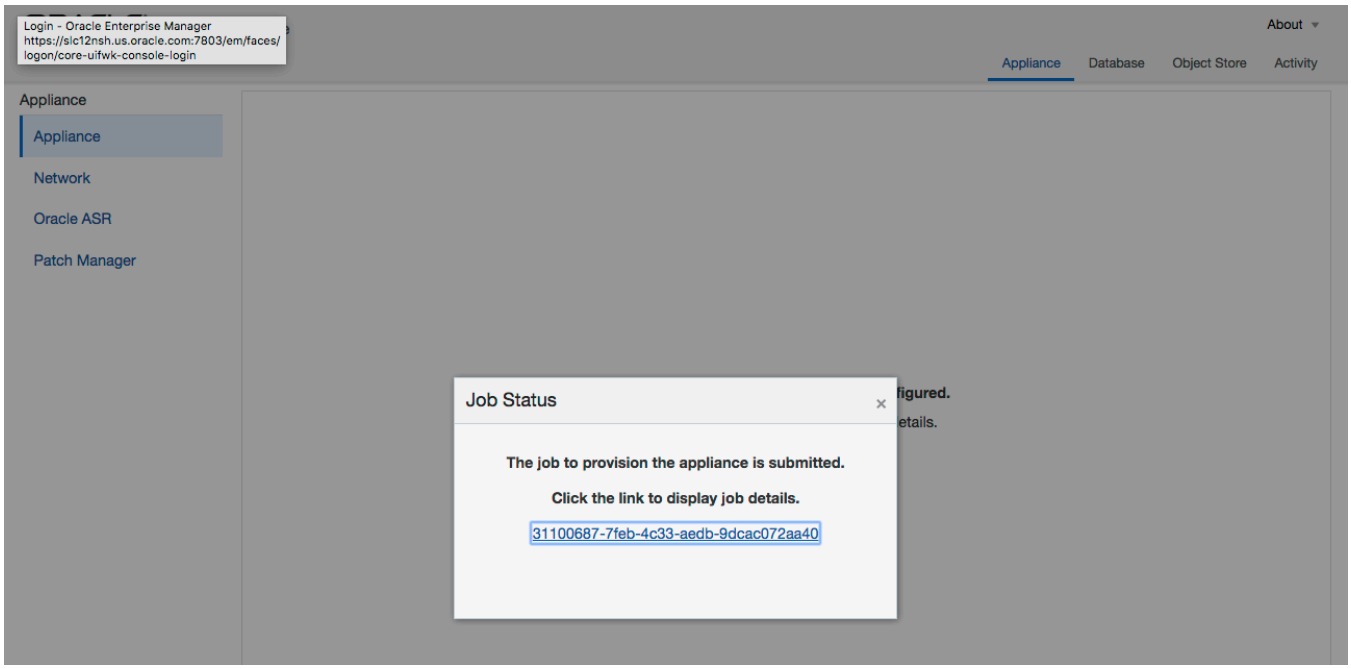
Client Access Network	SCAN and VIP Network	ILOM Network
Node0	**Node0**	**Node0**
Host Name *: oda0	VIP Name *: oda0-vip	ILOM Host Name:
IP Address *: 192.168.0.100	VIP Address *: 192.168.0.102	IP Address:
Node1	**Node1**	**Node1**
Host Name *: oda1	VIP Name *: oda1-vip	ILOM Host Name:
IP Address *: 192.168.0.101	VIP Address *: 192.168.0.103	IP Address:
Subnet Mask *: 255.255.255.0	Scan Name *: oda-scan	Subnet Mask:
Gateway *: 192.168.0.1	Scan IP Address: 192.168.0.104	Gateway:
Interface *: btbond1.118	192.168.0.105	

Scroll down to continue. This brings up the Database screen. Specify the database name and other database related information as shown below. Select DB Version 18.5.0.0. *Note: if you cannot select the DB Version, try to refresh the browser cache.*

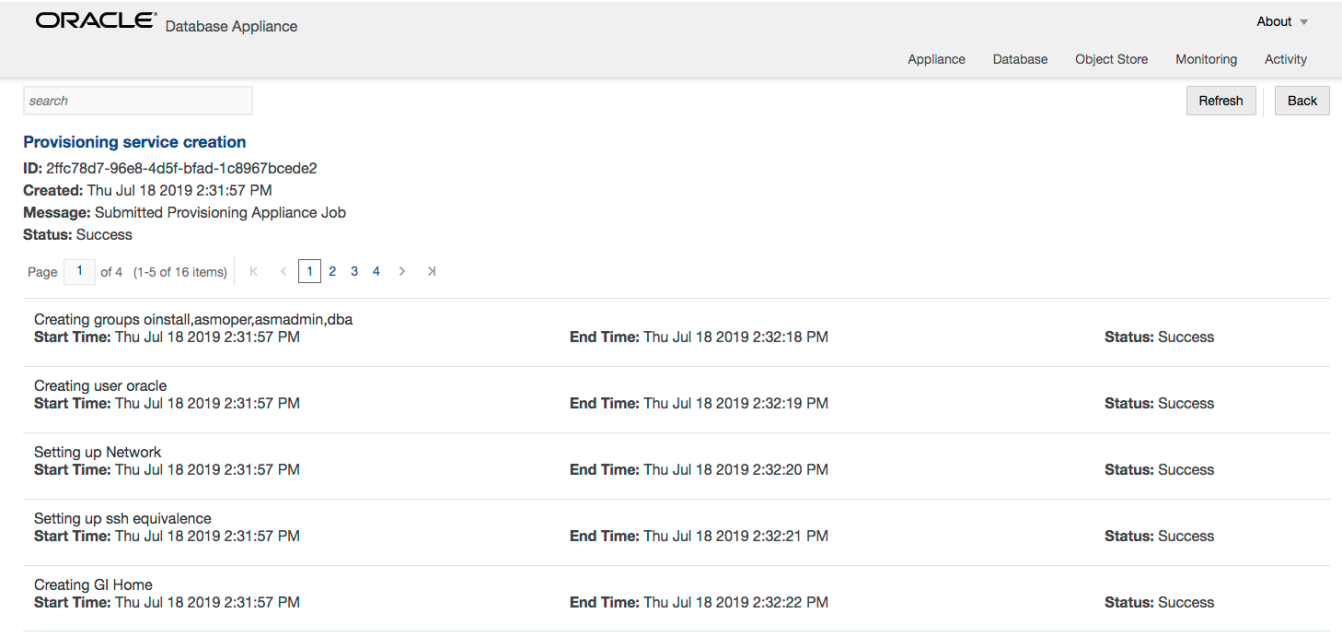


To configure ASR, specify credentials here. This is also where you can save the configuration file (e.g. oda.json) for later use.

Click "Submit" to continue and click "yes" in the confirmation box. This will bring up a link to the job status. Like with odacli, operations are asynchronous, and return immediately with a job ID. That job ID can then be used to monitor progress. This allows the administrator to perform other tasks if desired while long running operations complete. Click the job ID to see the status.



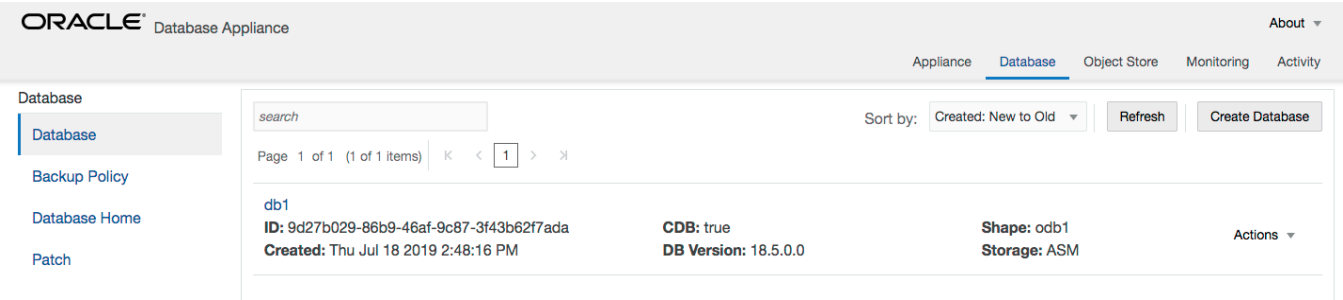
In the simulation, the deployment job status will complete within 1-2 minutes. You can see the various steps running, and their status changing to 'Success' as they complete. Click the Refresh button to more quickly refresh the screen. In a real ODA, deployment takes about 60 minutes to complete.



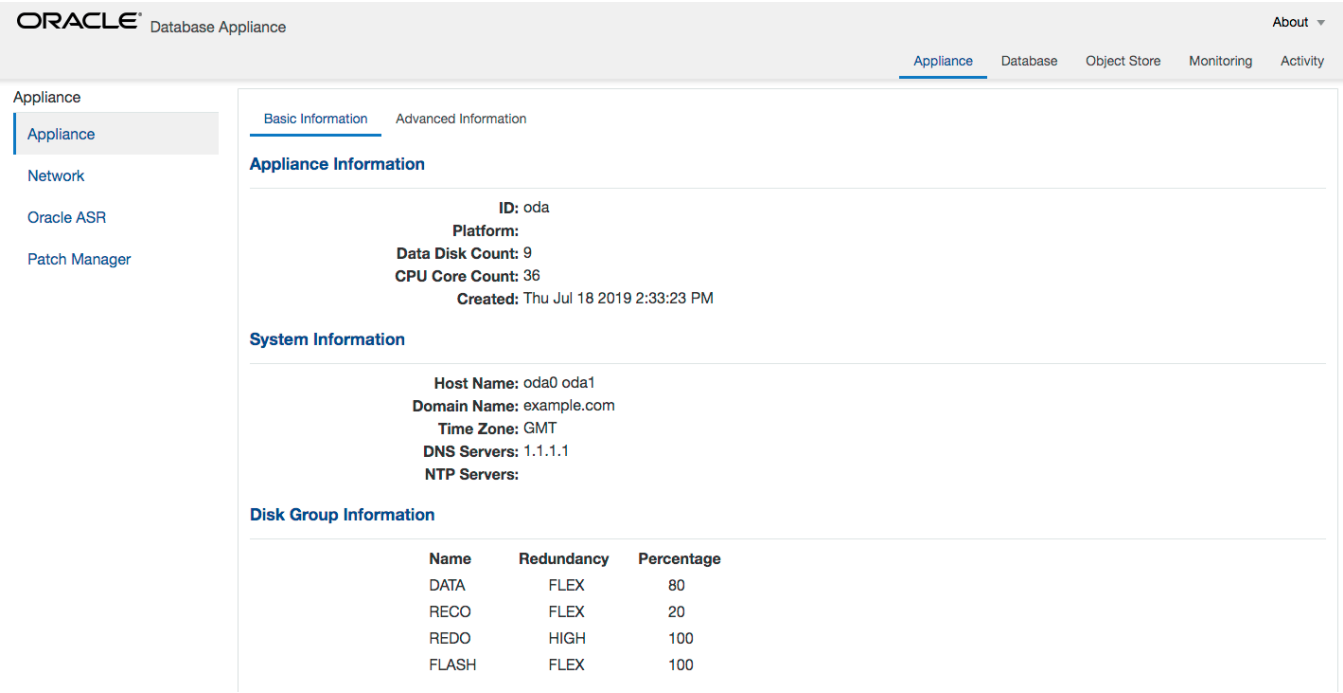
Step 4: Validate the Deployment

Next click on the "Database" tab at the top right of the web page. This should show the deployed database. The web pages refresh every few seconds, so if the database does not

show up at first, be patient. Click on the database name for more detail 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.

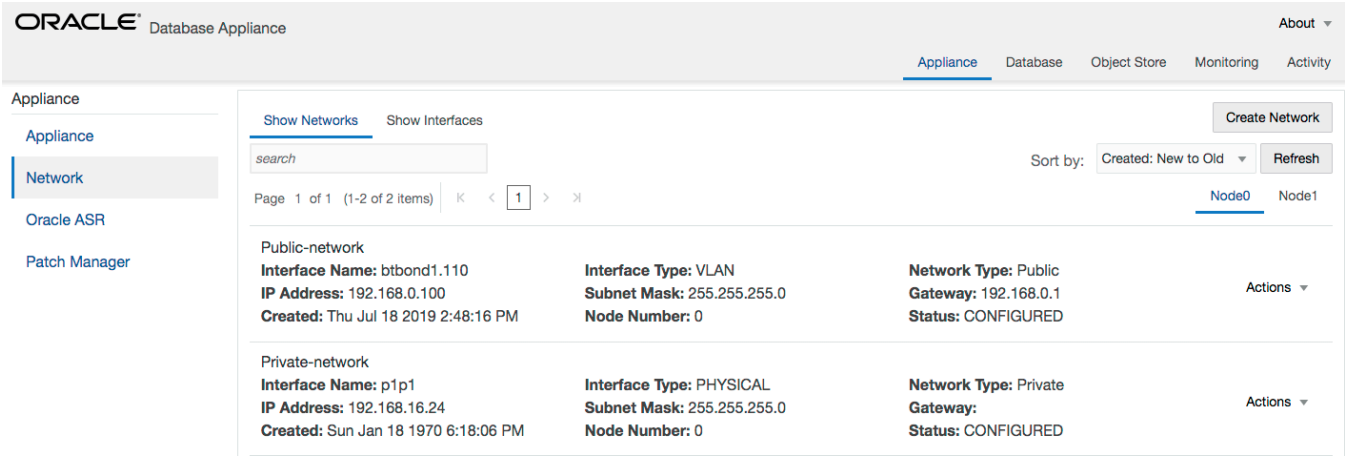


You can also verify the appliance has been properly deployed by clicking the "Appliance" tab to see more details. It should look similar to the view below (note not all values are correct for an X7-2-HA—remember this is a simulation):

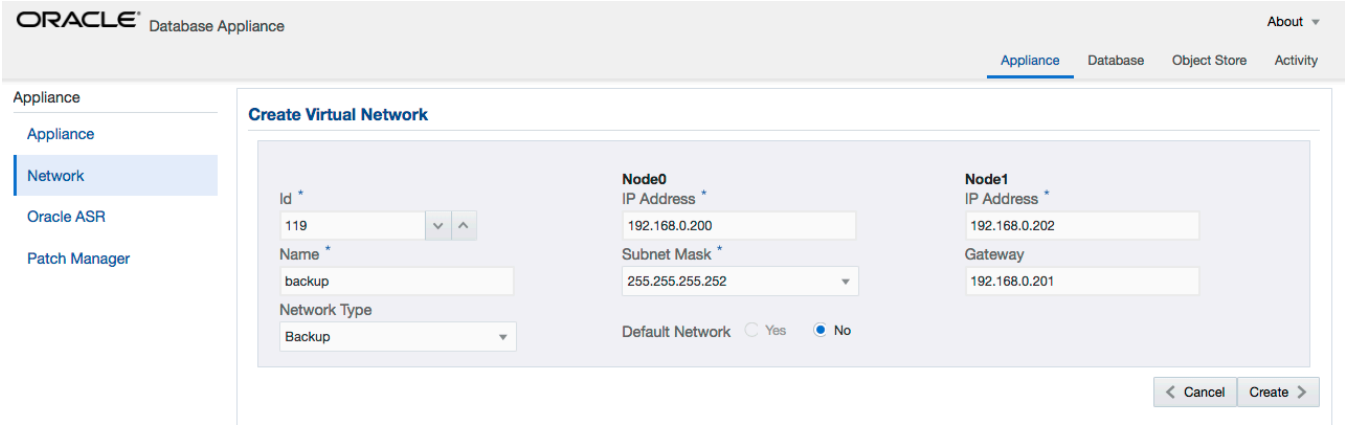


Step 5: Networking

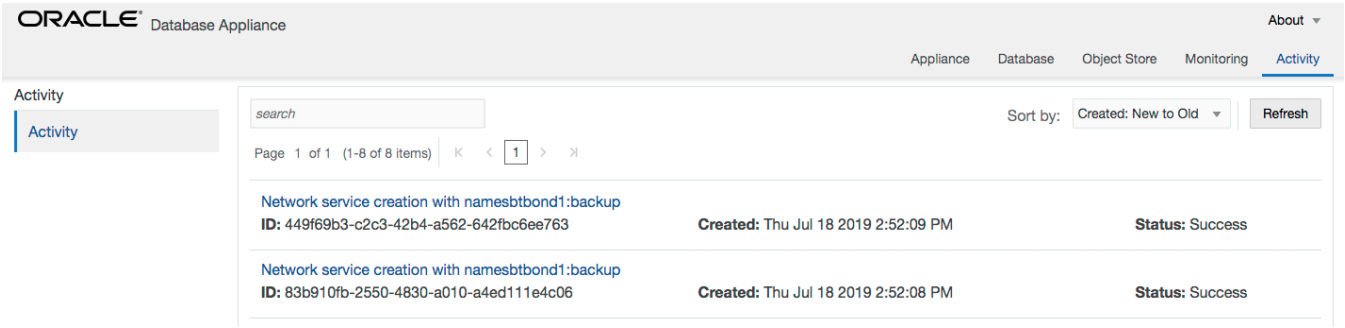
You can check the network by click on the "Network" tab on the left. You can see VLAN btbond1.118 has been created. Note switches must also support VLAN.



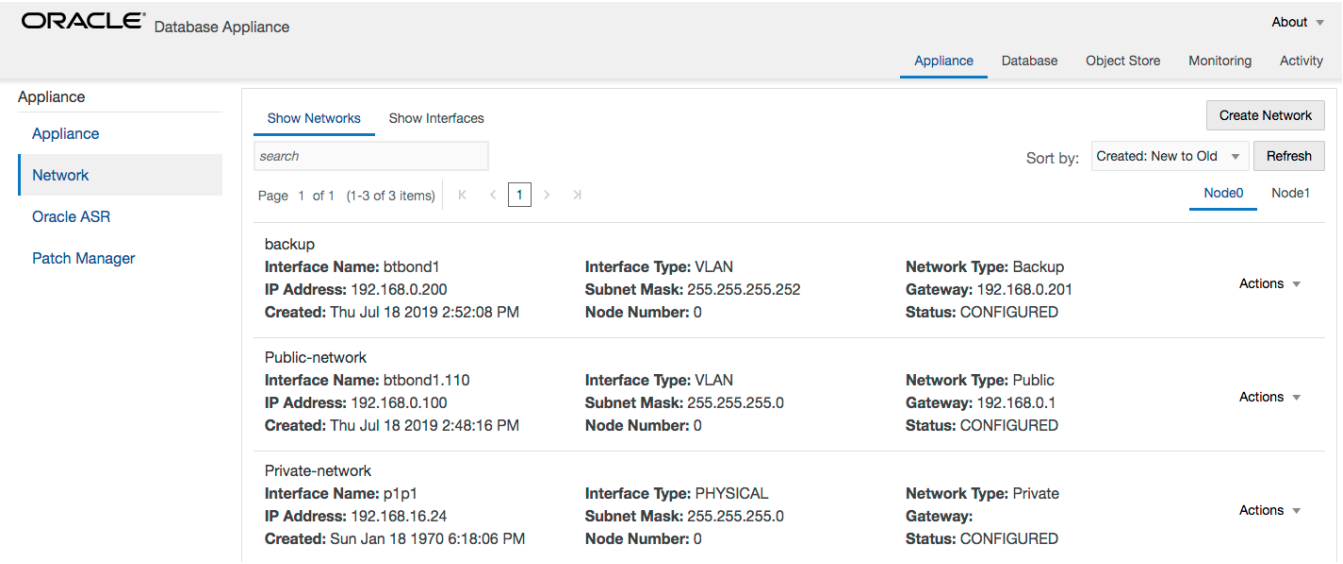
You can also create a new VLAN by clicking the "Create Network" button and filled in the network information below. Then hit "Create"



You can submit the job.



Below shows the backup VLAN has been created.



This concludes Lab 1.

Lab 2: Manage Databases

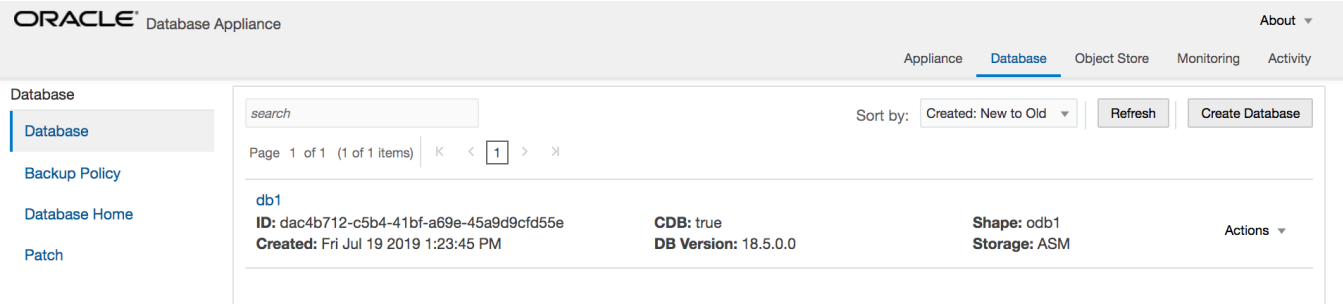
In this lab, we will create and delete additional databases in the appliance. We can do this via the web-based GUI, and the command line.

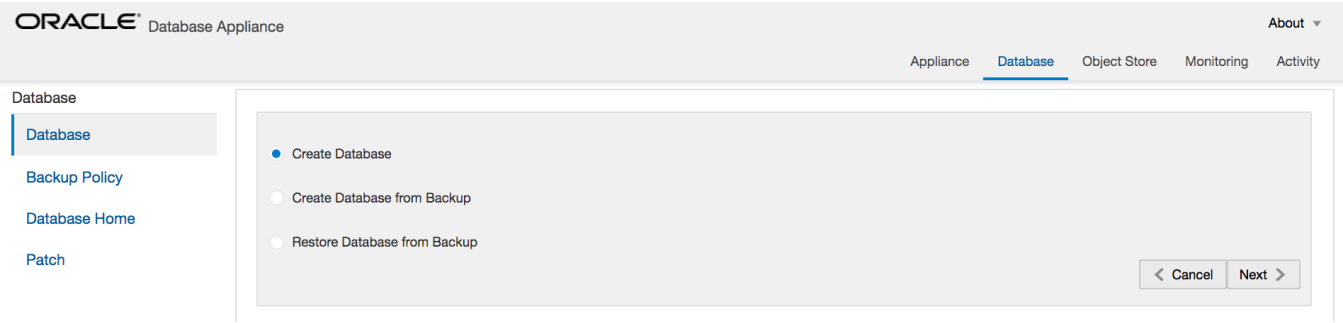
If you did not just successfully complete lab 1, you must set up the simulator for lab 2. If you just completed lab 1, you should already be set up for lab 2. To set up the simulator for lab 2, go to the ODA Simulator Home tab, and click the radio box labeled "Lab 2: Manage Databases". Then click "Setup Simulator".

Step 1: Create a new database via the Web GUI

Open the Web-based GUI. This may already be open in a Chrome tab if you just completed lab 1. Click the database tab in the web page…

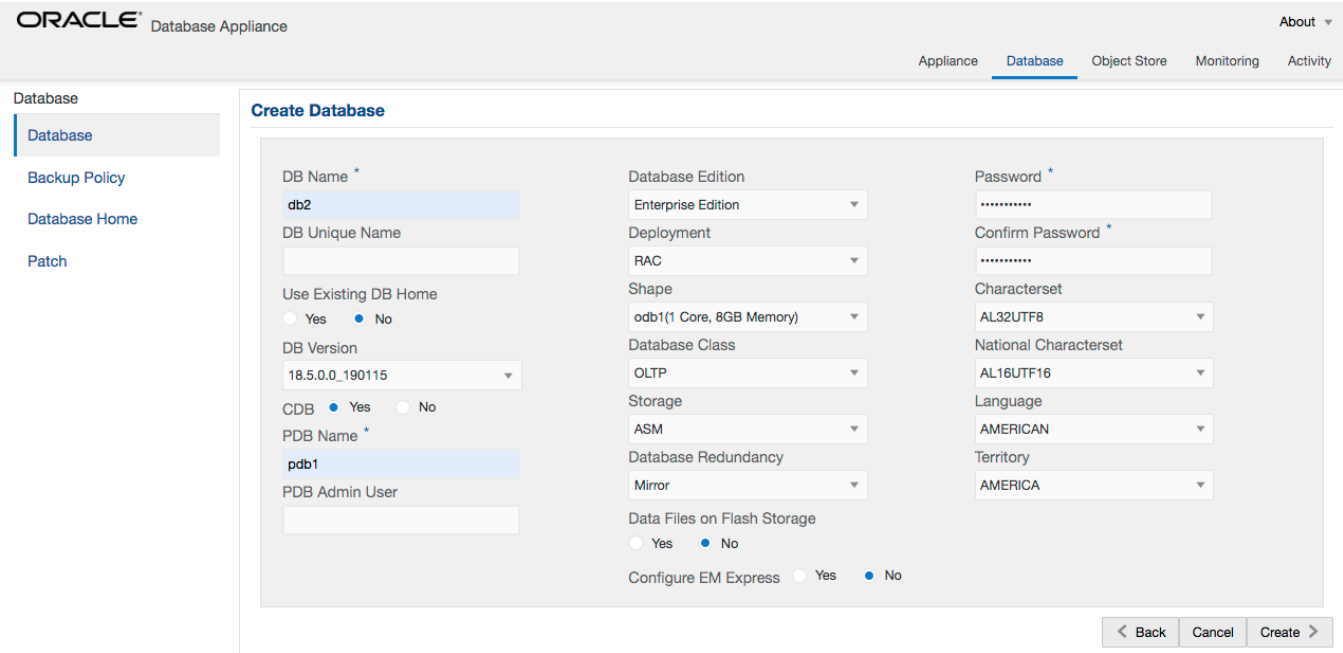
You should see the database created during deployment. In the upper right-hand corner, there is a "Create Database" button. Click it. It will bring up the "Create Database" Wizard.



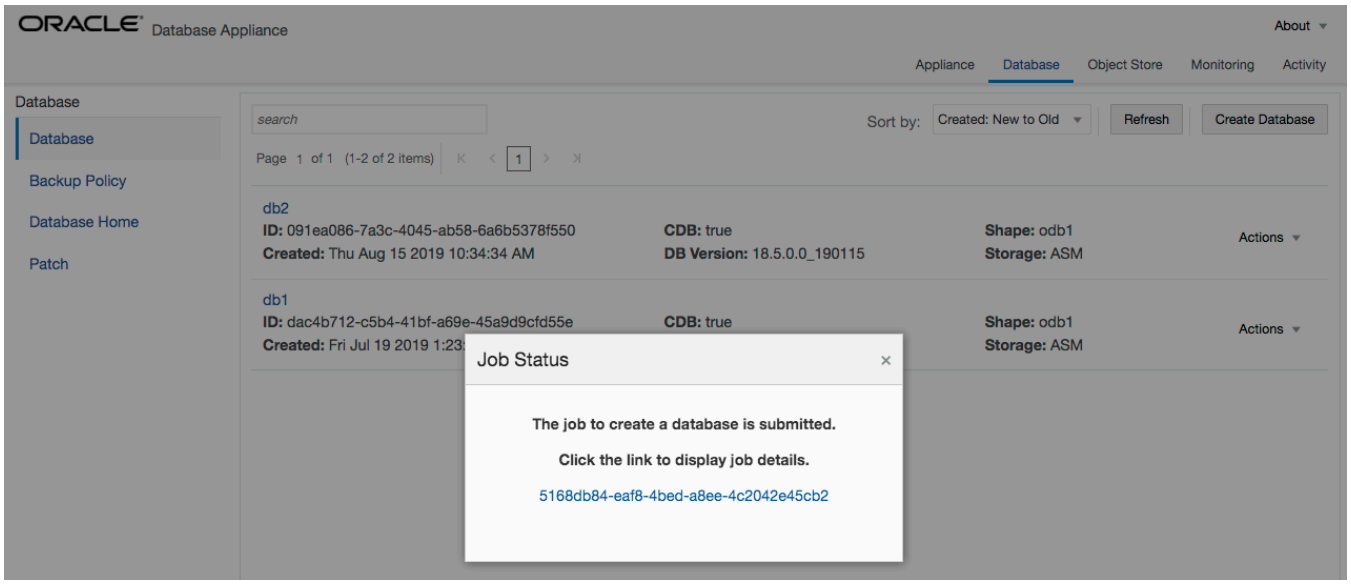


Choose "Create Database", and click "Next"

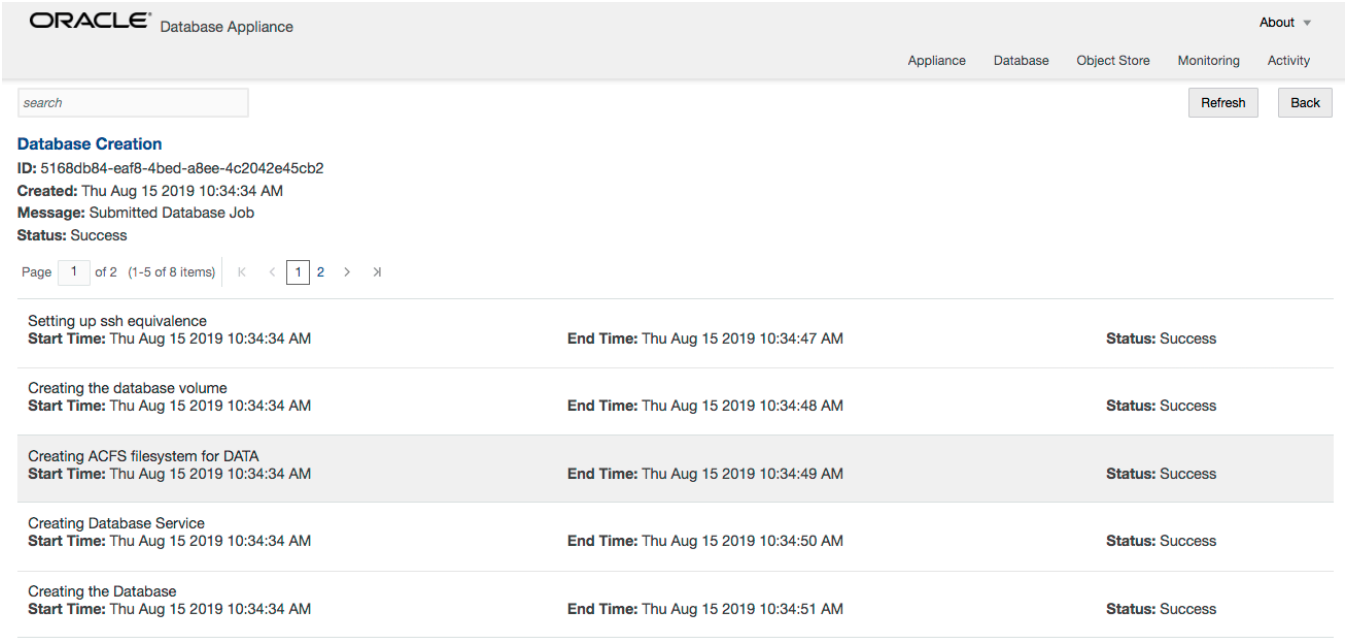
Specify the DB Name, and if you are creating a CDB, a PDB Name. Also remember to scroll down and enter a password that would (in a real ODA) be used for SYS, SYSTEM, and PDB Admin. When finished, click on the "Create" Button. Click "yes" to confirm. Beware of the password complexity checker—"WElcome12##" will pass the test.



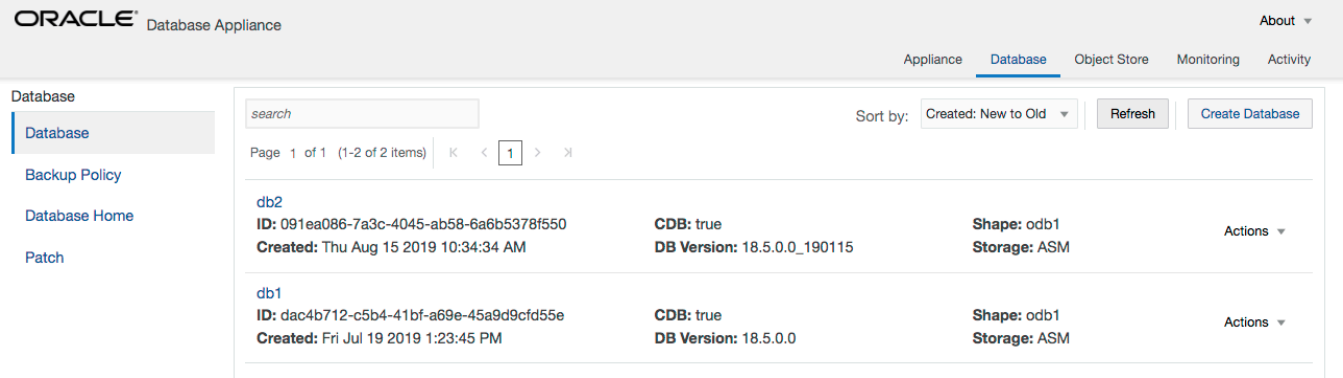
This will bring up a link to the job status. Like with odacli, operations are asynchronous, and return immediately with a job ID. That job ID can then be used to monitor progress. This allows the administrator to perform other tasks if desired while long running operations complete. Click the job ID 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. In a real ODA, these steps take about 20 minutes to complete.



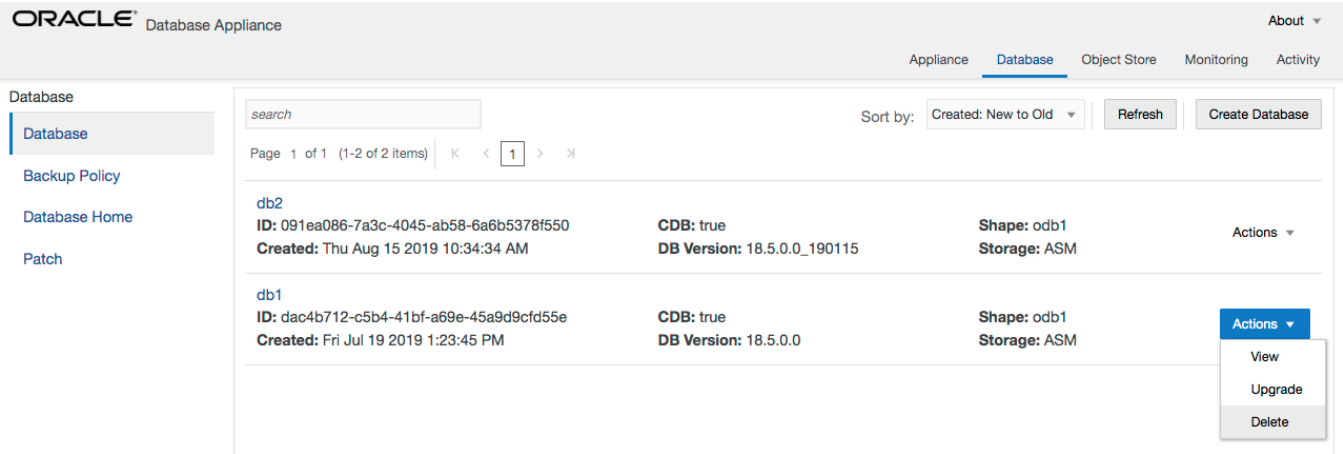
Once the operation completes, click on the "Appliance" tab and then "Database" tab at the top right of the web page. This should show the newly created database. The web pages refresh every few seconds, so if the database does not show up at first, be patient.

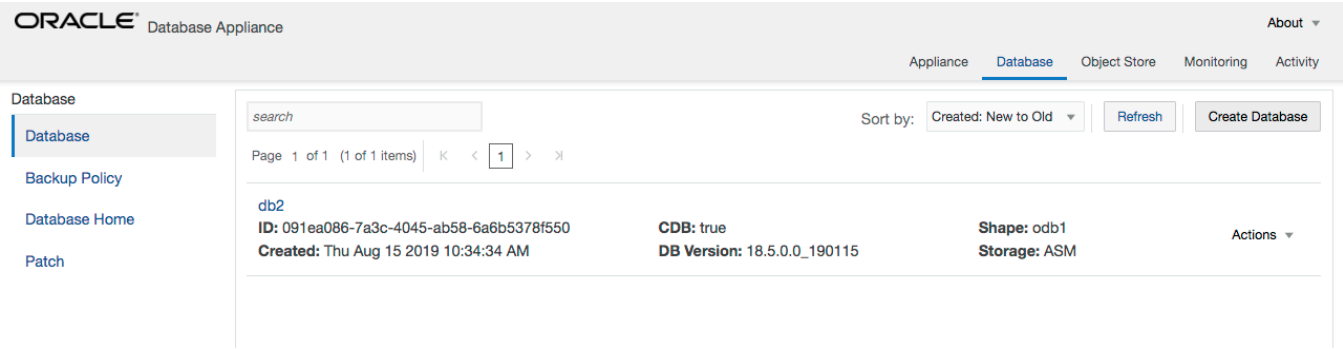


See detailed database information by clicking on the database name. You can also view the newly create home by clicking on the "Database Home" link in the left-hand column of the "Database" tab.

Step 2: Delete a Database

You can also delete a database from the "Database" tab. Click the "Appliance" tab and then "Database Tab" if not at the view that lists databases. Click the "Action" dropdown to the right of the db1 database, then select "Delete." Click "yes" to confirm, and then close the status box. The database list should reflect the deletion. Press "Refresh" if necessary.





Step 3: View the Databases and Homes via the CLI

You can also manage databases from the command line. Select the Chrome tab to go to the command line tool, or re-open the tab by selecting "Launch CLI" from the ODA Simulator Home Page Tab. If not logged in, log in using the credentials on the simulator home page.

Use the sudo odacli list-databases command to view your databases. Then use sudo odacli describe-database to see the details for a specific database. Be sure to use the database ID show in the list-database command, not the ID shown in the example.

```
$ sudo odacli list-databases

ID                                       DB Name    DB Type  DB Version           CDB        Class    Shape    Storage    Status        DbHomeID
---------------------------------------- ---------- -------- -------------------- ---------- -------- -------- ---------- ------------ ----------
---------
---------------------
091ea086-7a3c-4045-ab58-6a6b5378f550     db2        Rac      18.5.0.0_190115      true       Oltp     Odb1     Asm        Configured   daa38a0c-
340b-4bb3-
9230-529a7a76d632


$ sudo odacli describe-database -i 091ea086-7a3c-4045-ab58-6a6b5378f550

Database details
----------------------------------------------------------------
                     ID: 091ea086-7a3c-4045-ab58-6a6b5378f550
            Description: db2
                DB Name: db2
             DB Version: 18.5.0.0_190115
                DB Type: Rac
             DB Edition:
                   DBID: db2
 Instance Only Database: false
                    CDB: true
               PDB Name: pdb1
    PDB Admin User Name: pdbadmin
                  Class: Oltp
                  Shape: Odb1
                Storage: Asm
          DB Redundancy:
           CharacterSet: AL32UTF8
  National CharacterSet: AL16UTF16
               Language: AMERICAN
              Territory: AMERICA
                Home ID: daa38a0c-340b-4bb3-9230-529a7a76d632
        Console Enabled: false
     Level 0 Backup Day:
     AutoBackup Enabled: false
                Created: August 15, 2019 5:34:34 PM GMT
         DB Domain Name:
```

Step 4: Create a New Database with the CLI

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 only the database name is really required. Create a new 12.2.0.1 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, we suggest using Welcome12## for this lab.

```
$ sudo odacli create-database -h
Usage: create-database [options]
  Options:
    --adminpassword, -m
       Password for SYS,SYSTEM and PDB Admin
        … output deleted for brevity …



$ sudo odacli create-database -m -n db3 –v 12.2.0.1
Password for SYS,SYSTEM and PDB Admin:

Job details
----------------------------------------------------------------
                     ID:  58d8db72-2e3d-4d79-931b-0bc36339005c
                 Status:  Runninge Creation
                Created:  August 15, 2019 5:41:48 PM GMT
                Message:  Submitted Database Job

Task Name                                Start Time                          End Time                            Status
---------------------------------------- ----------------------------------- ----------------------------------- ----------
Setting up ssh equivalence               August 15, 2019 5:41:48 PM GMT      August 15, 2019 5:41:48 PM GMT      Scheduled
Creating the database volume             August 15, 2019 5:41:48 PM GMT      August 15, 2019 5:41:48 PM GMT      Scheduled

Creating Database Service                August 15, 2019 5:41:48 PM GMT      August 15, 2019 5:41:48 PM GMT      Scheduled
Creating the Database                    August 15, 2019 5:41:48 PM GMT      August 15, 2019 5:41:48 PM GMT      Scheduled
Configuring the database                 August 15, 2019 5:41:48 PM GMT      August 15, 2019 5:41:48 PM GMT      Scheduled
Creating group :oinstall                 August 15, 2019 5:41:48 PM GMT      August 15, 2019 5:41:48 PM GMT      Scheduled
Create User tablespace                   August 15, 2019 5:41:48 PM GMT      August 15, 2019 5:41:48 PM GMT      Scheduled
```

In a real ODA, this command would run a job in the background for approximately 30 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 and home using the odacli commands:

```
$ sudo odacli list-databases

ID                                       DB Name    DB Type  DB Version           CDB        Class    Shape    Storage    Status        DbHomeID

---------------------------------------- ---------- -------- -------------------- ---------- -------- -------- ---------- ------------ -------------------
---------------------
091ea086-7a3c-4045-ab58-6a6b5378f550     db2        Rac      18.5.0.0_190115      true       Oltp     Odb1     Asm        Configured   daa38a0c-340b-4bb3-
9230-529a7a76d632
4098e227-b16a-4e1a-a0ed-868fa31828f1     db3        Rac      12.2.0.1             false      Oltp     Odb1     Asm        Configured   29178c95-757d-4b14-
ba29-e7601e220261


$ sudo odacli list-dbhomes

ID                                       Name                 DB Version                                 Home Location                                  Statu
s
---------------------------------------- -------------------- ---------------------------------------- ---------------------------------------------- -----
-----
fad19404-f6ab-44bb-82a9-c53ff600f81e     OraDB18.5.0.0_home1  18.5.0.0                                 /u01/app/oracle/product/18.5.0.0/dbhome_1      Confi
gured
daa38a0c-340b-4bb3-9230-529a7a76d632     OraDB18.0.0.0_home2  18.5.0.0_190115                          /u01/app/oracle/product/18.0.0.0/dbhome_2      Confi
gured
29178c95-757d-4b14-ba29-e7601e220261     OraDB12.2.0.1_home3  12.2.0.1                                 /u01/app/oracle/product/12.2.0.1/dbhome_3      Confi
gured
```

Step 5: Delete and Recreate a Database

You can also delete a database via the CLI. 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 on a real ODA, you can use the database name in lieu of the ID, but the simulator doesn't yet support this option.

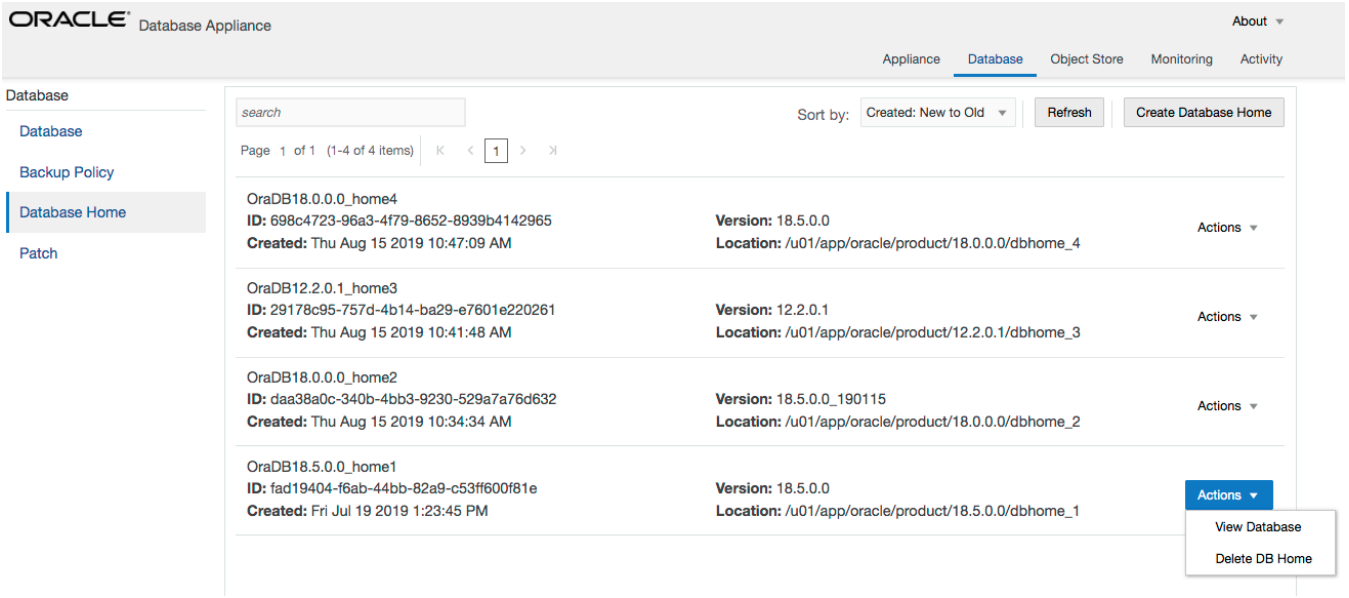
```
$ sudo odacli delete-database -i 091ea086-7a3c-4045-ab58-6a6b5378f550
null
$ sudo odacli list-databases

ID                                      DB Name    DB Type  DB Version           CDB        Class    Shape    Storage    Status        DbHomeID

---------------------------------------- ---------- -------- -------------------- ---------- -------- -------- ---------- ------------ --------------------
--------------------
4098e227-b16a-4e1a-a0ed-868fa31828f1     db3        Rac      12.2.0.1             false      Oltp     Odb1     Asm        Configured   29178c95-757d-4b14-
ba29-e7601e220261
```

And, using the CLI, create a new 18.5 database.

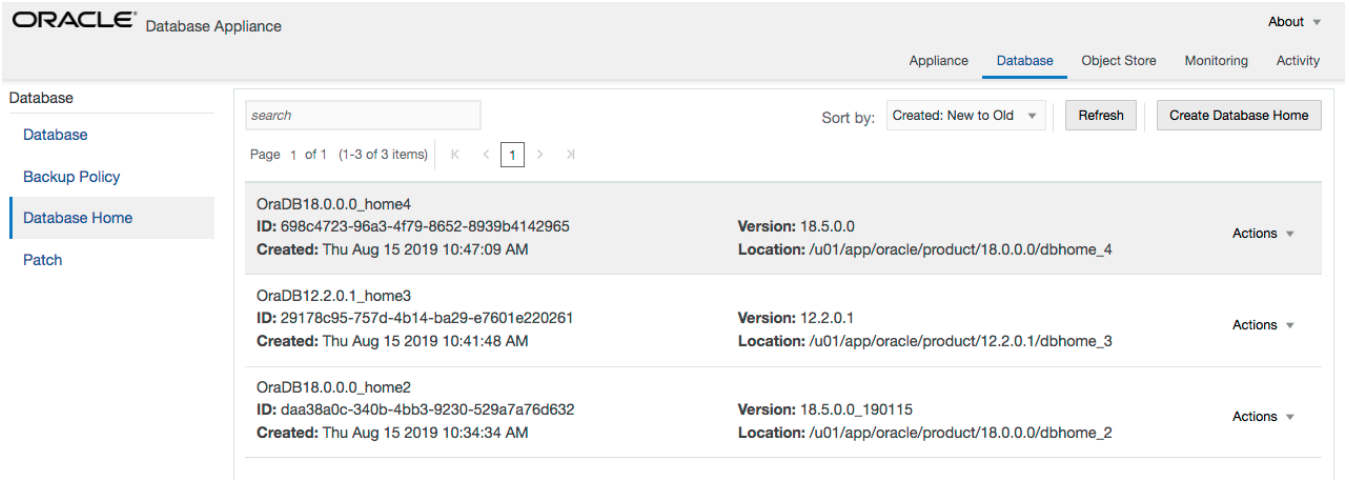
```
$ sudo odacli create-database -m -n db4 -v 18.5.0.0
Password for SYS,SYSTEM and PDB Admin:

Job details
----------------------------------------------------------------
                     ID:  c58359da-a86c-4815-babf-575da40e4e72
            Description:  Database Creation
                 Status:  Running
                Created:  August 15, 2019 5:47:09 PM GMT
                Message:  Submitted Database Job

Task Name                                Start Time                          End Time                            Status
---------------------------------------- ----------------------------------- ----------------------------------- ----------
Setting up ssh equivalence               August 15, 2019 5:47:09 PM GMT      August 15, 2019 5:47:09 PM GMT      Scheduled
Creating the database volume             August 15, 2019 5:47:09 PM GMT      August 15, 2019 5:47:09 PM GMT      Scheduled
Creating ACFS filesystem for DATA        August 15, 2019 5:47:09 PM GMT      August 15, 2019 5:47:09 PM GMT      Scheduled
Creating Database Service                August 15, 2019 5:47:09 PM GMT      August 15, 2019 5:47:09 PM GMT      Scheduled
Creating the Database                    August 15, 2019 5:47:09 PM GMT      August 15, 2019 5:47:09 PM GMT      Scheduled
Configuring the database                 August 15, 2019 5:47:09 PM GMT      August 15, 2019 5:47:09 PM GMT      Scheduled
Creating group :oinstall                 August 15, 2019 5:47:09 PM GMT      August 15, 2019 5:47:09 PM GMT      Scheduled
Create User tablespace                   August 15, 2019 5:47:09 PM GMT      August 15, 2019 5:47:09 PM GMT      Scheduled

$ sudo odacli list-databases

ID                                      DB Name    DB Type  DB Version           CDB        Class    Shape    Storage    Status        DbHomeID

---------------------------------------- ---------- -------- -------------------- ---------- -------- -------- ---------- ------------ --------------
-----
--------------------
4098e227-b16a-4e1a-a0ed-868fa31828f1     db3        Rac      12.2.0.1             false      Oltp     Odb1     Asm        Configured   29178c95-757d-
4b14-
ba29-e7601e220261
ca582672-3866-456b-a776-a7893137bfda     db4        Rac      18.5.0.0             false      Oltp     Odb1     Asm        Configured   698c4723-96a3-
4f79-
8652-8939b4142965
```

Step 6: Delete a Database Home

You can delete a database home via the web-based GUI or the command line. We will use web console 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 home1).



You can see the home1 database home has been deleted.



Step 7: Create Database Backup on local disk, external NFS storage or on the Oracle Cloud

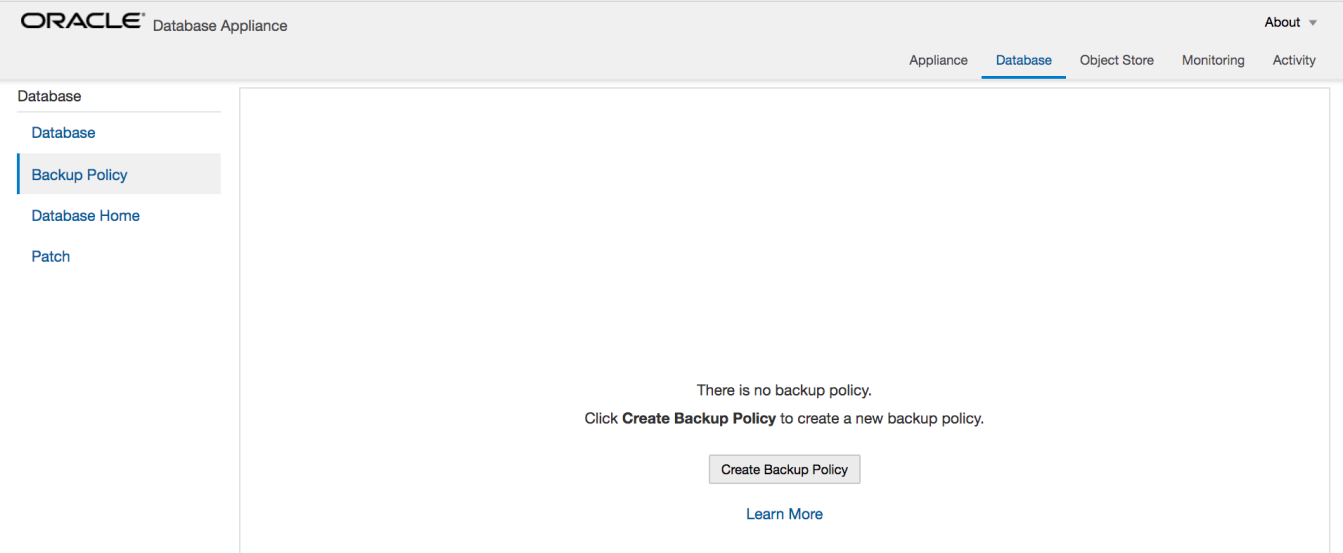
Backing up and restoring Oracle databases in ODA is very simple. There are two simple steps involved to create a database backup locally or on the Oracle Cloud. These can be done via web GUI

1. Create a backup policy
2. Attach a backup policy to a database

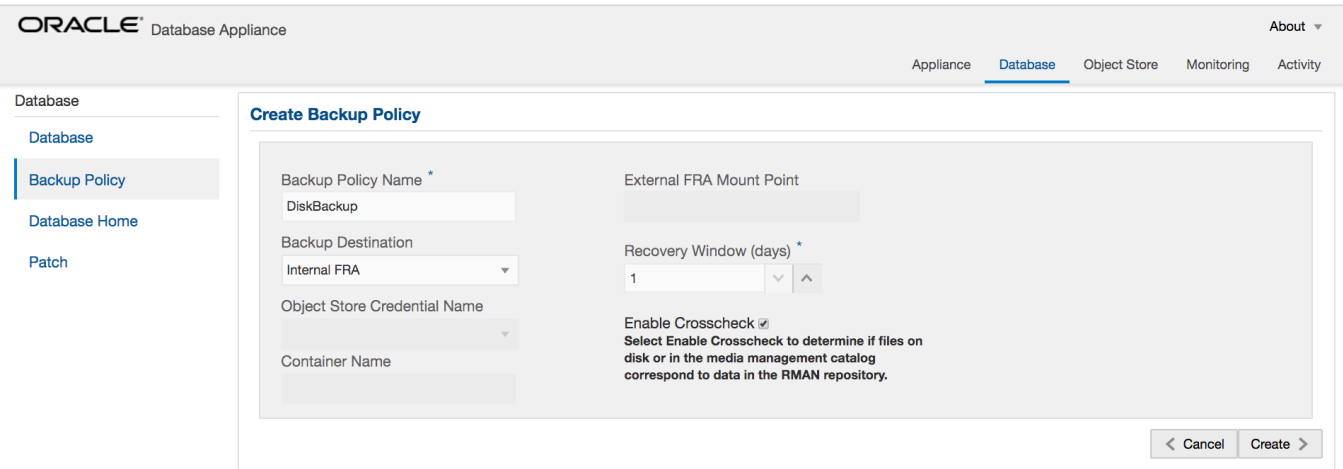
To back up to an external NFS storage, you must create an NFS mount point first.

To back up to the Oracle Cloud, you must obtain and create Object Store credentials first.

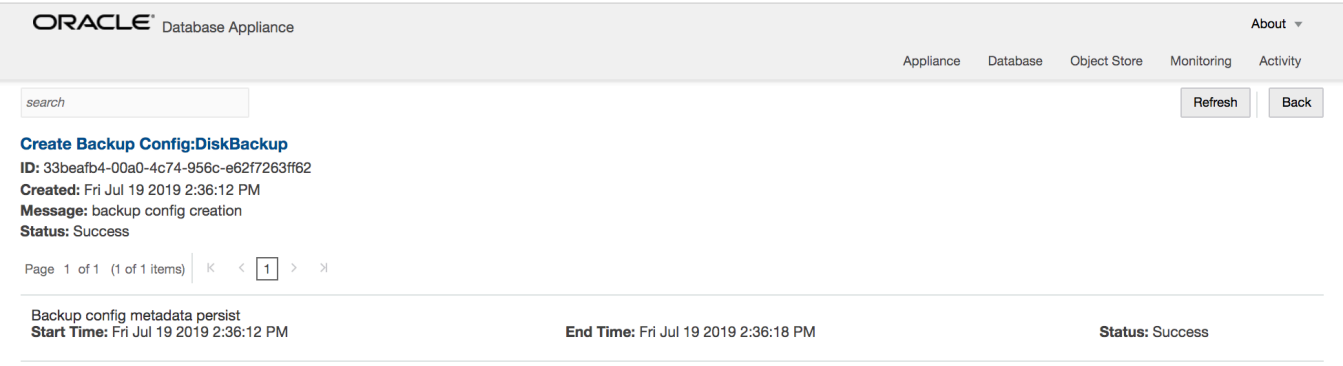
To create a backup policy, click on "Backup Policy" tab and then "Create Backup Policy"



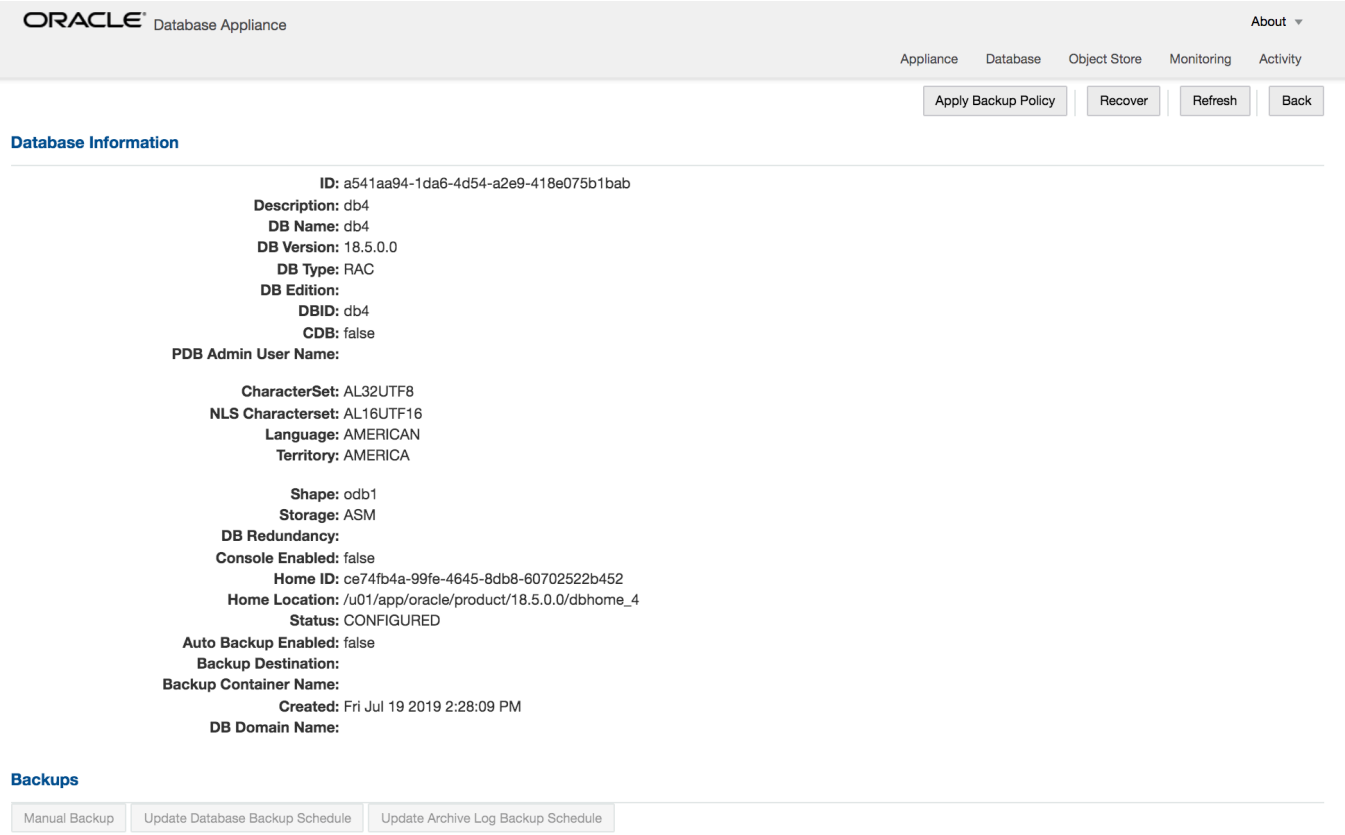
Then name the Backup Policy (i.e. DiskBackup), Backup Destination (Internal FRA/Local Disk or External FRA/External NFS Storage or Object Store/Oracle Cloud), and Recovery Window in days, then click "Create". To back a database to an external NFS storage, you need to specify a mount point such as /u03/app/oracle/oradata/nfs_backup.



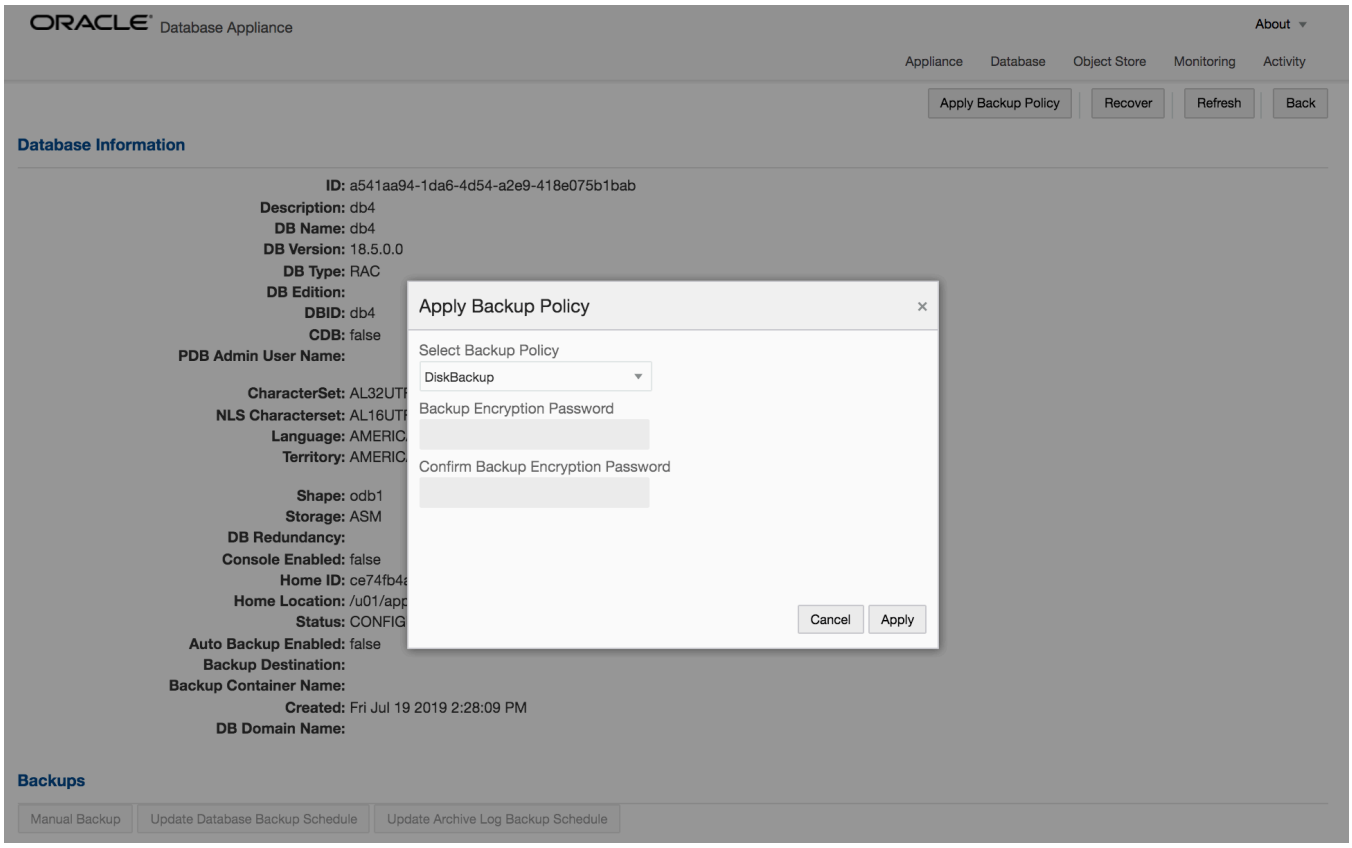
You can check the job status by clicking the provided link or the "Activity" tab on top.



Next you select the database (i.e. db4) you want to backup by clicking on the database name, then click "Apply Backup Policy"



Now select the backup policy (i.e. DiskBackup) for db4 and click "Apply"



Once the job is completed, you can verify the backup policy is listed under "Database Information" of the database (i.e. db4). Once this is done, ODA will start backing up the database to the disk regularly and produce backup reports.

You can see the backup reports under the "Backups" heading below.

ORACLE Database Appliance

About

Appliance Database Object Store Monitoring Activity

Apply Backup Policy | Recover | Refresh | Back

Database Information

ID: a541aa94-1da6-4d54-a2e9-418e075b1bab
Description: db4
DB Name: db4
DB Version: 18.5.0.0
DB Type: RAC
DB Edition:
DBID: db4
CDB: false
PDB Admin User Name:

CharacterSet: AL32UTF8
NLS Characterset: AL16UTF16
Language: AMERICAN
Territory: AMERICA

Shape: odb1
Storage: ASM
DB Redundancy:
Console Enabled: false
Home ID: ce74fb4a-99fe-4645-8db8-60702522b452
Home Location: /u01/app/oracle/product/18.5.0.0/dbhome_4
Status: CONFIGURED
Auto Backup Enabled: false
Backup Policy Name: DiskBackup
Backup Destination: Internal FRA
Created: Fri Jul 19 2019 2:28:09 PM
DB Domain Name:

Backups

Manual Backup | Update Database Backup Schedule | Update Archive Log Backup Schedule

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

ORACLE Database Appliance

About

Appliance Database Object Store Monitoring Activity

Manual Backup

Database Name: db4 **Backup Policy Name:** DiskBackup **Backup Destination:** Internal FRA

Backup Type: Level 0 Incremental Backup
(Backs up all blocks in the database)

Component: Database

Backup Tag

Keep Days

Cancel | Start

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

ORACLE Database Appliance

About

Appliance | Database | Object Store | Monitoring | Activity

Save Backup Report | Refresh | Back

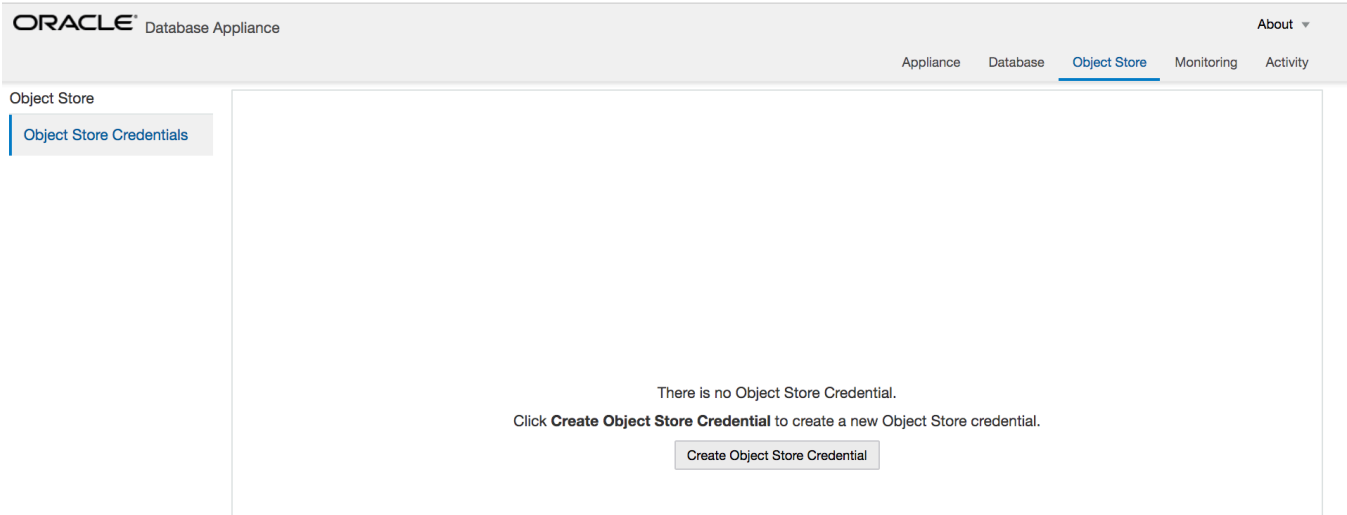
Backup Report

ID: a4683ef5-75ed-4b4e-a61d-c84634b7bc4f
Name: Backup_Report_db4
DB Resource ID: f7ef25ba-6031-4354-8f2e-3fc40265bd36
Tag:
DB ID: a541aa94-1da6-4d54-a2e9-418e075b1bab
DB Name: db4
DB Unique Name: db4
Backup Type: Regular-L0
Keep Days:
Backup Location: Disk [FRA] : /u03/app/oracle/fast_recovery_area/
CF Backup Handle:
SPF Backup Handle:
PITR Time Stamp: Fri Jun 22 2018 12:39:35 AM
Storage: ASM
PITR SCN: 709624
Reset Logs Time Stamp: Thu Jun 21 2018 5:05:47 PM
Reset Logs SCN: 685896
Oracle Home Version: 18.5.0.0
SQL Patches:
Backup Log Location:
TDE Wallet Location:
DB Config Location:
Status: CONFIGURED
Backup Report Log Detail:
Created: Fri Jul 19 2019 2:40:42 PM
Updated: Fri Jul 19 2019 2:40:42 PM

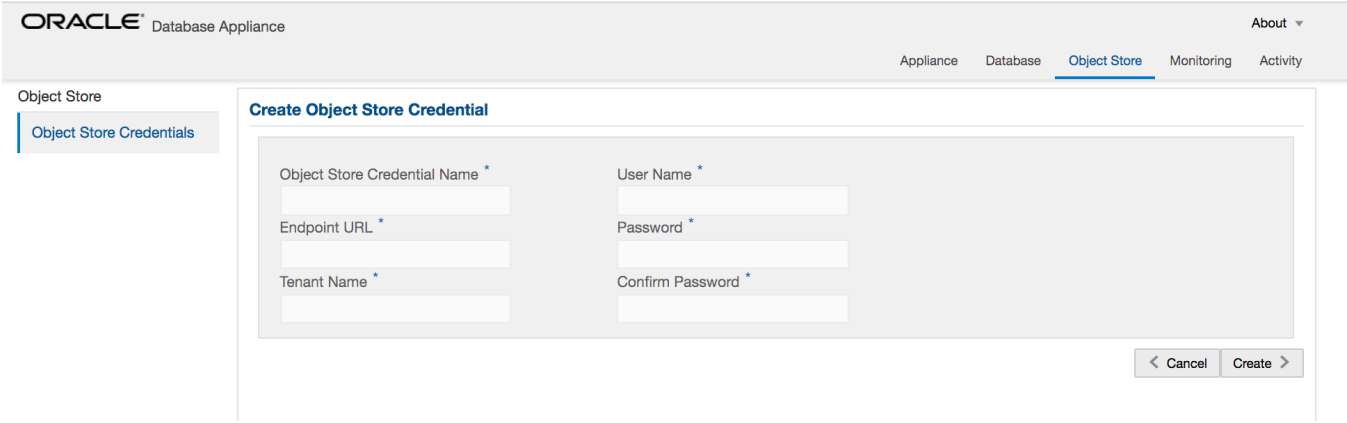
DB Data Size: 1360M
DB REDO Size: 3081M

Database Class: OLTP
Database Type: RAC
Database Shape: odb1
Database Edition:
Database Storage: ASM

In addition to backing up to local disk, you can back up to the Oracle Cloud. To backup databases in ODA to the Oracle Cloud, you must obtain Object Store credentials first. Once that's done, you can click "Object Store" tab, then "Create Object Store Credential"



Enter the required Object Store Credentials including the name. Once that's done, then you can create a backup policy, attached a database to the policy, and specify the Object Store as the backup destination. ODA will then 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 created and ready for patching. If not, you can set up the simulator for the patching lab by returning to the ODA Simulator Home Page tab, clicking the radio box "Lab 3: Patch and Update", and clicking the "Setup Simulator" button.

Return to or re-open the launch command line or GUI interface tab. If necessary, log in using the credentials on the simulator home page.

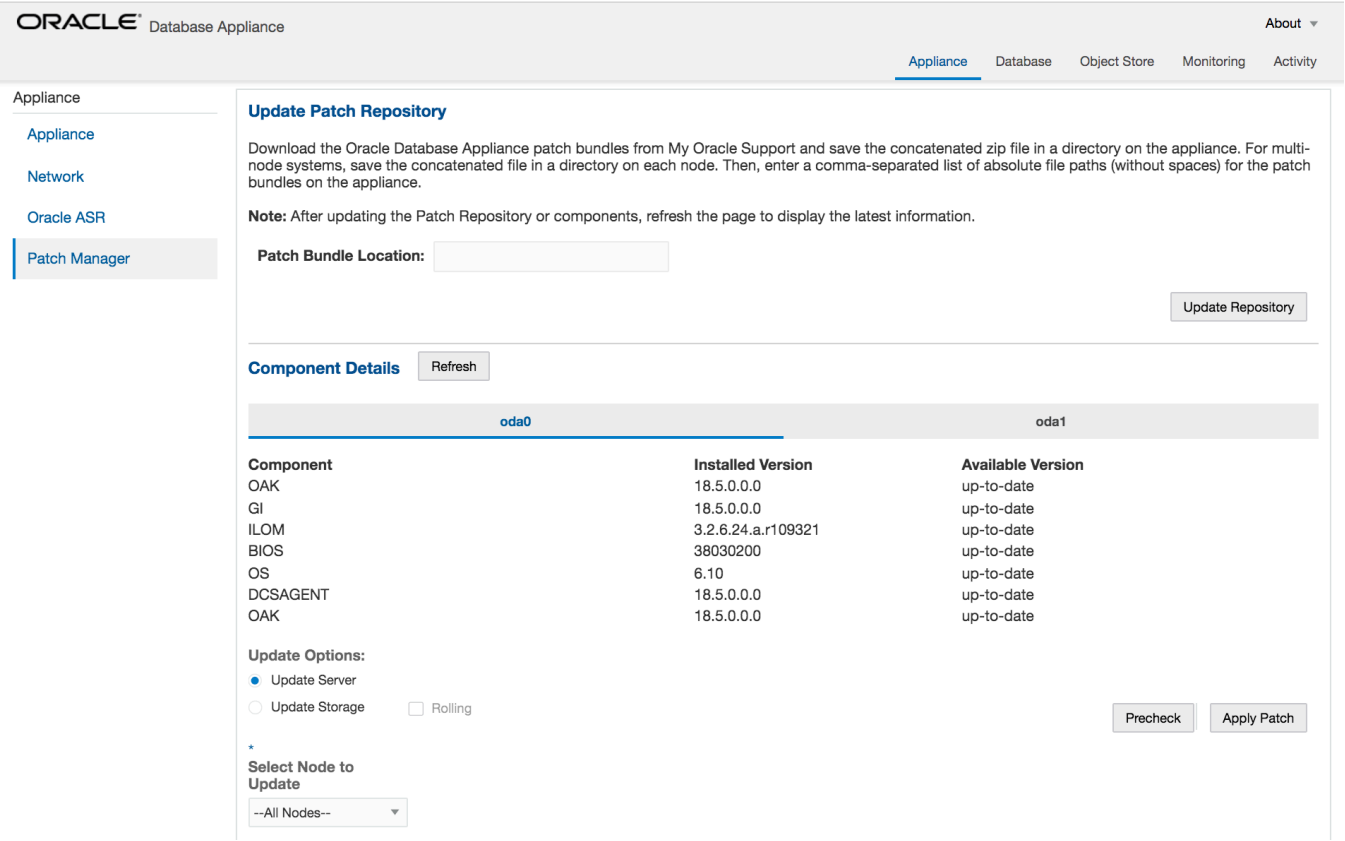
You will use the CLI to update the repository, the web GUI to update the DCS agent and the node 0 (oda0), then you will use the CLI to update the node 1 (oda1).

You will also use the web GUI to update the database homes.

Step 1: Update the ODA Repository with Latest Patches

Patches for ODA are posted in the Oracle Database Appliance Release Notes. There you will find the links to the patches. The ODA X7-2-HA appliances have one patch that must be applied: 1. A server patch that also includes RDBMS patches. The server patch will patch the firmware, OS, Grid Infrastructure, and the databases. You must patch the server before you patch the databases. When patching databases, you can choose to patch a subset if required (although we recommend all databases be kept current on patching). We have downloaded simulated 18.7.0.0.0 patches for the server and database to your simulator. They can be found in your home directory.

Before you start patching the server, you can check the current installed components from the web console. Go to Appliance tab, click on Patch Manager on the left. Note all the installed 18.5.0.0 components. Since you have not updated the repository to 18.7.0.0, everything is shown up to date.



Use the CLI to run the update-repository command. Set your current directory to your home directory. Type "ls" to list the files. The server patch is oda-sm-18.7.0.0.0-190716-server.zip. The server patch also includes database updates for 18.5.0.0, 12.2.1.2, 12.1.0.2 and 11.2.0.4. An 18.3.00 clone file is also included.

Type the following to update the ODA repository with these patches. **You must use the full path for the file names—substitute your home directory for the directory used in the examples**.

```
$ cd ~
$ sudo odacli update-repository -f /home/userxx/oda-sm-18.7.0.0.0-190716-server.zip
{
  "jobId" : "596bb6cf-2542-4bea-a1de-34310890c36e",
  "status" : "Running",
  "message" : "Submitted the job for update repository",
  "reports" : [ {
    "taskId" : "TaskSequential_UR1",
    "taskName" : "Checking for user validity and permissions",
    "taskResult" : "User permissions looks fine!",
    "startTime" : "August 15, 2019 20:54:43 PM GMT",
    "endTime" : "August 15, 2019 20:54:43 PM GMT",
    "status" : "Scheduled",
    "taskDescription" : "Checking for user permissions",
    "parentTaskId" : "",
    "jobId" : "",

… output deleted for brevity …
```

Now you can use the web console to see the 18.7.0.0.0 available component versions.

Note: with Oracle database 18c, the Release Update (RU) patch naming convention has changed. For example, if you run the odacli describe-component command you'll see:

DB	Installed Jan, 2019 Patch	Available July, 2019 Patch
OraDB12.2.0.1_home1	12.2.0.1.190115	12.2.0.1.190716
OraDB18.0.0.0_home2	18.5.0.0.190115	18.7.0.0.190716

ORACLE Database Appliance

About

Appliance | Database | Object Store | Monitoring | Activity

Appliance

- Appliance
- Network
- Oracle ASR
- Patch Manager

Update Patch Repository

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.

Note: After updating the Patch Repository or components, refresh the page to display the latest information.

Patch Bundle Location:

Update Repository

Component Details Refresh

oda0 | oda1

Component	Installed Version	Available Version
OAK	18.5.0.0.0	18.7.0.0.0
GI	18.5.0.0.0	18.7.0.0.0
ILOM	3.2.6.24.a.r109321	3.2.9.23.a.r116695
BIOS	38030200	38070400
OS	6.10	up-to-date
DCSAGENT	18.5.0.0.0	18.7.0.0.0
OAK	18.5.0.0.0	18.7.0.0.0

Update Options:

- Update Server
- Update Storage Rolling

Precheck Apply Patch

*
Select Node to Update

--All Nodes--

We recommend that you run the precheck for OS, ILOM, and GI before patching by click the "Precheck" button.

ORACLE Database Appliance

About

Appliance | Database | Object Store | Monitoring | Activity

Refresh | Back

Patch pre-checks for [OS, ILOM, GI]

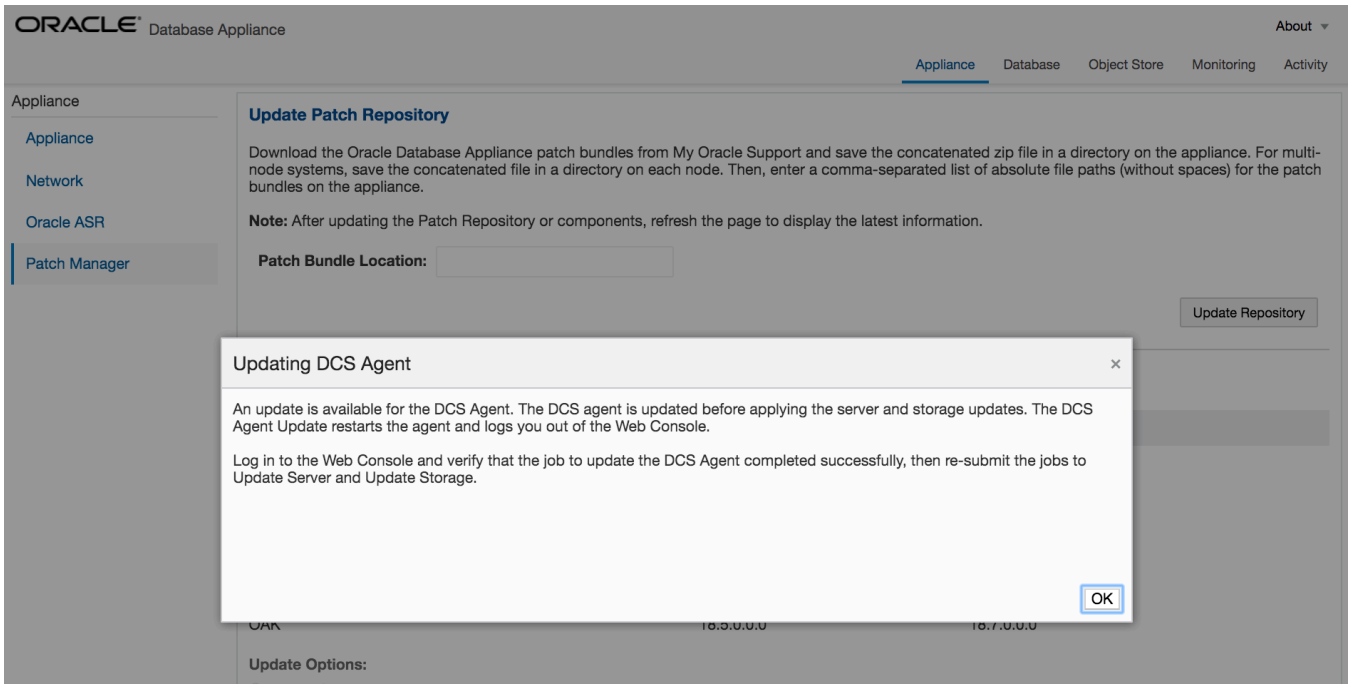
Job ID: d9ba0c55-4f3a-49d5-9796-4e8b68c1a404
Created: Fri Jul 19 2019 2:54:05 PM
Result: All pre-checks succeeded
Status: RUNNING

oda0 | oda1

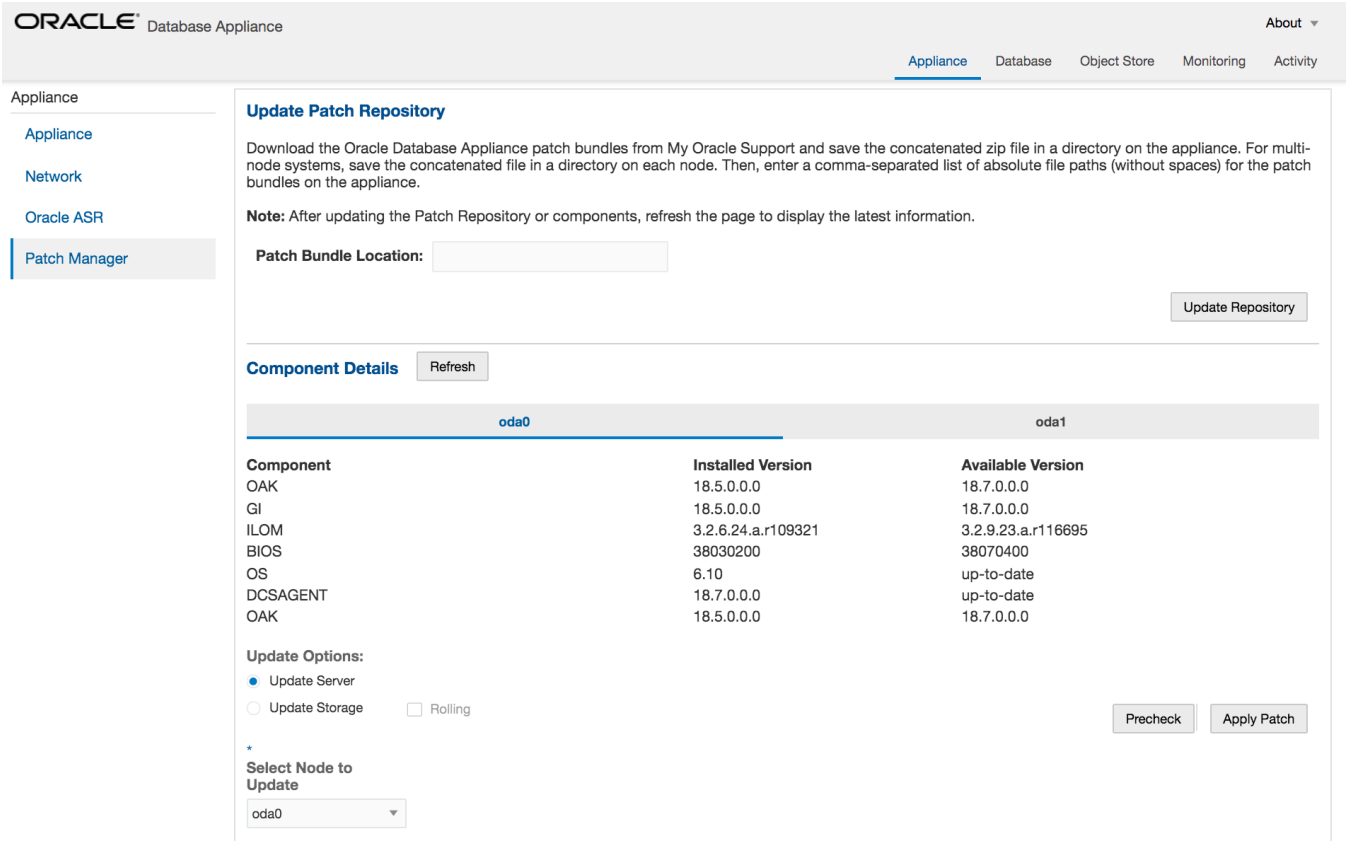
Pre-Check Description	Status	Comments
____OS____		
Validate supported versions	SUCCESS	Validated minimum supported versions
Validate patching tag	SUCCESS	Validated patching tag: 18.3.0.0.0
Is patch location available	SUCCESS	Patch location is available
Verify OS patch	SUCCESS	There are no packages available for an update
____ILOM____		
Validate supported versions	SUCCESS	Validated minimum supported versions
Validate patching tags	SUCCESS	Validated patching tag: 18.3.0.0.0
Is patch location available	SUCCESS	Patch location is available
Checking Ilom patch Version	SUCCESS	Successfully verified the versions
Patch location validation	SUCCESS	Successfully validated location
____GI____		
Validate supported GI versions	SUCCESS	Validated minimum supported versions
Validate available space	SUCCESS	Validated free space under /u01
Verify DB Home versions	SUCCESS	Verified DB Home versions
Validate patching locks	SUCCESS	Validated patching locks

Step 2: Update the DCS Agent

The next step is to update the DCS Agent on both nodes with the web console before actually updating the server. The DCS Agent is the Oracle Database Appliance software that provides the intelligence and automation. Select "Update Server" radio button, select "Apply Patch", then Submit, then click OK on Updating DCS Agent.



From the web console, go to the Appliance tab, Patch Manager, Refresh button to verify that the DCS Agent is up-to-date. It is automatically patched on both nodes, regardless of which "Select Nodes to Update" setting you specify.

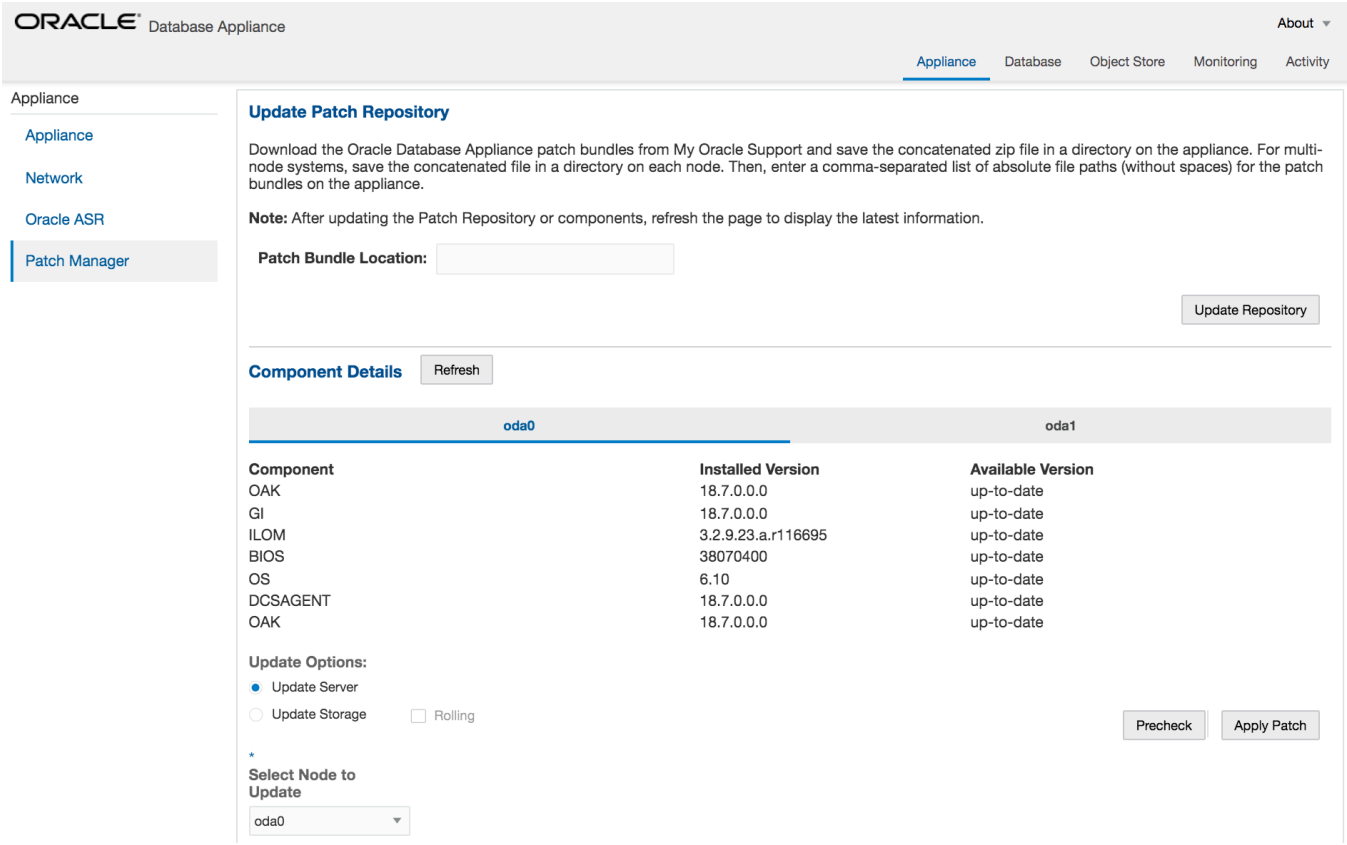


Step 3: Update the server

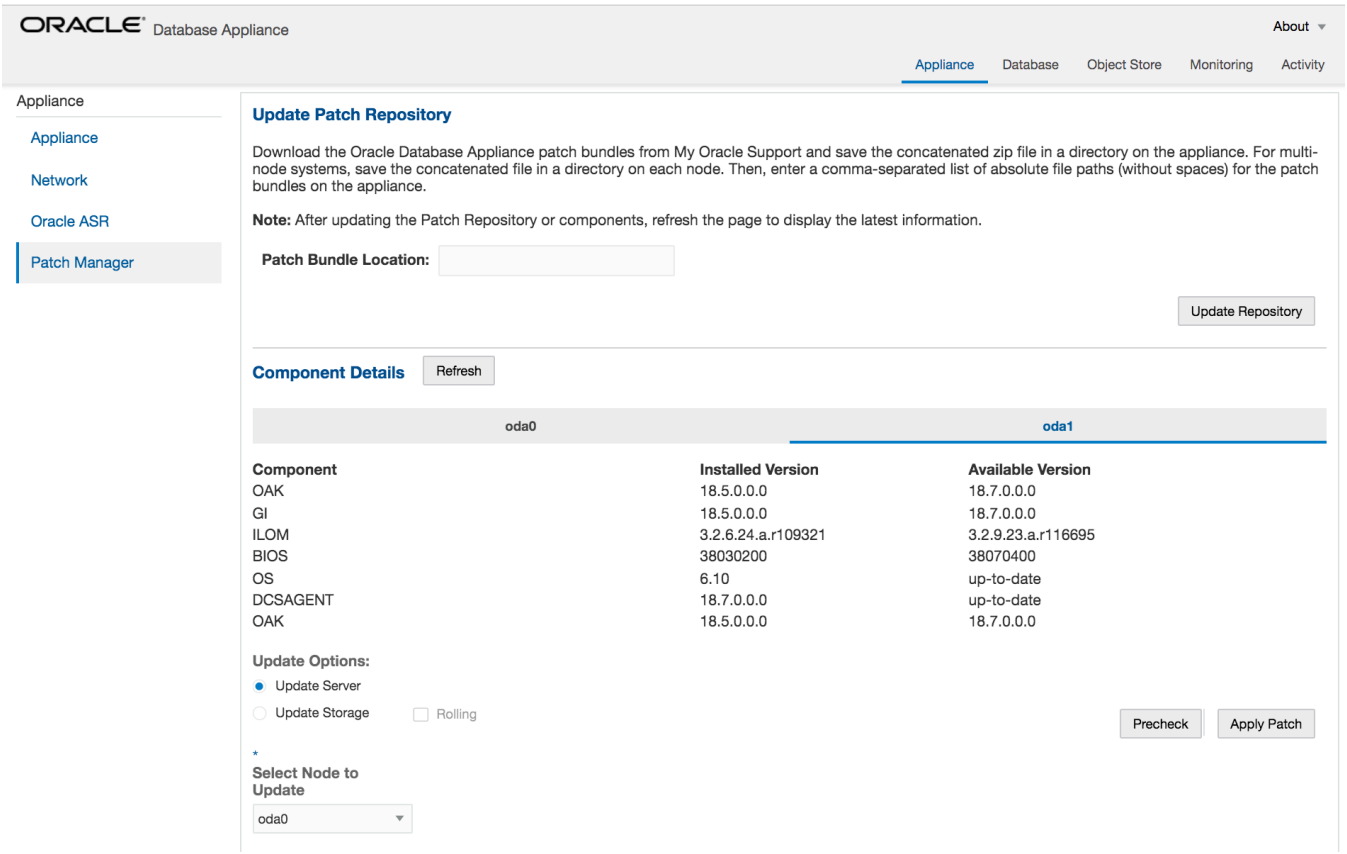
The next step is to update the server. This includes firmware, operating system, and GI updates.

To update node 0 (oda0), from the web console select Update Server, pick oda0 for Select Node to Update, then hit Submit.

After the job is completed, you can refresh the browser to see that the oda0 tab has all 18.7.0.0.0 components installed, and everything is up-to-date.



The second node (oda1) tab still has 18.5.0.0.0 components (except for the DCS Agent).



While you could easily use the Web GUI to patch the second node, you can also patch the server using the CLI. Next you will update the second node (oda1) with the following CLI command.

```
$ sudo odacli update-server –n 1 -v 18.7.0.0.0
{
  "jobId" : "396c66cc-d83c-4abf-81b7-cf6f4efdf398",
  "status" : "Running",
  "message" : "Submitted the job for patching the server",
  "reports" : [ {
    "taskId" : "TaskSequential_SP1",
    "taskName" : "Checking for user validity and permissions",
    "taskResult" : "User permissions looks fine!",
    "startTime" : "July 19, 2019 21:59:10 PM GMT",
    "endTime" : "July 19, 2019 21:59:10 PM GMT",
    "status" : "Scheduled",

… output deleted for brevity …
```

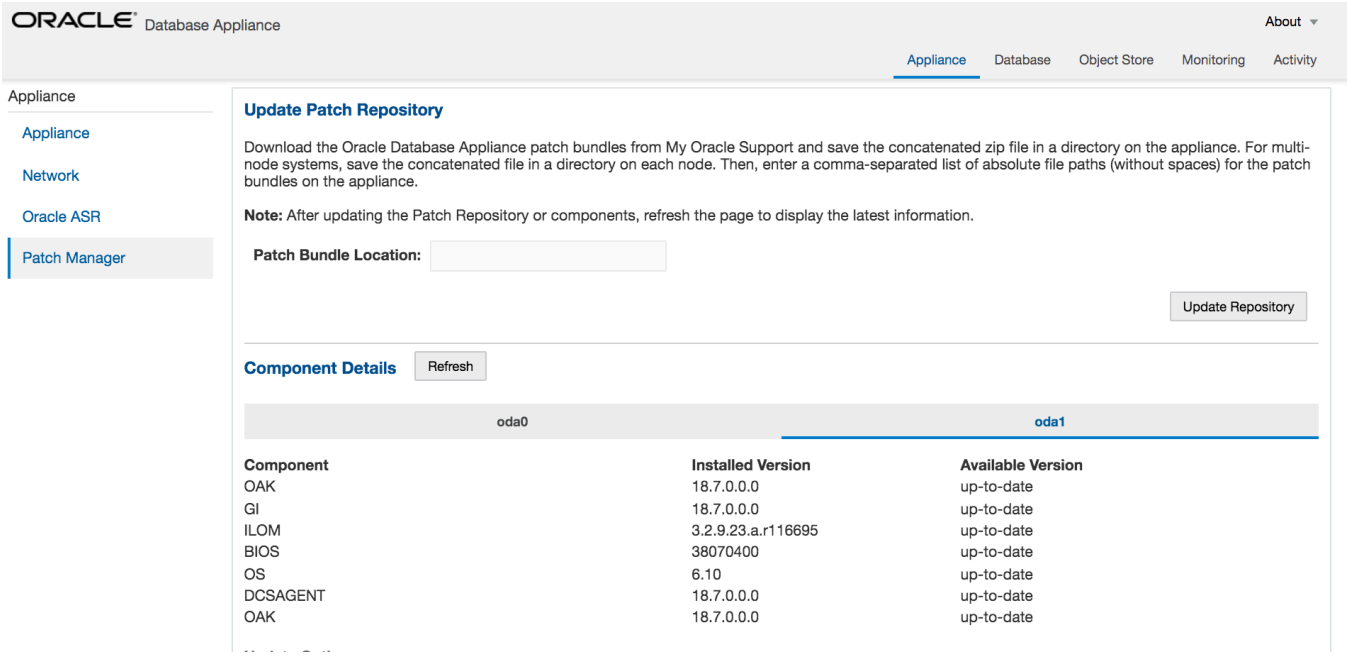
Patching a real ODA will take some time, the simulator speeds up the whole process. The Linux prompt returns immediately and the patch runs in the background. You can monitor the progress of the patch job using the 'odacli describe-job' command. Use the job ID from the previous operation.

```
$ sudo odacli describe-job -i 396c66cc-d83c-4abf-81b7-cf6f4efdf398

Job details
----------------------------------------------------------------
            Description:  Patching the serverae4b-ef9c750bbbe8
                 Status:  Success
                Created:  July 19, 2019 10:12:12 PM GMT
                Message:  Submitted the job for patching the server

Task Name                                Start Time                          End Time                            Status

---------------------------------------- ----------------------------------- ----------------------------------- ---------
-
Checking for user validity and permissions July 19, 2019 10:12:12 PM GMT     July 19, 2019 10:12:20 PM GMT        Success
Stopping the Appliance daemons           July 19, 2019 10:12:12 PM GMT       July 19, 2019 10:12:20 PM GMT        Success
Copying the server patch binaries        July 19, 2019 10:12:12 PM GMT       July 19, 2019 10:12:22 PM GMT        Success
```

Now you can use the command line to check all the installed components on both nodes.

```
$ sudo odacli describe-component

System Version
---------------
18.7.0.0.0

System node Name
---------------
oda0

Local System Version
---------------
18.7.0.0.0

Component                                Installed Version    Available Version
---------------------------------------- -------------------- --------------------
OAK                                       18.7.0.0.0            up-to-date

GI                                        18.7.0.0.0            up-to-date

DB {
[ OraDB18.0.0.0_home2 ]                   18.5.0.0_190115       up-to-date
[ OraDB12.2.0.1_home3 ]                   12.2.0.1              12.2.0.1_190716
[ OraDB18.0.0.0_home4 ]                   18.5.0.0              up-to-date
}

ILOM                                      3.2.9.23.a.r116695    up-to-date

BIOS                                      38070400              up-to-date

OS                                        6.10                  up-to-date

DCSAGENT                                  18.7.0.0.0            up-to-date

OAK                                       18.7.0.0.0            up-to-date

System node Name
---------------
oda1

Local System Version
---------------
18.7.0.0.0

Component                                Installed Version    Available Version
---------------------------------------- -------------------- --------------------
OAK                                       18.7.0.0.0            up-to-date

GI                                        18.7.0.0.0            up-to-date

DB {
[ OraDB18.0.0.0_home2 ]                   18.5.0.0_190115       up-to-date
[ OraDB12.2.0.1_home3 ]                   12.2.0.1              12.2.0.1_190716
[ OraDB18.0.0.0_home4 ]                   18.5.0.0              up-to-date
}

ILOM                                      3.2.9.23.a.r116695    up-to-date

BIOS                                      38070400              up-to-date

OS                                        6.10                  up-to-date

DCSAGENT                                  18.7.0.0.0            up-to-date

OAK                                       18.7.0.0.0            up-to-date
```

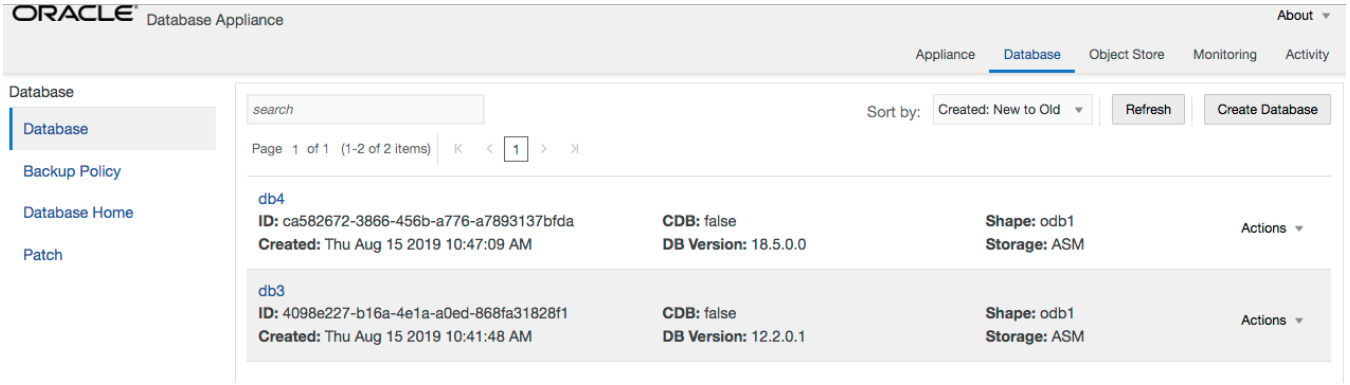
You can also use the web console to verify that the second node (oda1) components are updated to 18.7.0.0.0.



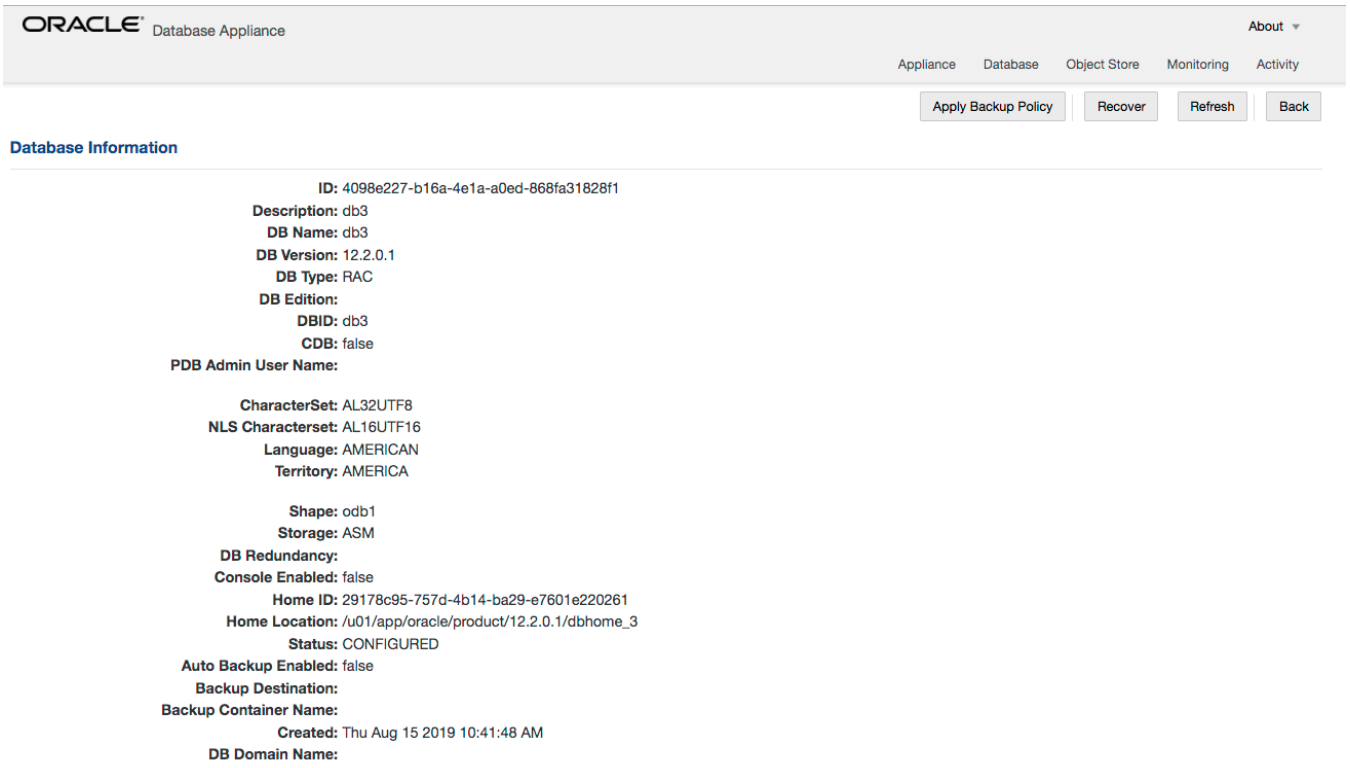
Step 4: Patch Database Homes (Updating Database)

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

To use the web console to identify the database homes, go to the Database tab, and …



…click on the database name (e.g. db3) to identify the database home ID for patching.



Note either the Home ID, or the Home location. You will need this to patch the database home.

You can use either CLI 'odacli update-dbhome' command or GUI web console 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. For a RAC database, database homes on both nodes will be patched in a rolling manner.

Now, we will use the CLI to patch database db3.

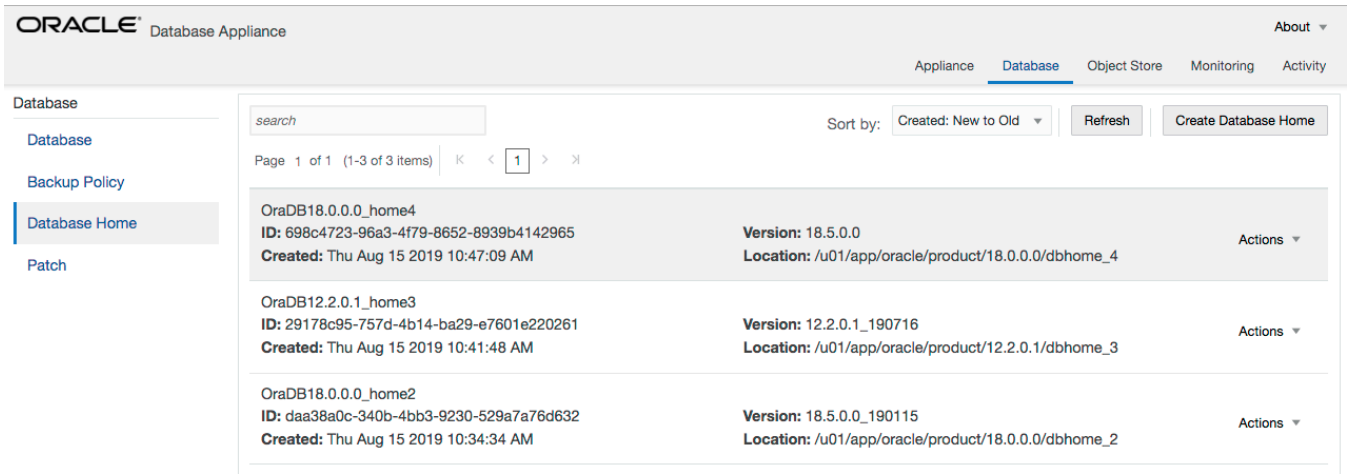
The 'odacli list-databases' command will list each database, its ID and its database home ID. Those database homes will be the ones we will patch by supplying the database home ID to the patching command. You can also see more information, such as the name of the database home, using the 'odacli list-dbhomes'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

```
$ sudo odacli list-databases

ID                                       DB Name    DB Type  DB Version           CDB        Class    Shape    Storage    Status        DbHomeID
---------------------------------------- ---------- -------- -------------------- ---------- -------- -------- ---------- ------------ -------------------
---------------------
4098e227-b16a-4e1a-a0ed-868fa31828f1     db3        Rac      12.2.0.1             false      Oltp     Odb1     Asm        Configured   29178c95-757d-4b14-
ba29-e7601e220261
ca582672-3866-456b-a776-a7893137bfda     db4        Rac      18.5.0.0             false      Oltp     Odb1     Asm        Configured   698c4723-96a3-4f79-
8652-8939b4142965

$ sudo odacli list-dbhomes

ID                                       Name                 DB Version                                 Home Location                                  Statu
s
---------------------------------------- -------------------- ---------------------------------------- ---------------------------------------------- -----
-----
daa38a0c-340b-4bb3-9230-529a7a76d632     OraDB18.0.0.0_home2  18.5.0.0_190115                          /u01/app/oracle/product/18.0.0.0/dbhome_2      Confi
gured
29178c95-757d-4b14-ba29-e7601e220261     OraDB12.2.0.1_home3  12.2.0.1                                 /u01/app/oracle/product/12.2.0.1/dbhome_3      Confi
gured
698c4723-96a3-4f79-8652-8939b4142965     OraDB18.0.0.0_home4  18.5.0.0                                 /u01/app/oracle/product/18.0.0.0/dbhome_4      Confi
gured
```

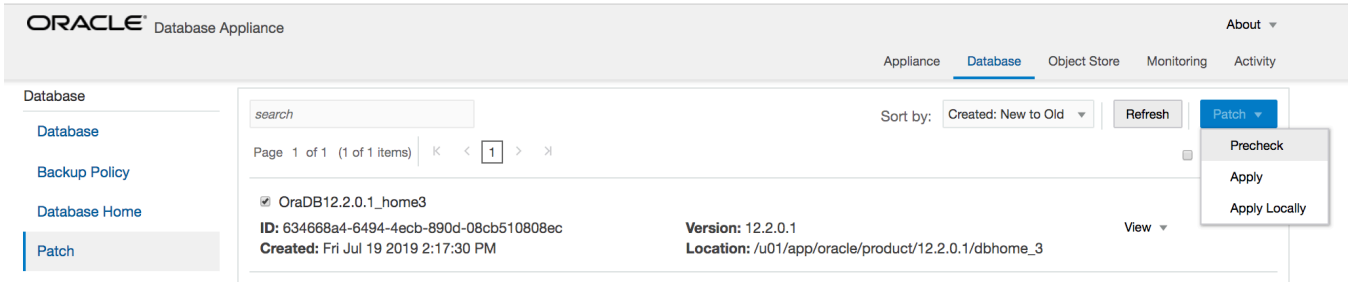
Use the clipboard to copy the DB Home ID for db3. Then use that with the 'odacli update-dbhome' command to update the home for db3. Verify the job has completed successfully using 'odacli describe-job'.

```
$ sudo odacli update-dbhome -i 29178c95-757d-4b14-ba29-e7601e220261 -v 18.7.0.0.0
{
  "jobId" : "8de1d90a-dc6b-4fd1-96b7-aaa028abac1f",
  "status" : "Running",
  "message" : "Submitted Update-DBHome Job",
  "reports" : [ {
    "taskId" : "TaskSequential_34",
    "taskName" : "Check the existence of DBHome Location",
    "taskResult" : "DBHome is valid!",
    "startTime" : "August 15, 2019 21:09:36 PM GMT",
    "endTime" : null,
    "status" : "Scheduled",

… output deleted for brevity …


$ sudo odacli describe-job -i 8de1d90a-dc6b-4fd1-96b7-aaa028abac1f


Job details
----------------------------------------------------------------
                     ID:  8de1d90a-dc6b-4fd1-96b7-aaa028abac1f
            Description:  Update DBHome
                 Status:  Success
                Created:  August 15, 2019 9:09:36 PM GMT
                Message:  Submitted Update-DBHome Job

Task Name                                Start Time                          End Time                            Status
---------------------------------------- ----------------------------------- ----------------------------------- ----------
Check the existence of DBHome Location   August 15, 2019 9:09:36 PM GMT      August 15, 2019 9:09:44 PM GMT      Success
Checking for update permissions          August 15, 2019 9:09:36 PM GMT      August 15, 2019 9:09:45 PM GMT      Success
Updating the database binaries           August 15, 2019 9:09:36 PM GMT      August 15, 2019 9:09:46 PM GMT      Success
```

Verify that the db3 database home has been updated to latest (190716.) You can use either the web console or CLI (odacli list-dbhomes).

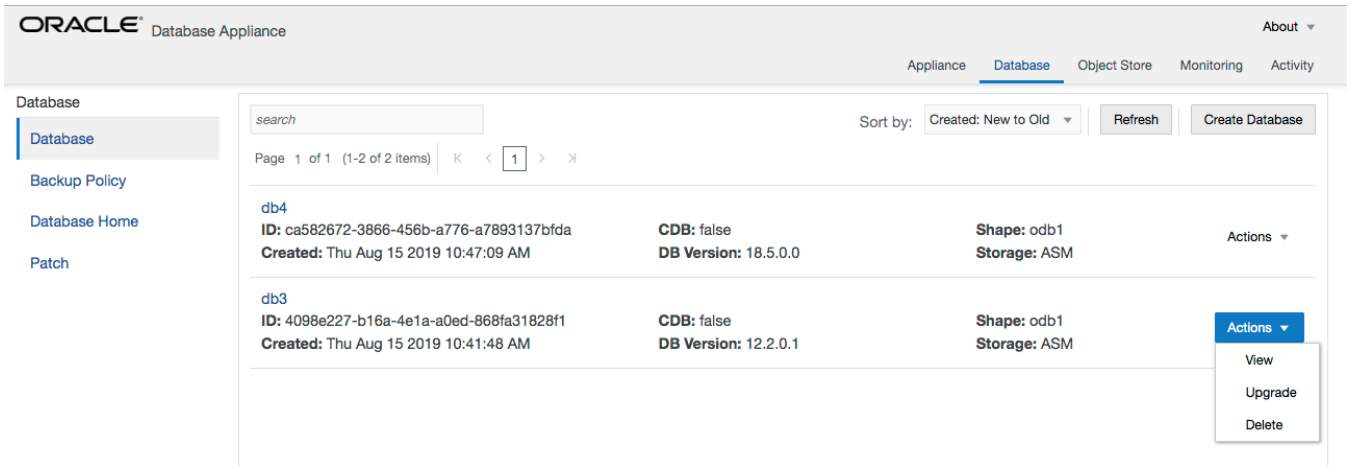


You can also use the GUI web console to update the database homes by clicking "Patch" on the left panel, then select Apply in the Patch drop-down. We already updated the db3 database home via command line already.

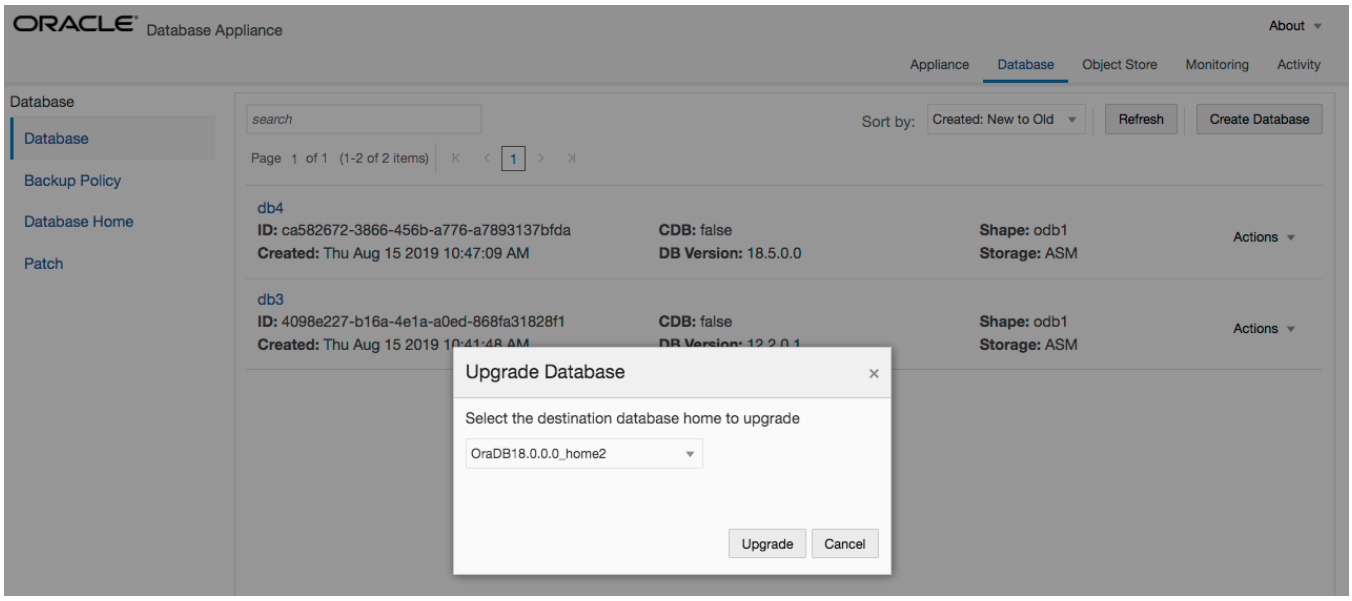


Step 5: Upgrading Database

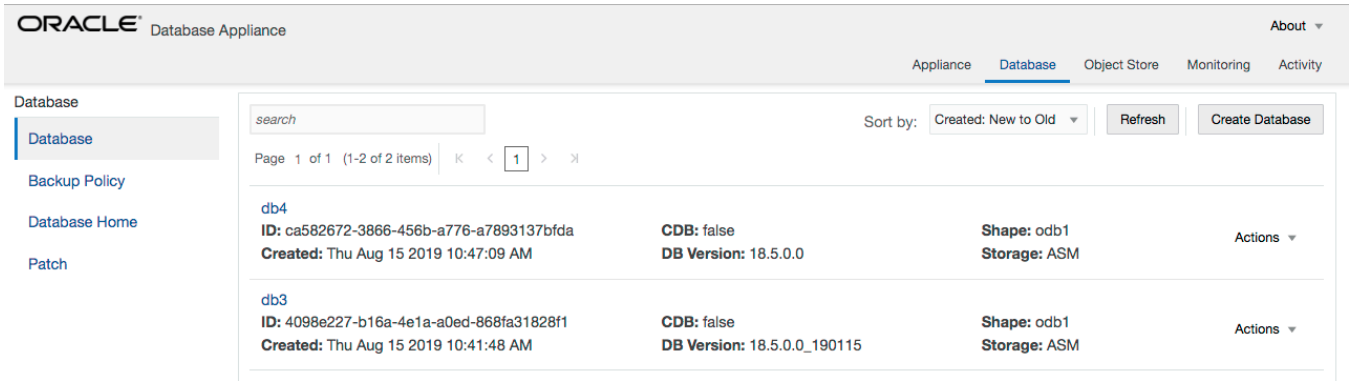
To upgrade a database (i.e. db3), go to "Database" tab, click on "Actions", select Upgrade.



Then select a new database home (i.e. OraDB18.0.0.0_home2)



You can see db3 has been upgraded from 12.2.0.1 to 18.3



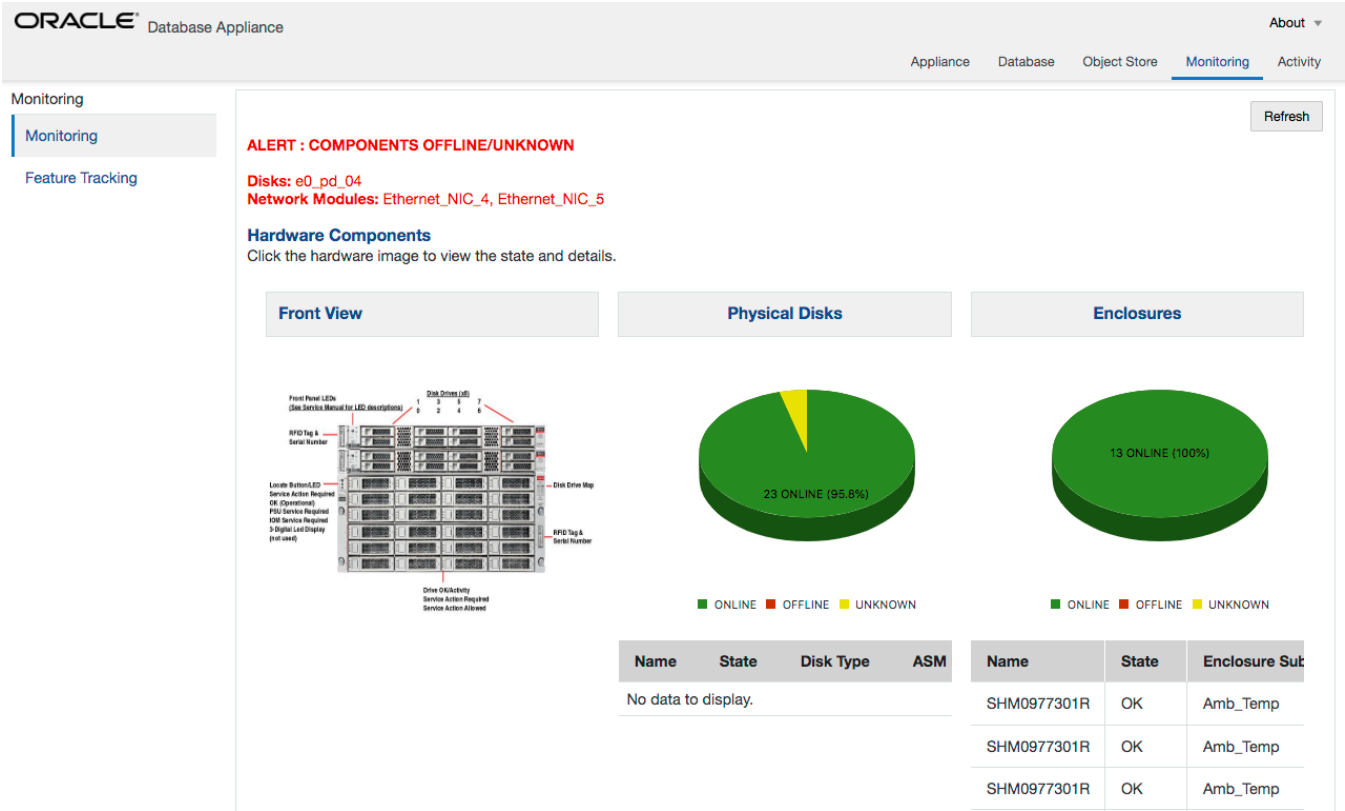
This concludes Lab 3.

Lab 4: Monitoring and Administration

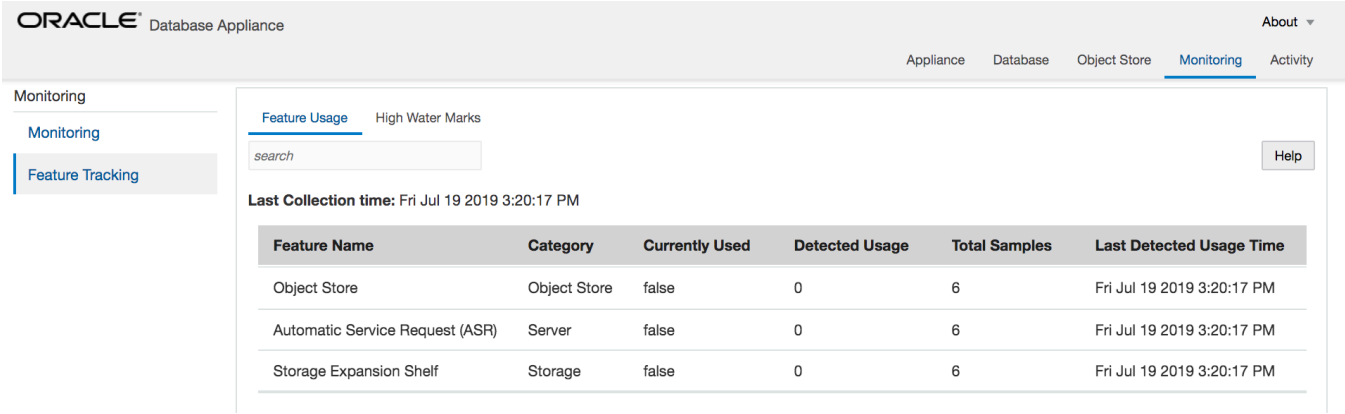
Step 1: Web GUI Hardware Monitoring and Feature Tracking

The web console shows ODA hardware status and tracks feature usage including High Water Marks.

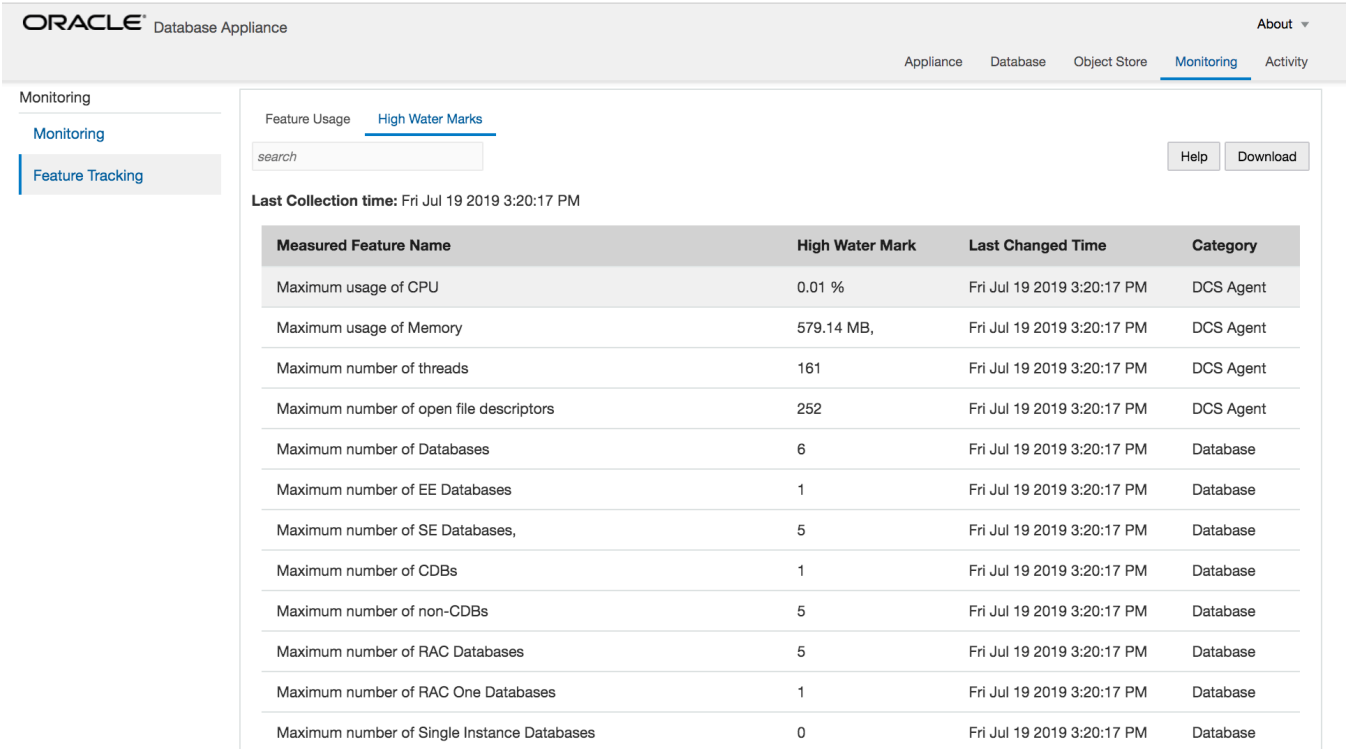
Hardware Status



Feature Tracking



High Water Marks



Measured Feature Name	High Water Mark	Last Changed Time	Category
Maximum usage of CPU	0.01 %	Fri Jul 19 2019 3:20:17 PM	DCS Agent
Maximum usage of Memory	579.14 MB,	Fri Jul 19 2019 3:20:17 PM	DCS Agent
Maximum number of threads	161	Fri Jul 19 2019 3:20:17 PM	DCS Agent
Maximum number of open file descriptors	252	Fri Jul 19 2019 3:20:17 PM	DCS Agent
Maximum number of Databases	6	Fri Jul 19 2019 3:20:17 PM	Database
Maximum number of EE Databases	1	Fri Jul 19 2019 3:20:17 PM	Database
Maximum number of SE Databases,	5	Fri Jul 19 2019 3:20:17 PM	Database
Maximum number of CDBs	1	Fri Jul 19 2019 3:20:17 PM	Database
Maximum number of non-CDBs	5	Fri Jul 19 2019 3:20:17 PM	Database
Maximum number of RAC Databases	5	Fri Jul 19 2019 3:20:17 PM	Database
Maximum number of RAC One Databases	1	Fri Jul 19 2019 3:20:17 PM	Database
Maximum number of Single Instance Databases	0	Fri Jul 19 2019 3:20:17 PM	Database

The Oracle Appliance Manager command line interfaces (odacli, odaadmcli) are tools that can also be used to install, configure, and interrogate the status of ODA. They are free with the Oracle Database Appliance to assist in the fast deployment and easy management of the Oracle Database Appliance, and the fast deployment, patching and maintenance of Oracle.

Some basic odaadmcli commands to explore the ODA configuration are outlined in the following sections. Execute each command shown below and review the information you see.

Step 2: Review Appliance Configuration

odaadmcli show server

Show the server/node status, including ILOM IP address, firmware version, power consumption, etc.. This is helpful for an at-a-glance view of basic server/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
```

odacli describe-system

Show the ODA deployment status.

```
$ sudo odacli describe-system

Appliance Information
----------------------------------------------------------------
                     ID: oda
               Platform:
        Data Disk Count: 9
         CPU Core Count: 36
                Created: July 19, 2019 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
```

odaadmcli show processor

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
```

odaadmcli show 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
```

odaadmcli show power

```
$ 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
```

odaadmcli show cooling

```
$ 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 3: Review the Storage Configuration

odaadmcli show disk

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

```
$ sudo odaadmcli show disk

        NAME            PATH                TYPE                STATE               STATE_DETAILS

      e0_pd_00          /dev/sdbv           HDD                 ONLINE              Good
      e0_pd_01          /dev/sdbw           HDD                 ONLINE              Good
      e0_pd_02          /dev/sdbx           HDD                 ONLINE              Good
      e0_pd_03          /dev/sdby           HDD                 ONLINE              Good
      e0_pd_04          /dev/sdbz           HDD                 ONLINE              Good
      e0_pd_05          /dev/sdca           HDD                 ONLINE              Good
      e0_pd_06          /dev/sdcb           HDD                 ONLINE              Good
      e0_pd_07          /dev/sdcc           HDD                 ONLINE              Good
      e0_pd_08          /dev/sdcd           HDD                 ONLINE              Good
      e0_pd_09          /dev/sdce           HDD                 ONLINE              Good
      e0_pd_10          /dev/sdcf           HDD                 ONLINE              Good
      e0_pd_11          /dev/sdcg           HDD                 ONLINE              Good
      e0_pd_12          /dev/sdch           HDD                 ONLINE              Good
      e0_pd_13          /dev/sdci           HDD                 ONLINE              Good
      e0_pd_14          /dev/sdcj           HDD                 ONLINE              Good
      e0_pd_15          /dev/sdck           SSD                 ONLINE              Good
      e0_pd_16          /dev/sdcl           SSD                 ONLINE              Good
      e0_pd_17          /dev/sdcm           SSD                 ONLINE              Good
      e0_pd_18          /dev/sdcn           SSD                 ONLINE              Good
      e0_pd_19          /dev/sdco           SSD                 ONLINE              Good
      e0_pd_20          /dev/sdcp           SSD                 ONLINE              Good
      e0_pd_21          /dev/sdcq           SSD                 ONLINE              Good
      e0_pd_22          /dev/sdcr           SSD                 ONLINE              Good
      e0_pd_23          /dev/sdcs           SSD                 ONLINE              Good
```

odaadmcli show diskgroup

List ASM diskgroups that have been configured by Appliance Manager on the ODA's storage.

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 database's backups, archive logs, and redo logs are stored.
REDO is where the database's redo logs are stored.

```
$  sudo odaadmcli show diskgroup

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

odaadmcli show fs

```
$  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
```

List the details on the ODA X7-2-HA file systems, including total Space, Free Space, Disk Group, etc. **Note: Due to a simulator bug, your output will look slightly different. The output below is what you should really see.**

odaadmcli show raidsyncstatus

List the status of the boot disk HW RAID.

```
$ sudo odaadmcli show raidsyncstatus

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

odaadmcli show storage

The following command shows 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 4: Review Network Status

odaadmcli show network

Show the MAC address, health status and temp 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 4.