Oracle® Database Appliance X7-2 Deployment and User's Guide





Oracle Database Appliance X7-2 Deployment and User's Guide, Release 12.2.1.1.0 for Linux x86-64

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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 (page xv)
- Documentation Accessibility (page xv)
- Related Documents (page xvi)
- Conventions (page xvii)

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.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.



Related Documents

For more information about Oracle Database Appliance, go to http://www.oracle.com/goto/oda/docs and click the appropriate release. The following documents are published in the Oracle Database Appliance online documentation library:

- Oracle Database Appliance Release Notes
- Oracle Database Appliance Licensing Information User Manual
- Oracle Database Appliance Security Guide
- Oracle Database Appliance Accessibility Guide
- Oracle Database Appliance X7-2 Deployment and User's Guide
- Oracle Database Appliance X6-2-HA Deployment and User's Guide
- Oracle Database Appliance X6-2S/M/L Deployment and User's Guide
- Oracle Database Appliance Getting Started Guide
- Oracle Database Appliance Administration and Reference Guide
- Oracle Database Appliance Setup Posters and Booklets (a full-size printed copy ships with Oracle Database Appliance)
- Oracle Database Appliance Owner's Guide
- Oracle Database Appliance Service Manual
- Oracle Database Appliance Series Safety and Compliance Guide

The following My Oracle Support Notes contain additional information:

- https://support.oracle.com/CSP/main/article? cmd=show&type=NOT&id=888888.1
- https://support.oracle.com/CSP/main/article? cmd=show&type=NOT&id=2144642.1

The following documents are published in the Oracle Database Appliance Plug-ins for Oracle Enterprise Manager online documentation library at http://docs.oracle.com/cd/E70264_01/index.htm:

- Oracle Database Appliance Plug-in for Oracle Enterprise Manager 13c User's Guide
- Oracle Database Appliance Plug-in for Oracle Enterprise Manager 12c User's Guide

For more information about using Oracle Database, go to http://docs.oracle.com/en/database/ and select the database release from the menu. See the following documents in the Oracle Database online documentation library:

- Oracle Database Security Guide
- Oracle Database Administrator's Guide
- Oracle Database SQL Language Quick Reference
- Oracle Database Backup and Recovery User's Guide
- Oracle Database Backup and Recovery Reference
- Oracle Database Utilities



Oracle Automatic Storage Management Administrator's Guide

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

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

Conventions

The following text conventions are used in this document:

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



1

About Oracle Database Appliance

Oracle Database Appliance enables you to take advantage of Oracle Database in an easy-to-deploy and manage system. The complete package of software, server, storage, and networking saves time and money by simplifying deployment, maintenance, and support of database and application workloads.

- Oracle Database Appliance Software (page 1-1)
 View the Oracle software that is available for download for Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA.
- Overview of Oracle Database Appliance Deployment (page 1-2)
 Review the steps you must complete to deploy Oracle Database Appliance.
- About the Web Console (page 1-3)
 Use the Oracle Appliance Manager Web Console to view and create databases and to view job activity.
- Viewing Job Activity (page 1-5)
 Use the Oracle Appliance Manager Web Console to view job activity, the status of tasks in a job, and job status.

1.1 Oracle Database Appliance Software

View the Oracle software that is available for download for Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA.

The table describes the Oracle Database Appliance patches that are available for download and the purpose of the patch.



Some hardware models may not use the patches listed in the table.

Table 1-1 Software for Oracle Database Appliance

Patch	Description	
Oracle Database Appliance patch bundle (quarterly patch release)	Use the patch bundle to update to the latest release after Oracle Database Appliance is deployed. The patch updates the Oracle Database Appliance server, storage, and database components.	
Oracle Database Appliance GI/ RDBMS Clone	Use to perform an initial deployment of Oracle Database Appliance.	
	The bundle contains the latest Grid Infrastructure RDBMS components, Oracle Database Appliance Manager software, Oracle Linux and hardware drivers for deployment on an Oracle Database Appliance that is shipped from factory state.	
	If you reimage Oracle Database Appliance with the Bare Metal ISO Image, download the GI/RDBMS Clone patch to deploy Oracle Database Appliance.	



Table 1-1 (Cont.) Software for Oracle Database Appliance

Patch	Description	
RDBMS Clone	Use the RDBMS Software Clone files to get the latest RDBMS clone binaries for Oracle Database releases 12.2.0.1, 12.1.0.2, and 11.2.0.4. The RDBMS clone files are needed to create Oracle databases and database homes.	
Bare Metal ISO Image	Use to reimage the appliance and reset the system back to the factory configuration.	
VM ISO Image (DOM0) (Virtualized Platform ISO Image)	Use to re-image Oracle Database Appliance before deploying the ODA_Base Template and virtualized platform. The Oracle Database Appliance virtualized operating system image contains the following:	
	 Oracle Database Appliance Manager oakcli command-line interface Oracle Database Appliance Manager Configurator Oracle Linux Hardware drivers Required for Virtualized Platform deployments on multi-node high availability (HA) systems. 	
ODA_BASE Template (Virtualization Template)	Use to create the ODA_Base virtual machine for a virtualized database appliance. The template contains the following:	
	Oracle Virtual Machine template	
	Oracle Database clone binaries	
	 Oracle Database templates, customized for Oracle Database Appliance deployments 	
	Oracle Grid Infrastructure clone binaries	
	Required for Virtualized Platform deployments on multi-node HA systems.	



See the *Oracle Database Appliance Release Notes* for the patch numbers and download locations and the component versions available in the quarterly patch bundle. See Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA Patches and Component Versions for Oracle Database Appliance X7-2 Models for details.

1.2 Overview of Oracle Database Appliance Deployment

Review the steps you must complete to deploy Oracle Database Appliance.

To complete these tasks, refer to topics in this book and in the *Oracle Database Appliance Owner's Guide*.

- 1. Prepare for Oracle Database Appliance.
 - a. Register your Support Identifier (SI) for Oracle Database Appliance with My Oracle Support to obtain software and support from Oracle.
 - b. Plan your configuration options and gather network and related information.
 - c. Set up the server site.
 - d. Configure network names and addresses on your Domain Name System (DNS) server.



- Download the Oracle Database Appliance software to a local computer on the network.
- 2. Ready Oracle Database Appliance for deployment.
 - a. Mount Oracle Database Appliance hardware into a rack at the server site.
 - **b.** Connect power and required cables to Oracle Database Appliance.
 - **c.** Connect the keyboard, mouse and video display to USB ports.
 - d. Create an initial network configuration to load external files.
 - e. Start up the system.
 - Plumb the network.
- 3. Install and deploy software on Oracle Database Appliance.
 - Download the Oracle Database Appliance software to a system on the network.
 - **b.** Copy the Oracle Database Appliance software to Oracle Database Appliance.
 - **c.** Run the command odacli update-repository to install the bundles.
- 4. Deploy Oracle Database Appliance.
 - a. Log into the Oracle Database Appliance Web Console.
 - b. Click Create Appliance.
 - **c.** Enter the configuration details that you gathered in Step 1.
 - d. Click Submit to start the deployment.
 - e. Monitor the progress on the **Activity** tab.

1.3 About the Web Console

Use the Oracle Appliance Manager Web Console to view and create databases and to view job activity.

The Web Console assists you in deploying Oracle Databases that follow Optimal Flexible Architecture guidelines. The Optimal Flexible Architecture standard provides best practices configurations to help to ensure database deployments that are easier to support and maintain. Optimal Flexible Architecture includes the following:

- Structured organization of directories and files, and consistent naming for critical database files, such as control files, redo log files, and other critical files, which simplifies database administration
- Separation of tablespace contents to minimize tablespace free space fragmentation, and maximize administrative flexibility
- Stripe and Mirror Everything (SAME) deployment, which safeguards against database failures

Note:

Create Oracle Databases using the Web Console or command-line interface to ensure that your database is configured optimally for Oracle Database Appliance.



The Web Console provides a user-friendly option to perform the following tasks:

- Deploy the appliance
- · View, create, delete, and upgrade databases
- View existing database homes
- Create and delete database homes
- View networks and network interfaces
- View job activity
- Configure and enable Oracle Auto Service Request (Oracle ASR)

Display the Oracle Database Appliance Version Installed

The Web Console has an **About** button in the upper right corner of the page. Click **About** to view the Oracle Database Appliance release that is installed on the appliance.

Refresh Features

Two refresh features are available in the Web Console:

- Auto Refresh: Refresh option at the console level. When you turn on Auto Refresh, all pages in the console refresh every 30 seconds. By default, Auto Refresh is Disabled.
- Refresh: Refresh option at the page level.

The Auto Refresh option is useful to see the job activity and status after you submit a provisioning job. After the job completes, turn off Auto Refresh. To enable or disable the Auto Refresh feature, click **Auto Refresh** and select **Turn On** or **Turn Off**.



It is important to **Turn Off Auto Refresh** before performing any actions in the Web Console. When Auto Refresh is enabled and you are performing a task, your changes are not saved if the console refreshes before you submit your job.

Ensure that Auto Refresh is Disabled before performing a task, such as creating a database or network. For example, complete your configuration on the Database page and click **Create Database**. Complete the task, such as create the database, then click **Refresh** on the Database page to refresh the information on that page and display the new database details, or go to the **Activity** tab and enable Auto Refresh.





Related Topics

Logging into the Web Console

1.4 Viewing Job Activity

Use the Oracle Appliance Manager Web Console to view job activity, the status of tasks in a job, and job status.

1. Open a browser and enter the following URL to launch the Web Console:

https://ip-address:7093/mgmt/index.html

2. Enter the following credentials:

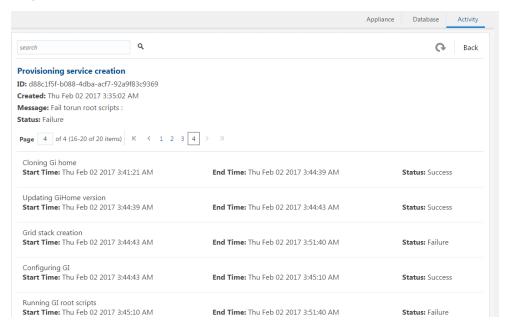
User name: oda-admin

Password: welcome1

Click Activity.

The jobs page displays recent jobs, the job name, identifier (ID) date created, and status.

4. (Optional) Click the job name to display greater details about the job, including the tasks that make up the job and the status of each task. In this image, the job name is Provisioning service creation. Several tasks finished successfully, but there are two tasks that failed and the overall job status is Failure due to inability to run root scripts.





2

Preparing for Oracle Database Appliance Installation and Deployment

Complete these setup tasks before Oracle Database Appliance is delivered.

- Registering Your Support Identifier on My Oracle Support (page 2-1)
 Add your hardware Support Identifier (SI) to your My Oracle Support account profile.
- Planning Oracle Database Appliance Configuration Options (page 2-1)
 Determine how many CPU cores you want to enable, determine your database configuration options, and gather the system information for your Oracle Database Appliance Bare Metal deployment configuration.
- Gathering System Requirement Information (page 2-6)
 Use these checklists to collect information before deploying Oracle Database Appliance.
- Creating a Configuration File for a Virtualization Platform (page 2-15)
 If you want to use the Configurator to create a virtualization platform configuration file before your Oracle Database Appliance X7-2-HA system is delivered, then review these topics.

2.1 Registering Your Support Identifier on My Oracle Support

Add your hardware Support Identifier (SI) to your My Oracle Support account profile.

Your hardware SI is supplied when you purchase Oracle Database Appliance. If you acquire new software licenses, then you must also register your new software SIs. The SI registration process can take up to 24 hours to complete.



You cannot obtain support or software from Oracle without registered SIs.

2.2 Planning Oracle Database Appliance Configuration Options

Determine how many CPU cores you want to enable, determine your database configuration options, and gather the system information for your Oracle Database Appliance Bare Metal deployment configuration.

Note:

Do not use Oracle Database Configuration Assistant (DBCA) to create databases on Oracle Database Appliance. Only use Oracle Appliance Manager for database configuration. Deploying Oracle Database instances using Oracle Appliance Manager ensures that these databases are properly configured, optimized, and supported on Oracle Database Appliance.

- Selecting an Oracle Database Appliance Configuration (page 2-2)
 Compare and select an Oracle Database Appliance hardware configuration.
- Selecting Operating System Groups and Users (page 2-2)
 Determine how you want to configure your operating system groups and users and whether or not you want to allow operating system role separation.
- Selecting Database Deployment Options (page 2-4)
 Review the Oracle Database editions that are available for deployment.
- Selecting Database Shapes for Oracle Database Appliance (page 2-6)
 Oracle Database Appliance software includes preconfigured templates, known as shapes, that incorporate Oracle best practices with optimization for different classes of databases.

2.2.1 Selecting an Oracle Database Appliance Configuration

Compare and select an Oracle Database Appliance hardware configuration.

- Oracle Database Appliance X7-2S is a small configuration designed for smaller or entry-level deployments.
- Oracle Database Appliance X7-2M is a medium-sized configuration designed for performance.
- Oracle Database Appliance X7-2-HA is a large configuration designed for larger databases and high-availability.

You cannot expand or reconfigure Oracle Database Appliance to a different configuration. For example, you cannot expand Oracle Database Appliance X7-S to Oracle Database Appliance X7-2M. For Oracle Database Appliance X7-2 configuration details, see the *Oracle Database Appliance Owner's Guide*.

2.2.2 Selecting Operating System Groups and Users

Determine how you want to configure your operating system groups and users and whether or not you want to allow operating system role separation.

About Operating System Groups and Users

Role separation enables you to configure groups and users to provide separate groups for operating system authentication.

With role separation, a single user owns all of the Oracle installations. All of the databases are installed under a single user. The separation only enables you to have separate users for Oracle and Oracle Clusterware. You can install multiple databases without sharing operating system authentication for system privileges. In addition,



each Oracle software installation is owned by a separate installation owner, to provide operating system user authentication for modifications to Oracle Database binaries.

Note:

Any Oracle software owner can start and stop all databases and shared Oracle Grid Infrastructure resources, such as Oracle Automatic Storage Management (Oracle ASM) or Virtual IP (VIP). The job role separation configuration enables database security, it does not restrict user roles in starting and stopping various Oracle Clusterware resources.

With Oracle Grid Infrastructure role separation, separate operating system groups provide operating system authentication for Oracle ASM system privileges for storage tier administration. This operating system authentication is separated from Oracle Database operating system authentication. In addition, the Oracle Grid Infrastructure installation owner provides operating system user authentication for modifications to Oracle Grid Infrastructure binaries.

You can configure the appliance with one of four combinations of operating system users, groups, and roles. The default users are the Oracle Database installation owner (oracle) and Oracle Grid Infrastructure installation owner (grid). The default groups are oinstall, dbaoper, dba, asmadmin, asmoper, and asmdba

Default Configuration: Two Users with Six Groups

The default configuration is a combination of two operating system roles for users with six groups.

To configure two users, oracle user with the Oracle User (oracleUser) role and the grid user with the gridUser role, allow operating system role separation.

To configure six groups, oinstall, dbaoper, dba, asmadmin, asmoper, and asmdba, do not select the option to customize users and groups.

Note:

When you select the default configuration in the Web Console, the users and groups do not appear in the interface.

Two Custom Users with Six Custom Groups

You can customize the configuration to create two custom users and six custom groups.

To configure two users, allow operating system role separation. The users are populated with the default values, oracle and grid, which you can edit.

To configure six groups, select the option to customize users and groups. The groups are populated with the default values, which you can edit. The default groups are oinstall, dbaoper, dba, asmadmin, asmoper, and asmdba.

The figure shows an example of a custom configuration with the default values populated.



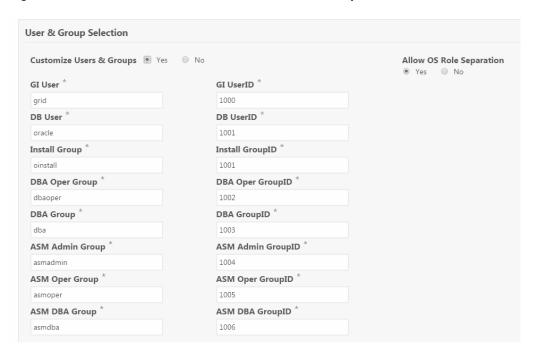


Figure 2-1 Two Custom Users with Six Custom Groups

Single Custom User with Six Custom Groups

You can customize the configuration to create a single operating system database user and with six custom groups. The database user can deploy both the grid infrastructure and RDBMS (relational database management system) stacks. You can edit the user name and user ID and you can customize the group names and IDs. Use this option when you deploy SAP.

To configure a single oracle database user with the Oracle User (oracleUser) role, do not allow OS role separation.

To configure six groups, select the option to customize users and groups. The following default groups are populated: oinstall, dbaoper, dba, asmadmin, asmoper, and asmdba. You can customize the groups.

Single User with Two Groups

To configure a single oracle user with the Oracle User (oracleUser) role, do not allow OS role separation.

To configure two groups, oinstall and dba, do not select the option to customize users and groups.

2.2.3 Selecting Database Deployment Options

Review the Oracle Database editions that are available for deployment.

In earlier releases, the database edition was defined at the appliance level during the initial deployment. Beginning with Oracle Database Appliance release 12.2.1.1, Oracle Database editions are defined at the database level, not the appliance level.



Note:

It is important to understand your Oracle Database licensing before you create databases. You cannot use both Oracle Database Enterprise Edition and Standard Edition on the same appliance, either bare metal or virtualized platform.

The following Oracle Database editions are available:

Oracle Database Enterprise Edition

Oracle Database Enterprise Edition provides the performance, availability, scalability, and security required for mission-critical applications such as high-volume online transaction processing (OLTP) applications, query-intensive data warehouses, and demanding Internet applications.

- Single-instance Oracle Database Enterprise Edition home
- Oracle Database options are available

Enterprise Edition for Oracle Database 12.2.0.1, 12.1.0.2, and 11.2.0.4 support Oracle Real Application Clusters (Oracle RAC).

Oracle Database Standard Edition 2

Oracle Database Standard Edition 2 delivers unprecedented ease of use, power, and performance for workgroup, department-level, and Web applications.

Standard Edition 2 for Oracle Database 12.1.0.2 supports Oracle RAC and RAC One.

Oracle Database Standard Edition One

Oracle Database Standard Edition One delivers unprecedented ease of use, power, and performance for workgroup, department-level, and Web applications.

Standard Edition One for Oracle Database 11.2.0.4. Standard Edition One does not support Oracle RAC.

Oracle Database Standard Edition

Oracle Database Standard Edition delivers the unprecedented ease of use, power, and performance of Standard Edition One, with support for larger machines and clustering of services with Oracle RAC.

Standard Edition for Oracle Database 11.2.0.4 supports Oracle RAC and RAC One.

Oracle Real Application Clusters (RAC) One Node is an always online single instance of an Oracle RAC enabled database running on one node in a cluster.

Note:

Review the *Database Licensing Information User Manual* for the Oracle Database release to review supported options and products.



2.2.4 Selecting Database Shapes for Oracle Database Appliance

Oracle Database Appliance software includes preconfigured templates, known as shapes, that incorporate Oracle best practices with optimization for different classes of databases.

Because of differences in CPU counts, memory size, and other resources available with different Oracle Database Appliance models, some shapes are not supported on all models.

Each Oracle Database shape has different workload profile and performance characteristics:

- Memory requirements, which are calculated from the System Global Area (SGA), and Program Global Area (PGA) sizes
- Processing requirements, which are calculated from the number of processes
- · Logging requirements, which are based on log buffer size, and online redo log size

Oracle Database Appliance shapes are tuned for the size of each database instance workload and are designed to run on a specific number of cores.



Oracle strongly recommends that you use the Oracle Database Appliance shapes. These shapes implement best practices, and are configured specifically for Oracle Database Appliance.

2.3 Gathering System Requirement Information

Use these checklists to collect information before deploying Oracle Database Appliance.

- List of Information You Need Before Deployment (page 2-6)
 Collect security, storage, and network information required to prepare for deploying Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA.
- Checklist for System Details (page 2-12)
 Use the checklist to gather system information that you need to obtain for Oracle Database Appliance. Record the values for your system.
- Checklist for Custom Network IP Address Configuration (page 2-14)
 Use the checklist to identify the IP addresses required for Oracle Database Appliance.

2.3.1 List of Information You Need Before Deployment

Collect security, storage, and network information required to prepare for deploying Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA.

Security Requirements (page 2-7)
 Review your security requirements for root passwords.



- Storage Administration Requirements (page 2-7)
 Storage administration is integrated into Oracle Database Appliance. No additional storage configuration is required.
- Network Administration Requirements for Single Node Systems (page 2-8)
 Review the network administration requirements and recommendations for Oracle Database Appliance X7-2S and X7-2M.
- Network Administration Requirements for Multi-Node Systems (page 2-9)
 Review the network administration requirements and recommendations for Oracle Database Appliance X7-2-HA multi-node systems.

2.3.1.1 Security Requirements

Review your security requirements for root passwords.

- What root password should you use for Oracle Database Appliance? Root passwords should comply with your system security requirements.
- Secure operating systems are an important basis for general system security.
 Ensure that your operating system deployment is in compliance with common security practices.

2.3.1.2 Storage Administration Requirements

Storage administration is integrated into Oracle Database Appliance. No additional storage configuration is required.

Oracle Database Appliance uses Oracle Automatic Storage Management Cluster File System (Oracle ACFS) or Oracle Automatic Storage Management (Oracle ASM) and include the following:

- Integrated storage for operational files (operating system, Oracle Grid Infrastructure home, Oracle Database homes, tools). Operational files are stored on mirrored internal system disks.
- DATA (user data and database files).
- RECO (database redo logs, archive logs, and recovery manager backups).
- REDO (database redo logs). X7-2-HA only.
- FLASH (hot table data) X7-2-HA with HDD drive configuration only.
- Operational files are stored on mirrored internal system disks.

Based on your environment and backup location, you can configure the storage capacity for the DATA diskgroup to be anywhere from 10% to 90%, with the remaining percentage for RECO diskgroup. For example, you might assign 80% of the storage capacity for DATA and 20% for RECO.



Depending on the model, you have the option to expand the system's storage capacity.



Related Topics

About Oracle Database File Storage (page B-1)
 Use Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage Management Cluster File System (Oracle ACFS) for database files storage.

2.3.1.3 Network Administration Requirements for Single Node Systems

Review the network administration requirements and recommendations for Oracle Database Appliance X7-2S and X7-2M.

The network administration requirements and recommendations are as follows:

- Determine the type of network interface for your public network and know the details for your generic and public network.
- Oracle recommends that you resolve addresses using Domain Name System (DNS) servers.
- All names must conform to the RFC 952 standard, which permits alphanumeric characters and hyphens ("-"), but does not allow underscores ("_").
- Provide an IP address for the public interface (btbond1).

Depending on your network setup, you can use one of the following available bonds:

- Onboard NIC 10GBase-T (copper) ports
- 25GbE SFP+ (fiber) PCIe card

As part of the initial setup, you must use the command configure-first through Oracle ILOM's remote console to plumb the public network.

Answer These Questions

Determine the answers to the following questions:

What is your domain name?

For example: example.com.

Do you want to use DNS?

(Optional) Ensure that the names and addresses that you provide for network configuration are configured in your Domain Name System (DNS) servers. DNS is optional, but recommended. If you want to use DNS, then obtain your DNS server addresses. The addresses that you provide are configured in the <code>/etc/hosts</code> file to provide IP name and address resolution, even if a DNS server is not available.

- Do you have a Network Time Protocol (NTP) service configured for each server, so that the local system time for each server is synchronized?
- Which network interface do you want to use for your public network?
 - 10GBase-T (copper)
 - 25GbE SFP+ (fiber)
- What are the details for your public network? To connect to the system, you
 require the following information:
 - Host name

For example: myhost



IP address

For example: 192.0.2.18

Netmask for the public network

For example: 255.255.252.0

Gateway for the public network

For example: 192.0.2.1

 What are the Oracle Integrated Lights Out Manager (Oracle ILOM) details needed to manage Oracle Database Appliance independent of the operating system?

Collect the following Oracle ILOM details from your network administrator:

Oracle ILOM host name

For example: myilom1

Oracle ILOM IP address

For example: 10.0.0.3

Netmask for the Oracle ILOM network

For example: 255.255.255.0

Gateway for the Oracle ILOM network

For example: 10.0.0.1

2.3.1.4 Network Administration Requirements for Multi-Node Systems

Review the network administration requirements and recommendations for Oracle Database Appliance X7-2-HA multi-node systems.

The network administration requirements and recommendations are as follows:

- Determine the type of network interface for your public network and know the details for your generic and public network.
- Oracle recommends that you resolve addresses using Domain Name System (DNS) servers.
- All names must conform to the RFC 952 standard, which permits alphanumeric characters and hyphens ("-"), but does not allow underscores ("_").
- Provide an IP address for the public interface (btbond1) for each node. This
 interface is bond0, or Eth1 on Oracle Database Appliance Virtualized Platform, (a
 bond of Eth2 and Eth3), which is used for the host IP address for the node.

For Oracle Database Appliance X7-2-HA, a correctly configured appliance requires at least six public addresses on the same subnet for the nodes:

- A public IP name and address for each node
- A virtual IP name and address for each node
- Two addresses that resolve to the SCAN for the cluster

Depending on your network setup, you can use one of the following available bonds:

- Onboard NIC 10GBase-T (copper) ports
- 25GbE SFP+ (fiber) PCle card



As part of the initial setup, you must use the odacli configure-first command to configure a public network through Oracle ILOM to get access to the machine.

Be prepared to provide a netmask and gateway for the network when you configure the network connection for Oracle Database Appliance.

Domain Name System (DNS) Servers

For multi-node systems, ensure that the names and addresses that you provide for network configuration are configured in your DNS servers. The addresses that you provide are configured in the /etc/hosts file to provide IP name and address resolution, even if a DNS server is not available.

You have the option to connect either to a copper, or to a fiber public network. To connect to a fiber network you must purchase the configuration with 25GbE SFP+ fiber cards. The InfiniBand interconnect is not supported if you purchase the configuration with 25GbE SFP+ fiber cards. Ensure that your network planning is based on the correct type of public network.

Oracle recommends that you resolve addresses using a DNS server, so that you can use Single Client Access Names (SCANs). Having a single name to access the cluster enables the client to use the EZConnect client and the simple JDBC thin URL to access any Oracle Database running in the cluster, independent of the active servers in the cluster. The SCAN provides load-balancing and failover for client connections to these databases. The SCAN works as a cluster alias for Oracle Databases in the cluster.

If you deploy without using a DNS server, then you can add a DNS server later, and add SCANs. If you add SCANs, then you must specify additional VIP addresses for those SCANs.

Answer These Questions

Determine the answers to the following questions:

What is your domain name?

For example: example.com.

Do you want to use DNS?

(Optional) Ensure that the names and addresses that you provide for network configuration are configured in your Domain Name System (DNS) servers. DNS is optional, but recommended. If you want to use DNS, then obtain your DNS server addresses. The addresses that you provide are configured in the <code>/etc/hosts</code> file to provide IP name and address resolution, even if a DNS server is not available.

- Do you have a Network Time Protocol (NTP) service configured for each server, so that the local system time for each server is synchronized?
 - If you have NTP servers and you want to synchronize time between Oracle Database Appliance nodes using NTP, then be prepared to provide the addresses for the servers. If you do not provide addresses for NTP servers, then Oracle Grid Infrastructure software configures time synchronization between nodes using Cluster Time Synchronization Service (CTSS).
- Do you want to plug in the public IP address cables to redundant switches, so that you can avoid a single point of failure for Oracle Database Appliance? Oracle recommends that you use redundant switches for High Availability.
- Which network interface do you want to use for your public network?



- 10GBase-T (copper)
- 25GbE SFP+ (fiber)
- What are the details for your public network? To connect to the system, you
 require the following information:
 - Host name

For example: myhost

IP address

For example: 192.0.2.18

Netmask for the public network

For example: 255.255.252.0

Gateway for the public network

For example: 192.0.2.1

- (For the X7-2-HA virtualized platform only) VLAN ID for public network (for example, 100)
- (For the X7-2-HA virtualized platform only) Do you want the ability to configure additional networks?
- What are the Oracle Integrated Lights Out Manager (Oracle ILOM) details needed to manage Oracle Database Appliance independent of the operating system?

Collect the following Oracle ILOM details from your network administrator:

Oracle ILOM host name for each node

For example: myilom1 and myilom2

Oracle ILOM IP address for each node

For example: 10.0.0.3 and 10.0.0.4

Netmask for the Oracle ILOM network

For example: 255.255.255.0

Gateway for the Oracle ILOM network

For example: 10.0.0.1



2.3.2 Checklist for System Details

Use the checklist to gather system information that you need to obtain for Oracle Database Appliance. Record the values for your system.

Table 2-1 Checklist for System Configuration Information for Oracle Database Appliance

System Information	Description
Host Name	The name for the Oracle Database Appliance System. The name must conform with the RFC 952 standard, which allows alphanumeric characters and hyphens (-), but does not allow underscores (_). The name should not begin with a numeral or hyphen and should not end in a hyphen. Oracle recommends that you use all lowercase characters for the host name.
Domain Name	Your domain name. For example: example.com
Region	The region where you plan to operate the Oracle Database Appliance system.
Timezone	The time zone where you plan to operate the Oracle Database Appliance system.
Diskgroup Redundancy	Determine the redundancy level for DATA, RECO, and FLASH: Normal redundancy (two way mirror) or High redundancy (three way mirror).
	If you select High redundancy, then DATA, RECO, and FLASH are all High redundancy.
	If the system has less than five (5) NVMe storage devices, then redundancy is automatically set to Normal and this field does not appear.
Percentage of Storage Reserved for Data	Determine the amount of reserves for DATA storage. The percentage must be a whole number between 10 and 90 and determines how the NVMe Disks are partitioned between DATA and RECO. For example, if you specify 80, then 80% of storage is reserved for DATA and the remaining 20% is for RECO.
Master Password	The password set for the root password of the system, OS users, database users, and pdbadmin. The password is also used to set the database SYS and SYSTEM passwords. Ensure that the password you provide is in compliance with common security practices.
DNS Server	(Optional) DNS server details.
NTP Server	(Optional) Network Time Protocol (NTP) service details.



Table 2-1 (Cont.) Checklist for System Configuration Information for Oracle Database Appliance

System Information	Description	
Network Information for the client access network	Obtain the following network information for the public network: IP address Subnet Mask Gateway	
Network Information for the Oracle Integrated Lights Out Manager (ILOM) network	(Optional) Obtain the following ILOM network information: ILOM host name ILOM address Subnet mask Gateway	
User and group information	Determine how you want to configure your users and groups and whether or not you want to allow operating system role separation. The default is two users with six groups.	
Initial Database Details (if you want to create one during deployment)	(Optional) If you choose to create an initial database during deployment, determine the following configuration details:	
	Database name	
	Database unique name	
	 Database version (based on the database clones that are registered with the Oracle Database Appliance): 	
	- 12.2.0.1 13.1.0.2	
	- 12.1.0.2 - 11.2.0.4	
	 Determine the Oracle Database edition licensing that you have, either Enterprise Edition or Standard Edition. You cannot mix editions. 	
	 Container database, or not 	
	 Shape (for example: odb1 or odb2) 	
	 Class (database template): 	
	 Enterprise Edition, 12c: OLTP, DSS, or IMDB 	
	 Enterprise Edition, 11g: OLTP or DSS 	
	 Standard Edition: OLTP 	
	Database characterset	
	Database language Storage (Orogle ASM or Orogle ASS)	
	 Storage (Oracle ASM or Oracle ACFS). All version 11.2.0.4 databases are provisioned on top of Oracle ACFS. 	
	Configure Oracle Enterprise Manager console. If you are using Enterprise Manager Cloud Control with this appliance, do not choose this option.	
Oracle Auto Service Request (Oracle ASR) information	(Optional) Do you want to Configure and enable Oracle ASR at deployment or later?	



2.3.3 Checklist for Custom Network IP Address Configuration

Use the checklist to identify the IP addresses required for Oracle Database Appliance.



Oracle does not recommend changing the default Host Private Address. If there is a business need to change the address, such as an IP address conflict, use the command odacli update-network to update the private network before using the Web Console to deploy the appliance. You cannot change the private network after deploying the appliance.

Table 2-2 Default IP Address Requirements for Oracle Database Appliance X7-2S and X7-2M

Type of IP	Number of IP Addresses Needed	IP Address Default Values	Your Values As Applicable
Client Access Network for the server host	1	No default	IP:
(Recommended) Oracle Integrated Lights Out Manager (ILOM)	1	No default	IP:
Host Private Addresses	Not applicable	192.168.16.24	Not applicable: the private addresses are defined before deployment and should not be changed
DNS	Up to 3	No default	IP:
(Optional) NTP	Up to 3	No default	IP:
Netmask	1	No default	IP:
Gateway	1	No default	IP:
(Optional) Guest VM IPs	As needed	No default	IP:

Table 2-3 Default IP Address Requirements for Oracle Database Appliance X7-2-HA

Type of IP	Number of IP Addresses Needed	IP Address Default Values	Your Values As Applicable
Client Access Network for the server hosts	2	No default	IP:
VIP	2	No default	IP:
SCAN	2	No default	IP:



Table 2-3 (Cont.) Default IP Address Requirements for Oracle Database Appliance X7-2-HA

Type of IP	Number of IP Addresses Needed	IP Address Default Values	Your Values As Applicable
(Recommended) Oracle Integrated Lights Out Manager (ILOM)	1	No default	IP:
Host Private Addresses (bare metal platform)	Not applicable	Node 0: 192.168.16.24 192.168.17.24 Node 1: 192.168.16.25 192.168.17.25	Not applicable: the private addresses are defined before deployment and should not be changed. On bare metal, the interconnect uses High Availability IP (HAIP) addresses. The interfaces are plp1 and plp2.
Host Private Addresses (virtualized platform)	Not applicable	Dom0: 192.168.16.24 (Node 0) 192.168.16.25 (Node 1) ODA_Base: 192.168.16.27 (Node 0) 192.168.16.28 (Node 1)	On a virutalized deployment, the interconnect is bonded and called icbond0
DNS	Up to 3	No default	IP:
(Optional) NTP	Up to 3	No default	IP:
Netmask	1	No default	IP:
Gateway	1	No default	IP:
(Optional) Guest VM IPs	As needed	No default	IP:

2.4 Creating a Configuration File for a Virtualization Platform

If you want to use the Configurator to create a virtualization platform configuration file before your Oracle Database Appliance X7-2-HA system is delivered, then review these topics.

About the Standalone Oracle Database Appliance Configurator (page 2-16)
Use the standalone Oracle Database Appliance Configurator to create an Oracle Database Appliance Virtualization Platform offline deployment plan and validate your network settings before the actual deployment.



Running the Standalone Oracle Database Appliance Configurator (page 2-17)
 Download and run the standalone Oracle Database Appliance Configurator to
 create a configuration file for the Oracle Database Appliance Virtualization
 Platform.

2.4.1 About the Standalone Oracle Database Appliance Configurator

Use the standalone Oracle Database Appliance Configurator to create an Oracle Database Appliance Virtualization Platform offline deployment plan and validate your network settings before the actual deployment.

If you prefer to configure your system at the time you deploy the virtualization platform, then you can wait and use the online Configurator that is part of virtualization image for Oracle Database Appliance.

The standalone Oracle Appliance Manager Configurator is a Java-based tool that enables you to generate your virtualization platform deployment plan and validate your network settings before the actual deployment. If you want to use this tool before deployment, then you must download and run the Configurator on a local client system. The local client can be a Linux, UNIX, MAC, or Windows system.

The Configurator provides two types of configuration: Typical and Custom. The **Typical** configuration is recommended in most cases. Choose the **Custom** configuration option if you want to configure additional or alternate network interfaces, or if you want to override the default values for one or more of the following:

- Database block size, language, territory, backup file location, or disk redundancy level for the DATA and RECO disk groups
- Oracle Integrated Lights Out Manager (Oracle ILOM) server.
- Oracle Auto Service Request (Oracle ASR) configuration. You can configure Oracle ASR after deployment.
- Oracle Cloud File System mount point and file system size. Configure a Cloud FS
 if you want a non-database file location accessible by both nodes.
- Network Time Protocol service server.

To see the default values for your version of Oracle Database Appliance software before choosing the **Typical** or **Custom** option, run the Configurator using the **Custom** option.

Oracle recommends that you use the Network Validation page in the Configurator to test your network settings. To test the network settings, you must run the Configurator on a client server that is connected to same network subnet that you intend to use for Oracle Database Appliance. If you do not do this, then the validation fails, regardless of whether or not you have completed required configuration.

At the end of an offline Configurator session, you can save your deployment plan in a configuration file. You can use the Configurator to edit your settings. When you are ready to deploy Oracle Database Appliance, copy this configuration file to the appliance, and run the online Oracle Appliance Manager Configurator to import and deploy your saved plan. You can also print the file's content and use the printout to review your configuration entries for deployment planning purposes and as a checklist for setting up your external network configuration.



2.4.2 Running the Standalone Oracle Database Appliance Configurator

Download and run the standalone Oracle Database Appliance Configurator to create a configuration file for the Oracle Database Appliance Virtualization Platform.

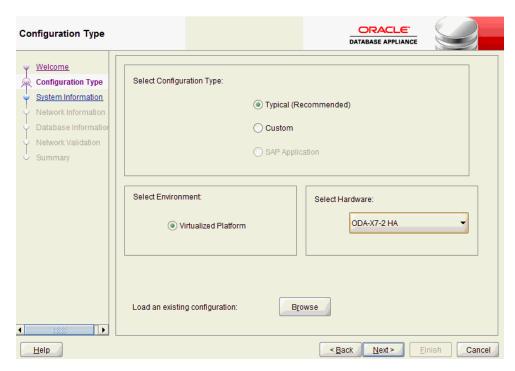
In most cases, Oracle recommends that you select the typical configuration. Select the custom option if you want to configure additional or alternate network interfaces, or if you want to override the default values. To see the default values for your version of Oracle Database Appliance software before choosing the **Typical** or **Custom** option, run the Configurator using the **Custom** option.

The steps described here enable you to create a typical virtualized platform configuration file.

- Download the standalone Oracle Database Appliance Manager Configurator software to a client.
 - a. Go to the following URL http://www.oracle.com/technetwork/database/ database-appliance/overview/index.html
 - **b.** Click the **Downloads** tab.
 - Review the License Agreement, then select Accept License Agreement.
 - d. Download the latest version of the Oracle Database Appliance Manager Configurator zip file to a client.
 - e. Extract the files from the zip.
- Start the Configurator using the command config.bat on a Windows client, or the command ./config.sh on a Linux or UNIX client. When the Oracle Database Appliance Manager Welcome page appears, click Next.
- Select the Typical configuration type and select the hardware model ODA-X7-2
 HA from the menu. Click Next.

The **Browse** option is not useful during the initial run, because there are no configuration files to load. If you have an existing configuration file created with this version of the Configurator that you want to load and edit, then click **Browse** and locate the file on your client.

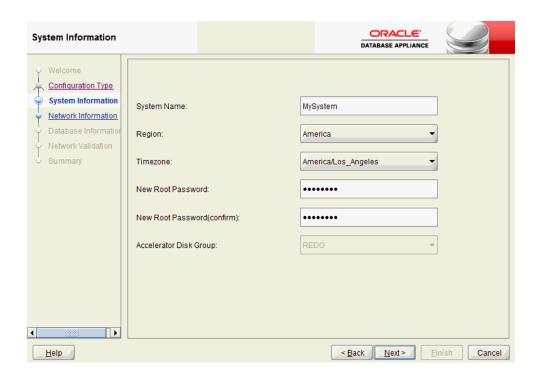




4. On the System Information page, provide the system name, and select the correct value from the lists for your region and time zone. In the New Root Password and New Root Password (confirm) fields, enter a new password for the root user. Click Next.

The password is encrypted in the configuration file. It is temporarily decrypted to reset the password during deployment.

.





5. On the Network Information page, provide your domain name, DNS server addresses, public and VIP addresses for your two nodes, SCAN name and addresses, and netmask and Gateway addresses. Click **Next**.



As you enter data on this page, some fields are automatically filled with values derived from earlier entries. For example, if the address that you provide for the Node 0 public IP address is 192.0.2.18, then the default node addresses generate as follows:

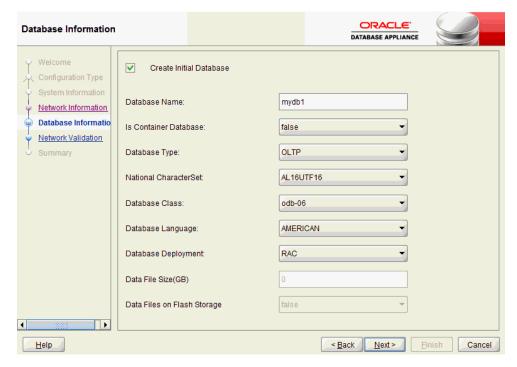
- Node 0 public IP address: 192.0.2.18
- Node 1 public IP address: 192.0.2.19
- Node 0 virtual IP (VIP) address: 192.0.2.20
- Node 1 virtual IP (VIP) address: 192.0.2.21
- SCAN addresses (two addresses resolving to the SCAN VIP name): 192.0.2.22, 192.0.2.23
- **6.** (Optional) On the Database Information page, determine if you want to create an initial database.
 - If you do not want to configure an initial database, then click Next. Go to Step 7.
 - If you want to configure an initial database, select the check box for **Create**Initial Database, complete the fields, then click **Next**.

To configure an initial database, provide the following database details:

- Database Name. Enter a name for the database.
- **Is Container Database**. The default is **false**. If you leave the default value, then the Configurator builds a non-container database.



- Database Type. The default type is OLTP. You can also select DSS, or select In-Memory.
- Database Class. Select the database class that you want to deploy. Not all
 options are available for all models of Oracle Database Appliance; the default
 class is odb-06.
- Database Language. The default language is AMERICAN
- Database Deployment. Select one of the following, where RAC is the default:
 - Oracle RAC
 - Oracle RAC One Node
 - Oracle Database Enterprise Edition (no Oracle RAC)
- Data File Size (GB). If you indicate that you want to build a container database, then provide a database data file size in the final field on this page. (This field does not accept input unless the Is Container Database selection is True.)
- Data Files on Flash Storage. This option is not available on the X7-2-HA
 model.



On the Network Validation page, validate your network settings and save the validation output in a file, or bypass the validation step, then click **Next** to go to the next step.

The following options are available:

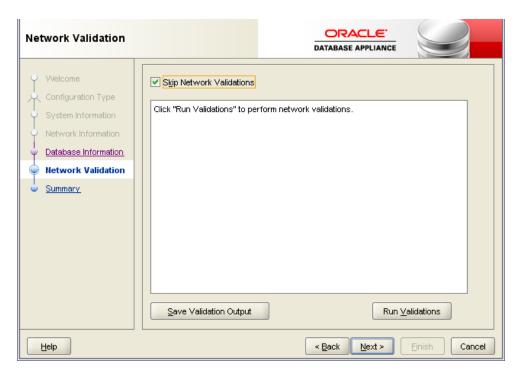
Click Run Validations to perform network validation.



Note:

Oracle recommends that you validate your network before you use the configuration file to configure an appliance. However, you must run Oracle Database Appliance Manager Configurator on a server attached to the network subnet that is configured for your appliance. If you do not do this, then the validation fails, regardless of whether or not you have completed required configuration.

- Click Save Validation Output to save the validation output. If the validation fails, it is useful to save the output to review with your network administrator later.
- Select Skip Network Validations to by-pass the validation step. If the network validation fails, and you want to continue with the configuration, then select this option.



8. On the Summary page, review the configuration options that you have selected. Click **Save** to save the configuration file. Click **Finish**.

Note the name and location of the configuration file. You can copy this configuration file to your Oracle Database Appliance for deployment. If you need to make corrections before deployment, then rerun the standalone Oracle Database Appliance Manager Configurator, load your configuration file, make the changes, and save the file again.





If you are running the Configurator on Oracle Database Appliance, and you have completed the preliminary steps to configure your initial network and install the software or deploy ODA_BASE, then you can click **Install** to deploy the configuration.

Readying Oracle Database Appliance for Deployment

Complete these tasks to prepare to deploy Oracle Database Appliance.

- About Interconnect Cabling (page 3-1)
 Interconnect is reserved for Oracle Grid Infrastructure (GI) and Oracle Relational Database Management System (RDBMS).
- Attaching Network Cables to Oracle Database Appliance X7-2-HA (page 3-2)
 Connect Oracle Database Appliance X7-2-HA to either a 10GBase-T (copper) or 25GbE SFP+ (fiber) network.
- Attaching Network Cables to Oracle Database Appliance X7-2S or X7-2M (page 3-4)
 Connect Oracle Database Appliance X7-2S or X7-2M to either a 10GBase-T (copper) or 25GbE SFP+ (fiber) network.
- Attaching Peripheral Devices (page 3-6)
 Complete this task if you have direct access to Oracle Database Appliance and you intend to use a locally connected monitor, keyboard and mouse.
- First Startup of Oracle Database Appliance (page 3-6)
 Use this procedure to start up either a newly-installed Oracle Database Appliance, or to start up the appliance after you power it down.
- Configuring Oracle Integrated Lights Out Manager (page 3-8)
 Configure Oracle Integrated Lights Out Manager (Oracle ILOM) to manage Oracle Database Appliance independent of the operating system.
- Plumbing the Network (page 3-9)
 Configure a temporary network configuration framework to build your network information during deployment.
- Updating the Server Components (page 3-11)
 Use the Server patch to update the dcs-agent, various infrastructure components, and Oracle Clusterware before deploying the appliance.
- Updating the Repository with the GI and RDBMS Files (page 3-12)
 Download the Oracle Database Appliance GI and RDBMS Software Clone Files from My Oracle Support and update the patch repository.

3.1 About Interconnect Cabling

Interconnect is reserved for Oracle Grid Infrastructure (GI) and Oracle Relational Database Management System (RDBMS).

Oracle GI includes Oracle Clusterware, Oracle Automatic Storage Management (Oracle ASM), and Oracle Restart. Even if you do not use Oracle Real Application Clusters (RAC), Oracle Database Appliance uses the interconnect for RAC ASM and Oracle GI.



Do not use interconnect for other applications.

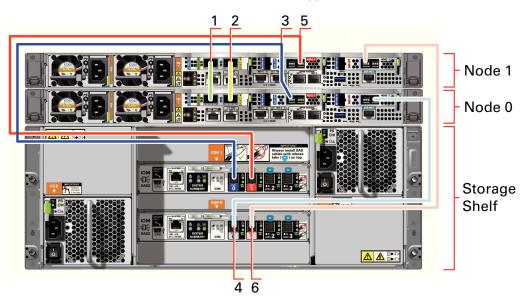
3.2 Attaching Network Cables to Oracle Database Appliance X7-2-HA

Connect Oracle Database Appliance X7-2-HA to either a 10GBase-T (copper) or 25GbE SFP+ (fiber) network.

For 10GBase-T public networking, use the Cat-6 network cables. To use the SFP28 ports, use the correct transceivers and cables to meet your switch bandwidth. The following sections show the cabling options for 25GbE SFP+ (fiber) network ports. In the figures, callouts 4 and 5 identify the ports for the 10GBase-T (copper) network. Callout 6 identifies the ports for the 25GbE SFP+ (fiber) network.

Connect the Fiber and Copper Network Cables for Oracle Database Appliance X7-2-HA

Connect the network cables for Oracle Database Appliance X7-2-HA.



Location of Network Ports and Power Cabling

Table 3-1 Location of Network Ports and Power Cabling for Oracle Database Appliance X7-2-HA

Callout Number	Description
1	Interconnect Port 25GbE p1p1
2	Interconnect Port 25GbE p1p2
3	Dark blue SAS cable between PCIe slot 2 in Node0 (SAS0) and the dark blue port in the top IO module in the storage shelf (port0)



Table 3-1 (Cont.) Location of Network Ports and Power Cabling for Oracle Database Appliance X7-2-HA

Callout Number	Description
4	Light blue SAS cable between PCIe slot 3 in Node0 (SAS1) and the light blue port in the bottom IO module in the storage shelf (port0)
5	Dark red SAS cable between PCIe slot 2 in Node1 (SAS1) and the dark red port in the top IO module in the storage shelf (port1)
6	Light red SAS cable between PCIe slot 3 in Node1 (SAS0) and the light red port in the bottom IO module in the storage shelf (port1)

Connect the Fiber and Copper Network Cables for Oracle Database Appliance X7-2



Table 3-2 Location of Ports and Power Cabling for Oracle Database Appliance

Callout Number	Description
1	Power cables to the power supply unit (PSU)
2	ILOM NET MGT port. Service processor 10/100/1000Base-T network interface
3	(Optional) ILOM SER MGT port. Service processor RJ-45 serial port
4	10 GbE network interface port with RJ-45 connector (btbond1)
5	(Optional) 25 GbE dual-rate SFP+ (fiber network) ports (btbond1)

Fiber Cables

For optical cables, you must purchase either Short Range (SR) or Long Range (LR) SFP transceivers for each of the network ports, and then plug in the appropriate optical cable. Currently, Oracle sells both the SR and LR SFP transceivers. In addition to these transceivers, you must purchase the appropriate LC-LC terminated fiber optic cables from a third-party vendor.

Table 3-3 Transceivers for the SFP Ports - 10GB/1GB

Name	Part Number
10Gbps Dual Rate SFP SR Transceiver	2129A
10Gbps SFP LR Transceiver	5562A-Z



Table 3-4 Transceivers for the SFP Ports - 25GB

Name	Part Number
SFP short range Transceiver	7118017
SFP long range Transceiver	7118020

Copper Cables

You can purchase the following copper cables from Oracle. These cables have built-in SFP connectors.

Table 3-5 Networking Cables for the SFP Ports - 10GB/1GB

Name	Length	Part Number
TwinAx passive copper cable: 1 meter	1m	7105137
TwinAx passive copper cable: 3 meter	3m	7105140
TwinAx passive copper cable: 5 meter	5m	7151141

Table 3-6 Networking Cables for the SFP Ports - 25GB

Name	Length	Part Number
Copper splitter cable assembly: 1 meter QSFP28 to 4 SFP28	1m	7118355
Copper splitter cable assembly: 2 meter QSFP28 to 4 SFP28	2m	7118356
Copper splitter cable assembly: 3 meter QSFP28 to 4 SFP28	3m	7118357
Copper splitter cable assembly: 5 meter QSFP28 to 4 SFP28	5m	7118358
TwinAx passive copper cable: 1 meter	1m	7118359
TwinAx passive copper cable: 3 meter	2m	7118360
TwinAx passive copper cable: 5 meter	3m	7118361
TwinAx passive copper cable: 5 meter	5m	7118362

3.3 Attaching Network Cables to Oracle Database Appliance X7-2S or X7-2M

Connect Oracle Database Appliance X7-2S or X7-2M to either a 10GBase-T (copper) or 25GbE SFP+ (fiber) network.

Use standard Cat-6 network cables to connect to the on-board 10GBase-T (copper) network ports. The following sections show the cabling options for 25GbE SFP+ (fiber) network ports. In the figures, callout 4 identifies the ports for the 10GBase-T (copper) network and callout 5 identifies the ports for the 25GbE SFP28 (fiber) network.



Connect the Fiber and Copper Network Cables for Oracle Database Appliance X7-2S or X7-2M

Connect the Fiber and Copper Network Cables for Oracle Database Appliance X7-2S or X7-2M



Location of Network Ports and Power Cabling

Table 3-7 Location of Network Ports and Power Cabling for Oracle Database Appliance

Callout Number	Description
1	Power cables to the power supply unit (PSU)
2	ILOM NET MGT port. Service processor 10/100/1000Base-T network interface
3	(Optional) ILOM SER MGT port. Service processor RJ-45 serial port
4	10 GbE network interface port with RJ-45 connector (btbond1)
5	(Optional) 25 GbE dual-rate SFP+ (fiber network) ports (btbond1)

Fiber Cables

For optical cables, you must purchase either Short Range (SR) or Long Range (LR) SFP transceivers for each of the network ports, and then plug in the appropriate optical cable. Currently, Oracle sells both the SR and LR SFP transceivers. In addition to these transceivers, you must purchase the appropriate LC-LC terminated fiber optic cables from a third-party vendor.

Name	Part Number
10Gbps Dual Rate SFP SR Transceiver	2129A
10Gbps SFP LR Transceiver	5562A-Z

Copper Cables

You can purchase the following copper cables from Oracle. These cables have built-in SFP connectors:

Name	Length	Part Number
TwinAx passive copper cable: 1m	1m	7105137
TwinAx passive copper cable: 3m	3m	7105140
TwinAx passive copper cable: 5m	5m	7151141



3.4 Attaching Peripheral Devices

Complete this task if you have direct access to Oracle Database Appliance and you intend to use a locally connected monitor, keyboard and mouse.

Oracle Database Appliance is not equipped with human-computer interface devices, such as a monitor or keyboard. To log in locally, instead of through a network, you must attach interface devices to a USB port. Oracle Database Appliance X7 hardware has one USB port per server node. The hardware does not have any VGA ports. Use a USB port expansion card or hub to attach more than one peripheral.

(Optional) Attach a USB expansion hub or card to the USB port on the back panel.
 For Oracle Database Appliance X7-2-HA, attach the hub or card to the USB port on Node 0.

3.5 First Startup of Oracle Database Appliance

Use this procedure to start up either a newly-installed Oracle Database Appliance, or to start up the appliance after you power it down.

To ready Oracle Database Appliance for the powering on the first time, you need to attach all of the required power cords and confirm that initialization completes successfully. You can then start up the system by pushing the power button once.

- Attaching Power Cords and Initializing Components (page 3-6)
 Attach power cords for Oracle Database Appliance.
- Powering On Oracle Database Appliance the First Time (page 3-7)
 Use this procedure the first time you power on Oracle Database Appliance.

3.5.1 Attaching Power Cords and Initializing Components

Attach power cords for Oracle Database Appliance.



Caution:

Before plugging in the power cords, ensure that the electrical outlets providing the power are grounded.

If you use only a single AC circuit, then connect both power cords for each component to that circuit. If you want to maintain N+1 power supply redundancy, then use two separate AC circuits. Connect one power cord from each AC circuit into each component.

For more information about cabling with the supplied Cable Management Arm, refer to *Oracle Database Appliance Owner's Guide*.



3.5.2 Powering On Oracle Database Appliance the First Time

Use this procedure the first time you power on Oracle Database Appliance.

When you power on Oracle Database Appliance for the first time, the system automatically defines your public network interface based on which of the public interface ports are connected. The onboard 10GBase-T (Copper) ports are used for the interconnect.



After you connect power cords, the green SP OK light-emitting diode (LED) lights blink for a few minutes, and then turn to steady ON. The cooling fans also may turn on. However, these events do not indicate that the system is started. You must complete all of the steps in this section to turn on the appliance properly. Read through the entire section to understand the sequence required for initial system startup.

- 1. (For Oracle Database Appliance X7-2-HA) Turn on the attached storage shelf, or shelves, before powering on the server nodes.
- 2. Push the recessed power button to turn on the appliance.



The fully-initialized state is indicated by the green SP OK LEDs staying steadily lit. If any of the green LED lights on the server are still blinking, then wait for them to complete their initialization steps.

Refer to the figures and to the following callout table to identify the power button and the system initialization status indicator lights.

Figure 3-1 Front of Oracle Database Appliance Power Panel



Table 3-8 Description of Callouts for Powering On Oracle Database Appliance

Callout	Function
1	SP OK LED light, located on the front panel of the appliance.



Table 3-8 (Cont.) Description of Callouts for Powering On Oracle Database Appliance

Callout	Function
2	Recessed On/Off power button, which is located on the front panel of the appliance. Push this button only once. Do not repeatedly push the power button.
3	Green Power OK LED, located on the front panel. These lights must be in the steady ON position (Green light does not blink) before you log on to the system.

Oracle Database Appliance does not use the DO NOT SERVICE indicator.

3. Wait for Oracle Database Appliance to complete startup.



Do not repeatedly push the power buttons. Startup can take several minutes to complete.

Oracle Database Appliance is ready for use when the green Power OK LEDs (callout 3) on the front of the system remains steadily on.

3.6 Configuring Oracle Integrated Lights Out Manager

Configure Oracle Integrated Lights Out Manager (Oracle ILOM) to manage Oracle Database Appliance independent of the operating system.

Oracle ILOM provides alternate ways to restart and troubleshoot Oracle Database Appliance.

You must set up the following items first to configure Oracle ILOM:

- A name and IP address
- A password to replace the default Oracle ILOM password
- Access to a management network, using an assigned netmask
- An Ethernet cable connected from the NET MGT port to the management network

In the default configuration, Dynamic Host Configuration Protocol (DHCP) is enabled in Oracle ILOM and the DHCP server automatically assigns network settings. To determine the IP address or host name assigned by the DHCP server, use the network tools provided with the DHCP server.

If you do not use DHCP, then use the custom option in Oracle Database Appliance Manager Configurator to assign IP addresses and host names to Oracle ILOM when you deploy your database.



If you have not enabled DHCP, then you must complete Oracle Database Appliance configuration to access Oracle ILOM.



To connect to the Oracle ILOM, use one of the following two methods:

- Log in using a web interface by completing these steps:
 - **a.** Using a client system's browser, enter the IP address or host name assigned by DHCP into the browser address field and press **Enter**.
 - **b.** At the login page, enter the default user name, root and the default password, changeme.

The Oracle ILOM web interface appears.

- 2. Log in using a command-line interface (CLI) by completing these steps:
 - a. Using a client system, establish a secure shell (SSH) connection by entering the following on the command line:

```
ssh -l root sp_ip_address
```

where $sp_ip_address$ is the IP address assigned by DHCP.

b. Enter the default user name, root, and the default password, changeme.

The Oracle ILOM CLI prompt appears.

Troubleshooting the ILOM Configuration

If the ILOM is not working, then ensure that the ILOM NIC is enabled and that $\mathtt{ipv4}$ is enabled.

You can configure the ILOM with the IPMI tool or through the BIOS. The following describes how to use the IPMI tool:

Open the IPMI tool.

```
# ipmitool -I open sunoem cli
```

2. Go to SP/network and verify that the port is enabled:

```
cd /SP/network
```

3. If the port is not enabled, then enable the port.

```
set state=enabled
```

- 4. In SP/network, verify that ipv4 is enabled.
- 5. If ipv6 is enabled, then disable ipv6 and enable ipv4

```
# ipmitool -I open sunoem cli "set /SP/network/ipv6 state=disabled"
# ipmitool -I open sunoem cli "set /SP/network/ipv4 state=enabled"
```

3.7 Plumbing the Network

Configure a temporary network configuration framework to build your network information during deployment.

Plumb the ODA network with the public internet protocol (IP) information that is assigned to that node. This will allow you to upload the GI and database clone files that are used to deploy Oracle Database Appliance. You must enter the IP information again during the deployment to complete the network configurations. Use either the 10GBase-T or the 25GbE SFP+ network interface. Use the initial network connection to transfer deployment software to Oracle Database Appliance and deploy the appliance with the Web Console.



Caution:

Oracle recommends using the configure-firstnet command only one time on Oracle Database Appliance. Subsequent use after configuring the initial network can cause unpredictable changes to your network settings.

To configure the initial network, you will to use Oracle ILOM to connect to the system and you will need the IP address and netmask address. Refer to the network configuration information that you collected in preparation for deployment. The program derives the gateway address using the network information you provided.

- 1. Connect to the ILOM remote console, then log into Oracle Database Appliance as root, using the password welcome1.
- 2. Run the command configure-firstnet to configure the initial network. Complete the network information, as prompted. Refer to the network configuration information that you collected in preparation for deployment.

Configure the first network to use a btbond1 interface without configuring DHCP.

Complete the IP address and netmask address based on the network configuration information that you collected in preparation for deployment and accept the Gateway address when prompted. In this example, the IP address is 10.1.10.2 and the Netmask address is 255.255.255.0. The program derives 10.1.10.1 as the Gateway address to configure. The program derives this gateway address using the network information you provided for the other IP addresses. Accept this value, unless your network administrator provides an alternative gateway address that is different from the default that the appliance command-line interface detects.

```
# configure-firstnet
```

```
Select the Interface to configure the network on (btbond1): btbond1
Configure DHCP on btbond1 (yes/no): no
INFO: You have chosen Static configuration
Enter the IP address to configure: 10.1.10.2
Enter the Netmask address to configure: 255.255.255.0
Enter the Gateway address to configure: 10.1.10.1
INFO: Plumbing the IPs now
INFO: Restarting the network
Shutting down interface btbond1: bonding: btbond1: Removing slave em2.
bonding: btbond1: releasing active interface em2
bonding: btbond1: making interface em3 the new active one.
bonding: btbond1: Removing slave em3.
bonding: btbond1: releasing active interface em3
:::::::::
```

Related Topics

configure-firstnet (page 13-7)

Use the configure-firstnet command to configure the first network in the appliance after racking and connecting the power and network cables.



3.8 Updating the Server Components

Use the Server patch to update the dcs-agent, various infrastructure components, and Oracle Clusterware before deploying the appliance.

If the system is Oracle Database Appliance X7-2-HA, you must update the repository, and run the update commands on both nodes.

The patches are available for download in My Oracle Support. You must download the server patch to an external client and then copy the files from the external client to a / tmp directory on the appliance. In some cases, there might not be sufficient space in the / tmp directory. Consider creating a / tmp directory in the / u01 directory.

Copy the file using a Secure Copy (scp) or Secure File Transfer Protocol (sftp) protocol. To use scp or sftp, you must first set up a static IP address (for example, oda_host) and configure Oracle Database Appliance with that address by using the configure-firstnet command. This command ensures the system is available in your network, enabling you to use the Oracle Appliance Manager Web Console to deploy Oracle Database Appliance.

Alternatively, you can use a USB storage device. To use a USB drive to transfer the files, you must format it first as FAT32, ext3, or ext4. NTFS file formats are not supported.

- 1. From an external client machine, log on to My Oracle Support.
- 2. Locate and download patch 27119380 (server patch).

27119380

- 3. Upload the patch to the appliance by using either the Secure Copy (scp) command or a USB storage device to copy the file from the external client.
- 4. Navigate to the directory and unzip the patch.
- 5. Run the command odacli update-repository to unpack the bundle to the correct locations in the file system. You must include the fully qualified directory.

```
# odacli update-repository -f /u01/tmp/patch_bundle_name.zip
```

6. Run the command odacli update-dcsagent to update the dcs-agent.

```
odacli update-dcsagent -v version
```

```
# odacli update-dcsagent -v 12.2.1.1
  "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "November 26, 2017 14:09:24 PM CST",
  "description" : "DcsAgent patching",
  "updatedTime" : "November 26, 2017 14:09:24 PM CST"
}
```

Allow at least two (2) minutes for the dcs-agent update job to complete before going to the next step.

7. Run the command odacli update-server to update the server components.

```
# ./odacli update-server -v 12.2.1.1
{
  "jobId" : "6f27a29a-959f-44e1-b984-7473e3c918ad",
  "status" : "Created",
  "message" : "Success of Server Update may trigger reboot of node after 4-5 minutes.
Please wait till node restart",
  "reports" : [ ],
  "createTimestamp" : "November 26, 2017 14:13:45 AM CST",
  "resourceList" : [ ],
  "description" : "Server Patching",
  "updatedTime" : "November 26, 2017 14:13:45 AM CST"
```

- 8. Allow at least two (2) minutes for the job to complete before running the next command.
- 9. Run the command odacli list-jobs to check the status.

10. If the system is an Oracle Database Appliance X7-2-HA system, ensure that you run these steps on both nodes.

After the server components are updated, update the patch repository with the GI and DB Clone files, then deploy the appliance.

Related Topics

- odacli update-repository
- odacli update-dcsagent
- odacli update-server

3.9 Updating the Repository with the GI and RDBMS Files

Download the Oracle Database Appliance GI and RDBMS Software Clone Files from My Oracle Support and update the patch repository.

Update the patch repository with the following patch files:

- GI Clone: The patch contains the latest Grid Infrastructure components needed to deploy, or create, an Oracle Database Appliance.
- RDBMS Software Clone file: Release-specific database clone files contain the components needed to create database homes and databases in Oracle Database Appliance. RDBMS Software is available for Oracle Database 12.2.0.1, 12.1.0.2, and 11.2.0.4.

The patches are available for download in My Oracle Support. You must download the GI and DB software files to an external client and then copy the files from the external client to a / tmp directory on the appliance. In some cases, there might not be sufficient space in the / tmp directory. Consider creating a / tmp directory in the / u01 directory.

Copy the file using a Secure Copy (scp) or Secure File Transfer Protocol (sftp) protocol. To use scp or sftp, you must first set up a static IP address (for example,

oda_host) and configure Oracle Database Appliance with that address by using the configure-firstnet command. This command ensures the system is available in your network, enabling you to use the Oracle Appliance Manager Web Console to deploy Oracle Database Appliance.

Alternatively, you can use a USB storage device. To use a USB drive to transfer the files, you must format it first as FAT32, ext3, or ext4. NTFS file formats are not supported.



Ensure that the server components are updated before you update the patch repository with the GI Clone and RDBMS Software Clone files. If the system is Oracle Database Appliance X7-2-HA, you must update both nodes.

- 1. From an external client machine, log on to My Oracle Support.
- 2. Locate and download patch 27119393 (GI patch), and the RDBMS Clone patches that you want to a temporary location on an external client.
 - GI Clone patch: 27119393
 - RDBMS Software Clone files for Oracle Database 12.2.0.1: 27119402
 - RDBMS Software Clone files for Oracle Database 12.1.0.2: 23494992
 - RDBMS Software Clone files for Oracle Database 11.2.0.4: 23494997

The RDBMS patches are release-specific. Select 12.2.1.1.0 from the release drop-down menu.

- 3. Unzip the patch files. If the patch files are split into more than one zip file, then concatenate the two zip files into a single zip file.
- 4. Upload the files from the external client to the appliance. You can use the scp protocol, sftp protocol, or a USB storage device to copy the files.
- 5. Navigate to the directory and unzip each patch.
- 6. Run the command odacli update-repository to unpack the bundle to the correct locations in the file system. You must include the fully qualified directory.

If you have more than one bundle, you can use a comma-separated list. Spaces are not allowed between the filenames.

```
# odacli update-repository -f /u01/tmp/patch_file_name.zip
```

7. Run the command odacli list-jobs to check the status.

```
# odacli list-jobs
```

8. If the system is an Oracle Database Appliance X7-2-HA system, ensure that you run these steps on both nodes.

After the GI and DB Clone files are in the patch repository, you can deploy the appliance.

Related Topics

odacli update-repository



4

Deploying Oracle Software on Oracle Database Appliance

Complete these tasks to deploy the Oracle Database Appliance software.

- About Deploying Oracle Database Appliance (page 4-1)
 Review this information to understand the available deployment options and requirements.
- Copying the Oracle Database Appliance GI and DB Software (page 4-2)
 Copy the software bundle to the system and update the repository to the latest version before deploying the appliance.
- Deploying a Single Node Bare Metal Platform (page 4-3)
 Configure the system, network, user groups, and database and deploy Oracle
 Database Appliance X7-2S or X7-2M.
- Deploying a Multi-Node Bare Metal Platform (page 4-8)
 Configure the system, network, user groups, and database and deploy Oracle
 Database Appliance X7-2-HA.

4.1 About Deploying Oracle Database Appliance

Review this information to understand the available deployment options and requirements.

Deploying a new Oracle Database Appliance requires a direct connection to the system to configure the Oracle Integrated Lights Out Manager (ILOM) and the first network. To complete the first part of the deployment, you can either connect a monitor and keyboard to the system or connect a laptop to the serial port. If you use the serial port, ensure that the baud rate speeds match. After the first network is configured, you can perform the remaining deployment steps on the Oracle Database Appliance system or from a remote system.

The procedure to deploy software consists of the following steps:

- Copy the Oracle Database Appliance GI and DB software that you downloaded earlier.
- 2. Update the repository with Oracle Database Appliance GI and DB software.
- 3. Deploy your configuration.

The steps to deploy your Oracle Database Appliance configuration vary, depending on the type of platform and whether you want to deploy a bare metal platform or a virtualized platform:

- Oracle Database Appliance X7-2S and X7-2M are single node systems that you
 deploy as a bare metal platform.
- Oracle Database Appliance X7-2-HA is a multi-node system with the option to deploy as a bare metal platform or a virtualized platform.

Deploying Oracle Database Appliance software requires approximately 1 hour to complete.

About Deploying a Bare Metal Platform

The Web Console is the preferred method of deploying your bare metal platform configuration. The Web Console provides all of the fields necessary to provision Oracle Database Appliance, including configuring the system, network, database, and Oracle Auto Service Request (Oracle ASR). If you prefer to use the command-line interface, you must create a JSON file to configure the deployment options.

At a high level, you will complete the following configuration steps in the Web Console to deploy Oracle Database Appliance:

- Configure the system
- Configure the client access network
- 3. Configure an Oracle ILOM network
- 4. (Optional) Configure a database
- 5. (Optional) Configure Oracle ASR

4.2 Copying the Oracle Database Appliance GI and DB Software

Copy the software bundle to the system and update the repository to the latest version before deploying the appliance.

You must copy the GI and DB software to the Oracle Database Appliance.

Copy the file using a Secure Copy (scp) or Secure File Transfer Protocol (sftp) protocol. To use scp or sftp, you must first set up a static IP address (for example, oda_host) and configure Oracle Database Appliance with that address by using the configure-firstnet command. This command ensures the system is available in your network, enabling you to use the Oracle Appliance Manager Web Console to deploy Oracle Database Appliance.

Alternatively, you can use a USB storage device. To use a USB drive to transfer the files, you must format it first as FAT32, ext3, or ext4. NTFS file formats are not supported.

Before running the command odacli update-repository, ensure that your appliance has the latest version of the dcs-agent and that the initial network connection is configured.

- 1. Download the software files from My Oracle Support to a temporary location on an external client.
 - a. Unzip the files.
 - **b.** If the files are split into more than one zip file, then concatenate the two zip files into a single zip file.
- 2. Copy the GI and DB software from the external client to Oracle Database Appliance. Use the scp or sftp protocol to copy the bundle.

oda-sm-release number -date-GI-12.1.0.2.zip to root@oda_host



```
oda-sm-release number -date-DB.zip to root@oda_host
```

For example, if you use the scp command, then enter a command similar to the following, where the temporary host address is oda_host , the release number is 12.2.1.1.0, and you are copying the bundle to /tmp:

```
scp oda-sm-release number -date-GI-12.1.0.2.zip root@oda_host:/tmp
scp oda-sm-release number -date-DB-12.1.0.2.zip root@oda_host:/tmp
scp oda-sm-release number -date-DB-11.2.0.4.zip root@oda_host:/tmp
```

For example, if you use the sftp command, then enter a command similar to the following, where the temporary host address is oda_host , and you are copying the bundle to /tmp:

```
sftp root@oda_host
```

Enter the root password.

```
put oda-sm-12.2.1.1.0-date-DB-12.1.0.2.zip
```

3. Update Oracle Database Appliance with the files that have been copied to system in the previous step. If there is more than one file, you can list all of them separated by a comma. Spaces are not allowed between the filenames.

For example, enter a command similar to the following to update the image file, where the temporary host address is oda_host , and you are copying the bundle to /tmp:

```
# opt/oracle/dcs/bin/odacli update-repository -f /tmp/oda-
sm-12.2.1.1.0-160XXXX-GI-12.1.0.2.zip,/tmp/oda-sm-12.2.1.1.0-160XXXX-
DB-12.1.0.2.zip,/tmp/oda-sm-12.2.1.1.0-160XXXX-DB-11.2.0.4.zip
```

4. Run the command odacli list-jobs to check the status.

```
# odacli list-jobs
```

5. If the system is an Oracle Database Appliance X7-2-HA system, ensure that you run these steps on both nodes.

4.3 Deploying a Single Node Bare Metal Platform

Configure the system, network, user groups, and database and deploy Oracle Database Appliance X7-2S or X7-2M.

Use the checklists that you completed earlier as a reference for the configuration settings needed to deploy the appliance.

Before deploying Oracle Database Appliance, complete the tasks in "Preparing for Oracle Database Appliance Installation" and "Readying Oracle Database Appliance for Deployment".

Complete the following tasks to prepare for deploying Oracle Database Appliance:

- Register your hardware SI and new software licenses that you received with Oracle Database Appliance to your My Oracle Support profile.
- Plan your configuration options.
- Gather your system requirements and complete the checklists for your deployment. You can use the checklists as a reference for the configuration settings needed to deploy the appliance.



Complete the following tasks to ready the system before deploying Oracle Database Appliance:

- 1. Attach the network cables.
- Perform a first startup of the appliance.
- 3. Configure Oracle Integrated Lights Out Manager (ILOM).
- 4. Configure an initial network connection.
- **5.** Download the latest version of the Oracle Database Appliance Software and copy it to the appliance.
- 6. Log into the Web Console. When you launch the Web Console on an unconfigured appliance, the Appliance page notifies you that the appliance is not configured and provides a link to the pages needed to configure and create the appliance.

See also:

Your browser determines how you log into the Web Console. In some cases, you must accept credentials for the DCS-controller on port 7093, and DCS-agent on port 7070. If you experience problems launching the Web Console, see Logging into the Web Console (page 15-1) for more information.

 Launch the Web Console and enter the credentials: User name: oda-admin, Password: welcome1

https://ODA-host-ip-address:7093/mgmt/index.html

- 2. Click Create Appliance.
- **3.** Enter the following information to configure the system information:
 - a. Host Name: Enter the host name.

The host name can contain alphanumeric characters and dashes (-), but cannot start with a number or dash (-) or end with dash (-). Do not exceed 30 characters.

b. Domain Name: Enter the domain name.

For example, example.com.

- **c.** (Optional) **Region**: Select the region of the world where the Oracle Database Appliance is located.
- **d.** (Optional) **Time Zone**: Select the time zone where the Oracle Database Appliance is located.
- e. Data Storage Percentage: Enter a whole number between 10 and 90 to define the percentage of storage reserved for DATA, the remainder is reserved for RECO. For example, if you enter 80, then 80% of the storage is for DATA and 20% is for RECO.
- f. Diskgroup Redundancy: This field appears when the Web Console detects that the system has at least five (5) NVMe storage devices. Select Normal or High.

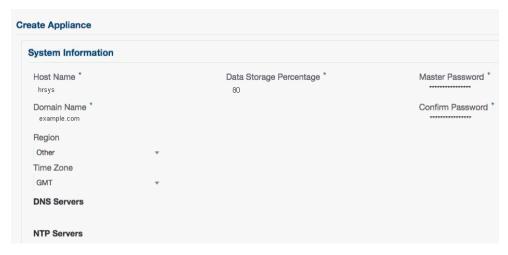
If the system has less than five (5) NVMe storage devices, redundancy is automatically set to Normal and this field does not appear.



g. Master Password and Confirm Password: Enter the master password in both fields.

The master password is the password set for UNIX users, root, SYS, SYSTEM, and PDBADMIN. The password must begin with an alpha character and cannot contain quotation marks. Do not exceed 30 characters.

- h. (Optional) **DNS Servers**: Enter addresses for one or more DNS servers.
- i. (Optional) NTP Servers: Enter addresses for one or more NTP servers.



4. Enter the following information to configure the network information:

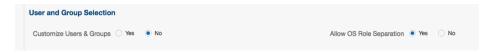
The Network Information page enables you to configure the primary client access network and an Oracle Integrated Lights Out Manager (ILOM) network. You are only required to configure the client access network. The ILOM configuration is optional if you already configured the ILOM for the appliance and you do not need to make changes.

- Client Access Network IP Address: Enter the IP address for the primary client access network.
- b. Client Access Network Subnet Mask: Enter the subnet mask address for the primary client access network.
- **c. Client Access Network Gateway**: Enter the gateway address for the primary client access network.
- d. (Optional) **ILOM Host Name**: Enter the name of the Oracle ILOM host.
- e. (Optional) ILOM Network IP Address: Enter the IP address for the ILOM.
- f. (Optional) ILOM Network Subnet Mask: Enter the subnet mask address for the ILOM.
- g. (Optional) ILOM Network Gateway: Enter the gateway address for the ILOM.





- 5. Determine how you want to configure your users and groups and whether or not you want to allow operating system role separation:
 - Two users with six groups: Customize Users and Groups, select No. Allow OS Role Separation, select Yes. This is the default configuration.



- Two customized users with six customized groups: Customize Users and Groups, select Yes. Allow OS Role Separation, select Yes.
- Single user with two groups: Customize Users and Groups, select No. Allow OS Role Separation, select No
- Single user with six groups: Customize Users and Groups, select Yes. Allow OS Role Separation, select No. SAP deployments use this configuration.
- **6.** Do you want to create an initial database? Select **Yes** and go to Step 8 or select **No** and go to Step 9.
- 7. Enter the following information to configure the database:
 - a. **DB Name**: Enter a name for the database.
 - The name must contain alphanumeric characters and cannot exceed 8 characters. Enter a name, do not use the default database name db1.
 - b. (Optional) **DB Unique Name**: Enter a globally unique name for the database.
 - Databases with the same DB Name within the same domain (for example, copies of a database created for reporting or a physical standby) must have a different DB Unique Name that is unique within the enterprise. The name can contain alphanumeric, underscore (_), dollar (\$), and pound (#) characters, but must begin with an alphabetic character. No other special characters are permitted in a database name. The unique name cannot exceed 30 characters.
 - **c. DB Version**: Select a database bundle patch number.
 - d. CDB: Select Yes or No to specify whether or not you want a Container Database (CDB). This field is only visible for Oracle Database 12.2.x.
 - e. (Optional) **PDB Name**: Enter a name for the pluggable database (PDB).
 - The name must begin with an alphanumeric character. The following characters are valid: alphanumeric characters, and underscore (_).
 - f. (Optional) **PDB Admin User**: Enter an Admin user name for the pluggable database (PDB).



- g. Database Edition: Select the Oracle Database edition, either Standard Edition and Enterprise Edition. Your license determines which database edition you are eligible to create in the appliance.
- **h.** (Optional) **Shape**: Select a database shape from the list.
- i. (Optional) Database Class: Select a database class from the list.

The database version and edition determine the classes that are available. Oracle Database 12.x and Enterprise Edition support OLTP, DSS, or IMDB. Oracle Database 11.2.0.4 and Enterprise Edition support OLTP and DSS. Standard Edition only supports OLTP.

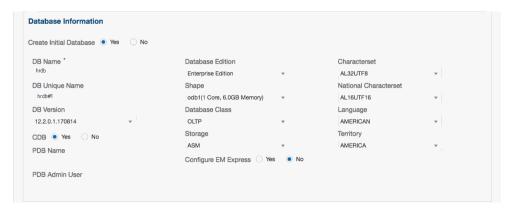
j. (Optional) Storage: Select ACFS or ASM.

Oracle Database 11.2 is only supported on Oracle ACFS.

k. (Optional) Configure EM Express: Select Yes or No.

Select **Yes** to configure the Oracle Enterprise Manager Database Express (EM Express) console for Oracle Database 12.2.0.1, 12.1.0.2 or the Database Control Console for Oracle Database 11.2.0.4.

- I. (Optional) **Characterset**: Select a characterset.
- m. (Optional) National Characterset: Select a national characterset.
- n. (Optional) Language: Select the database language.
- o. (Optional) **Territory**: Select a territory or location from the list.



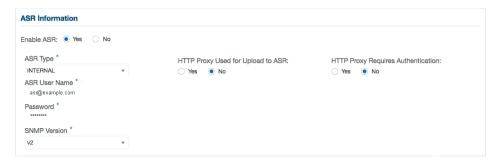
B. (Optional) Configure and enable Oracle ASR on the ASR page.

You can configure and enable Oracle Auto Service Request (Oracle ASR) now or later:

- To not enable Oracle ASR during deployment, select No and click Submit.
 After deployment, you can configure an internal Oracle ASR or register with an external Oracle ASR Manager from either the Web Console or command-line interface.
 - Internal Oracle ASR: choose to configure Oracle ASR Manager on Oracle Database Appliance or use Oracle ASR Manager configured on another server in the same network as your appliance.
 - External Oracle ASR: If you already have Oracle ASR Manager configured elsewhere, you can register Oracle Database Appliance with your existing Oracle ASR Manager.



- To enable Oracle ASR, select Yes and complete the fields:
- ASR User Name: Enter the e-mail address associated with the My Oracle Support account under which the server is registered.
- **b. Password**: Enter the password associated with the My Oracle Support account under which the server is registered.
- c. SNMP Version: Select V2 or V3. V2 is the default and recommended version.
- d. (Optional) HTTP Proxy used for Upload to ASR: Select Yes or No.
- Proxy Server Name: If you are using a proxy for upload, enter the proxy server name.
- **f. Proxy Port**: If you are using a proxy for upload, enter the proxy port.
- g. (Optional) HTTP Proxy Requires Authentication: If you are using a proxy for upload, select Yes if you require authentication. If you do not require authentication, select No.
- h. **(Optional) Proxy Password**: If you are using a proxy for upload and require authentication, enter the proxy password.



9. Click **Submit**. When prompted, click **Yes** to confirm that you want to start the job to deploy the appliance.

The job to create the appliance takes time to complete. To monitor the job progress, click the **Activity** tab . Click the job number to view the tasks.

The deployment is complete when the word SUCCESS appears after each task. To check the status from the command line, run the command odacli list-jobs. A job is not complete if the status is running.

After deployment, the root and database users SYS, SYSTEM, and PDBADMIN are set to the master password. The oracle and grid passwords are set to welcomel. Change these passwords to comply with your user security protocols.

Related Topics

Powering On Oracle Database Appliance the First Time (page 3-7)
 Use this procedure the first time you power on Oracle Database Appliance.

4.4 Deploying a Multi-Node Bare Metal Platform

Configure the system, network, user groups, and database and deploy Oracle Database Appliance X7-2-HA.

Use the checklists that you completed earlier as a reference for the configuration settings needed to deploy the appliance. When you launch the Web Console on an unconfigured appliance, the Appliance page notifies you that the appliance is not

configured and provides a link to the pages needed to configure and create the appliance.

See Also:

Your browser determines how you log into the Web Console. In some cases, you must accept credentials for the DCS-controller on port 7093, and DCS-agent on port 7070. If you experience problems launching the Web Console, see Logging into the Web Console (page 15-1) for more information.

Before deploying Oracle Database Appliance, complete the tasks in "Preparing for Oracle Database Appliance Installation" and "Readying Oracle Database Appliance for Deployment".

1. Open a browser and enter the following URL to launch the Web Console:

The URL must include the host name or IP address of the first node (Node0).

https://Node0-ODA-host-ip-address:7093/mgmt/index.html

- 2. Enter the following credentials:
 - User name: oda-admin
 - Password: welcome1
- 3. Click Create Appliance.

If **Create Appliance** is disabled, ensure that you are launching the console on the first node (Node0).

- **4.** Enter the following system information to configure the system:
 - a. Host Name: Enter the host name.

The host name can contain alphanumeric characters and dashes (-), but cannot start with a number or dash (-) or end with dash (-). Do not exceed 30 characters.

- **b. Domain Name**: Enter the domain name.
- Region: Select the region of the world where the Oracle Database Appliance is located.
- **d. Time Zone**: Select the time zone where the Oracle Database Appliance is located.
- **e.** (Optional) **DNS Servers**: Enter addresses for one or more DNS servers.
- **f.** (Optional) **NTP Servers**: Enter addresses for one or more NTP servers.
- g. Diskgroup Redundancy: This field appears when the Web Console detects that the system has at least five (5) NVMe storage devices. Select Normal or High.

The redundancy level is for DATA, RECO, and FLASH. If you select High redundancy, then DATA, RECO, and FLASH are all High redundancy. If the system has less than five (5) NVMe storage devices, redundancy is automatically set to Normal and this field does not appear.

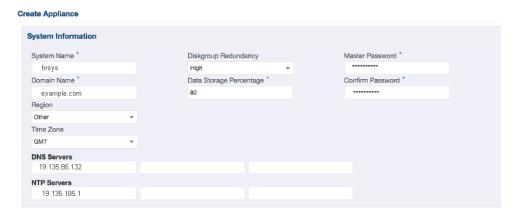
h. **Data Storage Percentage**: Enter a whole number between 10 and 90 to define the percentage of storage reserved for DATA, the remainder is



reserved for RECO. For example, if you enter 80, then 80% of the storage for DATA and 20% for RECO.

 Master Password and Confirm Password: Enter the master password in both fields.

The master password is the password set for UNIX users, root, sys, system, and pdbadmin. The password must begin with an alpha character and cannot contain quotation marks. Do not exceed 30 characters.



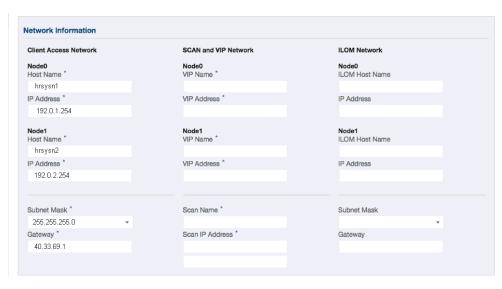
5. Enter the following information to configure the network:

This page enables you to configure the primary client access network, virtual networks, and an Oracle Integrated Lights Out Manager (ILOM) network. You are only required to configure the client access network. The ILOM configuration is optional if you already configured the ILOM for the appliance and you do not need to make changes.

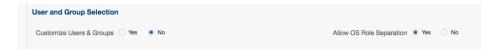
- **a.** Client Access Network Host Name: For Node0, enter the host name for the primary client access network.
- **b.** Client Access Network IP Address: For Node0, enter the IP address for the primary client access network.
- c. Client Access Network Subnet Mask: Enter the subnet mask address for the primary client access network.
- **d. Client Access Network Gateway**: Enter the gateway address for the primary client access network.
- Client Access Network Interface: Enter the interface for the primary client access network.
- f. VIP Name for Node0: Enter the name of the virtual IP network for Node0.
- **g. VIP IP Address for Node0**: Enter the virtual IP address that resides on Node0 and is shared between the nodes.
- h. **VIP Name for Node1**: Enter the name of the virtual IP network for Node0.
- i. **VIP IP Address for Node1**: Enter the virtual IP address that resides on Node1 and is shared between the nodes.
- (Optional) ILOM Host Name: Enter the name of the Oracle ILOM host.
- k. (Optional) **ILOM Network IP Address**: Enter the IP address for the ILOM.



- (Optional) ILOM Network Subnet Mask: Enter the subnet mask address for the ILOM.
- m. (Optional) **ILOM Network Gateway**: Enter the gateway address for the ILOM.



- 6. Determine how you want to configure your users and groups and whether or not you want to allow operating system role separation:
 - Two users with six groups: Customize Users and Groups, select No. Allow OS Role Separation, select Yes. This is the default configuration.



- Two customized users with six customized groups: Customize Users and Groups, select Yes. Allow OS Role Separation, select Yes.
- Single user with two groups: Customize Users and Groups, select No. Allow OS Role Separation, select No
- Single user with six groups: Customize Users and Groups, select Yes. Allow OS Role Separation, select No. SAP deployments use this configuration.
- Do you want to create an initial database? Select Yes and go to Step 8 or select No and go to Step 9.
- **8.** Enter the following information to configure an initial database:
 - DB Name: Enter a name for the database.

The name must contain alphanumeric characters and cannot exceed 8 characters.

Optional) DB Unique Name: Enter a globally unique name for the database.

Databases with the same DB Name within the same domain (for example, copies of a database created for reporting or a physical standby) must have a different DB Unique Name that is unique within the enterprise. The name must contain alphanumeric, underscore (_), dollar (\$), and pound (#) characters, but must begin with an alphabetic character. No other special characters are



permitted in a database name. The unique name cannot exceed 30 characters.

- c. **DB Version**: Select a database bundle patch number.
- d. CDB: Select Yes or No to specify whether or not you want a Container Database (CDB).
- e. PDB Name: Enter a name for the pluggable database (PDB).

The name must begin with an alphanumeric character. The following characters are valid: alphanumeric characters, and underscore ().

- f. PDB Admin User: Enter an Admin user name for the pluggable database (PDB).
- g. **Database Edition**: Select the Oracle Database edition, either Standard Edition and Enterprise Edition. Your license determines which database edition you are eligible to create in the appliance.
- h. **Deployment**: Select a deployment type from the list. The options are RAC, RAC-One, or SI (single instance database). If you select a single instance database, then select the node for the SI database deployment.

If you select a single instance database, then you have the option to create the database on either Node0 or Node1. The default is Node0.

- i. Shape: Select a database shape from the list.
- **Database Class**: Select a database class from the list. The options are:
 - Enterprise Edition 12c: OLTP, DSS, IMDB
 - Enterprise Edition 11g: OLTP, DSS
 - Standard Edition: OLTP
- k. Storage: Select ACFS or ASM.

Only Oracle 12.2 and 12.1 databases can use ASM storage. Oracle Database 11.2 is only supported on Oracle ACFS.

I. Date Files on Flash Storage: Select Yes or No.

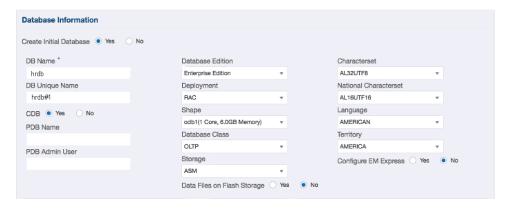
This option is only available if the HA system has HDD storage drives.

m. Configure EM Express: Select Yes or No.

Select **Yes** to configure the Oracle Enterprise Manager Database Express (EM Express) console for Oracle Database 12.2.1.0 or 12.1.0.2 or the Database Control Console for Oracle Database 11.2.0.4. Selecting Yes enables you to use the console to manage the database.

- n. Characterset: Select a characterset.
- o. National Characterset: Select a national characterset.
- **p. Language**: Select the database language.
- **q. Territory**: Select a territory or location from the list.



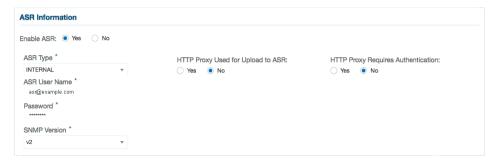


9. (Optional) Configure and enable Oracle ASR on the ASR page.

You can configure and enable Oracle Auto Service Request (Oracle ASR) now or later:

- To not enable Oracle ASR during deployment, select No and click Submit.
 After deployment, you can configure an internal Oracle ASR or register with an external Oracle ASR Manager from either the Web Console or command-line interface.
 - Internal Oracle ASR: choose to configure Oracle ASR Manager on Oracle Database Appliance or use Oracle ASR Manager configured on another server in the same network as your appliance.
 - External Oracle ASR: If you already have Oracle ASR Manager configured elsewhere, you can register Oracle Database Appliance with your existing Oracle ASR Manager.
- To enable Oracle ASR, select Yes and complete the fields:
- a. ASR User Name: Enter the e-mail address associated with the My Oracle Support account under which the server is registered.
- b. Password: Enter the password associated with the My Oracle Support account under which the server is registered.
- c. SNMP Version: Select V2 or V3. V2 is the default and recommended version.
- d. HTTP Proxy used for Upload to ASR: Select Yes or No.
- Proxy User Name: If you are using a proxy for upload, enter the proxy user name.
- f. **Proxy Port**: If you are using a proxy for upload, enter the proxy port.
- g. (Optional) HTTP Proxy Requires Authentication: If you are using a proxy for upload, select Yes if you require authentication. If you do not require authentication, select No.
- h. (Optional) Proxy Password: If you are using a proxy for upload and require authentication, enter the proxy password.





10. Click **Submit**. When prompted, click **Yes** to confirm that you want to start the job to deploy the appliance.

The job to create the appliance takes time to complete. To monitor the job progress, click the **Activity** tab . Click the job number to view the tasks.

After deployment, the root and database users SYS, SYSTEM, and PDBADMIN are set to the master password. The oracle and grid passwords are set to welcomel. Change these passwords to comply with your user security protocols.

Related Topics

Powering On Oracle Database Appliance the First Time (page 3-7)
 Use this procedure the first time you power on Oracle Database Appliance.



5

Creating an Oracle Database Appliance Virtualized Platform

Complete these tasks to deploy a Virtualized Platform configuration on Oracle Database Appliance X7-2-HA. You must complete the deployment tasks in the order that they are listed.

- About Creating an Oracle Database Appliance Virtualized Platform (page 5-1)
 Oracle Database Appliance X7-2-HA is a multi-node system with the option to reimage the system and configure the appliance as a virtualized platform.
- Determining if the System is Configured with a Virtualized OS Image (page 5-2)
 Before deploying a Virtualized Platform on Oracle Database Appliance X7-2-HA, determine if the system has the Virtualized OS ISO image.
- Installing a Virtualized OS ISO Image (page 5-3)
 Reimage Oracle Database Appliance with a virtualized operating system image on both nodes and configure the initial public network.
- Installing the Virtualized Platform Template and Deploying the Appliance (page 5-6)
 Use the Virtualized Platform Template to deploy the ODA_BASE domain for a virtualized platform and then deploy the appliance.

5.1 About Creating an Oracle Database Appliance Virtualized Platform

Oracle Database Appliance X7-2-HA is a multi-node system with the option to reimage the system and configure the appliance as a virtualized platform.

Oracle Database Appliance ships from the factory with a bare metal ISO image installed. To enable virtualization, you must deploy the Virtualized OS ISO image on both nodes, configure your public network, and then deploy the Oracle Database Appliance Virtualization Platform. Oracle Database Appliance ships with various components, including Oracle Integrated Lights Out Manager (ILOM) to help manage the system remotely. The Oracle Integrated Lights Out Manager (ILOM) client must be on at least version <code>jre-7-linux-i586.rpm</code> to be able to launch the remote console.

Oracle Database Appliance supports Oracle Database Enterprise Edition, Standard Edition, or Standard Edition 2 RAC in ODA_BASE on a virtualized platform.



Note:

You can provision Standard Edition and Standard Edition 2 RAC databases, but you must use Oracle VM virtualization on Oracle Database Appliance X7-2-HA and follow the single socket per server licensing restriction. The single socket restriction means that you can use a maximum of 18 cores per server, in multiples of two. You can use the remaining cores for applications.

About Deploying a Virtualized Platform

Deploying a new Oracle Database Appliance requires a direct connection to the system to configure the Oracle Integrated Lights Out Manager (ILOM) and the first network. After the first network is configured, you can perform the remaining deployment steps on the Oracle Database Appliance system or from a remote system.

The Configurator is the preferred method of deploying your virtualized platform configuration. The Configurator provides all of the fields necessary to provision Oracle Database Appliance, including configuring the system, network, database, and Oracle Auto Service Request (Oracle ASR).

At a high level, you will complete the following configuration steps to deploy a virtualized platform:

- Download images for a virtualized platform and reimage the appliance with the Virtualized ISO image on both nodes
- Configure the first network for DOM-0
- 3. Install the Virtualized Platform (ODA_BASE) Template
- Deploy your configuration with the Configurator

Deploying Oracle Database Appliance software requires approximately 1 hour to complete.

5.2 Determining if the System is Configured with a Virtualized OS Image

Before deploying a Virtualized Platform on Oracle Database Appliance X7-2-HA, determine if the system has the Virtualized OS ISO image.

Oracle Database Appliance ships from the factory with a bare metal ISO image installed. To use the virtualization features, you must reimage the system with the Virtualized OS ISO image.

A bare metal system uses the <code>odacli</code> and <code>odaadmcli</code> commands. A virtualized system uses the <code>oakcli</code> commands.

Perform the following steps to determine if you need to re-image Oracle Database Appliance and install the Virtualization Platform ISO image:

- 1. Log in as root with the password welcome1.
- To verify that a system is a bare metal system, enter the command odaadmcli show env_hw



```
# odaadmcli show env_hw
BM ODA X7-2-HA
```

The system is configured as a bare metal system when the command is valid and returns output that is prefixed with BM, for bare metal.

If the system is configured as a virtualized platform, the command odaadmcli show env_hw is invalid.

3. To verify that a system is a virtualized platform, enter the command oakcli show env_hw.

```
# oakcli show env hw
VM-ODA_BASE ODA X7-2-HA
```

The system is configured as a virtualized system when the command is valid and returns output that is prefixed with the string VM-ODA BASE. For example, the output of the following command shows that the platform is configured with a virtual machine environment (VM-ODA BASE) and identifies the hardware platform (ODA X7-2-HA):

```
# oakcli show env hw
VM-ODA_BASE ODA X7-2-HA
```

If the system is configured as a bare metal platform, then the command oakcli show env hw is invalid.

5.3 Installing a Virtualized OS ISO Image

Reimage Oracle Database Appliance with a virtualized operating system image on both nodes and configure the initial public network.

Oracle Database Appliance ships from the factory with a default OS image. Use the Oracle Database Appliance Virtualized OS ISO Image to reimage the Oracle Database Appliance for Virtualized Machine Restore before deploying the Oracle Database Appliance Virtualized Platform Template.

WARNING:

Oracle Database Appliance Virtualized OS image formats the local disks, which will result in loss of data that was previously stored on the Local and Shared storage. After re-install and deployment steps are completed, it might be necessary to restore data from backup.

Oracle Database Appliance ships with various components, including Oracle Integrated Lights Out Manager (ILOM) to help manage the system remotely. This procedure describes how to use ILOM to reimage the operating system; however, you can choose to use Preboot Execution Environment (PXE) or other methods instead of ILOM.

When you reimage a new Oracle Database Appliance with the Virtualized OS ISO image, you must set up the initial network. The command oakcli configure firstnet runs an interactive script to create an initial network, which enables you to download the deployment software. Be prepared to provide IP addresses for Node0 and Node1 to configure the network interface. While not required, you also have the option to configure DHCP.



Reimaging is node-specific. You must reimage both nodes. You can reimage both nodes at the same time.

Before reimaging the system, verify that the system is not already configured with a virtual machine.

Perform the following steps to reimage Oracle Database Appliance and install the Virtualized OS ISO image on both nodes and configure the initial network:

- Download patch 16186163 for the Oracle Database Appliance 12.2.1.1.0 Virtualized OS ISO Image.
 - a. From an external client machine, log on to My Oracle Support.
 - Locate patch 16186163 for the Oracle Database Appliance Virtualized OS ISO Image.

https://updates.oracle.com/download/16186163.html

- c. Select the patch version for release 12.2.1.1.0.
- d. Click **Download** to download the zip file onto your external client.

```
p16186163_122110_Linux-x86-64.zip
```

e. Use either a Secure Copy (scp) command or a USB storage device to copy the ODA_BASE template from the external client to dom0 on Node0. Use the /OVS directory as the target location.



If you use a USB drive to transfer the file, then format it first as FAT32, ext3, or ext4. NTFS file formats are not supported.

f. Extract the files.

```
# oakcli unpack -package /tmp/ p12999313_122110_Linux-x86-64.zip
```

Open a browser and connect to Oracle Integrated Lights Out Manager (ILOM) on Node0 as root.

The Summary home page appears.

- Launch the Remote Console.
 - a. Expand Remote Control in the left navigation.
 - b. Click the **Redirection** tab.
 - c. Click Launch Remote Console.

The state of the system determines what appears on the Console page.

4. Add the Virtualized OS ISO Image.

a. Click the **Devices** tab, then select **CD-ROM**.

Afile browser on the local client opens.

- **b.** Browse to the Oracle Database Appliance Virtualized OS ISO Image, highlight the image, then click **Open**.
- 5. Configure the CD-ROM as the next boot device.
 - **a.** Expand **Host Management** in the left menu of the ILOM Remote Console tab.
 - b. Click Host Control.
 - c. Select **CDROM** from the Next Boot Device menu, then click **Save**.
- 6. Power cycle the system.
 - a. Click Power Control in the Host Management menu.
 - b. Select Power Cycle.

When the node comes back after the power cycle, reimaging starts automatically.

It can take a couple of hours to reimage. The Running Post-Install scripts page is a static page and might give the impression that the reimaging process is not progressing. The post-install process during reimaging will wait until the synchronization between the partitions of the two mirrored local hard disks is complete, which can take 15 to 20 minutes to complete.

To check the progress of resynchronization, press the ALT-F2 key combination to open a second console and enter the following command:

```
# cat /proc/mdstat
```

When the resynchronization is complete, reimaging is completed and the machine restarts.

7. Repeat Steps 1 through 6 for Node1.

Reimaging is node-specific. You must reimage both nodes.

8. Verify that the host name in the Console is oak1 for Node0 and oak2 for Node1.

If the host name is something other than oak1 or oak2, then reboot the node. You might need to reboot more than once.

Once the image is completed on **both** nodes, you will see the screen with oak1 for Node0 (sc0).

 Use the command oakcli configure firstnet to configure a global network using bond0.

The global configuration sets the initial public network for both the nodes on Oracle Database Appliance, enabling you to download the deployment software onto the appliance.



When the initial public network setup is completed, download and install the Virtualized Platform Template (ODA_BASE).

Related Topics

Determining if the System is Configured with a Virtualized OS Image

5.4 Installing the Virtualized Platform Template and Deploying the Appliance

Use the Virtualized Platform Template to deploy the ODA_BASE domain for a virtualized platform and then deploy the appliance.

The template includes the Oracle Grid Infrastructure and Oracle Database clone files. When you install, or deploy, Oracle Database Appliance Virtualized Platform Template, the template is automatically deployed on both nodes and your system is configured with two domains on each server node: Dom0 and ODA_BASE (also known as Dom1).

As part of deploying the Virtualized Platform Template, be prepared to provide the following configuration details:

- Number of core licenses that you need. If you enter six (6), then 6 CPU cores are licensed on each server for a total of 12 CPU cores. The maximum is 18 cores per server.
- Amount of memory needed for the ODA_BASE. The memory is used for the database. It is important that you select a sufficient amount of memory.
- Define virtual area networks (VLANs). You can use the command oakclicreate vlan to create a VLAN network, including the VLAN name, identifier, and node location. As part of the install script, you are prompted to create additional VLANs, as needed.

After installing the Virtualized Platform Template, launch the Oracle Database Appliance Manager Configurator (Configurator) to configure and deploy the appliance.

The standalone Configurator enables you to complete your configuration details and validate your network on a client system, and then create a configuration file of your settings before you reimage and deploy the virtualization template. You can use the configuration file to pre-populate the fields in either the offline or online Configurator for future deployments. When using the configuration file, you still have the ability to edit individual fields before deploying the configuration on your appliance.

If you need to make corrections before deployment, then rerun the standalone Configurator, load your configuration file, make the changes, and save the file again.



Do not use a configuration file created for an earlier version of Oracle Database Appliance Manager Configurator. If you do not have a current configuration file, then complete a real-time configuration and deployment or download the offline Configurator and create a configuration file.



Before installing the template, confirm that the system has the Virtualized OS ISO image. Installing the template requires that the system is imaged with the Oracle Database Appliance Virtualized Platform OS ISO image on both nodes and has an initial network. After you install the Virtualized OS ISO image, you configure the initial public network on both nodes for Dom0. Then, install the Virtualized Platform Template and configure the network for ODA_BASE.

Note:

Use the command oakcli configure firstnet only during deployment to configure the initial network for DomO and ODA_BASE on Oracle Database Appliance. Using the command after configuring the initial network can cause unpredictable changes to your network settings.

Note:

The Oracle Integrated Lights Out Manager (ILOM) client must be on at least version jre-7-linux-i586.rpm to be able to launch the remote console.

While not required, it is recommended that you download the standalone Configurator and create a configuration file before deploying the appliance. This procedure assumes that you created a valid configuration file as part of preparing for your Oracle Database Appliance installation and deployment.

- 1. Download and copy the template files to the /OVS directory on dom0 (Node 0).
 - a. From an external client machine, log on to My Oracle Support and download Patch Number 16186172 to obtain the Oracle Database Appliance Oracle Database Appliance VM Template.

https://updates.oracle.com/download/16186172.html

- **b.** Select the latest version from the menu.
- c. Click **Download** for each of the zip files to download the current Oracle Database Appliance template onto your external client.
- 2. Copy the template files to the /OVS directory on Node 0 (oak1-dom0).
 - a. Use either a Secure Copy (scp) command or a USB storage device to copy the ODA_BASE template from the external client to dom0 on Node 0. Use the /OVS directory on Node 0 (oak1-dom0) as the target location.

Note:

If you use a USB drive to transfer the file, then format it first as FAT32, ext3, or ext4. NTFS file formats are not supported.

- b. Log into dom0 as root on Node 0 of Oracle Database Appliance. Remain logged in to dom0 while you complete the remaining steps in this task.
- c. From the /OVS directory, use the unzip command to extract the zip files.



```
unzip p16186172_12.2.1.1.0_Linux-x86-64_1of3.zip unzip p16186172_12.2.1.1.0_Linux-x86-64_2of3.zip unzip p16186172_12.2.1.1.0_Linux-x86-64_3of3.zip
```

When extracted, you will have the following files: oda_base_12.2.1.1.0.gz01, oda_base_12.2.1.1.0.gz02, and oda_base_12.2.1.1.0.gz03.

d. Use the cat command to concatenate the files into a single file.

The file name is determined by the version. Ensure that you use the correct file name from the download. Do not change the file name.

```
cat oda_base_12.2.1.1.0.gz01 oda_base_12.2.1.1.0.gz02 oda_base_12.2.1.1.0.gz03 oda_base_12.2.1.1.0.tar.gz
```

Make note of the file name and location, you will enter the following in the next Step: /ovs/oda_base_12.2.1.1.0.tar.gz

3. Define the virtual local area network (VLAN) and deploy ODA_BASE from the /opt/oracle/oak/bin/ directory. When prompted, enter the absolute path and file name for the template file that you created in the previous step, core licensing, and the base domain memory allocation.

The deploy oda_base option automatically deploys ODA_BASE on both nodes.

Values, such as the number of available CPU cores and default memory, differ between Oracle Database Appliance Virtualized Platform hardware platforms. The following excerpt is an example that creates a VLAN named v1200 with a vlanID of 200 using the bond0 interface. The example defines 20 CPU cores, which means that 20 CPU cores are licensed on each node for a total of 40 CPU cores, and uses the default memory.

```
# /opt/oracle/oak/bin/oakcli create vlan vl200 -vlanid 200 -if bond0
Created vlan vl200
# /opt/oracle/oak/bin/oakcli deploy oda_base
Enter the template location: /OVS/oda_base_12.2.1.1.0.tar.gz
Core Licensing Options:
 1. 2 CPU Cores
 2. 4 CPU Cores
 3. 6 CPU Cores
  4. 8 CPU Cores
 5. 10 CPU Cores
  6. 12 CPU Cores
 7. 14 CPU Cores
 8. 16 CPU Cores
  9. 18 CPU Cores
 10. 20 CPU Cores
 11. 22 CPU Cores
 12. 24 CPU Cores
 <continued ...>
  Selection[1 .. 37] (default 74 CPU Cores): 10
INFO: Using the 20 cores
   DA base domain memory in GB(min 16, max 244)[default 244]: 244
INFO: Using default memory size i.e. 244 GB
Additional vlan networks to be assigned to oda_base ? (y/n) [n]:
INFO: Deployment in non local mode
INFO: Verifying active cores on local node
INFO: Verified active cores on local node
INFO: Verifying active cores on remote node
NFO: Verified active cores on remote node
INFO: Running the command to copy the template /OVS/oda_base_12.2.1.1.0.tar.gz
```



```
to remote node 1
                           100% 7475MB 62.8MB/s 01:59
oda_base_12.1.2.12.tar.gz
INFO: Spawned the process 17728 in the deployment node 0
INFO: Spawned the process 17729 in the node 1
INFO: Validating LSI HBA PCI Cards on node 0
INFO: Validating LSI HBA PCI Cards on node 0
INFO: Validating LSI HBA PCI Cards on node 1
INFO: Validating LSI HBA PCI Cards on node 1
INFO: Deployment in local mode
INFO: Deployment in local mode
templateBuild-2017-02-14-23-51/swap.img
templateBuild-2017-02-14-23-51/swap.img
templateBuild-2017-02-14-23-51/System.img
templateBuild-2017-02-14-23-51/System.img
templateBuild-2017-02-14-23-51/u01.img
templateBuild-2017-02-14-23-51/u01.img
INFO: Extracted the image files on node 1
INFO: The VM Configuration data is written to /OVS/Repositories/odabaseRepo/
VirtualMachines/oakDoml/vm.cfg file
INFO: Running /sbin/losetup /dev/loop0 /OVS/Repositories/odabaseRepo/
VirtualMachines/oakDom1/System.img command to mount the image file
INFO: Mount is successfully completed on /dev/loop0
INFO: Extracted the image files on node 0
INFO: Validated domO and odabase version
INFO: Making change to the /OVS/Repositories/odabaseRepo/VirtualMachines/oakDoml
/tmpmnt/boot/grub/grub.conf file
INFO: Assigning IP to the second node...
INFO: The VM Configuration data is written to /OVS/Repositories/odabaseRepo/
VirtualMachines/oakDoml/vm.cfg file
INFO: Running /sbin/losetup /dev/loop0 /OVS/Repositories/odabaseRepo/
VirtualMachines/oakDom1/System.img command to mount the image file
INFO: Mount is successfully completed on /dev/loop0
INFO: Created oda base pool
INFO: Validated domO and odabase version
INFO: Making change to the /OVS/Repositories/odabaseRepo/VirtualMachines/oakDom1
/tmpmnt/boot/grub/grub.conf file
INFO: Assigning IP to the first node...
INFO: Created oda base pool
INFO: Starting ODA Base...
INFO: Starting ODA Base...
Using config file "/OVS/Repositories/odabaseRepo/VirtualMachines/oakDoml/vm.cfg"
Started domain oakDom1 (id=1)
INFO: Storing the odabase configuration information
Using config file "/OVS/Repositories/odabaseRepo/VirtualMachines/oakDoml/vm.cfg"
Started domain oakDom1 (id=1)
INFO: Storing the odabase configuration information
```

The ODA_BASE setup is complete.

- 4. Verify that your deployment of ODA_BASE is valid and that ODA_BASE is configured.
 - Run the command xm list to confirm that ODA_BASE is configured. When properly deployed, oakDom1 appears in the output with your configured memory and vcpus.



```
Domain-0
                                       0 4096
482672.4
                                       2 32768 4 -b----
oakDom1
132134.6
```

Run the command oakcli show oda base

```
# /opt/oracle/oak/bin/oakcli show oda base
ODA base domain
ODA base CPU cores :2
ODA base domain memory :32
ODA base template :/OVS/oda_base_12.2.1.1.0.tar.gz
ODA base vlans :[ 'priv1', 'net1']
ODA base current status : Running
```

5. Validate that the cabling is connected correctly.

```
# oakcli validate -c storagetopology
```

The command displays errors if the cables between the two nodes and the storage shelf or shelves are not in the correct sockets.



Caution:

Do not ignore any errors or warnings in the output. If the cabling validation fails, connect the cables correctly and rerun the command until the command runs without any errors or warnings. Do not deploy Oracle Database Appliance until the cabling is correct.

If the output includes a warning for jbod nickname, then run the command from the first node to correct the warning. Rerun the command again to verify that the command runs without the warning.

```
SUCCESS: Overall Cable Validation on Nodel
WARNING: JBODO Nickname is incorrectly set to: Oracle Database Appliance - E1
WARNING: JBOD1 Nickname is incorrectly set to: Oracle Database Appliance - E0
INFO : Above details can also be found in log
file=/tmp/StorageTopology-2015-05-13-15:03:36_29149_8856.log
```

- 6. Connect to ODA_BASE using vncviewer or vncsession using the dom0 host name and port 5900 (oak1-dom0:5900).
- 7. Use the oakcli configure firstnet to configure an initial public network on the first node (Node 0) to complete the ODA BASE deployment.
 - a. ssh to 192.168.16.27 from oak1-dom0
 - **b.** Log in as root user, with password welcome1.
 - c. Run the command oakcli configure firstnet from the /opt/ oracle/oak/oakcli directory.
 - # /opt/oracle/oak/oakcli configure firstnet
 - d. Enter the ODA_BASE (Node 0) network information.

The command uses an interactive script and prompts you for the information needed to configure the network. Enter values based on your environment requirements.



When prompted to configure the network nodes as global or local, select global. The default is global, which configures the network on both nodes. The local option only configures the network on the logged-on node.

Configure net1 as the network interface.

```
# /opt/oracle/oak/bin/oakcli configure firstnet
Configure the network for the node(s)(local, global) [global]: global
The network configuration for both nodes: Domain Name: example.com
DNS Server(s): Primary Dns Server: <enter your primary DNS server>
                        Secondary Dns Server: <enter your secondary DNS
server>
                        Tertiary Dns Server: <enter your tertiary DNS server>
Node Name
              Host Name
              host1-dom0 <- odahostname1
              host2-dom0 <- odahostname2
Choose the network interface to configure (net1, net2) [net1]: net1
Configure DHCP on net1 (yes/no) [no]:
You have chosen static configuration on net1
Enter the IP address for net1 on Node 0: 192.0.2.1
Enter the IP address for net1 on Node 1: 198.51.100.1
Netmask for net1: 255.255.252.0
Gateway Address for net1 [<Gateway IP>]: 192.0.0.1
Plumbing the IPs now on Node 0 ... INFO: Restarting the network now on Node 0 ...
dom0.xml
                                            100% 860 0.8KB/s 00:00
......
```

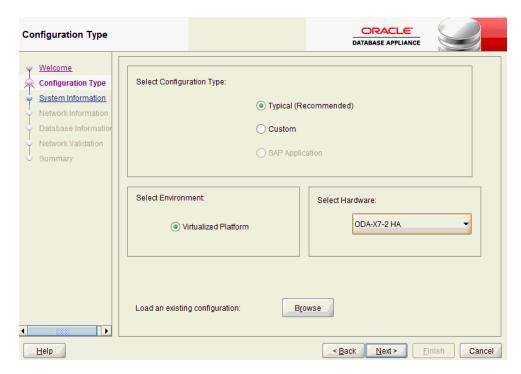
The IP address is plumbed and the network is restarted on each node.

- Deploy the Oracle Grid Infrastructure and Oracle Database software on the appliance.
 - Connect to ODA_BASE (Node 0) in the vncsession.
 - b. Navigate to the /opt/oracle/oak/bin directory and execute the command oakcli deploy to start the Oracle Database Appliance Manager Configurator.
 - # /opt/oracle/oak/bin/oakcli deploy

The Oracle Appliance Manager Welcome window opens.

- Click Next on the Oracle Appliance Manager Welcome window.
- 10. Complete the Configuration Type.
 - If you want to use a configuration file that you created earlier with this version
 of the Configurator, then click Browse and locate the file on your client. Click
 Next
 - If you do not have a configuration file, select the Typical configuration type and select the hardware model ODA-X7-2 HAfrom the menu. Click Next.





- **11.** Enter or review the configuration details for your system, network, and database information. For details, see "Running the Standalone Oracle Database Appliance Configurator".
- 12. Validate your network on the Network Validation page.
 - a. Click **Run Validations** to perform network validation.
 - **b.** Click **Save Validation Output** to save the validation output.
 - c. Click Next
- **13.** On the Summary page, review your configuration options and deploy your configuration.
 - a. (Optional) Click Save to save the configuration file.
 - b. Click **Install** to deploy the configuration.

The deployment can take an hour to complete. Monitor the install progress. When the deployment is complete, go to the next step.

- 14. Validate the deployment by executing the oakcli show version -detail command on ODA_BASE (Node 0).
 - # /opt/oracle/oak/bin/oakcli show version -detail

The output displays the System Version, Component Name, Installed Version, and Supported Version for each of the components.

Related Topics

- https://updates.oracle.com/download/16186172.html
- Running the Standalone Oracle Database Appliance Configurator (page 2-17)
 Download and run the standalone Oracle Database Appliance Configurator to
 create a configuration file for the Oracle Database Appliance Virtualization
 Platform.



Cleanup Script for a Virtualized Platform Deployment (page D-2)
 If you encounter problems with a Virtualized Platform deployment, clean up the existing deployment before starting a new ODA_BASE deployment.



6

Oracle Database Appliance Postinstallation Tasks

Complete these administrative tasks after you have deployed software, but before the system is operational.

- Changing the Oracle Installation Owner Passwords (page 6-1)
 You must change the default administrative account passwords after installation to secure your system.
- Changing the oda-admin User Password (page 6-1)
 Use the odacli-adm set-credential command to change the oda-admin user password to restrict access to the Oracle Appliance Manager Web Console.

6.1 Changing the Oracle Installation Owner Passwords

You must change the default administrative account passwords after installation to secure your system.

During deployment, the root and database users sys, system and pdbadmin are set to the master password. After deployment, the oracle and grid passwords are set to welcomel. Change the passwords to comply with your enterprise user security protocols.

Refer to the *Oracle Database Appliance Security Guide* and *Oracle Database Security Guide* for information about the required configuration and best practices to secure database systems.

6.2 Changing the oda-admin User Password

Use the odacli-adm set-credential command to change the oda-admin user password to restrict access to the Oracle Appliance Manager Web Console.

Oracle Database Appliance is configured with a default user name, oda-admin, and password welcomel. The credentials enable access to the Web Console. After deploying the appliance, Oracle recommends resetting the oda-admin user password.



Only root user can reset the oda-admin user credentials.

- 1. Log in to the appliance as root.
- 2. Run the odacli-adm set-credential command to reset the password. Enter the new password when prompted.
 - # odacli-adm set-credential --password --username oda-admin
 Agent password: new password

Related Topics

odacli-adm set-credential (page 13-65)
Use the odacli-adm set-credential command to change the oda-admin user credentials.



7

Updating Oracle Database Appliance Software

To keep Oracle Database Appliance running with the latest software, check for and apply Oracle Database Appliance patch bundles when they are released.

Performing a Bare Metal Restore (page 7-1)
 Reimage Oracle Database Appliance to perform a bare metal restore of Oracle Database Appliance.

7.1 Performing a Bare Metal Restore

Reimage Oracle Database Appliance to perform a bare metal restore of Oracle Database Appliance.

- About Performing a Bare Metal Restore (page 7-1)
 Bare metal operating system (OS) re-imaging installs Oracle Database Appliance operating system software on the local (boot) drive.
- Re-imaging Oracle Database Appliance (page 7-2)
 Re-image Oracle Database Appliance to perform a bare metal restore of Oracle Database Appliance.

7.1.1 About Performing a Bare Metal Restore

Bare metal operating system (OS) re-imaging installs Oracle Database Appliance operating system software on the local (boot) drive.

Bare Metal is a non-virtualized Oracle Database Appliance configuration. Oracle Database Appliance ships from the factory with a bare metal configuration, default ISO image and Appliance Manager installed.

Use the OS ISO Image to restore the OS to the "shipped from factory" state. Use only when necessary. Reimaging does not patch the firmware or update the component versions, it only re-images the local system disk from an OS perspective. After imaging is completed, redeploy the End User image, then restore from backup, as needed.

The following are some of the reasons that you might want to reimage to perform a bare metal restore:

- Deploy Bare Metal with latest Oracle Database Appliance software.
 - In some cases, the Oracle Database Appliance machine is shipped from the factory with an earlier release of Oracle Database Appliance software. To deploy the machine with the latest software, you can perform an update or you can reimage the machine.
- Roll back to an earlier version of Oracle Database Appliance software.

Re-imaging with older release of Oracle Database Appliance software does not rollback the firmware version.

Use the Oracle Integrated Lights Out Manager (ILOM) interface to reimage the Oracle Database Appliance node.

7.1.2 Re-imaging Oracle Database Appliance

Re-image Oracle Database Appliance to perform a bare metal restore of Oracle Database Appliance.

Bare metal restore uses Oracle Integrated Lights Out Manager (ILOM) to re-image the Oracle Database Appliance node. The ILOM must be configured before performing a bare metal restore or re-image. Generally, the ILOM is configured as part of readying for deploying Oracle Database Appliance.

Download the Oracle Database Appliance Bare Metal ISO image to your local machine before you launch the ILOM console.

 Open a browser and connect to Oracle Integrated Lights Out Manager (ILOM) on Node 0 as root. The default password is changeme.

https://ilom-ip-address

- 2. Launch the Remote Console.
 - a. Expand **Remote Control** in the left navigation.
 - b. Click the **Redirection** tab.
 - c. Click Launch for the Remote Console in the Actions menu.

The state of the system determines what appears on the Console page.

- Add the image.
 - a. Click the KVMS tab, then select Storage.
 - b. Click Add.
 - **c.** Browse to the Oracle Database Appliance Bare Metal ISO Image, highlight the image, then click **Select**.
 - d. Click Connect.

The mounting of the ISO image is successful when the **Connect** button changes to a **Disconnect** button.

e. Click OK

The CD-ROM icon in the top right corner is highlighted.

- 4. Configure the CD-ROM as the next boot device.
 - a. Expand Host Management in the left menu of the ILOM Remote Console tab.
 - b. Click Host Control.
 - c. Select **CDROM** from the Next Boot Device menu, then click **Save**.
- **5.** Power cycle the node.
 - a. Click Power Control in the Host Management menu.
 - b. Select Power Cycle, then click Save.

When the node comes back after the power cycle, re-imaging starts automatically. The Oracle Linux page appears, followed by the Running Post-Install scripts page.

The Running Post-Install scripts page is a static page and might give the impression that the re-imaging process is not progressing. The post-install process

during re-imaging will wait until the synchronization between the partitions of the two mirrored local hard disks is complete, which can take 15 to 20 minutes to complete.

To check the progress of re-synchronization, press the ALT-F2 key combination to open a second console and enter the following command:

cat /proc/mdstat

When the re-synchronization is complete, re-imaging is completed and the machine restarts.

After the machine restarts, the system is ready for you to deploy the Oracle software on the appliance to create an Oracle Database Appliance bare metal platform.



Managing Oracle Databases

Manage the Oracle Databases on your Oracle Database Appliance. For an Oracle Database Appliance Virtualized Platform, see the <code>oakcli</code> commands for managing the databases.

- Administrative Groups and Users on Oracle Database Appliance (page 8-1)
 Oracle Database Appliance Web Console deployment creates operating system groups and users whose members are granted system administration privileges on the appliance.
- Data Migration and Management and Oracle Database Appliance (page 8-2)
 Oracle Database Appliance supports the use of standard Oracle Database loading and migration tools.
- Working with Databases (page 8-3)
 Use the Web Console to display a list of databases, database details, and create and delete databases.
- Working with Database Homes (page 8-7)
 Use the Web Console to display a list of database homes, details, and create and delete database homes.
- About Managing Multiple Database Instances Using Instance Caging (page 8-11)
 Use instance caging to manage your system resources on Oracle Database
 Appliance.
- Oracle EM Express and DB Console (page 8-12)
 You can use Oracle Enterprise Manager Database Express (EM Express), or the Database Control Console (DB Console) to manage your database.

8.1 Administrative Groups and Users on Oracle Database Appliance

Oracle Database Appliance Web Console deployment creates operating system groups and users whose members are granted system administration privileges on the appliance.

During configuration, two administrative accounts are created for Oracle Database Appliance: the user <code>grid</code>, with a user ID (UID) of 1001, and the user <code>oracle</code>, with a UID of 1000. The user <code>grid</code> is the Oracle Grid Infrastructure installation owner. The user <code>oracle</code> is the Oracle Database installation owner, and the owner of all Oracle Database homes (Oracle homes). By default, these users are members of operating system groups whose members are granted privileges to start up and administer Oracle Database and Oracle Automatic Storage Management.

The following table describes the Oracle system privileges groups, and information about the operating system authentication groups:

Oracle System Group Name Group ID grid is a oracle is a **Privileges** (GID) member member Oracle Inventory group 1001 yes (primary oinstall yes (primary (OINSTALL) group) group OSOPER for dbaoper 1002 yes dbaoper yes group OSDBA group dba 1003 no yes OSASM Group for Oracle 1004 asmadmin yes no ASM OSOPER for ASM group 1005 asmoper yes no OSDBA for ASM group asmdba 1006 yes yes

Table 8-1 Operating System Groups and Users on Oracle Database Appliance

To change the Group Name and GID from the default values on Oracle Database Appliance bare metal platforms, change the default values from the Web Console during the deployment. If you create an initial database during deployment, then the password for the SYS and SYSTEM users is the Master Password that you set in the Web Console.

To change the Group Name and GID from the default values on the Oracle Database Appliance X7-2-HA Virtualized Platform, use the <code>-advance</code> parameter with the command <code>oakcli deploy</code>. If you create an initial database during deployment, then the password for the SYS and SYSTEM users is the ROOT password from the Configurator.



Change the password for both users as soon as possible after configuration to prevent unauthorized access to your database using these privileged accounts.

8.2 Data Migration and Management and Oracle Database Appliance

Oracle Database Appliance supports the use of standard Oracle Database loading and migration tools.

If you are loading data or migrating data from an existing database to Oracle Database Appliance, then you can use the standard Oracle Database loading and migration tools. These tools include the following:

- Oracle GoldenGate
- SQL*Loader
- Oracle Data Pump
- transportable tablespaces
- RMAN



You can also use the RMAN utility to back up and recover databases on Oracle Database Appliance.

8.3 Working with Databases

Use the Web Console to display a list of databases, database details, and create and delete databases.

- Viewing Databases (page 8-3)
 Use the Oracle Appliance Manager Web Console to display a list of Oracle databases and database details, create, upgrade, and delete a database in Oracle Database Appliance.
- Creating a Database (page 8-4)
 Use the Oracle Appliance Manager Web Console to create a database in Oracle Database Appliance.
- Upgrading a Database (page 8-6)
 Use the Oracle Appliance Manager Web Console to upgrade an Oracle database to a different database home version.
- Deleting a Database (page 8-7)
 Use the Oracle Appliance Manager Web Console to delete an Oracle database.

8.3.1 Viewing Databases

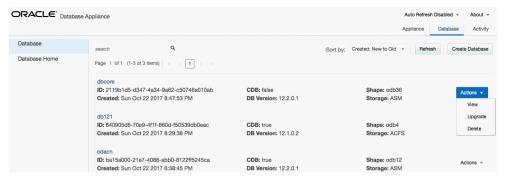
Use the Oracle Appliance Manager Web Console to display a list of Oracle databases and database details, create, upgrade, and delete a database in Oracle Database Appliance.

On the Oracle Database Appliance Virtualized Platform, see the command oakcli list databases.

Log into the Web Console:

https://host name or ip-address:7093/mgmt/index.html

Click the Database tab.



- (Optional) Click the database name, in blue font, to display more details about the database.
- (Optional) Click Actions next to a database entry to view more details, upgrade or delete the database.



8.3.2 Creating a Database

Use the Oracle Appliance Manager Web Console to create a database in Oracle Database Appliance.



For Oracle Database Appliance X7-2-HA Virtualized Platforms, see the command oakcli create database to create additional databases.

The Web Console provides a quick and easy method of creating new databases. The Create New Database page in the Web Console is populated with default options for most of the configuration options. Drop-down lists enable you to quickly view and select from a list of available options. You can use the drop-down list to create a new database Oracle Database Home (ORACLE_HOME) for the database or select an existing ORACLE HOME that you created earlier.



You cannot mix Oracle Database Standard Edition and Enterprise Edition databases on the same appliance. Your license determines the database edition that you are eligible to create in the appliance.

Oracle Database 12.x is supported on both Oracle Automatic Storage Management (Oracle ASM) and Oracle ASM Cluster file system (ACFS). Oracle Database 11.2 is only supported on Oracle ACFS. When databases are created in Oracle ACFS, each database is configured with its own Oracle ACFS file system for the datafiles and uses the following naming convention: /u02/app/db user/oradata/db unique name. The default size of this mount point is 100 GB.

The fields in the Web Console adjust, depending on which database version you select. For example, if you select database version 11.2.0.4.x, the storage field does not appear in the Web Console because Oracle ACFS is the only option available.

1. Log into the Web Console:

https://host-ip-address:7093/mgmt/index.html

- 2. Click the Database tab.
- 3. Verify that Auto Refresh Disabled appears on the page.
- Click Create Database to display the Create New Database page.
- 5. Enter the following information on the Create New Database page to configure the database:
 - a. In the **DB Name** field, enter a name for the database. The name *db1* appears in the field as an example of a database name, but the field is not populated. You must enter a name.

The name must contain lowercase alphanumeric characters and cannot exceed 8 characters. The Oracle system identifier (SID) is always set to the database name.



- **b.** (Optional) In the **DB Unique Name** field, enter a name to define a unique name for the database.
- c. In the Use Existing DB Home field, select Yes or No.
- d. In the **DB Version** field, select a database bundle patch number from the drop-down list.

Available database versions with available clones appear in the list in descending order. Supported versions that are not available in the repository appear in light gray font at the bottom of the list. Search is available for the list. To add a supported version to the repository, download the clone file.

- e. For the CDB option on Oracle Database version 12, select Yes or No, depending on whether or not you want the database to be a container database (CDB). The default is Yes. This option is not available for Oracle Database version 11.
- f. In the **PDB Name** field, enter a name for the pluggable database (PDB). This field is not available for Oracle Database version 11.

Alphanumeric characters and underscore (_) are valid. The name must begin with an alphanumeric character and cannot exceed 30 characters. The name pdb1 appears in the field in italic text as an example, but it is not populated. You must enter a name.

g. In the **PDB Admin User** field, enter a name. This field is not available for Oracle Database version 11.

The field shows pdbadmin as an example, you must enter a name. Alphanumeric characters and underscore () are valid.

- h. In the Database Edition field, enter the edition for which you have a license, either **Enterprise Edition** or **Standard Edition**.
- i. In the **Shape** field, select a database shape from the drop-down list. The shape determines the number of cores and total memory allocated to the database. The default is odb1 (1 Core, 8 GB Memory).
- j. In the Database Class field, select a database class from the drop-down list. If an option is not available in the list, it is not supported for the database edition on the Oracle Database Appliance or the version that you selected. The default is OLTP.
- k. In the **Storage** field, select ACFS or ASM from the drop-down list. The default is Oracle ACFS. For Oracle Database version 11, Oracle ACFS is the only option and the field does not appear in the Web Console.
- For the Configure EM Express or Configure EM Console option, select Yes or No. The default is No.

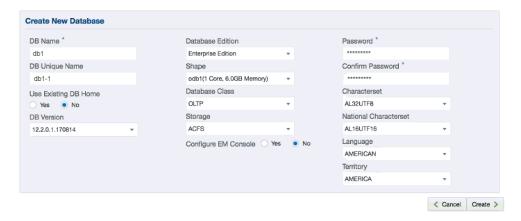
Select **Yes** to configure the Oracle Enterprise Manager Database Express (EM Express) console for Oracle Database 12.x or the Database Control Console (DB Console) for Oracle Database 11.2.0.4. Selecting **Yes** enables you to use the console to manage the database.

- m. In the Password field, enter the password for thesys, system, and PDB Admin.
 - The password must begin with an alpha character and cannot exceed 30 characters. Ouotation marks are not allowed.
- **n.** In the Confirm Password field, enter the password again to confirm.



- In the Characterset field, select an option from the drop-down list. The default is AL32UTF8.
- p. In the National Characterset field, select an option from the drop-down list. The default is AL16UTF16.
- **q.** In the **Language** field, select a database language from the drop-down list. The default is American.
- r. In the **Territory** field, select a territory or location for the database from the drop-down list. The default is America.

The image shows the fields completed to create a new database. The DB Name is db1 and the DB Unique Name is db1-1. Use Existing DB Home is No and the DB version is 12.2.0.1.170814. The Database Edition is Enterprise Edition, the shape is odb1 (1 Core, 6.0 GB Memory), the Database Class is OLTP, and the Storage is ACFS. database is a container database. The pluggable database (PDB) name is pdb1 and the PDB Admin User is pdbadmin. The Characterset is AL32UTF8, the National Characterset is AL16UTF16, the Language is American, the Territory is America. The database is not configured for EM Console.



Click Create. When prompted, click Yes to confirm that you want to start the job to create the database.

The job is submitted and a confirmation page appears with a link to the job. Click the link to view the job progress, tasks, and status.

After you close the Job confirmation page, you can click the **Activity** tab to monitor the job progress. Click the job number to view the tasks and status details. Click **Refresh** to refresh the page. If you are creating other configuration or provisioning jobs, do not turn on auto refresh. When auto refresh is turned on, your input is lost if the page refreshes before you submit your configuration.

8.3.3 Upgrading a Database

Use the Oracle Appliance Manager Web Console to upgrade an Oracle database to a different database home version.

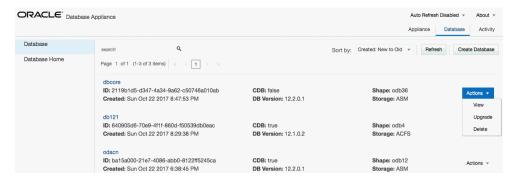
Before upgrading to a different database home, you must upload the RDBMS database version to the repository and create the database home.

1. Log into the Web Console:

https://host name or ip-address:7093/mgmt/index.html



Click the Database tab.



- 3. Click **Actions** next to the database that you want, then select **Upgrade**.
- Select the destination database home version from the list of available versions, then click **Upgrade**.

8.3.4 Deleting a Database

Use the Oracle Appliance Manager Web Console to delete an Oracle database.

1. Log into the Web Console:

```
https://host name or ip-address:7093/mgmt/index.html
```

- 2. Click the **Database** tab.
- 3. Click **Actions** next to the database that you want, then select **Delete**.
- 4. Confirm the action.

8.4 Working with Database Homes

Use the Web Console to display a list of database homes, details, and create and delete database homes.

- About Managing Multiple Oracle Homes on Oracle Database Appliance (page 8-8)
 - Create and manage one or more Oracle home directories and Oracle databases on Oracle Database Appliance.
- Downloading an RDBMS Clone File (page 8-9)
 Download an Oracle Database Appliance RDBMS Clone file onto your local machine to create a new database home.
- Viewing Database Homes (page 8-10)
 Use the Web Console to display a list of database homes and database home details, including databases associated with a DB home.
- Creating a Database Home (page 8-10)
 Use the Web Console to create database homes in Oracle Database Appliance.
- Deleting a Database Home (page 8-11)
 Use the Web Console to delete an Oracle database home.



8.4.1 About Managing Multiple Oracle Homes on Oracle Database Appliance

Create and manage one or more Oracle home directories and Oracle databases on Oracle Database Appliance.

Oracle home is the directory in which you install Oracle Database binaries, and from which Oracle Database runs. Oracle Database Appliance supports multiple Oracle homes, including support of different release Oracle Database homes. You can create multiple Oracle databases on a given Oracle home. Use Oracle Appliance Manager Web Console to create and manage multiple Oracle homes and databases on Oracle Database Appliance. Oracle Database Appliance Manager automatically creates an Oracle Database Oracle home that is compliant with Oracle's Optimal Flexible Architecture (OFA) standards.

Note:

For Oracle Database Appliance X7-2-HA Virtualized Platforms, use the command <code>oakcli</code> <code>create</code> <code>dbhome</code> or the command <code>oakcli</code> <code>delete</code> <code>dbhome</code> to manage database homes. The Web Console is not available for virtualized platforms.

Check the *Oracle Database Appliance Release Notes* to obtain information about the specific Oracle software releases supported for your Oracle Database Appliance platform.

When you use ODACLI commands to create multiple homes on Oracle Database Appliance, the commands start the Oracle Home cloning process. In Oracle Database Appliance deployments, the user oracle is the default software installation owner.

Note:

If you are not upgrading from an earlier release, then download the Oracle Database Appliance software for the Oracle Database version that you want to install.

For Oracle Database Appliance X7-2-HA Virtualized Platforms, see the command oakcli create database to create additional databases.

You can use the Web Console or the command-line interface to create and manage databases.

Note:

For Oracle Database Appliance X7-2-HA Virtualized Platforms, use the command <code>oakcli</code> <code>create</code> database to create and manage databases. The Web Console is not available for virtualized platforms.

Use ODACLI commands to create, list, describe, and delete databases on Oracle Database Appliance. The odacli create-database command enables you to create a database with minimal user input. When you run this command without any additional options, the command creates a new database home (ORACLE_HOME). You can create a database in an existing home by using the --dbhomeid option. To find the dbhomeid, use the odacli list-dbhomes command.

Alternatively, you can use the Web Console to create list, describe and delete databases and database homes. You can display a list of all Database Homes that includes the database home name, ID, version, the date and time that the database home was created and the location on the same page. You can also create and delete database homes on the Web Console.



Caution:

Do not apply Oracle Database patches directly to Oracle Databases on Oracle Database Appliance. Only use Oracle Database Appliance patch bundles, which are tested to work across the whole software stack. If a one-off database patch is required, it may be applied to the Oracle Home. When you apply the Oracle Database Appliance patch bundle, it may cause a conflict during future patching events and you might need to roll back and then re-apply the patch.

Related Topics

- Oracle Database Appliance Patches
- Oracle Database Appliance Command-Line Interface
- Oracle Appliance Manager Command-Line Interface for Virtualization

8.4.2 Downloading an RDBMS Clone File

Download an Oracle Database Appliance RDBMS Clone file onto your local machine to create a new database home.

To create Oracle Databases on Oracle Database Appliance, you must first upload the version-specific RDBMS clone file into the Oracle Database Appliance repository. The Oracle Database Appliance RDBMS clone files are available in My Oracle Support (MOS).

The following software clone files contain the Oracle Database software images for Oracle Database Appliance:

- Use the Oracle 12.2.0.1.x RDBMS Software Clone file to create any new 12.2 database homes.
- Use the Oracle 12.1.0.2.x RDBMS Software Clone file to create any new 12.1 database homes.
- Use the Oracle 11.2.0.4.x RDBMS Software Clone file for creating any new 11.2 database homes.

The *Oracle Database Appliance Release Notes* contains a list of the patch numbers and links to patches.

1. From an external client machine, log on to My Oracle Support.



- 2. Select the Oracle Database Appliance RDBMS Clone patch for the supported Oracle Database version.
- 3. Click **Download** to download the zip file onto your external client.
- 4. Use either a Secure Copy (scp) command or a USB storage device to copy the file from the external client to dom0 on Node0. Use the /tmp directory as the target location.



If you use a USB drive to transfer the file, then format it first as FAT32, ext3, or ext4. NTFS file formats are not supported.

5. Unzip the patch bundle, then use the command odacli update-repository as root user to update the repository.

```
# cd /tmp
# unzip p23494992_122110_Linux-x86-64.zip
# odacli update-repository -fileName /tmp/oda-sm-12.2.1.1.0-170814-
DB-12.2.1.0.zip
```

Related Topics

Oracle Database Appliance Patches

8.4.3 Viewing Database Homes

Use the Web Console to display a list of database homes and database home details, including databases associated with a DB home.

1. Log in to the Web Console:

```
https://ip-address:7093/mgmt/index.html
```

- 2. Click the **Database** tab.
- 3. Click **Database Home** on the left menu to view all database homes. The name, ID, version, location and date and time stamp of when the database home was created appears on the page.
- 4. (Optional) Click **Actions** next to a database home entry, then **View Databases** to see the databases that are associated with the database home.

8.4.4 Creating a Database Home

Use the Web Console to create database homes in Oracle Database Appliance.

The Create New Database page in the Web Console is populated with default options for most of the configuration options. Drop-down lists enable you to quickly view and select from a list of available options. You can use the drop-down list to create a new database Oracle Database Home (ORACLE_HOME) for the database or select an existing ORACLE_HOME that you created earlier.

Before you can create a database home, the Oracle Database Appliance RDBMS Clone file image must be in the repository.

1. Log in to the Web Console:



https://ip-address:7093/mgmt/index.html

- 2. Click the Database tab, then click Database Home.
- 3. Click Create Database Home.
- Select a database version from the list of available versions, then select the database edition, either Enterprise Edition or Standard Edition, per your licensing agreement.
- 5. Click **Create**. When prompted, click **Yes** to confirm that you want to start the job.

8.4.5 Deleting a Database Home

Use the Web Console to delete an Oracle database home.

You can delete a database home (DB Home) if it is not associated with any databases.

1. Log into the Web Console:

https://host name or ip-address:7093/mgmt/index.html

- 2. Click the **Database** tab.
- Click Database Home on the left menu to view all database homes. The name, ID, version, location and date and time stamp of when the database home was created appears on the page.
- Click Actions next to a database home entry, then Delete, and then confirm the action to delete a database home.

8.5 About Managing Multiple Database Instances Using Instance Caging

Use instance caging to manage your system resources on Oracle Database Appliance.

Oracle Database provides a method for managing CPU allocations on a multi-CPU server that runs multiple database instances. This method is called instance caging. Instance caging uses an initialization parameter to limit the number of CPUs that an instance can use simultaneously.

Instance caging and Oracle Database Resource Manager (the Resource Manager) work together to support your desired service levels across multiple instances. Consolidation can minimize idle resources, maximize efficiency, and lower costs.

Oracle Database Appliance templates are already tuned for the size of each database instance workload. They are designed to run on a specific number of cores. Instance caging ensures that each database workload is restricted to the set of cores allocated by the template, enabling multiple databases to run concurrently with no performance degradation, up to the capacity of Oracle Database Appliance. You can select database template sizes larger than your current needs to provide for planned growth.



Note:

Oracle strongly recommends that you use the Oracle Database Appliance templates, because they implement best practices and are configured specifically for Oracle Database Appliance.

The Oracle Database Appliance Manager interface refers to the database sizing templates as database classes.

By default, instance caging is not enabled on Oracle Database Appliance. To enable instance caging, set the initialization parameter, RESOURCE_MANAGER_PLAN, for each database on Oracle Database Appliance. The parameter specifies the plan to be used by the Resource Manager for the current instance. Setting this parameter directs the Resource Manager to allocate core resources among databases. If a plan is not specified with this parameter, then the Resource Manager and instance caging are not enabled.

Instance caging allocation of core resources is enabled in accordance with the Oracle Database Appliance database template size that you select for each database. The CPU_COUNT initialization parameter is set in the template. Use the CPU_COUNT setting that matches the size of each database to consolidate, and follow the standard instructions for configuring instance caging.

8.6 Oracle EM Express and DB Console

You can use Oracle Enterprise Manager Database Express (EM Express), or the Database Control Console (DB Console) to manage your database.

The EM Express console is available for Oracle Database 12.2.0.1 or 12.1.0.2. The DB Console is available for Oracle Database 11.2.0.4. Both consoles are web-based tools for managing Oracle Databases.

The EM Express console provides the following features:

- Support for basic administrative tasks, such as storage and user management
- Comprehensive solutions for performance diagnostics and tuning
- Performance advisors in a graphic user interface
- Oracle Database utilities in a graphic user interface, such as SQL*Loader and Oracle Recovery Manager (RMAN)

EM Express is built inside the database server and cannot perform actions outside the database.



9

Managing Storage

Expand storage capacity and replace disks in Oracle Database Appliance.

- About Managing Storage (page 9-1)
 You can add storage at any time without shutting down your databases or applications.
- Storage on Single Node Platforms (page 9-2)
 Review for storage and memory options on Oracle Database Appliance X7-2S and X7-2M single node platforms.
- Storage on Multi Node Platforms (page 9-3)
 Review for storage and memory options on Oracle Database Appliance X7-2-HA multi node platforms.

9.1 About Managing Storage

You can add storage at any time without shutting down your databases or applications.

Oracle Database Appliance uses raw storage to protect data in the following ways:

- Fast Recovery Area (FRA) backup. FRA is a storage area (directory on disk or Oracle ASM diskgroup) that contains redo logs, control file, archived logs, backup pieces and copies, and flashback logs.
- Mirroring. Double or triple mirroring provides protection against mechanical issues.

The amount of available storage is determined by the location of the FRA backup (external or internal) and if double or triple mirroring is used. External NFS storage is supported for online backups, data staging, or additional database files.

Oracle Database Appliance X7-2M and X7-2-HA models provide storage expansion options from the base configuration. In addition, Oracle Database Appliance X7-2-HA multi-node platforms have an optional storage expansion shelf.

When you add storage, Oracle Automatic Storage Management (Oracle ASM) automatically rebalances the data across all of the storage including the new drives. Rebalancing a disk group moves data between disks to ensure that every file is evenly spread across all of the disks in a disk group and all of the disks are evenly filled to the same percentage. Oracle ASM automatically initiates a rebalance after storage configuration changes, such as when you add disks.

The redundancy level for FLASH is based on the DATA and RECO selection. If you choose High redundancy (triple mirroring), then FLASH is also High redudancy.

WARNING:

Pulling a drive before powering it off will crash the kernel, which can lead to data corruption. Do not pull the drive when the LED is an amber or green color. When you need to replace an NVMe drive, use the software to power off the drive before pulling the drive from the slot. If you have more than one disk to replace, complete the replacement of one disk before starting replacement of the next disk.

Related Topics

- Memory and Storage Options for Single Node Systems (page 9-2) Oracle Database Appliance X7-2S and X7-2M have NVMe storage configurations with expansion memory and storage options.
- About Expanding Storage on Multi-Node Systems (page 9-3) Oracle Database Appliance X7-2-HA platforms have options for high performance and high capacity storage configurations.

9.2 Storage on Single Node Platforms

Review for storage and memory options on Oracle Database Appliance X7-2S and X7-2M single node platforms.

Memory and Storage Options for Single Node Systems (page 9-2) Oracle Database Appliance X7-2S and X7-2M have NVMe storage configurations with expansion memory and storage options.

9.2.1 Memory and Storage Options for Single Node Systems

Oracle Database Appliance X7-2S and X7-2M have NVMe storage configurations with expansion memory and storage options.

Table 9-1 Storage Options for Oracle Database Appliance X7-2S and X7-2M

Configuration	Oracle Database Appliance X7-2S	Oracle Database Appliance X7-2M
Base Configuration	1 x 10 CPU 192 GB memory 2 x 6.4 TB NVMe	2 x 18 CPU 384 GB memory 2 x 6.4 TB NVMe
Expansion Options	192 GB memory (part number 7117433)	Options: • 384 GB memory (part number 7117433; quantity: 2) • Three (3) NVMe Drives (part number 7117740) or Six (6) NVMe Drives (part number 7117740; quantity: 2)



9.3 Storage on Multi Node Platforms

Review for storage and memory options on Oracle Database Appliance X7-2-HA multi node platforms.

About Expanding Storage on Multi-Node Systems (page 9-3)
 Oracle Database Appliance X7-2-HA platforms have options for high performance and high capacity storage configurations.

9.3.1 About Expanding Storage on Multi-Node Systems

Oracle Database Appliance X7-2-HA platforms have options for high performance and high capacity storage configurations.

The base configuration has 16 TB SSD raw storage for DATA and 3.2 TB SSD raw storage for REDO, leaving 15 available slots to expand the storage. If you choose to expand the storage, you can fill the 15 slots with either SSD or HDD drives. For even more storage, you can add a storage expansion shelf to double the storage capacity of your appliance.

In all configurations, the base storage and the storage expansion shelf each have four (4) 800 GB SSDs for REDO disk group and five (5) 3.2TB SSDs (either for DATA/RECO in the SSD option or FLASH in the HDD option).



The base storage shelf must be fully populated before you can add an expansion shelf and the expansion shelf must have the same storage configuration as the base shelf. Once you select a base configuration, you cannot change the type of storage expansion.

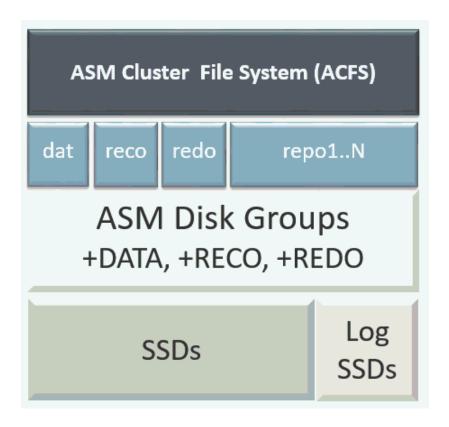
High Performance

A high performance configuration uses solid state drives (SSDs) for DATA and REDO storage. The base configuration has 16 TB SSD raw storage for DATA and 3.2 TB SSD raw storage for REDO.

You can add up to three (3) 5-Pack SSDs on the base configuration, for a total of 64 TB SSD raw storage. If you need more storage, you can double the capacity by adding an expansion shelf of SSD drives. The expansion shelf provides an additional 64 TB SSD raw storage for DATA, 3.2 TB SSD raw storage for REDO, and 16 TB SDD raw storage for FLASH.

Adding an expansion shelf requires that the base storage shelf and expansion shelf are fully populated with SSD drives. When you expand the storage using only SSD, there is no downtime.





High Capacity

A high capacity configuration uses a combination of SSD and HDD drives.

The base configuration has 16 TB SSD raw storage for DATA and 3.2 TB SSD raw storage for REDO.

The following expansion options are available:

- Base shelf: additional 150 TB HDD raw storage for DATA (15 pack of 10 TB HDDs.)
- HDD Expansion shelf: additional 150 TB HDD raw storage for DATA, 3.2 TB SSD for REDO, and 16 TB SSD for FLASH



When you expand storage to include HDD, you must reposition the drives to the correct slots and redeploy the appliance after adding the HDD drives.

A system fully configured for high capacity has 300 TB HDD raw storage for DATA, 6.4 TB SSD raw storage for REDO and 32 TB SSD for Flash.



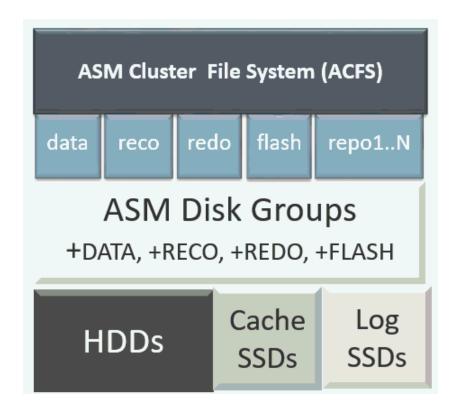


Table 9-2 Storage Options for Oracle Database Appliance X7-2-HA

Configura tion	Oracle Database Appliance X7-2-HA Base Configuration	Oracle Database Appliance X7-2-HA SSD Only Configuration for High Performance	Oracle Database Appliance X7-2-HA SSD and HDD Configuration for High Capacity
Base	2 servers, each with:	2 servers, each with:	2 servers, each with:
Configurati	• 2 x 18 CPU	• 2 x 18 CPU	• 2 x 18 CPU
on	 384GB memory 	 384GB memory 	 384GB memory
	JBOD:	JBOD:	JBOD:
	 4 x 800GB SSD 	 4 x 800GB SSD 	 4 x 800GB SSD
	• 5 x 3.2TB SSD	 20 x 3.2TB SSD 	• 5 x 3.2TB SSD
			 15 x 10TB HDD



Table 9-2 (Cont.) Storage Options for Oracle Database Appliance X7-2-HA

Configura tion	Oracle Database Appliance X7-2-HA Base Configuration	Oracle Database Appliance X7-2-HA SSD Only Configuration for High Performance	Oracle Database Appliance X7-2-HA SSD and HDD Configuration for High Capacity
Expansion Options	Options: 768GB memory (part number 7117433, quantity: 4) Options to fully populate the base configuration: 5 pack 3.2 TB (part number 7117369; quantity 1, 2, or 3) If the base is not fully populated with SSD, you can order 15 x 10TB HDD to the base. (part number 7117704) Options for the Expansion Shelf: You can only add an expansion shelf with the same storage configuration as the base configuration	Options: • 768GB memory (part number 7117433, quantity: 4) • Expansion Shelf (part number 7117465): - 4 x 800GB SSD - 20 x 3.2TB SSD	Options: • 768GB memory (part number 7117433, quantity: 4) • Expansion Shelf (part number 7117466): - 4 x 800GB SSD - 5 x 3.2TB SSD - 15 x 10TB HDD



10

Managing Networks

View the public and private networks that are configured on your Oracle Database Appliance.

Viewing Configured Networks and Network Interfaces (page 10-1)
 Use the Web Console to display a list of configured networks, network details and interfaces.

10.1 Viewing Configured Networks and Network Interfaces

Use the Web Console to display a list of configured networks, network details and interfaces.

1. Log into the Web Console:

https://ODA host name or ip-address:7093/mgmt/index.html

- 2. Click the Appliance tab.
- 3. Click the Network tab in the left navigation to display a list of networks. If the system is an Oracle Database Appliance X7-2-HA, then there are tabs for Node0 and Node1. Click the tab to display network details for each node.
- 4. Click Show Interfaces to view the interfaces. If the system is an Oracle Database Appliance X7-2-HA, then there are tabs for Node0 and Node1. Click the tab to display interface details for each node.

When on the Interfaces page, click **Show Networks** to return the Networks page.



Managing an Oracle Database Appliance Virtualized Platform

Review the concepts and procedures for Oracle Database Appliance Virtualized Platform.

These topics provides a conceptual overview of the Oracle Database Appliance Virtualized Platform architecture, and procedures for how to deploy a guest virtual machine, manage high availability, manage CPU pools, and configure network settings for Oracle Database Appliance Virtualized Platform. Learn about resizing your Oracle Database domain (ODA BASE), a privileged virtual machine.

- About Oracle Database Appliance Virtualized Platform (page 11-2)
 You can use Oracle VM to optimize your system resource use for databases and applications.
- Oracle Database Appliance Virtualized Platform Architecture (page 11-3)
 Review these topics to understand Oracle Database Appliance Virtualized
 Platform, and how you can use it to optimize system resource use.
- About Network Infrastructure and VLANs on Oracle Database Appliance Virtualized Platform (page 11-7)
 Oracle Database Appliance Virtualized Platform supports multiple VLANs on the same network port or bond.
- How to Create and Manage Shared Repositories (page 11-9)
 These topics describe how to use OAKCLI to create and manage shared repositories on Oracle Database Appliance Virtualized Platform.
- How to Manage Virtual Disks in Shared Repositories (page 11-12)
 These topics describe how to use OAKCLI to create, view, clone, attach, and delete virtual disks on Oracle Database Appliance Virtualized Platform.
- How to Manage Virtual Machine Templates (page 11-15)
 These topics describe how to use OAKCLI to import, configure, modify and check virtual machine templates on Oracle Database Appliance Virtualized Platform.
- How to Create Clones and Snap Clones of a Template (page 11-20)
 Review these topics for an overview of clones and snap clones, and for procedures to use to create clones.
- How to Manage Virtual Machines on Oracle Database Appliance Virtualized Platform (page 11-22)
 Review these topics for an overview of virtual machines, and for procedures to create and manage virtual machines.
- How to Create Driver Domain Virtual Machines (page 11-29)
 Use driver domain virtual machines to improve performance.
- How to Manage High Availability on Oracle Database Appliance Virtualized Platform (page 11-40)
 Use the collection configure high availability sorvice

Use the ${\tt oakcli}$ ${\tt configure}$ ${\tt vm}$ command to configure high availability services for your virtual machines.

 How to Manage CPU Pools on Oracle Database Appliance Virtualized Platform (page 11-41)

These topics describe how to use OAKCLI to create and manage CPU pools on Oracle Database Appliance Virtualized Platform.

11.1 About Oracle Database Appliance Virtualized Platform

You can use Oracle VM to optimize your system resource use for databases and applications.

You can deploy a virtualized platform on Oracle Database Appliance. The virtual platform is based on Oracle VM. With Oracle Database Appliance Virtualized Platform, you can use the capabilities of Oracle VM to effectively allocate resources to databases and applications running on the same physical Oracle Database Appliance. Rather than simply disabling unnecessary server cores, you can use the excess capacity to host other workloads. This enables consolidation of both databases and applications, while retaining the ease of deployment and management associated with Oracle Database Appliance.

Oracle Database Appliance Virtualized Platform is supported on all versions of Oracle Database Appliance hardware. All templates and operating systems supported by Oracle VM are also supported on Oracle Database Appliance Virtualized Platform. Supported operating systems include Linux, Windows, and Solaris x86.

Note:

All new systems are currently shipped from the factory with the nonvirtualized ISO image

If you are currently on the nonvirtualized deployment of Oracle Database Appliance, and you want to use Oracle Database Appliance as a virtualized platform, then you must reimage the servers with the Oracle Database Appliance Virtualized Platform ISO image.

Why Virtualize?

Oracle Appliance Manager (oakcli) makes it easy to setup and manage the virtualized environment with little virtualization expertise. With the Virtualized Platform deployment, you can consolidate entire multi-tier environments within a single Oracle Database Appliance system.

The following are some of the advantages of deploying Oracle Database Appliance with the Virtualized Platform option:

- 1. Deploy database and applications in a single hardware environment.
- 2. Use the pre-configured VM application templates to rapidly deploy database and applications.
- 3. Run the database in a virtual machine (ODA_BASE) with direct access to storage (for native performance).
- 4. Control licensed CPUs by configuring ODA_BASE domain with the required number of CPU cores (and memory).



- Use your CPU cores (and memory) efficiently. CPU cores not assigned to the ODA_BASE domain are not wasted and are available for use by other, nondatabase virtual machines.
- Use virtual local area networks (VLANs) to provide separate networks to different virtual machines.
- 7. Use shared repository to grow storage for the virtual machine (VM) repository.
- 8. Improves data center efficiency by increasing space utilization and reducing energy consumption and cooling costs.

11.2 Oracle Database Appliance Virtualized Platform Architecture

Review these topics to understand Oracle Database Appliance Virtualized Platform, and how you can use it to optimize system resource use.

- About Oracle Database Appliance Virtualized Platform Architecture (page 11-3)
 Review this topic to understand how Oracle Database Appliance Virtualized
 Platform works with Oracle Database Appliance hardware.
- About Virtual Machines and Oracle Database Appliance Virtualized Platforms (page 11-4)
 Oracle Database Appliance Virtualized Platform is designed to run and deploy virtual machines to manage system resources.

11.2.1 About Oracle Database Appliance Virtualized Platform Architecture

Review this topic to understand how Oracle Database Appliance Virtualized Platform works with Oracle Database Appliance hardware.

Oracle Database Appliance Virtualized Platform provides virtualization technology that enables multiple isolated databases and applications to share the same physical server. The Oracle Database Appliance Virtualized Platform ISO image is engineered specifically to leverage the Oracle Database Appliance hardware capabilities.

The Oracle Database Appliance Virtualized Platform architecture uses the virtual machine components shown in the following illustration:



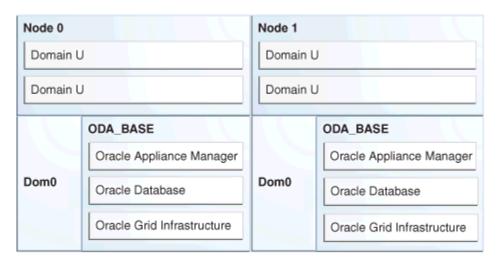


Figure 11-1 Oracle Database Appliance Virtualized Platform Architecture

- Oracle Database Appliance Base Domain (ODA_BASE): A privileged virtual
 machine domain, specifically for databases, that provides database performance
 similar to bare metal deployments. A PCI pass-through driver provides
 ODA BASE direct access to the shared storage.
- Domain 0 (Dom0): Default domain that initiates Oracle Database Appliance Virtualized Platform provisioning processes and hosts virtual machine templates. Most of the responsibility of hardware detection in an Oracle Database Appliance Virtualized Platform environment is passed to the management domain, referred to as domain zero (or Dom0). On x86-based servers, the Dom0 kernel is actually a small-footprint Linux kernel with support for a broad array of devices, file systems, and software RAID and volume management. In Oracle Database Appliance Virtualized Platform, Dom0 provides access to much of the system hardware, creating, deleting and controlling guest operating systems, and presenting those guests with a set of common virtual hardware.
- Guest Domains (Domain U): Virtual machines that are provisioned to host non-database workloads, such as applications and middleware. Guest operating systems each have their own management domain, called a *user domain*, abbreviated to "Domain U". These domains are unprivileged domains that have no direct access to the hardware or to the device drivers. Each Domain U starts after Dom0 is running on Oracle Database Appliance Virtualized Platform.

11.2.2 About Virtual Machines and Oracle Database Appliance Virtualized Platforms

Oracle Database Appliance Virtualized Platform is designed to run and deploy virtual machines to manage system resources.

Configure virtual machines on Oracle Database Appliance Virtualized Platform to manage your application use of shared repository resources, such as the CPU pool, memory, and other shared resources.



Virtual Machine Templates

Virtual machines can be created from a template or assembly containing preconfigured virtual machines. The creation of a virtual machine from a template is based on cloning: the template is imported as an archive, unpacked, and stored as a virtual machine configuration file with disk images. These disk images are cloned to create a new instance in the form of a virtual machine. In the same way, an existing virtual machine can be cloned to create a new virtual machine, or cloned to create a new template.

Virtual Machine Assemblies

Virtual machine assemblies are often described as a template of a group of virtual machines, or a collection of virtual machine templates. An assembly can contain a single virtual machine or a collection of virtual machine templates.

Domains, Guests and Virtual Machines

The terms *domain*, *guest*, and *virtual machine* are often used interchangeably, but they have subtle differences. A *domain* is a configurable set of resources, including memory, virtual CPUs, network devices, and disk devices, in which virtual machines run. A *guest* is a virtualized operating system running within a domain. Multiple guests can run on the same instance of Oracle Database Appliance Virtualized Platform, each within its own domain. A *virtual machine* is granted virtual resources, and can be started, stopped, and restarted independently.

Virtual Disks

In addition to virtual machines, you can create virtual disks in shared repositories. Virtual disks provide additional storage options for virtual machines by enabling you to attach additional block storage to your virtual machines. Similarly, you can detach the storage if you no longer need the additional space. You can use virtual disks to expand existing file system storage inside the virtual machine by extending the storage volume onto a virtual disk, or by creating a new file system on a virtual disk. Your virtual disks can also share multiple virtual machines running on the same shared repository.

A *driver domain* is a user domain that has special privileges and responsibilities for a particular piece of hardware. When you use the driver domain option, the newly created virtual disks are mounted directly from oda_Base to a guest virtual machine. The option improves performance by enabling guest virtual machines to use oda_Base instead of domain to access virtual disks. The driver domain option is available beginning with release 12.1.2.7.0 and is supported with Oracle Linux, Windows, and Oracle Solaris x86 guest operating systems. Live migration of driver domain virtual machines is not supported.

Shared Repositories

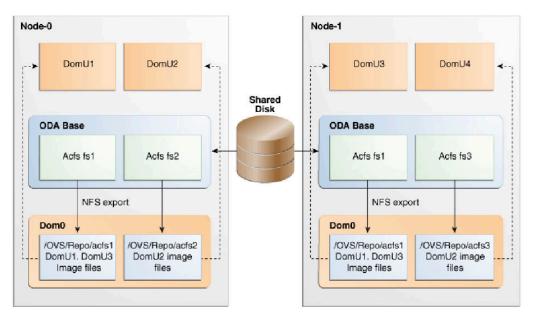
A *shared repository* is a central location for storing resources that are essential to creating and managing virtual machines. These resources include virtual machine templates and assemblies, ISO files (virtual DVD images), virtual machine configuration files, and virtual disks. Shared repositories are configured on an Oracle Automatic Storage Management Cluster File System (Oracle ACFS) and then presented to the Oracle Database Appliance nodes that need access to those resources. Oracle Database Appliance Virtualized Platform uses shared repositories to optimize available disk space usage in the environment, and for easy reallocation of



virtual machines if a physical server fails. The virtual machine files can be stored on shared disks, providing shared storage for the virtual machines. Additionally, you can configure CPU pools and a resizeable Oracle Database domain (ODA_BASE) to ensure that the virtual machines do not consume cycles from each other or from your assigned database CPU cores.

- The shared disks on Oracle Database Appliance Virtualized Platform are connected directly to ODA BASE.
- ODA_BASE contains three shared repositories named fs1, fs2, and fs3.
- Each shared repository is an Oracle ACFS in ODA_BASE created on top of the Oracle Automatic Storage Management (Oracle ASM) disk group (DATA or RECO) chosen by the user when creating the shared repository.
- The process that creates a shared repository also performs a network file system (NFS) export of the shared repository to the respective Dom0 by using the private network.
- The export enables shared storage for the virtual machine files.

Figure 11-2 Architecture Overview of Oracle Database Appliance Virtualized Platform Shared Repositories



With the configuration shown in the illustration, you can:

- Create multiple repositories.
- Mount these repositories either on the nodes where the virtual machine needs to run (such as fs2 and fs3 in the illustration), or on both the nodes (such as fs1 in the illustration).
- Create one or more virtual machines or virtual machine templates on the shared repositories.
- Use OAKCLI commands to create and manage shared repositories, virtual disks, and their virtual machines, and the underlying architecture shown in the illustration.



Note:

Virtual machine (VM) repositories on Oracle Database Appliance can only be on the boot drives or an Oracle Database Appliance shared storage shelf. External storage cannot be used for VM shared repositories on Oracle Database Appliance.

11.3 About Network Infrastructure and VLANs on Oracle Database Appliance Virtualized Platform

Oracle Database Appliance Virtualized Platform supports multiple VLANs on the same network port or bond.

Virtual local area networks (VLANs) are multiple logical networks that are created from a single physical network switch port. VLANs provide network security isolation for multiple workloads that share a common network. For example, application, backup, and management networks. Each VLAN acts as an independent logical network operating with other VLANs over the same physical connection. This means that virtual machines deployed on different networks, connected through the same Oracle VM Server port (or bond), can have traffic directed to different VLANs.

The physical ports in the system at deployment (either copper or fiber) are bonded as btbond0 in single node platforms and bond0 in multi-node platforms. The VLAN is created on bond0 or btbond0.

The network interfaces differ, depending on your Oracle Database Appliance hardware. In all cases, connections to user domains are through the selected interfaces. A switch that supports tagged VLANs uses VLAN IDs to identify the packet, including to which network the packet belongs.

Configuration Overview of Oracle Database Appliance Virtual Machine Local Area Networks

To specify which network you want to use to access a virtual machine, you employ network infrastructure components of Oracle Database Appliance Virtualized Platform. Oracle Database Appliance Virtualized Platform manages all of the high-level network infrastructure components for you by pre-creating the bridges for all networks. The front-end point for accessing a virtual machine is one of the bridges defined for Dom0.

When you configure a virtual machine, you define which network the virtual machine should use by identifying the related bridge.

For example, to connect a virtual machine named myvm1 to the net1 network, you would use the following command:

oakcli modify vm myvml -addnetwork net1

The illustration "Basic Virtual Machine Local Area Network" shows a typical Oracle Database Appliance local area network configuration that results from this virtual machine network configuration:



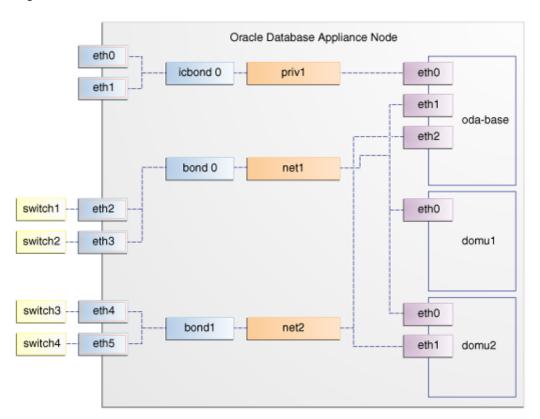


Figure 11-3 Basic Virtual Machine Local Area Network

You assign default VLANs to ODA_BASE during the installation and configuration of Oracle Database Appliance Virtualized Platform. The figure "Oracle Database Appliance Virtualized Platform with Virtual Local Area Networks" shows a typical Oracle Database Appliance configuration using VLANs. The illustration shows the same configuration as in "Basic Virtual Machine Local Area Networks," but with three tagged VLANs added for backups (backup), for applications (application), and for management (mgnt).



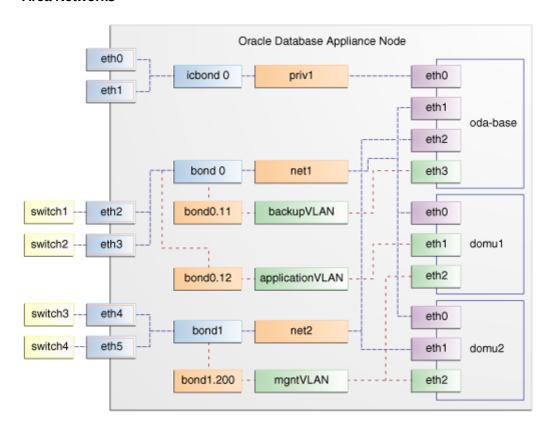


Figure 11-4 Oracle Database Appliance Virtualized Platform with Virtual Local Area Networks

11.4 How to Create and Manage Shared Repositories

These topics describe how to use OAKCLI to create and manage shared repositories on Oracle Database Appliance Virtualized Platform.

- Creating a Shared Repository (page 11-10)
 Use the oakcli create repo command to create a shared repository on Oracle Database Appliance Virtualized Platforms.
- Showing the Status of Shared Repositories (page 11-10)
 Use the oakcli show repo command to display information about virtual machine repositories on Oracle Database Appliance Virtualized Platforms.
- Starting a Shared Repository (page 11-11)
 Use the oakcli start repo command to start a virtual machine and assign it to a shared repository on Oracle Database Appliance Virtualized Platforms
- Stopping a Shared Repository (page 11-11)
 Use the oakcli stop repo command to command to stop a shared repository on a node on Oracle Database Appliance Virtualized Platforms.
- Deleting a Shared Repository (page 11-12)
 Use the oakcli delete repo command to delete a shared repository on Oracle Database Appliance Virtualized Platforms.



Increasing the Size of a Shared Repository (page 11-12)

Use the oakcli configure repo command to increase the size of a shared repository on Oracle Database Appliance Virtualized Platforms.

11.4.1 Creating a Shared Repository

Use the oakcli create repo command to create a shared repository on Oracle Database Appliance Virtualized Platforms.

When you run the <code>oakcli create repo</code> command, you identify the repository name using the option <code>repo</code>, you identify the disk group that you want to use for its storage (DATA or RECO) using the option <code>-dg</code>, and you identify the size of the repository in gigabytes or megabytes (the default size unit is gigabytes) using the <code>-size</code> option.

Other Oracle Appliance Manager shared repository commands, including commands to show and to stop (dismount) existing repositories, are similar to those used for nonshared repositories. Unlike the default repositories, which are permanent, you can delete a shared repository that has no active (mounted) virtual machines.

Example of Creating a Shared Repository

The following command creates a shared repository named repo1 in the ASM DATA disk group (data) with 30 gigabytes of available storage:

```
oakcli create repo repol -dg data -size 30
```

11.4.2 Showing the Status of Shared Repositories

. . . .

Use the oakcli show repo command to display information about virtual machine repositories on Oracle Database Appliance Virtualized Platforms.

To see all repositories, omit the repository name and node number. To see a specific shared repository, include the repository name and node number.

Example 11-1 Example of Showing the Status of All Shared Repositories

To show the status of all shared repositories, use the <code>oakcli show repo command</code>:

oakcl	i show repo				
	NAME	TYPE	NODENUM	FREE SPACE	STATE
	odarepo1	local	0	N/A	N/A
	odarepo2	local	1	N/A	N/A
	repol	shared	0	68.25%	ONLINE
	repol	shared	1	68.25%	ONLINE
	repo2	shared	0	N/A	OFFLINE
	repo2	shared	1	89.83%	ONLINE

Example 11-2 Example of Showing the Status of a Selected Shared Repository

To display information for a particular node in a shared repository, specify the repository name and node number as part of the command syntax. In the following example, information is displayed for Node 1 in the repol shared repository:

```
oakcli show repo repo1 -node 1

Resource: repo1_1
    AutoStart : restore
    DG : DATA
```



Device : /dev/asm/repo1-286

ExpectedState : Online
FreeSpace : 87.703125M
MountPoint : /u01/app/repo1
Name

Name : repol_0
Node : all
RepoType : shared
Size : 30720
State : Online
Version : 2

11.4.3 Starting a Shared Repository

Use the <code>oakcli</code> start repo command to start a virtual machine and assign it to a shared repository on Oracle Database Appliance Virtualized Platforms

Before you can assign a virtual machine to a shared repository, use the <code>oakcli start repo</code> command to start the repository and make the storage available. Note that the <code>oakcli start repo</code> command will also start any virtual machines assigned to the repository that are defined to be automatically started.

You must have a repository already configured. Identify the repository that you start by using the option repo name, where name is the repository name. Identify the name of the node on which the repository is located by using the option -node nodename, where nodename is the name of the node on which the repository is located.

Example 11-3 Example of Starting a Shared Repository

This command starts the shared repository named repo1 on Node 1:

oakcli start repo repol -node 1

11.4.4 Stopping a Shared Repository

Use the oakcli stop repo command to command to stop a shared repository on a node on Oracle Database Appliance Virtualized Platforms.

Identify the repository that you want to stop by using the repo reponame option, where reponame identifies the repository that you want to stop. Identify the node on which the repository that you want to stop is running by using the -node number option where number is the node number that you want to stop.



Do not issue an oakcli stop repo command while virtual machines are still active in the repository for the selected node.

Example 11-4 Example of Stopping a Shared Repository

The following example stops the shared repository named repo1 on Node 0:

oakcli stop repo repol -node 0



11.4.5 Deleting a Shared Repository

Use the oakcli delete repo command to delete a shared repository on Oracle Database Appliance Virtualized Platforms.

Identify the repository that you want to delete by using the repo reponame option, where reponame identifies the repository that you want to delete.



The shared repository that you want to delete must be offline (stopped) on both nodes before you attempt to delete it.

Example 11-5 Example of Deleting a Shared Repository

The following command deletes the shared repository named repo1 on both nodes:

oakcli delete repo repol

11.4.6 Increasing the Size of a Shared Repository

Use the oakcli configure repo command to increase the size of a shared repository on Oracle Database Appliance Virtualized Platforms.

Identify the repository that you want to expand by using the <code>-repo</code> <code>reponame</code> option, where <code>reponame</code> identifies the repository that you want to expand. Use the option <code>-incsize</code> <code>size</code> to specify the size of the increase that you want to configure, where <code>size</code> is the size (in gigabytes) that you want to add to the configured size.

Example 11-6 Example of Increasing the Size of a Shared Repository

The following command increases the size of the shared repository ${\tt repol}$ by 2 gigabytes:

```
# oakcli configure repo repo1 -incsize 2G
Configured Shared Repo : repo1 with new size 3712.0.
```

11.5 How to Manage Virtual Disks in Shared Repositories

These topics describe how to use OAKCLI to create, view, clone, attach, and delete virtual disks on Oracle Database Appliance Virtualized Platform.

- Creating a Virtual Disk for Use in a Shared Repository (page 11-13)
 Use the command oakcli create vdisk to create a virtual disk within a shared repository on Oracle Database Appliance Virtualized Platforms.
- Viewing Information About Virtual Disks (page 11-13)
 Use the command oakcli show vdisk to view information about virtual disks on Oracle Database Appliance Virtualized Platforms.
- Cloning Virtual Disks (page 11-14)
 Use the oakcli clone vdisk command to create clones of virtual disks on Oracle Database Appliance Virtualized Platforms.

- Attaching a Virtual Disk to a Virtual Machine (page 11-14)
 Use the oakcli modify vm command to attach a virtual disk to a virtual machine on Oracle Database Appliance Virtualized Platforms.
- Deleting a Virtual Disk (page 11-15)
 Use the oakcli delete vdisk command to remove a virtual disk from a shared repository on Oracle Database Appliance Virtualized Platforms.

11.5.1 Creating a Virtual Disk for Use in a Shared Repository

Use the command oakcli create vdisk to create a virtual disk within a shared repository on Oracle Database Appliance Virtualized Platforms.

The command oakcli create vdisk defines the size of the virtual disk, the shared repository in which that disk is created, defines the unique name for that disk within that shared repository, and defines if the disk is used for one virtual machine, or can be shared by multiple virtual machines.

The name of the vdisk you create is defined by the command <code>oakcli</code> <code>create vdisk name</code>, where <code>name</code> is the name of the vdisk you create. Identify the repository in which you create the vdisk by using the <code>-repo reponame</code> option, where <code>reponame</code> identifies the repository where you want to create the vdisk. Use the option <code>-size sizeG</code> to specify the vdisk size (in gigabytes), where <code>sizeG</code> is the size (in gigabytes) that you want to add to the configured size. If you want to configure the vdisk as a shared disk, then use the option <code>-type shared</code> to designate the vdisk as a shared disk.

Example 11-7 Example of Creating a Shared Virtual Disk

This example creates a virtual disk named sdisk1 in the repo2 shared repository that is 1 gigabyte in size, and that virtual machines can share:

```
oakcli create vdisk sdisk1 -repo repo2 -size 1G -type shared
```

11.5.2 Viewing Information About Virtual Disks

Use the command oakcli show vdisk to view information about virtual disks on Oracle Database Appliance Virtualized Platforms.

You can use <code>oakcli</code> show <code>vdisk</code> by itself to see information about all of your configured virtual disks. To see information about an individual virtual disk, enter the command <code>oakcli</code> show <code>vdisk</code> <code>diskname</code> -repo <code>reponame</code>, where <code>diskname</code> is the name of the disk that you want to check, and <code>reponame</code> is the name of the shared repository where the virtual disk is located.

Example 11-8 Example of Displaying the Information for All Vdisks

This example displays information about all virtual disks configured on an Oracle Database Appliance:

oakcli show vdisk

NAME	SIZE	TYPE	REPOSITORY
myvdisk	10G	local	vdiskrepo
newv	1G	local	vdiskrepo

Example 11-9 Example of Displaying Information for a Single Vdisk

This example displays information for the virtual disk named myvdisk1:



oakcli show vdisk myvdisk1
Resource: myvdisk_vdiskrepo

Name : myvdisk_vdiskrepo

RepoName : vdiskrepo
Size : 10G
Type : local
VmAttached : 0

11.5.3 Cloning Virtual Disks

Use the oakcli clone vdisk command to create clones of virtual disks on Oracle Database Appliance Virtualized Platforms.

The command <code>oakcli clone vdisk</code> defines the size of the virtual disk, the shared repository in which that disk is created, defines the unique name for that disk within that shared repository, and defines if the disk is used for one virtual machine, or can be shared by multiple virtual machines.

The name of the vdisk you create is defined by the command <code>oakcli clone vdisk name</code>, where <code>name</code> is the name of the vdisk you create. Identify the repository in which you create the vdisk by using the <code>-repo reponame</code> option, where <code>reponame</code> is the name of the repository where the original vdisk is located. Use the option <code>-src sourcevdiskname</code>, where <code>sourcevdiskname</code> is the name of the virtual disk that you are cloning. Add the option <code>-h</code> to display help for this command.



Once the virtual disk is attached to a virtual machine, the system administrator should perform normal disk addition tasks for the given operating system to make the newly added storage available to the virtual machine.

Syntax

oakcli clone vdisk name -repo reponame -src sourcevdiskname [-h]

Example 11-10 Example of Cloning a Virtual Disk

This example clones a virtual disk named my_vdisk2 from an existing virtual disk named vdisk1 that is stored in the repository named vrepo1:

oakcli clone vdisk my_vdisk2 -repo vrepo1 -src vdisk1

11.5.4 Attaching a Virtual Disk to a Virtual Machine

Use the <code>oakcli modify vm</code> command to attach a virtual disk to a virtual machine on Oracle Database Appliance Virtualized Platforms.

The command <code>oakcli modify vm name</code> enables you to modify a virtual machine, where <code>name</code> is the name of the virtual machine that you want to modify. To attach a disk to a virtual machine, use the option <code>-attachvdisk</code> <code>vdiskname</code>, where <code>vdiskname</code> is the name of the virtual disk that you want to attach to the virtual machine.



Example 11-11 Example of Attaching a Virtual Disk To a Virtual Machine

This example attaches the virtual disk named sdisk1 to the virtual machine named myol6u_test:

oakcli modify vm myo16u_test -attachvdisk sdisk1

11.5.5 Deleting a Virtual Disk

Use the <code>oakcli delete vdisk</code> command to remove a virtual disk from a shared repository on Oracle Database Appliance Virtualized Platforms.

The command <code>oakcli</code> <code>delete</code> <code>vdisk</code> <code>vdiskname</code> removes a virtual disk, where <code>vdiskname</code> is the name of the virtual disk that you want to remove. The option <code>-repo</code> <code>reponame</code> indicates the shared repository on which the virtual disk is located, where <code>reponame</code> is the name of the shared repository.

Example 11-12 Example of Deleting a Virtual Disk from a Shared Repository

This example removes a virtual disk named t2g from the shared repository named repoprod1:

oakcli delete vdisk t2g -repo repoprod1

11.6 How to Manage Virtual Machine Templates

These topics describe how to use OAKCLI to import, configure, modify and check virtual machine templates on Oracle Database Appliance Virtualized Platform.

- About Managing Virtual Machine Templates (page 11-15)
 Import and configure virtual machine templates as the source for the virtual machines deployed on Oracle Database Appliance Virtualized Platform.
- Listing Virtual Machine Templates (page 11-16)
 Use the oakcli show vmtemplate command to display virtual machine template details.
- Importing Virtual Machine Templates (page 11-17)
 Use the oakcli import vmtemplate command to import virtual machine templates and assemblies on Oracle Database Appliance Virtualized Platforms.
- Configuring a Virtual Machine Template (page 11-18)
 Use the oakcli configure vmtemplate command to configure a virtual machine template on Oracle Database Appliance Virtualized Platform.
- Showing Configured Values for a Virtual Machine Template (page 11-19)
 Use the oakcli show vmtemplate command to show values for the configurable options in a virtual machine template.
- Modifying a Virtual Machine Template Configuration (page 11-19)
 Use the oakcli modify vmtemplate command to modify a virtual machine template.
- Removing a Virtual Machine Template (page 11-20)
 Use the oakcli delete vmtemplate command to remove a virtual machine template.

11.6.1 About Managing Virtual Machine Templates

Import and configure virtual machine templates as the source for the virtual machines deployed on Oracle Database Appliance Virtualized Platform.

If you have created shared repositories, then import templates into one of those shared repositories. If you have not created shared repositories, then import templates into the local repository on one of the local nodes.

You can import assemblies that contain one or more templates. When you import a template or assembly into a shared repository, select a node that you want to perform the operation. Select the node carefully to avoid overloading the node. After you create the repository, the repository becomes available to both nodes, regardless of which node performs the import.

Templates imported into local nodes use the repository name supplied in the import command to identify the node that completes the import, and that provides the storage. On Node 0, the local repository is named <code>odarepol</code> and on Node 1, the local repository is named <code>odarepol</code>. If you want to import a template to both local repositories, then you must provide a different template name when you import the template into the second node.



You cannot create or clone templates directly on Oracle Database Appliance Virtualized Platform, you must use the Oracle VM templates that are available in Oracle Software Delivery.

If you import an assembly that contains more than one template, then the command automatically modifies the template name that you provide, so that all template names remain unique. The first template you import has the number "1" appended to the name. The second template as the number "2" appended, and additional templates have 3, 4, 5 and so on appended in sequence.

After you import a virtual machine template, you can customize the template using OAKCLI commands.



Find virtual machine templates at the following URL:

http://edelivery.oracle.com/linux.

11.6.2 Listing Virtual Machine Templates

Use the $oakcli\ show\ vmtemplate$ command to display virtual machine template details.

The <code>oakcli show vmtemplate</code> command displays the name and repository for each virtual machine template as well as the default number of CPUs and default amount of memory that Oracle Database Appliance Virtualized Platform would assign to a virtual machine created from the template.

Example

Display information about the sample1_odarepo1 virtual template:



```
oakcli show vmtemplate sample_odarepo1
```

Resource: sample1_odarepo1

CPUPriority : 100

Disks : |file:/OVS/Repositories/odarepo1/Te

mplates/otml_sample1_odarepo1/Syste
m.img,xvda,w||file:/OVS/Repositorie
s/odarepo1/Templates/otml_sample1_o

darepol/u01.img,xvdb,w

Domain : XEN_PVM
Keyboard : en-us
MaxMemory : 2048
MaxVcpu : 2
Memory : 2048
Mouse : OS_DEFAULT

Name : sample1_odarepo1

Networks : |bridge=priv1||bridge=net1||bridge=

net2

 NodeNum
 :
 0

 OS
 :
 OL_5

 ProcessorCap
 :
 100

 RepoName
 :
 odarepol

 Vcpu
 :
 2

11.6.3 Importing Virtual Machine Templates

Use the <code>oakcli import vmtemplate</code> command to import virtual machine templates and assemblies on Oracle Database Appliance Virtualized Platforms.

You import virtual machine templates and assemblies contained in an external repository assembly file. Use the name of the shared repository and include a clause to identify the node where you want to import a template or an assembly.

You can import virtual machine templates and assemblies directly from a remote repository using a URL to identify the source of the files. You can choose to use a remote copy command to copy files from the remote repository into your <code>Dom0 /ovs</code> directory, and then import the files using the path and names to identify the downloaded files.

Note:

When importing templates or assemblies to a local repository, do not use the -node option. The target node is implicit in the name of the repository.

Syntax

oakcli import vmtemplate $vmtemplate name - files image_files | -assembly_file - repo _ repo_name [- node 0 | 1]$

Example 11-13 Example of Importing Virtual Machine Templates from an External Repository Assembly File

Use the <code>oakcli</code> import <code>vmteplate</code> <code>vmtemplate</code> <code>name</code> <code>-assembly</code> <code>assembly_file</code> <code>-repo</code> <code>repo_name</code> command to import virtual machine templates contained in an external template repository assembly file.

This example imports the template in an external template repository assembly file located at the URL 'http://example.com/assemblies/OEL6/OVM_OL6U1_x86_PVHVM.ova' to a new template named OL6U1 in a new repository named odarepo1:

```
oakcli import vmtemplate OL6U1 -assembly 'http://example.com/assemblies/OEL6/
OVM_OL6U1_x86_PVHVM.ova' -repo odarepo1
```

Note the single quotation marks that enclose the URL.

Example 11-14 Example of Importing a Virtual Machine Template from Dom0

Use this command syntax to import a virtual machine template from the /OVS file system on Dom0:

```
oakcli import vmtemplate vmtemplatename -files image_files -repo repo_name
```

This example imports the virtual machine template named OVM_OL5U7_X86_64_PVM_10GB.tgz from the /ovs directory in Dom0 into the odarepo1 repository. The template is assigned the name oL5U7:

oakcli import vmtemplate OL5U7 -files /OVS/OVM_OL5U7_X86_64_PVM_10GB.tgz -repoodarepol

Example 11-15 Example of Importing a Virtual Machine Template Using an External Repository URL

Use the command oakcli import vmtemplate vmtemplatename -files image_files -repo repo_name to import a virtual machine template file from an external template repository.

```
oakcli import vmtemplate OL5U7 -files 'http://example.com/assemblies/OEL6/
OVM_OL6U1_x86_PVHVM.tgz'-repo odarepo1
```

11.6.4 Configuring a Virtual Machine Template

is imported into the odarpol repository:

Use the oakcli configure vmtemplate command to configure a virtual machine template on Oracle Database Appliance Virtualized Platform.

The values become the default values for any virtual machine cloned from this template. You can change any or all of them later with the <code>oakcli configure vm</code> command.

Example

Set values for the virtual machine template named myo15u7_10gb:

```
oakcli configure vmtemplate myol5u7_10gb -vcpu 2 -maxvcpu 4 -cpucap 40 -memory 1536M -maxmemory 2G -os OTHER_LINUX
```

- -vcpu 2 sets the number of CPUs to be assigned when the virtual machine starts up to 2.
- -maxvcpu 4 sets the maximum number of CPUs that can be assigned to the virtual machine to 4.



- -cpucap 40 sets the maximum percentage of a CPU's capacity that can be assigned to the virtual machine to 40%.
- -memory 1536M sets the amount of memory to be assigned when the virtual machine starts up to 1536 MB.
- -maxmemory 2G sets the maximum amount of memory that can be assigned to the virtual machine to 2 GB.
- -os OTHER_LINUX sets OTHER_LINUX as the operating system used by the virtual machine.

11.6.5 Showing Configured Values for a Virtual Machine Template

Use the <code>oakcli show vmtemplate</code> command to show values for the configurable options in a virtual machine template.

Example

Display information about the sample1_odarepo1 virtual template:

```
oakcli show vmtemplate sample_odarepo1
Resource: sample1_odarepo1
       CPUPriority :
                             100
                             |file:/OVS/Repositories/odarepo1/Te
       Disks
                             mplates/otml_sample1_odarepo1/Syste
                             m.img,xvda,w||file:/OVS/Repositorie
                             s/odarepo1/Templates/otml_sample1_o
                             darepol/u01.img,xvdb,w
       Domain
                             XEN_PVM
       Keyboard
                             en-118
                             2048
       MaxMemory
       MaxVcpu
                             2
                             2048
       Memory
       Mouse
                     :
                             OS_DEFAULT
                             sample1_odarepo1
                             |bridge=priv1||bridge=net1||bridge=
       Networks
                             net2
       NodeNum
                   :
                             OL 5
       ProcessorCap :
                             100
       RepoName :
                             odarepo1
       Vcpu
```

11.6.6 Modifying a Virtual Machine Template Configuration

Use the ${\tt oakcli}\ {\tt modify}\ {\tt vmtemplate}$ command to modify a virtual machine template.

After you import a virtual machine template to a storage repository, examine the template configuration parameters with the <code>oakcli show vmtemplate</code> command. If you need to reconfigure the template for specific requirements, then use the <code>oakcli configure vmtemplate</code> command. This is useful if you plan to deploy multiple virtual machines with the same characteristics from a single template. If you will be deploying only one virtual machine or many virtual machines but with different characteristics, then set required values in the virtual machines with the <code>oakcli configure vm command</code> after you deploy the template.

When you are satisfied with the configuration of your virtual machine template, use the <code>oakcli modify</code> command to assign a new network to the virtual machine template.

Example

Replace the network assigned to the gc_11g virtual machine template with the net1 network:

oakcli modify vmtemplate gc_11g -addnetwork net1

11.6.7 Removing a Virtual Machine Template

Use the oakcli delete vmtemplate command to remove a virtual machine template.

If you no longer need a template that you previously stored, then you can remove the template from the repository.

Example

Remove the virtual machine template named myol6u_15gb3 from Oracle Database Appliance Virtualized Platform:

oakcli delete vmtemplate my016u_15gb3

11.7 How to Create Clones and Snap Clones of a Template

Review these topics for an overview of clones and snap clones, and for procedures to use to create clones.

- About Creating Clones and Snap Clones of a Template (page 11-20)
 You can create, or *clone*, virtual machines from imported templates (or assemblies) or from an existing virtual machine on Oracle Database Appliance Virtualized Platforms.
- Cloning a Template With OAKCLI (page 11-21)
 Use the oakcli clone vm command to clone virtual machines that have attached virtual disks on Oracle Database Appliance Virtualized Platforms.
- Creating a Snap Clone from a Template With OAKCLI (page 11-21)
 Use the oakcli clone vm command to create a snap clone of a virtual machine template on Oracle Database Appliance Virtualized Platforms.
- Creating a Snap Clone of an Existing Virtual Machine With OAKCLI (page 11-22)
 Use the oakcli clone vm command to create a snap clone of an existing
 virtual machine on Oracle Database Appliance Virtualized Platforms.

11.7.1 About Creating Clones and Snap Clones of a Template

You can create, or *clone*, virtual machines from imported templates (or assemblies) or from an existing virtual machine on Oracle Database Appliance Virtualized Platforms.

Clones and snap clones can be an effective way to provision and clone new databases for test and development systems. They are much more efficient to create than using RMAN scripts, or other cloning approaches.

You can create virtual machines that are a complete clone of the template or assembly, or you can create virtual machines that are snap clones. Snap clones contain only the metadata defined for the virtual machine.



Creating snap clones is a very fast operation compared to cloning the entire template or assembly. However, if you update the contents of a snap clone, then review your space requirements. Unless your changes to the snap clone are carried out on shared virtual disks, you require additional storage on your system for the clone to retain both the original content, as well as changed content.

11.7.2 Cloning a Template With OAKCLI

Use the oakcli clone vm command to clone virtual machines that have attached virtual disks on Oracle Database Appliance Virtualized Platforms.

When you clone virtual machines with attached virtual disks, a clone of a virtual machine contains the contents of virtual disks attached locally, but does not contain contents of virtual disks attached in shared mode. If needed, you can clone the virtual disks required by a cloned virtual machine in a separate step.

Use the command <code>oakcli clone vm</code> to create a virtual machine from a virtual machine template. Use the <code>-repo name</code> option to provide the name of the shared repository, where <code>name</code> is the name of the repository. Use the <code>-node number</code> option to identify clause to identify the node on which you want to perform the cloning process, where <code>number</code> is the number of the node.



The <code>-node</code> option identifies the node where the cloning activity is carried out. The node value does not assign the default startup node for the virtual machine. You can set the startup assignment with the command <code>oakcliconfigure vm</code>.

Example 11-16 Example of Creating a Virtual Machine Clone from a Virtual Machine Template

This example creates a virtual machine named <code>myol6u_test</code> from the virtual machine template named <code>myol6u_15gb1</code>, which is located in a shared repository named <code>repo2</code> on <code>Node 0</code>:

oakcli clone vm myol6u_test -vmtemplate myol6u_15gb1 -repo repo2 -node 0

11.7.3 Creating a Snap Clone from a Template With OAKCLI

Use the oakcli clone vm command to create a snap clone of a virtual machine template on Oracle Database Appliance Virtualized Platforms.

Use the -vmtemplate name option to provide the name of the virtual machine template that you want to clone, where name is the name of the template. Use the -snap option to designate that you want to create a snap clone.

Example 11-17 Example of Creating a Snap Clone From a Virtual Machine Template

This example creates a snap clone named $myol15u_snap$ from the virtual machine template named myol5u:

oakcli clone vm myol15u_snap -vmtemplate myol5u -snap



11.7.4 Creating a Snap Clone of an Existing Virtual Machine With OAKCLI

Use the oakcli clone vm command to create a snap clone of an existing virtual machine on Oracle Database Appliance Virtualized Platforms.

Use the -vm name option to provide the name of the virtual machine that you want to clone, where name is the name of the virtual machine. Use the -snap option to designate that you want to create a snap clone.

Example 11-18 Example of Creating a Snap Clone From an Existing Virtual Machine

This example creates a snap clone named <code>myoll5u_test1</code> from a virtual machine named <code>myoll5u_test</code>:

oakcli clone vm myol15u_test1 -vm myol15u_test1 -snap

11.8 How to Manage Virtual Machines on Oracle Database Appliance Virtualized Platform

Review these topics for an overview of virtual machines, and for procedures to create and manage virtual machines.

- About Managing Virtual Machines on Oracle Database Appliance Virtualized Platform (page 11-23)
 - Deploy virtual machines on Oracle Database Appliance Virtualized Platform to run other workloads that are independent of databases running in ODA BASE
- Listing the Virtual Machines in Your Repositories (page 11-24)
 Use the <code>oakcli show vm</code> command to display details for all of your existing virtual machines or to display details of a specific virtual machine.
- Creating a Virtual Machine (page 11-25)
 Create a virtual machine by cloning an imported template, cloning an assembly that contains configured virtual machines, or cloning an existing virtual machine.
- Configuring a Virtual Machine (page 11-25)
 Use the oakcli configure vm command to configure a virtual machine on Oracle
 Database Appliance Virtualized Platform.
- Starting and Stopping a Virtual Machine (page 11-26)
 Use the oakcli start vm command to start a virtual machine on Oracle Database
 Appliance Virtualized Platform and use the oakcli stop vm command to stop a virtual machine.
- Externally Configuring a Virtual Machine (page 11-26)
 You can initially configure your virtual machines externally without connecting to the virtual machine console by using Oracle VM Guest Additions by passing key-value pairs to the virtual machine.
- Opening a Virtual Machine Console for a Virtual Machine (page 11-27)
 Use the oakcli show vmconsole command to open a virtual machine console window for an active virtual machine



- Creating an Image for a New Virtual Machine (page 11-27)
 Use the oakcli clone vm command to create an image for a new virtual machine on Oracle Database Appliance Virtualized Platform.
- Setting Up a Virtual Machine for Access from eth0 Using an IP Address (page 11-27)
 Configure a network device (eth0) with an IP address for a virtual machine.
- Adding or Removing a Virtual Disk to or from a Virtual Machine (page 11-28)
 Use the oakcli modify vm command to add or remove a virtual disk (vdisk) from a virtual machine.
- Removing a Virtual Machine from a Shared Repository (page 11-28)
 Use the <code>oakcli delete vm</code> command to delete the virtual machine and reclaim its storage and resources.
- Performing a Live Migration for an Oracle Database Appliance Virtual Machine (page 11-29)
 If your system meets requirements for live migration, then you can use the oakcli migrate vm command to migrate a virtual machine from the currently running node to another node.

11.8.1 About Managing Virtual Machines on Oracle Database Appliance Virtualized Platform

Deploy virtual machines on Oracle Database Appliance Virtualized Platform to run other workloads that are independent of databases running in ODA_BASE

Use OAKCLI commands to create and manage virtual machines, including starting and stopping them, and opening consoles for graphical user interface (GUI) access.



You can use a Virtual Network Computing (VNC) session to open a GUI console for a virtual machine.

You can reconfigure an active virtual machine. However, your changes do not take effect until you stop and restart the virtual machine. You can display high-level information about all of your virtual machines, or display detailed information about the configuration of single virtual machines. When you no longer have use for a particular virtual machine, delete the virtual machine to regain storage.

Note:

Do not modify the default settings for the following parameters in the guest virtual machine:

- xen blkfront.max: Max Indirect Descriptors, default 32
- xen blkback.max ring page order: Shared Ring Page Order, default 0



11.8.2 Listing the Virtual Machines in Your Repositories

Use the oakcli show vm command to display details for all of your existing virtual machines or to display details of a specific virtual machine.

The command displays the name, the repository, and the current state (online or offline) for each virtual machine. The output also contains the default number of CPUs and default amount of memory that Oracle Database Appliance Virtualized Platform will assign to each virtual machine.

Use the oakcli show vm command to display the virtual machine names, memory and vCPU allocations, status, virtual disks, and repository name for all virtual machines.

oakcli show vm

NAME	MEMORY	VCPU	STATE	REPOSITORY
sample5_odarepo1 odarepo1	2048	2	OFFLINE	
sample6_odarepol	2048	2	OFFLINE	
test1_odarepo1 odarepo1	2048	2	OFFLINE	
test2_odarepo2 odarepo2	2048	2	OFFLINE	
vml_odarepol odarepol	4096	4	ONLINE	
vm2_odarepo2	2048	2	OFFLINE	
odarepo2 win_vm1	1500	1	ONLINE	odarepo1

Use the oakcli show vm virtual machine name command to display information about a specific virtual machine.

For example, use the following command to display details about the vml_odarepol virtual machine:

```
oakcli show vm vml_odarepol
Resource: vml_odarepol
```

AutoStart : CPUPriority : Disks : restore 100

|file:/OVS/Repositories/odarepo1/Vi

rtualMachines/vml_odarepol/System.i mg,xvda,w||file:/OVS/Repositories/o darepol/VirtualMachines/vml_odarepo

1/u01.img,xvdb,w

Domain : XEN_PVM ExpectedState : online FailOver : false false IsSharedRepo : Keyboard : en-us 3000
: 4
: 4096
: OS_DEFAULT
: vml_odaren
: |m-MaxMemory MaxVcpu Memory Mouse vm1_odarepo1

Networks |mac=00:21:F6:00:00:E4|

NodeNum

NodeNumStart :

Name



OS : OL_5
PrivateIP : None
ProcessorCap : 100
RepoName : odarepo1
State : Online
TemplateName : otml_sample1_odarepo1
Vcpu : 4
cpupool : twocpu

11.8.3 Creating a Virtual Machine

vncport

Create a virtual machine by cloning an imported template, cloning an assembly that contains configured virtual machines, or cloning an existing virtual machine.

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A virtual machine is a software emulation of a computer system that is granted virtual resources, and can be started, stopped, and restarted independently.

When you clone a template, the template is imported as an archive, unpacked, and stored as a virtual machine configuration file with disk images. The disk images are cloned to create a new instance in the form of a virtual machine.

Instead of creating a complete clone of a template or assembly, you can create a snap clone, which contains only the metadata defined for the virtual machine.

11.8.4 Configuring a Virtual Machine

Use the <code>oakcli configure vm</code> command to configure a virtual machine on Oracle Database Appliance Virtualized Platform.

Include a -prefnode clause, to identify the node where you want the virtual machine to run by default and a -failover clause to indicate if you want the virtual machine to use the other node when the preferred node is not available (either at startup or while already active).

If you reconfigure a virtual machine that is currently running, then your changes do not take effect until you stop and restart the virtual machine.

Table 11-1 Parameters Available for Configuring a Virtual Machine

Parameter	Description
-vcpu 2	Sets two (2) as the number of CPUs to be assigned to the virtual machine when started
-cpuprio 150	Sets the CPU access priority to 150
-cpucap 20	Sets the maximum percentage of a CPU's capacity that will be assigned to the virtual machine to 20%
-memory 1G	Sets the amount of memory assigned when the virtual machine starts to 1 GB
-cpupool linpool	Specifies linpool as the CPU pool to be assigned to the virtual machine
-keyboard en-us	Defines the keyboard type used to access the virtual machine as en-us
-mouse USB_MOUSE	Defines the mouse type used to access the virtual machine as a USB mouse



These values will override values assigned to these same parameters in the virtual machine template from which this virtual machine was derived. The virtual machine will use default values for parameters that are not defined in either the parent template or in a configuration command.



CPU capacity is controlled by the CPU pool assigned to a virtual machine by either the <code>-cpupool</code> parameter or by the <code>default_unpinned_pool</code> (if the virtual machine is not configured with a <code>-cpupool</code> parameter). Values for <code>-vcpu</code> and <code>-maxvcpu</code> parameters that are larger than the number of CPUs in the assigned CPU pool are ignored.

Use the <code>oakcli configure</code> command and parameters to configure the virtual machine:

```
# oakcli modify vm vmname parameters
```

Example 11-19 Example of Configuring a Virtual Machine

Set values for specific resources in the virtual machine named myol15u:

```
oakcli configure vm myol5u
-vcpu 2 -cpuprio 150 -cpucap 20 -memory 1G
-cpupool linpool -keyboard en-us -mouse USB_MOUSE
```

11.8.5 Starting and Stopping a Virtual Machine

Use the <code>oakcli start vm</code> command to start a virtual machine on Oracle Database Appliance Virtualized Platform and use the <code>oakcli stop vm</code> command to stop a virtual machine.



If you reconfigure a virtual machine that is currently running, then your changes will not be effective until you stop and restart the virtual machine.

11.8.6 Externally Configuring a Virtual Machine

You can initially configure your virtual machines externally without connecting to the virtual machine console by using Oracle VM Guest Additions by passing key-value pairs to the virtual machine.

Use the oakcli modify vm -s command to pass parameters to the virtual machine:

```
# oakcli modify vm vmname -s 'key1:value1;key2:value2...'
```

The following example has two value pairs:

```
oakcli modify vm vmo16u3 -s 'com.oracle.linux.network.device.
0:eth0;com.oracle.linux.network.ipaddr.0:192.1.2.18'
```



Note:

- For more information about Oracle VM Guest Additions, see "Using the Oracle VM Guest Additions" in the Oracle VM Utilities Guide for x86 at http://docs.oracle.com/cd/E35328 01/E35333/html/vmutl-guestadd.html.
- Refer to the whitepaper *Oracle Database Appliance: Automated Virtual Machine Provisioning* for more information.

Related Topics

 http://www.oracle.com/technetwork/database/database-appliance/overview/odaautomatedymprovisioning-2348232.pdf

11.8.7 Opening a Virtual Machine Console for a Virtual Machine

Use the $oakcli\ show\ vmconsole\ command\ to\ open\ a\ virtual\ machine\ console\ window\ for\ an\ active\ virtual\ machine$

If the console does not display correctly, then close the console, set the DISPLAY environment variable to an appropriate value for your monitor, and then rerun the oakcli show vmconsole command.

You can also configure your virtual machine (using <code>oakcli modify vm</code> command with the <code>-s</code> parameter) to allow access from the OAKCLI command line instead of a graphical user interface (GUI) virtual machine console.

Use the <code>oakcli</code> show <code>vmconsole</code> vm <code>name</code> to open a console for a virtual machine. Open a For example, use the following command to open a console for the virtual machine <code>named vml_odarepol</code>:

oakcli show vmconsole vml_odarepol

11.8.8 Creating an Image for a New Virtual Machine

Use the $oakcli\ clone\ vm$ command to create an image for a new virtual machine on Oracle Database Appliance Virtualized Platform.

By default, the image inherits the content and configuration information from the template or from the virtual machine that you are cloning and resides in the same repository as the source. Unless you are using local repositories for your virtual machines, include the-node clause in the <code>oakcli clone</code> command to identify the node that should run the cloning process. To create a snap clone, which will only contain the configuration metadata, include the <code>-snap</code> clause in the <code>oakcli clone</code> command.

11.8.9 Setting Up a Virtual Machine for Access from eth0 Using an IP Address

Configure a network device (eth0) with an IP address for a virtual machine.

The following set of commands configures the virtual machine vmol6u3 (which has ovmd) with the IP address 192.168.16.51 for the eth0 interface and sets the root password to password123a.



```
oakcli clone vm vmol6u3 -vmtemplate ol6u3 -repo shrepo -node 0
oakcli modify vm vmol6u3 -addnetwork priv1
oakcli start vm vmol6u3
oakcli modify vm vmol6u3 -s 'com.oracle.linux.network.device.0:eth0'
oakcli modify vm vmol6u3 -s 'com.oracle.linux.network.onboot.0:yes'
oakcli modify vm vmol6u3 -s 'com.oracle.linux.network.bootproto.0:static'
oakcli modify vm vmol6u3 -s 'com.oracle.linux.network.ipaddr.0:192.168.16.51'
oakcli modify vm vmol6u3 -s 'com.oracle.linux.network.netmask.0:255.255.255.0'
oakcli modify vm vmol6u3 -s 'com.oracle.linux.root-password:password123'
```

11.8.10 Adding or Removing a Virtual Disk to or from a Virtual Machine

Use the <code>oakcli modify vm</code> command to add or remove a virtual disk (vdisk) from a virtual machine.

Do not use the -attachvdisk or the -detachvdisk option with the -addnetwork, -deletenetwork, or -s key:value pair parameters.

To attach a virtual disk to a virtual machine, use the oakcli modify vm vm_name command with the -attachvdisk clause that names the virtual disk.

```
oakcli modify vm vm_name -attachvdisk vdisk_name
```

To detach a virtual disk from a virtual machine, use the oakcli modify vm vm_name command with the -detachvdisk clause that names the virtual disk.

```
oakcli modify vm vm_name -detachvdisk vdisk_name
```

11.8.11 Removing a Virtual Machine from a Shared Repository

Use the oakcli delete vm command to delete the virtual machine and reclaim its storage and resources.

When you no longer have use for a particular virtual machine, delete the machine. When deleting the machine, you can specify the Oracle Database Appliance node from which you want to remove the virtual machine. If this optional parameter is not included, then the virtual machine is removed from both nodes.

Delete the virtual machine from Node 1.

For example, run the following command to delete the $\tt ovu22$ virtual machine from Node 1.

```
oakcli delete vm ovu22 -server 1
```

Delete the virtual machine from both nodes.

For example, run the following command to delete the ${\tt ovu22}$ virtual machine from both nodes.

```
oakcli delete vm ovu22
```



11.8.12 Performing a Live Migration for an Oracle Database Appliance Virtual Machine

If your system meets requirements for live migration, then you can use the <code>oakclimigrate vm</code> command to migrate a virtual machine from the currently running node to another node.

Live Migration refers to the process of moving a running virtual machine between physical machines without disconnecting the client or application running in the virtual machine. Memory, storage, and network connectivity of the virtual machine are transferred from the original host machine to the destination.

You must meet the following requirements before performing a live migration:

- The virtual machine must be on a shared repository and the repository must be online on both nodes.
- The virtual machine must be running.
- The destination host must have the required resources (memory, CPUs and so on) for successful migration.
- The destination host must have a CPU pool with the same name as the CPU pool
 of the virtual machine that is being migrated.

Use the <code>oakcli migrate vm vmname</code> command to migrate a virtual machine from the currently running node to another node. vmname is the name of the virtual machine to be migrated.

When you run this command, the virtual machine must be online and corresponding, and the shared repository must be online on both nodes. If a virtual machine is in the migration process, then OAKCLI will display the virtual machine state as MIGRATING.

Example 11-20 Example of Migrating a Virtual Machine from the Currently Running Node to Another Node

This example migrates a virtual machine named myvm1

oakcli migrate vm myvm1

11.9 How to Create Driver Domain Virtual Machines

Use driver domain virtual machines to improve performance.

- About Driver Domain Virtual Machines (page 11-30)
 Use driver domain virtual machines to improve performance by enabling guest virtual machines (VMs) to use ODA_BASE instead of Dom0 to access virtual disks.
- Creating a Driver Domain Virtual Machine from a Template (page 11-31)
 Create a driver domain virtual machine from a virtual machine template.
- Converting a Virtual Machine to a Driver Domain Virtual Machine (page 11-32)
 Convert a guest virtual machine to a driver domain virtual machine to improve performance.
- Converting a Root Disk to a Driver Domain Disk (page 11-33)
 Set up your guest virtual machine (guest VM) root disk as a driver domain and create a new disk as the boot driver.



11.9.1 About Driver Domain Virtual Machines

Use driver domain virtual machines to improve performance by enabling guest virtual machines (VMs) to use <code>ODA_BASE</code> instead of <code>Dom0</code> to access virtual disks.

A *driver domain* is a user domain that has special privileges and responsibilities for a particular piece of hardware. When you use the driver domain option, the newly created virtual disks are mounted directly from <code>ODA_BASE</code> to a guest virtual machine. The option improves I/O performance by enabling guest virtual machines to use <code>ODA_BASE</code> instead of <code>Dom0</code> to access virtual disks.

The driver domain functionality applies to non-system disks. Once a virtual machine is created in driver domain mode, any new vDisks are added in driver domain mode. Newly created virtual disks are mounted directly from <code>ODA_BASE</code> to a guest virtual machine. To determine if a virtual machine is configured in driver domain mode, use the <code>oakcli show vm vmname</code> command. When the virtual machine is in driver mode, the output for the DriverDomain attribute is TRUE.

The virtual disk and vm.cfg files are stored in the following directories:

- Dom0: /Repositories/vm_repo_name/.ACFS/snaps/vm_name/ VirtualMachines/vm name
- ODA_BASE: /app/sharedrepo/vm_repo_name/.ACFS/snaps/vm_name/ VirtualMachines/vm_name

The driver domain only works when you add virtual disks to a guest virtual machine. When a virtual machine is in driver domain mode, the corresponding virtual machine configuration file, vm.cfg, has the following disk entries:

When -driverdomain is specified, the cloned virtual machine is configured with the driver domain. The corresponding virtual machine configuration file, vm.cfg, has the following disk entries:

```
disk = [u'file:/OVS/Repositories/repo5/.ACFS/snaps/vm10/
VirtualMachines/
vm10/System.img,xvda,w',
u'file:/u01/app/sharedrepo/repo5/.ACFS/snaps/
vm10/VirtualMachines/vm10/u01.img,xvdb,w,oakDom1']
```

All disks, with the exception of the xvda boot disk, have the path from oakDom1, that is odabase.

The following guest operating systems are supported for driver domain virtual machines:

- Oracle Linux with the latest Unbreakable Enterprise Kernel 2 (UEK2) or Unbreakable Enterprise Kernel 3 (UEK3).
- Microsoft Windows with Oracle VM Windows PV Driver 3.4.1. Oracle VM Windows PV Driver 3.4.1 release is available for download on My Oracle Support as patch number 23346086.
- Oracle Solaris 11.3 or higher x86.



11.9.2 Creating a Driver Domain Virtual Machine from a Template

Create a driver domain virtual machine from a virtual machine template.

Several options are available to create, or import, a template that you will use to create the clone. Determine the virtual machine template you want, the method to import the template, and the naming convention for the template.

This example imports a virtual machine template from <code>Dom0</code> and uses the template to create a driver domain virtual machine. The virtual machine image is named <code>myol6u_test myol6u_ ol5u7_vm_alpha</code> from the virtual machine template named <code>myol6u_15gb1 (OL5U7)</code>, which is stored in the shared repository named <code>repo2 (odarepo1)</code> on Node 0 in driver domain mode.

This example

 Use the oakcli import vmtemplate command to import a virtual machine template and name the template.

For example, import virtual machine template <code>OVM_OL5U7_X86_64_PVM_10gB.tgz</code> from the <code>/OVS</code> directory in <code>Dom0</code> into the <code>odarepo1</code> shared repository on Node 0 in driver domain mode and name the template file <code>ol5U7</code>.

oakcli import vmtemplate OL5U7 -files /OVS/OVM_OL5U7_X86_64_PVM_10GB.tgz -repo odarepol

2. Use the oakcli clone vm command to create a clone that uses the driver domain.

For example, create a virtual machine image named $vm1_o15u7$ from the virtual machine template named ol5u7, which is stored in the shared repository named odarepo1 on Node 0:

clone virtual machine

```
oakcli clone vm vml_ol5u7 -vmtemplate OL5U7 -repo odarepo1 -node 0 -driverdomain
```

3. Run the oakcli show vm command to confirm that the virtual machine is configured in driver domain mode.

When the virtual machine is in driver mode, the output for the DriverDomain attribute is TRUE.

oakcli show vm vm1 ol5u7

Use the oakcli start vm command to start the virtual machine.

For example, start the virtual machine named vm1_o15u7 on Node 0.

```
oakcli start vm vm1_ol5u7 -node 0
```

Related Topics

oakcli import vmtemplate (page 14-73)
 Use the oakcli import vmtemplate command to import virtual machine templates.

oakcli clone vm (page 14-62)

Use the $oakcli\ clone\ vm$ command to create clones and snap clones of virtual machines.

oakcli show vm (page 14-68)

Use the oakcli show vm command to display information about virtual machines.

oakcli start vm (page 14-69)
 Use the oakcli start vm command to start a virtual machine on a node.

11.9.3 Converting a Virtual Machine to a Driver Domain Virtual Machine

Convert a guest virtual machine to a driver domain virtual machine to improve performance.

You can clone an existing virtual machine that uses <code>Dom0</code> to create a clone virtual machine that uses the driver domain <code>ODA_BASE</code> instead of <code>Dom0</code>.

In this example, virtual machine $vm-dom0_o15u7$ is on Dom0 and is not a driver domain virtual machine. The example creates a clone virtual machine named $vm-dd1_o15u7$ that uses the driver domain oda_base .

1. Use the oakcli stop command to shut down the virtual machine.

For example, stop the virtual machine named $vm-dom0_o15u7$. Shutting down the virtual machine ensures that there is consistent data from the virtual machine (vm) and virtual disks (vdisks)

```
oakcli stop vm vm2_ol5u7 -force
```

- 2. Detach the virtual disk (vdisk) from vm-dom0_ol5u7
- 3. Use the oakcli clone vm command to clone a new virtual machine from the original.

Create a new virtual machine named $vm-dd1_o15u7$ from the original virtual machine named $vm-dom0_o15u7$. Use the -snap option to create a snapshot of the source virtual machine. Because the original virtual machine is not a driver domain machine, use the -force and -driverdomain options to create a clone virtual machine that does use the driver domain.

- oakcli clone vm vm-dd1 ol5u7 -vm vm-dom0 ol5u7 -snap -force -driverdomain
- 4. Attach the virtual disk (vdisk) that you detached from the source virtual machine in Step 2 to the new driver domain virtual machine.

Attaching the vdisk ensures that the vm.cfg has the disk information with the driver domain feature.

- 5. Verify that oakDomlis the vdisk in the new vm.cfg.
- 6. Run the oakcli show vm to confirm that the newly created virtual machine is configured in driver domain mode.

When the virtual machine, $vm-dd1_o15u7$, is in driver domain mode, the output for the DriverDomain attribute is TRUE .

oakcli show vm vm-dd1 ol5u7

7. Use the oakcli start vm command to start the virtual machine.

For example, start the virtual machine named vm-dd1_o15u7 on Node 0.

oakcli start vm vm-dd1_ol5u7 -node 0



Related Topics

- oakcli stop command (page 14-49)
 Use the oakcli stop command to stop a virtual machine, to stop a shared repository on a node, or to stop ODA_BASE on the local node.
- oakcli clone vm (page 14-62)
 Use the oakcli clone vm command to create clones and snap clones of virtual machines.
- oakcli show vm (page 14-68)
 Use the oakcli show vm command to display information about virtual machines.
- oakcli start vm (page 14-69)
 Use the oakcli start vm command to start a virtual machine on a node.

11.9.4 Converting a Root Disk to a Driver Domain Disk

Set up your guest virtual machine (guest VM) root disk as a driver domain and create a new disk as the boot driver.

This example clones an existing guest virtual machine as a driver domain guest VM and then uses the $OL6U7_x86_64_PVHVM$ template to create a guest VM and create a new disk for the boot driver.

Using the driver domain improves the guest VM disk IO performance; however, the driver domain is not applicable for a guest VM virtual disk that is a boot disk. Because the boot disk is generally the root disk, you must create a new disk to be the boot driver.

You can create a guest virtual machine by cloning an existing guest, or use one of the templates, such as <code>OL6U7_x86_64_PVHVM</code> or <code>OVM_OL5U7_x86_64_PVM_10gB.tgz</code>, that are available in the <code>/OVS</code> directory in Dom0.

Using driver domains requires at least Oracle Database Appliance version 12.1.2.7.0. In this example, the following is the layout of disks in the original OL6U7 virtual machine:

```
- boot/root disk '/dev/xvda' (echo -e "p" | fdisk /dev/xvda):
Device Boot Start End Blocks Id System
/dev/xvda1 * 2 503 514048 83 Linux
/dev/xvda2 504 11264 11019264 83 Linux
/dev/xvda3 11265 15360 4194304 82 Linux swap / Solaris
- u01 disk '/dev/xvdb' (echo -e "p" | fdisk /dev/xvdb):
Device Boot Start End Blocks Id System
/dev/xvdb1 1 13054 104856223+ 83 Linux
```

The /etc/fstab is as follows:

```
# cat /etc/fstab
UUID=b072ele9-05a9-4544-a4dd-b15ba49cea2f / ext4 defaults 1 1
UUID=301e09e2-78e4-47d6-b501-d4f1098b419d /boot ext4 defaults 1 2
UUID=39e5a125-a1d8-48f4-9e81-f9e89b4dd51b swap swap defaults 0 0
tmpfs /dev/shm tmpfs defaults 0 0
devpts /dev/pts devpts gid=5,mode=620 0 0
sysfs /sys sysfs defaults 0 0
proc /proc proc defaults 0 0
UUID=770078eb-c083-4d52-81bf-e026ab3f3fa7 /u01 ext4 defaults 1 2
```

The df -h is as follows:



```
# df -h
Filesystem Size Used Avail Use% Mounted on
/dev/xvda2 11G 814M 8.9G 9%
/tmpfs 3.9G 0 3.9G 0% /dev/shm
/dev/xvda1 479M 51M 399M 12% /boot
/dev/xvdb1 92G 55G 33G 63% /u01
```

1. Clone a guest VM as a driver domain guest VM.

You can use one of the following commands to clone a virtual machine:

- oakcli clone vm vm_name -vmtemplate template_name -repo repo_name [-node 0|1] [-driverdomain]
- oakcli clone vm vm_name -vmtemplate src_vmtempl_name -snap [-driverdomain]
- oakcli clone vm vm_name -vm src_vm_name -snap [-force] [-driverdomain]



You must stop the virtual machine before taking a snapshot.

For example, create a driver domain guest VM named <code>ol6U7</code> from the <code>ol6U7_x86_64_PVHVM</code> source VM template. Use the <code>-snap</code> option to designate that you want to create a snapshot of the source virtual machine and the <code>-driverdomain</code> option to indicate that the new virtual machine will use the driver domain.

oakcli clone vm OL6U7 -vm OL6U7_x86_64_PVHVM -snap -driverdomain

2. Create a new boot virtual disk.

dd if=/dev/zero of=/u01/app/sharedrepo/repo name/.ACFS/snaps/vm_name/ VirtualMachines/vm_name/virtual diskfile name.img oflag=direct count=0 bs=1M seek=new size in MB

For example, create a 500 MB boot virtual disk named newboot for the OL6U7 virtual machine that is in the odarepol repository:

dd if=/dev/zero of=/u01/app/sharedrepo/odarepo1/.ACFS/snaps/OL6U7/
VirtualMachines/OL6U7/newboot.img oflag=direct count=0 bs=1M seek=500

- 3. Edit the vm.cfg file to attach the new boot disk to your guest VM.
 - a. Navigate to the vm.cfg file.

/u01/app/sharedrepo/vm repo/.ACFS/snaps/vm name/VirtualMachines/vm name/vm.cfg

For example, the <code>OL6U7</code> virtual machine is in the <code>odarepo1</code> repository:

/u01/app/sharedrepo/odarepo1/.ACFS/snaps/OL6U7/VirtualMachines/OL6U7/vm.cfg

b. Add the new disk entry on the disk parameter.

```
disk = ['file:virtual disk file path,virtual device,r/w option']
```

For example, add the newboot virtual disk for the OL6U7 virtual machine, which is in the odarepo1 repository.

disk =

[u'file:/OVS/Repositories/odarepo1/.ACFS/snaps/OL6U7/VirtualMachines/ OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvda,w',



```
u'file:/u01/app/sharedrepo/odarepo1/.ACFS/snaps/oakvdk_o16u7_u01/
VirtualDisks/oakvdk_o16u7_u01,xvdb,w,oakDom1',
u'file:/u01/app/sharedrepo/odarepo1/.ACFS/snaps/oakvdk_o16u7_bootdsk/
VirtualDisks/oakvdk_o16u7_bootdsk,xvdc,w,oakDom1']
(...)
```

The following example shows the newboot virtual disk:

```
disk =
[u'file:/OVS/Repositories/odarepol/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvda,w',
u'file:/u01/app/sharedrepo/odarepol/.ACFS/snaps/oakvdk_ol6u7_u01/
VirtualDisks/oakvdk_ol6u7_u01,xvdb,w,oakDoml',
u'file:/OVS/Repositories/odarepol/.ACFS/snaps/OL6U7/VirtualMachines/OL6U7/
newboot.img,xvdc,w']
(...)
```

4. Stop and restart your guest VM.

```
oakcli stop vm vm_name oakcli start vm vm_name
```

For example, stop and restart the OL6U7 guest.

```
oakcli stop vm OL6U7oakcli start vm OL6U7
```

The new disks are available to the guest VM after the restart.

5. Create a disk partition on the new boot driver.

A new empty virtual disk appears as an /dev/xvdc device.

```
# dmesg |grep xvdc
blkfront: xvdc: flush diskcache: enabled; persistent grants: enabled; indirect
descriptors: enabled;
xvdc: unknown partition table
```

Use the fdisk command to partition the disk and make the partition bootable.

6. Format the new boot disk partition /dev/xvdc1.

```
mkfs.ext4 /dev/xvdc1
```

7. Setup and mount the new boot disk partition and get the single blockID.

```
mkdir /virtual diskfile namemount /dev/xvdc1 /virtual diskfile name
```

a. Setup and mount the new boot disk.

```
mkdir /virtual diskfile namemount /dev/xvdc1 /virtual diskfile name
```

For example, make a directory and mount the newboot boot disk:

```
mkdir /newbootmount /dev/xvdc1 /newboot
```

b. Get the single blockID.

```
# blkid /dev/xvdc1/dev/xvdc1: UUID="3d7a177b-0fa0-4212-9c0c-c5554bb1817a"
TYPE="ext4"
```

8. Copy the original boot content to the new boot disk.

```
cp -dpR /boot/* /virtual diskfile name
```

For example, for the disk named newboot:

```
cp -dpR /boot/* /newboot
```

9. Make the new boot partition the active boot partition

```
umount /virtual diskfile nameumount /bootmount /dev/xvdc1 /boot
umount /newbootumount /bootmount /dev/xvdc1 /boot
```

10. Setup Grub in the new boot disk.

Use the grub or grub2 command, where /dev/xvdc is the new boot disk device.

If you are using Oracle Linux 6U7, use grub:

```
# grub
grub> device (hd0) /dev/xvdc
grub> root (hd0,0)
grub> setup (hd0)
```

If you are using Oracle Linux 7u2, use grub2:

```
# grub2-mkconfig -o /boot/grub2/grub.cfg
# grub2-install /dev/xvdc
```

The following example uses grub:

```
Probing devices to guess BIOS drives. This may take a long time.
GNU GRUB version 0.97 (640K lower / 3072K upper memory)
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename.]
grub> device (hd0) /dev/xvdc
device (hd0) /dev/xvdc
grub> root (hd0,0)
root (hd0,0)
Filesystem type is ext2fs, partition type 0x83
grub> setup (hd0)
setup (hd0)
Checking if "/boot/grub/stage1" exists... no
Checking if "/grub/stagel" exists... yes
Checking if "/grub/stage2" exists... yes
Checking if "/grub/e2fs_stage1_5" exists... yes
Running "embed /grub/e2fs_stage1_5 (hd0)"... 27 sectors are embedded.
Running "install /grub/stage1 (hd0) (hd0)1+27 p (hd0,0)/grub/stage2 /grub/
grub.conf"... succeeded
Done.
grub> quit
quit
```

The following example uses grub2:

```
# grub2-mkconfig -o /boot/grub2/grub.cfg
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-3.10.0-327.3.1.el7.x86_64
Found initrd image: /boot/initramfs-3.10.0-327.3.1.el7.x86_64.img
Found linux image: /boot/vmlinuz-3.8.13-118.2.1.el7uek.x86_64
Found initrd image: /boot/initramfs-3.8.13-118.2.1.el7uek.x86_64.img
Found linux image: /boot/vmlinuz-0-rescue-8f9df86c6d4c4640a01315a3aa93790e
Found initrd image: /boot/initramfs-0-
```



```
rescue-8f9df86c6d4c4640a01315a3aa93790e.img done

# grub2-install /dev/xvdc
Installing for i386-pc platform.
Installation finished.
No error reported.
```

11. Edit /etc/fstab with the new boot device.

```
UUID=b072ele9-05a9-4544-a4dd-b15ba49cea2f / ext4 defaults 1 1
#UUID=30le09e2-78e4-47d6-b50l-d4f1098b419d /boot ext4 defaults 1 2 <<---
Original boot device
UUID=3d7a177b-0fa0-4212-9c0c-c5554bb1817a /boot ext4 defaults 1 2

UUID=39e5a125-a1d8-48f4-9e81-f9e89b4dd51b swap swap defaults 0 0
tmpfs /dev/shm tmpfs defaults 0 0
devpts /dev/pts devpts gid=5,mode=620 0 0
sysfs /sys sysfs defaults 0 0
proc /proc proc defaults 0 0

UUID=770078eb-c083-4d52-81bf-e026ab3f3fa7 /u01 ext4 defaults 1 2
```

12. Edit the vm.cfg file and make the new boot virtual disk the first disk on the list.

Note:

The driver domain device use the following root path /u01/app/sharedrepo. The boot disk root path is /OVS/Repositories.

The entries in the disk section of the ${\tt vm.cfg}$ file will look something like the following:

```
u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvda,w',
<<-- original boot/root disk
u'file:/u01/app/sharedrepo/rcrepo/.ACFS/snaps/oakvdk_ol6u7_u01/VirtualDisks/
oakvdk_ol6u7_u01,xvdb,w,oakDoml',
<<-- original u01 disku'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/
VirtualMachines/OL6U7/newboot.img,xvdc,w'
<<-- new boot disk</pre>
```

Move the new boot virtual disk, newboot, to the first disk on the list.

```
u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/OL6U7/
newboot.img,xvda,w'
<<-- new boot disk
u'file:/u01/app/sharedrepo/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvdb,w,oakDom1
<<-- original boot/root disku'file:/u01/app/sharedrepo/rcrepo/.ACFS/snaps/
oakvdk_ol6u7_u01/VirtualDisks/oakvdk_ol6u7_u01,xvdc,w,oakDom1'
<<-original u01 disk</pre>
```

The new boot device (xvdc) becomes the first device (not driver domain) and xvda is the second domain driver device.

The following is an example of the vm.cfg before the edit:



```
# cat vm.cfg
vif = ['type=netfront,bridge=net1']
name = 'OL6U7'
extra = 'NODENAME=OL6U7'
builder = 'hvm'
'24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50
,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,6
vcpus = 2
memory = 8192
cpu_cap = 0
vnc = 1
serial = 'pty'
disk =
[u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvda,w',
u'file:/u01/app/sharedrepo/rcrepo/.ACFS/snaps/oakvdk_ol6u7_u01/VirtualDisks/
oakvdk_ol6u7_u01,xvdb,w,oakDom1',
u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/OL6U7/
newboot.img,xvdc,w']
maxvcpus = 2
maxmem = 8192
```

The following is an example of the vm.cfg after the edit, where the new boot device (xvdc) is the first device and xvda is the driver domain device:

```
# cat vm.cfg
vif = ['type=netfront,bridge=net1']
name = 'OL6U7'
extra = 'NODENAME=OL6U7'
builder = 'hvm'
cpus =
124,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50
,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,6
vcpus = 2
memory = 8192
cpu_cap = 0
vnc = 1
serial = 'pty'
disk =[
[u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/OL6U7/
newboot.img,xvda,w',
u'file:/u01/app/sharedrepo/u'file:/u01/app/sharedrepo/rcrepo/.ACFS/snaps/
oakvdk_ol6u7_u01/VirtualDisks/oakvdk_ol6u7_u01,xvdc,w,oakDom1']
maxvcpus = 2
maxmem = 8192
```

13. Stop and restart the guest VM

```
oakcli stop vm vm_name
oakcli start vm vm_name
oakcli stop vm OL6U7
oakcli start vm OL6U7
```

14. Check the layout of the new disks.

The layout should be similar to the following:

```
# df -h
Filesystem Size Used Avail Use% Mounted on/dev/xvdb2 11G 814M 8.9G 9% /
tmpfs 3.9G 0 3.9G 0% /dev/shm
```



```
/dev/xvda1 471M 51M 391M 12% /boot
/dev/xvdc1 92G 55G 33G 63% /u01
```

The swap device is now under the driver domain: /dev/xvdb

```
# swapon -s
Filename Type Size Used Priority
/dev/xvdb3 partition 4194300 0 -1
```

15. (Optional) Synchronize the oakcli virtual machine inventory with the vm.cfg file.

When you edit the vm.cfg file, the oakcli show vm vm name output displays incorrect information about the disk. You can create a temporary duplicate (snapshot) of the virtual machine to fix the output.

```
oakcli stop vm vm_name
oakcli clone vm tmp_vm_name -vm vm_name -snap -driverdomain
oakcli delete vm vm_name
oakcli clone vm vm_name -vm tmp_vm_name -snap -driverdomain
oakcli delete vm tmp_vm_name
```



Stop the virtual machine before taking a snapshot.

For example, create a temporary clone called tmp_OL6U7 of the virtual machine OL6U7 using the -snap and -driverdomain options. Delete the virtual machine OL6U7, and then use the temporary clone to create a new clone. Delete the temporary virtual machine.

```
oakcli stop vm OL6U7
oakcli clone vm tmp_OL6U7 -vm OL6U7 -snap -driverdomain
oakcli delete vm OL6U7
oakcli clone vm OL6U7 -vm tmp_OL6U7 -snap -driverdomain
oakcli delete vm tmp_OL6U7
```

Note:

The oakcli clone vm command creates a duplicate (snapshot) of the VDisks that are attached to the guest VM. Use the oakcli delete vdisk command to remove the orphan VDisks.

Run the oakcli show vm vm_name command to verify that the oakcli virtual machine inventory is in sync with the vm.cfg file.

```
# oakcli show vm OL6U7
The Resource is : OL6U7
AutoStart : restore
CPUPriority : 100
Disks : |file:/OVS/Repositories/rcrepo/.ACF
S/snaps/OL6U7/VirtualMachines/OL6U7
/newboot.img,xvda,w||file:/u01/app/
sharedrepo/rcrepo/.ACFS/snaps/OL6U7
/VirtualMachines/OL6U7/15f96d92a66c
4b808035116ab6348d0d.img,xvdb,w,oak
Dom1|
```



```
Domain : XEN_PVM
DriverDomain : True
ExpectedState : offline
FailOver : false
IsSharedRepo : true
Keyboard : en-us
MaxMemory: 8192M
MaxVcpu : 2
Memory: 8192M
Mouse : OS_DEFAULT
Name : OL6U7
Networks : |type=netfront,bridge=net1|
NodeNumStart : 0
OS : OL 5
PrefNodeNum: 0
PrivateIP : None
ProcessorCap: 0
RepoName : rcrepo
State : Offline
TemplateName : tmp_OL6U7
VDisks: |oakvdk_snap_3_ol6u7_u01_rcrepo|
Vcpu: 2
cpupool : default-unpinned-pool
```

11.10 How to Manage High Availability on Oracle Database Appliance Virtualized Platform

Use the $oakcli\ configure\ vm$ command to configure high availability services for your virtual machines.

A system that is highly available is designed to provide uninterrupted computing services during essential time periods, during most hours of the day, and during most days of the week throughout the year. Reliability, recoverability, timely error detection, and continuous operations are primary characteristics of a highly available solution. Two essential parts of high availability are automatic restart and failover.

Unless you are using local repositories, you can set high availability options for your virtual machines. High availability options identify the node where the virtual machine should be started by default and whether the virtual machine should be failed over to the other node. Failover can occur if the node where the virtual machine is already running fails or if the preferred node is not available when the virtual machines attempt to start.

Configuring Automatic Restart for High Availability

A virtual machine automatically restarts after a hardware or software failure or whenever your database host computer restarts. Use the <code>oakcli configure vm</code> command to start a virtual machine on a preferred node by using the-prefnode option.

Configuring Failover for High Availability

Configuring failover provides high availability by enabling a virtual machine to restart on the other node after an unplanned failure, without requiring manual intervention. Use the command <code>oakcli configure vm</code> with the <code>-failover</code> option to configure fail over from one node to another.



11.11 How to Manage CPU Pools on Oracle Database Appliance Virtualized Platform

These topics describe how to use OAKCLI to create and manage CPU pools on Oracle Database Appliance Virtualized Platform.

- About Managing CPU Pools for Resource Allocation (page 11-41)
 Use CPU pools to cage and manage resource allocations to workloads for virtual machines on Oracle Database Appliance Virtualized Platforms.
- About Over-Subscribed CPU Pools (page 11-42)
 Configure virtual machines so that they do not subscribe to more CPU resources than the resources available in CPU pools.
- Creating a New CPU Pool on Oracle Database Appliance Virtualized Platform Nodes (page 11-42)
 Use the command oakcli create cpupool to create a CPU pool.
- Showing the CPU Pools Configured on Oracle Database Appliance Virtualized Platform Nodes (page 11-43)
 Use the command oakcli show cpupool command to display the CPUs assigned to each defined CPU pool.
- Changing the Number of CPUs Assigned to a CPU Pool on Oracle Database Appliance Virtualized Platform Nodes (page 11-43)
 Use the oakcli configure cpupool command to change the number of CPUs assigned to a CPU pool.
- Assigning a Virtual Machine to a CPU Pool on Oracle Database Appliance
 Virtualized Platform (page 11-43)
 Use the command oakcli configure vm to assign a virtual machine to a CPU pool.

11.11.1 About Managing CPU Pools for Resource Allocation

Use CPU pools to cage and manage resource allocations to workloads for virtual machines on Oracle Database Appliance Virtualized Platforms.

Workloads are isolated by creating CPU pools and assigning (pinning) virtual machines to a specific CPU pool. When you pin a virtual machine to a CPU pool, you ensure that the virtual machine uses CPUs in only that CPU pool.

When you initially configure Oracle Database Appliance Virtualized Platform, a default-unpinned-pool is created on each node. The size of this pool depends on the hardware model.

When you create the ODA_BASE domain, a new CPU pool is created on both nodes. The pool is named <code>odaBaseCpuPool</code>. The CPUs required for this pool are removed from the default-unpinned-pool. ODA_BASE is the only domain allowed to use the CPUs in the <code>odaBaseCpuPool</code>. When you start other virtual machines, the virtual machines run on CPUs that are left in the default-unpinned-pool, effectively removing ODA_BASE from the work being done by other virtual machines.

You can also cage groups of virtual machines by creating additional CPU pools. These additional pools enable you to pin a virtual machine, or a set of virtual machines, to its own CPU pool. Virtual machines running in a specific CPU pool do not share CPU



cycles with virtual machines running in other CPU pools. Define as many CPU pools as you want, up to the number of available CPUs on your system.

If your application requirements change over time, then Oracle recommends that you resize, add, or drop CPU pools as needed to make the best use of your resources. You may also want to resize ODA_BASE. However, if you want to resize ODA_BASE, then you must use a special command that also updates your Oracle Database Appliance Virtualized Platform license.

Example 11-21 Example of Showing CPU Pools on a Node

A CPU pool can have a different size on each node (except for the odaBaseCpuPool), as shown by the following oakcli show opupool commands, one for each node:

11.11.2 About Over-Subscribed CPU Pools

Configure virtual machines so that they do not subscribe to more CPU resources than the resources available in CPU pools.

A CPU resource can belong to one, and only one, CPU pool. You can assign multiple virtual machines to a CPU pool. A CPU pool becomes oversubscribed when the virtual machines that are active in the pool require more CPUs than you configured for the pool. For example, if a CPU pool has four CPUs, then you can start two virtual machines that are defined to use four CPUs each. In this case, the CPU pool is oversubscribed, because each of the four CPUs is supporting two virtual machines.

If you stop one of those virtual machines, but start another one that requires two CPUs, then the CPU pool is still oversubscribed. This is because two of the CPUs are supporting both virtual machines. When oversubscribing a CPU pool, assess the performance of the virtual machines in that pool. Reassign one or more virtual machines to a different CPU pool if sharing an oversubscribed pool degrades performance to unacceptable levels.

11.11.3 Creating a New CPU Pool on Oracle Database Appliance Virtualized Platform Nodes

Use the command oakcli create cpupool to create a CPU pool.

Manage resource use by creating CPU pools, and then assign these resources to virtual machines.



Example 11-22 Example of Creating a New CPU Pool on Oracle Database Appliance Virtualized Platform Nodes

This example creates a CPU pool named winpool that is allocated 4 CPUs on Node 0:

oakcli create cpupool winpool -numcpu 4 -node 0

11.11.4 Showing the CPU Pools Configured on Oracle Database Appliance Virtualized Platform Nodes

Use the command oakcli show cpupool command to display the CPUs assigned to each defined CPU pool.

You can use oakcli show cpupool to display any virtual machines assigned to each CPU pool.

Example 11-23 Example of Showing CPUs Assigned to Defined CPU Pools on Oracle Database Appliance Virtualized Platform Nodes

This oakcli show cpupool example shows the CPUs assigned to each defined CPU pool on Node 0:

oakcli show cpupool -node 0

11.11.5 Changing the Number of CPUs Assigned to a CPU Pool on Oracle Database Appliance Virtualized Platform Nodes

Use the oakcli configure cpupool command to change the number of CPUs assigned to a CPU pool.

An Oracle VM Server can belong to only one virtual pool. However, you can change the resources allocated to a virtual pool to increase the CPU resources available to the virtual machine.

Example 11-24 Example of Changing the Number of CPUs Assigned to a CPU Pool on Oracle Database Appliance Virtualized Platform Nodes

This oakcli configure cpupool example changes the number of CPUs assigned to the CPU pool named linpool on Node 1. After the command runs, the new number of CPU resources assigned to the CPU are six.

oakcli configure cpupool linpool -numcpu 6 -node 1

11.11.6 Assigning a Virtual Machine to a CPU Pool on Oracle Database Appliance Virtualized Platform

Use the command oakcli configure vm to assign a virtual machine to a CPU pool.

Review the availability of CPU pools on nodes as part of your placement policy for virtual machines on Oracle Database Appliance Virtualized Platforms.

If your virtual machine is assigned to a specific CPU pool, and the virtual machine is allowed to fail over, then the virtual machine attempts to use the same CPU pool on the secondary node. If the CPU pool exists on the other node, but the CPU pool is a



different size, then the performance of your virtual machine can be affected when it runs on the secondary node. If the assigned CPU pool does not exist on the secondary node, then the virtual machine cannot fail over.



Do not manage <code>odaBaseCpuPool</code> by using <code>oakcli cpupool</code> commands. Instead, use commands that configure ODA_BASE, as discussed in "How to Resize ODA BASE."

Example 11-25 Example of Assigning a Virtual Machine to a CPU Pool on Oracle Database Appliance Virtualized Platform

This oakcli configure vm example pins the virtual machine named wintest to the CPU pool named winpool:

oakcli configure vm wintest -cpupool winpool



12

Managing Oracle Database Appliance KVM Virtualization

Review the concepts and procedures for Oracle Database Appliance Virtualized Platform.

About KVM Virtualization (page 12-1)
 KVM virtualization uses a kernel-based virtual machine (KVM) to create a virtualized environment for your Linux applications.

12.1 About KVM Virtualization

KVM virtualization uses a kernel-based virtual machine (KVM) to create a virtualized environment for your Linux applications.

Beginning with Oracle Database Appliance 12.1.2.11.0, the required RPMs are included in the Oracle Database Appliance patch bundle. When you upgrade to Oracle Database Appliance 12.1.2.12.0 or later, the Oracle Linux KVM hypervisor is installed as part of the Oracle Linux kernel and uses CPU extensions (HVM) for virtualization. The Linux KVM is a Type II hypervisor, which means that it is one layer above the operating system. When you run your Linux applications in a virtualized environment, you can isolate your database from your applications. One of the advantages to isolating the applications is that you can update your Oracle Database without impacting the applications, which enables you to deploy both the database and application on the same system to create a Solution-in-a-Box.

The following are limitations with using KVM:

- All virtual machines (VM), or guests, are Oracle Linux operating systems and only Linux applications are supported in the KVM.
- You cannot deploy an Oracle Database in the KVM. Oracle Databases must run
 on the base Oracle Linux operating system.
- KVM on Oracle Linux does not support hard partitioning. This means that all
 enabled cores/sockets on Oracle Database Appliance are licensed for databases
 and applications running on the appliance using the appropriate licensing metric
 for the database edition and application. Using KVM does not limit licensing,
 capacity on demand for Oracle Database Appliance still applies.

See Also:

For more about Oracle Linux KVM on Oracle Database Appliance, see the KVM series in the Oracle Database Appliance blog at https://blogs.oracle.com/oda/kvm.

Oracle Database Appliance Command-Line Interface

The command-line interface has different classes of tools to manage Oracle Database Appliance.

- About Oracle Database Appliance Command-Line Interface (page 13-2)
 Three classes of tools are available to perform deployment, lifecycle management, and system administration on Oracle Database Appliance.
- Managing ODACLI Privileges and Security with SUDO (page 13-4)
 Oracle Appliance Manager command-line utility requires root system privileges for most administration actions. You may want to use SUDO as part of your system auditing and security policy.
- Configure Command (page 13-7)
 Use the configure and update commands to configure the appliance.
- odacli Apply Patch and Update Commands (page 13-8)
 Use the commands odacli update and apply patch to apply patches and update the appliance.
- odacli Appliance Commands (page 13-15)
 Use the odacli appliance commands to perform lifecycle activities for the appliance.
- odacli CPU Core Commands (page 13-17)
 Use the CPU Core commands to enable CPU cores and display current and historical CPU core configurations.
- odacli Database Commands (page 13-19)
 Use the odacli database commands to perform database lifecycle operations.
- odacli DBHome Commands (page 13-30)
 Use the odacli DBHome commands to manage database Home operations.
- odacli Database Storage Commands (page 13-34)
 Use the Database Storage commands to list, describe, create, and delete Oracle database storage.
- odacli Job Commands (page 13-38)
 Use the odacli list-jobs and odacli describe-job commands to display job details.
- odacli Network Commands (page 13-40)
 Use the odacli network commands to list and describe network interfaces.
- odacli Oracle Auto Service Request Commands (page 13-44)
 Use the Oracle Auto Service Request (Oracle ASR) commands to configure, update, test, and delete Oracle ASR on the system.
- odacli validate-storagetopology (page 13-50)
 Use the odacli validate-storagetopology command to check the cable connections between the system controllers and the storage shelf, as well as the cable connection to the storage expansion shelf (if one is installed).

- odaadmcli Hardware Monitoring Commands (page 13-50)
 Use the hardware monitoring commands to display hardware configurations.
- odaadmcli Storage Commands (page 13-56)
 Use the odaadmcli storage commands to perform storage diagnostics.
- odacli-adm set-credential (page 13-65)
 Use the odacli-adm set-credential command to change the oda-admin user credentials.

13.1 About Oracle Database Appliance Command-Line Interface

Three classes of tools are available to perform deployment, lifecycle management, and system administration on Oracle Database Appliance.

The command-line interface (CLI) is an alternative to Oracle Database Appliance Web Console for some appliance configuration and patching tasks, database management, and job activity.

Oracle Database Appliance uses a role-based command-line interface. Use the <code>odacli</code> commands to perform lifecycle management tasks and the <code>odaadmcli</code> commands to perform storage and hardware monitoring maintenance. Many tasks related to managing Oracle Databases are also required with databases on Oracle Database Appliance. Tasks common to Oracle Database generally are described in the Oracle Database documentation library. However, to simplify tasks, use the Oracle Database Appliance command-line interface. The <code>odacli</code> and <code>odaadmcli</code>utilities combine the capabilities of the <code>sys</code> database administrator role and the operating system Superuser (<code>root</code> user). Always perform administrative tasks using the Oracle Database Appliance Web Console or CLI utilities.

The following classes of commands are available:

- Deployment and Configuration: Use the deployment and configuration commands as part of the initial deployment of the appliance and to configure CPU cores.
- Lifecycle management: Use odacli commands to perform database and system administration tasks for the appliance. The odacli commands are the primary interface to perform life cycle activities for the appliance.
- Administration: Use odaadmcli commands to perform hardware administration tasks for the appliance. The odaadmcli commands are the interface for in-frequent administration activities needed to manage appliance hardware components, storage, and VLAN.

You can perform the following deployment and configuration tasks:

- Configure the first network in the appliance
- Unzip and copy the Oracle Database Appliance software to the correct locations
- Set the number of CPU Cores for the system

You can perform the following appliance lifecycle tasks with odacli commands:

- Create and describe the appliance
- Create, list, describe, and delete databases
- Create, list, describe, and delete Oracle Database Homes



- Create, list, and describe the networks
- · List and describe the jobs

You can perform the following appliance administration tasks with odaadmcli commands:

- Show storage, disks, diskgroups, and controllers
- Display storage diagnostics for disks and NVM Express (NVMes)
- Locate disks
- Show server, memory, processor, power, cooling, and network details

Depending on your version of Oracle Appliance Manager and your hardware, some of the odacli commands may not be available to you. To see which commands are supported on your version of Oracle Appliance Manager and your hardware, run the odacli help command: odacli -h.

ODACLI Syntax

The command-line interface commands and parameters are case-sensitive.

An odacli command uses the following command syntax:

```
odacli command [options]
```

- *command* is an action you want to perform on the appliance. For example: odacli list-networks0r odacli describe-jobs.
- options are optional parts of the odacli command. Options can consist of one or more options that extend the use of the odacli command carried out on an object. Options include additional information about the action that you want to perform on the object. Option names are preceded with a dash. Some options require the name of an object for the command to perform the action that you want to carry out. If an option is preceded with an * (asterisk), this information is required to submit the command. When appending -j to the odacli command, the output is returned in JSON format. The help option (-h) is an option that is available with almost all commands. When you include the -h option, you can obtain additional information about the command that you want to perform.

Example 13-1 Command-Line Interface Syntax

```
# odacli create-database -h
Usage: create-database [options]
Options:
 * --adminpassword, -m
      Password for SYS, SYSTEM and PDB Admin
  --backupconfigid, -bi
      Backup Config ID
  --cdb. -c
      Create Container Database (Inverse option: --no-cdb/-no-c)
  --characterset, -cs
      Character Set (default:AL32UTF8)
                                             Default: AL32UTF8
  --databaseUniqueName, -u
      database unique name
  --dbclass, -cl
      Database Class EE: OLTP/DSS/IMDB, SE: OLTP
  --dbconsole. -co
      Enable Database Console (Inverse option: --no-dbconsole/-no-co)
  --dbhomeid, -dh
```



```
Database Home ID (Use Existing DB Home)
 --dblanguage, -1
                                               Default: AMERICAN
      Datbase Language (default:AMERICAN)
* --dbname, -n
     Database Name
 --dbshape, -s
     Database Shape{odb1s,odb1,odb2,etc.}
                                               Default: odb1
 --dbstorage, -r
     Database Storage {ACFS | ASM} Default: ACFS
 --dbterritory, -dt
     Database Territory (default:AMERICA)
                                               Default: AMERICA
 --dbtype, -y
      Database Type: SI Default: SI
 --help, -h
      get help
 --instanceonly, -io
      Create Instance Only (For Standby)
 --json, -j
      json output
 --nlscharacterset, -ns
     NLS Character Set (default:AL16UTF16)
                                                Default: AL16UTF16
  --no-cdb, -no-c
   Won't create Container Database (Inverse option: --cdb/-c)
   --no-dbconsole, -no-co
   Disable Database Console (Inverse option: --dbconsole/-co)
 --pdbadmin. -d
      Pluggable Database Admin User
 --pdbname, -p
      Pluggable Database Name
 --version, -v
      Database Version
```

Oracle Database Appliance Manager Command-Line Interface Help

Run the $\,$ -h command to see the usage information for all commands available for your Oracle Database Appliance. For example:

```
odacli -h
```

Run odacli command -h or odacliadm command -h to see detailed help about a specific command. For example, to see detailed help for the odacli describe-dbhome command, use the following:

```
odacli describe-dbhome -h
```

13.2 Managing ODACLI Privileges and Security with SUDO

Oracle Appliance Manager command-line utility requires root system privileges for most administration actions. You may want to use SUDO as part of your system auditing and security policy.

For most tasks, Oracle recommends that you log in as root to use the Oracle Appliance Manager command-line interface on Oracle Database Appliance. If you are not logged in as root, then you cannot carry out most actions on the appliance. For example, if you are not logged in as root, then you can view storage information, but you cannot modify the storage.



Allowing Root User Access Using SUDO

In environments where system administration is handled by a different group than database administration, or where security is a significant concern, you may want to limit access to the root user account and password. SUDO enables system administrators to grant certain users (or groups of users) the ability to run commands as root, while logging all commands and arguments as part of your security and compliance protocol.

A SUDO security policy is configured by using the file /etc/sudoers. Within the sudoers file, you can configure groups of users and sets of commands to simplify and audit server administration with SUDO commands.



Caution:

Configuring SUDO to allow a user to perform any operation is equivalent to giving that user root privileges. Consider carefully if this is appropriate for your security needs.



See Also:

The SUDO man pages for more information about configuring and using SUDO:

http://www.sudo.ws/sudo.html

Example 13-2 SUDO Example 1: Allow a User to Perform Any ODACLI Operation

This example shows how to configure SUDO to enable a user to perform any ODACLI operation. You do this by adding lines to the commands section in the /etc/sudoers file:

```
## The commands section may have other options added to it.
##
Cmnd_Alias ODACLI_CMDS=/opt/oracle/oak/bin/odacli *
jdoe ALL = ODACLI_CMDS
```

In this example, the user name is jdoe. The file parameter setting ALL= ODACLI_CMDS grants the user jdoe permission to run all odacli commands that are defined by the command alias ODACLI_CMDS. After configuration, you can copy one sudoers file to multiple hosts. You can also create different rules on each host.





Before database creation, you must set up user equivalency with SSH for the root user on each server. If you do not set up user equivalency and configure SSH on each server, then you are prompted to provide the root password for each server during database creation.

After you configure the sudoer file with the user, the user jdoe can run the set of odacli commands configured with the command alias <code>ODACLI_CMDS</code>. For example:

```
$ sudo odacli create database -db newdb
INFO: 2015-08-05 14:40:55: Look at the logfile '/opt/oracle/oak/log/scaoda1011/
tools/12.1.2.4.0/createdb_newdb_91715.log' for more details
INFO: 2015-08-05 14:40:59: Database parameter file is not provided. Will be using
default parameters for DB creation
Please enter the 'SYSASM' password: (During deployment we set the SYSASM password
to 'welcome1'):
Please re-enter the 'SYSASM' password:
INFO: 2015-08-05 14:41:10: Installing a new home: OraDb12102_home3 at /u01/app/
oracle/product/12.1.0.2/dbhome_3
Please select one of the following for Database type [1 .. 3]:
   => OI,TP
    => DSS
2
3
    => In-Memory
```

Example 13-3 SUDO Example 2: Allow a User to Perform Only Selected ODACLI Operations

To configure SUDO to allow a user to perform only selected ODACLI operations, add lines to the commands section in the /etc/sudoers file as follows:

```
## DCS commands for oracle user
Cmnd_Alias DCSCMDS = /opt/oracle/dcs/bin/odacli *
                 DCSCMDS
oracle ALL=
$ sudo /opt/oracle/dcs/bin/odacli describe-appliance
Appliance Information
                    ID: a977bb04-6cf0-4c07-8e0c-91a8c7e7ebb8
              Platform: OdaliteL
        Data Disk Count: 6
         CPU Core Count: 20
                Created: October 24, 2017 6:51:52 AM HDT
System Information
                  Name: rwsodal001
            Domain Name: example.com
             Time Zone: America/Adak
             DB Edition: EE
            DNS Servers: 10.200.76.198 10.200.76.199 192.0.2.254
            NTP Servers: 10.200.0.1 10.200.0.2
```



Disk Group Information

DG Name	Redundancy	Percentage
Data	Normal	90
Reco	Normal	10

In this example, the user <code>jdoe2</code> tries to run the <code>odacli</code> show <code>databases</code> command, which is not part of the set of commands that is configured for that user. Sudo prevents <code>jdoe2</code> from running the command.

[jdoe2@servernode1 ~]\$ sudo /opt/oracle/oak/bin/odacli show database

Sorry, user jdoe2 is not allowed to execute '/opt/oracle/oak/bin/odacli show database' as root on servernode1.

13.3 Configure Command

Use the configure and update commands to configure the appliance.

configure-firstnet (page 13-7)
 Use the configure-firstnet command to configure the first network in the appliance after racking and connecting the power and network cables.

13.3.1 configure-firstnet

Use the configure-firstnet command to configure the first network in the appliance after racking and connecting the power and network cables.

File Path

\$ORACLE_HOME/opt/oracle/oak/bin/configure-firstnet

Syntax

configure-firstnet

Example 13-4 Configuring the First Network

This command ensures that the system is available in the network, enabling you to manage the deployment through the Oracle Appliance Manager Web Console.

Configure the first network to use a btbond1 interface without configuring DHCP. Complete the IP address, netmask address, and gateway address.

Values that you need to provide are shown in *italic font*, with the exception of the net1 gateway address; the program obtains the gateway IP address. The program derives this gateway address using the network information you provided for the other IP addresses. Accept this value, unless your network administrator provides an alternative gateway address that is different from the default that the appliance command-line interface detects.

The following is an example of the command on a single node platform:

configure-firstnet

Select the Interface to configure the network on (btbond1): btbond1 Configure DHCP on btbond1 (yes/no): no



```
INFO: You have chosen Static configuration
Enter the IP address to configure: 10.1.10.2
Enter the Netmask address to configure: 255.255.255.0
Enter the Gateway address to configure: 10.1.10.1
INFO: Plumbing the IPs now
INFO: Restarting the network
Shutting down interface btbond1: bonding: btbond1: Removing slave em2.
bonding: btbond1: releasing active interface em2
bonding: btbond1: making interface em3 the new active one.
bonding: btbond1: Removing slave em3.
bonding: btbond1: releasing active interface em3
::::::::::
```

13.4 odacli Apply Patch and Update Commands

Use the commands odacli update and apply patch to apply patches and update the appliance.

- odacli describe-component (page 13-8)
 Use the odacli describe-component command to display the installed version and the latest available version for each component.
- odacli describe-latestpatch (page 13-10)
 Use the odacli describe-latestpatch command to display a list of the latest supported patch versions for each component.
- odacli update-dcsagent (page 13-11)
 Use the odacli update-dcsagent command to update the agent.
- odacli update-repository (page 13-12)
 Use the odacli update-repository command to update the repository with the new Oracle Database Appliance software.
- odacli update-server (page 13-13)
 Use the odacli update-server command to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.
- odacli update-storage (page 13-15)
 Use the odacli update-storage command to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.

13.4.1 odacli describe-component

Use the odacli describe-component command to display the installed version and the latest available version for each component.

If there are multiple DB Homes installed in Oracle Database Appliance, then the output will display the version details for each of the installed homes. You can use this command to check the component version after applying a patch.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-component [-d][-j][-h][-s][-v]

Parameters

Parameter	Description
dbhomes, -d	(Optional) Lists the database home versions and available versions.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.
local	(Optional) Describes the components for the local node. Use to display details on the local node of multi-node high availability (HA) systems. This option is not needed to display component details on single node systems.
node, -v	(Optional) Describes the components for a specific node on multi-node high availability (HA) systems. This option is not needed to display component details on single node systems. {0 1}
server, -s	(Optional) Lists the server components and versions and the available versions to which you can patch them.

Usage Notes

Use the odacli describe-component command to get component details. On a multi-node environment, such as Oracle Database Appliance X7-2-HA, the command provides details across all nodes. Use the --node or --local option to get component details for a specific node.

Example 13-5 Displaying Patch Details for Components

```
# odacli describe-component
System Version
-----
12.2.1.1.0
```

Component	Installed Version	Available Version
0.217	10 0 1 1 0	
OAK	12.2.1.1.0	up-to-date
GI	12.2.0.1.170814	up-to-date
DB {		-
[OraDB12102_home1]	12.1.0.2.170814	up-to-date
[OraDB11204_home1]	11.2.0.4.170814	up-to-date
}		
ILOM	4.0.0.22.r120818	up-to-date
BIOS	41017100	up-to-date
OS	6.8	up-to-date

Example 13-6 List DB Home Details



Example 13-7 List the Server Components and Versions

```
# odacli describe-component -s
System Version
-----
12.2.1.1.0
```

Component	Installed Version	Available Version
OAK	12.2.1.1.0	up-to-date
GI	12.2.0.1.170814	up-to-date
ILOM	4.0.0.22.r119604	4.0.0.22.r120818
BIOS	41016500	41017100
OS	6.8	up-to-date

13.4.2 odacli describe-latestpatch

Use the odacli describe-latestpatch command to display a list of the latest supported patch versions for each component.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-latestpatch [-h]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

Example 13-8 Listing the Latest Supported Versions

odacli describe-latestpatch

componentType	availableVersion
gi	12.1.0.2.170117
db	11.2.0.4.161018
db	12.1.0.2.170117
oak	12.1.2.10.0
ilom	3.2.8.24.114611
bios	39070000
os	6.8



13.4.3 odacli update-dcsagent

Use the odacli update-dcsagent command to update the agent.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

```
odacli update dcsagent -v version [-j] [-h]
```

Parameters

Parameter	Description
version, -v	Defines the Oracle Database Appliance version after update.
help, -h	(Optional) Displays help for using the command.

Usage Notes

The update dcsagent command updates the dcs-agent to the RPM package that is located in the *location* and restarts the dcs-agent. After the update is applied, the agent automatically restarts. It will take a few minutes to reconnect to the dcs-agent. Wait until the agent shuts down and completes restarting before performing any tasks.



Before updating the agent, ensure that you do not have any jobs running or pending during the update window.

Example 13-9 Updating the Agent

To update the dcs-agent to version 12.2.1.1.012.1.2.10:

```
# odacli update-dcsagent -v 12.2.1.1.0
{
   "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
   "status" : "Created",
   "message" : null,
   "reports" : [],
   "createTimestamp" : "November 26, 2017 14:09:24 PM CST",
   "description" : "DcsAgent patching",
   "updatedTime" : "November 26, 2017 14:09:24 PM CST"
}
```



13.4.4 odacli update-repository

Use the odacli update-repository command to update the repository with the new Oracle Database Appliance software.

Prerequisites

Before updating the repository, you must upload the Oracle Database Appliance software to the appliance. If the patch contains more than one zip file, then extract and concatenate the zip files before updating the repository.

The following is an example of the steps to get the files from My Oracle Support, extract, and concatenate the files:



The file names in the examples and might not reflect actual file names.

1. (Optional) Create a temporary directory in the /u01 directory. You will upload your Oracle Database Appliance software to this directory before adding the files to the update repository. You can use the existing /tmp directory, but it might not have sufficient space for the zip files. It is a good practice to clean the /tmpdir directory after you update the repository.

```
/u01/tmpdir
```

2. Download the Oracle Database Appliance software files from My Oracle Support, then upload the files to a temporary location in the /u01 directory in Oracle Database Appliance. For example:

```
p26433721_122110_Linux-x86-64_lof2.zip and p26433721_122110_Linux-x86-64_2of2.zip
```

3. If the patch contains more than one zip file, then extract the zip files and concatenate the files into a single zip file. For example, a file named oda-sm-12.2.1.1.0-171031-server.zip before updating the repository.

```
When inflated, the files are named oda-sm-12.2.1.1.0-171031-server\_lof2.zippart and oda-sm-12.2.1.1.0-171031-server\_2of2.zippart
```

```
# cat oda-sm-12.2.1.1.0-171031-server_lof2.zippart oda-sm-12.2.1.1.0-171031-
server_2of2.zippart > oda-sm-12.2.1.1.0-171031-server.zip
```

4. Concatenate the zip files into a single zip file. For example, a file named odasm-12.2.1.1.0-171031-server.zip.

```
# cat oda-sm-12.2.1.1.0-171031-server_lof2.zippart oda-sm-12.2.1.1.0-171031-
server_2of2.zippart > oda-sm-12.2.1.1.0-171031-server.zip
```

The file is named oda-sm-12.2.1.1.0-171031-server.zip

5. Use the concatenated zip file to update the repository

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli



Syntax

To unpack and copy the patch bundle to the correct locations in the file system:

```
odacli update-repository -f filename [-j] [-h]
```

Parameters

Parameter	Description
filename, -f	Defines the zip filename of patch bundle or RDBMS clones downloaded from My Oracle Support. Provide a comma-separated list of absolute file paths of the end user and patch bundles.
json, -j	(Optional) Displays JSON output. The default is false.
help,-h	(Optional) Displays help for using the command.

Usage Notes

- Before updating the repository, ensure that you do not have any jobs running or pending during the update window.
- This command only updates the repository on the local node. On Oracle Database Appliance X7-2-HA, run the command on each node.

Example 13-10 Updating the Repository

The server patch zip file is located in the /u01/tmpdir directory. The following example updates the repository with the latest server patch and then lists the job to verify that the update is successful:

13.4.5 odacli update-server

Use the odacli update-server command to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.

File Path

/opt/oracle/dcs/bin/odacli



Syntax

```
odacli update-server -v version [-j] [-h]
```

Parameters

Parameter	Description
local, -v	Updates the Database Home locally.
precheck, -v	Analyzes the patch.
version, -v	Defines the version to update.
json, -j	(Optional) Displays JSON output. The default is false.
help, -h	(Optional) Displays help for using the command.

Usage Notes

The update-server command applies the patches to various infrastructure components and Oracle Clusterware. Before executing the update-server command, use the update-dcsagent command to update the agent to the current version.

On Oracle Database Appliance X7-2-HA, you must run the command on both nodes.

After the update is applied, the agent automatically restarts. It will take a few minutes to reconnect to the server. Wait until the agent shuts down and completes restarting before performing any tasks. Allow at least two (2) minutes before running the next command.



Before updating the server, ensure that you do not have any jobs running or pending during the update window.

Example 13-11 Updating the Server

Run the odacli update-server command to update the server to version 12.2.1.1. On a multi-node HA system, you must run the command on both nodes to update the server version.

```
# odacli update-server -v 12.2.1.1
{
   "jobId" : "6f27a29a-959f-44e1-b984-7473e3c918ad",
   "status" : "Created",
   "message" : "Success of Server Update may trigger reboot of node after 4-5
minutes. Please wait till node restart",
   "reports" : [],
   "createTimestamp" : "November 7, 2017 14:13:45 PM CST",
   "resourceList" : [],
   "description" : "Server Patching",
   "updatedTime" : "November 7, 2017 14:13:45 PM CST"
}
```



13.4.6 odacli update-storage

Use the odacli update-storage command to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli update-storage -v version [-h] [-j]

Parameters

Parameter	Description
version, -v	Defines the version to update.
json, -j	(Optional) Displays JSON output. The default is false.
help, -h	(Optional) Displays help for using the command.

Usage Notes

Example 13-12 Updating the Storage

odacli update-storage -v 12.2.1.1.0

13.5 odacli Appliance Commands

Use the odacli appliance commands to perform lifecycle activities for the appliance.

- odacli create-appliance (page 13-15)
 Use the odacli create-appliance command in a JSON file format to provision Oracle Database Appliance.
- odacli describe-appliance (page 13-16)
 Use the odacli describe-appliance command to display appliance details.

13.5.1 odacli create-appliance

Use the odacli create-appliance command in a JSON file format to provision Oracle Database Appliance.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To view help for the odacli create-appliance command:



odacli create-appliance -r requestjson [-j] [-h]



The odacli create-appliance command only supports a JavaScript Object Notation (JSON) file format. An example JSON files and a readme are available in an appendix in this document and in the /opt/oracle/dcs/sample directory.

Parameters

Parameter	Description
requestjson, -r	JSON input for appliance creation.
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.

13.5.2 odacli describe-appliance

Use the odacli describe-appliance command to display appliance details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-appliance [-d|-no-d][-j][-h]

Parameters

Parameter	Description
details, -d	(Optional) Displays the agent CLI build details.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.
no-details, -no-d	(Optional) Displays no detailed information. Use this flag if you do not want to display details.

Example 13-13 Displaying Appliance Details

odacli describe-appliance -d

Appliance Information

ID: 78e9a6b8-c4f8-42b2-9e72-7d23c2636544

Platform: OdaliteL Data Disk Count: 6 CPU Core Count: 20

Created: November 17, 2016 5:14:41 AM EST

System Information



.....

Name: rwsoda6f002 Domain Name: example.com Time Zone: America/New_York

DB Edition: EE

DNS Servers: 10.204.32.1

NTP Servers: 10.68.0.41 10.68.0.42

Disk Group Information

DG Name	Redundancy	Percentage
Data	High	80
Reco	High	20

13.6 odacli CPU Core Commands

Use the CPU Core commands to enable CPU cores and display current and historical CPU core configurations.

odacli describe-cpucore (page 13-17)

Uso the edeal indeagrable groupers command to

Use the odacli describe-cpucore command to display the current core configuration and the modification date and time.

odacli list-cpucores (page 13-18)

Use the odacli list-cpucores command lists the history of core configuration changes in the system.

• update-cpucore (page 13-18)

Use the ${\tt odacli}$ update-cpucore command to enable the number of CPU cores in the system.

13.6.1 odacli describe-cpucore

Use the odacli describe-cpucore command to display the current core configuration and the modification date and time.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-cpucore [-h]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-14 Displaying the Current Core Configuration

odacli describe-cpucore

Node Cores Modified Job Status



```
0 8 July 25, 2016 9:39:59 AM SGT Configured
```

13.6.2 odacli list-cpucores

Use the odacli list-cpucores command lists the history of core configuration changes in the system.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

```
odacli list-cpucores [-h]
```

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-15 Displaying a List of Cores

```
# odacli list-cpucores
```

Node	Cores	Modified	Job Status
0	10	July 22, 2016 12:06:08 PM SGT	Configured
0	8	July 25, 2016 9:39:59 AM SGT	Configured

13.6.3 update-cpucore

Use the ${\tt odacli}$ update-cpucore command to enable the number of CPU cores in the system.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

```
odacli update-cpucore -c cores [-h]
```

Parameters

Parameter	Description
cores, -c	Defines the number of cores to be enabled in the system.
help, -h	(Optional) Displays help for using the command.

Usage Notes

The number of cores you enable must be a multiple of 2.



 After the initial configuration, you cannot reduce the number of cores. You can only increase the number of cores.

Example 13-16 Enabling CPU Cores

The following command enables 8 CPU cores.

```
# odacli update-cpucore -c 8

{
"jobId" : "2807f6ae-3ba5-48a5-8941-b8b365d89d24",
"status" : "Created",
"message" : null,
"reports" : [ ],
"createTimestamp" : 1469410799194,
"description" : "CPU cores service update",
"updatedTime" : 1469410799194
}
```

13.7 odacli Database Commands

Use the odacli database commands to perform database lifecycle operations.

- odacli list-databases (page 13-19)
 Use the odacli list-databases command to list all databases on the appliance.
- odacli describe-database (page 13-20)
 Use the odacli describe-database command to display database details.
- odacli create-database (page 13-21)
 Use the odacli create-database command to create a new database.
- odacli register-database (page 13-25)
- odacli upgrade-database (page 13-27)
 Use the odacli upgrade-database command to upgrade a database from version 11.2.0.4 to version 12.1.0.2 or 12.2.0.1.
- odacli delete-database (page 13-29)
 Use the odacli delete-database command to delete a database.

13.7.1 odacli list-databases

Use the odacli list-databases command to list all databases on the appliance.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To display a list of all databases:

```
odacli list-databases [-h]
```



Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-17 Displaying a List of Databases

Display a list of databases:

```
# odacli list-databases
```

ID			DB Name	DB Version	CDB
ad6c7326-e46	0-411e-94df	-230dedbef743	rdb121a	12.1.0.2	true
fb4d02f3-241	3-47ca-8584	-a768e23ec2e7	ee12db	12.1.0.2	false
(Continued)					
Class Sha	pe Storage	Status			
OLTP odb1	ACFS	Configured			
IMDB odb1	ASM	Configured			

13.7.2 odacli describe-database

Use the odacli describe-database command to display database details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To display database details:

```
odacli describe-database -i dbid [-h] [-j]
```

Parameters

Parameter	Description	
dbid, -i	Identifies the database home identifier (ID) to display.	
	Use the odacli list-databases command to obtain the dbid.	
json, -j		
	(Optional) Displays JSON output.	
help, -h	(Optional) Displays help for using the command.	

Example 13-18 Displaying Database Details

Display information for database named ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f:

```
# odacli describe-database -i ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f
```

Database details

 $\label{eq:identity} \mbox{ID: ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f}$



Description: rdb1 DB Name: rdb1 DB Version: 12.1.0.2 DBID: 1339792271

CDB: true
PDB Name: r1pdb1

PDB Admin User Name: pdbadmin

Class: OLTP Shape: odb2 Storage: ASM

CharacterSet: DbCharacterSet(characterSet=AL32UTF8, nlsCharacterset=AL16UTF16,

dbTerritory=AMERICA, dbLanguage=AMERICAN)
Home ID: fe87f30c-b810-45d1-8b96-13996ad7a255

Console Enabled: true

Created: Jun 14, 2016 6:21:14 PM

13.7.3 odacli create-database

Use the odacli create-database command to create a new database.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

```
odacli create-database -n database_name -m -cs characterset -cl {OLTP|DSS|IMDB} -l dblanguage -s dbshape -r {ACFS|ASM} -dt dbterritory -y dbtype -ns nlscharacterset -d pdbadmin -p pdbname -v version [-u databaseUniqueName] [-dh Database Home ID] [-c|-no-c] [-co|-no-co] [-bi backupconfigid] [-io] [-j] [-h]
```

Parameters

Parameter	Description
adminpassword, -m	Defines the password for SYS, SYSTEM, and PDB Admin. Use this option to specify the password interactively. When using this option, do not enter the password in the command-line.
	To use non-interactive mode, use the $$ –hm option instead of the – m option.
backupconfigid, -bi	(Optional) Defines the backup configuration identifier for future use.
cdb, -c	(Optional) Creates the database as a container database. Use the -c flag to create a container database and use the -no-c flag to create a non-CDB database. The default is -no-c.
characterset, -cs	Defines the character set. The default is AL32UTF8.
databaseUniqueName, -u	(Optional) Defines a unique name for the database.
dbclass, -cl {OLTP DSS IMDB}	Defines the database class. The default is OLTP. The options are as follows:
	Enterprise Edition: OLTP, DSS, or IMDB.Standard Edition: OLTP
dbconsole, -co	(Optional) Enables the Database Console. Use the -no-co flag to disable the Database Console. If not selected, the default is no database console.



Parameter	Description	
dbhomeid, -dh	(Optional) Identifies the existing Database Home ID.	
dblanguage, -l	Defines the database language. The default language is AMERICAN.	
dbname, -n	Defines the name given to the new database (dbname.)	
dbshape, -s	Identifies the database shape (template) and determines the total memory allocated to the database. For example, odb1 and odb2. The default is odb1.	
dbstorage, -r{ACFS ASM}	Defines the Database Storage, either Oracle ACFS or Oracle ASM. The default value is ACFS.	
dbterritory, -dt	Defines the database territory. The default territory is AMERICA.	
dbtype, -y [SI]	Defines the database type. The default database type is SI.	
help, -h	(Optional) Displays help for using the command.	
instanceonly, -io	(Optional) Creates a database instance, password file and also the underlying Oracle ACFS mount point. You can use the instance as an auxiliary instance for RMAN duplicate.	
json, -j	(Optional) Displays JSON output.	
nlscharacterset, -ns	Defines the NLS National Character Set. The default is AL16UTF16.	
no-cdb, -no-c	(Optional) Creates a database that is not a container database. Use this flag when you want to create a non-CDB database. Use the $-c$ flag to create a container database.	
no-dbconsole, -no-co	(Optional) Disables Database Console. Use the -co flag to enable Database Console.	
pdbadmin, -d	Defines the Pluggable Database (PDB) Admin User.	
pdbname, -p	Defines the Pluggable Database (PDB) name. The default value is pdb1.	
version, -v	Defines the database bundle patch number. To install the latest bundle patch for a release, specify 11.2.0.4 or 12.1.0.2. The default version is 12.1.0.2.	
	To specify a specific supported bundle, use the 5 digit format. For example, 12.1.0.2.170814 or 11.2.0.4.170814.	

Usage Notes

- You cannot mix Oracle Database Standard Edition and Enterprise Edition databases on the same appliance.
- Use the --cdb or --no-cdb flag to indicate whether or not the database is a container database. When neither flag is specified, the default database created is a non-CDB database.
- When --dbhomeid is not provided, the create-database command creates a new Oracle Database Home.
- When --dbhomeid is provided, the create-database command creates the database using the existing Oracle Home. Use the odacli list-dbhomes command to obtain the dbhomeid.
- When you specify both the --version and the--dbhomeid, the version is ignored and the database is created against the existing database home.



- Oracle Database 12.1 is supported on both Oracle Automatic Storage Management (Oracle ASM) and Oracle ASM Cluster file system (ACFS). The default is Oracle ACFS.
- Oracle Database 11.2 is only supported on Oracle ACFS.
- When databases are created in Oracle ACFS, each database is configured with its own Oracle ACFS file system for the datafiles and uses the following naming convention: /u02/app/db user/oradata/db unique name. The default size of this mount point is 100 GB.

Note:

Oracle recommends not sharing the mount point across different databases.

- Online logs are stored in the /u03/app/db user/redo/ directory.
- Oracle Fast Recovery Area (FRA) is located in the /u03/app/db user/ fast_recovery_area directory.
- Use one of the following options to specify the adminpassword:
 - Interactive mode: Use the -m option and enter the password when prompted.
 - Non-interactive mode: Use the -hm option and specify the adminpassword in the command-line.
- For the version, you can specify the database version, either 12.2.0.1, 12.1.0.2 or 11.2.0.4, or you can use a 5 digit format to specify a specific patch bundle version. If you use the database version without specifying the bundle patch number, the latest bundle patch is used. The following values are supported:
 - 12.2.0.1
 - 12.2.0.1.170814
 - 12.1.0.2
 - 12.1.0.2.170718
 - 12.1.0.2.170418
 - 12.1.0.2.161018
 - 12.1.0.2.160719
 - 12.1.0.2.160419
 - 11.2.0.4
 - 11.2.0.4.170718
 - 11.2.0.4.170418
 - 11.2.0.4.161018
 - 11.2.0.4.160719



Note:

Oracle Database 11.2.0.4.160419 is not supported. Attempts to create an Oracle Database 11.2 against an 11.2.0.4.160419 database home will fail.

Example 13-19 Creating a Database in Interactive Mode

This example creates an 12.1.0.2 OLTP container database named hrdb with shape odb2 and enables you to provide the password interactively.

Note:

To provide a password interactively, use the -m option, but do not provide the password until prompted.

```
# odacli create-database -n hrdb -c -m -cl OLTP -s odb2 -p pdbl
Password for SYS,SYSTEM and PDB Admin:
{
    "jobId" : "f12485f2-dcbe-4ddf-aeel-de24d37037b6",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "November 26, 2017 03:54:03 AM EDT",
    "description" : "Database service creation with db name: hrdb",
    "updatedTime" : "November 26, 2017 03:54:03 AM EDT"
}
```

Example 13-20 Creating a Database in Non-Interactive Mode

This example creates an 12.1.0.2 OLTP database named \mbox{crmdb} with shape $\mbox{odb2}$ and enables you to specify the password in the command-line. To define the password in the command-line, use the $\mbox{-hm}$ option and define the password. Because the container database flag ($\mbox{-c}$) is not used, the database created is not a container database.

```
# odacli create-database -n crmdb -hm WelCome__12 -cl OLTP -s odb2
{
    "jobId" : "30b5e2a6-493b-4461-98b8-78e9a15f8cdd",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "November 26, 2017 03:59:22 AM EDT",
    "description" : "Database service creation with db name: crmdb",
    "updatedTime" : "November 26, 2017 03:59:22 AM EDT"
}
```

Example 13-21 Creating a Database Against a Different Version

Either of the following statements creates a database against a home with Oracle Database Bundle (170718) applied:

```
# odacli create-database -m -n hrmsdb1 -v 12.1.0.2
# odacli create-database -m -n hrmsdb2 -v 12.1.0.2.170718
```



The following statement creates a new database against a home with Oracle Database Bundle patch 170814:

odacli create-database -m -n hrmsdb3 -v 12.1.0.2.170814

13.7.4 odacli register-database

Use the $odacli\ register-database\ command\ to\ register\ a\ migrated\ database\ with\ the\ appliance.$

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli register-database -c {OLTP|DSS|IMDB} -s dbshape -t dbtypeSI -o hostname -sn servicename -p syspassword[-bi backupconfigid] [-co|-no-co] [-h][-j]

Parameters

Parameter	Description
backupconfigid, -bi	(Optional) Defines the backup configuration identifier for future use.
dbclass, -c {OLTP DSS IMDB}	Defines the database class. The database class setting determines the database SGA memory and instance PGA memory configuration. The options are as follows: • Enterprise Edition: OLTP, DSS, or IMDB. • Standard Edition: OLTP
dbconsole, -co	(Optional) Enables the Database Console. Use the -no-coflag to disable the Database Console. If not selected, the default is no Database Console.
dbshape, -s	Identifies the database shape (template) and determines the total memory allocated to the database. For example, odb1 and odb2. The default is odb1.
dbtype, -t [SI]	Defines the type of database. The database type is Single Instance. The default is SI.
help, -h	(Optional) Displays help for using the command.
hostname, -o	Defines the host name. Default: local host name
json, -j	(Optional) Displays JSON output.
no-dbconsole, -no-co	(Optional) Disables Database Console. Use the -coflag to enable Database Console.
servicename, -sn	Defines the Database Service Name. Using this service name, the EZCONNECT String is derived for connecting to the database. For example, hostname:port/servicename.
	The Port number is the port configured for the listener, as part of the deployment.



Parameter	Description
syspassword, -p	Defines the proxy user password for SYS.

Usage Notes



It is a good practice to use Easy Connect (EZCONNECT) to test the database connectivity before registering the database.

Log in as the sys user and enter the following command:

sqlplus sys/welcomel@//hostname:1521/service name

- To execute the command in non-interactive mode, use the hidden parameter -hp to specify the password in the command line instead of using the -p parameter to specify the password.
- The migrated database is registered with the listener configured during the provisioning of the appliance. The migrated database must be in read-write or read-only mode for the registration to succeed.
- The register-database command validates the datafile and log file locations and moves the controlfile and spfile to the correct locations.
- The following are the minimum compatible parameters set, based on the database version:

Oracle Database 12c: 12.1.0.2

Oracle Database 11 g: 11.2.0.4

• Some init.ora parameters are set, or reset, as part of the registration. Review the parameter changes before and after registration.

The following are examples of changes implemented as part of registration:

- The memory_target is reset.
- The sga_target/pga_aggregate_target/log_buffer/inmemory_size is configured based on the database class and database shape settings used during registration.
- The registration process sets, or resets, the recommended appliance-specific parameters.
- The database being registered must use Oracle Managed Files and the file location must match the DATA Location, REDO Location and RECO Location of the odacli describe-dbstorage command.
- As part of the registration process, the database is registered with Oracle Clusterware. Depending on the database role, the database is registered as Primary or Standby database with Oracle Clusterware.
- If you are registering the database as a standby database, then open the database in read-only mode before executing the odacli registerdatabasecommand.



Example 13-22 Registering a Migrated Database

The following is the syntax to register a single instance OLTP database that is using shape odb1.

```
odacli register-database -c OLTP -s odb1 -sn crmdb.example.com -p
Password for SYS:
  "jobId" : "317b430f-ad5f-42ae-bb07-13f053d266e2",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "August 08, 2016 05:55:49 AM EDT",
  "description" : "Database service registration with db service name:  
crmdb.example.com",
  "updatedTime" : "August 08, 2016 05:55:49 AM EDT"
rpandrap: ]# odacli describe-job -i "317b430f-ad5f-42ae-bb07-13f053d266e2"
Job details
                    ID: 317b430f-ad5f-42ae-bb07-13f053d266e2
           Description: Database service registration with db service name:
crmdb.example.com
                Status: Success
               Created: August 8, 2016 5:55:49 AM EDT
               Message:
Task Name
                              Start Time
_____
restore control file August 8, 2016 5:55:49 AM EDT
move spfile to right location August 8, 2016 5:56:08 AM EDT
register DB with clusterware August 8, 2016 5:56:13 AM EDT
reset db parameters August 8, 2016 5:57:05 AM EDT Running DataPatch August 8, 2016 5:57:36 AM EDT
(Continued)
 End Time
                            Status
August 8, 2016 5:56:08 AM EDT Success
August 8, 2016 5:56:13 AM EDT Success
August 8, 2016 5:57:05 AM EDT
                              Success
August 8, 2016 5:57:36 AM EDT
                              Success
August 8, 2016 5:57:49 AM EDT
                               Success
```

13.7.5 odacli upgrade-database

Use the odacli upgrade-database command to upgrade a database from version 11.2.0.4 to version 12.1.0.2 or 12.2.0.1.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To upgrade an Oracle Database:

odacli upgrade-database -i Comma separated list of database ids -from source dbhome id -to destination dbhome id [-j] [-h]

Parameters

Parameter	Description
databaseids, -i	(Optional) Defines the Database IDs to upgrade. You can use a comma separated list of database IDs.
destDbHomeId, -to	The DB HOME ID of the destination database home.
sourceDbHomeId, -from	The DB HOME ID of the source database home.
json, -j	
	(Optional) Displays JSON output. The default is false.
help, -h	(Optional) Displays help for using the command.

Usage Notes

You have the following options for defining the databases to upgrade:

- When you define a single database ID, only the database of the source database home is upgraded.
- When you define more than one database ID, only those databases of the source database home are upgraded.
- When you do not define a database ID, all of the databases under the source database home are upgraded.

You can only upgrade from 11.2.0.4 to 12.1.0.2 or 12.2.0.1.

Example 13-23 Upgrading an Oracle Database

In this example, a single database is upgraded. Use the command odacli list-databases to display the database ID, then use the command odacli upgrade-databases to upgrade the 11.2.0.4 database. After the upgrade is complete, you can run the command odacli list-databases again to verify the upgrade.

```
# odacli list-databases
                                  DB Name DB Version CDB
ad6c7326-e460-411e-94df-230dedbef743 rdb121a 11.2.0.4 true
fb4d02f3-2413-47ca-8584-a768e23ec2e7 ee12db 12.1.0.2 false
(Continued)
Class Shape Storage Status
______
OLTP odb1 ACFS Configured
IMDB odb1 ASM Configured
# odacli upgrade-database -i ad6c7326-e460-411e-94df-230dedbef743 -from fa4321f5-0543-477d-bb54-
a429dcc8ee8d -to d752df28-ecdd-4af4-9454-38085ea17f8b
  "jobId": "1bbe8boe-acb0-4296--9c8b-473b69da0c18",
  "status" : "Created",
   "message" : null,
   "reports" : [ ],
  "createTimestamp" : "October 24, 2017 03:54:03 AM EDT",
  "description" : "Database service upgrade with db ids: [ad6c7326-
e460-411e-94df-230dedbef743]",
   "updatedTime" : "October 24, 2017 03:54:03 AM EDT"
```



odacli list-databases

ID	DB Name DB Version CDB
ad6c7326-e460-411e-94df-230dedbeff fb4d02f3-2413-47ca-8584-a768e23ec2	
(Continued)	

 Class
 Shape
 Storage
 Status

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

 OLTP
 odb1
 ACFS
 Configured

 IMDB
 odb1
 ASM
 Configured

13.7.6 odacli delete-database

Use the odacli delete-database command to delete a database.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To delete a database:

odacli delete-database -i dbid [-h] [-j]

Parameters

Parameter	Description
dbid, -i	Identifies the database home identifier (ID) to display.
	Use the ${\tt odacli\ list-databases}$ command to obtain the ${\ttdbid}.$
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.

Usage



The delete-database command deletes the database, the file system, and the underlying advm volumes assigned to the database. For example, deleting a database named hrdb also deletes the file system /u02/app/oracle/oradata/hrdb. Do not keep any other files on this database file location.

Example 13-24 Deleting a Database Named hrmsdb

In this example we want to delete a database named hrmsdb. Before we can delete the database, we need to know the database home identifier (*dbid*). This example shows how to run the odacli list-databases command to list the databases and their associated *dbid*, then how to delete database hrmsdb.

odacli list-databases

ID DB Name DB Version CDB Class

a3f4a6c0-a0c9-4c79-bad7-898afcf9de46 hrmsdb 12.1.0.2 true OLTP 7e28bf52-la09-49fd-9391-841838d2c42f crmdb 12.1.0.2 false OLTP

(continued)

Shape Storage Status
----odb1 ACFS Configured
odb1 ACFS Configured

odacli delete-database -i a3f4a6c0-a0c9-4c79-bad7-898afcf9de46

13.8 odacli DBHome Commands

Use the odacli DBHome commands to manage database Home operations.

- odacli list-dbhomes (page 13-30)
 Use the odacli list-dbhomes command to display a list of Oracle Home directories.
- odacli describe-dbhome (page 13-31)
 Use the odacli describe-dbhome command to display Oracle Database
 Home details.
- odacli create-dbhome (page 13-32)
 Use the odacli create-dbhome command to create an Oracle Database
 Home.
- odacli update-dbhome (page 13-33)
 Use the odacli update-dbhome command to update a specific RDBMS Home to the latest patch bundle version.
- odacli delete-dbhome (page 13-34)
 Use the odacli delete-dbhome command to delete database home that is not associated with a database.

13.8.1 odacli list-dbhomes

Use the odacli list-dbhomes command to display a list of Oracle Home directories.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To display a list of Oracle Home directories:

```
odacli list-dbhomes [-h] [-j]
```

Parameters

Parameter	Description
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.



Example 13-25 Displaying a List of Oracle Home Directories

Run the following command to display a list of Oracle Home directories:

13.8.2 odacli describe-dbhome

Use the odacli describe-dbhome command to display Oracle Database Home details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To display details about Oracle Database Home:

odacli describe-dbhome -i dbhomeid [-h] [-j] [-v]

Parameters

Parameter	Description
-i dbhomeid	Identifies the database home ID. Use the odacli list-dbhomes command to get the <i>dbhomeid</i> .
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.
-vdbversion	(Optional) Identifies the Database Home Version. Use the odacli list-dbhomes -v command to get the dbversion.

Example 13-26 Displaying Oracle Database Home Details

The following output is an example of using the display Oracle Database Home details command:

```
# odacli describe-dbhome -i b727bf80-c99e-4846-ac1f-28a81a725df6

DB Home details ------

ID: b727bf80-c99e-4846-ac1f-28a81a725df6

Name: OraDB12102_home1

Version: 12.1.0.2
```



13.8.3 odacli create-dbhome

Use the odacli create-dbhome command to create an Oracle Database Home.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To create an Oracle Database Home:

odacli create-dbhome -v version [-j] [-h]

Parameters

Parameter	Description
-v version number	Defines the database bundle patch number.
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.

Usage Notes

For the version number, you can specify the database version, either 12.2.0.1, 12.1.0.2 or 11.2.0.4, or you can use a 5 digit format to specify a specific patch bundle version. For example, 12.1.0.2.161018. If you use the database version without specifying the bundle patch number, then the latest bundle patch is used.

The following values are supported:

- 12.2.0.1
- 12.2.0.1.170814
- 12.1.0.2
- 12.1.0.2.170718
- 12.1.0.2.170418
- 12.1.0.2.161018
- 12.1.0.2.160719
- 12.1.0.2.160419
- 11.2.0.4
- 11.2.0.4.170718
- 11.2.0.4.170418
- 11.2.0.4.161018
- 11.2.0.4.160719





Oracle Database 11.2.0.4.160419 is not supported. Attempts to create an Oracle Database 11.2 against an 11.2.0.4.160419 database home will fail.

Example 13-27 Creating an Oracle Database Home

The following example creates an Oracle Database Home version 12.1.0.2.170718.

odacli create-dbhome -v 12.1.0.2.170718

13.8.4 odacli update-dbhome

Use the odacli update-dbhome command to update a specific RDBMS Home to the latest patch bundle version.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli update-dbhome -i dbhomeid -v version [-j] [-h]

Parameters

Parameter	Description
dbhomeid, -i	Defines the Oracle Database Home to update.
help-h	(Optional) Displays help for using the command.
json, -j	
	(Optional) Displays JSON output. The default is false.
local, -v	Updates the Database Home locally.
precheck, -v	Analyzes the patch.
version, -v	Defines the Oracle Database Appliance version to update. For example, 12.2.1.1.

Usage Notes

- The update-dbhome command applies the latest release update (RU) for Oracle Database version 12.2.1, bundle patch (BP) for Oracle Database version 12.1 and Oracle Database patch set update (PSU) for Oracle Database 11.2.0.4.x home.
- To be updated with the latest patches, the database must be running.
- Only databases in the <code>Configured</code> status are updated. Use the <code>odacli list-database</code> command to see a list of configured databases. Databases in any other status are skipped during the update.

Example 13-28 Updating an Oracle Database Home

To apply the latest patch bundle to update an Oracle Database:



odacli update-dbhome -i ad6c7326-e460-411e-94df-230dedbef743 -v 12.2.1

13.8.5 odacli delete-dbhome

Use the odacli delete-dbhome command to delete database home that is not associated with a database.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli delete-dbhome -i [-h]

Parameters

Parameter	Description
id, -i	Identifies the database home using a database identifier (ID).
help, -h	(Optional) Displays help for using the command.

Usage Notes

- Use the odacli list-dbhomes command to locate the identifier.
- To delete, or uninstall, a database home (dbhome), there must not be any associated databases in the dbhome.
- Use the odacli delete-database command to delete an existing database.

Example 13-29 Deleting an Empty Database Home

odacli delete-dbhome -i 0ce547ca-3df2-4178-a7e6-eefa613aeab4

13.9 odacli Database Storage Commands

Use the Database Storage commands to list, describe, create, and delete Oracle database storage.

- odacli list-dbstorages (page 13-35)
 - Use the odacli list-dbstorages command to display a list of all of the database storage configured in the appliance.
- odacli describe-dbstorage (page 13-35)
 - Use the odacli describe-dbstorage command to display storage configuration details.
- odacli create-dbstorage (page 13-37)
 - Use the odacli create-dbstorage command to create the file system for database migrations.
- odacli delete-dbstorage (page 13-38)
 - Use the odacli delete-dbstorage command to delete database storage that is not associated with a database.



13.9.1 odacli list-dbstorages

Use the odacli list-dbstorages command to display a list of all of the database storage configured in the appliance.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli list-dbstorages [-h]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Usage Notes

This command displays a list of all of the filesystems that are configured with the create-database command and the create-dbstorage command.

Example 13-30 Displaying a List of all Database Storage

odacli list-dbstorages

ID Type	DBUnique	Name	Status
9fe39332-cc1a-4b4b-8393-165524a6ef6b	Acfs	rdb121a	Configured
4f2a1b59-ca66-4d80-951c-425ab7b0acae	Asm	ee12db	Configured
0266edac-c729-4539-861f-3f3d543be9e4	Acfs	db12SE	Configured

13.9.2 odacli describe-dbstorage

Use the ${\tt odacli}$ ${\tt describe-dbstorage}$ command to display storage configuration details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-dbstorage -i [-j] [-h]

Parameters

Parameter Description	
id, -i	Identifies the database storage.
json, -j	(Optional) Displays JSON output. The default is false.



Parameter	Description
help, -h	(Optional) Displays help for using the command.

Usage Notes

- Use the odacli list-dbstorages command to get the database storage identifier (ID).
- The DATA Location corresponds to the init.ora parameter db_create_file_dest.
- RECO Location corresponds to the init.ora parameter db_recovery_file_dest
- REDO Location corresponds to the init.ora parameter db_create_online_log_dest_1

Example 13-31 Displaying Database Oracle ACFS Storage Details

The following example displays Oracle ASM Cluster file system (ACFS) storage details:

Example 13-32 Displaying Database Oracle ASM Storage Details

The following example displays Oracle Automatic Storage Management (Oracle ASM) storage details:



13.9.3 odacli create-dbstorage

Use the odacli create-dbstorage command to create the file system for database migrations.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli create-dbstorage -n dbname -s dataSize -u databaseUniqueName -r [ASM|ACFS] [-h]

Parameters

Parameter	Description
dbname, -n	Defines the name of the database.
dataSize, -s	(Optional) Defines the size, in gigabytes (GB), of the filesystem for storing database files and temp files. The default is: 100 GB The minimum size is 10 GB. When entering the size, do not include GB. For example, for 50 GB, use 50.
databaseUniqueName, -u	(Optional) Defines a unique name for the database. Specify only if the database unique name is different than the database name. The command creates the following mount point: /u02/app/oracle/oradata/db unique name
dbstorage, -r [ASM ACFS]	(Optional) Defines the type of database storage, either ASM or ACFS. When you select ASM, the command only creates the supporting directory structure for storing non-database files. The default is: ACFS
help, -h	(Optional) Displays help for using the command.

Usage Notes

- The odacli create-dbstorage command registers the storage metadata with the Appliance Manager.
- When you create ACFS database storage, the command creates a separate ACFS file system and creates the directory structure for other database files, such as archives and online logs.
- When you create ASM database storage, the command only creates the corresponding directories for non-database files.

Example 13-33 Creating Database Storage

The following statement creates 50 GB ACFS database storage for the APPSDB database.



```
# odacli create-dbstorage -n APPSDB -s 50 -r ACFS
{
    "jobId" : "fc6bf8fd-60c2-44f3-b8b7-efd0e9a2149f",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "August 09, 2016 06:19:35 AM WSST",
    "description" : "Database storage service creation with db name: APPSDB",
    "updatedTime" : "August 09, 2016 06:19:35 AM WSST"
}
```

13.9.4 odacli delete-dbstorage

Use the odacli delete-dbstorage command to delete database storage that is not associated with a database.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli delete-dbstorage -i [-h]

Parameters

Parameter	Description
id, -i	Identifies the database storage using a database identifier (ID).
help,-h	(Optional) Displays help for using the command.

Usage Notes

- You can only use the delete-dbstorage when the storage is not associated with any databases.
- Use the delete-database command to delete an existing database.
- Use the list-dbstorages command to locate the identifier.

Example 13-34 Deleting Empty Database Storage

odacli delete-dbstorage -i 9fe39332-cc1a-4b4b-8393-165524a6ef6b

13.10 odacli Job Commands

Use the odacli list-jobs and odacli describe-job commands to display job details.

- odacli list-jobs (page 13-39)
 Use the odacli list-jobs command to display a list of jobs, including the job
 IDs, status, and the job created date and time stamp.
- odacli describe-job (page 13-39)
 Use the odacli describe-job command to display details about a specific job, including the job ID, status, tasks, and the job created date and time stamp.

13.10.1 odacli list-jobs

Use the odacli list-jobs command to display a list of jobs, including the job IDs, status, and the job created date and time stamp.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To list jobs and view job details and status:

```
odacli list-jobs [-j] [-h]
```

Parameters

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.

Example 13-35 Displaying a List of Jobs

To display a list of jobs:

13.10.2 odacli describe-job

Use the odacli describe-job command to display details about a specific job, including the job ID, status, tasks, and the job created date and time stamp.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To view a specific job, status, and tasks:

```
odacli describe-job -i jobid [-j] [-h]
```



Parameters

Parameter	Description
jobid, -i <i>jobid</i>	Identifies the job. To get the job identifier (jobid), run the list-jobs command.
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.

Example 13-36 Displaying Details for a Job

To display details of a specific job with jobid 02df22c8-c21f-4162-8265-97f7826c243a:

odacli describe-job -i 02df22c8-c21f-4162-8265-97f7826c243a

13.11 odacli Network Commands

Use the odacli network commands to list and describe network interfaces.

- odacli list-networks (page 13-40)
 Use the odacli list-networks command to display networks.
- odacli describe-network (page 13-41)
 Use the odacli describe-network command to display the details of a specific network.
- odacli create-network (page 13-42)
 Use the odacli create-network command to create a network.
- odacli update-network (page 13-42)
 Use the odacli update-network command to update an existing network configuration.
- odacli delete-network (page 13-43)
 Use the odacli delete-network command to delete a network.

13.11.1 odacli list-networks

Use the odacli list-networks command to display networks.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli list-networks [-j] [-h]

Parameters

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.



Example 13-37 Displaying a List of Networks

Use the odacli list-networks command to display a list of networks:

odacli list-networks

ID		Name	NIC	IP Address
	-9720-a01a2a7a838d -943b-7a8ee912cafb	Private-network Public-network	priv0 btbond1	192.0.2.1 10.20.30.100
(Continued) Subnet Mask	Gateway			
255.255.255.240 255.255.252.0	10.20.30.1			

13.11.2 odacli describe-network

Use the odacli describe-network command to display the details of a specific network.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To display the details of a specific network:

odacli describe-network -i id [-j][-h]

Parameters

Parameter	Description	
id, -i	Identifies the network ID. Use the odacli list-networks command to obtain the id.	
json, -j	(Optional) Displays JSON output.	
help, -h	(Optional) Displays help for using the command.	

Example 13-38 Displaying Network Details

Enter the following command to display the details of network ID 9e5ba92b-3f64-4ca7-9067-48be0952510a:

odacli describe-network -i 9e5ba92b-3f64-4ca7-9067-48be0952510a

Network details

ID: 9e5ba92b-3f64-4ca7-9067-48be0952510a

Name: Public-network

NIC: btbond1

IP Address: 192.0.2.1
Subnet Mask: 255.255.252.0
Gateway: 10.20.30.1

Type: Public

Default: true

Created: July 28, 2016 10:10:49 AM EDT



13.11.3 odacli create-network

Use the odacli create-network command to create a network.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

```
odacli create-network [-d|-no-d] -n interface -p ipaddress
-w {Public|Private|Dataguard|Backup|Other} -s subnetmask -g gateway[-h] [-j]
```

Parameters

Parameter	Description	
defaultnetwork, -d	Identifies the default network.	
gateway, -g	Defines the network gateway. The gateway is required for the default network.	
help, -h	(Optional) Displays help for using the command.	
interface, -n	Defines the name of the network interface.	
ipaddress, -p	Defines the network IP address.	
json, -j	(Optional) Displays JSON output.	
networktype, -w	Defines the type of network. Options are: {Public Private Dataguard Backup Other}	
no-defaultnetwork, no-d	Identifies a network as not the default network. Use defaultnetworkd to identify a default network.	
subnetmask, -s	Defines the Network Subnet Mask.	

Usage Notes

Use this command to create an additional network not done in create-appliance.

You are only allowed to create a network on the bond interface.

Example 13-39 Creating a Network

The following example creates a new network, sfpbond1, with IP address 192.0.2.15. The network is an additional network that uses subnet mask 255.255.255.0 and is not a default network.

odacli create-network -n sfpbond1 -p 192.0.2.15 -w Backup -s 255.255.255.0 -no-d

13.11.4 odacli update-network

Use the odacli update-network command to update an existing network configuration.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli



Syntax

To update a network:

```
odacli update-network -i id [-p IP address]
[-w [Public|Private|Dataguard|Backup|Other]] [-s network subnet mask]
[-g network gateway] [-j] [-h]
```

Parameters

Parameter	Description
id, -i	Defines the network identity.
gateway, -g	(Optional) Defines the network gateway.
ipaddress, -p	(Optional) Defines the network IP address.
json, -j	(Optional) Displays JSON output.
networktype, -w [Public Private Dataguard Backup Other]	(Optional) Defines the type of network.
subnetmask, -s	(Optional) Defines the Network Subnet Mask.
help,-h	(Optional) Displays help for using the command.

Usage Notes

You cannot modify the Public and Private-interfaces after the system is deployed.

The system has both SFP+ and 10GBaseT bonded pairs, which means that one of them is used for the public, and you can configure the other after deployment if you want additional connectivity. For example, if you want a backup network.

Example 13-40 Updating a Network

The following example updates network ID 192.0.0.2 and designates the network as a backup network:

odacli update-network -i 192.0.0.2 -w Backup

13.11.5 odacli delete-network

Use the odacli delete-network command to delete a network.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

To delete a network:

odacli delete-network -i id [-j] [-h]

Parameters

Parameter	Description
id, -i	Defines the network identity.



Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.

Usage Notes

You cannot delete the Public-network or Private-network after the system is deployed.

Example 13-41 Deleting a Network

The following example deletes a backup network with a network ID of 55db39db-d95c-42c5-abbd-b88eb99b83ec.

```
# odacli delete-network -i 55db39db-d95c-42c5-abbd-b88eb99b83ec
"jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
"status" : "Running",
"message" : null,
"reports" : [ {
    "taskId" : "TaskSequential_137",
    "taskName" : "deleting network",
    "taskResult" : "Running",
    "startTime" : "July 30, 2016 23:14:32 PM EDT",
    "endTime" : "July 30, 2016 23:14:32 PM EDT",
    "status" : "Running",
    "taskDescription" : null,
    "parentTaskId" : "TaskSequential_135",
    "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
    "tags" : [ ],
    "reportLevel" : "Info",
    "updatedTime" : "July 30, 2016 23:14:32 PM EDT"
  },{
   "taskId" : "TaskZJsonRpcExt_142",
    "taskName" : "Setting up Network",
    "taskResult" : "Network setup success",
    "startTime" : "July 30, 2016 23:14:32 PM EDT",
    "endTime" : "July 30, 2016 23:14:32 PM EDT",
     "status" : "Success",
     "taskDescription" : null,
     "parentTaskId" : "TaskParallel_141",
    "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
    "tags" : [ ],
    "reportLevel" : "Info",
    "updatedTime" : "July 30, 2016 23:14:32 PM EDT" } ],
   "createTimestamp" : "July 30, 2016 23:14:32 PM EDT",
   "description" : "Network service delete",
   "updatedTime" : "July 30, 2016 23:14:32 PM EDT"
```

13.12 odacli Oracle Auto Service Request Commands

Use the Oracle Auto Service Request (Oracle ASR) commands to configure, update, test, and delete Oracle ASR on the system.

odacli configure-asr (page 13-45)

- odacli update-asr (page 13-47)
- odacli describe-asr (page 13-48)
- odacli test-asr (page 13-49)
- odacli delete-asr (page 13-49)

13.12.1 odacli configure-asr

Use the odacli configure-asr command to configure Oracle Auto Service Request (Oracle ASR) after deploying the appliance.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli configure-asr -u username -a asrpassword [-r proxyserver] [-t proxyport] [-y proxyuser] [-ppwd proxypassword] [-s snmpversion] -i[asrip] -e [internal | external] [-j] [-h]

Parameters

Parameter	Description
asrip, -i	(Optional) Identifies the external Oracle ASR Manager IP address.
asrpassword, -a	Defines the My Oracle Support password associated with the user name. Use this option to specify the password interactively. When using this option, do not enter the password in the command-line.
	To use non-interactive mode, use the $$ -ha option instead of the $$ -a option.
asrtype, -e {internal external}	Defines the Oracle ASR Configuration Type. The default is internal.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.
proxypassword, -ppwd	(Optional) Defines the proxy user password.
proxyport, -t	(Optional) Defines the proxy server port.
proxyserver, -r	(Optional) Defines the Proxy Server Address.
proxyuser, -y	(Optional) Defines the proxy user name needed to authenticate the proxy server.
snmpversion, -s [V2 V3]	(Optional) Defines Simple Network Management Protocol (SNMP) Version 2 or SNMP Version 3. The default is V2.
username, -u	Defines the Oracle ASR user name. The user name is the My Oracle Support user name under which the server is registered.



Usage Notes

To execute the command in non-interactive mode and specify the password in the command-line itself, use the option -ha instead of -a.

All log files for Oracle ASR are located in the /var/opt/asrmanager/log/directory.

To configure an external Oracle ASR Manager, you must define the Oracle ASR Configuration Type as external (-e external). For example, odacli configure-asr -e external -i 198.51.100.1

Example 13-42 Configuring Oracle ASR with a Proxy Server

This example configures Oracle ASR for user name scott.tiger@example.com. A proxy server, www-proxy.example.com, and port 80 are defined.

Example 13-43 Configuring an External Oracle ASR

This example configures Oracle Database Appliance to use an external Oracle ASR instance at IP address 10.20.30.40.

```
# odacli configure-asr --asrip 10.20.30.40 --asrtype External
{
   "jobId" : "ea054a2f-d18d-4253-83bc-b57434e3598e",
   "status" : "Created",
   "message" : "Please run the script '/tmp/activateExternalAssets.pl' on the
ASRManager host once the current job is successful.",
   "reports" : [],
   "createTimestamp" : "November 20, 2016 22:12:34 PM EST",
   "description" : "Configure ASR",
   "updatedTime" : "November 20, 2016 22:12:34 PM EST"
}
```

When the job completes successfully, run the / tmp/activateExternalAssets.pl script on the Oracle ASR Manager host.



13.12.2 odacli update-asr

Use the odacli update-asr command to make changes to Oracle Auto Service Request (Oracle ASR) configuration details after deploying the appliance.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

update-asr -u username -a asrpassword [-r proxyserver] [-t proxyport] [-y proxyuser [-ppwd proxypassword] [-s snmpversion] -i[asrip] -e [internal external] [-j] [-h]

Parameters

Parameter	Description
asrip, -i	(Optional) Identifies the external Oracle ASR Manager IP address.
asrpassword, -a	Defines the My Oracle Support password associated with the user name. Use this option to specify the password interactively. When using this option, do not enter the password in the command-line.
	To use non-interactive mode, use the $$ -ha option instead of the $$ -a option.
asrtype, -e [internal external]	Defines the Oracle ASR Configuration Type. The default is internal.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.
proxypassword, -ppwd	(Optional) Defines the proxy user password.
proxyport, -t	(Optional) Defines the proxy server port.
proxyserver, -r	(Optional) Defines the Proxy Server Address.
proxyuser, -y	(Optional) Defines the proxy user name needed to authenticate the proxy server.
snmpversion, -s [v2 v3]	(Optional) Defines Simple Network Management Protocol (SNMP) Version 2 or SNMP Version 3. The default is v2.
username, -u	Defines the Oracle ASR user name. The user name is the My Oracle Support user name under which the server is registered.

Usage Notes

- You can define the password as a command-line argument or enter the password during Oracle ASR configuration. To support non-interactive mode and pass the password in the command-line, use the -ha option instead of the -a option.
- All log files for Oracle ASR are located in the /var/opt/asrmanager/log/directory.



- You cannot use the update-asr command to change the Oracle ASR type. For example, from internal to external. To change the Oracle ASR type, delete the existing configuration using the odacli delete-asr and then re-configure Oracle ASR using the odacli configure-asr command.
- To configure an external Oracle ASR Manager, you must define the Oracle ASR Configuration Type as external (-e external). For example, odacli update-asr -e external -i 198.51.100.1

Example 13-44 Updating Oracle ASR with a New Proxy Server

This example updates Oracle ASR for user name scott.tiger@example.com. The password is not defined in the command-line. You are prompted to enter the password during configuration. The proxy server is updated to www-proxy2.example.com.

13.12.3 odacli describe-asr

Use the odacli describe-asr command to display Oracle Auto Service Request (Oracle ASR) configuration details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

describe-asr [-h]

Parameters

Parameter	Description		
help, -h	(Optional) Displays help for using the command.		

Example 13-45 Displaying Oracle ASR Details

odacli describe-asr

ASR details

ID: e841d74a-687b-4e87-9548-1baa2090d48e Name: UserName: scott.tiger@example.com ProvyServerName: www-proxy.example.com



ProxyPort: 80 ProxyUserName: SnmpVersion: V3 State: N/A

Created: July 15, 2016 8:53:54 AM PST Updated: July 15, 2016 8:53:54 AM PST

13.12.4 odacli test-asr

Use the odacli test-asr command to test the Oracle Auto Service Request (Oracle ASR) configuration.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli test-asr [-h]

Parameters

Parameter	Description		
help, -h	(Optional) Displays help for using the command.		

Usage Notes

This command internally invokes the SNMP test trap by invoking /SP/alertmgmt/rules/1 testrule=true.

Example 13-46 Testing the Oracle ASR Configuration

Created: July 25, 2016 9:03:15 AM SGT

Message:

Task Name Start Time End Time Status

13.12.5 odacli delete-asr

Use the $odacli\ delete-asr$ command to remove the Oracle Auto Service Request (Oracle ASR) configuration from the system.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli



Syntax

```
# odacli delete-asr [-h]
```

Parameters

Parameter	Description		
help, -h	(Optional) Displays help for using the command.		

Example 13-47 Deleting Oracle ASR From the System

```
# odacli delete-asr
{
"jobId" : "5d70bd17-ec4a-48da-8196-1364105db99d",
"status" : "Running",
"message" : null,
"reports" : [],
"createTimestamp" : 1469409622451,
"description" : "Delete ASR",
"updatedTime" : 1469409622458
}
```

13.13 odacli validate-storagetopology

Use the <code>odacli validate-storagetopology</code> command to check the cable connections between the system controllers and the storage shelf, as well as the cable connection to the storage expansion shelf (if one is installed).

Oracle recommends that you run the <code>odacli validate-storagetopology</code> command before deploying the system to ensure that the cabling is correct. This will avoid and prevent problems during deployment due to incorrect or missing cable connections. If the cabling is not correct, you will see errors in your output.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odacli

Syntax

odacli validate-storagetopology [-h]

Parameters

Parameter	Description	
help, -h	(Optional) Displays help for using the command.	

13.14 odaadmcli Hardware Monitoring Commands

Use the hardware monitoring commands to display hardware configurations.

odaadmcli show cooling (page 13-51)
 Use the odaadmcli show cooling command to show cooling details.

odaadmcli show env_hw (page 13-51)

Use the odaadmcli show env_hw command to display information about the environment and hardware.

odaadmcli show fs (page 13-52)

Use the odaadmcli show fs command to display filesystem details.

odaadmcli show memory (page 13-53)

Use the odaadmcli show memory command to display memory details.

odaadmcli show network (page 13-53)

Use the odaadmcli show network command to show network details.

odaadmcli show power (page 13-54)

Use the odaadmcli show power command to display power supply details.

odaadmcli show processor (page 13-55)

Use the odaadmcli show processor command to display processor details.

odaadmcli show server (page 13-55)

Use the odaadmcli show server command to display server details.

13.14.1 odaadmcli show cooling

Use the odaadmcli show cooling command to show cooling details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show cooling details:

odaadmcli show cooling [-h]

Parameters

Parameter	Description	
help, -h	(Optional) Displays help for using the command.	

13.14.2 odaadmcli show env_hw

Use the odaadmcli show env_hw command to display information about the environment and hardware.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display environment and hardware details:

odaadmcli show env_hw [-h]



Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-48 Displaying Environment and Hardware Details

To display the hardware details, enter the command odaadmcli show env_hw. The results show a bare metal Oracle Database Appliance X7-2M system.

```
# odaadmcli show env_hw
BM ODA_Lite X7-2 Medium
```

13.14.3 odaadmcli show fs

Use the odaadmcli show fs command to display filesystem details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display filesystem details:

```
odaadmcli show fs [-h]
```

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-49 Displaying Filesystem Details

odaadmcli show fs

Type ext3	Total Space 30237M	Free Space 7763M	Total DG Space	Free DG Space
ext3	484M	416M	-	-
ext3 ext3	60475M 100793M	38149M 22060M	-	-
acfs	102400M	102158M	4894016M	2418668M
acfs	102400M	100501M	4894016M	2418668M
acfs	102400M	100601M	4894016M	2418668M



13.14.4 odaadmcli show memory

Use the odaadmcli show memory command to display memory details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show memory details:

odaadmcli show memory [-h]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-50 Display Memory Details

odaadmcli show memory

NAME	HEALTH	HEALTH	_DETAILS	PART_N	0.	SERIAL_NO.
DIMM_0	OK	-		3A4K40	BB1-CRC	00CE01154602EADA96
DIMM_11	OK	-		3A4K40	BB1-CRC	00CE01154602EADADA
DIMM_3	OK	-		3A4K40	BB1-CRC	00CE01154602EADBC7
DIMM_8	OK	-		3A4K40	BB1-CRC	00CE01154602EADBA0
(Continue	ed)					
LOCATION	MANUFACT	TURER 1	MEMORY_SI	ZE CURR	_CLK_SPEED	ECC_Errors
P0/D0	Samsung		32 GB	2400	MHz	0
P0/D1	Samsung		32 GB	2400	MHz	0
P0/D3	Samsung		32 GB	2400	MHz	0
P0/D8	Samsung		32 GB	2400	MHz	0

13.14.5 odaadmcli show network

Use the odaadmcli show network command to show network details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show network details:

odaadmcli show network [-h]



Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-51 Showing Network Details

13.14.6 odaadmcli show power

Use the odaadmcli show power command to display power supply details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show power supply details:

odaadmcli show power [-h]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-52 Displaying Power Supply Details

odaadmcli show power

NAME	HEALTH	HEALTH_DETAILS	PART_NO.	SERIAL_NO.
Power_Supply_	0 OK	-	7079395	476856Z+1514CE056G
(C +)				
(Continued)				
LOCATION T	NPUT POWER	OUTPUT POWER	TNLET TEMP	EXHAUST TEMP

PSO Present 112 watts 28.000 degree C 34.938 degree C



13.14.7 odaadmcli show processor

Use the odaadmcli show processor command to display processor details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show processor details:

odaadmcli show processor [-h]

Parameters

Parameter	Description	
help, -h	(Optional) Displays help for using the command.	

Example 13-53 Displaying Processor Details

```
# odaadmcli show processor
```

```
NAME HEALTH HEALTH_DETAILS PART_NO. LOCATION MODEL
CPU_0 OK - 060F P0 (CPU 0) Intel(R) Xeon(R) CPU
E5-2630

(Continued)
MAX_CLK_SPEED TOTAL_CORES ENABLED_CORES
2.200 GHz 10 10
```

13.14.8 odaadmcli show server

Use the odaadmcli show server command to display server details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show server details:

odaadmcli show server [-h]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-54 Displaying Server Details

```
# odaadmcli show server
```

Power State : On



Open Problems : 0

Model : ORACLE SERVER X7-2

Type : Rack Mount

Part Number : 7320190

Serial Number : 1605NM10JJ

Primary OS : Not Available

ILOM Address : 10.209.8.215

ILOM MAC Address : 00:10:E0:95:98:F0

Description : Oracle Database Appliance X7-2 Small 1606NM1s02

Locator Light : Off

Actual Power Consumption : 135 watts

Ambient Temperature : 24.250 degree C

Open Problems Report : System is healthy

13.15 odaadmcli Storage Commands

Use the odaadmcli storage commands to perform storage diagnostics.

- odaadmcli expand storage (page 13-56)
 Use the odaadmcli expand storage command to expand storage.
- odaadmcli show disk (page 13-58)
 Use the odaadmcli show disk command to display the status of a single disk or of all disks on the system.
- odaadmcli show diskgroup (page 13-60)
 Use the odaadmcli show diskgroup command to list configured diskgroups or display a specific diskgroup configuration.
- odaadmcli show controller (page 13-61)
 Use the odaadmcli show controller command to display details of the controller.
- odaadmcli show raidsyncstatus (page 13-62)
 Use the odaadmcli show raidsyncstatus command to display the RAID SYNC status.
- odaadmcli show storage (page 13-62)
 Use the odaadmcli show storage command to show the storage controllers, expanders, and disks.
- odaadmcli stordiag (page 13-63)
 Use the odaadmcli stordiag command to collect detailed information for each disk or NVMe.
- odaadmcli manage diagcollect (page 13-64)
 Use the odaadmcli manage diagcollect command to collect diagnostic logs for storage components.
- odaadmcli power disk (page 13-64)
 Use the odaadmcli power disk command to power a disk on or off.

13.15.1 odaadmcli expand storage

Use the odaadmcli expand storage command to expand storage.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

odaadmcli expand storage -ndisk number of disks to be added -enclosure $\{0/1\}$ [-h]

Parameters

Parameter	Description
enclosure {0 1}	Defines the JBOD or shelf number. The base storage shelf is 0. The storage expansion shelf is 1.
	This option is only available for multi-node platforms. It is not supported on Oracle Database Appliance X7-2S and X7-2M single node platforms.
help, -h	(Optional) Displays help for using the command.
-ndisk	Defines the number of disks to be added in the enclosure.

Usage Notes

Various storage options are available. On multi-node platforms, the base storage is SSD and you can choose to add either SSD or HDD disks. When adding a storage expansion shelf, all disks must be the same type (you cannot combine SSD and HDD disks).



In addition to reviewing the expand storage command, it is important to follow the procedures for adding storage. Cabling validation and disk placement is important. In some cases, you must move disks to different slots to successfully expand storage.

- The following storage options are available on single node platforms:
 - Oracle Database Appliance X7-2S platforms have fixed storage that cannot be expanded.
 - Oracle Database Appliance X7-2M platforms are configured with two (2)
 NVME disks. You can expand storage to five (5) or eight (8) NVME disks.
- The following SSD storage options are available on multi-node Oracle Database Appliance X7-2-HA platforms:
 - Base configuration.
 - Base configuration plus five (5), 10, or 15 SSD disks.
 - Second storage shelf base configuration plus 15 SSD disks (fully populated).
 The base configuration must be fully populated before adding an expansion shelf. The expansion shelf must be fully populated.
- The following HDD storage options are available on multi-node Oracle Database Appliance X7-2-HA platforms:



- Base configuration.
- Base configuration plus 15 HDD disks (fully populated).
- Second storage shelf base configuration plus 24 HDD disks (fully populated).
 The base configuration must be fully populated before adding an expansion shelf. The expansion shelf must be fully populated.

Example 13-55 Adding Six NVMe Disks to a Single Node Platform

You can expand storage on Oracle Database Appliance X7-2M. In this example, five (5) NVMe disks are added to the platform.

```
# odaadmcli expand storage -ndisk 5
```

Example 13-56 Adding 15 SSD Disks to a Multi-Node Platform

The SSD disks are available in packs of 5 (5, 10, or 15). This example adds three 5 packs of SSD disks to the base configuration.

```
#odaadmcli expand storage -ndisk 15 -enclosure 0
Precheck passed.
Successfully formatted 3.2TB SSD disks...
Check the progress of expansion of storage by executing 'odaadmcli show disk'
Waiting for expansion to finish ...
```

Example 13-57 Adding an SSD Storage Expansion Shelf to a Multi-Node Platform

In this example, the base configuration is fully populated and a fully populated expansion shelf of SSD disks is added.

```
# odaadmcli expand storage -ndisk 24 -enclosure 1
Precheck passed.
Successfully formatted 3.2TB SSD disks...
Check the progress of expansion of storage by executing 'odaadmcli show disk'
Waiting for expansion to finish ...
```

Example 13-58 Adding an HDD Storage Expansion Shelf to a Multi-Node Platform

In this example, the base configuration is fully populated with SSD and 15 HDD disks, and a fully populated expansion shelf of HDD disks is added.

```
# odaadmcli expand storage -ndisk 24 -enclosure 1
Precheck passed.
Successfully formatted 10TB HDD disks...
Check the progress of expansion of storage by executing 'odaadmcli show disk'
Waiting for expansion to finish ...
```

13.15.2 odaadmcli show disk

Use the odaadmcli show disk command to display the status of a single disk or of all disks on the system.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli



Syntax

To display the status of all disks on the system:

```
odaadmcli show disk [-h]
```

To display the status of a single disk:

```
odaadmcli show disk disk_name [-h]
```

Parameters

Parameter	Description
disk_name	(Optional) Define the disk resource name. The resource name format is pd_{03} .
help, -h	(Optional) Displays help for using the command.

Example 13-59 Displaying the Status of All Disks

To display the status of all the disks on the system:

Example 13-60 Displaying the Status of a Single Disk

To display the status of a disk named pd_00:

```
# odaadmcli show disk pd_00
The Resource is : pd_00
ActionTimeout : 1500
ActivePath : /dev/nvme0n1
AsmDiskList : |data_00||reco_00|
AutoDiscovery: 1
AutoDiscoveryHi : |data:80:NVD||reco:20:NVD|
CheckInterval: 300
ColNum : 0
CriticalWarning : 0
DependListOpr : add
Dependency: |0|
DiskId : 360025380144d5332
DiskType : NVD
Enabled: 1
ExpNum: 19
HbaPortNum : 10
IState : 0
Initialized : 0
IsConfigDepende : false
ModelNum : MS1PC2DD3ORA3.2T
 MonitorFlag : 1
MultiPathList : |/dev/nvme0n1|
Name : pd_00
NewPartAddr : 0
OSUserType : |userType:Multiuser|
PlatformName : X7_1_LITE_S
PrevState : Invalid
```



PrevUsrDevName :
SectorSize : 512

SerialNum : S2LHNAAH000001
Size : 3200631791616

SlotNum : 0

SmartDiskWarnin : 0
SmartTemperatur : 37
State : Online

StateChangeTs : 1465263789
StateDetails : Good
TotalSectors : 6251233968

TypeName : 0

UsrDevName : NVD_S00_S2LHNAAH101026

VendorName : Samsung

gid : 0 mode : 660 uid : 0

13.15.3 odaadmcli show diskgroup

Use the odaadmcli show diskgroup command to list configured diskgroups or display a specific diskgroup configuration.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To list configured diskgroups:

```
odaadmcli show diskgroup [-h]
```

To display DATA configurations:

```
odaadmcli show diskgroup [DATA] [-h]
```

To display RECO configurations:

```
odaadmcli show diskgroup [RECO] [-h]
```

Parameters

Parameter	Description
DATA	(Optional) Displays the DATA diskgroup configurations.
RECO	(Optional) Displays the RECO diskgroup configurations.
help, -h	(Optional) Displays help for using the command.

Example 13-61 Listing All Diskgroups

odaadmcli show diskgroup

DiskGroups -----DATA RECO



Example 13-62 Displaying DATA Configurations

odaadmcli show diskgroup DATA

```
ASM_DISK PATH DISK STATE STATE_DETAILS data_00 /dev/NVD_S00_S2LHNAAH101026p1 pd_00 ONLINE Good data_01 /dev/NVD_S01_S2LHNAAH101008p1 pd_01 ONLINE Good
```

13.15.4 odaadmcli show controller

Use the odaadmcli show controller command to display details of the controller.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display details of the controller:

```
odaadmcli show controller id [-h]
```

Parameters

Parameter	Description	
controller_id, id	Defines the controller.	
help, -h	(Optional) Displays help for using the command.	

Example 13-63 Showing Controller Details

```
# odaadmcli show controller 1
Controller [1] information:
        sun-controller-id = nvme:1b:00.00
        sun-id = nvme:1b:00.00
       sun-controller-manufacturer = Samsung
       pci-vendor-id = 0x0000144d
       sun-controller-model = 0xa821
       pci-device-id = 0x0000a821
       sun-controller-type = NVMe
       sun-card-manufacturer = Sun Microsystems
       pci-subvendor-id = 0x0000108e
       sun-card-model = 0xa803
       pci-subdevice-id = 0x0000a803
       pci-address = 1b:00.0
       sun-version-firmware = KPYA7R3Q
        sun-serial-number = S2LHNAAH101008
        sun-product-name = MS1PC2DD3ORA3.2T
       pci-slot-number = 11
       nvme-power-control = 1
        sun-nac-name = /SYS/DBP/NVME1
```



13.15.5 odaadmcli show raidsyncstatus

Use the odaadmcli show raidsyncstatus command to display the RAID SYNC status.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display the status of RAID SYNC:

odaadmcli show raidsyncstatus [-h]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.

Example 13-64 Displaying the RAID SYNC Status

To display the RAID SYNC details and status:

odaadmcli show raidsyncstatus

Raid Type Raid Device Raid Status maintainPdFailHistory Rebuildrate H/W Raid /dev/sda Optimal ON 30%

13.15.6 odaadmcli show storage

Use the odaadmcli show storage command to show the storage controllers, expanders, and disks.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display the storage controllers, expanders, and disks:

odaadmcli show storage [-h]

To show storage errors:

odaadmcli show storage -errors [-h]

Parameters

Parameter	Description	
errors	(Optional) Shows storage errors.	
help, -h	(Optional) Displays help for using the command.	



Example 13-65 Displaying Storage Devices

The following example displays details about the storage devices on an appliance.

```
# odaadmcli show storage
==== BEGIN STORAGE DUMP ======
Host Description: Oracle Corporation: ORACLE SERVER X6-2
Total number of controllers: 2
   Id = 0
   Pci Slot = 10
   Serial Num = S2LHNAAH101026
    Vendor = Samsung
  Model = MS1PC2DD3ORA3.2T
   FwVers = KPYA7R3Q
   strId = nvme:19:00.00
     Pci Address = 19:00.0
     Id = 1
     Pci Slot = 11
     Serial Num = S2LHNAAH101008
     Vendor = Samsung
   Model = MS1PC2DD3ORA3.2T
   FwVers = KPYA7R3Q
    strId = nvme:1b:00.00
 Pci Address = 1b:00.0
Total number of expanders: 0
Total number of PDs: 2
   /dev/nvme0n1 Samsung NVD 3200gb slot: 0 pci : 19
   /dev/nvmeln1 Samsung NVD 3200gb slot: 1 pci : 1
```

13.15.7 odaadmcli stordiag

Use the odaadmcli stordiag command to collect detailed information for each disk or NVMe.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To collect storage diagnostics for disks and NVM Express (NVMe):

```
odaadmcli stordiag n [-h]
```

==== END STORAGE DUMP =======

Parameters

Parameter	Description
-n disk_name	Defines the disk resource name. The resource name format is $pd_{0.3}$.
help, -h	(Optional) Displays help for using the command.



Example 13-66 Displaying NVMe Details

To display detailed information for NVMe pd_00:

odaadmcli stordiag pd_00

13.15.8 odaadmcli manage diagcollect

Use the <code>odaadmcli</code> manage <code>diagcollect</code> command to collect diagnostic logs for storage components.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To collect diagnostic logs for storage components:

```
odaadmcli manage diagcollect --storage [-h]
```

Parameters

Parameter	Description
storage	Collects storage logs.
help, -h	(Optional) Displays help for using the command.

Example 13-67 Collecting Storage Logs

```
# odaadmcli manage diagcollect --storage
Collecting storage log data. It will take a while, please wait...
Collecting oak data. It will take a while, please wait...
tar: Removing leading `/' from member names
tar: /opt/oracle/oak/onecmd/tmp/OakCli-Command-Output.log: file changed as we read it
Logs are collected to : /opt/oracle/oak/log/rwsoda6f002/oakdiag/oakStorage-
rwsoda6f002-20161120_2217.tar.gz
```

13.15.9 odaadmcli power disk

Use the odaadmcli power disk command to power a disk on or off.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To power a disk on or off:

odaadmcli power disk {on|off|status} disk_name [-h]



Parameters

Parameter	Description
disk_name	Defines the disk resource name. The resource name format is pd_[03].
{on off status}	Power on a disk, power off a disk, display status.
help, -h	(Optional) Displays help for using the command.

Example 13-68 Powering a Disk Off

This example shows how to power off a disk.

```
# odaadmcli power disk off pd_00
Disk 'pd_00' is already part of ASM
Are you sure you want to power OFF the disk?: 'pd_00'?
[yes/no]:
yes
Powered OFF pd_00
```

Example 13-69 Checking the Disk Status

This example shows how to get the status of disk pd_00.

```
# odaadmcli power disk status pd_00
The disk is powered ON
```

13.16 odacli-adm set-credential

Use the odacli-adm set-credential command to change the oda-admin user credentials.

Syntax

To reset the oda-admin user credentials in interactive mode:

```
odacli-adm set-credential --password --username username [-j] [-h]
```

To reset the oda-admin user credentials in non-interactive mode:

```
odacli-adm set-credential --hp password --username username [-j] [-h]
```

Parameters

Parameter	Description
password, -p	Agent password. The Agent password is needed to access the Oracle Appliance Manager Web Console. The default password is welcome1. To define the password in non-interactive mode, usehp instead ofpassword.
username, -u	User name required to access the Oracle Appliance Manager Web Console. The default user name is oda-admin.
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.



Usage Notes

Only root user can reset the oda-admin user credentials.

Example 13-70 Resetting the oda-admin Password in Interactive Mode

To reset the oda-admin user password to welcome2 in interactive mode:

odacli-adm set-credential --password --username oda-admin
Agent password: welcome2

Example 13-71 Resetting the oda-admin Password in Non-Interactive Mode

To reset the oda-admin user password to welcome2 in non-interactive mode:

odacli-adm set-credential --password welcome2 --username oda-admin



Oracle Appliance Manager Command-Line Interface for Virtualization

Oracle Appliance Manager Command-Line Interface (OAKCLI) is a command-line interface (CLI) for Oracle VM Server (Xen hypervisor technology virtualization) on Oracle Database Appliance X7-2-HA. Only use the oakcli commands on an Oracle Database Appliance X7-2-HA virtualized platform.

 About the Oracle Appliance Manager Command-line Interface (OAKCLI) (page 14-3)

The <code>oakcli</code> commands are the primary method for performing database and system administration on Oracle Database Appliance, and on Oracle Database Appliance Virtualized Platform.

- Managing OAKCLI Privileges and Security with SUDO (page 14-4)
 Oracle Appliance Manager command-line utility requires root system privileges for most administration actions. You may want to use SUDO as part of your system auditing and security policy.
- oakcli add disk -local (page 14-7)
 Use the oakcli add disk -local command to add a local disk to the system after physically replacing a failed disk.
- oakcli configure commands (page 14-7)
 Use the oakcli configure commands to configure components on Oracle Database Appliance.
- oakcli copy (page 14-13)
 Use the oakcli copy command to prepare a copy of the configuration file for use during the configuration of Oracle Database Appliance.
- oakcli create commands (page 14-13)
 Use the oakcli create commands to create components on Oracle Database Appliance.
- oakcli delete commands (page 14-21)
 Use the oakcli delete commands to delete components from Oracle Database Appliance.
- oakcli deploy (page 14-24)
 Use the command oakcli deploy to deploy Oracle Grid Infrastructure for a cluster on Oracle Database Appliance.
- oakcli expand storage (page 14-25)
 Use the oakcli expand storage command to configure the solid-state drives (SSDs) for data storage into the existing base configuration to fully populate the base storage shelf.
- oakcli diskwritecache (page 14-26)
 Use the oakcli diskwritecache command to locate disks with write cache enabled and to disable disk write cache for those disks.

oakcli locate disk (page 14-26)

Use the <code>oakcli locate disk</code> command to locate the physical disk that is associated with a named Oracle ASM disk by turning the disk's LED light on or off.

oakcli manage diagcollect (page 14-27)

Use the <code>oakcli manage diagcollect</code> command to collect diagnostic information about Oracle Database Appliance for troubleshooting purposes, and for working with Oracle Support Services.

oakcli modify database (page 14-28)

Use the oakcli modify database command to modify the database type or size class for a named database.

oakcli orachk (page 14-29)

Use the <code>oakcli</code> orachk command to audit configuration settings with the ORAchk utility.

oakcli reconfigure osparams (page 14-30)

Use the oakcli reconfigure osparams command to adjust the kernel parameters based on the available RAM after you upgrade memory or DIMM.

oakcli resize dbstorage (page 14-31)

Use the <code>oakcli resize</code> dbstorage command to resize the space used for a storage structure that was created for the purpose of migrating databases from Oracle ASM to Oracle ACFS.

oakcli restart oda base (page 14-32)

Use the oakcli restart oda_base command to stop and restart ODA_BASE on the local node.

oakcli show commands (page 14-32)

Use the oakcli show commands to display the status of Oracle Database Appliance components.

oakcli start commands (page 14-48)

Use the oakcli start commands to start a virtual machine, to start a shared repository on a node, or to start ODA BASE on the local node.

oakcli stop command (page 14-49)

Use the <code>oakcli stop</code> command to stop a virtual machine, to stop a shared repository on a node, or to stop ODA_BASE on the local node.

oakcli stordiag (page 14-50)

Use the <code>oakcli stordiag</code> command to run diagnostic tests on a disk in the storage shelf or storage expansion shelf.

oakcli test asr (page 14-51)

Use the <code>oakcli test asr</code> command to send a test trap to determine if Oracle Auto Service Request (Oracle ASR) is configured and working correctly.

oakcli unpack (page 14-51)

Use the ${\tt oakcli\ unpack}$ command to unpack packages into the Oracle Appliance Manager repository.

oakcli update (page 14-52)

Use the oakcli update command to apply Oracle Database Appliance patches.

oakcli update-cpucore (page 14-53)

Use the oakcli update-cpucore command to enable a specified number of licensed CPU cores for Oracle Database Appliance.

- oakcli upgrade (page 14-54)
 - Use the ${\tt oakcli}$ upgrade command to upgrade the Oracle Database software on Oracle Database Appliance.
- oakcli validate (page 14-55)
 - Validates the state of an Oracle Database Appliance or the viability of an operating system patch.
- oakcli Virtual Disk Commands (page 14-58)
 Use the oakcli virtual disk (vdisk) commands to manage virtual disks on Oracle Database Appliance X7-2-HA virtualized platform.
- oakcli Virtual Machine Commands (page 14-61)
 Use the oakcli virtual machine commands to list and manage virtual machines (VMs).
- oakcli Virtual Machine Template Commands (page 14-70)
 Use the oakcli Virtual Machine template commands to list and manage virtual machine (VM) templates.
- oakcli VLAN Management Commands for Virtual Platform (page 14-75)
 Use the oakcli VLAN commands to list and manage virtual local area networks (VLANs) on an Oracle Database Appliance virtualized platform.

14.1 About the Oracle Appliance Manager Command-line Interface (OAKCLI)

The oakcli commands are the primary method for performing database and system administration on Oracle Database Appliance, and on Oracle Database Appliance Virtualized Platform.

You can perform the following tasks with OAKCLI commands:

- List the hardware components
- Validate and diagnose the hardware components
- Install and upgrade software
- Apply software patches
- Create and drop databases
- Install and uninstall Oracle Homes
- Deploy and manage virtual machines
- Test Oracle Auto Service Request (Oracle ASR)
- Enable CPU cores

Depending on your version of Oracle Appliance Manager and your hardware, some of the OAKCLI commands may not be available to you. To see which OAKCLI commands are supported on your version of Oracle Appliance Manager and your hardware, run the help command for OAKCLI: oakcli -h

OAKCLI Command Location and Path Configuration

The Oracle Appliance Manager command-line interface is in the following directory:

/opt/oracle/oak/bin/oakcli



Configure the root user account on your Oracle Database Appliance servers to have the PATH variable defined to search for oakcli commands in the path /opt/oracle/oak/bin/oakcli.

OAKCLI Syntax

Oracle Appliance Manager command-line interface commands and parameters are case-insensitive.

An oakcli command uses the following command syntax:

oakcli command object [options]

- *command* is an action you want to perform on the appliance. For example: show, locate, apply.
- object is the target or object on which the oakcli command performs the
 operation. For example, you issue a command to create or configure a disk, or a
 controller, or perform other system or software administration. You can also use
 object abbreviations.
- options are optional parts of the oakcli command. Options can consist of one or more options that extend the use of the oakcli command carried out on an object. Options include additional information about the action that you want to perform on the object. Option names are preceded with a dash. Many options require the name of an object for the command to perform the action that you want to carry out. The help option (-h) is an option that is available with every command. When you include the -h option, you can obtain additional information about the command that you want to perform.

Oracle Appliance Manager Command-Line Interface Help

Run the following command to see the usage information for all oakcli commands available for your Oracle Database Appliance:

```
oakcli -h
```

Run the following command to see detailed help about a specific oakcli command:

```
oakcli command -h
```

Run the following command to see detailed help about a specific oakcli command carried out on an object, and the options that are available for you to use with that object.

oakcli command object -h

14.2 Managing OAKCLI Privileges and Security with SUDO

Oracle Appliance Manager command-line utility requires root system privileges for most administration actions. You may want to use SUDO as part of your system auditing and security policy.

For most tasks, Oracle recommends that you log in as \mathtt{root} to use the Oracle Appliance Manager command-line interface on Oracle Database Appliance. If you are not logged in as \mathtt{root} , then you cannot carry out most actions on the appliance. For example, if you are not logged in as \mathtt{root} , then you can view storage information, but you cannot modify the storage.



Allowing Root User Access Using SUDO

In environments where system administration is handled by a different group than database administration, or where security is a significant concern, you may want to limit access to the \mathtt{root} user account and password. SUDO enables system administrators to grant certain users (or groups of users) the ability to run commands as \mathtt{root} , while logging all commands and arguments as part of your security and compliance protocol.

A SUDO security policy is configured by using the file <code>/etc/sudoers</code>. Within the <code>sudoers</code> file, you can configure groups of users and sets of commands to simplify and audit server administration with SUDO commands.



Caution:

Configuring SUDO to allow a user to perform any operation is equivalent to giving that user root privileges. Consider carefully if this is appropriate for your security needs.

SUDO Example 1: Allow a User to Perform Any OAKCLI Operation

This example shows how to configure SUDO to enable a user to perform any OAKCLI operation. You do this by adding lines to the commands section in the <code>/etc/sudoers</code> file:

```
## The commands section may have other options added to it.
##
Cmnd_Alias OAKCLI_CMDS=/opt/oracle/oak/bin/oakcli *
jdoe ALL = OAKCLI_CMDS
```

In this example, the user name isjdoe. The file parameter setting ALL= OAKCLI_CMDS grants the user jdoe permission to run all oakcli commands that are defined by the command alias OAKCLI_CMDS. After configuration, you can copy one sudoers file to multiple hosts. You can also create different rules on each host.



Before database creation, you must set up user equivalency with SSH for the root user on each server. If you do not set up user equivalency and configure SSH on each server, then you are prompted to provide the root password for each server during database creation.

After you configure the sudoer file with the user, the user jdoe can run the set of oakcli commands configured with the command alias $oakcli_cmds$. For example:

```
$ sudo oakcli create database -db newdb
INFO: 2015-08-05 14:40:55: Look at the logfile '/opt/oracle/oak/log/scaoda1011/
tools/12.1.2.4.0/createdb_newdb_91715.log' for more details
INFO: 2015-08-05 14:40:59: Database parameter file is not provided. Will be using
```



SUDO Example 2: Allow a User to Perform Only Selected OAKCLI Operations

To configure SUDO to allow a user to perform only selected OAKCLI operations, add lines to the commands section in the /etc/sudoers file as follows:

```
## The commands section may have other options added to it.
##
Cmnd_Alias OAKCLI_CMDS=/opt/oracle/oak/bin/oakcli *
jdoe ALL = OAKCLI_CMDS
[jdoe2@servernode1 ~]$ sudo /opt/oracle/oak/bin/oakcli create database -db test
INFO: 2015-09-30 15:49:07: Look at the logfile '/opt/oracle/oak/log/servernode1/
tools/12.1.2.4.0/createdb_test_59955.log' for more details
INFO: 2015-09-30 15:49:12: Database parameter file is not provided. Will be using
default parameters for DB creation
Please enter the 'SYSASM' password: (During deployment we set the SYSASM password
to 'welcome1'):
Please re-enter the 'SYSASM' password:
{\tt INFO: 2015-09-30\ 15:49:27:\ Installing\ a\ new\ home:\ OraDb12102\_home2\ at\ /u01/app/lines}
oracle/product/12.1.0.2/dbhome_2
Please select one of the following for Database type [1 .. 3]:
    => OLTP
    => DSS
    => In-Memory
```

In this example, the user <code>jdoe2</code> tries to run the <code>oakcli</code> show <code>databases</code> command, which is not part of the set of commands that is configured for that user. Sudo prevents <code>jdoe2</code> from running the command.

```
[jdoe2@servernode1 ~]$ sudo /opt/oracle/oak/bin/oakcli show database
```

Sorry, user jdoe2 is not allowed to execute '/opt/oracle/oak/bin/oakcli show database' as root on servernode1.



The SUDO man pages for more information about configuring and using SUDO:

http://www.sudo.ws/sudo.html



14.3 oakcli add disk -local

Use the oakcli add disk -local command to add a local disk to the system after physically replacing a failed disk.

Syntax

oakcli add disk -local

Usage Notes

- · You cannot add more than two disks per node.
- You must remove the failed drive and replace it with a new drive before running the oakcli add disk -local command.
- The new disk must be inserted into the slot before you run this command.
- The oakcli add disk -local command is supported only on bare metal deployments. It is not supported on virtualized configurations.

14.4 oakcli configure commands

Use the oakcli configure commands to configure components on Oracle Database Appliance.

- oakcli configure additionalnet (page 14-8)
 Use the oakcli configure additionalnet command to configure any unconfigured public networks in bare metal, Domain 0, and ODA BASE.
- oakcli configure asr (page 14-8)
 Use the oakcli configure asr command to configure Oracle Auto Service Request (Oracle ASR) on Oracle Database Appliance.
- oakcli configure cpupool (page 14-9)
 Use the oakcli configure cpupool command to configure a CPU pool on one
 Oracle Database Appliance Virtualized Platform node.
- oakcli configure firstnet (page 14-10)
 Use the oakcli configure firstnet command to configure an initial network on Oracle Database Appliance that enables you to download deployment software.
- oakcli configure network (page 14-10)
 Use the oakcli configure network command to configure the network after either replacing a network card or swapping the public network from copper to fiber and vice versa. The meaning of the command changes depending on which parameter you use.
- oakcli configure oda_base (page 14-11)
 Use the oakcli configure oda_base command to change the CPU core count assigned to ODA_BASE, add or remove virtual local area networks assigned to ODA_BASE, and adjust resource allocation among user domains and between ODA_BASE and other user domains.
- oakcli configure repo (page 14-12)
 Use the oakcli configure repo command to increase the size of a shared repository.



14.4.1 oakcli configure additionalnet

Use the <code>oakcli configure additionalnet</code> command to configure any unconfigured public networks in bare metal, Domain 0, and ODA_BASE.

Syntax

```
oakcli configure additionalnet [-h]
```

Parameter

-h displays online help for using the command.

Usage Notes

The <code>oakcli configure</code> additionalnet command automatically detects any unconfigured networks and runs an interactive script that guides you through how to configure the network. The script requires the following input:

- Interface name
- DHCP [Y/N]
- IP
- Netmask



If you are running the command on a bare metal deployment, then the interface name expects a bond name. If you are running the command on Dom0, then the interface name expects a net name. If you are running the command on Dom1, then the interface name expects an eth name.

14.4.2 oakcli configure asr

Use the <code>oakcli configure asr</code> command to configure Oracle Auto Service Request (Oracle ASR) on Oracle Database Appliance.

Syntax

```
oakcli configure asr [-h]
```

Parameter

-h displays help for using the command.

Usage Notes

- The <code>oakcli configure asr</code> command initiates an interactive script that requests the following information to implement Oracle ASR on Oracle Database Appliance:
 - Action to be performed (setup internal, setup external, deinstall, or reconfigure Oracle ASR Manager)
 - PROXY server name, port, user ID, and password



- Oracle ASR user ID and password
- Oracle ASR Manager IP and port
- You can configure Oracle ASR on Oracle Database Appliance to use its own ASR Manager (internal Oracle ASR) or use Oracle ASR Manager configured on another server in the same network as your appliance (external Oracle ASR). If you already have Oracle ASR Manager configured in your environment, you can register Oracle Database Appliance with your existing Oracle ASR Manager.



With an internal Oracle ASR Manager, an alert is not sent when the server goes down. If a critical event occurs on Oracle Database Appliance with an external Oracle ASR Manager, then an alert can still be sent to Oracle.

Configuring Oracle ASR

```
# oakcli configure asr

INFO : Logging all actions in /opt/oracle/oak/onecmd/tmp/
scaoda1011-20150805153300.log and traces in /opt/oracle/oak/onecmd/tmp/
scaoda1011-20150805153300.trc

Please enter
1 to setup Internal ASR
2 to setup External ASR
3 to Deinstall ASR
0 to Exit

[1]:INFO : Logging all actions in /opt/oracle/oak/onecmd/tmp/
scaoda1011-20150805153300.log and traces in /opt/oracle/oak/onecmd/tmp/
scaoda1011-20150805153300.trc
```

14.4.3 oakcli configure cpupool

Use the <code>oakcli configure cpupool</code> command to configure a CPU pool on one Oracle Database Appliance Virtualized Platform node.

Syntax

oakcli configure cpupool poolname -numcpu cpu_count -node nodenum [-h]

Parameters

Parameter	Description
poolname	Unique name for the CPU pool
-numcpu cpu_count	Number of CPUs for the CPU pool
-node <i>nodenum</i>	Node where the CPU pool will be created (0 or 1)
-h	(Optional) Display help for using the command.



Configuring a CPU Pool

Configure a CPU pool named twonode with two cores on Node 1 of Oracle Database Appliance Virtualized Platform:

```
oakcli configure cpupool twonode -numcpu 2 -node 1
```

14.4.4 oakcli configure firstnet

Use the oakcli configure firstnet command to configure an initial network on Oracle Database Appliance that enables you to download deployment software.

Syntax

```
oakcli configure firstnet
```

Example

The <code>oakcli</code> configure firstnet command creates an initial network on a new Oracle Database Appliance using an interactive script. The following example shows how to configure the initial network on a bare metal Oracle Database Appliance:

Note:

Oracle recommends using the oakcli configure firstnet command only one time on Oracle Database Appliance. Subsequent use after configuring the initial network can cause unpredictable changes to your network settings.

14.4.5 oakcli configure network

Use the <code>oakcli configure network</code> command to configure the network after either replacing a network card or swapping the public network from copper to fiber and vice versa. The meaning of the command changes depending on which parameter you use.

Syntax

```
oakcli configure network [-changeNetCard|-publicNet][-h]
```



Parameters

Parameter	Description
-changeNetCard	Configures the network card after it has been replaced. You must run the oakcli configure network -changeNetCard command on each node if the network card was replaced. This parameter is supported on all Oracle Database Appliance hardware models. This command must be executed from DomO on virtualized platforms.
-publicNet	Configures the network after you have swapped the public network from copper to fiber and vice versa. You must run the oakcli configure network -publicNet command on each node, and this requires the stack to be down. The stack includes GI and RDBMS. If you are using Oracle Database Appliance Virtualized Platform, the virtual machines must be down. The virtual machines may need some configuration changes, especially if they are using VLANs. This parameter is supported only on Oracle Database Appliance X4-2 hardware models.
-h	(Optional) Display help for using the command.

14.4.6 oakcli configure oda_base

Use the <code>oakcli configure oda_base</code> command to change the CPU core count assigned to ODA_BASE, add or remove virtual local area networks assigned to ODA_BASE, and adjust resource allocation among user domains and between ODA_BASE and other user domains.

You must restart the domain for the resource allocation change to take effect.

Syntax

oakcli configure oda_base

Examples

Here are examples of how to use the oakcli configure oda_basecommand.

Changing the CPU Core Count in ODA_BASE

Change the CPU core count from six to eight in ODA_BASE:



```
INFO: Node 0:Configured oda base pool
INFO: Node 1:Configured oda base pool
INFO: Node 0:ODA Base configured with new memory
INFO: Node 0:ODA Base configured with new vcpus
INFO: Changes will be incorporated after the domain is restarted on Node 0
INFO: Node 1:ODA Base configured with new memory
INFO: Node 1:ODA Base configured with new vcpus
INFO: Changes will be incorporated after the domain is restarted on Node 1
```

Changing the Amount of Memory Allocated to ODA_BASE

- 1. Log in to Dom0.
- 2. Execute the oakcli configure oda_base command and change the configuration.
- **3.** Restart ODA_BASE.

Assigning VLANs to ODA_BASE

- 1. Log in to Dom0.
- 2. Execute the oakcli configure oda_base command.
- 3. Change the setting for Additional vlan networks to be assigned to oda_base? (y/n) to y.
- 4. Follow the prompts to assign additional VLANs to ODA BASE.
- 5. Restart ODA BASE.

14.4.7 oakcli configure repo

Use the oakcli configure repo command to increase the size of a shared repository.

Syntax

oakcli configure repo reponame -incsize size [M|G] [-h]

Parameter	Description
reponame	Name of the shared repository
size	Number that can be followed by M to define the size as megabytes or by G to define as size as gigabytes
-h	(Optional) Display help for using the command.

Increasing the Size of a Shared Repo

Increase the size of the repo1 shared repository by 2 gigabytes:

```
# oakcli configure repo repol -incsize 2G
Configured Shared Repo : repol with new size 3712.0.
```



14.5 oakcli copy

Use the <code>oakcli copy</code> command to prepare a copy of the configuration file for use during the configuration of Oracle Database Appliance.

Syntax

oakcli copy -conf absolute_conf_file [-h]

Parameters

Parameter	Description
-conf absolute_conf_file	Specifies the full path name of the configuration file
-h	(Optional) Display help for using the command.

Example 14-1 Preparing a Copy of the Configuration File

If you created a configuration file previously and copied this file to Oracle Database Appliance, then prepare the configuration file to be used during the configuration process. For example, if you copied the file ${\tt myserver1.conf}$ to ${\tt /tmp}$, then enter the following command:

oakcli copy -conf /tmp/myserver1.conf

14.6 oakcli create commands

Use the oakcli create commands to create components on Oracle Database Appliance.

- oakcli create cpupool (page 14-14)
 - Use the command oakcli create cpupool to create a CPU pool on one Oracle Database Appliance Virtualized Platform node.
- oakcli create database (page 14-14)
 - Use the <code>oakcli create database</code> command to create additional databases on Oracle Database Appliance.
- oakcli create dbhome (page 14-17)
 - Use the <code>oakcli</code> <code>create</code> <code>dbhome</code> command to create a new database home on Oracle Database Appliance.
- oakcli create dbstorage (page 14-17)
 - Use the ${\tt oakcli}$ create dbstorage command to create a storage structure for migrating databases from Oracle ASM to Oracle ACFS.
- oakcli create db config params (page 14-18)
 - Use the oakcli create db_config_params command to generate a database configuration file.
- oakcli create repo (page 14-19)
 - Use the <code>oakcli</code> <code>create</code> <code>repo</code> command to create a new shared repository on Oracle Database Appliance Virtualized Platform.
- oakcli create snapshotdb (page 14-20)
 - Use the ${\tt oakcli}$ create snapshotdb command to create a snapshot database from an existing database.



14.6.1 oakcli create cpupool

Use the command oakcli create cpupool to create a CPU pool on one Oracle Database Appliance Virtualized Platform node.

Syntax

oakcli create cpupool poolname -numcpu cpu_count -node nodenum [-h]

Parameters

Parameter	Description
poolname	Uniquely names the CPU pool
-numcpu cpu_count	Defines the number of CPUs for the CPU pool
-node nodenum	Defines the node where the CPU pool will be created (0 or 1)
-h	(Optional) Display help for using the command.

Example

Create a CPU pool with two CPUs on Node 1 of Oracle Database Appliance Virtualized Platform:

oakcli create cpupool twonode -numcpu 2 -node 1

14.6.2 oakcli create database

Use the oakcli create database command to create additional databases on Oracle Database Appliance.

When you run the command oakcli create database, the command prompts you for further inputs.



Do not use Oracle Database Configuration Assistant (DBCA) to create databases on Oracle Database Appliance. Only use Oracle Appliance Manager for database configuration. Deploying Oracle Database instances using Oracle Appliance Manager ensures that these databases are properly configured, optimized, and supported on Oracle Database Appliance.

File Path

\$ORACLE_HOME/directory_name

Syntax

oakcli create database -db db_name [[[-oh home] | [-version version]] [-params
params_file] [-storage asm] [-cdb]][h]



Parameters

Parameter	Description
-cdb	(Optional) Creates the database as a container database.
-db db_name	Name of the database that you want to create.
-oh home	(Optional) Name of an existing Oracle home to use when creating the database. By default, the command creates a new database home.
-params params_file	(Optional) Name of the configuration file. By default, Oracle Database Appliance uses the default configuration file.
-storage asm	(Optional) Creates an Oracle 12c database in Oracle Automatic Storage Management (Oracle ASM).
-version version	(Optional) Version of the database that you want to create. By default, Oracle Database Appliance uses the highest version that you have downloaded.
-h	(Optional) Display help for using the command.

Usage Notes

- The -oh and the -version parameters are mutually exclusive. Attempting to use both in the same command will generate an error.
- When a database is created without identifying an Oracle home, a new Oracle home is created using a standard naming convention (for example, OraDb11204_home3). The number at the end of the name is incremented by one for each new home created with the same version number.
- On Oracle Database Appliance X7-2-HA, the minimum supported Oracle Database release is 11.2.0.4. Oracle Database 11.2.0.3.x is not supported.
- When you upgrade the database, infrastructure, and Oracle Grid Infrastructure, you must specify an existing home to create a new database.
- If you try to create a database using the option -version version before
 downloading and unpacking the specific version database clone files, then the
 command will fail.
- You can create configuration files with the oakcli create db_config_params command.
- The prompt "Do you want to keep the data files on FLASH storage: [Y|N]" is
 only shown if you choose the OLTP database type and if there is some free space
 available on flash storage.
- Beginning with Oracle Database 12c release 1 (12.1.0.2), you can create an Oracle Database in Oracle ASM.

Examples

This section shows different scenarios for using the command oakcli create database.

Example 14-2 Creating a New Database Showing Prompts

When you run the command <code>oakcli</code> <code>create</code> <code>database</code>, you are prompted for several inputs.



The following command creates a database named mydb using an existing Oracle home named OraDb12102_home1:

```
# oakcli create database -db DBPROD
INFO: 2017-07-25 19:21:16: Please check the logfile
'/opt/oracle/oak/log/ODADBI1/tools/12.2.1.1.0/createdb_DBPROD_29285.log' for more
details
INFO: 2017-07-25 19:21:24: Database parameter file is not provided.
Will be using default parameters for DB creation
Please enter the 'SYSASM' password: (During deployment we set the SYSASM password
to 'welcome1'):
Please re-enter the 'SYSASM' password:
INFO: 2017-07-25 19:21:35: Installing a new Home: OraDb12102 home2 at
 /u01/app/oracle/product/12.1.0.2/dbhome_2
Please select one of the following for Database type [1 .. 3]:
1 => OLTP
2 => DSS
3 => In-Memory
The selected value is : OLTP
1 => EE : Enterprise Edition
2 => RACONE
3 => RAC1
Selected value is : RAC
Specify the Database Class (1. odb-01 '1 core, 8 GB memory' 2.0thers) [1]
Please select one of the following for Database Class
    => odb-01s ( 1 cores , 4 GB memory)
    => odb-01 ( 1 cores ,
                                8 GB memory)
3
    => odb-02 ( 2 cores , 16 GB memory)
4
    => odb-04 ( 4 cores , 32 GB memory)
5
   => odb-06 ( 6 cores , 48 GB memory)
6
  => odb-08 ( 8 cores , 64 GB memory)
  => odb-10 ( 10 cores , 80 GB memory)
```

Example 14-3 Creating a New Database in an Existing Oracle Home

Create a database called sales1 in OraDb11204_home2:

```
oakcli create database -db sales1 -oh OraDb11204_home2
```

Example 14-4 Creating a New Database from a Template

Create a database called sales2 from the salesdbtemplate.bconf file (by appending the default file extension to the file name provided). This example also creates a new Oracle home:

```
oakcli create database -db sales2 -params salesdbtemplate
```

14.6.3 oakcli create dbhome

Use the <code>oakcli</code> create <code>dbhome</code> command to create a new database home on Oracle Database Appliance.

Syntax

oakcli create dbhome [-version version] [-h]

Parameters

Parameter	Description
-version version	(Optional) Version that you want to install. If this is not provided, then Oracle Database Appliance uses the latest available version.
-h	(Optional) Display help for using the command.

Creating a Database Home

Create a database home called sales1 using Oracle Database version 12.1.0.2.4.

oakcli create dbhome -version 12.1.0.2.4

14.6.4 oakcli create dbstorage

Use the <code>oakcli</code> <code>create</code> <code>dbstorage</code> command to create a storage structure for migrating databases from Oracle ASM to Oracle ACFS.

Syntax

oakcli create dbstorage -db db_name [-cdb][-h]

Parameters

Parameter	Description
-db db_name	Sets up the required Oracle ACFS storage structure for the database to be created called db_name
-cdb	Must be passed if you are creating a multitenant container database
-h	(Optional) Display help for using the command.

Example

The <code>oakcli create dbstorage</code> command requests user input to determine the size of the storage structure to create, as shown in this example:

```
oakcli create dbstorage -db sales

Please enter the 'root' password:

Please re-enter the 'root' password:

Please enter the 'oracle' password:

Please re-enter the 'oracle' password:
```



```
Please enter the 'SYSASM' password: (During deployment we set the SYSASM password to 'welcomel'):
Please re-enter the 'SYSASM' password:

Specify the Database Class (1. odb-01 '1 core, 8 GB memory' 2. Others) [1]:2

Please select one of the following for Database Class [1 .. 8]:

1 => odb-01s (1 cores , 4 GB memory)

2 => odb-01 (1 cores , 8 GB memory)

3 => odb-02 (2 cores , 16 GB memory)

4 => odb-04 (4 cores , 32 GB memory)

5 => odb-06 (6 cores , 48 GB memory)

6 => odb-12 (12 cores , 96 GB memory)

7 => odb-16 (16 cores , 128 GB memory)

8 => odb-24 (24 cores , 192 GB memory)

Selected value is: odb-01s (1 cores , 4 GB memory)
```

14.6.5 oakcli create db_config_params

Use the oakcli create db_config_params command to generate a database configuration file.

The configuration file is created in /opt/oracle/oak/install/dbconf and is given the default extension .dbconf.

Syntax

oakcli create db_config_params -conf filename [-h]

Parameters

Parameter	Description
-conf filename	Name you want to give to the configuration file, without its path name.
-h	(Optional) Display help for using the command

Example

Create the database parameter file: /opt/oracle/oak/install/dbconf/newconf.dbconf:

```
# oakcli create db_config_params -conf newconf
```

```
Please select one of the following for Database Block Size [1 .. 4]:

1 ==> 4096

2 ==> 8192

3 ==> 16384

4 ==> 32768

2

Selected value is: 8192

Specify the Database Language (1. AMERICAN 2. Others) [1]:
Selected value is: AMERICAN

Specify the Database Characterset (1. AL32UTF8 2. Others) [1]:2
```



```
Please select one of the following for Database Characterset [0 .. 10]:
0 => Others
1 => AL32UTF8
2 => AR8ADOS710
3 => AR8ADOS710T
4 => AR8ADOS720
5 => AR8ADOS720T
6 => AR8APTEC715
7 => AR8APTEC715T
8 => AR8ARABICMACS
9 => AR8ASMO708PLUS
10 => AR8ASMO8X
Selected value is: AL32UTF8
Specify the Database Territory (1. AMERICA 2. Others) [1]:2
Please select one of the following for Database Territory [0 .. 10]:
0 => Others
1 => ALBANIA
2 => ALGERIA
3 => AMERICA
4 => ARGENTINA
5 => AUSTRALIA
6 => AUSTRIA
7 => AZERBAIJAN
8 => BAHRAIN
9 => BANGLADESH
10 => BELARUS
Selected value is: AMERICA
Specify the Component Language (1. en 2. Others) [1]:2
Please select one of the following for Component Language [0 .. 10] :
0 => Others
1 => en : English
2 => fr : French
3 => ar : Arabic
4 => bn : Bengali
5 => pt_BR : Brazilian Portuguese
6 => bg : Bulgarian
7 => fr_CA : Canadian French
8 => ca : Catalan
9 => hr : Croatian
10 => cs : Czech
Selected value is: en
Successfully generated the Database parameter file 'newconf'
```

14.6.6 oakcli create repo

Use the <code>oakcli create repo</code> command to create a new shared repository on Oracle Database Appliance Virtualized Platform.

Syntax

```
oakcli create repo repo\_name -size size [M|G] -dg DATA|RECO [-h]
```

Parameters

Parameter	Description
repo_name	Name assigned to the shared repository
-size <i>size</i> [M G]	Amount of storage to be assigned to the shared repository. It can be defined in megabytes with the M option or in gigabytes with the G option.
-dg DATA RECO	Oracle ASM disk group in which the shared repository is to be stored, either the DATA+ disk group or the RECO+ disk group, selected by using the DATA or RECO option respectively
-h	(Optional) Display help for using the command.

Usage Notes

- The -size parameter requires a whole number for size.
- The minimum value for size is 500 when M is used or 1 when G is used for the sizing unit.
- The default unit for size is G (gigabytes).
- A shared repository should only be used for the virtual machine and not as a file staging area. Avoid copying or moving files into a shared repository.

Example

Create a 25-gigabyte shared repository named repoprod1 in the DATA+ disk group:

oakcli create repo repoprod1 -dg DATA -size 25

14.6.7 oakcli create snapshotdb

Use the $oakcli\ create\ snapshotdb$ command to create a snapshot database from an existing database.

Syntax

oakcli create snapshotdb [-db snap_dbname -from dbname] | [-h]

Parameters

Parameter	Description
-db snap_dbname	Name of the snapshot database to be created
-from source_dbname	Name of the source database
-h	(Optional) Display help for using the command

Example

Create a new snapshot database, name snapprod, from the database named prod:

oakcli create snapshotdb $\operatorname{-db}$ snapprod $\operatorname{-from}$ prod



14.7 oakcli delete commands

Use the oakcli delete commands to delete components from Oracle Database Appliance.

- oakcli delete cpupool (page 14-21)
 - Use the <code>oakcli delete cpupool</code> command to delete a CPU pool from one Oracle Database Appliance Virtualized Platform node.
- oakcli delete database (page 14-22)
 - Use the ${\tt oakcli}$ delete database command to delete a database from Oracle Database Appliance.
- oakcli delete db_config_params (page 14-22)
 - Use the <code>oakcli delete db_config_params</code> command to delete a database configuration file.
- oakcli delete dbhome (page 14-22)
 - Use the <code>oakcli</code> <code>delete</code> <code>dbhome</code> command to delete a database home from Oracle Database Appliance.
- oakcli delete dbstorage (page 14-23)
 - Use the <code>oakcli</code> <code>delete</code> <code>dbstorage</code> command to delete a storage structure that was created for the purpose of migrating databases from Oracle ASM to Oracle ACFS.
- oakcli delete repo (page 14-23)
 Use the oakcli delete repo command to delete a shared repository.

14.7.1 oakcli delete cpupool

Use the <code>oakcli delete cpupool</code> command to delete a CPU pool from one Oracle Database Appliance Virtualized Platform node.

Syntax

oakcli delete cpupool poolname -node nodenum [-h]

Parameters

Parameter	Description
poolname	Name of the CPU pool to be deleted
-node nodenum	Node from which the CPU pool will be deleted (0 or 1)
-h	(Optional) Display help for using the command.

Example

Delete the CPU pool named twonode from Node 1 of Oracle Database Appliance Virtualized Platform:

oakcli delete cpupool twonode -node 1



14.7.2 oakcli delete database

Use the oakcli delete database command to delete a database from Oracle Database Appliance.

Syntax

oakcli delete database -db db_name [-h]

Parameters

Parameter	Description
db_name	Name of the database that you want to delete
-h	(Optional) Display help for using the command

Example

Delete the database named sales1:

oakcli delete database -db sales1

14.7.3 oakcli delete db_config_params

Use the $oakcli\ delete\ db_config_params$ command to delete a database configuration file.

Syntax

oakcli delete db_confiq_params -conf filename [-h]

Parameters

Parameter	Description
-conffilename	Name of the configuration file that you want to remove, without its path name
-h	(Optional) Display help for using the command

14.7.4 oakcli delete dbhome

Use the <code>oakcli</code> delete dbhome command to delete a database home from Oracle Database Appliance.

Syntax

oakcli delete dbhome -oh oracle_home [-h]

Parameters

Parameter	Description
-oh oracle_home	The database home to be uninstalled



Parameter	Description
-h	(Optional) Display help for using the command.

Example

Delete a database home called oral1_1:

oakcli delete dbhome -oh oral1_1

14.7.5 oakcli delete dbstorage

Use the <code>oakcli delete dbstorage</code> command to delete a storage structure that was created for the purpose of migrating databases from Oracle ASM to Oracle ACFS.

For example, run this command if you created a storage structure using create dbstorage that is no longer required.

Syntax

oakcli delete dbstorage -db \(db_name [-cdb] [-h]

Parameters

Parameter	Description
db db_name	Name of the database structure to be deleted
-cdb	Must be passed if you are deleting a multitenant container database
-h	(Optional) Display help for using the command

Example

Delete the sales storage structure:

oakcli delete dbstorage -db sales

14.7.6 oakcli delete repo

Use the oakcli delete repo command to delete a shared repository.

Syntax

oakcli delete repo repository_name [-h]

Parameter

Parameter	Description
repository_name	The name of the shared repository to be deleted
-h	(Optional) Display help for using the command.

Example

Delete the testrepo01 shared repository:



oakcli delete repo testrepo01

The command will not succeed if testrepoll is active on one or both nodes.

14.8 oakcli deploy

Use the command oakcli deploy to deploy Oracle Grid Infrastructure for a cluster on Oracle Database Appliance.

Syntax

oakcli deploy [-config] [-conf config_file] [-advance][-h]

Parameters

Parameter	Description
-config	(Optional) Run the Oracle Appliance Manager Configurator.
-conf config_file	(Optional) Preload the configuration stored in the named configuration file, <code>config_file</code> .
-advance	(Optional) Perform the deployment, or run the Oracle Appliance Manager Configurator, in advance mode. Use this option to launch Oracle Appliance Manager and change the default user ID or group user ID.
-h	(Optional) Display help for using the command.

Usage Notes

When defining the user ID and the group ID, it is a best practice to use different values.

Examples

Use these examples to understand how to use the command oakcli deploy.

Example 14-5 Deploying the Complete Oracle Database Appliance

oakcli deploy

Example 14-6 Running the Configurator

oakcli deploy -config

Example 14-7 Running the Offline Configurator with Advance Mode

To run the offline Configurator with advance mode, update the config.sh file and add -advance.

cat config.sh #!/bin/sh java -Djava.util.logging.config.file=onecommand.properties jar onecommand.jar config -advance run ./config.sh

Example 14-8 Preloading an Existing Configuration File

Preload the configuration stored in the configuration file MYCONFIG-VM:

oakcli deploy -conf myconfig -vm_file



Example 14-9 Changing a User Group Name or ID

You can change the following group user names or IDs on the User Group Information page: GI User, DB User, Install Group, DBA Group, DBA Oper Group, ASM DBA Group, ASM Oper Group, and ASM Admin Group.

- 1. Run the Configurator or Offline Configurator in -advance mode.
- 2. Select **Custom** to display the User Group Information page.
- 3. Change the group name or ID, then click Next.
- Click Finish.

Example 14-10 Viewing the Log File

The command <code>oakcli</code> deploy creates a log file that is prepended with the character string <code>step*</code>. The log file is stored in the following location:

/opt/oracle/oak/onecmd/tmp/

14.9 oakcli expand storage

Use the <code>oakcli</code> expand storage command to configure the solid-state drives (SSDs) for data storage into the existing base configuration to fully populate the base storage shelf.

File Path

\$ORACLE_HOME/opt/oracle/oak/bin/oakcli

Syntax

oakcli expand storage [-h]

Parameters

Parameter	Description
-h	(Optional) Display help for using the command.

Usage Notes

After all disks are inserted into the slots, execute the <code>oakcli</code> expand storage command on both nodes. First on the master node and then wait for 30 seconds and execute from the slave nodes. It takes about 10 to 12 minutes to add all of the disks.

Review the procedure for how to add the storage shelf for detailed steps on how to add the disks, the timing needed to avoid flooding disk events, and the steps to validate that all disks are online and are in a good state.

Example 14-11 Expanding Storage

#oakcli expand storage

Precheck passed.

Successfully formatted 1.6TB SSD disks...

Check the progress of expansion of storage by executing 'oakcli show disk' Waiting for expansion to finish \dots



14.10 oakcli diskwritecache

Use the <code>oakcli diskwritecache</code> command to locate disks with write cache enabled and to disable disk write cache for those disks.

Enabled write caches should be disabled as soon as downtime for Oracle Database Appliance can be scheduled. During the downtime, use this command with the disable option for each disk, in turn, that has an enabled write cache.

Syntax

oakcli diskwritecache [disable disk_name | enable disk_name | status] [-h]

Parameters

Parameter	Description
disable disk_name	(Optional) Disable disk write cache for named disk.
enable disk_name	(Optional) Enable disk write cache for named disk.
status	(Optional) Show the write cache status of all disks.
-h	(Optional) Display help for using the command.

Example 14-12 Displaying the Write Cache Status of Disks

Show the write cache status of all disks:

oakcli diskwritecache status

14.11 oakcli locate disk

Use the $oakcli\ locate\ disk$ command to locate the physical disk that is associated with a named Oracle ASM disk by turning the disk's LED light on or off.

Syntax

oakcli locate disk diskname [on|off][-h]

Parameters

Parameter	Description
diskname	Name of the Oracle ASM disk to locate
on	(Optional) Turns on the LED of the named disk
off	(Optional) Turns off the LED of the named disk
-h	(Optional) Display help for using the command.

Example 14-13 Locating an Oracle ASM Disk by Turning on the Disk's LED

Turn on the LED of the Oracle ASM disk named disk pd_23:

oakcli locate disk pd_23 on



14.12 oakcli manage diagcollect

Use the <code>oakcli manage diagcollect</code> command to collect diagnostic information about Oracle Database Appliance for troubleshooting purposes, and for working with Oracle Support Services.

Syntax

```
oakcli manage diagcollect [--all | --crs [--crshome crs_home_dir]
(continued)
[--core] | --install | --chmos [--incidenttime time] [--incidentduration time]
(continued)
|--adr adr_location [--afterdate date]
(continued)
[--aftertime time] [--beforetime time] ]
[excl comp1,comp2,...] [--clean] [--storage][-h]
```

Parameters

Parameter	Description
all	Collect all of the diagnostic information excluding Automatic Diagnostic Repository (ADR) and Cluster Health Monitor. This is the default option.
crs	Collect Oracle Clusterware diagnostic information.
crshome crs_home_dir	Specifies the location of the Oracle Clusterware home directory
core	Package core files with the Oracle Clusterware diagnostic data.
install	Collect the installation logs when the installation failed before running the script root.sh.
adr adr_location	Collect diagnostic information for ADR, where $adr_{location}$ specifies the location of the ADR information.
afterdate date	Collect archives from the specified date. Specify the date in the $\mathtt{mm}/\mathtt{dd}/\mathtt{yyyy}$ format.
aftertime time	Collect the archives after the specified time. Enter the time using the format YYYYMMDDHHMMSS24. Supported only with the -adr parameter.
beforetime time	Collect the archives before the specified time. Enter the time using the format: YYYYMMDDHHMMSS24. Supported only the with the -adr parameter.
chmos	Collect Cluster Health Monitor data.
incidenttime time	Collect Cluster Health Monitor data from the specified time. Enter the time using the format: YYYYMMDDHHMMSS24.
	If you do not use theincidenttime parameter, then the command collects data for the past 24 hours.
incidentduration time	Collect Cluster Health Monitor data for the duration after the specified time. Enter the time using the format: HH:MM. If you do not specify a duration, then the command collects all Cluster Health Monitor data after the specified incident time.
excl [comp1,comp2]	Exclude the specified component logs. Valid components are: acfs, invt, sys, ocr, crs, home, and base.



Parameter	Description
clean	Remove the diagnosability information gathered by this command.
storage	Collect all of the logs for any storage issues. The logs can be used when you are experiencing any problems with storage and need support to diagnose the logs.
h	(Optional) Display help for using the command.

14.13 oakcli modify database

Use the oakcli modify database command to modify the database type or size class for a named database.

Syntax

oakcli modify database -db db name [-dbtypeOLTP/DSS/in-Memory] [-to dbSizeclass]

Parameters

Parameter	Description
-db db-name	Identifies the database being modified.
-dbtype OLTP DSS in- Memory	(Optional) Changes the database type. The parameter dbtype takes one of the following three options:
	OLTP: Online transaction processing
	DSS: Decision support system
	 in-Memory: Oracle Database In-Memory
-to dbclass	(Optional) Changes the database size class.
-h	(Optional) Displays help for using the command.

Usage Notes



When you resize the database, the redo log file size is not modified automatically. Change the size of the redo log manually to the size that you require for your applications.

Example 14-14 Modifying the Database Type

Here are examples of how to use the oakcli modify database command.

Change the database type assigned to the database dbhome_1 to a DSS database:

oakcli modify database DB dbhome_1 -dbtype DSS

Example 14-15 Modifying the Database Size

Change the database size for the database named <code>dbhome_1</code> to a 6-core CPU Oracle Database Appliance DSS database template:



oakcli modify database dbhome_1 -to odb-06

14.14 oakcli orachk

Use the oakcli orachk command to audit configuration settings with the ORAchk utility.

Syntax

oakcli orachk [-a|-b|-v|-h|-p|-f|-m[-u-o][o]-c-t][-clusternodes |-localonly][-debug][-dbnames |-dbnone|-dball][upgrade] list list

Parameters

Parameter	Description
-a	Perform a best practice check and recommended patch check.
-b	Perform a best practice check only without the recommended patch check.
-v	Display version.
-h	Display command usage (help).
-p	Perform patch check only.
-f	Run the command offline.
-m	Exclude checks for Maximum Availability scorecards.
-u -0	Perform check on pre-upgrade best practices (-u -o pre) or on post-upgrade best practices (-u -o post).
-0	As an argument to an option, if -o is followed by v, V, Verbose, of VERBOSE, output will display checks that pass on the display. Without the -o option, only failures will display on the screen.
-c	Determines granularity of information displayed on the screen. For use only when working with Oracle Support Services.
-clusternodes list	list is a comma-delimited list containing the names of the nodes where the command should run.
-localonly	Run the command only on the local node.
-debug	Creates a debug log.
-dbnames list	list is a comma-delimited list containing the names of the subset of databases on which the command should run.
-dbnone	Skip all database-related checks on all databases without prompting to select which database to skip.
-dball	Run all database-related checks on all databases without prompting to select which databases to check.
-upgrade	Force upgrade of the version of the ORAchk utility being run.

Usage Notes

- The command offers multiple options that are generic to the ORAchk command when run on servers other than the Oracle Database Appliance server. You can find details about these options by running the command oakcli orachk -h. The options are grouped into the following categories, but this document does not list the options for each category:
 - Report Options



- Auto Restart Options
- Daemon Options
- Profile Run Options
- For more information about ORAchk, see My Oracle Support note 1268927.2,
 "ORAchk Health Checks for the Oracle Stack" at https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=1268927.2

14.15 oakcli reconfigure osparams

Use the oakcli reconfigure osparams command to adjust the kernel parameters based on the available RAM after you upgrade memory or DIMM.

After you change or expand memory on Oracle Database Appliance, use the <code>oakclireconfigure</code> osparams command to display the current configuration and suggested values for <code>memlock</code> and <code>vm.nr_hugepages</code>. When prompted, answer <code>yes</code> or no to change the value to the suggested value.

Syntax

oakcli reconfigure osparams [-h]

Parameters

Parameter	Description
-h	(Optional) Displays help for using the command.

Usage Notes

After you change or expand memory on Oracle Database Appliance, use this command to update the kernel parameters.



When adjusting the settings, ensure that you make the changes on both nodes.

Example 14-16 Viewing the Current and Suggested Kernel Parameters

In this example, the output displays the configured and suggested values for memlock and $vm.nr_hugepages$. When prompted, enter no for both parameters to view, but not implement the suggested values.

```
# oakcli reconfigure osparams
Configured value for memlock is: 11000000
Suggested value for memlock is: 11000000
Do you want to use suggested value of memlock?: yes/no
no
User entered no, not updating kernel.memlock
Configured value for vm.nr_hugepages is: 2048
Suggested value for vm.nr_hugepages parameter is: 4150
Do you want to update to suggested value?: yes/no
no
User entered no, not updating kernel.vm.nr_hugepages
```



Example 14-17 Reconfiguring the Kernel Based on Available RAM

In this example, the output displays the configured and suggested values for <code>memlock</code> and <code>vm.nr_hugepages</code>. The <code>memlock</code> value does not require changing. A new value is suggested for <code>vm.nr_hugepages</code>. When prompted, enter <code>yes</code> to update to the suggested value.



You must adjust the value on both nodes.

oakcli reconfigure osparams
Configured value for memlock is: 193000000
Suggested value for memlock is: 193000000
Configured and suggested values are same
Configured value for vm.nr_hugepages is: 67815
Suggested value for vm.nr_hugepages parameter is: 67748
Do you want to update to suggested value?: yes/no
yes

14.16 oakcli resize dbstorage

Use the <code>oakcli resize</code> dbstorage command to resize the space used for a storage structure that was created for the purpose of migrating databases from Oracle ASM to Oracle ACFS.

You can check the current space usage using <code>oakcli</code> show fs and then add space using <code>oakcli</code> resize dbstorage.



You cannot decrease the size of the space used for Oracle ACFS.

Syntax

oakcli resize dbstorage -data size -reco size -redo size -db db_name [-h]

Parameters

Parameter	Description
-data size	Extendable size in GB for the DATA volume.
-reco size	Extendable size in GB for the REDO volume.
-redo size	Extendable size in GB for the RECO volume.
-db db_name	Database for which these volumes must be resized.
-h	(Optional) Display help for using the command.

Example 14-18 Increasing the Size of the DATA Volume

Increase the size of the volume by 10 GB on the DATA volume:



oakcli resize dbstorage -data 10

14.17 oakcli restart oda_base

Use the oakcli restart oda_base command to stop and restart ODA_BASE on the local node.

Use this command only when you are not concerned about the current status of ODA_BASE, because it performs a forced shutdown. You must run this command from <code>Dom0</code>. Typically, if ODA_BASE needs to be restarted, then you must restart it on both nodes.

Syntax

oakcli restart oda_base [-h]

The ODA_BASE that you want to restart is on the same node as the Dom0 from which you run this command.

Parameter

(Optional) -h displays help for using the command.

14.18 oakcli show commands

Use the oakcli show commands to display the status of Oracle Database Appliance components.

The oakcli show commands display status information for the node where you run the command. To see the list of components available on the current node, use the help option: oakcli show -h:



Depending on your model and version of Oracle Database Appliance software, the <code>oakcli show</code> command options may differ from the ones shown in this section and explained in the following sections. To obtain an annotated list of components available on your system, run the command <code>oakcli show -h</code>.

- oakcli show asr (page 14-34)
 Use the oakcli show asr command to display your Oracle Auto Service Request configuration details.
- oakcli show cooling (page 14-34)
 Use the oakcli show cooling command to display the status of the cooling units.
- oakcli show controller (page 14-35)
 Use the oakcli show controller command to display information about the disk controllers.
- oakcli show cpupool (page 14-35)
 Use the oakcli show cpupool command to display core allocations to virtual machine mappings.



oakcli show databases (page 14-36)

Use the <code>oakcli</code> show databases command to display information about each existing database, including database name, database type, database home name and location, and database version.

oakcli show db_config_params (page 14-37)

Use the <code>oakcli show db_config_params</code> command to display configuration file names and parameters.

oakcli show dbhomes (page 14-37)

Use the <code>oakcli</code> show dbhomes command to display information about each existing Oracle database home, including home name, home location, and database version.

oakcli show dbstorage (page 14-38)

Use the <code>oakcli</code> show <code>dbstorage</code> command to display database storage information for databases created on Oracle Automatic Storage Management Cluster File System (Oracle ACFS).

oakcli show disk (page 14-39)

Use the oakcli show disk command to display disk information.

oakcli show diskgroup (page 14-40)

Use the <code>oakcli show diskgroup</code> command to display Oracle Automatic Storage Management (Oracle ASM) disk group information.

oakcli show enclosure (page 14-41)

Use the <code>oakcli</code> show <code>enclosure</code> command to display information about the storage enclosure subsystem on the node where the command is executed.

oakcli show env_hw (page 14-41)

Use the <code>oakcli show env_hw</code> command to display the environment type and hardware version of the current node.

oakcli show expander (page 14-41)

Use the ${\tt oakcli\ show\ expander}$ command to display information about a SAS expander.

oakcli show ismaster (page 14-42)

Use the ${\tt oakcli}$ show ismaster command to determine which node is the master node.

oakcli show fs (page 14-42)

Use the <code>oakcli show fs</code> command to display all database and cloudfs file systems created on ASM Cluster File System (ACFS) in addition to the local file systems on the Oracle Database Appliance node.

oakcli show memory (page 14-42)

Use the oakcli show memory command to display information about memory modules.

oakcli show network (page 14-42)

Use the <code>oakcli</code> show <code>network</code> command to display information about the network subsystem.

oakcli show power (page 14-43)

Use the ${\tt oakcli\ show\ power}$ command to display information about the power supply subsystem.

oakcli show processor (page 14-43)

Use the ${\tt oakcli}\ {\tt show}\ {\tt processor}$ command to display information about CPU processors.

oakcli show raidsyncstatus (page 14-44)

Use the <code>oakcli</code> show raidsyncstatus command to display the status of the RAID rebuild after a failed local disk is replaced.

oakcli show repo (page 14-44)

Use the oakcli show repo command to display information about virtual machine repositories.

oakcli show server (page 14-45)

Use the ${\tt oakcli}$ show server command to display information about the server subsystem.

oakcli show storage (page 14-45)

Use the $oakcli\ show\ storage\ command\ to\ display\ information\ about\ the\ storage\ for\ controllers,\ expanders,\ and\ disks.$

oakcli show validation storage (page 14-46)

Use the $oakcli\ show\ validation\ storage\ command\ to\ show\ whether\ validation\ storage\ is\ enabled\ or\ disabled.$

oakcli show validation storage errors (page 14-46)

Use the oakcli show validation storage errors command to show hard storage errors.

oakcli show validation storage failures (page 14-46)

Use the <code>oakcli</code> show validation storage failures command to show soft validation errors. A typical soft disk error would be an invalid version of the disk firmware.

oakcli show version (page 14-46)

Use the <code>oakcli show version</code> command to display the applied patch versions for Oracle Database Appliance software and firmware.

14.18.1 oakcli show asr

Use the $oakcli\ show\ asr\ command$ to display your Oracle Auto Service Request configuration details.

Syntax

oakcli show asr [-h]

Parameters

(Optional) -h displays the help for using this command.

14.18.2 oakcli show cooling

Use the <code>oakcli</code> show cooling command to display the status of the cooling units.

Syntax

oakcli show cooling [-h]

Parameters

(Optional) -h displays the help for using this command.

Example

Display the cooling unit information for the node where the command is executed:

oakcli	show co	ooling					
NAME	${\tt HEALTH}$	${\tt HEALTH_DETAILS}$	LOCATION	FAN	1 %	FAN	SPEED
Fan_0	OK	-	FM0	30	%	6300	RPM
Fan_1	OK	-	FM0	19	%	3800	RPM
Fan_10	OK	-	FM2	34	%	6600	RPM
Fan_11	OK	-	FM2	23	%	4100	RPM
Fan_12	OK	-	FM3	32	%	6300	RPM
Fan_13	OK	-	FM3	22	of	3900	RPM
Fan_14	OK	-	FM3	24	of	4700	RPM
Fan_15	OK	-	FM3	14	왕	2500	RPM
Fan_2	OK	-	FM0	29	%	6400	RPM
Fan_3	OK	-	FM0	18	%	3700	RPM
Fan_4	OK	-	FM1	32	%	6400	RPM
Fan_5	OK	-	FM1	20	왕	3700	RPM
Fan_6	OK	-	FM1	33	%	6400	RPM
Fan_7	OK	-	FM1	22	%	3800	RPM
Fan_8	OK	-	FM2	33	왕	6400	RPM
Fan_9	OK	-	FM2	22	%	3900	RPM

14.18.3 oakcli show controller

Use the <code>oakcli</code> show controller command to display information about the disk controllers.

Syntax

oakcli show controller controller_id [-h]

Parameters

Parameter	Description
controller_id	Specifies the controller for which to display information
-h	(Optional) Display help for using the command.

Displaying Disk Controller Details

Display details of controller 0:

oakcli show controller 0

14.18.4 oakcli show cpupool

Use the $oakcli\ show\ cpupool\ command\ to\ display\ core\ allocations\ to\ virtual\ machine\ mappings.$

Syntax

oakcli show cpupool -node nodenum

nodenum is the number of the Oracle Database Appliance node that you want to examine, either 0 or 1.



Displaying Core Mapping for Node 0

Display the core mapping information for Node 0:

```
oakcli show cpupool -node 0
Pool Cpu List VM List

default-unpinned-pool [14, 15, 16, 17, ['test1_odarepo1', 'sample5_odarepo1', 'nodarepo1', 'vm_very_long_name_sample1_odarepo1', 'vm_
```

14.18.5 oakcli show databases

Use the <code>oakcli</code> show databases command to display information about each existing database, including database name, database type, database home name and location, and database version.

Syntax

oakcli show databases [-h]

Parameters

Parameter	Description
-h	(Optional) Displays help for using the command.

Usage Notes

On Oracle Database Appliance X7-2-HA, the minimum supported Oracle Database release is 11.2.0.4. Oracle Database 11.2.0.3.*x* is not supported.

Example 14-19 Displaying Database Details

```
# oakcli show databases
Name Type Storage HomeName HomeLocation

Version
-----
omydb RAC ACFS OraDb12102_home1 /u01/app/oracle/product/12.1.0.2/dbhome_1
12.1.0.2.160719(23054246,23054327)
orcl RAC ACFS OraDb12102_home1 /u01/app/oracle/product/12.1.0.2/dbhome_1
12.1.0.2.160719(23054246,23054327)
```

Example 14-20 Displaying Database Details for Four Databases

#oakcli show databases

Name Type	Storage	HomeName	HomeLocation	Version
db1 RAC	ACFS	OraDb12102_home1	/u01/app/oracle/product/12.1.0.2/dbhome_1	12.1.0.2.5(21359755,21359758)
db2 SINGLE	ACFS	OraDb12102_home2	/u01/app/oracle/product/12.1.0.2/dbhome_2	12.1.0.2.5(21359755,21359758)
db3 RACOneNod	le ACFS	OraDb12102_home3	/u01/app/oracle/product/12.1.0.2/dbhome_3	12.1.0.2.5(21359755,21359758)
db4 RAC	ACFS	OraDb12102_home4	/u01/app/oracle/product/12.1.0.2/dbhome_4	12.1.0.2.5(21359755,21359758)



14.18.6 oakcli show db_config_params

Use the <code>oakcli show db_config_params</code> command to display configuration file names and parameters.

The command searches for files with the extension <code>.dbconf</code> located in the <code>/opt/oracle/oak/install/dbconf</code> directory.

Syntax

oakcli show db_config_params [-conf filename] [-detail] [-h]

Parameters

Parameter	Description
-conf filename	(Optional) Name of configuration file to be displayed. If not included, then the command displays all configuration files.
-detail	(Optional) Display the parameter values stored in the configuration file or files.
-h	(Optional) Display help for using the command.

Displaying the Default Database Configuration Parameters

Display the default database configuration parameter values stored in the configuration file or files:

```
oakcli show db_config_params -detail
Available DB configuration files are:

Default

DATABASE_BLOCK_SIZE => 8192

DATABASE_LANGUAGE => AMERICAN

DATABASE_CHARACTERSET => AL32UTF8

DATABASE_TERRITORY => AMERICA

COMPONENT_LANGUAGES => en
```

14.18.7 oakcli show dbhomes

Use the <code>oakcli show dbhomes</code> command to display information about each existing Oracle database home, including home name, home location, and database version.

Syntax

oakcli show dbhomes [-detail] [-h]

Parameter	Description
-detail	(Optional) Include a list of databases associated with each home.
-h	(Optional) Display help for using the command.



Usage Notes

On Oracle Database Appliance X7-2-HA, the minimum supported Oracle Database release is 11.2.0.4. Oracle Database 11.2.0.3.*x* is not supported.

Example 14-21 Displaying DB Home Details

(Optional) Describe the example here.

oakcli show dbhomes

Oracle Home Name	Oracle Home version	Home Location
OraDb12102_home1	12.1.0.2.160719(23054246,23054327)	/u01/app/oracle/product/
12.1.0.2/dbhome_1		

Example 14-22 Displaying DB Home Details

oakcli show dbhomes -detail

Oracle HomeName	Oracle Home Version	Oracle HomeLocation	Databa	se Name	Database Type
OraDb11204_home1	11.2.0.4.8(21352635,21352649)	/u01/app/oracle/product/11.2.0.4/dl	ohome_1	no DB	available
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	one43	RACOneNode
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	ee120	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	one311	RACOneNode
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	ee311	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	rac311	RAC
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	ee43	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	one120	RACOneNode
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	odacn	RAC
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dl	ohome_1	rac43	RAC
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/db	ohome_1	rac120	RAC

14.18.8 oakcli show dbstorage

Use the <code>oakcli</code> show <code>dbstorage</code> command to display database storage information for databases created on Oracle Automatic Storage Management Cluster File System (Oracle ACFS).

All non-cdb databases are listed together, because they share a common set of volumes. Each CDB database is listed separately.

Syntax

oakcli show dbstorage [-db][-h]db_name

Parameter	Description
-db <i>dbname</i>	(Optional) Display the name of the database for the storage information.
-h	(Optional) Display help for using the command.



Oracle Database Appliance X5-2 with a Storage Expansion Shelf and Non-CDB Databases

Here is an example of the <code>oakcli show dbstorage</code> command output for an Oracle Database Appliance plus the storage expansion shelf. The output includes only non-CDB databases. Half of the available disk group storage is allocated to Oracle ACFS, except for the FLASH disk group. In the FLASH disk group, all storage is allocated to Oracle ACFS.

oakcli show dbstorage

All the DBs with DB TYPE as non-CDB share the same volumes

DB_NAMES	DB_TYPE	Filesystem	Size	Used	Available	AutoExtend Size	DiskGroup
db1, db2, db3, db4	non-CDB	/u01/app/oracle/oradata/datastore	62G	27.26G	34.74G	6G	REDO
		/u02/app/oracle/oradata/datastore	3730G	7.86G	3722.14G	373G	DATA
		/u02/app/oracle/oradata/flashdata	558G	205.25G	352.75G	55G	FLASH
		/u01/app/oracle/fast_recovery_are	a/datas	store			
			4958G	21.05G	4936.95G	495G	RECO

Oracle Database Appliance X3-2 or X4-2 with a Storage Expansion Shelf

Here is an example of the <code>oakcli show dbstorage</code> command output for an Oracle Database Appliance plus the storage expansion shelf. The output includes both CDB and non-CDB databases. The <code>Available</code> heading shows the available AFCS storage, which can be auto-extended. Half of the available disk group storage is allocated to Oracle ACFS, except for the FLASH disk group. In the FLASH disk group, all storage is allocated to Oracle ACFS.

oakcli show dbstorage

All the DBs with DB TYPE as non-CDB share the same volumes

DB_NAMES	DB_TY	PE Filesystem	Size	Used	Available	AutoExtend Size	DiskGroup
odacn	CDB	/u01/app/oracle/oradata/rdoodacn	5G	3.15G	1.85G	1G	REDO
		/u02/app/oracle/oradata/datodacn	100G	3.86G	96.14G	10G	DATA
		/u01/app/oracle/fast_recovery_area/rcoodacn	132G	0.92G	131.08G	13G	RECO
rac120, r	ac401,	ra non-CDB /u01/app/oracle/oradata/datastore	60G	11.30G	48.70G	5G	REDO
		/u02/app/oracle/oradata/datastore	1027G	5.77G	1021.23G	102G	DATA
		$/ \verb"u01/app/oracle/fast_recovery_area/datastore"$	1336G	7.27G	1328.73G	133G	RECO
cdbracon	CDB	/u01/app/oracle/oradata/rdocdbracon	6G	4.15G		1G	REDO
		/u02/app/oracle/oradata/datcdbracon	100G	4.05G	95.95G	10G	DATA
		/u01/app/oracle/fast_recovery_area/rcocdbracc	n 132G	0.79G	131.21G	13G	RECO

14.18.9 oakcli show disk

Use the oakcli show disk command to display disk information.

Syntax

oakcli show disk [-shared | -local | -shared_disk_name |-asm [-all][-h]

Parameter	Description
-local	(Optional) Display information for all of the local disks.
-shared	(Optional) Display information for all of the shared disks.



Parameter	Description
-shared_disk_name	(Optional) Display information for only the specified shared disk.
-asm	(Optional) Displays information for an assembly.
-all	(Optional) Display complete details of the selected disk or disks.
-h	(Optional) Display help for using the command.

Usage Notes

- Running the command with no parameters is identical to running the oakcli show disk -shared command.
- The -all parameter produces valid output only when used with the shared_disk_name parameter. All other parameters are optional and cannot be combined with other parameters.

Example 14-23 Displaying Information About the Local Disks

oakcli show disk -local

Example 14-24 Displaying Information About the Shared Disks

oakcli show disk -shared

Example 14-25 Displaying Information About a Specific Shared Disk

Display information about the shared disk named pd_01:

oakcli show disk -shared pd_01

14.18.10 oakcli show diskgroup

Use the <code>oakcli</code> show <code>diskgroup</code> command to display Oracle Automatic Storage Management (Oracle ASM) disk group information.

Syntax

oakcli show diskgroup [disk_group_name][-h]

Parameter	Description
disk_group_name	(Optional) The name of an Oracle ASM disk group for which complete details should be displayed. If you do not specify this parameter, then information for all of the Oracle ASM disk groups is displayed.
-h	(Optional) Display help for using the command.



14.18.11 oakcli show enclosure

Use the <code>oakcli</code> show <code>enclosure</code> command to display information about the storage enclosure subsystem on the node where the command is executed.

Syntax

oakcli show enclosure [-h]

Parameter

-h displays help for using the command.

14.18.12 oakcli show env_hw

Use the $oakcli\ show\ env_hw$ command to display the environment type and hardware version of the current node.

Syntax

oakcli show env_hw [-h]

Parameter

(Optional) -h displays help for using the command.

Displaying the Environment and Hardware for a Virtualized Platform

Show the environment type and hardware model when logged in to ODA_BASE on Oracle Database Appliance Virtualized Platform:

```
oakcli show env_hw
VM-ODA BASE ODA X7-2
```

14.18.13 oakcli show expander

Use the oakcli show expander command to display information about a SAS expander.

Syntax

oakcli show expander [expander_id] [-h]

Parameter	Description
expander_id	(Optional) Identifies the specific SAS expander
-h	(Optional) Display help for using the command.



14.18.14 oakcli show ismaster

Use the oakcli show ismaster command to determine which node is the master node.

File Path

\$ORACLE_HOME/opt/oracle/oak/bin/oakcli

Syntax

oakcli show ismaster [-h]

Parameters

Parameter	Description
-h	(Optional) Display help for using the command.

Example 14-26 Determining Which Node is the Master Node

oakcli show ismaster

14.18.15 oakcli show fs

Use the <code>oakcli show fs</code> command to display all database and cloudfs file systems created on ASM Cluster File System (ACFS) in addition to the local file systems on the Oracle Database Appliance node.

Syntax

oakcli show fs [-h]

Parameter

(Optional) -h displays help for using the command.

14.18.16 oakcli show memory

Use the oakcli show memory command to display information about memory modules.

Syntax

oakcli show memory [-h]

Parameter

(Optional) -h displays help for using the command.

14.18.17 oakcli show network

Use the ${\tt oakcli}$ show ${\tt network}$ command to display information about the network subsystem.



Syntax

oakcli show network

Parameter

(Optional) -h displays help for using the command.

14.18.18 oakcli show power

Use the $oakcli\ show\ power\ command\ to\ display\ information\ about\ the\ power\ supply\ subsystem.$

Syntax

```
oakcli show power [-h]
```

Parameter

(Optional) -h displays help for using the command.

Example 14-27 Displaying Power Supply Information

Display the power supply information of the node where the command is executed:

```
# oakcli show power
```

14.18.19 oakcli show processor

Use the <code>oakcli</code> show processor command to display information about CPU processors.

Syntax

```
oakcli show processor [-h]
```

Parameter

(Optional) -h displays help for using the command.

Displaying CPU Processor Information

Display the CPU processor information of the node where the command is executed:

```
oakcli show processor

NAME HEALTH HEALTH_DETAILS PART_NO. LOCATION

MODEL MAX_CLK_SPEED TOTAL_CORES ENABLED_CORES

CPU_0 OK - 060D P0 (CPU 0)

Intel(R) Xeon(R) CPU E5-2690 2.900 GHZ 8 8
```



```
CPU_1 OK - 060D P1 (CPU 1)
Intel(R) Xeon(R) CPU E5-2690 2.900 GHZ 8 8
```

14.18.20 oakcli show raidsyncstatus

Use the <code>oakcli</code> show raidsyncstatus command to display the status of the RAID rebuild after a failed local disk is replaced.



The show raidsyncstatus command is only supported on a bare metal platform; it is not supported on the virtualized platform. For general RAID information, use the oakcli show iraid command.

Syntax

oakcli show raidsyncstatus [-h]

Parameter

(Optional) -h displays help for using the command.

14.18.21 oakcli show repo

Use the <code>oakcli</code> show repo command to display information about virtual machine repositories.

Syntax

oakcli show repo [reponame -node 0|1] [-h]

Parameters

Parameter	Description
reponame	[Optional] Identifies a specific repository name
-node	[Optional] Identifies the node number 0 or 1
-h	[Optional] Display help for using the command.

To see all repositories, omit the repository name and node number. To see a specific shared repository, include the repository name and node.

Examples

Here are examples of how to use the oakcli show repo command.

Example 14-28 Displaying the Available Virtual Machine Repositories

Display the virtual machine repositories on Oracle Database Appliance Virtualized Platform nodes:

```
oakcli show repo
NAME REPOTYPE NODENUM
odarepol local 0
```



odarepo2 local repol shared shared repo1

Example 14-29 Displaying Details About a Specific Shared Repository

Display information about the repository named repo1 on Node 1:

oakcli show repo repol -node 1 Resource: repol_1 AutoStart : restore

DG : DATA
Device : /dev/asm/repol-286
ExpectedState : Online
MountPoint : /u01/app/repol
Name : repol_0
Node : all
RepoType : shared
Size : 102400
State : Online

14.18.22 oakcli show server

Use the oakcli show server command to display information about the server subsystem.

Syntax

oakcli show server [-h]

Parameter

(Optional) -h displays help for using the command.

14.18.23 oakcli show storage

Use the oakcli show storage command to display information about the storage for controllers, expanders, and disks.

Syntax

oakcli show storage -errors [-h]

Parameter	Description
-errors	Display detailed information about reported errors.
-h	(Optional) Display help for using the command.



14.18.24 oakcli show validation storage

Use the oakcli show validation storage command to show whether validation storage is enabled or disabled.

Syntax

oakcli show validation storage [-h]

Parameter

(Optional) -h displays help for using the command.

Example 14-30 Determining if Storage Validation is Enabled

oakcli show validation storage
Enabled

14.18.25 oakcli show validation storage errors

Use the oakcli show validation storage errors command to show hard storage errors.

Hard errors include having the wrong type of disk inserted into a particular slot, an invalid disk model, or an incorrect disk size.

Syntax

oakcli show validation storage errors [-h]

Parameter

(Optional) -h displays help for using the command.

14.18.26 oakcli show validation storage failures

Use the oakcli show validation storage failures command to show soft validation errors. A typical soft disk error would be an invalid version of the disk firmware.

Syntax

oakcli show validation storage failures [-h]

Parameter

(Optional) -h displays help for using the command.

14.18.27 oakcli show version

Use the oakcli show version command to display the applied patch versions for Oracle Database Appliance software and firmware.

Syntax

oakcli show version [-detail] [-h]



Parameter	Description
-detail	(Optional) Display detailed version information.
-h	(Optional) Display help for using the command.

Usage Notes

When you apply the patch and then run the command <code>oakcli</code> show <code>version</code> <code>-detail</code>, the output shows the installed version and that the supported versions are <code>Up-to-date</code> for each component. If you unpack the patch bundle (<code>oakcli</code> <code>unpack</code> <code>-pack</code>) and then run the command <code>oakcli</code> show <code>version</code> <code>-detail</code> before applying the patch, the output shows <code>No-update</code> in the Supported Version column.



After unpacking the patch bundle, but before applying the patch, use the <code>oakcli</code> update <code>-patch version --verify</code> command to verify the contents of the patch instead of issuing <code>oakcli</code> show version <code>-detail</code>.

Displaying the Oracle Database Appliance Version

This is an example of how to determine if all of the components are successfully updated after applying the 12.1.2.10.0 patch. You can also view the applied patch version information for the software and firmware on Oracle Database Appliance. All components are successfully updated when $\mathtt{Up-to-date}$ appears in the Supported Version column.

```
# oakcli show version -detail
Mon Feb 13 03:31:48 PST 2017
Reading the metadata. It takes a while...
                                                                         Supported Version
System Version Component Name
                                           Installed Version
12.1.2.10.0
               Controller_INT
                                          4.230.40-3739
                                                                    Up-to-date
               Controller_EXT
                                          09.00.00.00
                                                                    Up-to-date
               Expander
                                          0291
                                                                    Up-to-date
               SSD_SHARED {
                [ c2d20,c2d21,c2d22,
                                          A29A
                                                                    Up-to-date
               c2d23 1
                [ c2d0,c2d1,c2d2,c2d
                                          A29A
                                                                    Up-to-date
               3,c2d4,c2d5,c2d6,c2d
               7,c2d8,c2d9,c2d10,c2
               d11,c2d12,c2d13,c2d1
               4,c2d15,c2d16,c2d17,
               c2d18,c2d19 1
                SSD_LOCAL
                                          0R30
                                                                    Up-to-date
```



ILOM	3.2.8.24 r114611	Up-to-date
BIOS	38070000	Up-to-date
IPMI	1.8.12.4	Up-to-date
НМР	2.3.5.2.8	Up-to-date
OAK	12.1.2.10.0	Up-to-date
OL	6.8	Up-to-date
GI_HOME	12.1.0.2.170117(2473	Up-to-date
	2082,24828633)	
DB_HOME	12.1.0.2.170117(2473	Up-to-date
	2082,24828633)	

Related Topics

oakcli update (page 14-52)
 Use the oakcli update command to apply Oracle Database Appliance patches.

14.19 oakcli start commands

Use the oakcli start commands to start a virtual machine, to start a shared repository on a node, or to start ODA_BASE on the local node.

- oakcli start oda_base (page 14-48)
 Use the oakcli start oda_base command to start ODA BASE on the local node.
- oakcli start repo (page 14-48)
 Use the oakcli start repo command to start a shared repository on a node.

14.19.1 oakcli start oda base

Use the oakcli start oda_base command to start ODA_BASE on the local node.

Syntax

oakcli start oda_base [-h]

Parameter

(Optional) -h displays help for using the command.

Example 14-31 Starting ODA_BASE on the Local Node

Connect to Dom0 on the desired node and enter the following command to start ODA_BASE on that node:

oakcli start oda_base

14.19.2 oakcli start repo

Use the oakcli start repo command to start a shared repository on a node.

Syntax

oakcli start repo repo_name [-node node_number] [-h]



Parameters

Parameter	Description
repo_name	repo_name is the name of the shared repository to be started.
-node node_number	Specifies the node on which to start the shared repository. node_number is the number of the node where it is to be started, either 0 or 1. If -node is not specified, the shared repository is started on both nodes.
-h	(Optional) Displays help for using the command.

Example 14-32 Starting a Shared Repository on Node 0

Start the shared repository named repo1 on Node 0:

oakcli start repo repol -node 0

14.20 oakcli stop command

Use the $oakcli\ stop$ command to stop a virtual machine, to stop a shared repository on a node, or to stop ODA_BASE on the local node.

Syntax

oakcli stop [vm vm_name [-force] | repo repo_name [-node node_number] | oda_base] [h]

Parameters

Parameter	Description
vm vm_name	vm_name is the name of the virtual machine to be stopped.
-force	(Optional) forces the virtual machine to stop.
repo repo_name	repo_name is the name of the shared repository to be stopped.
-node node_number	node_number is the number of the node where the shared repository is to be stopped, either 0 or 1. The -node parameter is only valid when stopping a virtual machine on a shared repository. If -node is not specified, the shared repository is stopped on both nodes.
oda_base	Stops ODA_BASE on the local node
-h	(Optional) Displays help for using the command.

Examples

Here are examples of how to use the oakcli stop command.

Example 14-33 Forcing a Virtual Machine to Stop

Force the virtual machine named vml_odarepol to stop:

oakcli stop vm vm_odarepol -force



Example 14-34 Stopping a Shared Repository

Stop the shared repository named repo1 on Node 0:

```
oakcli stop repo repol -node 0
```

Example 14-35 Stopping the Local ODA_Base

Connect to Dom0 on the desired node and enter the following command to stop ODA_BASE on that node:

```
oakcli stop oda_base
```

14.21 oakcli stordiag

Use the $oakcli\ stordiag\ command\ to\ run\ diagnostic\ tests\ on\ a\ disk\ in\ the\ storage\ shelf$ or storage expansion shelf.

The tool produces a list of 14 disk checks for each node.

Syntax

```
oakcli stordiag resource_type [n| [-h]
```

Parameters

Parameter	Description
resource_type	Prefix that depends on the configuration. See "Usage Notes."
n	(Optional) Disk number (starting with 0 and increasing to one less than the number of disks)
-h	(Optional) Display help for using the command.

Usage Notes

Select the value for *resource_type* based from one of the following options:

- On Oracle Database Appliance Version 1, use d.
- On Oracle Database Appliance with a single storage shelf, use pd_.
- On Oracle Database Appliance with an expansion storage shelf, use e0_pd_ for a
 disk in the storage shelf and use e1_pd_ for a disk in the expansion storage shelf.

For Oracle Database Appliance systems that have internal storage, use the format d_[..] to identify the disk to be diagnosed. For Oracle Database Appliance systems that have connected a storage shelf (and optional storage expansion shelf), use the format e[0..1] pd_[0..23] to identify the disk to be diagnosed.

Example 14-36 Running Diagnostic Tests on a Disk in the Expansion Storage Shelf

Runs the diagnostic tests on disk 3 in the expansion storage shelf:



14.22 oakcli test asr

Use the <code>oakcli test asr</code> command to send a test trap to determine if Oracle Auto Service Request (Oracle ASR) is configured and working correctly.

The command returns a success message if Oracle ASR is functioning properly.

Syntax

oakcli test asr [-h]

Parameter

(Optional) -h displays help for using the command.

Usage Notes

Run the command on both nodes. The Oracle ASR logs are always on the node where the ASR Manager is installed, which is the master node.

14.23 oakcli unpack

Use the ${\tt oakcli\ unpack}$ command to unpack packages into the Oracle Appliance Manager repository.

Syntax

oakcli unpack -package absolute_package_name

Parameters

Parameters	Description
absolute_package_name	Identifies the package to be unpacked using the package's full absolute path and file name
-h	(Optional) Display help for using the command.

Example 14-37 Unpacking Packages into the Oracle Appliance Manager Repository

Unpack the $p13982331_23000_Linux-86-62.zip$ package, which was previously copied to /tmp on the current node, into the node's Oracle Appliance Manager command-line interface repository:

oakcli unpack -package /tmp/p13982331_23000_Linux-86-62.zip



14.24 oakcli update

Use the oakcli update command to apply Oracle Database Appliance patches.

You can apply patches using the patch bundle and use the --local patching option to patch components one node at a time without impacting the other node. This reduces the downtime when applying the patch.



You must use the --local patch option to patch the server and grid components. If you want to update only the Oracle Database software, use the oakcli upgrade command.

Syntax

```
oakcli update -patch version [--server | --storage | --database] [--local} [--
noreboot] | [--clean] | [--verify][-h]
```

Parameters

Parameter	Description
- patch version	Patch version that you want to install. For example: 12.2.1.1.0.
server	Contains the patches previously obtained in earlier releases from the Infrastructure (infra) and Grid Infrastructure (gi) patch updates.
storage	Contains only patches for shared storage components.
database	(Optional) Patches Oracle database homes.
local	Patches the component only on the local node. By default, this is set to false. For Oracle Database Appliance release 12.1.2.6, you must use thelocal option to patch the server and grid.
noreboot	(Optional) Node is not rebooted after patching.
clean	(Optional) Cleans up all temporary files on the local node.
verify	(Optional) Lists the patchable components on the node.
-h	(Optional) Display help for using the command.

Usage Notes

After unpacking the patch bundle, but before applying the patch, verify the contents of the patch for the release.

Example 14-38 Verify the Contents of a Patch Bundle

Display the installed version and the version available in the 12.2.1.1.0 release patch bundle for each of the components on the node. When the latest supported version is installed, <code>Up-to-date</code> appears in the Proposed column.



Controller_INT	4.230.40-3739	Up-to-date
Controller EXT	09.00.00.00	10.00.00.00
Expander	0291	Up-to-date
-		-
SSD_SHARED {		
<pre>[c2d20,c2d21,c2d22, c2d23]</pre>	A29A	Up-to-date
[c2d0,c2d1,c2d2,c2d 3,c2d4,c2d5,c2d6,c2d	A29A	Up-to-date
7,c2d8,c2d9,c2d10,c2		
d11,c2d12,c2d13,c2d1		
4,c2d15,c2d16,c2d17,		
c2d18,c2d19]		
}		
SSD_LOCAL	0R30	Up-to-date
ILOM	3.2.7.26.a r112632	3.2.8.24 r114611
BIOS	38050100	38070000
IPMI	1.8.12.4	Up-to-date
HMP	2.3.5.2.5	2.3.5.2.8
OAK	12.1.2.12.0	12.2.1.1.0
OL	6.8	Up-to-date
GI_HOME	12.1.0.2.161018(2400	12.1.0.2.170117(2473
	6101,23854735)	2082,24828633)
DB_HOME	12.1.0.2.160719(2305 4246,23054327)	12.1.0.2.170117(2473 2082,24828633)
ASR	5.5.1	Up-to-date

oakcli update -patch Command Examples

```
Update the current node with the 12.2.1.1.0 patch:
```

```
oakcli update -patch 12.2.1.1.0
```

Patch the server with the 12.2.1.1.0 patch:

```
oakcli update -patch 12.2.1.1.0 --server --local
```

Patch the grid home only on the local node:

```
oakcli update -patch 12.2.1.1.0 --storage --local
```

Patch the Oracle Database homes on both nodes:

oakcli update -patch 12.2.1.1.0 --database

14.25 oakcli update-cpucore

Use the <code>oakcli update-cpucore</code> command to enable a specified number of licensed CPU cores for Oracle Database Appliance.

Prerequisites

If all cores are not enabled, you can enable multiples of 2 licensed CPU cores up to the maximum number of cores.

File Path

\$ORACLE_HOME/opt/oracle/oak/bin/oakcli



Syntax

```
oakcli update-cpucore -cores number of cores per server [-h]
```

Parameters

Parameter	Description
-cores	Defines the number of cores to enable per server, in multiples of 2. To enable all available cores, specify All instead of the number of cores.
-h	(Optional) Display help for using the command.

Usage Notes

- This command applies only to bare metal deployments. It is not available on an Oracle Database Appliance Virtualized Platform.
- The number of licensed cores you enable must be a multiple of 2, up to the maximum number of cores.
- After the initial configuration, you cannot reduce the number of cores. You can
 purchase additional cores and increase the number of cores, up to the maximum
 number of cores for the hardware model.

Example 14-39 Enabling 12 CPU Cores for Oracle Database Appliance

The following command enables 12 CPU cores on an Oracle Database Appliance system.

```
oakcli update-cpucore -cores 12

Please enter the 'root' password:

Please re-enter the 'root' password:

Setting up SSH .............Completed

INFO : Running as root: /usr/bin/ssh -l root 192.0.2.1 /etc/rc.d/rc3.d/S90cpu-core

INFO : Running as root: /usr/bin/ssh -l root 192.0.2.1 /etc/rc.d/rc3.d/S90cpu-core
```

Example 14-40 Enabling All CPU Cores for Oracle Database Appliance

The following command enables all cores on an Oracle Database Appliance system.

```
oakcli update-cpucore -cores All

Please enter the 'root' password:

Please re-enter the 'root' password:

Setting up SSH ............Completed

INFO : Running as root: /usr/bin/ssh -l root 192.0.2.1 /etc/rc.d/rc3.d/S90cpu-core

INFO : Running as root: /usr/bin/ssh -l root 192.0.2.1 /etc/rc.d/rc3.d/S90cpu-core
```

14.26 oakcli upgrade

Use the $oakcli\ upgrade$ command to upgrade the Oracle Database software on Oracle Database Appliance.

For patching Oracle Database Appliance itself, use the oakcli update command.



Syntax

oakcli upgrade database [-db db_names | -from source_home] -to destination_home

Parameters

Parameter	Description
-db db_names	Specifies the name or names (in a comma-delimited list) of the database or databases you want to upgrade
-from source_home	Specifies the current Oracle Database home of the databases you are upgrading
-to destination_home	Specifies the Oracle Database home containing the version to which you want to upgrade the databases
-h	(Optional) Display help for using the command.

Usage Notes

- You must include either a -db parameter or a -from parameter.
- Running the command with a -db parameter upgrades only the named databases, regardless of their current Oracle Database homes. If you include a -from parameter in addition to a -db parameter, then the command ignores the -from parameter. That is, the command upgrades named databases from other homes and ignores the databases in the named home if they are not listed in the -db parameter.
- Running the command without a -db parameter will upgrade all of the databases in the named Oracle Database home.
- You must always provide a -to parameter that names an existing Oracle Database home.

Example

Upgrade an Oracle 11.2.0.3.1 database named tpcc from Oracle Database 11.2.0.3.1 to Oracle Database 12.1.0.2 using the Oracle Database home directory OraDb12102_home1:

oakcli upgrade database -db tpcc -to OraDb12102_home1

14.27 oakcli validate

Validates the state of an Oracle Database Appliance or the viability of an operating system patch.

Syntax

oakcli validate [[-V \mid -l \mid -h]] \mid [[-v][-f output_file] [-a \mid -d \mid -c checklist][-ver patch_version]]

Parameter	Description
-V	Display the version of oakValidation.



Parameter	Description
-1	List the items that can be checked (and their descriptions).
-h	(Optional) Display help for using the command.
-v	Show verbose output (must be used with a parameter that generates a validation report).
-f output_file	Send output to a file with a fully qualified file name, <code>output_file</code> , instead of to the screen (stdout).
-a	Run all system checks, including DiskCalibration. Oracle recommends that you use this command to validate system readiness before deployment. Do not run oakcli validate with this option on a busy production system, because the DiskCalibration system check can cause performance issues.
-d	Run only the default checks. The default checks are NetworkComponents, OSDiskStorage, SharedStorage, and SystemComponents.
	The NetworkComponents validation check is not available on Oracle Database Appliance V1.
-c checklist	Run the validation checks for the items identified in <code>checklist</code> , a comma-delimited list. Use this parameter to check either a single item or subset of items.
-c ospatch	Run the validation checks for the patch version identified in -ver patch_version.
-ver patch_version	Report any reasons for not being able to patch Oracle Database Appliance with the patch named in patch_version.

Listing All Checks and Their Descriptions

oakcli validate -l

```
Checkname -- Description

========

*SystemComponents -- Validate system components based on ilom sensor data readings

*OSDiskStorage -- Validate OS disks and filesystem information

*SharedStorage -- Validate Shared storage and multipathing information

DiskCalibration -- Check disk performance with orion

*NetworkComponents -- Validate public and private network components

*StorageTopology -- Validate external JBOD connectivity

asr -- Validate asr components based on asr config file and ilom sensor data readings
```

Running All Checks

Enter the following command to run all checks:

oakcli validate -a

Validating Storage Cable Connections

Check the cable connections between the system controllers and the storage shelf, as well as the cable connection to the storage expansion shelf (if one is installed):



 $[\]mbox{\scriptsize \star}$ -- These checks are also performed as part of default checks

```
oakcli validate -c storagetopology
```

Oracle recommends that you run the oakcli validate -c StorageTopology command before deploying the system. This will avoid and prevent problems during deployment due to wrong or missing cable connections. The output shown in the following example reports a successful configuration. If the cabling is not correct, you will see errors in your output.

```
# oakcli validate -c storagetopology
It may take a while. Please wait...
INFO: ODA Topology Verification
INFO: Running on Node0
INFO: Check hardware type
SUCCESS: Type of hardware found: X4-2
INFO : Check for Environment(Bare Metal or Virtual Machine)
SUCCESS: Type of environment found: Virtual Machine (ODA BASE)
SUCCESS: Number of External LSI SAS controller found: 2
INFO: Check for Controllers correct PCIe slot address
SUCCESS: External LSI SAS controller 0: 00:15.0
SUCCESS: External LSI SAS controller 1: 00:16.0
INFO: Check if powered on
SUCCESS: 1: Powered-on
INFO : Check for correct number of EBODS(2 or 4)
SUCCESS : EBOD found : 2
INFO : Check for External Controller 0
SUCCESS: Controller connected to correct ebod number
SUCCESS: Controller port connected to correct ebod port
SUCCESS: Overall Cable check for controller 0
INFO : Check for External Controller 1
SUCCESS: Controller connected to correct ebod number
SUCCESS: Controller port connected to correct ebod port
SUCCESS: Overall Cable check for controller 1
INFO: Check for overall status of cable validation on NodeO
SUCCESS: Overall Cable Validation on NodeO
INFO: Check Node Identification status
SUCCESS: Node Identification
SUCCESS: Node name based on cable configuration found: NODEO
INFO: Check Nickname
SUCCESS: Nickname set correctly: Oracle Database Appliance - EO
INFO: The details for Storage Topology Validation can also be found in log
file=/opt/oracle/oak/log/<hostname>/storagetopology/
StorageTopology-2014-07-03-08:57:31_7661_15914.log
```

Validating Oracle ASR

Enter the following syntax to validate your Oracle ASR configuration:

```
# oakcli validate -c asr
INFO: oak Asr information and Validations
RESULT: /opt/oracle/oak/conf/asr.conf exist
RESULT: ASR Manager ip:10.139.154.17
RESULT: ASR Manager port:1162
SUCCESS: ASR configuration file validation successfully completed
RESULT: /etc/hosts has entry 141.146.156.46 transport.oracle.com
RESULT: ilom alertmgmt level is set to minor
RESULT: ilom alertmgmt type is set to snmptrap
RESULT: alertmgmt snmp_version is set to 2c
RESULT: alertmgmt community_or_username is set to public
RESULT: alertmgmt destination is set to 10.139.154.17
RESULT: alertmgmt destination_port is set to 1162
SUCCESS: Ilom snmp configuration for asr set correctly
```



```
RESULT: notification trap configured to ip:10.139.154.17
RESULT: notification trap configured to port:1162
SUCCESS: Asr notification trap set correctly
INFO: IP_ADDRESS HOST_NAME SERIAL_NUMBER ASR PROTOCOL SOURCE PRODUCT_NAME
INFO: -----
______
10.170.79.98 oda-02-c 1130FMW00D Enabled SNMP ILOM SUN FIRE X4370 M2 SERVER
10.170.79.97 oda-01-c 1130FMW00D Enabled SNMP ILOM SUN FIRE X4370 M2 SERVER
INFO: Please use My Oracle Support 'http://support.oracle.com' to view the
activation status.
SUCCESS: asr log level is already set to Fine.
RESULT: Registered with ASR backend.
RESULT: test connection successfully completed.
RESULT: submitted test event for asset:10.139.154.17
RESULT: bundle com.sun.svc.asr.sw is in active state
RESULT: bundle com.sun.svc.asr.sw-frag is in resolved state
RESULT: bundle com.sun.svc.asr.sw-rulesdefinitions is in resolved state
RESULT: bundle com.sun.svc.ServiceActivation is in active state
SUCCESS: ASR diag successfully completed
```

Checking the Viability of a Patch

Use the <code>oakcli</code> validate <code>ospatch</code> -ver <code>patch_version</code> command to report any reasons for not being able to patch Oracle Database Appliance with the patch named in <code>patch_version</code>. Run this command before you attempt to patch Oracle Database Appliance to determine if it will succeed or if you need to make changes before applying the patch.

```
# oakcli validate -c ospatch -ver 12.1.2.5.0
INFO: Validating the OS patch for the version 12.1.2.5.0
WARNING: 2015-10-10 06:30:32: Patching sub directory /opt/oracle/oak/pkgrepos/orapkgs/OEL/5.10/Patches/5.10.1 is not existing
INFO: 2015-10-10 06:30:32: May need to unpack the Infra patch bundle for the version: 12.1.2.5.0
ERROR: 2015-10-10 06:30:32: No OS patch directory found in the repository
```

Validating Hardware System and Network Components

The following command runs system checks to validate hardware system components and Oracle Database Appliance network components:

```
# oakcli validate -c SystemComponents,NetworkComponents
```

14.28 oakcli Virtual Disk Commands

Use the oakcli virtual disk (vdisk) commands to manage virtual disks on Oracle Database Appliance X7-2-HA virtualized platform.

- oakcli create vdisk (page 14-59)
 Use the oakcli create vdisk command to create a new virtual disk in a shared repository on Oracle Database Appliance Virtualized Platform.
- oakcli clone vdisk (page 14-59)
 Use the oakcli clone vdisk command to create clones of virtual disks.
- oakcli delete vdisk (page 14-60)
 Use the oakcli delete vdisk command to delete a virtual disk from a shared repository on Oracle Database Appliance Virtualized Platform.

oakcli show vdisk (page 14-60)
 Use the oakcli show vdisk command to display information about virtual disks on Oracle Database Appliance Virtualized Platform.

14.28.1 oakcli create vdisk

Use the <code>oakcli create vdisk</code> command to create a new virtual disk in a shared repository on Oracle Database Appliance Virtualized Platform.

Syntax

oakcli create vdisk $vdisk_name$ -repo $repository_name$ -size size -type shared | local -sparse [-h]

Parameters

Parameter	Description
vdisk_name	Name assigned to the virtual disk that is unique within the name repository
-repo repository_name	Name of the shared repository where the virtual disk will be created and from which it will acquire its storage
-size <i>size</i>	Amount of storage to be assigned from the shared repository to the shared disk. The default unit is G (for gigabytes) and the minimum size is 500 M (for megabytes)
-type shared local	Sets the option of allowing the virtual disk to be shared by more than one virtual machine (shared) or used by only one virtual machine (local)
-sparse	Creates a sparse vdisk
-h	(Optional) Display help for using the command.

Example

Create a virtual disk named t2g in the shared repository named repoprod1 for use by only one virtual machine at a time in that repository. Assign the t2g virtual disk 2 GB in the repoprod1 shared repository.

oakcli create vdisk t2g -repo repoprod1 -type local -size 2G

14.28.2 oakcli clone vdisk

Use the oakcli clone vdisk command to create clones of virtual disks.

Syntax

oakcli clone vdisk new_vdisk_name -repo repo_name -src source_vdisk_name [-h]

Parameter	Description
new_vdisk_name	Name given to the clone virtual disk
repo_name	Name of the repository source for the virtual disk being cloned



Parameter	Description
source_vdisk_name	Name of the virtual disk being cloned
-h	(Optional) Display help for using the command.

Usage

The virtual disk and vm.cfg files are stored in the following directories:

- Dom0: /Repositories/vm_repo_name/.ACFS/snaps/vm_name/
 VirtualMachines/vm_name
- ODA_BASE: /app/sharedrepo/vm_repo_name/.ACFS/snaps/vm_name/
 VirtualMachines/vm_name

Example 14-41 Cloning a Virtual Disk

Clone a virtual disk named my_vdisk2 from an existing virtual disk named vdisk1 that is stored in the repository named vrepo1:

oakcli clone vdisk my_vdisk2 -repo vrepo1 -src vdisk1

14.28.3 oakcli delete vdisk

Use the <code>oakcli delete vdisk</code> command to delete a virtual disk from a shared repository on Oracle Database Appliance Virtualized Platform.

Syntax

oakcli delete vdisk vdisk_name -repo repository_name [-h]

Parameters

Parameter	Description
vdisk_name	Name assigned to the virtual disk
-repo repository_name	Name of the shared repository where the virtual disk was created
-h	(Optional) Display help for using the command.

Example

Remove a virtual disk named t2g from the shared repository named repoprod1:

oakcli delete vdisk t2g -repo repoprod1

14.28.4 oakcli show vdisk

Use the <code>oakcli show vdisk</code> command to display information about virtual disks on Oracle Database Appliance Virtualized Platform.

Syntax

oakcli show vdisk [vdisk_name -repo repository_name] [-h]



Parameters

Parameter	Description
vdisk_name	(Optional) Display information for just one virtual disk.
-repo repository_name	Required parameter if a virtual disk is specified in the command
-h	(Optional) Display help for using the command.

Examples

Here are examples of how to use the oakcli show vdisk command.

Example 14-42 Displaying Information for All Virtual Disks

Display information about all virtual disks on Oracle Database Appliance Virtualized Platform:

oakcli show vdisk

NAME	SIZE	TYPE	REPOSITORY
myvdisk	10G	local	vdiskrepo
newv	1G	local	vdiskrepo

Example 14-43 Displaying Information for a Single Virtual Disk

Display information for the virtual disk named myvdisk1:

```
# oakcli show vdisk myvdisk1
Resource: myvdisk_vdiskrepo
```

Name : myvdisk_vdiskrepo
RepoName : vdiskrepo
Size : 10G
Type : local

14.29 oakcli Virtual Machine Commands

VmAttached :

Use the oakcli virtual machine commands to list and manage virtual machines (VMs).

- oakcli clone vm (page 14-62)
 Use the oakcli clone vm command to create clones and snap clones of virtual machines.
- oakcli configure vm (page 14-64)

Use the <code>oakcli configure vm</code> command to configure a virtual machine on Oracle Database Appliance Virtualized Platform and to increase or decrease resource allocation to user domains.

oakcli delete vm (page 14-66)

Use the oakcli delete vm command to delete a virtual machine.

oakcli migrate vm (page 14-66)

Use the $oakcli\ migrate\ vm$ command to migrate a currently running virtual machine to another node.

oakcli modify vm (page 14-67)
Use the oakcli modify vm command to modify an existing virtual machine.

- oakcli show vm (page 14-68)
 Use the oakcli show vm command to display information about virtual machines.
- oakcli show vmconsole (page 14-69)
 Use the oakcli show vmconsole command to open a GUI virtual machine console to manage a specific virtual machine.
- oakcli start vm (page 14-69)
 Use the oakcli start vm command to start a virtual machine on a node.

14.29.1 oakcli clone vm

Use the $oakcli\ clone\ vm$ command to create clones and snap clones of virtual machines.

Syntax

To create a virtual machine from a template:

oakcli clone vm vm_name -vmtemplate $template_name$ -repo $repo_name$ [-node 0/1] [-driverdomain]

To create a snapshot clone of an existing virtual machine:

oakcli clone vm vm_name -vm src_vm_name -snap [-force] [-driverdomain]

To create a virtual machine snapshot from a template:

oakcli clone vm <vm_name> -vmtemplate src_vmtempl_name -snap [-driverdomain]

Parameter	Description
-vm vm_name	Identifies the name given to the new cloned virtual machine.
<pre>-vmtemplate template_name</pre>	Identifies the name of the template containing the virtual machine that you want to clone.
-repo <i>repo_name</i>	Identifies the name of the repository that contains the template being cloned.
-node 0 1	Identifies the Oracle Database Appliance node that contains the shared repository from which the virtual machine is to be cloned.
-vm src_name	Identifies the name of the virtual machine that is to be cloned.
-snap	(Optional) Creates a snapshot of the source virtual machine or virtual machine template.
-driverdomain	(Optional) Creates the virtual machine with the driver domain option.
	The driver domain option improves performance by enabling guest virtual machines to use ODA_BASE instead of Dom0 to access virtual disks. Newly created virtual disks are mounted directly from ODA_BASE to a guest virtual machine.
-force	(Optional) When cloning a source virtual machine, the -force option enables you to make a change from the source virtual machine. For example, if the source file does not use a driver domain, you can use -force -driverdomain to create a clone virtual machine that does use the driver domain.
-h	(Optional) Displays help for using the command.



Usage Notes

- The -node parameter must be used when you clone from a shared repository. The -node parameter is invalid for non-shared repositories.
- The virtual disk and vm.cfg files are stored in the following directories:
 - Dom0: /Repositories/vm_repo_name/.ACFS/snaps/vm_name/
 VirtualMachines/vm_name
 - ODA_BASE: /app/sharedrepo/vm_repo_name/.ACFS/snaps/vm_name/
 VirtualMachines/vm_name
- Live migration of driver domain virtual machines is not supported.
- The driver domain option is supported with the following guest operating systems:
 - Oracle Linux with the latest Unbreakable Enterprise Kernel 2 (UEK2),
 Unbreakable Enterprise Kernel 3 (UEK3), or Unbreakable Enterprise Kernel
 Release 4 (UEK R4).
 - Microsoft Windows with Oracle VM Windows PV Driver 3.4.1. Oracle VM Windows PV Driver 3.4.1 release is available for download on My Oracle Support as patch number 23346086.
 - Oracle Solaris 11.3 or higher x86.
- The driver domain only works when you add virtual disks to a guest virtual machine. When -driverdomain is specified, the cloned virtual machine is in driver domain mode. The corresponding virtual machine configuration file, vm.cfg, has the following disk entries:

When -driverdomain is specified, the cloned virtual machine is in driver domain mode. The corresponding virtual machine configuration file, vm.cfg, has the following disk entries:

```
disk = [u'file:/OVS/Repositories/repo5/.ACFS/snaps/vm10/
VirtualMachines/
vm10/System.img,xvda,w',
u'file:/u01/app/sharedrepo/repo5/.ACFS/snaps/
vm10/VirtualMachines/vm10/u01.img,xvdb,w,oakDom1']
```

All disks, with the exception of the xvda boot disk, have the path from oakDom1, that is odabase.

- The driver domain functionality applies to non-system disks. Once a virtual machine is created in driver domain mode, any new vDisks are added in driver domain mode.
- To determine if a virtual machine is configured in driver domain mode, use the oakcli show vm vmname command. When the virtual machine is in driver mode, the output for the DriverDomain attribute is TRUE.

Example 14-44 Creating a Virtual Machine Image

Create a virtual machine image named myol6u_test from the virtual machine template named myol6u_15gbl, which is stored in the shared repository named repo2 on Node 0:

```
oakcli clone vm myol6u_test -vmtemplate myol6u_15gb1 -repo repo2 -node 0
```



Example 14-45 Creating a Virtual Machine Image in Driver Domain Mode

Create a virtual machine image named <code>myol6u_test</code> from the virtual machine template named <code>myol6u_15gbl</code>, which is stored in the shared repository named <code>repo2</code> on Node 0 in driver domain mode:

oakcli clone vm myol6u_test -vmtemplate myol6u_15gb1 -repo repo2 -node 0 - driverdomain

14.29.2 oakcli configure vm

Use the <code>oakcli configure vm</code> command to configure a virtual machine on Oracle Database Appliance Virtualized Platform and to increase or decrease resource allocation to user domains.

You must restart the domain for the resource allocation change to take effect.

Syntax

oakcli configure vm name [-vcpu cpucount -maxvcpu maxcpu -cpuprio priority -cpucap cap -memory memsize -maxmemory max_memsize -os sys -keyboard lang -mouse mouse_type -domain dom -network netlist -autostart astart -disk disks -bootoption bootstrap -cpupool pool -prefnode 0|1 -failover true|false][-h]

Parameter	Description
name	The name assigned to the virtual machine.
-vcpu <i>cpucount</i>	Number of nodes assigned to the virtual machine. The range is 1 to 72. This number depends on your Oracle Database Appliance configuration
-maxvcpu <i>maxcpu</i>	Maximum number of CPUs that the virtual machine can consume. The range is 1 to 72. This number depends on your Oracle Database Appliance configuration.
-cpuprio priority	Priority for CPU usage, where larger values have higher priority. The range is 1 to 65535.
-cpucap <i>cap</i>	Percentage of a CPU the virtual machine can receive. The range is 10 to 100.
-memory memsize	Amount of memory given to the virtual machine: (1 to 248)G to (1to 760G) or (1 to 253952)M to (1 to 778240)M, based on RAM. The default is M.
-maxmemory max_memsize	Maximum amount of memory allowed for the virtual machine: (1 to 248)G to (1 to 760)G or (1-253952)M to (1-778240)M, based on RAM. The default is M.
-os sys	Operating system used by the virtual machine (WIN_2003, WIN_2008, WIN_7, WIN_VISTA, OTHER_WIN, OL_4, OL_5, OL_6, RHL_4, RHL_5, RHL_6, LINUX_RECOVERY, OTHER_LINUX, SOLARIS_10, SOLARIS_11, OTHER_SOLARIS, or NONE)
-keyboard lang	Keyboard used by virtual machine (en-us, ar, da, de, de-ch, en-gb, es, et, fi, fo, fr, fr-be, fr-ca, hr, hu, is, it, ja, lt, lv, mk, nl, nbe, no, pl, pt, pt-br, ru, sl, sv, th, or tr)
-mouse mouse_type	Mouse type used by the virtual machine (OS_DEFAULT, PS2_MOUSE, USB_MOUSE, or USB_TABLET)



Parameter	Description	
-domain dom	Domain type from the following options:	
	 Hardware virtualized guest (XEN_HVM) 	
	 The kernel or operating system is not virtualization-aware and can run unmodified. 	
	- Device drivers are emulated.	
	 Para virtualized guest (XEN_PVM) 	
	 The guest is virtualization-aware and is optimized for a virtualized environment. 	
	PV guests use generic, idealized device drivers.Hardware virtualized guest (XEN_HVM_PV_DRIVERS)	
	The PV drivers are hypervisor-aware and significantly reduce the overhead of emulated device input/output. Hardware virtualized guest (UNKNOWN)	
-network netlist	MAC address and list of networks used by the virtual machine	
-autostart astart	Startup option for virtual machine (always, restore, or never)	
-disk disks	List of disks (slot, disktype, and content) used by virtual machine	
-bootoption bootstrap	Boot option used to bootstrap the virtual machine (PXE, DISK, or CDROM)	
-cpupool pool	Named CPU pool assigned to the virtual machine	
-prefnode 0 1	Preferred node on which the virtual machine will attempt to start (Node 0 or Node 1). This parameter is only valid for virtual machines created in shared repositories.	
-failover true false	Allow (use the keyword "true") or disallow (use the keyword "false") the virtual machine to start or restart on a node other than the node defined by the -prefnode parameter. This parameter is only valid for virtual machines created in shared repositories.	
-h	(Optional) Display help for using the command.	

Usage Notes

- All of the parameters, except for name, are optional.
- You must include at least one optional parameter for the command to work.
- When you create a virtual machine, select the Processor Cap as a percentage, between 10 and 100%. The default is 100%. This value is then converted to a CPU utilization limit in the vm.cfg file for the virtual machine. The value set in the vm.cfg file limits the amount of CPU a guest is allowed to consume. If the Processor Cap is set at 100% in Oracle VM, then the value set in vm.cfg is 0, which means there is no limit to CPU utilization.



See Also:

Oracle VM release 3.1 documentation contains more information about the options in the preceding table. Access the library at the following URL:

http://docs.oracle.com/cd/E27300_01

For example, refer to 2.8. Virtual Machines for information about the the -domain dom options:

http://docs.oracle.com/cd/E27300_01/E27309/html/vmusg-ovm-vms.html

Changing the Number of Virtual CPUs

This command example changes the number of virtual CPUs to 3, and changes the virtual memory size to 4 GB in a virtual machine named odarep01:

oakcli configure vm odarep01 -vcpu 3 -memory 4196

14.29.3 oakcli delete vm

Use the oakcli delete vm command to delete a virtual machine.

Syntax

oakcli delete vm vm_name [-server node_number] [-h]

Parameters

Parameter	Description
vm vm_name	(Optional) Name of the virtual machine to be deleted
-server node_number	(Optional) Oracle Database Appliance node from which you want to remove the virtual machine. If this optional parameter is not included, then the virtual machine is removed from both nodes.
-h	(Optional) Display help for using the command.

Example

Delete the ovu22 virtual machine from Node 1:

oakcli delete vm ovu22 -server 1

14.29.4 oakcli migrate vm

Use the $oakcli\ migrate\ vm$ command to migrate a currently running virtual machine to another node.

Syntax

oakcli migrate vm vmname [-h]



Parameters

Parameter	Description
vmname	Name of the virtual machine to be migrated
-h	(Optional) Display help for using the command.

14.29.5 oakcli modify vm

Use the oakcli modify vm command to modify an existing virtual machine.

Syntax

```
oakcli modify vm vmname [-attachvdisk|-deletenetworkvlanname] [-s
key1:value1;key2:value2;...] [-addnetwork|-deletenetworkvlanname] [-h]
```

Parameters

Parameter	Description
-attachvdisk <i>vdisk_name</i>	(Optional) Attaches the named VDisk (virtual disk) to the named virtual machine.
-detachvdisk <i>vdisk_name</i>	(Optional) Detaches the named VDisk disk from the named virtual machine.
-s key1:value1;key2:value2;	(Optional) Identifies a message consisting of one or more semicolon separated key:value pairs to send to the ovmd utility. Each key and value is separated by a colon (:) and each key/value pair is separated from the next key/value pair by quotation marks.
-addnetwork <i>vlanname</i>	(Optional) Adds a VLAN network to the named virtual machine.
-deletenetwork <i>vlanname</i>	(Optional) Removes a VLAN network from the named virtual machine.
-h	(Optional) Displays help for using the command.

Usage Notes

- Do not use the -attachvdisk or the -detachvdisk option with the -addnetwork, deletenetwork, or -s parameters.
- Include only one of the -addnetwork, -deletenetwork, or -s parameters when you use this command.

Example 14-46 Sending a Message to a Running Virtual Machine

Update the root user password for the gc_11g virtual machine:

oakcli modify vm gc_11g -s "com.oracle.linux.root-password:root123"



14.29.6 oakcli show vm

Use the oakcli show vm command to display information about virtual machines.

Syntax

```
oakcli show vm [vm_name | -h]
```

Parameters

Parameter	Description
vm_name	(Optional) The name of the virtual machine for which details should be displayed. If you do not specify this parameter, then information for all the virtual machines is displayed.
-h	(Optional) Display help for using the command.

Usage Notes

When a virtual machine is configured in driver domain mode, the output of the <code>oakclishow vm vmname</code> command displays TRUE for the DriverDomain attribute.

Examples

Here are examples of how to use the oakcli show vm command.

Example 14-47 Displaying Details for All Virtual Machines

Display the virtual machine names, memory and vCPU allocations, status, virtual disks, and repository name for all virtual machines:

oakcli show vm

NAME	MEMORY	VCPU	STATE	REPOSITORY
sample5 odarepo1	2048	2	OFFLINE	odarepo1
sample6_odarepo1	2048	2	OFFLINE	odarepo2
test1_odarepo1	2048	2	OFFLINE	odarepo1
test2_odarepo2	2048	2	OFFLINE	odarepo2
vm1_odarepo1	4096	4	ONLINE	odarepo1
vm2_odarepo2	2048	2	OFFLINE	odarepo2
win_vm1	1500	1	ONLINE	odarepo1

Example 14-48 Displaying Information for a Single Virtual Machine

Display information about the *vm1_odarepo1* virtual machine:

oakcli show vm vml_odarepo1
Resource: vml_odarepo1

AutoStart : restore CPUPriority : 100

Disks : |file:/OVS/Repositories/odarepol/VirtualMachines/vml_odarepol/System.i | mg,xvda,w||file:/OVS/Repositories/odarepol/VirtualMachines/vml_odarepol/VirtualM

1/u01.img,xvdb,w|

Domain : XEN_PVM ExpectedState : online



FailOver false IsSharedRepo : false Keyboard en-us MaxMemory 3000 MaxVcpu 4 : 4096 Memory : Mouse OS_DEFAULT Name vm1_odarepo1

Networks : NodeNum : |mac=00:21:F6:00:00:E4| Ω

NodeNum

NodeNumStart :

OL_5 ProcessorCap :
RepoName :
State None 100 odarepo1 Online

TemplateName : otml_sample1_odarepo1

: Vcpu : cpupool vncport twocpu 5901

14.29.7 oakcli show vmconsole

Use the oakcli show vmconsole command to open a GUI virtual machine console to manage a specific virtual machine.

Syntax

oakcli show vmconsole vm_name [-h]

Parameters

Parameter	Description
vm_name	Name of the virtual machine for which you want to open a console.
-h	(Optional) Display help for using the command.

Example 14-49 Opening a Virtual Machine Console

Open a console for the virtual machine named vml_odarepol:

oakcli show vmconsole vml_odarepol

14.29.8 oakcli start vm

Use the oakcli start vm command to start a virtual machine on a node.

Syntax

oakcli start vm vm_name [-node node_number] [-d] [-h]

Parameter	Description
vm_name	vm_name is the name of the virtual machine to be started.



Parameter	Description
-node node_number	Specifies the node on which to start the virtual machine. node_number is the number of the node where it is to be started, either 0 or 1. If -node is not specified, a virtual machine is started on both nodes.
-d	Provides details about the virtual machine starting procedure
-h	(Optional) Display help for using the command.

Example 14-50 Starting a Virtual Machine on Node 0

Start the virtual machine named vml_odarepol on Node 0.

oakcli start vm vm_odarepo1 -node 0

14.30 oakcli Virtual Machine Template Commands

Use the oakcli Virtual Machine template commands to list and manage virtual machine (VM) templates.

- oakcli configure vmtemplate (page 14-70)
 Use the oakcli configure vmtemplate command to configure a virtual machine template on Oracle Database Appliance Virtualized Platform.
- oakcli delete vmtemplate (page 14-72)
 Use the oakcli delete vmtemplate command to delete a virtual machine template.
- oakcli import vmtemplate (page 14-73)
 Use the oakcli import vmtemplate command to import virtual machine templates.
- oakcli modify vmtemplate (page 14-74)
 Use the oakcli modify vmtemplate command to add networks to or delete networks from an existing virtual machine template.
- oakcli show vmtemplate (page 14-75)
 Use the oakcli show vmtemplate command to display information about virtual machine templates.

14.30.1 oakcli configure vmtemplate

Use the <code>oakcli configure vmtemplate</code> command to configure a virtual machine template on Oracle Database Appliance Virtualized Platform.

Syntax

oakcli configure vmtemplate name [-vcpu cpucount -maxvcpu maxcpu -cpuprio priority -cpucap cap -memory memsize -maxmemory max_memsize -os sys -keyboard lang -mouse mouse_type -domain dom -network netlist -disk disks][h]

Parameters

Parameter	Description
name	Name assigned to the virtual machine template
-vcpu cpucount	Number of nodes assigned to virtual machines cloned from the template.



Parameter	Description	
-maxvcpu maxcpu	Maximum number of CPUs that virtual machines cloned from the template can consume.	
-cpuprio priority	Priority for CPU usage, where larger values have higher priority (1 to 256).	
-cpucap <i>cap</i>	Percentage of a CPU that virtual machines cloned from the template can receive (1 to 100).	
-memory memsize	Amount of memory given to virtual machines cloned from the template (1G to 88 G or 1M to 90112M)	
-maxmemory max_memsize	Maximum amount of memory allowed for virtual machines cloned from the template	
-os sys	Operating system used by virtual machines cloned from the template (WIN_2003, WIN_2008, WIN_7, WIN_VISTA, OTHER_WIN, OL_4, OL_5, OL_6, RHL_4, RHL_5, RHL_6, LINUX_RECOVERY, OTHER_LINUX, SOLARIS_10, SOLARIS_11, OTHER_SOLARIS, or NONE)	
-keyboard lang	Keyboard used by virtual machines cloned from the template (en-us, ar, da, de, de-ch, en-gb, es, et, fi, fo, fr, fr-be, fr-ca, hr, hu, is, it, ja, lt, lv, mk, nl, nbe, no, pl, pt, pt-br, ru, sl, sv, th, or tr)	
-mouse mouse_type	Mouse type used by virtual machines cloned from the template (OS_DEFAULT, PS2_MOUSE, USB_MOUSE, or USB_TABLET)	
-domain dom	Domain type from the following options:	
	 Hardware virtualized guest (XEN_HVM) 	
	 The kernel or operating system is not virtualization-aware and can run unmodified. 	
	- Device drivers are emulated.	
	Para virtualized guest (XEN_PVM)	
	 The guest is virtualization-aware and is optimized for a virtualized environment. 	
	PV guests use generic, idealized device drivers.Hardware virtualized guest (XEN_HVM_PV_DRIVERS)	
	The PV drivers are hypervisor-aware and significantly reduce the overhead of emulated device input/output.	
-network netlist	MAC address and list of networks used by virtual machines cloned from the template	
-disk <i>disks</i>	List of disks (slot, disktype, and content) used by virtual machines cloned from the template	
-h	(Optional) Display help for using the command.	

Usage Notes

- All of the parameters, except for name, are optional.
- You must include at least one optional parameter for the command to work.



See Also::

Oracle VM Release 3.1 documentation, which is available at the following URL:

http://docs.oracle.com/cd/E27300_01 for more information about the options in the preceding table.

For example, see 2.8. Virtual Machines for details about the option -domain dom

http://docs.oracle.com/cd/E27300_01/E27309/html/vmusg-ovm-vms.html

Setting Values for a Virtual Machine

Set values for the following configuration values in the virtual machine template named myo15u7_10gb:

```
oakcli configure vmtemplate myol5u7_10gb
-vcpu 2 -maxvcpu 4 -cpucap 40 -memory 1536M -maxmemory 2G
-network "['type=netfront,bridge=net1']" -os OTHER_LINUX
```

- -vcpu 2 = Two CPUs will assigned when the virtual machine starts up
- -maxvcpu 4 = The maximum number of CPUs that can be assigned to the virtual machine is 4.
- -cucap 40 = The maximum percentage of a CPU's capacity that will be assigned to the virtual machine is 40%.
- -memory 1536M = The amount of memory assigned when the virtual machine starts up is 1536 MB.
- -maxmemory 2g = The maximum amount of memory that can be assigned to the virtual machine is 2 GB.
- network type=netfront, bridge=net1 = This is the list of networks used by virtual machines cloned from the template.
- -os = The operating system used by the virtual machine is OTHER LINUX.

14.30.2 oakcli delete vmtemplate

Use the oakcli delete vmtemplate command to delete a virtual machine template.

Syntax

oakcli delete vmtemplate template_name [-server=node_number][-h]

Parameters

Parameter	Description
template_name	Name of the virtual machine template to be removed
-server node_number	(Optional) Oracle Database Appliancenode from which you want to remove the virtual machine template. If this optional parameter is not included, then the virtual machine template is removed from both nodes.



Parameter	Description
-h	(Optional) Display help for using the command.

Example

Delete the ovu22 virtual machine template from both nodes:

oakcli delete vmtemplate ovu22

14.30.3 oakcli import vmtemplate

Use the oakcli import vmtemplate command to import virtual machine templates.

Syntax

oakcli import vmtemplate $vmtemplate name - files image_files | -assembly_file - repo _ repo_name [- node 0 | 1][-h]$

Parameters

Parameter	Description	
vmtemplatename	Name that you want to assign to the template	
-files	Use the -files option when importing one or more files that comprise a template.	
image_files	<pre>image_files is one of the following:</pre>	
	A single template file name	
	 A comma-separated list of files that comprise a single template 	
	 A URL enclosed in single quotation marks that links to a template file 	
-assembly	Use the -assembly option when importing an assembly file.	
assembly_file	An assembly file, or a URL enclosed in single quotation marks, that links to an assembly file	
repo_name	Name of the repository to store the template or templates that you are importing	
-node	When you are importing to a shared repository, use the -node option with a value of 0 or 1 to identify the node.	
-h	(Optional) Display help for using the command.	

Usage Notes

- Include only one of the options, -files or -assembly, each time you run this
 command. You cannot include both of these options in the same statement.
- If the command imports more than one template from an assembly, then each template will automatically be given a unique name. These template names will include the name given in the vmtemplate vmtemplatename clause followed by a sequence number, such as vmtemplatename1, vmtemplatename2, and vmtemplatename3.
- When importing into a shared repository, you must include the -node option with a valid node number, 0 or 1. Using the -node option for imports into non-shared repositories will cause the command to fail.



Examples

Here are examples of how to use the oakcli import vmtemplate command.

Example 14-51 Importing a Virtual Machine Template from Dom0

Import the required template (OVM_OL5U7_X86_64_PVM_10GB.tgz) from the /OVS directory in DomO into the odarepo1 repository and name the template file OL5U7:

oakcli import vmtemplate OL5U7 -files /OVS/OVM_OL5U7_X86_64_PVM_10GB.tgz -repo odarepol

Example 14-52 Importing a Virtual Machine Template from a Remote Server

Import a template from a remote server using a URL to identify the server and the template file:

oakcli import vmtemplate OL5U6 -files 'http://example.com/vm-template/OEL-5/OVM_OL5U6_X86_64_PVM_10GB.tgz' -repo odarepo2

Example 14-53 Importing Virtual Machine Templates from an Assembly on a Remote Server

Import the templates contained in the assembly file stored on a remote server at the URL provided into the <code>odarepol</code> repository:

oakcli import vmtemplate OL6U1 -assembly 'http://example.com/assemblies/OEL6/ OVM_OL6U1_x86_PVHVM.ova' -repo odarepo1

Example 14-54 Importing Virtual Machine Templates Into a Shared Repository From an Assembly on a Remote Server

Import the templates contained in the assembly file stored on a remote server at the URL provided into a shared repository named repo4 on Node 1:

oakcli import vmtemplate OL6U1 -assembly 'http://example.com/assemblies/OEL6/ OVM_OL6U1_x86_PVHVM.ova' -repo repo4 -node 1

14.30.4 oakcli modify vmtemplate

Use the oakcli modify vmtemplate command to add networks to or delete networks from an existing virtual machine template.

Syntax

oakcli modify vmtemplate vmtemplatename [-addnetwork|-deletenetworkvlanname] [-h]

Parameters

Parameter	Description
-addnetworkvlanname	(Optional) Adds a VLAN network to the named virtual machine template
-deketenetworkvlanname	(Optional) Deletes a VLAN network from the named virtual machine template
-h	(Optional) Displays help for using the command.



Example 14-55 Modifying the Network Defined in a Virtual Machine Template

Replace the network assigned to the gc_11g virtual machine template with the net1 network:

oakcli modify vmtemplate gc_11g -addnetwork net1

14.30.5 oakcli show vmtemplate

Use the <code>oakcli</code> show <code>vmtemplate</code> command to display information about virtual machine templates.

Syntax

oakcli show vmtemplate [vmtemplate_name | -h]

Parameters

Parameter	Description
vmtemplate_name	(Optional) The name of the virtual template for which details should be displayed. If you do not specify this parameter, then information for all of the virtual templates is displayed.
-h	(Optional) Display help for using the command.

Example 14-56 Display Information About a Virtual Template

Display information about the sample1_odarepo1 virtual template:

```
oakcli show vmtemplate sample_odarepo1
Resource: sample1 odarepo1
       CPUPriority :
                              |file:/OVS/Repositories/odarepo1/Te
       Disks
                              mplates/otml_sample1_odarepo1/Syste
                              m.img,xvda,w||file:/OVS/Repositorie
                              s/odarepo1/Templates/otml_sample1_o
                              darepol/u01.img,xvdb,w|
       Domain
                              XEN_PVM
       Keyboard
                              en-us
                               2048
       MaxMemory
       MaxVcpu
                              2048
       Memory
       Mouse
                              OS_DEFAULT
                              sample1_odarepo1
       Name
                              |bridge=priv1||bridge=net1||bridge=
       Networks
                              net2
                      :
       NodeNum
                              0
       OS
                       :
                              OL_5
       ProcessorCap :
                              100
                              odarepo1
       RepoName
       Vcpu
```

14.31 oakcli VLAN Management Commands for Virtual Platform

Use the oakcli VLAN commands to list and manage virtual local area networks (VLANs) on an Oracle Database Appliance virtualized platform.

- oakcli create vlan (page 14-76)
 Use the oakcli create vlan command to create a new virtual local area network (VLAN) on an Oracle Database Appliance Virtualized Platform node.
- oakcli delete vlan (page 14-77)
 Use the oakcli delete vlan command to delete a virtual local area network.
- oakcli show vlan (page 14-77)
 Use the oakcli show vlan command to display information about virtual local area networks (VLANs) configured on Oracle Database Appliance.

14.31.1 oakcli create vlan

Use the oakcli create vlan command to create a new virtual local area network (VLAN) on an Oracle Database Appliance Virtualized Platform node.

Syntax

oakcli create vlan vlan_name -vlanid tag_id -if interface_name -node 0 | 1 [-h]

Parameters

Parameter	Description
vlan_name	Name assigned to the VLAN.
-vlanid tag_id	Tag number, used for packet routing, from 2 to 4096 inclusive. It uniquely identifies the VLAN on a node. You assign the ID and you can use the same tag number on both nodes.
-if interface_name	Name of the interface on which the VLAN network is created
-node 0 1	Node on which the VLAN is created, either Node0 or Node1.
-h	(Optional) Display help for using the command.

Usage Notes

- You can assign VLANs to ODA BASE during the deployment.
- The VLAN for the ODA BASE is created from DOM-0.
- Only execute the VLAN created in Dom-0 from Node0.
- VLAN creation in dom0 should be executed only from Node 0.

Examples

Here are examples of how to use the oakcli create vlan command.

Creating a New VLAN

Create a VLAN named sample10 on Node 1 using the bond1 interface and a tag with the number 10:

oakcli create vlan sample10 -vlanid 10 -if bond1 -node 1

Duplicating a VLAN on the Second Node

Create a VLAN named sample10 on Node 0:

oakcli create vlan sample10 -vlanid 10 -if bond1 -node 0



14.31.2 oakcli delete vlan

Use the oakcli delete vlan command to delete a virtual local area network.

Syntax

oakcli delete vlan vlan_name -node node_number [-h]

Parameters

Parameter	Description
vlan <i>vlan_name</i>	Name of the virtual local area network to be deleted
-node node_number	Oracle Database Appliance node from which you want to remove the virtual local area network
-h	(Optional) Display help for using the command.

Example

Delete the sample1 virtual local area network from Node 1:

oakcli delete vlan sample1 -node 1

14.31.3 oakcli show vlan

Use the <code>oakcli show vlan</code> command to display information about virtual local area networks (VLANs) configured on Oracle Database Appliance.

Syntax

oakcli show vlan [-h]

Parameter

(Optional) -h displays help for using the command.

Example 14-57 Displaying Details of Available Virtual Area Networks (VLANs)

Display the names, tag ID numbers, networks, and node assignments for the available virtual local area networks:

oakcli show vlan

NAME		ID	INTERFACE	NODENUM
net1 net1 net2 net2 net2	1 1 1 1	bond1 bond1 bond2 bond2 bond3	0 1 0 1	
net3 net4 net4 priv1 priv1	1 1 1 1	bond3 xbond0 xbond0 bond0 bond0	1 0 1 0	



Validating and Troubleshooting Oracle Database Appliance

This chapter contains information about how to validate changes and troubleshoot Oracle Database Appliance problems.

- Logging into the Web Console (page 15-1)
 If you have problems logging into the Web Console, then it might be your browser or credentials.
- Troubleshooting Tools and Commands (page 15-2)
 This section describes additional tools and commands for diagnosing and troubleshooting problems with Oracle Database Appliance.
- Preparing Log Files for Oracle Support Services (page 15-6)
 If necessary, use the command odaadmcli manage diagcollect to collect diagnostic files to send to Oracle Support Services.

15.1 Logging into the Web Console

If you have problems logging into the Web Console, then it might be your browser or credentials.

Oracle Database Appliance uses self-signed certificates. Depending on the browser and browser version, you might receive a warning or error that the certificate is invalid or not trusted because it is self-signed, or that the connection is not private.



For browsers other than Google Chrome, you must accept the security certificate on the two different websites. If you do not, the log in appears to work, but the agent is not logged in.

- Open a browser window.
 - If you are using Google Chrome, go to Step 2.
 - If you are using Mozilla Firefox or another browser, perform the following steps:
 - a. Enter the following URL: https://ODA-host-ip-address:7070/login
 - **b.** Get the security certificate (or certificate), confirm the security exception, and add an exception.
 - c. Open a new browser window or tab, then go to Step 2.
- 2. Go to the following URL: https://ODA-host-ip-address:7093/mgmt/index.html

- 3. Get the security certificate (or certificate), confirm the security exception, and add an exception.
- 4. Log in with your Oracle Database Appliance credentials.

The default user name is oda-admin and the default password is welcome1.

The following error message indicates that the agent is not logged in: No Response Returned from Authentication. Go to Step 1 and accept the security certificate for the following URL: https://oDA-host-ip-address:7070/login

Related Topics

http://www.oracle.com/technetwork/indexes/products/browser-policy-2859268.html

15.2 Troubleshooting Tools and Commands

This section describes additional tools and commands for diagnosing and troubleshooting problems with Oracle Database Appliance.

- ORAchk Health Check Tool (page 15-2)
 Use the ORAchk Health Check Tool to audit configuration settings and check system health.
- Disk Diagnostic Tool (page 15-4)
 Use the Disk Diagnostic Tool to help identify the cause of disk problems.
- Trace File Analyzer Collector (page 15-4)
 Trace File Analyzer (TFA) Collector simplifies diagnostic data collection on Oracle
 Grid Infrastructure and Oracle Real Application Clusters systems.
- Oracle Database Appliance Hardware Monitoring Tool (page 15-4)
 The Oracle Database Appliance Hardware Monitoring Tool displays the status of different hardware components in Oracle Database Appliance server.

15.2.1 ORAchk Health Check Tool

Use the ORAchk Health Check Tool to audit configuration settings and check system health.

The ORAchk utility performs proactive heath checks for the Oracle software stack and scans for known problems.

The ORAchk Configuration Audit Tool audits important configuration settings for Oracle RAC two-node deployments in the following categories:

- Operating system kernel parameters and packages
- RDBMS
- Database parameters, and other database configuration settings
- Oracle Grid Infrastructure, which includes Oracle Clusterware and Oracle Automatic Storage Management

ORAchk is aware of the entire system. It checks the configuration to indicate if best practices are being followed.



See Also:

For more information about ORAchk, see My Oracle Support note 1268927.2, "ORAchk Health Checks for the Oracle Stack" at https:// support.oracle.com/CSP/main/article? cmd=show&type=NOT&id=1268927.2

- Open the command-line interface as root.
- Navigate to the ORAchk tool in the /suptools directory.

/u01/app/12.2.0.1/grid/suptools/orachk

Run the utility.

./orachk

When all checks are finished, a detailed report is available. The output displays the location of the report in an HTML format and the location of a zip file if you want to upload the report.

Review the Oracle Database Appliance Assessment Report and system health and troubleshoot any issues that are identified.

The report includes a summary and filters that enable you to focus on specific areas. For example, you can choose the filter to show failed checks only, show checks with a Fail, Warning, Info, or Pass status, or any combination.

Oracle Database Appliance Assessment Report System Health Score is 98 out of 100 (detail)

Cluster Summary

Cluster Name	myhostc	
OS/Kernel Version	LINUX X86-64 OELRHEL 6 4.1.12-94.4.1.el6uek.x86_64	
CRS Home - Version	/u01/app/12.2.0.1/grid - 12.2.0.1.0	
DB Home - Version - Names	/u01/app/oracle/product/12.2.0.1/dbhome_1 - 12.2.0.1.0 - 2 /u01/app/oracle/product/12.1.0.2/dbhome_1 - 12.1.0.2.0 - tb12 /u01/app/oracle/product/11.2.0.4/dbhome_1 - 11.2.0.4.0 - sam11	
Number of nodes	1	
Database Servers	1	
orachk Version	12.1.0.2.7_20160526	
Collection	orachk_myhost 003_PDB1_110117_132904.zip	
Duration	2 mins, 38 seconds	
Executed by	root	
Arguments	-noupgrade	
Collection Date	01-Nov-2017 13:29:28	

Table of Contents

- Database Server
 Top 10 Time Consuming Checks

Report Feature

- Show Failed checks only
- Show details of the following regions:
 Top 10 Time Consuming Checks
- Show details of the checks: ○Expand All

 Collapse All



15.2.2 Disk Diagnostic Tool

Use the Disk Diagnostic Tool to help identify the cause of disk problems.

The tool produces a list of 14 disk checks for each node. To display details, where n represents the disk resource name, enter the following command:

odaadmcli stordiag n

For example, to display detailed information for NVMe pd_00:

odaadmcli stordiag pd_00

15.2.3 Trace File Analyzer Collector

Trace File Analyzer (TFA) Collector simplifies diagnostic data collection on Oracle Grid Infrastructure and Oracle Real Application Clusters systems.

TFA behaves in a similar manner to the ion utility packaged with Oracle Clusterware. Both tools collect and package diagnostic data. However, TFA is much more powerful than ion, because TFA centralizes and automates the collection of diagnostic information.

TFA provides the following key benefits and options:

- Encapsulation of diagnostic data collection for all Oracle Grid Infrastructure and Oracle RAC components on all cluster nodes into a single command, which you run from a single node
- Option to "trim" diagnostic files during data collection to reduce data upload size
- Options to isolate diagnostic data collection to a given time period, and to a particular product component, such as Oracle ASM, RDBMS, or Oracle Clusterware
- Centralization of collected diagnostic output to a single node in Oracle Database Appliance, if desired
- On-Demand Scans of all log and trace files for conditions indicating a problem
- Real-Time Scan Alert Logs for conditions indicating a problem (for example, Database Alert Logs, Oracle ASM Alert Logs, and Oracle Clusterware Alert Logs)

See Also:

Refer to My Oracle Support note 1513912.1 "TFA Collector - Tool for Enhanced Diagnostic Gathering" for more information. https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=1513912.1

15.2.4 Oracle Database Appliance Hardware Monitoring Tool

The Oracle Database Appliance Hardware Monitoring Tool displays the status of different hardware components in Oracle Database Appliance server.



The tool is implemented with the Trace File Analyzer collector. Use the tool both on bare-metal and on virtualized systems. The Oracle Database Appliance Hardware Monitoring Tool reports information only for the node on which you run the command. The information it displays in the output depend on the component that you select to review.

Bare Metal Platform

You can see the list of monitored components by running the command odaadmclishow -h

To see information about specific components, use the command syntax odaadmcli show component, where component is the hardware component that you want to query. For example, the command odaadmcli show power shows information specifically about the Oracle Database Appliance power supply:

```
# odaadmcli show power

NAME HEALTH HEALTH_DETAILS PART_NO. SERIAL_NO.
Power_Supply_0 OK - 7079395 476856Z+1514CE056G

(Continued)
```

LOCATION INPUT_POWER OUTPUT_POWER INLET_TEMP EXHAUST_TEMP
PS0 Present 112 watts 28.000 degree C 34.938 degree C

Virtualized Platform

You can see the list of monitored components by running the command oakclishow -h

To see information about specific components, use the command syntax <code>oakcli</code> show <code>component</code>, where <code>component</code> is the hardware component that you want to query. For example, the command <code>oakcli</code> show <code>power</code> shows information specifically about the Oracle Database Appliance power supply:

```
# oakcli show power

NAME HEALTH HEALTH DETAILS PART_NO. SERIAL_NO.
Power Supply_0 OK - 7047410 476856F+1242CE0020
```

(Continued)

Power Supply_1 OK

```
LOCATION INPUT POWER OUTPUT POWER INLET TEMP
PS0 Present 88 watts 31.250 degree C
PS1 Present 66 watts 31.250 degree C 34.188 degree C
```

Note:

Oracle Database Appliance Server Hardware Monitoring Tool is enabled during initial startup of ODA_BASE on Oracle Database Appliance Virtualized Platform. When it starts, the tool collects base statistics for about 5 minutes. During this time, the tool displays the message "Gathering Statistics..." message.

7047410 476856F+1242CE004J



15.3 Preparing Log Files for Oracle Support Services

If necessary, use the command odaadmcli manage diagcollect to collect diagnostic files to send to Oracle Support Services.

If you have a system fault that requires help from Oracle Support Services, then you may need to provide log records to help Oracle support diagnose your issue.

Collect log file information by running the command odaadmcli manage diagcollect. This command consolidates information from log files stored on Oracle Database Appliance into a single log file for use by Oracle Support Services. The location of the file is specified in the command output.

The following is an example of collecting log file information for storage.

```
# odaadmcli manage diagcollect --storage
Collecting storage log data. It will take a while, please wait...
Collecting oak data. It will take a while, please wait...
tar: Removing leading `/' from member names
tar: /opt/oracle/oak/onecmd/tmp/OakCli-Command-Output.log: file changed as we read it
Logs are collected to : /opt/oracle/oak/log/rwsoda6f002/oakdiag/oakStorage-
rwsoda6f002-20161120_2217.tar.gz
```



A

Oracle Database Appliance Software Configuration Defaults

Oracle Database Appliance software configuration defaults.

- Directory Paths for Oracle Database Appliance (page A-1)
 Locate the storage and mount configuration file paths for Oracle Database Appliance.
- Location of Log Files (page A-2)
 Log files are available for actions performed in the command-line interface and Web Console and are useful when you need to track and debug jobs.
- Oracle Groups and User Configurations for Oracle Database Appliance (page A-3)
 Review the groups and default users when you use the Web Console to deploy the appliance. All passwords are set to the Master password that you define during deployment.
- System Configuration for Oracle Database Appliance (page A-3)
 Review the system configuration for Oracle Database Appliance.

A.1 Directory Paths for Oracle Database Appliance

Locate the storage and mount configuration file paths for Oracle Database Appliance.

Oracle homes on Oracle Database Appliance follow Optimal Flexible Architecture guidelines.

Directory Paths for Oracle Database Appliance

Item	Directory Path
Grid home	/u01/app/release-specific_name/gi owner
Grid base	/u01/app/gi owner
Oracle home	<pre>/u01/app/rdbms owner/product/ dbhome_release- specific_namesequence_number</pre>
Oracle base	/u01/app/rdbms owner
Oracle Inventory	/u01/app/oraInventory



A.2 Location of Log Files

Log files are available for actions performed in the command-line interface and Web Console and are useful when you need to track and debug jobs.

You can also use the Oracle Appliance Manager Web Console to view job activity, including the tasks that make up the job. The status of each task appears in the Web Console and you can drill down to get greater details.

If you log a Service Request, upload all of the logs in the $\protect\operatorname{\mathsf{Nopt/oracle/dcs/log}}$ directory.

Patching Log Files

All patching-related information is logged in the dcs-agent log file at /opt/oracle/dcs/log/dcs-agent.log.

DCS Agent Log Directories

Agent-specific activities are logged in the dos-agent log.

The DCS Agent, controller, and command-line interface output appears in the /opt/oracle/dcs/log/dcs-agent.log file.

If an error occurs in the command-line interface layer, then the output will show in the <code>/opt/oracle/dcs/log/dcscli.log</code> file first.

Storage Logs

Storage-related activity is logged in the oakd log file.

/opt/oracle/oak/log/hostname/oak/oakd.log

For example, /opt/oracle/oak/log/myhost/oak/oakd.log

Use the odaadmcli manage diagcollect command to collect diagnostic logs for storage components. The files are saved in the oakdiag log file.

/opt/oracle/oak/log/hostname/oakdiag/file name.tar.gz

For example, /opt/oracle/oak/log/myhost/oakdiag/oakStorage-myhost-20161120_2217.tar.gz

Database Logs

Online logs are stored in the /u03/app/db user/redo/ directory.

Oracle Fast Recovery Area (FRA) is located in the /u03/app/db user/fast_recovery_area directory.

Oracle Auto Service Request (Oracle ASR) Log Files

All log files for Oracle ASR are located in the /var/opt/asrmanager/log/ directory.



A.3 Oracle Groups and User Configurations for Oracle Database Appliance

Review the groups and default users when you use the Web Console to deploy the appliance. All passwords are set to the Master password that you define during deployment.

Default Operating System Groups and User Configurations

Table A-1 Default Operating System Groups and Users Configuration for Oracle Database Appliance

Groups and Users	Default Value
Oracle Grid Infrastructure installation owner	grid, UID 1001
Oracle Database installation owner	oracle, UID 1000
Oracle Database system administrator	sys
Oracle Database generic administrator	system
Oracle Inventory system privileges group	oinstall, GID 1001
Oracle ASM Administrators system privileges	asmadmin, GID 1004
Oracle ASM Users system privileges	asmdba, GID 1006
Oracle ASM Operator system privileges	asmoper, GID 1005
Oracle Database Administrators system privileges	dba, GID 1003
Oracle Database Operator system privileges	dbaoper, GID 1002

Oracle Groups and User Configurations

You can use the Web Console or the odacli create-appliance command and a JSON file to deploy the appliance. The following configurations are supported:

- 2 Users with 6 groups (operating system role separation)
- Single User with 6 groups (no operating system role separation)
- Single user with 2 groups (no operating system role separation)

You can customize groupname, username, and UID.

A.4 System Configuration for Oracle Database Appliance

Review the system configuration for Oracle Database Appliance.

Table A-2 System Configuration for Oracle Database Appliance

Item	Value
Oracle Linux with the Red Hat-compatible kernel	Oracle Linux 6.8 with 4.1.12-94.3.9.el6uek.x86_64



Table A-2 (Cont.) System Configuration for Oracle Database Appliance

Item	Value
Oracle Database release	12.2.0.1.170814, 12.1.0.2.170814 and 11.2.0.4.170814
	Oracle Database Enterprise Edition, Oracle Database Standard Edition 2, Oracle Database Standard Edition 1, Oracle Database Standard Edition
Oracle Enterprise Manager Express 12c (EM Express)	Port 5500 is the first port that is used by EM Express. Each subsequent database configured with EM Express uses the next available port number. For example, port 5501.
	To access Oracle Enterprise Manager, enter the following URL string, where hostname is the name of the Oracle Database Appliance server:
	https://hostname:5500/em
Oracle Enterprise Manager 11.2 database console (EM DB Console)	Port 1158 is the first port that is used by EM DB Console. Each subsequent database configured with EM DB Console uses the next available port number. For example, port 1159.
	To access Oracle Enterprise Manager, enter the following URL string, where hostname is the name of the Oracle Database Appliance server:
	https://hostname:1158/em



B

Storage on Oracle Database Appliance

Review this section to understand Oracle Database Appliance storage architecture and options and how to determine usable storage.

- About Oracle Database File Storage (page B-1)
 Use Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage Management Cluster File System (Oracle ACFS) for database files storage.
- Usable Space on Oracle Database Appliance X7-2S and X7-2M (page B-4)
 Review the table for the approximate amount of usable space for Oracle Database Appliance X7-2S and X7-2M.
- Usable Space on Oracle Database Appliance X7-2-HA (page B-5)
 Review the table for the approximate amount of usable space for high performance or high capacity on Oracle Database Appliance X7-2-HA.

B.1 About Oracle Database File Storage

Use Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage Management Cluster File System (Oracle ACFS) for database files storage.

Database file systems are used exclusively for storing database files, and they include a DATA file system for database data files and a RECO file system for storing archive files and backups. Oracle Database Appliance supports Oracle ACFS and Oracle ASM database file storage. You determine the type of database storage when you create the database.

About Oracle ASM Database Storage

Use Oracle ASM with Oracle Database 12c release 2 (12.2.0.1) and 12c release 1 (12.1.0.2).

With Oracle ASM, database data files are stored in DATA diskgroup. Redo and archive files are in RECO diskgroup.

Reserved storage is the amount of Oracle Automatic Storage Management (Oracle ASM) storage required to maintain redundancy in the event of a disk failure. If you use the reserve storage capacity, then the system continues to run, and it is protected through Oracle ASM mirroring. However, in the event of a second disk failure, the system is then running in a non-protected and degraded mode. In this event, you must replace disks immediately.

About Oracle ACFS Database Storage

Oracle ACFS is supported with Oracle Database 12c release 2 (12.2.0.1), 12c release 1 (12.1.0.2), and Oracle Database 11g release 2 (11.2.0.4). Version 11.2.0.4 databases must use ACFS for storage.



With Oracle ACFS, an Oracle ACFS file system is created from DATA diskgroup for each database to store data files, and an Oracle ACFS file system is created from RECO diskgroup for REDO and fast recovery area for all databases.

Each database created under ACFS has it own mount points, /u02/app/oracle/oradata/dbid. When you delete a database, you should clean up the files.

- Oracle ACFS Mount Points and Storage Space (page B-2)
 Review Oracle ASM Cluster file system (ACFS) mount points for Oracle Database Appliance.
- Displaying Mounted Disk Details (page B-3)
 Use the Oracle Automatic Storage Management 1sdg command to display mounted disk groups and their information for Oracle Database Appliance.

B.1.1 Oracle ACFS Mount Points and Storage Space

Review Oracle ASM Cluster file system (ACFS) mount points for Oracle Database Appliance.

If you select Oracle Automatic Storage Management (Oracle ASM) for database storage when you create a database, then an Oracle ASM Cluster file system (ACFS) is not created. All files are in an Oracle ASM diskgroup.

If you select Oracle ACFS for database storage, then each database has its own Oracle ACFS mount point:

- DATA diskgroup: /u02/app/oracleuser/oradata/db_name
- RECO diskgroup: /u03/app/oracleuser.

With Oracle ACFS, the following are created:

- A 100G ACFS is created from +DATA diskgroup for each database. This Oracle ACFS automatically extends the space on demand.
- A common Oracle ACFS with 25% of +RECO diskgroup is created with auto extension on. This file system is used for fast recovery area and redo logs for all databases.

Table B-1 Oracle ACFS Mount Points and Related Oracle ASM Disk Groups and Volume Information

File System	Oracle ASM Disk Group	Oracle ASM Dynamic Volume	Mount Point
DATA	+DATA	/dev/asm/dat <i>dbname-nnn</i> For example: /dev/asm/	/u02/app/oracleuser/oradata/ dbname
		datodacn-123	For example: /u02/app/example/ oradata/odacn



Table B-1 (Cont.) Oracle ACFS Mount Points and Related Oracle ASM Disk Groups and Volume Information

File System	Oracle ASM Disk Group	Oracle ASM Dynamic Volume	Mount Point
RECO	+RECO	/dev/asm/reco-nn	/u03/app/ <i>oracleuser</i>
			This mount point is shared by all databases for fast_recovery_area and redo logs.
			For fast_recovery_area, the path is: /u03/app/oracleuser/fast_recovery_area/db_name
			For redo logs, the path is: /u03/app/ oracleuser/redo/db_name

Example B-1 Oracle ACFS Storage Space

When the Oracle ACFS file systems are created, they do not initially consume all of the storage in the appliance. Space is preserved for additional repositories, or in some cases, database files stored directly in Oracle ASM. You can check for available storage space in your file systems by running the operating system command df -k as shown in the following example.

# df -k					
Filesystem	1K-blocks	Used	Available	Use%	
Mounted on					
/dev/mapper/VolGroupSys-LogVolRoot	30963708	14203568	15187276	49%	/
tmpfs	65952292	647800	65304492		
1% /dev/shm					
/dev/sda1	495844	43872	426372	10%	/
boot					
/dev/mapper/VolGroupSys-LogVolOpt	61927420	18594420	40187272	32%	/
opt					
/dev/mapper/VolGroupSys-LogVolU01	103212320	49621560	48347880	51%	/
u01					
/dev/asm/reco-62	76546048	1469676	75076372		
2% /u03/app/oracle					
/dev/asm/datrdb2-268	104857600	3872368	100985232		
4% /u02/app/oracle/oradata/rdb2					
/dev/asm/datndb11-268	104857600	247160	104610440		
<pre>1% /u02/app/oracle/oradata/ndb11</pre>					
/dev/asm/datndb12-268	104857600	247160	104610440		
1% /u02/app/oracle/oradata/ndb12					

B.1.2 Displaying Mounted Disk Details

Use the Oracle Automatic Storage Management 1sdg command to display mounted disk groups and their information for Oracle Database Appliance.

To display information about a specific disk group, specify the disk group in the command.

- Log in as a grid user.
- 2. Run the Oracle Automatic Storage Management 1sdg command.



Example B-2 Determining Storage on the DATA Disk Group

B.2 Usable Space on Oracle Database Appliance X7-2S and X7-2M

Review the table for the approximate amount of usable space for Oracle Database Appliance X7-2S and X7-2M.

Oracle Database Appliance X7-2S and X7-2M use 6.4TB NVMe. The usable data capacity varies because it is derived by converting disk hardware terabytes (based on 1 kilobyte equals 1,000 bytes) into software storage terabytes (based on 1 kilobyte equals 1,024 bytes) and splitting the usable capacity into Oracle Automatic Storage Management (Oracle ASM) disk groups.

The estimated usable space is calculated based on the number of drives, where 90% is allocated to data.

Table B-2 Usable Disk Capacity on Oracle Database Appliance X7-2S and X7-2M

Number of Drives (90% allocated to data)	Normal Redundancy	High Redundancy
X7-2S	• DATA: 5.24 TB	Not applicable
2 drives (12.8TB raw storage)	 RECO: 0.58 TB 	
X7-2M	 DATA: 5.24 TB 	Not applicable
2 drives (12.8TB raw storage)	 RECO: 0.58 TB 	
X7-2M	 DATA: 10.48 TB 	• DATA: 5.24 TB
2 drives (12.8TB raw storage)	 RECO: 1.16 TB 	 RECO: 0.58 TB
	 Reservation: 2.91 TB 	 Reservation: 5.82 TB
X7-2M	• DATA: 18.34 TB	 DATA: 10.48 TB
8 drives (51.2TB raw storage)	 RECO: 2.04 TB 	 RECO: 1.16 TB
	 Reservation: 2.91 TB 	 Reservation: 5.82 TB

The Reservation value represents the amount of storage required to maintain full redundancy in case of disk failure.



B.3 Usable Space on Oracle Database Appliance X7-2-HA

Review the table for the approximate amount of usable space for high performance or high capacity on Oracle Database Appliance X7-2-HA.

Usable Space for High Performance

Oracle Database Appliance X7-2-HA use 3.2TB solid state drives (SSDs). The usable data capacity varies because it is derived by converting disk hardware terabytes (based on 1 kilobyte equals 1,000 bytes) into software storage terabytes (based on 1 kilobyte equals 1,024 bytes) and splitting the usable capacity into Oracle Automatic Storage Management (Oracle ASM) disk groups.

The estimated usable space is calculated based on the number of drives, where 90% is allocated to data.

Table B-3 Usable Disk Capacity for High Performance on Oracle Database Appliance X7-2-HA

Number of Drives (90% allocated to data)	Normal Redundancy	High Redundancy
5 drives (16 TB raw storage)	• DATA: 5.24 TB	• DATA: 2.62 TB
	 RECO: 0.58 TB 	 RECO: 0.29 TB
	 REDO: 0.97 TB 	 REDO: 0.97 TB
	 Reservation: 1.5 TB 	Reservation: 3.0 TB
10 drives (32 TB raw storage)	 DATA: 11.79 TB 	• DATA: 6.98 TB
	 RECO: 1.31 TB 	 RECO: 0.78 TB
	 REDO: 0.97 TB 	 REDO: 0.97 TB
	 Reservation: 1.5 TB 	 Reservation: 3.0 TB
15 drives (48 TB raw storage)	• DATA: 18.34 TB	• DATA: 11.35 TB
	 RECO: 2.04 TB 	 RECO: 1.26 TB
	 REDO: 0.97 TB 	 REDO: 0.97 TB
	 Reservation: 1.5 TB 	Reservation: 3.0 TB
20 drives (64 TB raw storage)	 DATA: 24.88 TB 	 DATA: 15.72 TB
	 RECO: 2.76 TB 	 RECO: 1.75 TB
	 REDO: 0.97 TB 	 REDO: 0.97 TB
	 Reservation: 1.5 TB 	Reservation: 3.0 TB
40 drives (128 TB raw storage)	 DATA: 51.08 TB 	• DATA: 33.18 TB
	 RECO: 5.68 TB 	 RECO: 3.69 TB
	 REDO: 1.94 TB 	 REDO: 1.94 TB
	 Reservation: 1.5 TB 	 Reservation: 3.0 TB

The Reservation value represents the amount of storage required to maintain full redundancy in case of disk failure.

The REDO disk group uses 800 GB raw Solid-State Drives or 0.8TB total usable space. The REDO disk group uses high redundancy that provides approximately 0.3TB usable space for database redo logs.



Note:

For an Oracle Database Appliance virtualized platform:

- Nn-CDB databases, the REDO disk group has 50% free disk space.
- CDB databases, an Oracle ASM Cluster file system (ACFS) mount point is created per CDB database, based on the template log file size. If this is a Single Instance (SI) database, then multiply by 3. If the database is an Oracle RAC database, then multiply by 4.

Usable Space for High Capacity

The usable space for high capacity assumes that 90% is allocated to data and that you use external backup.

Table B-4 Usable Disk Capacity for High Capacity on Oracle Database Appliance X7-2-HA

Number of Drives (90% allocated to data)	Normal Redundancy	High Redundancy	
15 drives (150 TB raw storage)	• DATA: 57.30 TB	• DATA: 35.47 TB	
	 RECO: 6.37 TB 	 RECO: 3.94 TB 	
	 REDO: 0.97 TB 	 REDO: 0.97 TB 	
	 Flash: 5.52 TB 	 Flash: 2.61 TB 	
	 Reservation: 4.5 TB 	 Reservation: 9.0 TB 	
30 drives (300 TB raw storage)	• DATA: 118.69 TB	• DATA: 76.40 TB	
	 RECO: 13.19 TB 	 RECO: 8.49 TB 	
	 REDO: 1.94 TB 	 REDO: 1.94 TB 	
	 Flash: 12.50 TB 	 Flash: 7.16 TB 	
	 Reservation: 4.5 TB 	 Reservation: 9.0 TB 	



C

Create Appliance Using JSON File

Review this section to understand the command odacli create-appliance and to see an example JSON file.

- Readme for the Command odacli create-appliance (page C-1)
 If you want to create the appliance outside of the Web Console, then review the readme file for details on how to create a JSON file to use with the command-line interface.
- Example JSON Files to Create a Single Node Appliance with the CLI (page C-2)
 Follow these JSON file examples to create a JSON file to deploy a single node appliance with the command odacli create-appliance.
- Example JSON File to Create a Multi-Node Appliance with the CLI (page C-6) Follow the JSON file example to create a JSON file to deploy a multi-node appliance with the command odacli create-appliance.

C.1 Readme for the Command odacli create-appliance

If you want to create the appliance outside of the Web Console, then review the readme file for details on how to create a JSON file to use with the command-line interface.

You can use the command odacli create-appliance and a JSON file that includes your appliance configuration settings to deploy the appliance instead of using the Web Console.



It is important to review the readme and the examples carefully before creating your JSON file. If you do not enter your network and Oracle ILOM information correctly based on your setup, you will lose network access to both the host and Oracle ILOM.

Readme

The readme is located in the <code>/opt/oracle/dcs/sample</code> directory. Review the readme carefully along with the provided JSON example files. Create a JSON file with the necessary changes based on your environment and requirements.

C.2 Example JSON Files to Create a Single Node Appliance with the CLI

Follow these JSON file examples to create a JSON file to deploy a single node appliance with the command odacli create-appliance.

Use the example JSON files and the information located in the readme as a template to create a file for your environment. Examples and the readme are located in the /opt/oracle/dcs/sample directory.



If you do not enter your network and Oracle ILOM information correctly based on your setup, then network access is lost to both the host and Oracle ILOM.

When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

Example C-1 JSON File to Create a Single Node Oracle Database Appliance with Role Separation

The following is an example of a JSON file that creates a single node appliance on Oracle Database Appliance X7-2S or X7-2M. The example uses role separation.

```
"instance" : {
 "name" : "odambox",
 "instanceBaseName" : "odambox-c",
 "dbEdition" : "EE",
 "timeZone" : "UTC",
 "ntpServers" : ["10.0.3.14"],
 "dnsServers" : ["10.0.4.10","10.0.4.11","10.0.4.12"],
 "domainName" : "example.com",
 "isRoleSeparated" : true,
  "osUserGroup" : {
    "groups" : [ {
      "groupId" : 1001,
      "groupName" : "oinstall",
      "groupRole" : "oinstall"
      "groupId" : 1002,
      "groupName" : "dbaoper",
      "groupRole" : "dbaoper"
      "groupId" : 1003,
      "groupName" : "dba",
      "groupRole" : "dba"
      "groupId" : 1004,
      "groupName" : "asmadmin",
      "groupRole" : "asmadmin"
      "groupId" : 1005,
      "groupName" : "asmoper",
      "groupRole" : "asmoper"
```



```
}, {
      "groupId" : 1006,
      "groupName" : "asmdba",
      "groupRole" : "asmdba"
    } ],
    "users" : [ {
      "userId" : 1000,
      "userName" : "oracle",
      "userRole" : "oracleUser"
      "userId" : 1001,
      "userName" : "grid",
      "userRole" : "gridUser"
   } ]
},
"nodes" : [ {
 "nodeNumber" : "0",
  "nodeName" : "odambox",
  "network" : [ {
    "nicName" : "btbond1",
     "ipAddress" : "10.0.1.11",
     "subNetMask" : "255.255.240.0",
     "gateway" : "10.0.0.1",
     "networkType" : [ "Public" ],
     "isDefaultNetwork" : true
   },
  ],
  "ilom" : {
   "ilomName": "odambox-c",
    "ipAddress":"10.0.2.10",
    "subNetMask": "255.255.240.0",
    "gateway":"10.0.0.1"
} ],
"grid" : {
  "diskGroup" : [ {
    "diskGroupName" : "DATA",
    "redundancy" : "NORMAL",
    "diskPercentage" :80
    "diskGroupName" : "RECO",
    "redundancy" : "NORMAL",
    "diskPercentage" :20
 } ],
"scan" : {
   "scanName": "odambox-scan",
   "ipAddresses":[
  "10.0.1.11"
  ]
  },
"vip":[
  "nodeNumber":"0",
  "vipName": "odambox-vip",
  "ipAddress":"10.0.1.11"
  ],
  "language" : "en",
  "enableAFD": "TRUE"
},
```

```
"database" : {
  "dbName" : "myTestDb",
  "databaseUniqueName": "myTestDb_sealkj",
  "dbEdition" : "EE",
  "dbVersion" : "12.2.0.1",
 "dbHomeId":null,
  "instanceOnly" : false,
  "isCdb" : true,
  "pdBName" : "pdb1",
  "pdbAdminuserName" : "pdbuser",
  "enableTDE":true,
  "adminPassword" : "password",
  "dbType" : "SI",
  "dbTargetNodeNumber" : null,
  "dbClass" : "OLTP",
  "dbShape" : "odb1",
  "dbStorage" : "ACFS",
  "dbCharacterSet" : {
   "characterSet" : "AL32UTF8",
   "nlsCharacterset" : "AL16UTF16",
   "dbTerritory" : "AMERICA",
   "dbLanguage" : "AMERICAN"
  },
  "dbConsoleEnable" : false,
  "backupConfigId":null,
  "rmanBkupPassword": null
},
"asr" :{
  "asrType": "INTERNAL",
  "userName": "john.smith@example.com",
  "password": "password",
  "proxyServerName": "www-proxy.example.com",
  "proxyPort": "80",
  "proxyUserName": "proxy-user",
  "proxyPassword": "proxy-password",
  "snmpVersion": "v2"
```

Example C-2 JSON File to Create a Single Node Oracle Database Appliance without Role Separation

The following is an example of a JSON file that creates an Oracle Database Appliance without using role separation. This example creates two groups (oinstall and dba) and one user ("oracle").



```
}, {
      "groupId" : 1002,
      "groupName" : "dba",
      "groupRole" : "dba"
   } ],
   "users" : [ {
      "userId" : 1000,
      "userName" : "oracle",
      "userRole" : "oracleUser"
"nodes" : [ {
 "nodeNumber" : "0",
 "nodeName" : "odambox",
 "network" : [ {
    "nicName" : "btbond1",
    "ipAddress" : "10.0.1.11",
    "subNetMask" : "255.255.240.0",
    "gateway" : "10.0.0.1",
    "networkType" : [ "Public" ],
    "isDefaultNetwork" : true
   },
 ],
 "ilom" : {
   "ilomName": "odambox-c",
    "ipAddress":"10.0.2.10",
   "subNetMask":"255.255.240.0",
    "gateway":"10.0.0.1"
} ],
"grid" : {
 "diskGroup" : [ {
    "diskGroupName" : "DATA",
    "redundancy" : "NORMAL",
    "diskPercentage" :80
    "diskGroupName" : "RECO",
    "redundancy" : "NORMAL",
   "diskPercentage" :20
 } ],
"scan" : {
  "scanName": "odambox-scan",
  "ipAddresses":[
 "10.0.1.11"
  ]
 },
"vip":[
 "nodeNumber":"0",
 "vipName": "odambox-vip",
 "ipAddress":"10.0.1.11"
 "language" : "en",
 "enableAFD": "TRUE"
"database" : {
 "dbName" : "myTestDb",
 "databaseUniqueName": "myTestDb_sea1kj",
 "dbEdition" : "EE",
```

```
"dbVersion" : "12.2.0.1",
 "dbHomeId":null,
 "instanceOnly" : false,
 "isCdb" : true,
 "pdBName" : "pdb1",
 "pdbAdminuserName" : "pdbuser",
 "enableTDE":true,
 "adminPassword" : "password",
 "dbType" : "SI",
 "dbTargetNodeNumber" : null,
 "dbClass" : "OLTP",
 "dbShape" : "odb1",
  "dbStorage" : "ACFS",
  "dbCharacterSet" : {
   "characterSet" : "AL32UTF8",
   "nlsCharacterset" : "AL16UTF16",
   "dbTerritory" : "AMERICA",
   "dbLanguage" : "AMERICAN"
 "dbConsoleEnable" : false,
 "backupConfigId":null,
 "rmanBkupPassword": null
},
"asr" :{
 "asrType": "INTERNAL",
 "userName": "john.smith@example.com",
 "password": "password",
 "proxyServerName": "www-proxy.example.com",
 "proxyPort":"80",
  "proxyUserName": "proxy-user",
  "proxyPassword": "proxy-password",
  "snmpVersion": "v2"
```

C.3 Example JSON File to Create a Multi-Node Appliance with the CLI

Follow the JSON file example to create a JSON file to deploy a multi-node appliance with the command odacli create-appliance.

Use the example JSON files and the information located in the readme as a template to create a file for your environment. Examples and the readme are located in the /opt/oracle/dcs/sample directory.

Note:

It is important to review the readme and the examples carefully before creating your JSON file. If you do not enter your network and Oracle ILOM information correctly based on your setup, then network access is lost to both the host and Oracle ILOM.



Example C-3 JSON File to Create a Multi-Node Oracle Database Appliance with Role Separation

The following is an example of a JSON file that creates a multi-node appliance on Oracle Database Appliance X7-2-HA bare metal platform. The example uses role separation. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
"instance":{
   "name": "odahabox",
   "instanceBaseName": "odahabox",
   "dbEdition": "EE",
   "timeZone": "UTC",
   "ntpServers" : ["10.0.3.14"],
   "dnsServers" : ["10.0.4.10","10.0.4.11","10.0.4.12"],
   "domainName": "example.com",
   "isRoleSeparated":true,
   "osUserGroup":{
      groups:[
             "groupId":1001,
             "groupName": "oinstall",
             "groupRole": "oinstall"
             "groupId":1002,
             "groupName": "dbaoper",
             "groupRole": "dbaoper"
             "groupId":1003,
            "groupName": "dba",
             "groupRole":"dba"
             "groupId":1004,
             "groupName": "asmadmin",
             "groupRole": "asmadmin"
             "groupId":1005,
             "groupName": "asmoper",
             "groupRole": "asmoper"
             "groupId":1006,
             "groupName": "asmdba",
             "groupRole": "asmdba"
      ],
      "users":[
            "userId":101,
            "userName": "grid",
            "userRole": "gridUser"
            "userId":102,
            "userName": "oracle",
             "userRole": "oracleUser"
```



```
]
   },
   "objectStoreCredentials":null
},
"nodes":[
   {
      "nodeNumber":"0",
      "nodeName": "odahaboxc1n2",
      "network":[
             "nicName": "btbond1",
             "ipAddress": "10.31.98.133",
             "subNetMask": "255.255.240.0",
             "gateway": "10.31.96.1",
             "networkType":[
                "Public"
            ],
             "isDefaultNetwork":true
      ],
      "ilom":{
         "ilomName": "odahabox2-c",
         "ipAddress":"10.31.16.140",
         "subNetMask": "255.255.240.0",
         "gateway":"10.31.16.1"
      "nodeNumber": "1",
      "nodeName": "odahaboxc1n1",
      "network":[
             "nicName": "btbond1",
             "ipAddress": "10.31.98.132",
             "subNetMask": "255.255.240.0",
             "gateway": "10.31.96.1",
             "networkType":[
                "Public"
            ],
             "isDefaultNetwork":true
      ],
      "ilom":{
         "ilomName": "odahabox1-c",
         "ipAddress":"10.31.16.139",
         "subNetMask": "255.255.240.0",
         "gateway": "10.31.16.1"
   }
],
"grid":{
   "diskGroup":[
         "diskGroupName": "DATA",
         "redundancy": "HIGH",
         "diskPercentage":80
         "diskGroupName": "RECO",
         "redundancy": "HIGH",
```

```
"diskPercentage":20
         "diskGroupName": "REDO",
         "redundancy": "HIGH",
         "diskPercentage":null
   ],
   "scan":{
      "scanName": "odahaboxc1-scan",
      "ipAddresses":[
         "10.31.98.182",
         "10.31.98.183"
   },
   "vip":[
         "nodeNumber": "0",
         "vipName": "odahaboxc1n2-vip",
         "ipAddress":"10.31.98.159"
         "nodeNumber": "1",
         "vipName": "odahaboxcln1-vip",
         "ipAddress": "10.31.98.158"
   ],
   "language":"en",
   "enableAFD":"TRUE"
"database":{
   "dbName": "myTestDb",
   "databaseUniqueName": "myTestDb_sea1kj",
   "dbVersion": "12.2.0.1",
   "dbHomeId":null,
   "instanceOnly":false,
   "isCdb":true,
   "pdBName": "pdb1",
   "pdbAdminuserName": "pdbuser",
   "enableTDE":true,
   "adminPassword": "password",
   "dbType": "RAC",
   "dbTargetNodeNumber":null,
   "dbClass": "OLTP",
   "dbShape": "odb1",
   "dbStorage": "ACFS",
   "dbCharacterSet":{
      "characterSet": "AL32UTF8",
      "nlsCharacterset": "AL16UTF16",
      "dbTerritory": "AMERICA",
      "dbLanguage": "AMERICAN"
   "dbConsoleEnable":false,
   "backupConfigId":null
"asr":null
```



D

Oracle Database Appliance Cleanup Script

Use the cleanup deploy script tool to perform clean up tasks.

Use the Oracle Database Appliance cleanup deploy script, cleanup.pl for the following activities:

- Uninstall Oracle Auto Service Request (Oracle ASR)
- Uninstall Oracle Trace File Analyzer (TFA)
- Delete Oracle Database Console (dbconsole) files
- Uninstall GI and Oracle stack
- Reset the Oracle Linux udev rules
- Delete Oracle Linux udev rules
- Delete users and groups that were created when the appliance was created. For default users and groups, use the DROP USER statement. If you used a custom user name and group name when you deployed the appliance, use -griduser, -dbuser, -groups arguments to pass to the cleanup.pl script.

The script removes the firstnet config and the client access VLAN UNIX_DB, but does not delete any other VLANs.

File Path

\$ORACLE HOME/opt/oracle/oak/onecmd/

Syntax

./cleanup.pl [-griduser $grid_user$] [-dbuser db_user] [-groups comma separated list of groups]

Parameters

Parameter	Description
-griduser <i>grid_user</i>	Defines the grid user name. The default user is grid.
-dbuser <i>db_user</i>	Defines the database user name. The default user is oracle.
-groups comma separated list of groups	Lists the groups in a comma separated list. The default groups are oinstall, dba, asmadmin, asmoper, asmdba.

Usage

When the $grid_user$ and db_user are the same (roleSeparation=false), you must still run the script for each user.

As part of the cleanup script, any disabled CPU cores are reset and all of the cores are re-enabled.



Example D-1 Cleanup Script to Delete the Grid and Database Users

Run the following command to delete the grid user and database user when both are named oracle:

- # ./cleanup.pl -griduser oracle -dbuser oracle
- Cleanup Script for a Virtualized Platform Deployment (page D-2)
 If you encounter problems with a Virtualized Platform deployment, clean up the existing deployment before starting a new ODA BASE deployment.

D.1 Cleanup Script for a Virtualized Platform Deployment

If you encounter problems with a Virtualized Platform deployment, clean up the existing deployment before starting a new ODA BASE deployment.

For Oracle Database Appliance X7-2 models, only use this cleanup deploy script tool to clean up a Virtualized Platform deployment on Oracle Database Appliance X7-2-HA.

The script removes the initial network configuration (firstnet config) and the client access VLAN UNIX_DB, but does not delete any other VLANs. The script also resets any disabled CPU cores and enables all of the cores.

Run the following command from ${\tt dom0}$ on Node 0 to remove ODA_BASE and the initial network configuration.

/opt/oracle/oak/tools/cleanOdabase.py



Е

Database Shapes for Oracle Database Appliance

Use the information in this appendix to select database shapes, or templates, for your planned databases.

- About Database Shapes and Classes (page E-1)
 Review this information to help determine the database shape (also known as a database template) and class to use based on the common workload your databases perform.
- Database Shapes for the OLTP Class (page E-2)
 Use Oracle Database Appliance OLTP Database Shapes if your database workload is primarily online transaction processing (OLTP).
- Database Shapes for the In-Memory Class (page E-4)
 Use Oracle Database Appliance In-Memory (IMDB) database shapes if your database workload can fit in memory, and can benefit from in-memory performance capabilities.
- Database Shapes for the DSS Class (page E-5)
 Use DSS database shapes if your database workload is primarily decision support services (DSS) or data warehousing.

E.1 About Database Shapes and Classes

Review this information to help determine the database shape (also known as a database template) and class to use based on the common workload your databases perform.

Oracle Database Appliance shapes define databases with parameters selected specifically to optimize performance on Oracle Database Appliance. In addition, these shapes help you to set up appropriate instance caging and to acquire an appropriate license.

Oracle Database Appliance enables you to consolidate many databases into a single system. Consolidation can minimize idle resources, maximize efficiency, and lower costs. By using instance caging in conjunction with Oracle Database Resource Manager (the Resource Manager), you can provide desired levels of service across multiple instances on a single Oracle Database Appliance.

Oracle Database Appliance shapes are already tuned for the size of each database instance workload. They are designed to run on a specific number of cores. Caging ensures that each database workload is restricted to the set of cores allocated by the shape, enabling multiple databases to run concurrently with no performance degradation, up to the capacity of Oracle Database Appliance. You can select database shape sizes larger than your current needs to provide for planned growth, which you accommodate later by adjusting System Global Area (SGA) and Program Global Area (PGA) sizes as well as the number of cores.

Note:

Oracle strongly recommends that you use the Oracle Database Appliance shapes, because they implement best practices and are configured specifically for Oracle Database Appliance.

Choosing a Database Shape

Database shapes are configured specifically for the type of database workload that you want to carry out on your databases on Oracle Database Appliance. Choose the shape that best matches the common workload your databases perform (OLTP, DSS, In-Memory).

The database sizing tables provide shape names and sizing based on the number of CPUs and memory attributes for each type of database workload.

Identify the shape type that is appropriate to your database workload and hardware:

- Use Oracle Database Appliance OLTP Database Shapes if your database workload is primarily online transaction processing (OLTP).
- Use Oracle Database Appliance DSS database shapes if your database workload is primarily decision support services (DSS) or data warehousing.
- Use Oracle Database Appliance In-Memory (IMDB) database shapes if your database workload can fit in memory, and can benefit from in-memory performance capabilities.

Use the database shape tables to help select the best shapes for your databases. When using these tables remember the following:

- The information in the tables assumes that you are creating local disk backups.
 Consider the space requirements for your database and the policy for local disk backups versus external backups. Typically, external backups have more space available for the database than local backups.
- The log file size assumes three (3) REDO log groups for each instance with a log switch every 15 minutes when the system is running at full capacity.

E.2 Database Shapes for the OLTP Class

Use Oracle Database Appliance OLTP Database Shapes if your database workload is primarily online transaction processing (OLTP).

The table lists the online transaction processing (OLTP) database shape sizes for Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA.

The information in the table assumes the following:

- You are creating local disk backups. Consider the space requirements for your database and the policy for local disk backups versus external backups. Typically, external backups have more space available for the database than local backups.
- The log file size assumes three (3) REDO log groups for each instance with a log switch every 15 minutes when the system is running at full capacity.



Table E-1 Oracle Database Appliance X7-2S OLTP Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	200	4	32
odb1	1	4	2	200	4	32
odb2	2	8	4	400	4	32
odb4	4	16	8	800	4	64
odb6	6	24	12	1200	8	128
odb08	8	32	16	1600	8	128
odb10	10	40	20	2000	8	128

Table E-2 Oracle Database Appliance X7-2M OLTP Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	200	4	32
odb1	1	4	2	200	4	32
odb2	2	8	4	400	4	32
odb4	4	16	8	800	4	64
odb6	6	24	12	1200	8	128
odb08	8	32	16	1600	8	128
odb10	10	40	20	2000	8	128
odb12	12	48	24	2400	16	128
odb16	16	64	32	3200	16	128
odb20	20	80	40	4000	16	128
odb24	24	96	48	4800	16	128
odb28	28	112	56	5600	16	128
odb32	32	144	64	6400	16	128
odb36	36	128	72	7200	16	128

Table E-3 Oracle Database Appliance X7-2-HA OLTP Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Flashcache (GB/node)	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	200	6	4	32
odb1	1	4	2	200	12	4	32
odb2	2	8	4	400	24	4	32
odb4	4	16	8	800	48	4	64
odb6	6	24	12	1200	72	8	128
odb08	8	32	16	1600	96	8	128



Table E-3 (Cont.) Oracle Database Appliance X7-2-HA OLTP Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Flashcache (GB/node)	Redo log file size (GB)	Log buffer (MB)
odb10	10	40	20	2000	120	8	128
odb12	12	48	24	2400	144	16	128
odb16	16	64	32	3200	192	16	128
odb20	20	80	40	4000	240	16	128
odb24	24	96	48	4800	288	16	128
odb28	28	112	56	5600	336	16	128
odb32	32	144	64	6400	384	16	128
odb36	36	128	72	7200	432	16	128

E.3 Database Shapes for the In-Memory Class

Use Oracle Database Appliance In-Memory (IMDB) database shapes if your database workload can fit in memory, and can benefit from in-memory performance capabilities.

The table lists the In-Memory database shape sizes for Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA.

The information in the table assumes the following:

- You are creating local disk backups. Consider the space requirements for your database and the policy for local disk backups versus external backups. Typically, external backups have more space available for the database than local backups.
- The log file size assumes three (3) REDO log groups for each instance with a log switch every 15 minutes when the system is running at full capacity.

Table E-4 Oracle Database Appliance X7-2S In-Memory Database Shapes

odb1s 1 2 1 1 200 4 32 odb1 1 4 2 2 200 4 32 odb2 2 8 4 4 400 4 32 odb4 4 16 8 8 800 4 64 odb6 6 24 12 12 1200 8 128 odb08 8 32 16 16 1600 8 128 odb10 10 40 30 30 3000 8 138	Shape	CPU Cores	SGA (GB)	PGA (GB)	In-Memory (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb2 2 8 4 4 400 4 32 odb4 4 16 8 8 800 4 64 odb6 6 24 12 12 1200 8 128 odb08 8 32 16 16 1600 8 128	odb1s	1	2	1	1	200	4	32
odb4 4 16 8 8 800 4 64 odb6 6 24 12 12 1200 8 128 odb08 8 32 16 16 1600 8 128	odb1	1	4	2	2	200	4	32
odb6 6 24 12 12 1200 8 128 odb08 8 32 16 16 1600 8 128	odb2	2	8	4	4	400	4	32
odb08 8 32 16 16 1600 8 128	odb4	4	16	8	8	800	4	64
	odb6	6	24	12	12	1200	8	128
odb10 10 40 20 20 2000 8 128	odb08	8	32	16	16	1600	8	128
0db10 10 40 20 20 2000 0 120	odb10	10	40	20	20	2000	8	128



Table E-5 Oracle Database Appliance X7-2M and X7- 2-HA In-Memory Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	In-Memory (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	1	200	4	32
odb1	1	4	2	2	200	4	32
odb2	2	8	4	4	400	4	32
odb4	4	16	8	8	800	4	64
odb6	6	24	12	12	1200	8	128
odb08	8	32	16	16	1600	8	128
odb10	10	40	20	20	2000	8	128
odb12	12	48	24	24	2400	16	128
odb16	16	64	32	32	3200	16	128
odb20	20	80	40	42	4000	16	128
odb24	24	96	48	48	4800	16	128
odb28	28	112	56	56	5600	16	128
odb32	32	128	64	64	6400	16	128
odb36	36	144	72	72	7200	16	128

E.4 Database Shapes for the DSS Class

Use DSS database shapes if your database workload is primarily decision support services (DSS) or data warehousing.

The table lists the DSS database shape sizes for Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA.

The information in the table assumes the following:

- You are creating local disk backups. Consider the space requirements for your database and the policy for local disk backups versus external backups. Typically, external backups have more space available for the database than local backups.
- The log file size assumes three (3) REDO log groups for each instance with a log switch every 15 minutes when the system is running at full capacity.

Table E-6 Oracle Database Appliance X7-2S DSS Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	1	2	200	4	32
odb1	1	2	4	200	4	32
odb2	2	4	8	400	4	32
odb4	4	8	16	800	4	64
odb6	6	12	24	1200	8	128
odb08	8	16	32	1600	8	128



Table E-6 (Cont.) Oracle Database Appliance X7-2S DSS Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb10	10	20	40	2000	8	128

Table E-7 Oracle Database Appliance X7-2M and X7-2-HA DSS Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	1	2	200	4	32
odb1	1	2	4	200	4	32
odb2	2	4	8	400	4	32
odb4	4	8	16	800	4	64
odb6	6	12	24	1200	8	128
odb08	8	16	32	1600	8	128
odb10	10	20	40	2000	8	128
odb12	12	24	48	2400	16	128
odb16	16	32	64	3200	16	128
odb20)	20	40	80	4000	16	128
odb24	24	48	96	4800	16	128
odb28	28	56	112	5600	16	128
odb32	32	64	128	6400	16	128
odb36	36	72	144	7200	16	128



Glossary

Backup location

Determine the backup location you want: External, Internal, or Custom.

Bare metal

A non-virtualized Oracle Database Appliance configuration.

Data Storage Percentage

Defines the percentage of storage assigned to DATA. The remainder is applied to RECO.

Oracle Database Edition

Oracle Database Appliance supports Oracle Database Enterprise Edition and Standard Edition. You cannot mix editions. The database edition you select determines the database editions that you create in the appliance. To change editions, you must redeploy Oracle Database Appliance.

EM Express

If you choose the option when you deploy Oracle Database Appliance, you can use the Oracle Enterprise Manager Database Express (EM Express) console for Oracle Database 12.1.0.2 or the Database Control Console for Oracle Database 11.2.0.4 to manage the database. See Oracle Enterprise Manager Cloud Control documentation for more information about the console.

Master Password

During system configuration, the master password is the password set for UNIX users, oracle, and grid. The password is also used to set the database SYS and SYSTEM passwords and the root password of the system.

Oracle Appliance Manager

The Oracle Database Appliance Web Console. Use the Web Console to deploy Oracle Database Appliance and create databases.

Oracle Database Appliance Operating System Image

Contains the components typically installed and available on Oracle Database Appliance. The following components are typically included:

- Oracle Appliance Manager command-line interface
- Oracle Appliance Manager (Web Console)



- Oracle Linux
- Hardware drivers

Oracle RAC One Node

Oracle Real Application Clusters (RAC) One Node is an always online single instance of an Oracle RAC enabled database running on one node in a cluster. Oracle RAC One Node provides protection from unplanned failures, as well as eliminates common causes of planned downtime for maintenance operations.

Support Identifier (SI)

A hardware Support Identifier (SI) is supplied when you purchase Oracle Database Appliance. To obtain software and support from Oracle, you must register the SI with My Oracle Support.



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