

# Oracle® Database Appliance

## X7-2 Deployment and User's Guide



Release 12.2.1.3.0 for Linux x86-64

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

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Oracle Database Appliance X7-2 Deployment and User's Guide, Release 12.2.1.3.0 for Linux x86-64

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Primary Author: Laura Hartman

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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 xvii)
- [Documentation Accessibility](#) (page xvii)
- [Related Documents](#) (page xviii)
- [Conventions](#) (page xix)

## 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](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/](https://docs.oracle.com/cd/E37444_01/).

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

## Conventions

The following text conventions are used in this document:

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

# 1

## 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 deploy and manage the appliance, databases, networks, and jobs.
- [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.

 **Note:**

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 and 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: <ul style="list-style-type: none"> <li>• Oracle Database Appliance Manager oakcli command-line interface</li> <li>• Oracle Database Appliance Manager Configurator</li> <li>• Oracle Linux</li> <li>• Hardware drivers</li> </ul> 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: <ul style="list-style-type: none"> <li>• Oracle Virtual Machine template</li> <li>• Oracle Database clone binaries</li> <li>• Oracle Database templates, customized for Oracle Database Appliance deployments</li> <li>• Oracle Grid Infrastructure clone binaries</li> </ul> Required for Virtualized Platform deployments on multi-node HA systems.

**Note:**

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.

- e. 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.
  - f. Plumb the network.
3. Install and deploy software on Oracle Database Appliance.
  - a. 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 deploy and manage the appliance, databases, networks, and jobs.

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 quickly view and perform many of the tasks needed to manage your system.

Use the links in the side navigation to view and manage the following:

- **Appliance**
  - Appliance information
  - System information
  - Disk group information
- **Network**
  - View network details
  - Create, update, and delete networks
  - View interface details
- **Oracle ASR**
  - View Oracle Auto Service Request (Oracle ASR) configuration details
  - Configure, update, test, and delete Oracle ASR
- **Patch Manager**
  - Update the patch repository with Oracle Database Appliance patches
  - View component details of the patch and versions that are installed on the appliance
  - View component details of the patch and versions that are available, but not yet installed, on the appliance
  - Run patch prechecks before applying the patch
  - Update the server and storage components

Use the links in the top navigation to view and manage the following:

- **Database**
  - Create a database
  - View database details
  - Apply a backup policy for the database
  - Create a manual backup
  - Recover a database from a backup
  - View and update the database backup schedule and update the archive log backup schedule for the database
  - Create, update, and delete backup policies
  - Create, update, and delete database homes
  - Create and delete database homes
  - Patch database homes
- **Object Store**
  - Create Object Store Credentials for backup and recovery

- View the details for Object Store Credentials, including the endpoint URL, user name, and tenant
- Update and delete Object Store Credentials
- Configure and enable Oracle Auto Service Request (Oracle ASR)
- **Activity**
  - View a list of jobs, details, and status
  - Click a job description to view job details

### Update ILOM and User Settings

Expand **About** in the upper right corner of the Web Console to perform the following tasks:

- Click **About** to view the Oracle Database Appliance release that is installed on the appliance.
- Click **Update ILOM Setting** to change the root password. To enable first-time login and access to Oracle ILOM, a default Administrator (root) account and its password are provided with the system.
- Click **Update User Settings** to change the `oda-admin` password.
- Click **Sign Out** to sign out of the Web Console. If you do not sign out, the system automatically signs you out after a period of inactivity. A warning will appear 2 minutes before the session expires.

## 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: *password*

3. 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.



**Provisioning service creation**

**ID:** d88c1f5f-b088-4dba-acf7-92a9f83c9369

**Created:** Thu Feb 02 2017 3:35:02 AM

**Message:** Fail torun root scripts :

**Status:** Failure

Page 4 of 4 (16-20 of 20 items) | K < 1 2 3 4 > X

Cloning Gi home	<b>Start Time:</b> Thu Feb 02 2017 3:41:21 AM	<b>End Time:</b> Thu Feb 02 2017 3:44:39 AM	<b>Status:</b> Success
Updating GiHome version	<b>Start Time:</b> Thu Feb 02 2017 3:44:39 AM	<b>End Time:</b> Thu Feb 02 2017 3:44:43 AM	<b>Status:</b> Success
Grid stack creation	<b>Start Time:</b> Thu Feb 02 2017 3:44:43 AM	<b>End Time:</b> Thu Feb 02 2017 3:51:40 AM	<b>Status:</b> Failure

# 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 2-14)  
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.

 **Note:**

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.

Without role separation, a single user owns all of the Oracle installations. All of the databases are installed under a single user. Role separation 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 can Oracle Database Enterprise Edition and Standard Edition databases on the same appliance, subject to Oracle Database support requirements and your licensing.

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.x 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 supports Oracle RAC and RAC One.

- **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.



### Note:

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 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.

 **Note:**

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



### Related Topics

- [Usable Space on Oracle Database Appliance X7-2S and X7-2M](#) (page B-5)  
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-6)  
Review the table for the approximate amount of usable space for high performance or high capacity on Oracle Database Appliance X7-2-HA.
- [Usable Free Space with Oracle ASM](#) (page B-7)  
When Oracle ASM calculates usable Free Space, it determines the amount of space to reserve in the case of a disk failure.

## 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 `/etc/hosts` 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) PCIe 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 `/etc/hosts` 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: <b>Normal</b> redundancy (two way mirror) or <b>High</b> 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 pdbadm. 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: <ul style="list-style-type: none"> <li>• IP address</li> <li>• Subnet Mask</li> <li>• Gateway</li> </ul>
Network Information for the Oracle Integrated Lights Out Manager (ILOM) network	(Optional) Obtain the following ILOM network information: <ul style="list-style-type: none"> <li>• ILOM host name</li> <li>• ILOM address</li> <li>• Subnet mask</li> <li>• Gateway</li> </ul>
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: <ul style="list-style-type: none"> <li>• Database name</li> <li>• Database unique name</li> <li>• Database version (based on the database clones that are registered with the Oracle Database Appliance): <ul style="list-style-type: none"> <li>– 12.2.0.1</li> <li>– 12.1.0.2</li> <li>– 11.2.0.4</li> </ul> </li> <li>• Determine the Oracle Database edition licensing that you have, either Enterprise Edition or Standard Edition. You cannot mix editions.</li> <li>• Container database, or not</li> <li>• Shape (for example: odb1 or odb2)</li> <li>• Class (database template): <ul style="list-style-type: none"> <li>– Enterprise Edition, 12c: OLTP, DSS, or IMDB</li> <li>– Enterprise Edition, 11g: OLTP or DSS</li> <li>– Standard Edition: OLTP</li> </ul> </li> <li>• Database character set</li> <li>• Database language</li> <li>• Storage (Oracle ASM or Oracle ACFS). All version 11.2.0.4 databases are provisioned on top of Oracle ACFS.</li> <li>• Configure Oracle Enterprise Manager console. If you are using Enterprise Manager Cloud Control with this appliance, do not choose this option.</li> </ul>
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 Address Configuration

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

### Note:

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 `odacli update-network` command 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**

Type of IP	IP Address Default Values	Your Values As Applicable
Client Access Network	No default	No default
Additional Network	No default	No default
Oracle Integrated Lights Out Manager (ILOM)	No default	No default
Host Private Addresses	192.168.16.24	Not applicable: the private addresses are defined before deployment and should not be changed

## 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 2-14)  
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 2-15)  
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.

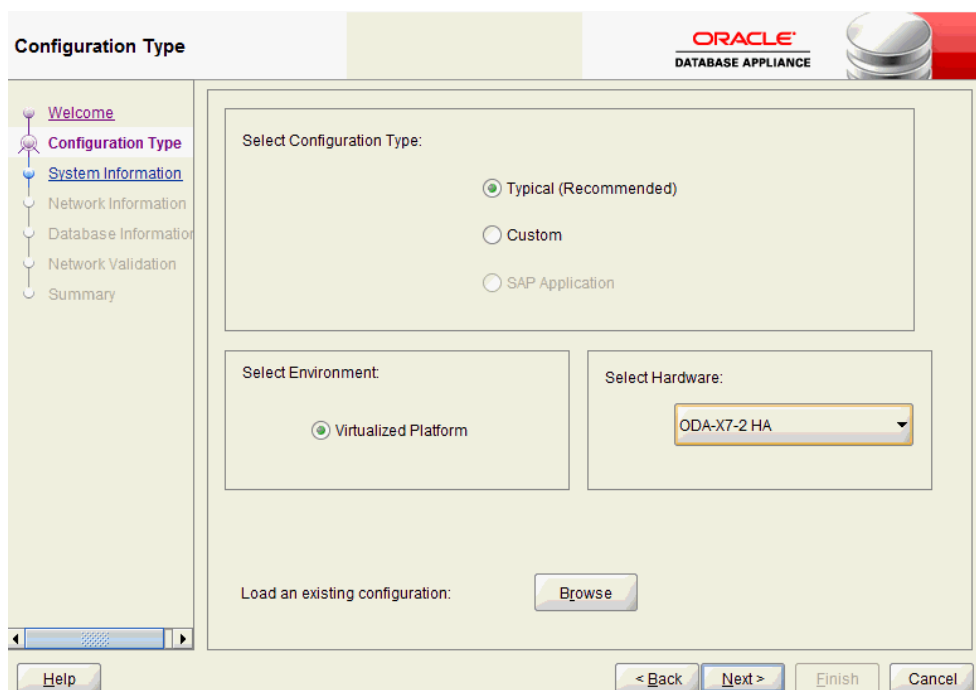
The steps described here enable you to create a typical virtualized platform configuration file.

1. 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.
  - c. 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.
2. 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**.
  3. 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.

The screenshot shows the 'System Information' page of the Oracle Database Appliance Configuration Wizard. The left sidebar contains a navigation menu with the following items: Welcome, Configuration Type, System Information (highlighted), Network Information, Database Information, Network Validation, and Summary. The main content area contains the following fields:

- System Name: MySystem
- Region: America
- Timezone: America/Los\_Angeles
- New Root Password: [masked]
- New Root Password(confirm): [masked]
- Accelerator Disk Group: REDO

At the bottom of the page, there are buttons for Help, < Back, Next >, Finish, and Cancel.

- 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**.

The screenshot shows the 'Network Information' page of the Oracle Database Appliance Configuration Wizard. The left sidebar contains a navigation menu with the following items: Welcome, Configuration Type, System Information, Network Information (highlighted), Database Information, Network Validation, and Summary. The main content area contains the following fields:

- Domain Name: mydomain.example.com
- DNS Servers: 190.0.2.2, 190.0.2.3, 190.0.2.4

	Node0-Name	Node0-IP	Node1-Name	Node1-IP
Public	MySystem0	192.0.2.18	MySystem1	192.0.2.19
VIP	MySystem0-vip	192.0.2.20	MySystem1-vip	192.0.2.21
SCAN	MySystem-scan	Addresses	192.0.2.22	192.0.2.23
Netmask	255.255.252.0	Gateway	192.0.0.1	

At the bottom of the page, there are buttons for Help, < Back, Next >, Finish, and Cancel.

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.

7. 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.

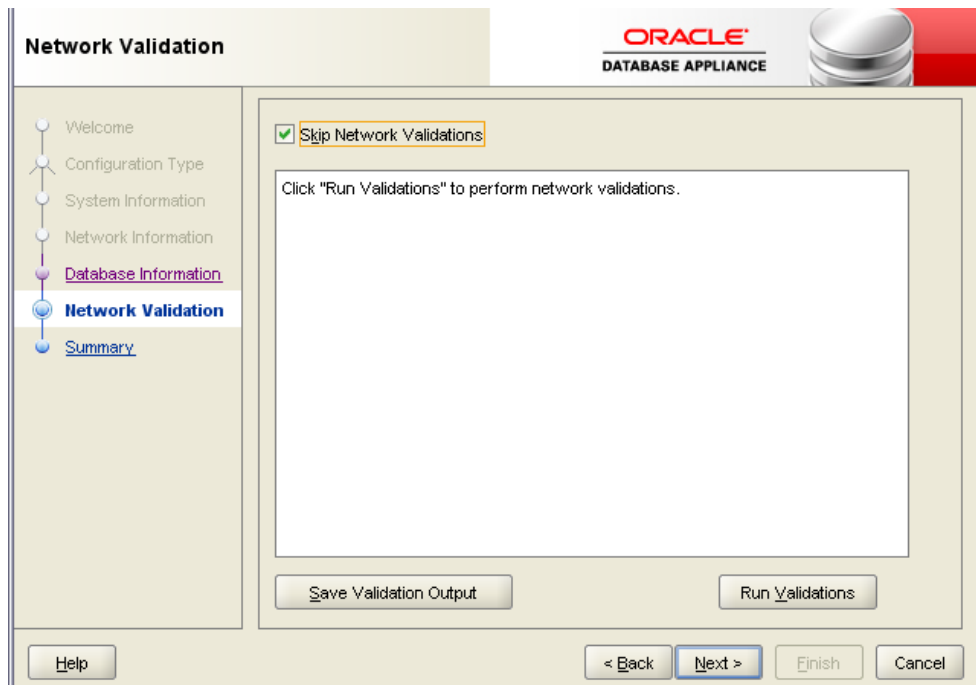
The following options are available:

- Click **Run Validations** to perform network validation.

 **Note:**

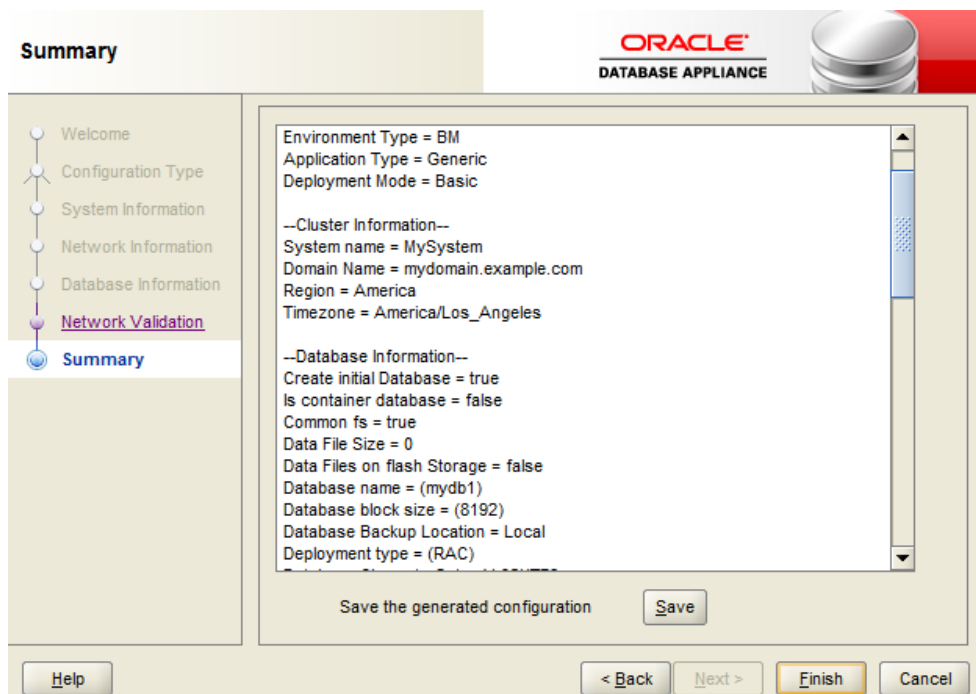
Oracle recommends that you validate your network before you use the configuration file to configure an appliance. However, you must run Oracle Database Appliance Manager Configurator on a server attached to the network subnet that is configured for your appliance. If you do not do this, then the validation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

# 3

## 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 SFP28 (fiber) network.
- [Attaching Network Cables to Oracle Database Appliance X7-2S or X7-2M](#) (page 3-5)  
Connect Oracle Database Appliance X7-2S or X7-2M to either a 10GBase-T (copper) or 25GbE SFP28 (fiber) network.
- [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.
- [Downloading the Server, GI and DB Clone Bundles](#) (page 3-12)  
Download the Oracle Database Appliance Server, GI and DB patches from My Oracle Support and update the patch repository.
- [Updating the dcs-agent to the Latest Version](#) (page 3-14)  
If an older version of the `dcs-agent` is installed, then download the latest agent and update the repository, `dcs-agent`, and server components.
- [Applying the Server Patch](#) (page 3-14)  
Update the server component to apply patches to various infrastructure components and Oracle Clusterware before deploying the appliance.

### 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.

**Note:**

Do not use interconnect for other applications.

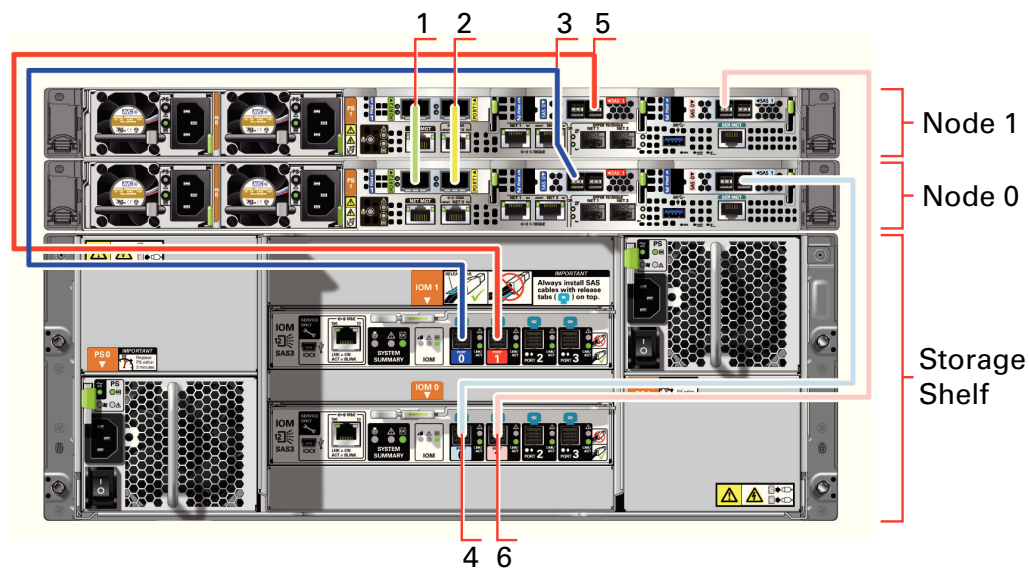
## 3.2 Attaching Network Cables to Oracle Database Appliance X7-2-HA

Connect Oracle Database Appliance X7-2-HA to either a 10GBase-T (copper) or 25GbE SFP28 (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 SFP28 (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 SFP28 (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**

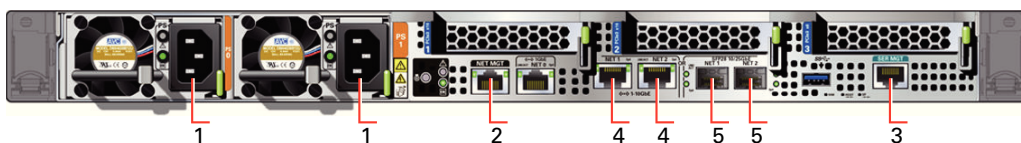
Callout Number	Description
1	Interconnect Port 25GbE p1p1
2	Interconnect Port 25GbE p1p2
3	Dark blue SAS cable between PCIe slot 2 in Node0 (SAS0) and the dark blue port in the top IO module in the storage shelf (port0)



**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 SFP28 (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

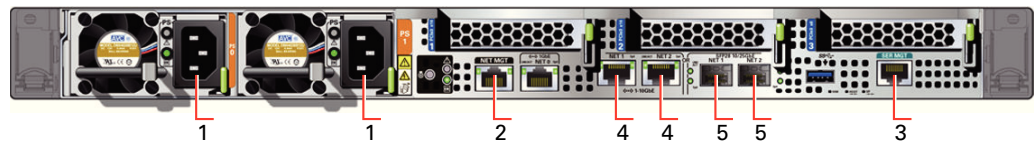
## 3.3 Attaching Network Cables to Oracle Database Appliance X7-2S or X7-2M

Connect Oracle Database Appliance X7-2S or X7-2M to either a 10GBase-T (copper) or 25GbE SFP28 (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 SFP28 (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 SFP28 (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 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 3-6)  
Use this procedure the first time you power on Oracle Database Appliance.

### 3.4.1 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*.

### 3.4.2 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.

**Note:**

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.

**Note:**

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.
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.

 **Note:**

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.

## 3.5 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.

 **Note:**

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:

1. 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 *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:

1. 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"
```

## 3.6 Plumbing the Network

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

Oracle Database Appliance X7-2 has two dual-port public network interfaces, a 10GBase-T (copper) and a 25GbE SFP28 (fiber) network interface. By default, the dual-ported interface is bonded and you can only enable one of the interfaces.

Oracle Database Appliance uses the interface to create the initial network connection and to create virtual local area networks (VLANs). The initial network connection enables you to transfer the deployment software to the machine and deploy the appliance with the Web Console.

To deploy the appliance, you must plumb the Oracle Database Appliance network with the public internet protocol (IP) information that is assigned to that node. Plumbing the network enables 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 SFP28 network interface. Use the initial network connection to transfer deployment software to Oracle Database Appliance and deploy the appliance with the Web Console.

To support two separate physical network interfaces in your data center, you can break the bond and create a non-bonded network configuration. The bonded network

configuration uses `btbond1`. The non-bonded network configuration uses `em2` and `em3` as public interfaces.

 **Note:**

When you use a non-bonded network configuration, VLAN capabilities are disabled.

The option to configure the network as bonded or non-bonded is available when you use the command `configure-firstnet`.

 **Caution:**

On multi-node systems, you must run the command `configure-firstnet` on both nodes.

Oracle recommends using the command `configure-firstnet` only one time on each Oracle Database Appliance node (Node 0 and Node 1). Subsequent use after configuring the initial network can cause unpredictable changes to your network settings.

To change a non-bonded network configuration to a bonded configuration, run the Oracle Database Appliance Cleanup Script and redeploy the appliance.

To configure the initial network, you will use Oracle ILOM to connect to the system and you 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`.
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.

The default configuration is to create a bonded configuration. The answer to the following question determines the configuration type:

```
Using bonding public interface (yes/no) [yes]:
```

- To create a bonded configuration, answer `yes` when prompted.
- To create a non-bonded configuration and disable VLAN capabilities, answer `no` when prompted.

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.

The following is an example of a bonded configuration. For a bonded configuration, answer `yes` to using a bonding public interface and configure the first network to use a `btbond1` interface without configuring DHCP.

```
# configure-firstnet
Using bonding public interface (yes/no) [yes]: yes
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
:::~::~:
```

The following is an example of a non-bonded configuration. For a non-bonded configuration, answer `no` to using a bonding public interface.

```
# configure-firstnet
Using bonding public interface (yes/no) [yes]: no
INFO: Breaking the bonding on btbond1
INFO: remove bonding module: rmmmod bonding
INFO: remove slave setup in /etc/sysconfig/network-scripts/ifcfg-em2
INFO: remove slave setup in /etc/sysconfig/network-scripts/ifcfg-em3
INFO: Restarting the network
Shutting down interface em1: [ OK ]
Shutting down interface plp1: [ OK ]
Shutting down interface plp2: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface em1: [ OK ]
Bringing up interface em2: [ OK ]
Bringing up interface em3: [ OK ]
Bringing up interface plp1: Determining if ip address 192.168.16.24 is already
in use for device plp1... [ OK ]
Bringing up interface plp2: Determining if ip address 192.168.17.24 is already
in use for device plp2... [ OK ]

INFO: Restarting the network
Select the Interface to configure the network on (em2 em3) [em2]:
Configure DHCP on em2 (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
/usr/share/system-config-network/netconfpkg/NCHostsList.py:100:
DeprecationWarning: BaseException.message has been deprecated as of Python 2.6
badlines.append((num, value_exception.message))
/usr/share/system-config-network/netconfpkg/NCHostsList.py:105:
DeprecationWarning: BaseException.message has been deprecated as of Python 2.6
```

```

    """ % (value_exception.message, num)
/usr/share/system-config-network/netconfpkg/NCProfileList.py:142:
DeprecationWarning: BaseException.message has been deprecated as of Python 2.6
    self.error = e.message
INFO: Restarting the network
Shutting down interface em1:                [ OK ]
Shutting down interface em2:                [ OK ]
Shutting down interface em3:                [ OK ]
Shutting down interface plp1:               [ OK ]
Shutting down interface plp2:               [ OK ]
Shutting down loopback interface:           [ OK ]
Bringing up loopback interface:              [ OK ]
Bringing up interface em1:                  [ OK ]
Bringing up interface em2:  Determining if ip address 10.1.10.2 is already in
use for device em2...                        [ OK ]
Bringing up interface em3:                  [ OK ]
Bringing up interface plp1:  Determining if ip address 192.0.2.24 is already in
use for device plp1...                        [ OK ]
Bringing up interface plp2:  Determining if ip address 192.0.2.25 is already in
use for device plp2...                        [ OK ]

```

3. Repeat these steps on Node 1.

#### Related Topics

- [configure-firstnet](#) (page 14-7)  
Use the command `configure-firstnet` to configure the first network in the appliance after racking and connecting the power and network cables.

## 3.7 Downloading the Server, GI and DB Clone Bundles

Download the Oracle Database Appliance Server, GI and DB patches from My Oracle Support and update the patch repository.

After updating the repository, you must apply the patches in the following order:

1. **Server patch:** Use the server patch to update Oracle Database Appliance components before deploying Oracle Database Appliance. The patch updates the Oracle Database Appliance server and DCS agent.
2. **GI Clone:** Use the GI Clone patch to deploy the appliance. The patch contains the latest Grid Infrastructure components needed to deploy, or create, an Oracle Database Appliance.
3. **RDBMS Software Clone file:** Use the release-specific database clone files to add 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.
  - 12.2.0.1 Database: Use the Oracle 12.2.0.1.x RDBMS Software Clone file to create new 12.2.0.1 database homes.
  - 12.1.0.2 Database: Use the Oracle 12.1.0.2.x RDBMS Software Clone file to create new 12.1.0.2 database homes.

- 11.2.0.4 Database: Use the Oracle 11.2.0.4.x RDBMS Software Clone file to create new 11.2.0.4 database homes.

The patches are available for download in My Oracle Support. 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. In some cases, there might not be sufficient space in the `/tmp` directory. Consider creating a `/tmp` directory in the `/u01` directory.

 **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.

1. From an external client machine, log on to My Oracle Support.
2. Locate and download patch the Server patch, the GI Clone patch, and the RDBMS Clone patches that you want. See the *Oracle Database Appliance Release Notes* for the latest patches.

In some cases, the patches are release-specific. When selecting a patch, ensure that you select the latest release.

- Server patch: [27648057](#)
- GI Clone patch: [27119393](#)
- RDBMS Clone files for Oracle Database 12.2.0.1: [27119402](#)
- RDBMS Clone files for Oracle Database 12.1.0.2: [23494992](#)
- RDBMS Clone files for Oracle Database 11.2.0.4: [23494997](#)

3. Upload the patches for Oracle Database Appliance to the appliance by using either Secure Copy (scp) command or a USB storage device to copy the file from the external client to `dom0` on Node0.

On multi-node systems, the DCS-Agent copies the patch to Node1 and updates the patch repository on both nodes.

4. Navigate to the directory and unzip each patch.
5. Run the command `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 for the *filename*.

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

Ensure the job completes successfully, then apply the server patch.

### Related Topics

- Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA Patches

## 3.8 Updating the dcs-agent to the Latest Version

If an older version of the `dcs-agent` is installed, then download the latest agent and update the repository, `dcs-agent`, and server components.

A machine might ship with an older version of the `dcs-agent`. You should update the agent to the latest version.

1. Log in to Oracle Database Appliance as a root user.
2. Download the latest `dcs-agent` patch from My Oracle Support.
3. Update the patch repository.

On multi-node systems, update the patch repository on Node 0, the `dcs-agent` copies the patch to Node 1 and updates the patch repository on both nodes.

```
odacli update-repository -fileName patch bundle
```

4. Update the `dcs-agent`.

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

```
# odacli update-dcsagent -v 12.2.1.3.0
{
  "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 14:09:24 PM CST",
  "description" : "DcsAgent patching",
  "updatedAtTime" : "March 26, 2018 14:09:24 PM CST"
}
```

The agent automatically restarts. It may take 1-2 minutes for the `dcs-agent` to complete restarting.

 **Note:**

Wait until the agent completes restarting before updating the server.

## 3.9 Applying the Server Patch

Update the server component to apply patches to various infrastructure components and Oracle Clusterware before deploying the appliance.

As part of readying the system, apply the server patch to update the server component before deploying the appliance. The patch updates the Oracle Database Appliance server and DCS Agent. On multi-node systems, the DCS-Agent copies the patch to Node 1 and updates the patch repository on both nodes.

See the *Oracle Database Release Notes* for the latest patch information.

Before applying the server patch, you must download the patch and update the repository.

**1. Run the command `update-server` on Node 0.**

```
# ./odacli update-server -v 12.2.1.3.0
{
  "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" : "March 26, 2018 14:13:45 AM CST",
  "resourceList" : [ ],
  "description" : "Server Patching",
  "updatedAt" : "March 26, 2018 14:13:45 AM CST"
```

**2. 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 for the job to complete before running the next command.****3. Use the command `odacli list-jobs` to check the status.**

```
# odacli list-jobs

ID                                     Description
Created                               Status
-----                               -
6f27a29a-959f-44e1-b984-7473e3c918ad  Server Patching  March 26, 2018 14:19:05 AM CST"
Success
```

**Related Topics**

- [Downloading the Server, GI and DB Clone Bundles](#) (page 3-12)  
Download the Oracle Database Appliance Server, GI and DB patches from My Oracle Support and update the patch repository.
- [odacli update-server](#) (page 14-16)  
Use the `odacli update-server` command to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.

# 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:

1. 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:

1. Configure the system
2. 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 command `configure-firstnet`. 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. See Appendix A in the *Oracle Database Appliance Release Notes* for the patches available and download links.
  - a. Unzip the patch file, it contains the `README.html` and one or more zip files for the patch.
  - b. If the files are split into more than one zip file, then concatenate the zip files into a single zip file.

For example, `oda-12.2.1.3.0-27141226-GI.zip`

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-12.2.1.3.0-27141226-GI.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 `12.2.1.3.0`, and you are copying the bundle to `/tmp`:

```
scp oda-sm-release number -date-DB-12.2.0.1.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
```

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-12.2.1.3.0-date-DB-12.1.0.2.zip
```

3. Update the repository with the Grid Infrastructure (GI) Server patch.

```
# opt/oracle/dcs/bin/odacli update-repository -f /tmp/oda-12.2.1.3.0-27141226-GI.zip
```

4. Run the command `odacli list-jobs` to check the status. When the job finishes successfully, go to the next step.

```
# odacli list-jobs
```

5. (Optional) Update the repository with a database (RDBMS Clone) patch. For example, the `12.2.0.1` RDBMS Clone patch.

```
# opt/oracle/dcs/bin/odacli update-repository -f /tmp/oda-sm-release number -date-DB-12.2.0.1.zip
```

6. Run the command `odacli list-jobs` to check the status. When the job finishes successfully, go to the next step.

```
# odacli list-jobs
```

7. (Optional) Repeat Step 5 and Step 6 for the `12.1.0.2` and `11.2.0.4` RDBMS Clone files, as needed.

## 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:



1. Register your hardware SI and new software licenses that you received with Oracle Database Appliance to your My Oracle Support profile.
2. Plan your configuration options.
3. 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.
2. 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 16-1) for more information.

1. Launch the Web Console and enter the user name `oda-admin` and *password*.  
`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.

**Create Appliance**

---

**System Information**

<b>Host Name *</b> hrsys	<b>Data Storage Percentage *</b> 80	<b>Master Password *</b> *****
<b>Domain Name *</b> example.com		<b>Confirm Password *</b> *****
<b>Region</b> Other ▼		
<b>Time Zone</b> GMT ▼		
<b>DNS Servers</b>		
<b>NTP Servers</b>		

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.

- a. 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.

Client Access Network	ILOM Network
IP Address * 192.0.2.254	ILOM Host Name ilom
Subnet Mask * 255.255.255.240	IP Address 198.51.100.1
Gateway * 10.209.12.1	Subnet Mask 255.255.255.0
	Gateway 40.33.69.1

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.

User and Group Selection

Customize Users & Groups  Yes  No

Allow OS Role Separation  Yes  No

- 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.

**l. (Optional) Characterset:** Select a character set.

**m. (Optional) National Characterset:** Select a national character set.

**n. (Optional) Language:** Select the database language.

**o. (Optional) Territory:** Select a territory or location from the list.

**Database Information**

Create Initial Database  Yes  No

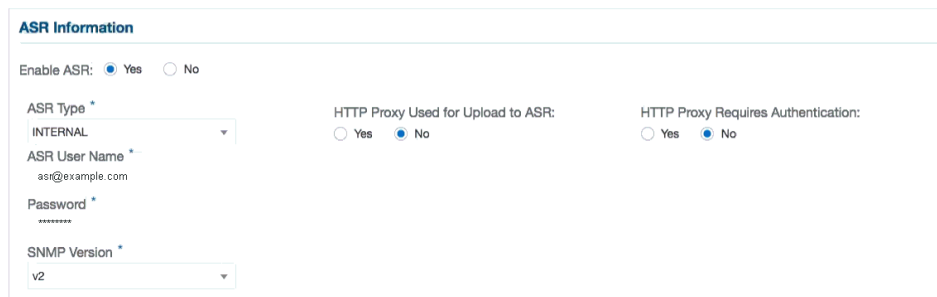
DB Name *	Database Edition	Character set
hrdb	Enterprise Edition	AL32UTF8
DB Unique Name	Shape	National Character set
hrdb#1	odb1(1 Core, 6.0GB Memory)	AL16UTF16
DB Version	Database Class	Language
12.2.0.1.170814	OLTP	AMERICAN
CDB <input checked="" type="radio"/> Yes <input type="radio"/> No	Storage	Territory
PDB Name	ASM	AMERICA
PDB Admin User	Configure EM Express <input type="radio"/> Yes <input checked="" type="radio"/> No	

**8. (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. **(Optional) HTTP Proxy used for Upload to ASR:** Select **Yes** or **No**.
  - e. **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.



**ASR Information**

Enable ASR:  Yes  No

ASR Type \*  
INTERNAL

ASR User Name \*  
asr@example.com

Password \*  
\*\*\*\*\*

SNMP Version \*  
v2

HTTP Proxy Used for Upload to ASR:  
 Yes  No

HTTP Proxy Requires Authentication:  
 Yes  No

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 `password`. Change these passwords to comply with your user security protocols.

#### Related Topics

- [Powering On Oracle Database Appliance the First Time](#) (page 3-6)  
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 16-1) 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/management/index.html
```

2. Enter the user name `oda-admin` and the password.

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.

- c. **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.

- i. **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.

**Create Appliance**

**System Information**

System Name *	Diskgroup Redundancy	Master Password *
hrsys	High	*****
Domain Name *	Data Storage Percentage *	Confirm Password *
example.com	80	*****
Region		
Other		
Time Zone		
GMT		
<b>DNS Servers</b>		
19.135.85.132		
<b>NTP Servers</b>		
19.135.185.1		

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.
- e. **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.
- j. (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.
- l. (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.

**Network Information**

Client Access Network	SCAN and VIP Network	ILOM Network
<b>Node0</b> Host Name * <input type="text" value="hrs1yn1"/> IP Address * <input type="text" value="192.0.1.254"/>	<b>Node0</b> VIP Name * <input type="text"/> VIP Address * <input type="text"/>	<b>Node0</b> ILOM Host Name <input type="text"/> IP Address <input type="text"/>
<b>Node1</b> Host Name * <input type="text" value="hrs1yn2"/> IP Address * <input type="text" value="192.0.2.254"/>	<b>Node1</b> VIP Name * <input type="text"/> VIP Address * <input type="text"/>	<b>Node1</b> ILOM Host Name <input type="text"/> IP Address <input type="text"/>
Subnet Mask * <input type="text" value="255.255.255.0"/>	Scan Name * <input type="text"/>	Subnet Mask <input type="text"/>
Gateway * <input type="text" value="40.33.69.1"/>	Scan IP Address * <input type="text"/>	Gateway <input type="text"/>

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.

**User and Group Selection**

Customize Users & Groups  Yes  No

Allow OS Role Separation  Yes  No

- 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.

7. 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:

- a. **DB Name**: Enter a name for the database.

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

- 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 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.
- j. **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.
- l. **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. **Characteraset:** Select a characteraset.
- o. **National Characteraset:** Select a national characteraset.
- 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**.
  - e. **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.

The screenshot shows a configuration form titled "ASR Information". It contains the following fields and options:

- Enable ASR:** Radio buttons for "Yes" (selected) and "No".
- ASR Type:** A dropdown menu with "INTERNAL" selected.
- ASR User Name:** A text input field containing "asr@example.com".
- Password:** A text input field with masked characters "\*\*\*\*\*".
- SNMP Version:** A dropdown menu with "v2" selected.
- HTTP Proxy Used for Upload to ASR:** Radio buttons for "Yes" and "No" (selected).
- HTTP Proxy Requires Authentication:** Radio buttons for "Yes" and "No" (selected).

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 the default password. Change these passwords to comply with your user security protocols.

### Related Topics

- [Powering On Oracle Database Appliance the First Time](#) (page 3-6)  
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 `jre-7-linux-i586.rpm` 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:

1. Download images for a virtualized platform and reimage the appliance with the Virtualized ISO image on both nodes
2. Configure the first network for DOM-0
3. Install the Virtualized Platform (ODA\_BASE) Template
4. 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 `odacli` and `odaadmcli` commands. A virtualized system uses the `oakcli` 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.
2. 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.

**Note:**

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:

1. Download patch 16186163 for the Oracle Database Appliance 12.2.1.3.0 Virtualized OS ISO Image.
  - a. From an external client machine, log on to My Oracle Support.
  - b. Locate patch 16186163 for the Oracle Database Appliance Virtualized OS ISO Image.
- c. Select the patch version for release 12.2.1.3.0.
- d. Click **Download** to download the zip file onto your external client.

```
p16186163_122130_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.

**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.

- f. Extract the files.

```
# oakcli unpack -package /tmp/ p12999313_122130_Linux-x86-64.zip
```

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

The Summary home page appears.

3. 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**.  
A file 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`).
9. 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.

```
# oakcli configure firstnet
Configure the network for the node(s)(local, global) [global]:global
Select the interface to configure network on [bond0 bond1 bond2 xbond0]:bond0
Configure DHCP on bond0?(yes/no):no
      INFO: Static configuration selected
      Enter the IP address to configure:192.0.2.18
      Enter the netmask address to configure:255.255.252.0
      Enter the gateway address to configure:192.0.2.1
Plumbing the IPs now
Restarting the network
::::::::::::::::::
```



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

## 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. You are selecting the number of cores per Node or ODA\_Base. If you select 6 CPU cores, then 6 cores are licensed on each server for a total of 12 CPU cores.
- 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 `oakcli create 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.

### Note:

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 Dom0 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_12.2.1.3.0_Linux-x86-64_1of3.zip
unzip p16186172_12.2.1.3.0_Linux-x86-64_2of3.zip
unzip p16186172_12.2.1.3.0_Linux-x86-64_3of3.zip
```

When extracted, you will have the following files: `oda_base_12.2.1.3.0.gz01`, `oda_base_12.2.1.3.0.gz02`, and `oda_base_12.2.1.3.0.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_12.2.1.3.0.gz01 oda_base_12.2.1.3.0.gz02
oda_base_12.2.1.3.0.gz03 oda_base_12.2.1.3.0.tar.gz
```

Make note of the file name and location, you will enter the following in the next step: `/OVS/oda_base_12.2.1.3.0.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 v1200 -vlanid 200 -if bond0
Created vlan v1200

# /opt/oracle/oak/bin/oakcli deploy_oda_base
Enter the template location: /OVS/oda_base_12.2.1.3.0.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
INFO: Verified active cores on remote node
INFO: Running the command to copy the template /OVS/oda_base_12.2.1.3.0.tar.gz
to remote node 1

oda_base_12.2.1.3.0.tar.gz 100% 7475MB 62.8MB/s 01:59
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/oakDom1/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 dom0 and odabase version
INFO: Making change to the /OVS/Repositories/odabaseRepo/VirtualMachines/oakDom1
/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/oakDom1/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 dom0 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/oakDom1/vm.cfg"
.
Started domain oakDom1 (id=1)
INFO: Storing the odabase configuration information
Using config file "/OVS/Repositories/odabaseRepo/VirtualMachines/oakDom1/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.

```

# xm list
Name                               ID   Mem VCPUs   State
Time(s)
Domain-0                            0  4096   40   r-----
482672.4
oakDom1                              2 32768    4   -b-----

```

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_12.2.1.3.0.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 Node1
WARNING : JBOD0 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.
- 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
0              host1-dom0 <- odahostname1
1              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
.....
```

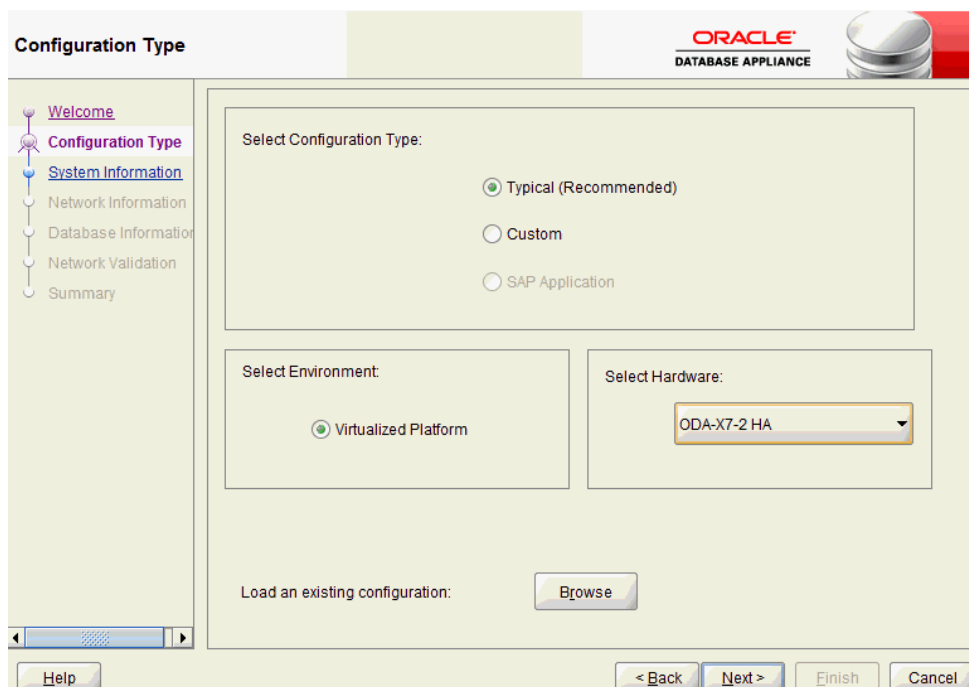
The IP address is plumbed and the network is restarted on each node.

8. Deploy the Oracle Grid Infrastructure and Oracle Database software on the appliance.
  - a. 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.

9. 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 HA** from 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 2-15)  
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 Web Console Password](#) (page 6-1)  
After your initial log in, change the Oracle Database Appliance Web Console password to secure your system.
- [Changing the Password](#) (page 6-2)  
Change the administrative account passwords to secure your system.
- [Shutdown the VNC Server](#) (page 6-3)  
After successfully deploying Oracle Database Appliance, shutdown your VNC server.

### 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 also set to the master password. 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 Web Console Password

After your initial log in, change the Oracle Database Appliance Web Console password to secure your system.

The administrator user name for the Web Console is `oda-admin`. A default password (`welcome1`) enables first-time access to the Web Console.

To build a secure environment, you must change the default password. You can change the password in the Web Console or by using the command `odacli-admin set-credential`.

1. Log into the Web Console using the user name (`oda-admin`).
2. Click **About**, then **User Settings** in the upper right corner of the Web Console.

3. Enter the password in the Password field and the Password Confirmation field, then click **Submit**.

The password must begin with an alpha character and cannot contain quotation marks. Password should contain no fewer than 9 characters and no more than 30 characters.

A confirmation message appears.

4. Click **About**, then click **Sign Out**.
5. Log back into the Web Console with the new password.

#### Related Topics

- [odacli-adm set-credential](#) (page 14-89)  
Use the `odacli-adm set-credential` command to change the `oda-admin` user credentials.
- [odacli-adm set-credential](#) (page 14-89)  
Use the `odacli-adm set-credential` command to change the `oda-admin` user credentials.

## 6.3 Changing the Password

Change the administrative account passwords 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 also set to the master password.

To log into the Web Console, the default user name is `oda-admin` and the default password is `welcome1`.



#### Note:

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.

1. Log in to the appliance as `root`.  
The default password is `welcome1`.
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
```

## 6.4 Shutdown the VNC Server

After successfully deploying Oracle Database Appliance, shutdown your VNC server.

As part of deploying Oracle Database Appliance, you used VNC.

- Shutdown the VNC server on the port on Node 0.

```
# vncserver -kill: 5901
```

# 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.

- [About Updating Oracle Database Appliance Software](#) (page 7-1)  
Oracle Database Appliance patching is done using the quarterly Oracle Database Appliance Patch Bundle.
- [About Update Pre-Checks](#) (page 7-3)  
Use the pre-checks to reduce potential update problems before applying patches.
- [Updating Oracle Database Appliance from the Web Console](#) (page 7-4)  
Use the Web Console to update the patch repository and install the Oracle Database Appliance Patch Bundle.
- [Updating Oracle Database Appliance from the CLI](#) (page 7-8)  
Use the command-line interface (CLI) to update the patch repository and install the Oracle Database Appliance Patch Bundle.
- [Updating Components Without Using a Patch Update](#) (page 7-14)  
The patch bundle updates provide all relevant patches for the entire system and are designed to work with Oracle Database Appliance and future update patch bundles.
- [Performing a Bare Metal Restore](#) (page 7-15)  
Reimage Oracle Database Appliance to perform a bare metal restore of Oracle Database Appliance.

### 7.1 About Updating Oracle Database Appliance Software

Oracle Database Appliance patching is done using the quarterly Oracle Database Appliance Patch Bundle.

The GI Clone Patch Bundle for Oracle Database Appliance, contains the latest patches for DCS Agent, DCS Controller, OAK, GI, RDBMS 12.2, 12.1 and 11.2 homes, enhancements, and fixes.

The patch bundle provides all relevant patches for the entire system, including the following:

- BIOS
- Hardware drivers, Hardware Management Pack (HWM), and firmware drivers for various components
- Oracle Appliance Manager
- Oracle Linux
- Oracle VM Server
- Java Development Kit (JDK)

- Oracle Integrated Lights Out Manager (Oracle ILOM)
- Oracle Database Bundle Patch (BP) and Oracle Database Patch Set Update (PSU)
- Oracle Auto Service Request (Oracle ASR)
- Oracle Grid Infrastructure
- Intelligent Platform Management Interface (IPMI)

### About Oracle Database Appliance Software Updates

To keep Oracle Database Appliance running with the latest software, check for and apply Oracle Database Appliance patch bundles when they are released. As well as offering new features, patches may improve the functionality of existing features.

#### **Caution:**

Do not patch Oracle Database Appliance using individual patches for Oracle Grid Infrastructure, Oracle Database, or Oracle Linux. Also do not use individual infrastructure patches, such as firmware patches. You must only use Oracle Database Appliance patches.

If you use patches that are not intended for Oracle Database Appliance, or if you use Opatch, or a similar patching tool, then Oracle Database Appliance inventory is not updated, and you cannot complete future patch updates.

The *Oracle Database Appliance Release Notes* include information about the latest Oracle Database Appliance patch bundle and a list of component versions in the patch bundle. Oracle recommends updating the appliance with the latest Oracle Database Appliance software version to take advantage of new features, fixes, and the latest supported component versions. See the *Oracle Database Appliance Release Notes* for the upgrade paths.

### Overview of the Patch Upgrade

Oracle Database Appliance Patch Bundle releases include new enhancements, including a comprehensive patching solution for Oracle Database Appliance. You must have a database deployed before updating the repository, agent, server, or database. Do not have any jobs running or pending during the update window.

All patching-related information is logged in the `dcs-agent` log file at `/opt/oracle/dcs/log/dcs-agent.log`.

- [Downloading Oracle Database Appliance Software](#) (page 7-2)  
Download the Oracle Database Appliance 12.2.1.3.0 patch bundle.

## 7.1.1 Downloading Oracle Database Appliance Software

Download the Oracle Database Appliance 12.2.1.3.0 patch bundle.

Use the patch bundle to update to the latest quarterly release after Oracle Database Appliance is deployed. The patch updates the Oracle Database Appliance server, storage, and database components.

1. From an external client machine, log on to My Oracle Support.
2. Locate patch 27141226 for the Oracle Database Appliance.  
[27141226](#)
3. Select the patch version for Oracle Appliance Kit 12.2.1.3.0.
4. Click **Download** to download the zip files onto your external client.

```
p27141226_122130_Linux-x86-64.zip
```

5. 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.

**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.

6. Unzip the patch bundle.

```
# cd /tmp
# unzip p27141226_122130_Linux-x86-64.zip
```

**Related Topics**

- [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.
- [https://updates.oracle.com/Orion/PatchDetails/process\\_form?patch\\_num=27141226](https://updates.oracle.com/Orion/PatchDetails/process_form?patch_num=27141226)

## 7.2 About Update Pre-Checks

Use the pre-checks to reduce potential update problems before applying patches.

Based on best practices and lessons learned from earlier upgrades, the pre-checks are designed to detect problems that might be encountered during patching and flag those issues. The pre-checks view the state of the appliance, including the version and hardware specific upgrades, verify that the necessary conditions and checks are complete before attempting an upgrade, and identify conditions that might cause an upgrade to fail. You can avoid potential patching problems by correcting the conditions and resolving the issues before applying the patch.

The following system update pre-checks are performed:

- Confirms that the DCS server is online on all nodes
- Checks that there is sufficient space for the update
- Validates the minimum agent version and validates the patching tag
- Confirms that a valid patch is in the repository and calculates the patch bundle md5 checksum

The following server update pre-checks are performed:

- Generic

- Confirms that the GI patch is installed
- Confirms that Oracle ClusterWare is running on all nodes
- GI
  - Performs a check for required components using `opatch prereq checkcomponents`
  - Analyzes the patch using `opatchauto`
  - Performs a patch conflict check
- Operating System
  - Checks the available disk space
  - Confirms that the yum repository directory exists
  - Performs a yum check
  - Performs a yum check-update
  - Performs a test (dry run) yum update to check for dependencies in the RPMS

The following DBHome update pre-checks are performed:

- Confirms that the GI is installed
- Confirms that Oracle ClusterWare is running on all nodes
- Confirms that the GI is upgraded before upgrading other components
- Validates that there is sufficient space available in local mount
- Performs a check for required components using `opatch prereq checkcomponents`
- Analyzes the patch using `opatchauto`
- Performs a patch conflict check and determines if a rollback of database patches is required

## 7.3 Updating Oracle Database Appliance from the Web Console

Use the Web Console to update the patch repository and install the Oracle Database Appliance Patch Bundle.

Topics:

- [Updating the Patch Repository](#) (page 7-5)  
Use the Web Console to view the current component versions, upload the Oracle Database Appliance Patch Bundle to the patch repository, and deploy the patch bundle.
- [Updating the Agent, Storage, and Database Components](#) (page 7-6)  
Use the Web Console to view the available Oracle Database Appliance component versions and deploy the patch bundle to update the components.

## 7.3.1 Updating the Patch Repository

Use the Web Console to view the current component versions, upload the Oracle Database Appliance Patch Bundle to the patch repository, and deploy the patch bundle.

The Web Console enables you to update the Patch Repository by selecting the files on your local system or designating a location on the appliance. When you download the Oracle Database Appliance Patch Bundle to an external client (your local system), you can save the files in a location on your local system or to an external storage device, such as a USB storage device. If you save the files on your local system, the files are automatically transferred to the appliance as part of the Update Patch Repository job.

On a new Oracle Database Appliance machine, confirm that the initial deployment is successfully completed and that the public network is configured. Patch Manager in Oracle Database Appliance is available beginning with the 12.2.1.2 release. You must update to 12.2.1.2 before Patch Manager is available.

1. Download the Oracle Database Appliance patches from My Oracle Support and save them in a directory on the appliance.
  - a. See the *Oracle Database Appliance Release Notes* for a list of available patches and links to download the patches.
  - b. From an external client machine, log in to My Oracle Support, then locate the patch to download.
  - c. Select the Oracle Database Appliance release.
  - d. Click **Download** to download the zip file to your local system.

If a patch download consists of more than one zip file, unzip the files, then concatenate the zip files.

- e. Upload the files from your local system to a temporary location in the `/u01` directory in `dom0` on Node 0 of the appliance. Use the `/tmp` directory as the target location.

 **Note:**

On multi-node systems, the DCS Agent copies the patch to Node 1 and updates the patch repository on both nodes.

Use a USB storage device, File Transfer Protocol (FTP) utility, or Secure Copy (scp) to copy the file from your local system to the appliance.

- f. Unzip the files.
2. Log into the Web Console with the `oda-admin` user name and password.  
`https://Node0-host-ip-address:7093/mgmt/index.html`
3. Click **Patch Manager**.
4. Enter the absolute file path and patch name, then click **Update Repository** to start the update repository job.



Use a comma separated list, without spaces, if there is more than one patch bundle.

5. Click **Activity** to monitor the progress. When the job completes successfully, the Patch Repository is updated.

## 7.3.2 Updating the Agent, Storage, and Database Components

Use the Web Console to view the available Oracle Database Appliance component versions and deploy the patch bundle to update the components.

The Patches page on the Web Console displays a list of installed and available component versions. After reviewing the list, you can either update the Patch Repository with the latest Oracle Database Appliance Patch Bundle or upgrade the server, storage, and database components.



### Note:

If your appliance has two nodes, you have the option to update both nodes at the same time or individually. If updating individually, update Node0 before updating Node1.

DCS agent is automatically updated when the server or storage is updated.

Perform the following tasks before updating Oracle Database Appliance:

- On a new Oracle Database Appliance machine, confirm that the initial deployment completed successfully and that the public network is configured.
  - Confirm that you have a database deployed. To verify that the database is successfully deployed, run Oracle ORAchk and ensure that it completes successfully.
  - Do not have any jobs running or pending during the update window.
  - Disable (Turn Off) Auto Refresh.
1. Click **Patch Manager** in the Web Console.
  2. Wait for the Component Details to load. If you just updated the Patch Repository, click **Refresh** in the Component Details section of the page.

After the patch is uploaded to the Patch Repository, the Component Details on the page are updated with the Installed Version and Available Version for each component.

Appliance Database Activity

Appliance

Network

Oracle ASR

Patch Manager

### Update Patch Repository

Download the Oracle Database Appliance patch bundles from My Oracle Support and save the concatenated zip file in a directory on the appliance. For multi-node systems, save the concatenated file in a directory on each node. Then, enter a comma-separated list of absolute file paths (without spaces) for the patch bundles on the appliance.

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

Patch Bundle Location:

Update Repository

### Component Details

Refresh

appliance-host-name		
Component	Installed Version	Available Version
OAK	12.2.1.2.0	up-to-date
GI ( OraGrid12201 )	12.2.0.1.171017	up-to-date
DCSAGENT	12.2.1.2.0	up-to-date
ILOM ( X6-2 )	3.2.9.23.r116695	up-to-date
BIOS	38070200	not-available
OS	6.8	up-to-date
FIRMWARECONTROLLER ( c2 )	4.650.00-7176	up-to-date
FIRMWARECONTROLLER ( c0, c1 )	KPYA7R3Q	kpyagr3q
FIRMWAREDISK ( c2d0, c2d1 )	OR3Q	up-to-date

Update Options:

Precheck

Update Server

Update Storage

Update Components

3. Select **Precheck**, click **Update Components**, then click **Submit** to verify the patches in the repository and check for conflicts.  
When the job finishes, go to the next step. Click **Activity** for job status.
4. On the Patch Manager page, Click **Refresh** to refresh the Component Details. Select **Update Server**, click **Update Components**, then click **Submit** to begin the job to patch the server components.  
When the job finishes, go to the next step. Click **Activity** for job status.
5. On the Patch Manager page, Click **Refresh** to refresh the Component Details. Select **Update Storage**, click **Update Components**, then click **Submit** to begin the job to patch the storage components.  
Click **Activity** for job status.
6. Review the Component Versions list.
7. Select **Update Server**, then click **Update Components** to update the Server components.  
For multi-node systems, select the node to update: All Nodes (default), Node0, or Node1.  
The DCS agent is automatically updated whenever the Server or Storage components are updated.
8. Click **Activity** to monitor the progress. When the job completes successfully, go to the next step.
9. Click **Patch Manager**, then refresh the page.
10. Select **Update Storage**, then click **Update Components** to update the Storage components.

For multi-node systems, select the node to update: All Nodes (default), Node0, or Node1.

11. Click **Activity** to monitor the progress.

## 7.4 Updating Oracle Database Appliance from the CLI

Use the command-line interface (CLI) to update the patch repository and install the Oracle Database Appliance Patch Bundle.

Topics:

- [Step 1: Update the Patch Repository](#) (page 7-8)  
Download the Oracle Database Appliance Patch Bundle from My Oracle Support and use the command-line interface to update the repository with the new patches.
- [Step 2: Update the Agent](#) (page 7-9)  
Run the command `update-dcsagent` to update the agent version.
- [Step 3: Update the Server](#) (page 7-10)  
Run the command `update-server` to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.
- [Step 4: Update Oracle Database](#) (page 7-12)  
Run the command `update-dbhome` to update a specific RDBMS Home to the latest patch bundle version.

### 7.4.1 Step 1: Update the Patch Repository

Download the Oracle Database Appliance Patch Bundle from My Oracle Support and use the command-line interface to update the repository with the new patches.

Perform the following tasks before updating Oracle Database Appliance:

- On a new Oracle Database Appliance machine, confirm that the initial deployment completed successfully and that the public network is configured.
  - Confirm that you have a database deployed. To verify that the database is successfully deployed, run Oracle ORAchk and ensure that it completes successfully.
  - Do not have any jobs running or pending during the update window.
1. From an external client machine, log on to My Oracle Support and locate patch 27141226 for Oracle Database Appliance.
  2. Select the patch version for Oracle Appliance Kit 12.2.1.3.0, then click **Download** to download the zip files onto your external client.  
  
`p27141226_122130_Linux-x86-64.zip`
  3. Use either a Secure Copy (`scp`) command or a USB storage device to copy the file from the external client to `dom0` on Node 0. Use the `/tmp` directory 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.

4. Run the `update-repository` command to unpack the patch bundle to the correct locations in the file system. You must include the fully qualified directory.

If you have more than one patch, you can use a comma-separated list for the *filename*.

```
# /opt/oracle/dcs/bin/odacli update-repository -f comma seperated list of enduser bundles
```

Ensure the job completes before you run the next step.

**Related Topics**

- Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA Patches

## 7.4.2 Step 2: Update the Agent

Run the command `update-dcsagent` to update the agent version.

Before updating the agent, ensure that you do not have any jobs running or pending during the update window. The update automatically restarts the DCS Agent.

1. Log in as the root user.
2. Run the command `update-dcsagent` to define the patch set bundle version and update the agent.

```
# /opt/oracle/dcs/bin/odacli update-dcsagent -v version
```

As the patch runs, output displays advising you of the installation progress. After the update is applied, the agent automatically restarts. It takes a few minutes to reconnect to the `dcs-agent`. Wait until the agent shuts down and completes restarting before proceeding to the next step.

3. Run the `describe-job` command for the patch job to verify that the update completed successfully. The `jobID` displays in the `update-dcsagent` output. You can also get the job ID by running the `list-jobs` command.

```
# /opt/oracle/dcs/bin/odacli describe-job -i jobid
```

After the DCS Agent is updated, wait two (2) minutes before going to the next step.

**Example 7-1 Updating the DCS Agent Version**

Run the following command to update the DCS Agent to version 12.2.1.3.0:

```
# odacli update-dcsagent -v 12.2.1.3.0
{
  "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 10:30:02 AM EDT",
  "description" : "DcsAgent patching",
```

```
"updatedAtTime" : "March 26, 2018 10:30:02 AM EDT"
}
```

### Example 7-2 Verifying the DCS Agent Version

The following example uses job ID `77e454d3-eb68-4130-a247-7633f8d6192b` from the previous example to get the job details.

```
# odacli describe-job -i "77e454d3-eb68-4130-a247-7633f8d6192b"
```

Job details

```
-----
ID: 77e454d3-eb68-4130-a247-7633f8d6192b
Description: DcsAgent patching
Status: Success
Created: March 26, 2018 10:39:02 AM EDT
Message:

Task Name                               Start Time
-----
dcsagent rpm version checking           March 26, 2018 10:39:02 AM EDT
Patch location validation                 March 26, 2018 10:39:02 AM EDT
Apply dcsagent patch                     March 26, 2018 10:39:02 AM EDT
```

(Continued)

```
End Time                               Status
-----
March 26, 2018 10:39:02 AM EDT         Success
March 26, 2018 10:39:02 AM EDT         Success
March 26, 2018 10:39:02 AM EDT         Success
```

## 7.4.3 Step 3: Update the Server

Run the command `update-server` to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.

Patching information is logged in the `dcs-agent log file (/opt/oracle/dcs/log/dcs-agent.log)`.

Before executing the command `odacli update-server`, update the repository with the latest patch bundle, update the DCS Agent to the latest version, and ensure that the agent is running.

1. Log in as the root user.
2. Run the command `update-server -v version`, where `version` is the patch set bundle version.

```
# /opt/oracle/dcs/bin/odacli update-server -v version
```

Observe the patch status reports. As the patch runs, it displays output that advises you of the installation progress.

3. Run the command `describe-job` for the patch job to verify that the update completed successfully. The jobID displays in the `update-server` output. You can also get the job ID by running the command `list-jobs`.

```
# /opt/oracle/dcs/bin/odacli describe-job -i jobid
```

4. Run the command `odacli describe-component` to verify that the components are on the latest version.

When the server is patched, proceed to the next step.

### Example 7-3 Updating the Server Version

Run the following command to update the server to version 12.2.1.3.0:

```
# odacli update-server -v 12.2.1.3.0
{
  "jobId" : "94685c73-55c2-40b1-a02e-265a23c45642",
  "status" : "Created",
  "message" : "Success of Server Update may trigger reboot of node after 4-5
minutes. Please wait till node restart",
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 14:13:45 PM CST",
  "resourceList" : [ ],
  "description" : "Server Patching",
  "updatedAtTime" : "March 26, 2018 14:13:45 PM CST"
}
```

### Example 7-4 Verifying that the Server is on the Updated Version

The following example uses job ID 94685c73-55c2-40b1-a02e-265a23c45642 from the previous example to get the job details and status.

```
# /opt/oracle/dcs/bin/odacli describe-job -i "94685c73-55c2-40b1-a02e-265a23c45642"
```

Job details

```
-----
ID: 94685c73-55c2-40b1-a02e-265a23c45642
Description: Server Patching
Status: Success
Created: March 26, 2018 11:02:30 AM EDT
Message:
```

Task Name	Start Time
-----	-----
dcscontroller rpm version checking	March 26, 2018 11:02:30 AM EDT
Patch location validation	March 26, 2018 11:02:31 AM EDT
Apply dcscontroller patch	March 26, 2018 11:02:31 AM EDT
dcscli rpm version checking	March 26, 2018 11:02:32 AM EDT
Patch location validation	March 26, 2018 11:02:32 AM EDT
Apply dcscli patch	March 26, 2018 11:02:32 AM EDT
oak rpm version checking	March 26, 2018 11:02:33 AM EDT
Patch location validation	March 26, 2018 11:02:33 AM EDT
Apply oak patch	March 26, 2018 11:02:33 AM EDT
Checking IloM patch Version	March 26, 2018 11:03:02 AM EDT
Patch location validation	March 26, 2018 11:03:05 AM EDT
Apply IloM patch	March 26, 2018 11:03:05 AM EDT
Copying Flash Bios to Temp location	March 26, 2018 11:03:06 AM EDT
Patch application verification	March 26, 2018 11:03:06 AM EDT
Patch location validation	March 26, 2018 11:03:09 AM EDT
Opatch updation	March 26, 2018 11:04:13 AM EDT
analyzing patch	March 26, 2018 11:04:15 AM EDT
Apply gi patch	March 26, 2018 11:04:50 AM EDT
Reboot IloM	March 26, 2018 11:16:17 AM EDT

(Continued)

End Time	Status
-----	-----
March 26, 2018 11:02:31 AM EDT	Success
March 26, 2018 11:02:31 AM EDT	Success
March 26, 2018 11:02:32 AM EDT	Success
March 26, 2018 11:02:32 AM EDT	Success

```
March 26, 2018 11:02:32 AM EDT Success
March 26, 2018 11:02:33 AM EDT Success
March 26, 2018 11:02:33 AM EDT Success
March 26, 2018 11:02:33 AM EDT Success
March 26, 2018 11:03:02 AM EDT Success
March 26, 2018 11:03:05 AM EDT Success
March 26, 2018 11:03:05 AM EDT Success
March 26, 2018 11:03:06 AM EDT Success
March 26, 2018 11:03:06 AM EDT Success
March 26, 2018 11:03:09 AM EDT Success
March 26, 2018 11:03:14 AM EDT Success
March 26, 2018 11:04:15 AM EDT Success
March 26, 2018 11:04:50 AM EDT Success
March 26, 2018 11:16:08 AM EDT Success
March 26, 2018 11:16:17 AM EDT Success
```

## 7.4.4 Step 4: Update Oracle Database

Run the command `update-dbhome` to update a specific RDBMS Home to the latest patch bundle version.

After patching, download the latest database end user bundles. You can use the command `odacli create-database` to create different versions of the database without downloading the latest Oracle Database Appliance GI Clone bundle.

### Note:

Oracle recommends downloading the latest database bundle and use it to create any new databases.

1. Log in as the root user.
2. Run the command `odacli list-dbhomes` to get a list of database homes in the system and the `dbhomeid` for each database.

```
# /opt/oracle/dcs/bin/odacli list-  
dbhomes
```

3. Run the command `update-dbhome -i dbhomeid -v version`, where `dbhomeid` is the Oracle Database Home to update and `version` is the Oracle Database Appliance patch set bundle version.

### Note:

You cannot perform individual database updates for databases running in the same home. When you update a database home, all databases running in the database home are patched to the Oracle Database release patch for Oracle Database Appliance.

```
# /opt/oracle/dcs/bin/odacli update-dbhome -i dbhomeid -v version
```

Observe the patch status reports. As the patch runs, it displays output that advises you of the job identifier (ID) and the installation progress.

4. Run the command `describe-job` for the patch job to verify that the update completed successfully. The `jobID` displays in the `update-dbhome` output. You can also get the job ID by running the command `list-jobs`.

```
# /opt/oracle/dcs/bin/odacli describe-job -i jobid
```

#### Example 7-5 Getting a List of Database Home IDs

The following example shows how to get a database home ID using JSON output:

```
# /opt/oracle/dcs/bin/odacli list-dbhomes -j
[ {
  "id" : "ab3cecaf-2223-4726-b95c-488f0aec914a",
  "name" : "OraDB12201_home1",
  "dbVersion" : "12.2.0.1.180116 ",
  "dbHomeLocation" : "/u01/app/oracle/product/12.2.0.1/dbhome_1",
  "createTime" : "March 26, 2018 08:46:52 AM PDT",
  "state" : {
    "status" : "CONFIGURED"
  },
  "updatedAt" : "March 26, 2018 11:55:55 AM PDT"
}, {
  "id" : "d5b01e27-799e-4e8a-bfe6-07a781f79526",
  "name" : "OraDB12201_home2",
  "dbVersion" : "12.2.0.1.180116",
  "dbHomeLocation" : "/u01/app/oracle/product/12.2.0.1/dbhome_2",
  "createTime" : "March 26, 2018 22:34:31 PM PDT",
  "state" : {
    "status" : "CONFIGURED"
  },
  "updatedAt" : "March 26, 2018 22:36:59 PM PDT"
} ]
```

#### Example 7-6 Updating the Database Home Version

The following example updates database home ID `d5b01e27-799e-4e8a-bfe6-07a781f79526` to Oracle Database Appliance version 12.2.1.3.0.

```
# odacli update-dbhome -i d5b01e27-799e-4e8a-bfe6-07a781f79526 -v 12.2.1.3.0
{
  "jobId" : "576cdbfa-ece4-4e5f-becd-9bc6e6bf430b",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 11:08:35 AM PDT",
  "description" : "DbHome Patching: Home Id is d5b01e27-799e-4e8a-bfe6-07a781f79526",
  "updatedAt" : "March 26, 2018 11:08:35 AM PDT"
}
```

#### Example 7-7 Verifying that Database Home is Updated

The following example uses job ID `576cdbfa-ece4-4e5f-becd-9bc6e6bf430b` from the previous example to get the job details.

```
# /opt/oracle/dcs/bin/odacli describe-job -i "576cdbfa-ece4-4e5f-becd-9bc6e6bf430b"
Job details
-----
ID: 576cdbfa-ece4-4e5f-becd-9bc6e6bf430b
Description: DbHome Patching: Home Id is d5b01e27-799e-4e8a-bfe6-07a781f79526
```



Status: Success  
 Created: March 26, 2018 11:08:35 AM PDT  
 Message:

Task Name	Start Time
Patch application verification	March 26, 2018 11:08:35 AM PDT
location validation	March 26, 2018 11:08:37 AM PDT
updateOpatch	March 26, 2018 11:09:41 AM PDT
analyzing patch	March 26, 2018 11:09:43 AM PDT
Apply db patch	March 26, 2018 11:10:17 AM PDT

(continued)

End Time	Status
March 26, 2018 11:08:37 AM PDT	Success
March 26, 2018 11:08:42 AM PDT	Success
March 26, 2018 11:09:43 AM PDT	Success
March 26, 2018 11:10:17 AM PDT	Success
March 26, 2018 11:14:13 AM PDT	Success

## 7.5 Updating Components Without Using a Patch Update

The patch bundle updates provide all relevant patches for the entire system and are designed to work with Oracle Database Appliance and future update patch bundles.

The patch bundle includes relevant patches, including the following:

- BIOS
- Hardware drivers, Hardware Management Pack (HWM), and firmware drivers
- Oracle Appliance Manager
- Oracle Linux
- Oracle VM
- Java Development Kit (JDK)
- Oracle Integrated Lights Out Manager (Oracle ILOM)
- Oracle Database Bundle patch (BP)
- Oracle Auto Service Request (Oracle ASR)
- Oracle Grid Infrastructure
- Intelligent Platform Management Interface (IPMI)

### Caution:

Do not patch Oracle Database Appliance using individual patches for Oracle Grid Infrastructure, Oracle Database, and most Oracle Linux RPM updates. Do not use individual infrastructure patches, such as firmware patches. You must only use Oracle Database Appliance patches.

If you use patches that are not intended for Oracle Database Appliance, or if you use OPatch, or a similar patching tool, then you can encounter problems with storage, communication, and applying patch updates in the future.

## Updating Oracle Linux RPMs

While not recommended, you can update some Oracle Linux RPMs for database nodes. Do not update or customize Oracle Linux kernel, Oracle Optimal Flexible Architecture, Oracle InfiniBand, or related software. Other software may be installed, updated, or customized. However, the Oracle Database Appliance update may not carry newer version dependencies of customized components. Therefore, you might be required to remove and subsequently reapply site-specific changes to successfully update Oracle Database Appliance in the future.

### **Caution:**

For database nodes, do not update the following:

- Oracle Linux Kernel (kernel\*)
- Oracle Optimal Flexible Architecture (ofa\*)
- Oracle InfiniBand-related packages (ofed\*)

For storage, do not apply *any* RPM updates.

## Using a Different Version of Java Development Kit (JDK)

Oracle Database Appliance depends on a specific version of JDK. If you want to use a different version of JDK for a specific application, then install it in a different directory and only point to it for that application.

# 7.6 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 7-15)  
Bare metal operating system (OS) re-imaging installs Oracle Database Appliance operating system software on the local (boot) drive.
- [Downloading the ISO Image for Bare Metal Restore](#) (page 7-16)  
Download the Oracle Database Appliance 12.2.1.3.0 Bare Metal ISO image to your desktop or external client to prepare for a bare metal restore on Oracle Database Appliance.
- [Re-imaging Oracle Database Appliance](#) (page 7-17)  
Re-image Oracle Database Appliance to perform a bare metal restore of Oracle Database Appliance.

## 7.6.1 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.

## 7.6.2 Downloading the ISO Image for Bare Metal Restore

Download the Oracle Database Appliance 12.2.1.3.0 Bare Metal ISO image to your desktop or external client to prepare for a bare metal restore on Oracle Database Appliance.

Before downloading the image, ensure that the initial network connection is configured. 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.

1. From an external client machine, log on to My Oracle Support. Locate patch 23530609 for the Oracle Database Appliance Bare Metal ISO Image.  
<https://updates.oracle.com/download/23530609.html>
2. Select the patch version for Oracle Appliance Kit 12.2.1.3.0, then click **Download** to download the zip files onto your external client.  
`p23530609_122130_Linux-x86-64.zip`
3. Use either a Secure Copy (`scp`) command or a USB storage device to copy the file from the external client to `dom0` on Node 0. Use the `/tmp` directory 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.

4. Unzip the patch bundle.  

```
# cd /tmp
# unzip p23530609_122130_Linux-x86-64.zip
```

**Related Topics**

- <https://updates.oracle.com/download/23530609.html>

## 7.6.3 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.

1. Open a browser and connect to Oracle Integrated Lights Out Manager (ILOM) on Node 0 as root.

`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.

3. 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.

# 8

## Managing Oracle Databases

Manage the Oracle Databases on your Oracle Database Appliance. For an Oracle Database Appliance Virtualized Platform, see the `oakcli` 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 8-9)  
Use the Web Console to display a list of database homes, details, and create and delete database homes.
- [Migrating Databases](#) (page 8-13)  
Review these topics to learn how to prepare for and migrate an entire database to your Oracle Database Appliance.
- [About Managing Multiple Database Instances Using Instance Caging](#) (page 8-17)  
Use instance caging to manage your system resources on Oracle Database Appliance.
- [Oracle EM Express and DB Console](#) (page 8-18)  
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 `grid`, with a user ID (UID) of 1001, and the user `oracle`, with a UID of 1000. The user `grid` is the Oracle Grid Infrastructure installation owner. The user `oracle` 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:

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

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

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 `-advance` parameter with the command `oakcli deploy`. If you create an initial database during deployment, then the password for the SYS and SYSTEM users is the ROOT password from the Configurator.

**Note:**

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.
- [Creating an Instance Only Database](#) (page 8-7)  
Create an instance only database from the command-line interface.
- [Creating a Database from Backup](#) (page 8-8)  
Use the Web Console to create a database from a backup.
- [Upgrading a Database](#) (page 8-9)  
Use the Oracle Appliance Manager Web Console to upgrade an Oracle database to a different database home version.
- [Deleting a Database](#) (page 8-9)  
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`.

1. Log into the Web Console:

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

2. Click the **Database** tab.

The screenshot shows the Oracle Database Appliance Web Console interface. At the top, it says "ORACLE Database Appliance" and "Auto Refresh Disabled". Below that, there are tabs for "Appliance", "Database", and "Activity". The "Database" tab is selected. The main content area shows a table of databases with columns for "Database Home", "ID", "Created", "CDB", "DB Version", "Shape", and "Storage". There are also "Actions" buttons for each database.

Database Home	ID	Created	CDB	DB Version	Shape	Storage	Actions
dbcore	2119b1d5-d347-4a34-9a62-c50746a010ab	Sun Oct 22 2017 8:47:53 PM	false	12.2.0.1	odb36	ASM	View, Upgrade, Delete
db121	640905d6-70e9-4f1f-860d-f50539db0eac	Sun Oct 22 2017 8:29:38 PM	true	12.1.0.2	odb4	ACFS	View, Upgrade, Delete
odacn	ba15a000-21e7-4086-abb0-8122ff5245ca	Sun Oct 22 2017 6:38:45 PM	true	12.2.0.1	odb12	ASM	View, Upgrade, Delete

3. (Optional) Click the database name, in blue font, to display more details about the database.



4. (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.

### Note:

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.

### Note:

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.
4. 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 *pdadmin* 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 ASM. For Oracle Database version 11, Oracle ACFS is the only option and the field does not appear in the Web Console.
- l. 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 the SYS, SYSTEM, and PDB Admin.

The password must begin with an alpha character and cannot exceed 30 characters. Quotation marks are not allowed.

- n. In the Confirm Password field, enter the password again to confirm.
- o. 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.

6. 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 Creating an Instance Only Database

Create an instance only database from the command-line interface.

### Note:

If you provisioned the appliance without creating an initial database, then you must create a new Oracle home. If the version of the database home is different from the migrated database, create a new database home for the migrated database. You might want to create a database home specifically for the migrated database.

This example creates an instance only database named `PRODDB` with database version 12.1.0.2.160719 and a new database home.

1. Use the `odacli list-dbhomes` command to display a list of database homes and verify that a database home exists for the database version.

Note the ID if you want to use an existing database home or if you want to get more details. Use the `odacli describe-dbhomes` command to get greater details about a specific database home.

```
# odacli list-dbhomes
ID                                     Name                                     DB Version
-----
b727bf80-c99e-4846-ac1f-28a81a725df6 OraDB12102_home1 12.1.0.2
```

(continued)

Home Location

```
-----
/u01/app/orauser/product/12.1.0.2/dbhome_1
```

2. Create a database home if a database home does not exist for the database version.

If you want to create a database home for specifically for the migrated database, you can use the `odacli create-dbhome` command, or you can create the database home when you create the database. The example creates a database home for database version 12.1.0.2.

```
# odacli create-dbhome -v 12.1.0.2
```

3. Create an instance only database. You can use an existing database home ID or you can create a database home when creating the database.

To create an instance only database named `PRODDB` with database version 12.1.0.2 that uses an existing database home with ID `b727bf80-c99e-4846-ac1f-28a81a725df6`:

```
#odacli create-database -n PRODDB -v 12.1.0.2 -io -m -dh b727bf80-c99e-4846-ac1f-28a81a725df6
```

To create an instance only database named `PRODDB` with database version 12.1.0.2 and a database home:

```
#odacli create-database -n PRODDB -v 12.1.0.2 -io -m
```

## 8.3.4 Creating a Database from Backup

Use the Web Console to create a database from a backup.

When you create a backup in Oracle Database Appliance, a JSON file is created. Save the JSON file and you can use the file to create a database on the same appliance, or a different appliance.

The following are the prerequisites to creating a database from a backup:

1. Obtain Object Store Credentials for the host.
2. Create a backup policy using the object store credentials as the backup destination.
3. Attach the backup policy to the database that you want to backup.
4. Create a manual backup of the database and save the file.

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.
4. Click **Create Database from Backup**, then click **Next** to display the Create Database from Backup page.
5. Select your Object Store Credential name.
6. Enter the password in the **Backup Encryption Passwords** field and the **Confirm Backup Encryption Passwords** field.
7. Click **Browse** and select the backup report.

When the backup report is loaded, additional fields appear on the page and are populated based on the backup report. You can edit some of the fields.

8. In the **DB Name** field, enter a name for the database.

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

9. Enter the password in the **SYS User Password** field and the **Confirm SYS User Password** field.
10. Click **Create**.
11. Click **Yes** to confirm that you want to create a database from the selected Object Store backup.

When you submit the job, the job ID and a link to the job appears. Click the link to display the job status and details.

12. Validate that the job completed. You can track the job in the **Activity** tab in the Web Console, or run the command `odacli describe-job` with the job ID.

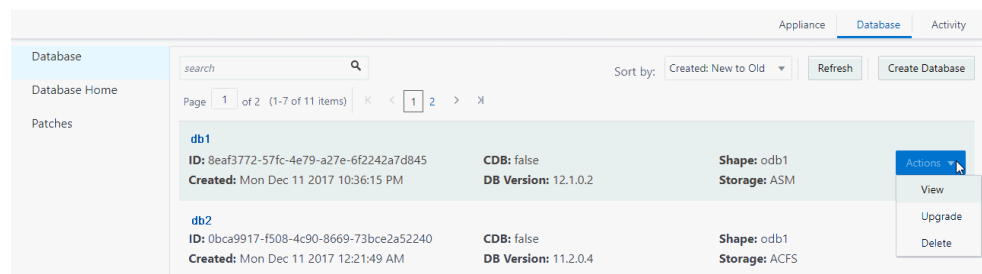
```
# odacli describe-job -ijobId
```

## 8.3.5 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`
2. Click the **Database** tab.
3. Click **Actions** next to the database that you want, then select **Upgrade**.



4. Select the destination database home version from the list of available versions, then click **Upgrade**.

## 8.3.6 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 8-10)  
Create and manage one or more Oracle home directories and Oracle databases on Oracle Database Appliance.
- [Downloading an RDBMS Clone File](#) (page 8-11)  
Download an Oracle Database Appliance RDBMS Clone file onto your local machine to create a new database home.

- [Viewing Database Homes](#) (page 8-12)  
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 8-12)  
Use the Web Console to create database homes in Oracle Database Appliance.
- [Deleting a Database Home](#) (page 8-12)  
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.

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 ODA CLI 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.

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

Use ODA CLI 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**

- [Downloading the ISO Image for Bare Metal Restore](#) (page 7-16)  
Download the Oracle Database Appliance 12.2.1.3.0 Bare Metal ISO image to your desktop or external client to prepare for a bare metal restore on Oracle Database Appliance.

## 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 *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.

 **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.

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/<zip file name>.zip
```



## 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.

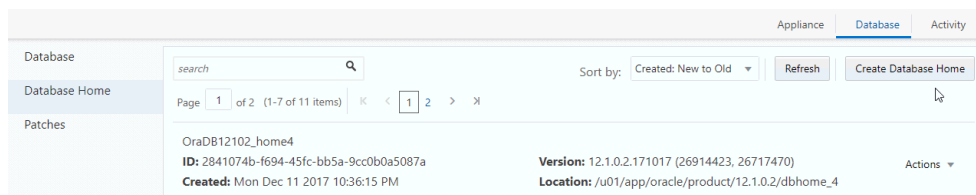
## 8.4.4 Creating a Database Home

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**.



4. 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.
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. Click **Actions** next to a database home entry, then **Delete**, and then confirm the action to delete a database home.

## 8.5 Migrating Databases

Review these topics to learn how to prepare for and migrate an entire database to your Oracle Database Appliance.

- [About Migrating Databases](#) (page 8-13)  
You can migrate an entire active container database (CDB) or non-CDB database to an Oracle Database Appliance machine by using the RMAN duplicate command.
- [Configuring a Static Listener](#) (page 8-14)  
Configure a static listener before you duplicate a database.
- [Migrating a Database](#) (page 8-15)  
Use the `RMAN Duplicate` command to migrate the entire database to the appliance.
- [Registering a Database](#) (page 8-16)  
Use the `odacli register-database` command to register the migrated database with the appliance.

### 8.5.1 About Migrating Databases

You can migrate an entire active container database (CDB) or non-CDB database to an Oracle Database Appliance machine by using the RMAN duplicate command.

When using RMAN Duplicate, ensure to have network connectivity from source and target databases:

- Source database: The existing database to be migrated.
- Target database: The new database created on an Oracle Database Appliance environment.

If you do not have network connectivity between the source and the target environments, you can use the offline migration method. Offline migration uses RMAN backup sets for duplication, which does not require connectivity to the primary database.

At a high level, the procedure involves the following steps:

1. **Deploy or update Oracle Database Appliance to the latest version.**

Confirm that the provisioning completed successfully.

- If you have a bare metal platform, use the command `odacli list-jobs` and the command `odacli describe-job` to verify the status.

- If you have a virtualized platform, use the command `oakcli list-jobs` and the command `oakcli describe-job` to verify the status.
- 2. Create an instance only database from the command-line interface.**
    - If you have a bare metal platform, use the command `odacli create-database` with the `instanceonly` flag on an Oracle Database Appliance machine. The new database is the target database.
    - If you have a virtualized platform, use the command `oakcli create-database` with the `instanceonly` flag on an Oracle Database Appliance machine. The new database is the target database.

Creating an instance only database also creates the following:

    - ACFS Filesystem used to store the database files
    - Directory structures that are required by the database instance/`rman duplicate` command
    - Password file for the SYS user
  - 3. Configure a static listener.**
  - 4. Migrate the existing database to the target database using the backup and restore operations.**
  - 5. Register the migrated database with the appliance.**

## 8.5.2 Configuring a Static Listener

Configure a static listener before you duplicate a database.

The static listener is only required when using RMAN Duplicate command.

Perform the following steps to manually configure the `listener.ora` file:

1. Log in as a grid user.
2. Navigate to `/u01/app/12.1.0.2/grid/network/admin/` directory.
3. Edit the default `listener.ora` file and append the static database entry.

```
SID_LIST_LISTENER=
  (SID_LIST=
    (SID_DESC=
      (GLOBAL_DBNAME=db_unique_name with domain)
      (ORACLE_HOME=db home)
      (SID_NAME=db unique name)
      (ENVS="TNS_ADMIN=database home/network/admin"))
    )
```

For example, the following file is edited for a 12.1.0.2 database named `PRODDB` in the `example.com` domain:

```
SID_LIST_LISTENER=
  (SID_LIST=
    (SID_DESC=
      (GLOBAL_DBNAME=PRODDB.example.com)
      (ORACLE_HOME=/u01/app/oracle/product/12.1.0.2/dbhome_2)
      (SID_NAME=PRODDB)
      (ENVS="TNS_ADMIN=/u01/app/oracle/product/12.1.0.2/dbhome_2/network/
admin"))
    )
```

4. Save the file.
5. Restart the listener.

```
srvctl stop listener -l listener
srvctl start listener -l listener
```

## 8.5.3 Migrating a Database

Use the `RMAN Duplicate` command to migrate the entire database to the appliance.

Before migrating the database, verify that a network connection exists between the source and destination databases.

1. Verify that the `sysdba` connection to the auxiliary database is working. Use the password that you defined when you created the database with the `--instanceonly` flag.

```
sqlplus sys/password@hostname:PORT/GLOBAL_DBNAME as sysdba << EOF
select 1 from dual;
exit;
EOF
```

The following example uses the `Welcome_12` password for `myhost` on port `1521` for `PRODDB.example.com`.

```
sqlplus sys/Welcome_12@myhost:1521/PRODDB.example.com as sysdba << EOF
select 1 from dual;
exit;
EOF
```

2. As oracle user, set the `ORACLE_HOME` and `ORACLE_SID` environment variables.

```
ORACLE_HOME=path of Oracle Home against which the AUX DB is created
ORACLE_SID=database unique name
```

3. Display a list of all database storage configured on the appliance and database storage identifiers (ID).

Use the `odacli list-dbstorages` to display the storage IDs for all configured filesystems.

```
# odacli list-dbstorages
ID Type                                DBUnique Name          Status
-----
68d13446-f26c-49ee-ab75-a393732aa88a  Asm          rdb1             Configured
ff2023d9-338d-4cff-8bb4-e73a89e32ce4  Acfs         PRODDB           Configured
```

4. Display the database storage details, including the `DATA`, `RECO` and `REDO` locations, for each database storage ID.

For example, use the `odacli describe-dbstorage` command to display information about the ACFS storage for ID `9fe39332-cc1a-4b4b-8393-165524a6ef6b`.

```
# odacli describe-dbstorage -i ff2023d9-338d-4cff-8bb4-e73a89e32ce4
DBStorage details
-----
ID: ff2023d9-338d-4cff-8bb4-e73a89e32ce4
DB Name: PRODDB
DBUnique Name: PRODDB
```

```

DB Resource ID: c5b77384-634e-4dc8-b10b-fa2831d2c59b
Storage Type: Acfs
DATA Location: /u02/app/oracle/oradata/PRODDB
RECO Location: /u03/app/oracle/fast_recovery_area/
REDO Location: /u03/app/oracle/redo/
State: ResourceState(status=Configured)
Created: November 22, 2016 12:07:12 PM SGT
UpdatedTime: November 22, 2016 12:26:39 PM SGT

```

#### 5. Duplicate the database.

Use the RMAN duplicate database command to duplicate the database.

```

rman target sys/Welcome_12@source database hostname:PORT
(Continued)
/Service Name auxiliary sys/Welcome_12@Hostname of the target database:1521/
service name
RUN {
SET NEWNAME FOR DATABASE TO NEW;
duplicate target database to PRODDB from active database
SPFILE
SET cluster_database 'false'
SET audit_file_dest '/u01/app/oracle/admin/PRODDB/adump'
SET db_create_file_dest '/u02/app/oracle/oradata/PRODDB'
SET db_create_online_log_dest_1 '/u03/app/oracle/redo'
SET db_recovery_file_dest '/u03/app/oracle/fast_recovery_area'
SET control_files '/tmp/control_PRODDB.ctl' nofilenamecheck;
}

```

## 8.5.4 Registering a Database

Use the `odacli register-database` command to register the migrated database with the appliance.

The `dbclass`, `dbshape`, `servicename` and `password` are mandatory for registering the database. The `dbclass` and `dbshape` determine the `sga_target` and `pga_target` settings. The database `init.ora` parameters are reset as part of the `odacli register-database` command. Review the `init.ora` parameters after registration and ensure that the parameters set correctly.

### Note:

For a standby database, open the standby database in `READ ONLY` mode before executing the `odacli register-database` command.

1. If you have Oracle Database version 12.1 with SQL patches, ensure that the `sqlpatches` are in the Oracle Database Appliance environment. If the patches are not in the environment, copy the `$OH/sqlpatch` directories from the source database home to the `$OH` in Oracle Database Appliance before executing the `odacli register-database` command

The `odacli register-database` command invokes the `datapatch` utility for applying the post patch SQLs. If the source database has any `sqlpatches` applied that are not present in the Oracle Database Appliance environment, then the `datapatch` will fail.

2. If you have Oracle Database version 11.2 with SQL patches, you must roll back any patches applied to the source database that are not part of the installed Oracle Database Bundle patch (BP).
3. Register the database with Oracle Database Appliance.

```
odacli register-database -c OLTP -s odb1 -sn proddb.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: proddb.example.com",
  "updatedAtTime" : "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: proddb.example.com
Status: Success
Created: November 23, 2016 5:55:49 AM EDT
Message:
```

Task Name	Start Time
restore control file	November 23, 2016 5:55:49 AM EDT
move spfile to right location	November 23, 2016 5:56:08 AM EDT
register DB with clusterware	November 23, 2016 5:56:13 AM EDT
reset db parameters	November 23, 2016 5:57:05 AM EDT
Running DataPatch	November 23, 2016 5:57:36 AM EDT

(Continued)

End Time	Status
November 23, 2016 5:56:08 AM EDT	Success
November 23, 2016 5:56:13 AM EDT	Success
November 23, 2016 5:57:05 AM EDT	Success
November 23, 2016 5:57:36 AM EDT	Success
November 23, 2016 5:57:49 AM EDT	Success

4. Use the `odacli list-databases` command to view the registered database.

## 8.6 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.

## 8.7 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 redundancy.



**⚠ 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.

See “Adding Optional Oracle Database Appliance X7-2-HA Storage Shelf Drives (CRU)” in the Oracle Database Appliance Service Manual for disk placement.

**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.
- [Adding Optional Oracle Database Appliance X7-2-HA Storage Shelf Drives \(CRU\)](#)

## 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

**Table 9-1 (Cont.) Storage Options for Oracle Database Appliance X7-2S and X7-2M**

Configuration	Oracle Database Appliance X7-2S	Oracle Database Appliance X7-2M
Expansion Options	192 GB memory (part number 7117433)	Options: <ul style="list-style-type: none"> <li>• 384 GB memory (part number 7117433; quantity: 2)</li> <li>• Three (3) NVMe Drives (part number 7117740) or Six (6) NVMe Drives (part number 7117740; quantity: 2)</li> </ul>

## 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.
- [Preparing for a Storage Upgrade for a Virtualized Platform](#) (page 9-6)  
Review and perform these best practices before adding storage to the base shelf or adding the expansion shelf.

### 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).

#### Note:

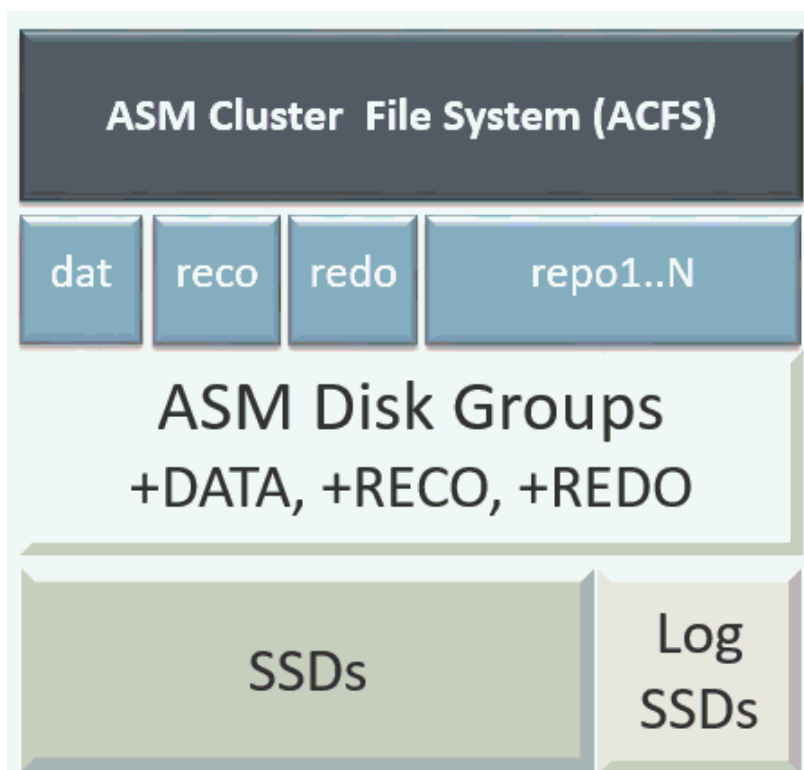
The base storage shelf must be fully populated before you can add an expansion shelf and the expansion shelf must have the same storage configuration as the base shelf. Once you select a base configuration, you cannot change the type of storage expansion.

### 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.

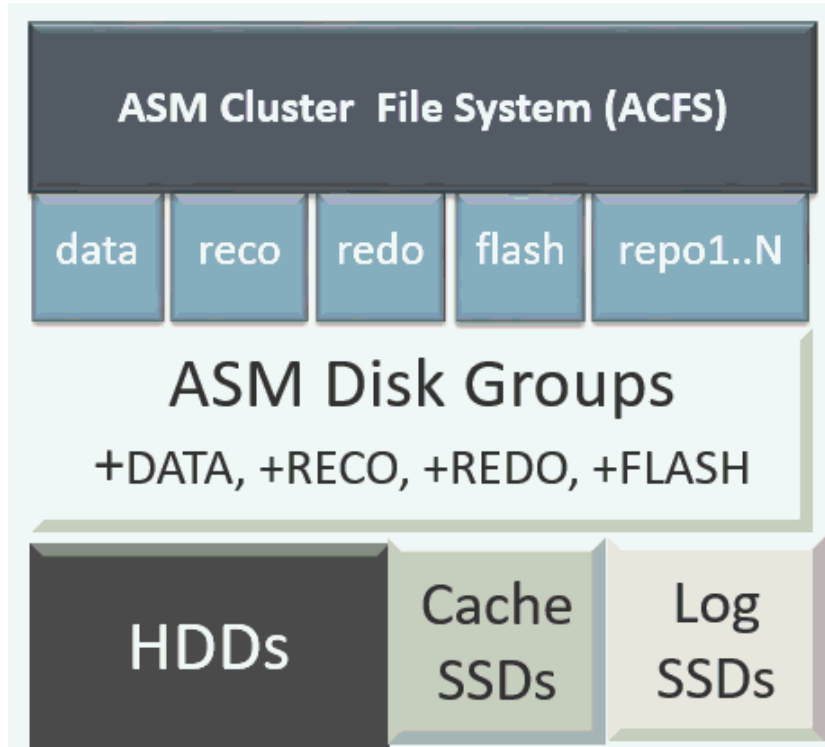
The following expansion options are available:

- 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

 **Note:**

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 Configurati on	2 servers, each with: <ul style="list-style-type: none"> <li>• 2 x 18 CPU</li> <li>• 384GB memory</li> </ul> JBOD: <ul style="list-style-type: none"> <li>• 4 x 800GB SSD</li> <li>• 5 x 3.2TB SSD</li> </ul>	2 servers, each with: <ul style="list-style-type: none"> <li>• 2 x 18 CPU</li> <li>• 384GB memory</li> </ul> JBOD: <ul style="list-style-type: none"> <li>• 4 x 800GB SSD</li> <li>• 20 x 3.2TB SSD</li> </ul>	2 servers, each with: <ul style="list-style-type: none"> <li>• 2 x 18 CPU</li> <li>• 384GB memory</li> </ul> JBOD: <ul style="list-style-type: none"> <li>• 4 x 800GB SSD</li> <li>• 5 x 3.2TB SSD</li> <li>• 15 x 10TB HDD</li> </ul>

**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	<p>Options:</p> <ul style="list-style-type: none"> <li>• 768GB memory (part number 7117433, quantity: 4)</li> <li>• Options to fully populate the base configuration: <ul style="list-style-type: none"> <li>– 5 pack 3.2 TB (part number 7117369; quantity 1, 2, or 3)</li> <li>– If the base is not fully populated with SSD, you can order 15 x 10TB HDD to the base. (part number 7117704)</li> </ul> </li> <li>• Options for the Expansion Shelf: <ul style="list-style-type: none"> <li>– You can only add an expansion shelf with the same storage configuration as the base configuration</li> </ul> </li> </ul>	<p>Options:</p> <ul style="list-style-type: none"> <li>• 768GB memory (part number 7117433, quantity: 4)</li> <li>• Expansion Shelf (part number 7117465): <ul style="list-style-type: none"> <li>– 4 x 800GB SSD</li> <li>– 20 x 3.2TB SSD</li> </ul> </li> </ul>	<p>Options:</p> <ul style="list-style-type: none"> <li>• 768GB memory (part number 7117433, quantity: 4)</li> <li>• Expansion Shelf (part number 7117466): <ul style="list-style-type: none"> <li>– 4 x 800GB SSD</li> <li>– 5 x 3.2TB SSD</li> <li>– 15 x 10TB HDD</li> </ul> </li> </ul>

### 9.3.2 Preparing for a Storage Upgrade for a Virtualized Platform

Review and perform these best practices before adding storage to the base shelf or adding the expansion shelf.

1. Update Oracle Database Appliance to the latest Patch Bundle before expanding storage.
2. Confirm both nodes are at the same version and patch bundle level for software and firmware.

```
# oakcli show version -detail
```

```
#oakcli inventory -q
```



**Note:**

If oakd is not running on either node, fix the problem before adding storage.

3. Check the disk health of the existing storage disks.

Run the check on both nodes and use the default checks option to check the NetworkComponents, OSDiskStorage, SharedStorage, and SystemComponents.

```
# oakcli validate -d
```

4. Run the command `oakcli show diskgroup` on each node to display and review Oracle Automatic Storage Management (Oracle ASM) disk group information.

```
# oakcli show diskgroup data
```

```
# oakcli show diskgroup reco
```

```
# oakcli show diskgroup redo
```

5. Confirm Oracle ASM and CRS health on both nodes.

Run the `oakcli orachk` command on each node. If there is a problem connecting to either node, then check the `/etc/bashrc` file and remove (or remark out) any values in the profile for `root`; `oracle`; `grid` users

Run `oakcli orachk` on Node 0:

```
# oakcli orachk
...
```

Checking Status of Oracle Software Stack - Clusterware, ASM, RDBMS

```
.....
```

Oracle Stack Status								
Host Name	CRS Installed	ASM HOME	RDBMS Installed	CRS UP	ASM UP	RDBMS UP	DB	Instance Name
odax3rm1	Yes	No	Yes	No	No	No		.....

...

Run `oakcli orachk` on Node 1:

```
# oakcli orachk
...
```

Checking Status of Oracle Software Stack - Clusterware, ASM, RDBMS

```
.....
```

Oracle Stack Status								
Host Name	CRS Installed	ASM HOME	RDBMS Installed	CRS UP	ASM UP	RDBMS UP	DB	Instance Name
odax3rm2	Yes	Yes	Yes	Yes	Yes	Yes	b22S2	b23S2 b24S2

...

6. Confirm communications between the nodes and that SSH is working using the same password for `oracle`, `root` and `grid`.

From each node:

- a. ssh to both nodes.
  - b. Ping both nodes.
7. Confirm that there is at least 10 GB of space available on each node.

```
[root@oda]# df -h
```

```
[root@odb]# df -h
```

# 10

## Managing Networks

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

- [About Network Infrastructure and VLANs on Oracle Database Appliance](#) (page 10-1)  
Learn about networks and virtual local area networks (VLANs) on the appliance.
- [Viewing Configured Networks and Network Interfaces](#) (page 10-3)  
Use the Web Console to display a list of configured networks, network details and interfaces.
- [Creating a Network](#) (page 10-4)  
Create a new network for the appliance.
- [Creating a Non-Bonded Physical Network](#) (page 10-5)  
For a non-bonded network configuration, you can create a physical network on the unused physical interface.
- [Updating a Network](#) (page 10-6)  
Update a network to revise the IP address, subnet mask, gateway, or type of network.
- [Deleting a Network](#) (page 10-6)  
Delete a configured network.

### 10.1 About Network Infrastructure and VLANs on Oracle Database Appliance

Learn about networks and virtual local area networks (VLANs) on the appliance.

Oracle Database Appliance X7-2 has two dual-port public network interfaces (either copper or fiber), which are bonded. The networks are `btbond0` in single node platforms and `bond0` in multi-node platforms.

You can only enable one of the interfaces in a bonded network. You can use the bonded network to manage VLANs, or you can break the bond and create two separate physical network interfaces (non-bonded network configuration) in your data center.

#### Note:

To create a second network, you must configure, or plumb, the initial network as a non-bonded network before deploying the appliance. You cannot use VLANs on a non-bonded network.

Use the Web Console to display all physical and virtual networks. For multi-node systems, the IP addresses for Node 0 and Node 1 cannot be the same.



## Virtual Local Area Networks (VLANs)

Oracle Database Appliance supports multiple virtual local area networks (VLANs) on the same network port or bond. VLANs are multiple logical networks that are created from a single physical network switch port, providing 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. The VLAN tag associated with the data packet and network define the network. You can create a collection of isolated networks to enhance network security and bandwidth and keep data packets separated. For example, application, backup, and management networks.

The network interfaces differ, depending on your Oracle Database Appliance hardware. The VLAN is created on `btbond0` in single node platforms and `bond0` in multi-node platforms. 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.

### Note:

To use VLANs with Oracle Database Appliance, you must configure the VLANs before you deploy the appliance.

The Web Console enables you to create, list, and delete VLANs on the appliance. For multi-node systems, you can use the Web Console to create a VLAN on both nodes of the appliance. To create a VLAN on a specific node, use the command-line interface.

For a bare metal deployment, use the Web Console or `odaadmcli` commands to manage the following types of VLANs:

- Public: For public access. This is the default public interface.
- Backup: For backup operations.
- Management: For management traffic.
- Custom: For usage defined by the customer. For example, for applications.

The public VLAN is setup when you configure the first network using the command `configure-firstnet`. You can set up only one public VLAN. Use the command-line interface to create other VLANs. For multi-node systems, the IP addresses for Node 0 and Node 1 cannot be the same. Oracle Database Appliance does not support Dynamic Host Configuration Protocol (DHCP) to provide IP addresses, subnet mask and default gateway.

## Non-Bonded Network Configuration

When you plumb the network for deployment, you can choose to use a bonded network, or you can choose to break the bond to create a non-bonded network configuration. The non-bonded network enables you to create a physical network on the unused physical interface.

When you use the command `configure first-net` to plumb the network as a non-bonded interface, there are two physical network interfaces, `em2` and `em3`. One of

the interfaces is for the public network, the second interface is available for you to create a network.

To create a second network, you must configure, or plumb, the initial network as a non-bonded network before deploying the appliance.

## 10.2 Viewing Configured Networks and Network Interfaces

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

1. Click the **Appliance** tab in the Web Console.
2. Click the **Network** tab in the left navigation to display a list of configured networks.

When the appliance is a multi-node system, tabs named **Node0** and **Node1** appear in the right corner, below the **Refresh** button. Click a tab to display network details for each node.

Network Name	Interface Name	Interface Type	Network Type	IP Address	Subnet Mask	Gateway	Node Number	Status	Actions
vlan126	btbond1.126	VLAN	Other	10.31.129.120	255.255.255.240	10.31.129.125	0	CONFIGURED	Actions
yihu1	sfpbond1	PHYSICAL	Backup	192.0.2.254	255.255.255.252	192.0.2.100	0	CONFIGURED	Actions
Private-network	priv0		Private	192.0.2.250	255.255.255.240		0	CONFIGURED	Actions
Public-network	btbond1		Public	10.30.99.99	255.255.252.0	10.30.90.10	0	CONFIGURED	Actions

3. Click **Show Interfaces** in the upper left corner of the Network page to display a list of network interfaces.

When the appliance is a multi-node system, tabs named **Node0** and **Node1** appear in the right corner, below the **Refresh** button. Click a tab to display the interfaces for each node.

Show Networks		Show Interfaces	
search <input type="text"/>		Sort by: Created: New to Old <input type="button" value="Refresh"/>	
Page 1 of 2 (1-7 of 8 items) < 1 2 >			
btbond1.126	Created: Fri Dec 08 2017 2:46:21 AM	Interface Type: VLAN	Status: CONFIGURED
Interface Members: btbond1.126			
sfpbond1	Created: Thu Dec 07 2017 12:59:53 AM	Interface Type: BOND	Status: CONFIGURED
Interface Members: p3p1,p3p2			
em2	Created: Thu Dec 07 2017 12:59:53 AM	Interface Type: PHYSICAL	Status: CONFIGURED
Interface Members: em2			
p3p1	Created: Thu Dec 07 2017 12:59:53 AM	Interface Type: PHYSICAL	Status: CONFIGURED
Interface Members: p3p1			

4. Click **Show Networks** to go back to the network view.

## 10.3 Creating a Network

Create a new network for the appliance.

When naming a network, you can use alphanumeric characters, dashes (-) and underscores (\_). The network name cannot exceed 40 characters and must begin with an alpha character.

1. Click the **Appliance** tab in the Web Console.
2. Click the **Network** tab in the left navigation to display a list of configured networks.
3. If the appliance is a multi-node system, click **Node0** or **Node1** to display the node where the network to reside.
4. Click **Create Network** in the upper right corner.
5. Enter the network information in the required fields. The Interface field has a drop-down menu with available choices. The Subnet Mask field has a drop-down menu with available choices and a search box. Optionally, enter a Gateway IP address and select an option from the Network Type list. The network type helps to identify if the network is for backup, database, dataguard, management, private, or other. Click **Create**.

The screenshot shows the 'Create New Network' form in the Oracle Web Console. The form is titled 'Create New Network' and is located under the 'Appliance' tab. It contains several input fields: 'Name \*', 'Interface \*' (a dropdown menu), 'Subnet Mask \*' (a dropdown menu with '255.255.255.252' selected), 'IP Address \*', 'Gateway', and 'Network Type' (a dropdown menu with 'Backup' selected). There are 'Cancel' and 'Create' buttons at the bottom right of the form.

## 10.4 Creating a Non-Bonded Physical Network

For a non-bonded network configuration, you can create a physical network on the unused physical interface.

If you plumbed the network as a non-bonded interface, you create two physical network interfaces, `em2` and `em3`. One interface is the public network, the second interface is available for you to create a network.

### Note:

To create a second network, you must configure, or plumb, the initial network as a non-bonded network before deploying the appliance. You cannot use VLANs on a non-bonded network.

1. Click the **Appliance** tab in the Web Console.
2. Click the **Network** tab in the left navigation to display a list of configured networks.
3. If the appliance is a single-node system, click **Create Network** in the upper right corner. If the appliance is a multi-node system, go to Step 4.
  - a. Enter the network information in the required fields. The Interface field has a drop-down menu with available choices. The Subnet Mask field has a drop-down menu with available choices and a search box. Optionally, enter a Gateway IP address and select an option from the Network Type list. The network type helps to identify if the network is for backup, database, dataguard, management, private, or other.

The screenshot shows the Oracle Database Appliance Web Console interface. The top navigation bar includes 'ORACLE', 'Database Appliance', and 'About'. Below this, there are tabs for 'Appliance', 'Database', 'Object Store', and 'Activity'. The left sidebar shows a navigation menu with 'Appliance', 'Network', 'Oracle ASR', and 'Patch Manager'. The main content area is titled 'Create Network' and contains the following fields:

- Name \***: Text input field.
- Subnet Mask \***: Dropdown menu with '255.255.255.252' selected.
- IP Address \***: Text input field.
- Gateway**: Text input field.
- Interface \***: Dropdown menu with 'em3' selected.
- Network Type**: Dropdown menu with 'Backup' selected.
- Default Network**: Radio buttons for 'Yes' and 'No', with 'No' selected.

At the bottom right of the form, there are '< Cancel' and 'Create >' buttons.

- b. Click **Create**.
4. If the appliance is a multi-node system, click **Node0** or **Node1** to display the node where the network to reside. Click **Create Network** in the upper right corner.
    - a. Enter the network information in the required fields. The Interface field has a drop-down menu with available choices. The Subnet Mask field has a drop-down menu with available choices and a search box. Optionally, enter a Gateway IP address and select an option from the Network Type list. The network type helps to identify if the network is for backup, database, dataguard, management, private, or other.
    - b. Click **Create**.

The screenshot shows the Oracle Database Appliance Web Console interface. The top navigation bar includes 'Appliance', 'Database', 'Object Store', and 'Activity'. The left sidebar has 'Appliance', 'Network', 'Oracle ASR', and 'Patch Manager'. The main content area is titled 'Create Network' and contains the following fields:

- Name**: Text input field.
- Subnet Mask**: Dropdown menu with '255.255.255.252' selected.
- Network Type**: Dropdown menu with 'Backup' selected.
- Node0 IP Address**: Text input field.
- Gateway**: Text input field.
- Default Network**: Radio buttons for 'Yes' and 'No' (selected).
- Node1 IP Address**: Text input field.
- Interface**: Dropdown menu with 'em3' selected.

Buttons for '< Cancel' and 'Create >' are located at the bottom right of the form.

### Related Topics

- [Plumbing the Network](#) (page 3-9)  
Configure a temporary network configuration framework to build your network information during deployment.
- [About Network Infrastructure and VLANs on Oracle Database Appliance](#) (page 10-1)  
Learn about networks and virtual local area networks (VLANs) on the appliance.

## 10.5 Updating a Network

Update a network to revise the IP address, subnet mask, gateway, or type of network.

1. Click the **Appliance** tab in the Web Console.
2. Click the **Network** tab in the left navigation to display a list of configured networks.  
When the appliance is a multi-node system, tabs named **Node0** and **Node1** appear in the right corner, below the **Refresh** button. Click a tab to display network details for each node.
3. If the appliance is a multi-node system, click **Node0** or **Node1** to display the node where the network that you want to edit resides.
4. Expand the **Actions** menu, then click **Update** for the network that you want to edit.
5. Update the information in the IP Address, Subnet Mask, and Gateway fields and select a network type from the list, as needed, then click **Update**.

The screenshot shows the 'Update Network' form in the Oracle Database Appliance Web Console. The form contains the following fields and a dropdown menu:

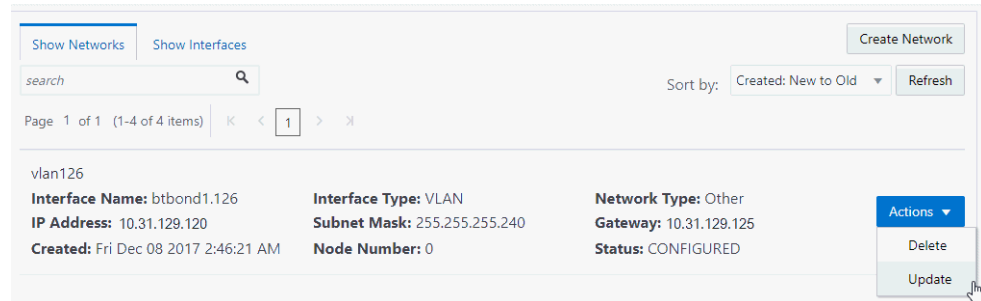
- IP Address**: Text input field with '192.0.2.54' entered.
- Subnet Mask**: Dropdown menu with '255.255.255.240' selected.
- Gateway**: Text input field.
- Network Type**: Dropdown menu with 'Backup' selected. The dropdown list is open, showing options: Backup, Database, Dataguard, Management, and Other.

A 'Update >' button is visible at the bottom right of the form.

## 10.6 Deleting a Network

Delete a configured network.

1. Click the **Appliance** tab in the Web Console.
2. Click the **Network** tab in the left navigation to display a list of configured networks.  
When the appliance is a multi-node system, tabs named **Node0** and **Node1** appear in the right corner, below the **Refresh** button. Click a tab to display network details for each node.
3. If the appliance is a multi-node system, click **Node0** or **Node1** to display the node where the network that you want to delete resides.
4. Expand the **Actions** menu, then click **Delete** for the network that you want to delete.



5. Confirm the action when prompted.

# 11

## Backup, Restore and Recover Databases

Review backup, restore, and recovery operations for your databases.

- [About Database Backup, Restore and Recover](#) (page 11-1)  
Backup your databases in Oracle Database Appliance and use the restore and recover features to restore a database to another system or to recover database files.
- [Creating a Database Backup Policy](#) (page 11-8)  
Use the Web Console to create a policy to backup a database to the Oracle Fast Recovery Area (FRA) of a disk or to the Object Store.
- [Updating a Database Backup Policy](#) (page 11-9)  
Use the Web Console to update the recovery window or change the crosscheck option for a database backup policy.
- [Backing Up a Database](#) (page 11-9)  
Apply a backup policy to a database, create a manual backup, update a database backup schedule, or update an archive log backup.
- [Viewing Backup Logs](#) (page 11-10)  
Each database has a log of available backups. The log lists the type, location, and date and timestamp of the backup.
- [Updating a Database with a Backup Configuration File](#) (page 11-10)  
Attach a backup configuration file to a database to define the database backup attributes and destination.
- [Restoring a Database](#) (page 11-10)  
Use the Web Console to restore a database from one appliance to another appliance, or to the same appliance when the source database is deleted.
- [Recovering a Database](#) (page 11-11)  
Recover the database to the system using a Backup Report, point-in-time recovery (PITR), a system change number (SCN), or from the latest backup time.
- [Deleting Backups](#) (page 11-13)  
Delete older, obsolete level 0, level 1 and long term backups.
- [Deleting a Backup Policy](#) (page 11-13)  
Use the Web Console to delete a database backup policy.
- [Using the CLI to Backup, Restore, and Recover](#) (page 11-13)  
Use the command-line interface to create a database backup policy.

### 11.1 About Database Backup, Restore and Recover

Backup your databases in Oracle Database Appliance and use the restore and recover features to restore a database to another system or to recover database files.

It is important to create a backup recovery strategy to protect the databases in Oracle Database Appliance from data loss due to a physical problem with a disk that causes a failure of a read from or write to a disk file that is required to run the database, or due

to user error. You can create a backup policy in the Web Console or from the command-line interface.

The following backup options are available:

- Backup to an Oracle Fast Recovery Area (FRA) disk
- Backup to Oracle Cloud Infrastructure Object Storage (Oracle Object Storage)

You cannot use the backup, restore, and recovery features with a third-party repository.

The backup feature enables you to create a backup configuration with your backup parameters, including backup level and location. For new and existing databases, you can create and attach a backup configuration to a database to perform a daily backup. Once a backup configuration is attached to a database, the `dcS-agent` schedules daily automatic backups for the database. The default schedule is a level 0 backup every Sunday and a level 1 backup Monday through Saturday. You can edit or disable the schedule.

The `dcS-agent` generates and saves a backup report for each backup. The backup report contains the metadata required to recover or restore a database.



#### Note:

You cannot backup databases that use Transparent Data Encryption (TDE).

Recovering a database in Oracle Database Appliance is a full RMAN database recovery. You can recover from a Backup Report, a point-in-time (PITR), a System Change Number (SCN), or from the latest backup.

### Backup Configuration

The Backup Configuration defines the backup details. When you create a Backup Configuration, you define the destination for the database backups, either Disk or Cloud Object Storage, and you define the attributes such as the backup level and the recovery window.

If you use the Oracle Object Storage for backup and recovery, you must have an ObjectStore Resource ID.

You assign the backup configuration to the database when you create the database. You can attach a backup configuration to an existing database or edit a backup configuration.

### Backup Levels

The backup configuration that you create defines the backup level:

- **Level 0:** The backup captures all blocks in the datafile. By default level 0 backups occur every Sunday. A level 0 backup is a full backup and is used as the parent for a level 1 backup.
- **Level 1:** The backup is an incremental backup that captures only those blocks that change between backups in each datafile. By default, a level 1 backup occurs daily, Monday through Saturday, and captures images of each block in a datafile



that changed. Level 1 backups are differential backups. The backup includes blocks from the most recent previous level 1 or level 0 backup.

- **LongTerm:** The backup is a long-term, or archival backup. Use LongTerm to create a backup that is all-inclusive and exempt from the backup retention policy. The backup is all-inclusive because every file needed to restore and recover the database is backed up to a single location. The backup is exempt from the retention policy that is defined in the recovery window. You must use Oracle Object Storage for long term backups.

The AutoScheduler creates a level 0 backup on Sunday and level 1 on the remaining days of the week. You can display a list of scheduled backups, edit your backup schedule, or disable a scheduled backup.

### Backup to Disk

When you backup to disk, you are using the Oracle Fast Recovery Area (FRA) of the disk. FRA is a storage directory that allows backup and recovery operations on Oracle databases. The directory contains archived redo logs, backup pieces and copies, and the control file.

Advantages to backing up to disk are as follows:

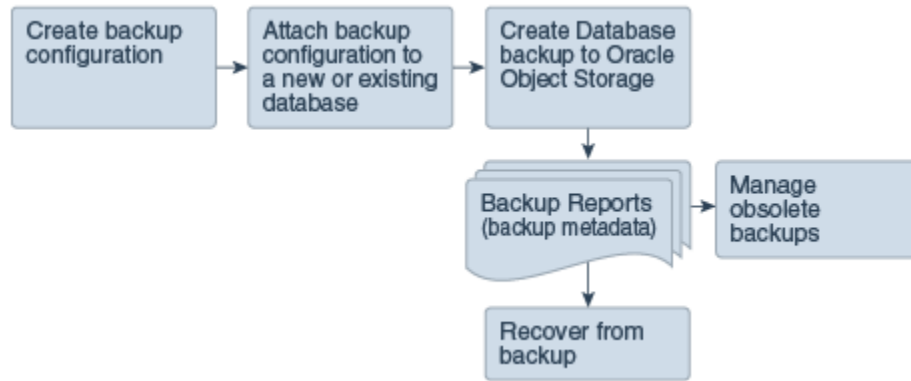
- Quick recovery from backups stored on disk
- Ability to flashback the database
- Automate management of recovery related files (like archived logs)

#### Note:

When you backup to disk, data is not encrypted and passwords are not allowed. In addition, backup to disk requires a lot of disk space (up to two to three times the size of the database).

The following is a high-level overview of the workflow for backup and recovery when using a disk:

1. Create a backup configuration to define the backup location (disk), backup level, and recovery window.
2. Create a database and attach the backup configuration as part of creating the database. When the backup configuration is associated with a database, backups are automatically created.
3. Manage obsolete backups.
4. Recover the database from a backup on the disk.



### Backup to Oracle Object Storage

Oracle Object Storage is a highly secure, scalable storage platform that enables you to safely and securely store or retrieve a database backup at any time. Data and the associated metadata are stored as an object in a logical container (bucket). Oracle Database Appliance creates a Backup Report and a unique ID to identify each backup.

Oracle Object Storage is tightly integrated with Oracle Cloud Infrastructure Identity and Access Management. The data, user-defined metadata associated with the data, and encryption keys are automatically encrypted using 256-bit Advanced Encryption Standard (AES- 256). The encryption keys are rotated frequently and cannot be disabled. By default, only authenticated users that have explicitly been granted access to specific resources can access data stored in Oracle Object Storage. Data is uploaded and downloaded over SSL endpoints using the HTTPS protocol.

When you backup to Oracle Object Storage, you are using your backup configuration and your Oracle ObjectStoreSwift credentials. The credentials are stored in an encrypted Oracle wallet. You can attach the credentials to one or more backup configurations.

#### Note:

Credentials are validated when you create the backup configuration that uses Oracle Object Storage. The credentials are not validated against the URL and tenancy.

Advantages to using Oracle Object Storage are as follows:

- Backups are encrypted using the password for non-TDE databases.

#### Note:

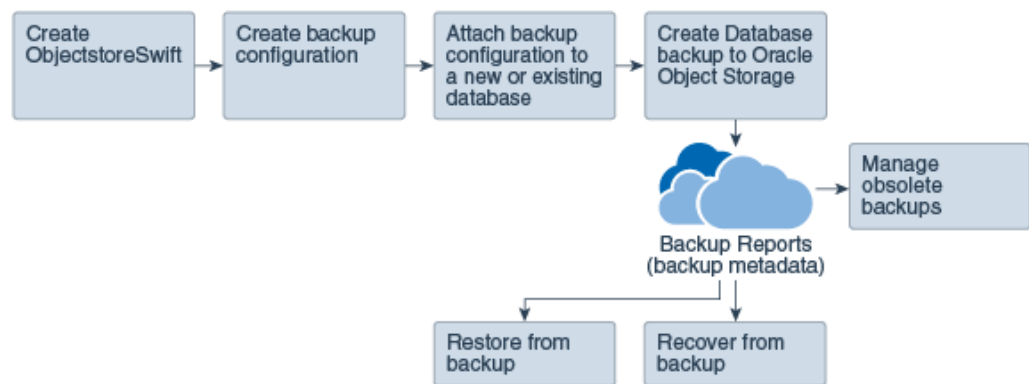
Save the password that you use during backups in a safe location, you must provide the password during recovery operations.

- Quick recovery from backups. With the Oracle Object Storage, you can safely and securely use the Web Console to store or retrieve data directly from within the cloud platform, at any time.

- Automate management of recovery related files (like archived logs)
- Oracle Object Storage is not directly accessed by the operating system, instead it uses APIs to access the storage at the application level.

The following is a high-level overview of the workflow for backup and recovery when using Oracle Object Storage:

1. Create a ObjectStoreSwift object with your credentials.
2. Create a backup configuration to define the backup location (ObjectStore), resource id of ObjectStoreSwift, the container (bucket) name where you want to store backups, and the recovery window.
3. Create a database and attach the backup configuration as part of creating the database. When the backup configuration is associated with a database, backups are automatically created.
4. Manage obsolete backups.
5. Restore from backup. When you save your backups to Oracle Object Storage, you can restore the database to the same system or to a different system.
6. Recover the database from a backup on Oracle Object Storage.



 **Note:**

Before you can use this backup option, you must create an Oracle Cloud Infrastructure Object Storage account. When you create the account, you define the account credentials, end point URL, and bucket. Go to the [Oracle Store](#) and sign up for Oracle Cloud Infrastructure Object Storage.

### Backup Reports

A backup report is generated for each backup and is similar to, but does not replace, a recovery catalog. The report contains the Oracle Database Appliance information and metadata needed to restore or recover a database. The Backup Report is designed to keep track of all of the information required to restore or recover a database.

The following is an example of a level 1 backup report:

```
{
  "id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
  "dbResId" : "b5Fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
}
```

```

"dbId" : "2717054291",
"dbName" : "HRDbO",
"dbUniqueName" : "HRDbOu",
"backupType" : "REGULAR-L1",
"keepDays" : null,
"backupLocation" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket",
"cfBackupHandle" : "c-2717054291-20171108-04",
"spfBackupHandle" : "c-2717054291-20171108-04",
"pitrTimeStamp" : "November 08, 2017 12:43:14 PM UTC",
"pitrSCN" : "1175058",
"resetLogsTimeStamp" : "November 08, 2017 09:55:34 AM UTC",
"resetLogsSCN" : "1112268",
"oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
"sqlPatches" : "25811364,26609817",
"backupLogLoc" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/scaoda702c1n1/rmanlog/HRDbOu/2717054291/2017-11-08/rman_backup_2017-11-08_12-42-41.0545.log",
"tdeWalletLoc" : null,
"dbConfigLoc" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/scaoda702c1n1/dbconfig/HRDbOu/2717054291/2017-11-08/DBCONFIG_TAG20171108T124407_2017-11-08_12-44-07.0533.tar.gz",
"name" : "Backup_Report_HRDbO",
"createTime" : "November 08, 2017 12:42:08 PM UTC",
"state" : {
  "status" : "CONFIGURED"
},
"updatedAt" : "November 08, 2017 12:44:12 PM UTC",
"backupReportLogDetail" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/scaoda702c1n1/rmandetaillogreport/HRDbOu/2717054291/2017-11-08/rman_list_backup_detail_2017-11-08_12-44-04.0362.log",
"dbInfo" : {
  "dbClass" : "OLTP",
  "dbType" : "RAC",
  "dbShape" : "odbl",
  "dbEdition" : "EE",
  "dbStorage" : "ASM"
},
"dbDataSize" : "1542M",
"dbRedoSize" : "16403M"
}

```

## About Recovery Options

The recovery in Oracle Database Appliance always performs a full database restore or recover. The recovery options are LATEST, PITR, SCN, and BackupReport.

The following types of recovery are available:

- **LATEST:** Performs a complete recovery (valid backups and all required archived logs and online redo logs must be available)
- **PITR:** Point-in-Time Recovery that performs a recovery to a specified timestamp within the current incarnation of database
- **SCN:** SCN-based recovery that performs a recovery is an incomplete recovery to a specified SCN within the current incarnation of database.
- **BackupReport:** Performs a recovery based on the Backup Report timestamp. The BackupReport option is similar to PITR, except that the recovery uses the Backup Report timestamp instead of a specified timestamp.

## Point-in-Time Database Recovery

Point-in-Time Recovery (PITR) recovers the database to a specific point-in-time. You can use a timestamp or a backup report for this type of recovery.

A point-in-time recovery is often used for the following situations:

- A user error or corruption removes needed data or introduces corrupted data. For example, someone erroneously deletes or updates the contents of one or more tables, drops database objects that are still needed during an update to an application, or runs a large batch update that fails midway.
- A database upgrade fails.

## System Change Number Recovery

A system change number (SCN) is a stamp that defines a committed version of a database at a point in time. Oracle assigns every committed transaction a unique SCN. You can recover a database to the latest time or to an SCN.

The database is restored from backups created before the target time, and then applies incremental backups and logs to re-create all changes between the time of the data file backups and the end point of recovery. When the end point is specified as an SCN, the database applies the redo logs and stops after each redo thread or the specified SCN, whichever occurs first. When the end point is specified as a time, the database internally determines a suitable SCN for the specified time and then recovers to this SCN.

SCN is a primary mechanism to maintain data consistency in Oracle database. With each execution, there is an increase in the count of the SCN. The following are some examples of areas that use SCN:

1. Redo records. Every redo record has an SCN version of the redo record in the redo header (redo records can have non-unique SCN). Given redo records from two threads (as in the case of RAC), recovery will order them in SCN order, essentially maintaining a strict sequential order.
2. Data block. Every data block has block SCN (block version). In addition to that, a change vector in a redo record also has expected block SCN. This means that a change vector can be applied to one and only version of the block. Code checks if the target SCN in a change vector is matching with the block SCN before applying the redo record. If there is a mismatch, corruption errors are thrown.
3. Read consistency. Every query has query environment which includes an SCN at the start of the query. A session can see the transactional changes only if that transaction commit SCN is lower than the query environment SCN.
4. Commit. Every commit generates an SCN (commit SCN) that marks a transaction boundary. Group commits are possible too.

## Obsolete Database Backups

It is important to remove older backups once they become obsolete. The type of backup and the recovery window that you define in the database backup configuration determines when obsolete database backups are deleted.

For level 0 and level 1 backups, run the command `odacli delete-backup` for a given Database Resource Identifier to delete obsolete backups based on the defined recovery window.

For Longterm backups, create a JSON input file and use the command `odacli delete-backup` for a given Backup Report to delete the backups from Oracle Object Storage.

Typically, older level 0 and level 1 database backups are considered obsolete and deleted based on the defined recovery window, as follows:

- Disk: 1-14 days
- Object Storage: 1-31 days

**Related Topics**

- [odacli Backup and Recovery Commands](#) (page 14-21)  
Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.

## 11.2 Creating a Database Backup Policy

Use the Web Console to create a policy to backup a database to the Oracle Fast Recovery Area (FRA) of a disk or to the Object Store.

The backup policy defines the backup, including the location where you want to store the backups and the recovery window. Backup to disk requires a lot of disk space (up to two to three times the size of the database).

1. Click the **Database** tab in the Web Console.
2. Click **Backup Policy** in the left navigation to display a list of backup policies.
3. Click **Create Backup Policy**.
4. Enter a name for the backup policy and select the number of days for the recovery window. Select **Enable Crosscheck** to determine if the files on the disk on in the media management catalog correspond to data in the RMAN repository. Select one of the following as the backup destination:
  - To backup to disk, select **Disk** as the backup destination.
  - To backup to the cloud, select **ObjectStore** as the backup destination. If you have more than one Object Store, then select the Object Store Credential Name from the list. Enter a name in the Container Name field.
  - To not define a destination, select **None**.

The Backup Policy name must begin with an alpha character and contain only alphanumeric characters.

The following example creates a backup configuration named `mkg1dailydisk` with a backup to `disk` and a 1 day recovery window. Crosscheck is enabled.

**Create Backup Policy**

Backup Policy Name \*      Recovery Window (days) \*

mkg1dailydisk      1

Backup Destination      Enable Crosscheck

Disk      Select Enable Crosscheck to determine if files on disk or in the media management catalog correspond to data in the RMAN repository.

Object Store Credential Name

ObjectStoreName

Container Name

< Cancel      Create >

5. Click **Create**. Click **Yes** to confirm that you want to create the backup policy.  
A link to the job appears. When the job completes successfully, the backup configuration is ready.

Update an existing database to attach the backup configuration to the database using the ID or Name. When you attach the backup configuration to a database, the `dc-agent` schedules daily automatic backups for the database.

## 11.3 Updating a Database Backup Policy

Use the Web Console to update the recovery window or change the crosscheck option for a database backup policy.

Crosscheck determines if the files on the disk on in the media management catalog correspond to data in the RMAN repository.

1. Click the **Database** tab in the Web Console.
2. Click **Backup Policy** in the left navigation to display a list of backup policies.
3. Expand the **Actions** menu for a backup policy, then click **Update**.
4. To change the recovery window, use the up or down arrow to change the number of days.
5. To enable or disable the crosscheck select or deselect **Enable Crosscheck**.
6. Click **Update**. Click **Yes** to confirm that you want to update the backup policy.

A link to the job appears. When the job completes successfully, the backup configuration is ready.

## 11.4 Backing Up a Database

Apply a backup policy to a database, create a manual backup, update a database backup schedule, or update an archive log backup.

You can use the Web Console or the command-line interface to create a database backup. In the command-line interface, use the command `odacli create-backup` for a specified Database Resource ID.

Before creating a database backup, you must have a backup policy. The backup policy defines the recovery window and the backup destination. You can associate a backup policy with the database before creating the backup.

1. In the Web Console, click the **Database** tab.
2. Click a database name to select a database from the list.
3. Review the database information, including the backup policy name and destination details. To select a backup policy for the database, click **Apply Backup Policy**. Select a policy.
4. Click **Manual Backup**, **Update Database Backup Schedule** or **Update Archive Log Backup**.

If the action is disabled, then apply a backup policy.

5. Click **Yes** to confirm the job.

A link to the job appears. When the job completes successfully, the backup is ready. A list of backups appears at the bottom of the page.

## 11.5 Viewing Backup Logs

Each database has a log of available backups. The log lists the type, location, and date and timestamp of the backup.

1. In the Web Console, click the **Database** tab, then click the database name in the list of databases.  
Information about the database appears on the Database Information page.
2. Scroll to the bottom of the page to view a list of Backups.
3. Click the Job ID for a backup to view the Backup Report and more details about the backup.

## 11.6 Updating a Database with a Backup Configuration File

Attach a backup configuration file to a database to define the database backup attributes and destination.

1. In the Web Console, click the **Database** tab, then select a database from the list.
2. Expand the **Actions** menu, then click **Update Database with Backup Config**.  
If the action is disabled, then you must create a backup configuration file.
3. Select a backup configuration name from the list of available files, then click **Update**.
4. Expand the **Actions** menu, then click **View** to display the Database Information page.  
The details include whether or not AutoBackup is disabled, the Backup Config ID number, and options to create a backup and enable or disable automatic backups.
5. (Optional) Click **Create Backup** to create a single backup, to enable automatic backups, and to display a list of backups.
6. (Optional) Click the Database details to display the Backup Config ID, to create a manual backup, or enable automatic backups.
7. Click the **Activity** tab to check the job status.

When the job completes successfully, the backup configuration is associated with the database.

## 11.7 Restoring a Database

Use the Web Console to restore a database from one appliance to another appliance, or to the same appliance when the source database is deleted.

After you backup a database, you can restore it. When you restore a database, environment and validation checks and setup tasks are performed. Restoring a database requires a number of tasks and configuration details, such as creating database storage, Oracle Home, recreating the control file, registering the database, and establishing RMAN restore and recovery. An Oracle Database Appliance backup report is generated for each backup and contains the metadata required to restore a database. The report is designed to help you to quickly and efficiently restore a database.



The following are the prerequisites to restoring a database from a backup:

1. Obtain Object Store Credentials for the host.
2. Create a backup policy using the object store credentials as the backup destination.
3. Attach the backup policy to the database that you want to backup.
4. Create a manual backup of the database and save the file.
1. Click the **Database** tab.
2. Verify that **Auto Refresh Disabled** appears on the page.
3. Click **Restore Database from Backup**, then click **Next** to display the Restore Database from Backup page.
4. Select your Object Store Credential name from the list.
5. Enter the password in the **Backup Encryption Passwords** field and the **Confirm Backup Encryption Passwords** field.
6. Click **Browse** and select the backup report.
7. Click **Restore** .

When the backup report is loaded, additional fields appear on the page and are populated based on the backup report.

8. In the **DB Name** field, enter a name for the database.  
The name must contain lowercase alphanumeric characters and cannot exceed 8 characters. The Oracle system identifier (SID) is always set to the database name.
9. Enter the password in the **SYS User Password** field and the **Confirm SYS User Password** field.
10. Click **Restore**.
11. Click **Yes** to confirm that you want to restore the database from the selected Object Store backup.
12. Validate that the job completed. You can track the job in the **Activity** tab in the Web Console.

## 11.8 Recovering a Database

Recover the database to the system using a Backup Report, point-in-time recovery (PITR), a system change number (SCN), or from the latest backup time.

Recovering a database in Oracle Database Appliance is a full RMAN database recovery.

Recovering from a backup report requires JSON input for the backup report.

1. Display a list of backup reports and locate the latest Backup Report for the database and save the Backup Report ID.  

```
# odacli list-backupreports
```
2. Use the Backup Report ID to display the details of the Backup Report. Determine how you want to recover the database: PITR, SCN, or Latest and locate the needed information in the Backup Report.

```
# odacli describe-backupreport -i 2d82460c-d648-4e75-8c7d-72cc90bc442a
{
  "id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
  "dbResId" : "b5fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
  "dbId" : "2717054291",
  "dbName" : "ExampleDB",
  "dbUniqueName" : "ExampleDBu",
  "backupType" : "REGULAR-L1",
  "keepDays" : null,
  "backupLocation" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket",
  "cfBackupHandle" : "c-2717054291-20180108-04",
  "spfBackupHandle" : "c-2717054291-20180108-04",
  "pitrTimeStamp" : "January 08, 2018 12:43:14 PM UTC",
  "pitrSCN" : "1175058",
  "resetLogsTimeStamp" : "January 08, 2018 09:55:34 AM UTC",
  "resetLogsSCN" : "1112268",
  "oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
  "sqlPatches" : "25811364,26609817",
  "backupLogLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/system_namecln1/
rmanlog/ExampleDBu/2717054291/2018-01-08/rman_backup_2018-01-08_12-42-41.0545.log",
  "tdeWalletLoc" : null,
  "dbConfigLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/system_namecln1/
dbconfig/ExampleDBu/2717054291/2018-01-08/DBCONFIG_TAG20180108T124407_2018-01-08_12-44-07.0533.tar.gz",
  "name" : "Backup_Report_ExampleDB",
  "createTime" : "January 08, 2018 12:42:08 PM UTC",
  "state" : {
    "status" : "CONFIGURED"
  },
  "updatedAt" : "January 08, 2018 12:44:12 PM UTC",
  "backupReportLogDetail" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/
system_namecln1/
rmandetaillogreport/ExampleDBu/2717054291/2018-01-08/
rman_list_backup_detail_2018-01-08_12-44-04.0362.log",
  "dbInfo" : {
    "dbClass" : "OLTP",
    "dbType" : "RAC",
    "dbShape" : "odbl",
    "dbEdition" : "EE",
    "dbStorage" : "ASM"
  },
  "dbDataSize" : "1542M",
  "dbRedoSize" : "16403M"
}
}
```

3. To recover from a backup report, based on PITR, identify the database ID and the backup report for recovery.

In the following example, the JSON input file for the backup report is `backupreport.json`.

```
# odacli recover-database -i b5fc646e-01a6-4c8b-8286-7633346c4 -br
backupreport.json -p
```

4. To recover based on PITR, identify the database ID and the date and time stamp for recovery.

```
# odacli recover-database -i b5fc646e-01a6-4c8b-8286-7633346c4 -t PITR -r
01/08/2018 12:57:33 -p
```

5. To recover based on SCN, identify the database ID and the SCN number.

```
# odacli recover-database -i b5fc646e-01a6-4c8b-8286-7633346c4 -t SCN -s
392375947
```

6. To recover based on the latest backup, identify the database ID and use the Latest option.

```
# odacli recover-database -i b5fc646e-01a6-4c8b-8286-7633346c4 -t Latest -p
```

7. Validate that the job completed. You can track the job in the **Activity** tab in the Web Console, or run the command `odacli describe-job` with the job ID.

```
# odacli describe-job -ijobId
```

When the job completes successfully, the recovery is complete.

## 11.9 Deleting Backups

Delete older, obsolete level 0, level 1 and long term backups.

For level 0 and level 1 backups, the recovery window defined in the Backup Configuration determines when the backup is obsolete. The ranges are as follows:

- Backup to disk: between 1 and 14 days
- Backup to the Oracle Object Storage: between 1 and 31 days

For Long Term backups to the Oracle Object Storage, view the Backup Report for a database to determine when the backup is obsolete. To delete Long Term Backup, the Database Resource ID or Database name and the Backup Report are required.

1. Display a list of all backup reports.

```
# odacli list-backupreports
```

2. Obtain the Database ID and type of backup.

```
# odacli describe-backupreport -i Backup Report ID
```

3. To delete obsolete level 0 and level 1 backups, use the Database ID to delete the backup.

```
# odacli delete-backup -i20576eb1-bc32-4e34-bf97-fda0b60ca15b
```

4. To delete Long Term backups, use the Backup Report and a JSON file to delete the backup.

In the following example, the JSON input file for the backup report is `backupreport.json`.

```
# odacli delete-backup -i 20576eb1-bc32-4e34-bf97-fda0b60ca15b -br backupreport.json
```

## 11.10 Deleting a Backup Policy

Use the Web Console to delete a database backup policy.

1. Click the **Database** tab in the Web Console.
2. Click **Backup Policy** in the left navigation to display a list of backup policies.
3. Expand the **Actions** menu for a backup policy, then click **Delete**. Click **Yes** to confirm that you want to delete the backup policy.

A link to the job appears. When the job completes successfully, the backup policy is deleted.

## 11.11 Using the CLI to Backup, Restore, and Recover

Use the command-line interface to create a database backup policy.

- [Preparing for Database Backup to Disk](#) (page 11-14)  
Use the command-line interface to create a policy to backup a database to the Oracle Fast Recovery Area (FRA) of a disk.

- [Preparing for Database Backup to Oracle Cloud](#) (page 11-15)  
Create a backup configuration to backup a database to Oracle Cloud Infrastructure Object Storage.
- [Backing Up a Database with the CLI](#) (page 11-16)  
Create a level 0, level 1, or LongTerm database backup with the command-line interface.
- [Restoring a Database with the CLI](#) (page 11-17)  
Restore a database to a system from Oracle Object Storage using a Backup Report and the command-line interface.

### 11.11.1 Preparing for Database Backup to Disk

Use the command-line interface to create a policy to backup a database to the Oracle Fast Recovery Area (FRA) of a disk.

You can create a backup configuration using the Web Console or the command-line interface. Most of the backup and recovery commands enable you to provide either a resource name or resource ID to identify the database.

Backup to disk requires a lot of disk space (up to two to three times the size of the database).

1. Create a BackupConfig object (backup configuration) using the command `odacli create-backupconfig`.

The backup configuration defines the backup, including the location where you want to store the backups and the recovery window.

The following example creates a backup configuration named `mkgldailydisk` with a backup to `disk` and a 1 day recovery window.

```
# odacli create-backupconfig -d Disk -n mkgldailydisk -w 1
```

2. Check the job status.

```
# odacli list-jobs
```

When the job completes successfully, the backup configuration is ready.

3. (Optional) Update an existing database to attach the backup configuration to the database using the ID or Name.

When you attach the backup configuration to a database, the `dcs-agent` schedules daily automatic backups for the database.

The following example uses the Database Resource ID and Backup Configuration ID:

```
# odacli update-database -i d3c4d8f6-5eb7-4f9e-ab27-7bdd5013ac90 -bi 9d942e0a-ba00-4cbc-9bfb-0de83ed279e5 -bp
```

The following example uses the Database Resource Name, `mydb` and the Backup Configuration Name, `mydb`:

```
# odacli update-database -in mydb -bin mybcfg -bp
```

You can create manual backups or scheduled backups to disk.

**Related Topics**

- [odacli Backup and Recovery Commands](#) (page 14-21)  
Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.

## 11.11.2 Preparing for Database Backup to Oracle Cloud

Create a backup configuration to backup a database to Oracle Cloud Infrastructure Object Storage.

Before you can backup to Oracle Object Storage, you must sign up for an Oracle Cloud Infrastructure Object Storage account and know your Oracle Object Storage credentials. When you create an Oracle ObjectStoreSwift object, the command creates and stores the credential details in the system and stores the password in an encrypted Oracle wallet. The Oracle wallet contains your tenant name, user name, and defines the end point URL.

Go to the Oracle Store to sign up for Oracle Cloud Infrastructure Object Storage.

1. Create an Oracle ObjectStoreSwift object using the command `create-objectstoreswift`. If you already have an Oracle wallet for Oracle Database Appliance, skip to Step 2.

```
# odacli create-objectstoreswift -e swift end point URL -n Object Store Swift name [-p] swiftpassword -t Object Store tenant name -u Object Store user name
```

For example:

```
# odacli create-objectstoreswift -e https://swiftobjectstorage.r1.oracleiaas.com/v1 -n ossn1 -t mytenant -u user.name@example.com -p
```

The output includes an `objectstoreswift` Resource ID to identify an ObjectStoreSwift credential.

2. Create a BackupConfig object (backup configuration) using the command `odacli create-backupconfig`.

The backup configuration defines the backup, including the location (container) where you want to store the backups, the recovery window, and the credentials that are defined in your encrypted Oracle wallet.

The following example creates a backup configuration named `hr_7d_cloud` with a backup to the ObjectStore. The following backup parameters are defined: the container is `hr_bucket`, `crosscheck` is not enabled, the recovery window is 7 days, and the ObjectStoreSwift Resource ID is provided, which attaches the Oracle Wallet and credentials to the backup configuration.

```
# odacli create-backupconfig -n hr_7d_cloud -d ObjectStore -w 7 -o b974f006-5503-4949-ab6c-6f1a56e4ac37 -c hr_bucket -no-cr
```

 **Note:**

If the ObjectStoreSwift Object was not created with valid credentials, then creating the backup configuration will fail.

3. Check the job status.

```
# odacli list-jobs
```

When the job completes successfully, the backup configuration is ready. When you create a new database, you have the option to associate the database with a backup configuration.

4. (Optional) Update an existing database to attach the backup configuration to the database.

When you attach the backup configuration to a database, the `dcs-agent` schedules daily automatic backups for the database.

```
# odacli update-database -i e3c4d8f6-5eb7-4f9e-ab27-7bdd5013ac10 -bi 7d942e0a-ba00-4cbc-9bfb-0de83ed279e5 -bp
```

You can create manual backups outside of scheduled backups, view backup reports, or disable automatic backups.

### Related Topics

- [odacli Backup and Recovery Commands](#) (page 14-21)  
Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.
- [Oracle Store](#)

## 11.11.3 Backing Up a Database with the CLI

Create a level 0, level 1, or LongTerm database backup with the command-line interface.

You can create a database backup in the Web Console or with the command-line interface. When you attach a backup configuration file to a database, the `dcs-agent` automatically schedules daily backups for the database. The day and time are based on the Oracle Database Appliance time zone. The AutoSchedule triggers a level 0 Backup every Sunday and a level 1 the other 6 days of the week. Use the command `odacli update-schedule` to disable or change the scheduled backup time.

To create a Long Term database backup, or a level 0 or level 1 backup outside of the automatic backups, use the command `odacli create-backup`.



### Note:

To recover a database, you can use disk or Oracle Object Storage and a level 0 backup report. To restore a database to another system, you must have a Long Term database backup in Oracle Object Storage.

1. Verify that a backup configuration file is associated with the database.
2. Create a single backup, outside of the automatic backups, by using the command `odacli create-backup`.

Use the Database Resource ID to identify the database to backup, specify the type of backup, and use a tag to create a name for the backup. You can use up to 30 alphanumeric characters for the backup name tag. If you do not select a backup type (level 0, level 1, or LongTerm), a level 1 backup is performed. For example, create a level 0 backup named `2018Jan02_HRLevel10` for resource ID `20576eb1-bc32-4e34-bf97-fda0b60ca15b`

```
# odacli create-backup -i20576eb1-bc32-4e34-bf97-fda0b60ca15b -bt Regular-L0 -t
2018Jan02_HRLevel0
```

When the job finishes, a backup report is generated for the backup. The report contains all of the metadata required to recover a database.

3. (Optional) Display a list of backup reports.

```
# odacli list-backupreports
```

4. (Optional) Display a list of all scheduled backups.

```
# odacli list-schedules
```

## 11.11.4 Restoring a Database with the CLI

Restore a database to a system from Oracle Object Storage using a Backup Report and the command-line interface.

When you restore a database, environment and validation checks and setup tasks are performed. Restoring a database requires a number of tasks and configuration details, such as creating database storage, Oracle Home, recreating the control file, registering the database, and establishing RMAN restore and recovery. An Oracle Database Appliance backup report is generated for each backup and contains the metadata required to restore a database. The report is designed to help you to quickly and efficiently restore a database.

You can restore a database from one appliance to another appliance, or to the same appliance when the source database is deleted:

- To restore to a different system, copy the backup report generated by the command `odacli create-backup` to the other machine's `\bin` folder and use the command `odacli irestore-database` with the backup report.
- To restore to the same system, delete the source database and use the backup report generated by the command `odacli create-backup`.

To restore a database to another system, you must have a database backup report in Oracle Object Storage, valid credentials in an Oracle wallet (ObjectStoreSwift), the Swift Object Store credential ID, and the SYS user password.

1. Display a list of backup reports and locate the latest Backup Report in Oracle Object Storage for the database and save the Backup Report ID.

```
# odacli list-backupreports
```

2. Use the Backup Report ID to display the details of the Backup Report.

```
# odacli describe-backupreport -i 2d82460c-d648-4e75-8c7d-72cc90bc442a
{
  "id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
  "dbResId" : "b5fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
  "dbId" : "2717054291",
  "dbName" : "ExampleDB",
  "dbUniqueName" : "ExampleDBu",
  "backupType" : "REGULAR-L1",
  "keepDays" : null,
  "backupLocation" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket",
  "cfBackupHandle" : "c-2717054291-20180108-04",
  "spfBackupHandle" : "c-2717054291-20180108-04",
  "pitrTimeStamp" : "January 08, 2018 12:43:14 PM UTC",
  "pitrSCN" : "1175058",
  "resetLogsTimeStamp" : "January 08, 2018 09:55:34 AM UTC",
  "resetLogsSCN" : "1112268",
  "oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
```

```

"sqlPatches" : "25811364,26609817",
"backupLogLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/system_namecnl1/
rmanlog/ExampleDBu/2717054291/2018-01-08/rman_backup_2018-01-08_12-42-41.0545.log",
"tdeWalletLoc" : null,
"dbConfigLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/system_namecnl1/
dbconfig/ExampleDBu/2717054291/2018-01-08/DBCONFIG_TAG20180108T124407_2018-01-08_12-44-07.0533.tar.gz",
"name" : "Backup_Report_ExampleDB",
"createTime" : "January 08, 2018 12:42:08 PM UTC",
"state" : {
  "status" : "CONFIGURED"
},
"updatedAt" : "January 08, 2018 12:44:12 PM UTC",
"backupReportLogDetail" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/
system_namecnl1/
rmandetaillogreport/ExampleDBu/2717054291/2018-01-08/
rman_list_backup_detail_2018-01-08_12-44-04.0362.log",
"dbInfo" : {
  "dbClass" : "OLTP",
  "dbType" : "RAC",
  "dbShape" : "odbl",
  "dbEdition" : "EE",
  "dbStorage" : "ASM"
},
"dbDataSize" : "1542M",
"dbRedoSize" : "16403M"
}

```

3. (Optional) If you need to generate a new backup report, use the command `odacli create-backup`.

```
# odacli create-backup
```

4. Locate the Swift Object Store credential ID for the database backup.

```
# odacli list-objectstoreswifts
```

5. Save the backup report as a JSON file in a folder in the `\bin` directory on the appliance. For example, `backupreport.json`.

6. Restore the database to the system using the JSON file in the command `odacli irestore-database`.

Run the command, then enter the SYS user password when prompted.

```
# odacli irestore-database -r backupreport.json -oid Object Store ID -m
```

7. Validate that the job completed. You can track the job in the **Activity** tab in the Web Console, or run the command `odacli describe-job` with the job ID.

```
# odacli describe-job -ijobId
```

## Related Topics

- [odacli Backup and Recovery Commands](#) (page 14-21)  
Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.



# 12

## 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 12-2)  
You can use Oracle VM to optimize your system resource use for databases and applications.
- [Oracle Database Appliance Virtualized Platform Architecture](#) (page 12-3)  
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 12-7)  
Oracle Database Appliance Virtualized Platform supports multiple VLANs on the same network port or bond.
- [How to Create and Manage Shared Repositories](#) (page 12-8)  
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 12-11)  
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 12-14)  
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 12-19)  
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 12-21)  
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 12-28)  
Use driver domain virtual machines to improve performance.
- [How to Manage High Availability on Oracle Database Appliance Virtualized Platform](#) (page 12-39)  
Use the `oakcli configure vm` command to configure high availability services for your virtual machines.

- [How to Manage CPU Pools on Oracle Database Appliance Virtualized Platform](#) (page 12-40)  
These topics describe how to use OAKCLI to create and manage CPU pools on Oracle Database Appliance Virtualized Platform.

## 12.1 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).

5. 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, non-database virtual machines.
6. 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.

## 12.2 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 12-3)  
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 12-4)  
Oracle Database Appliance Virtualized Platform is designed to run and deploy virtual machines to manage system resources.

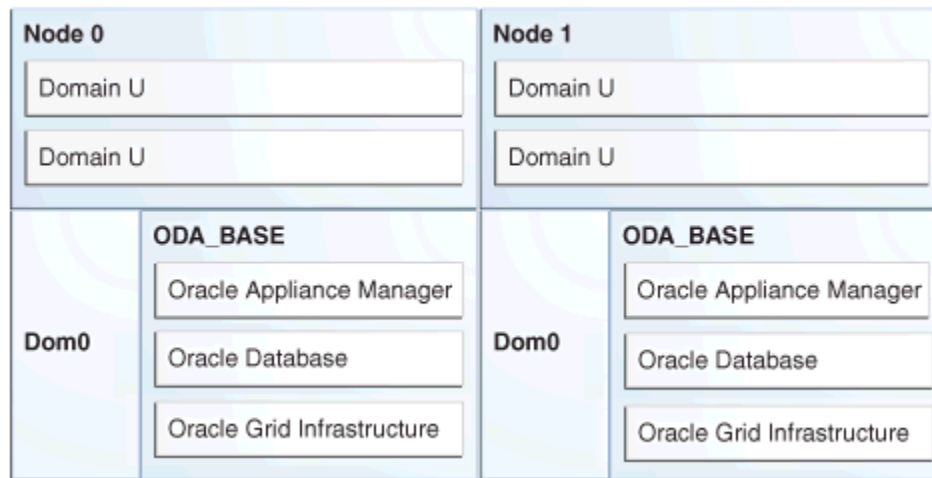
### 12.2.1 About Oracle Database Appliance Virtualized Platform Architecture

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 12-1 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.

## 12.2.2 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 `Dom0` 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.

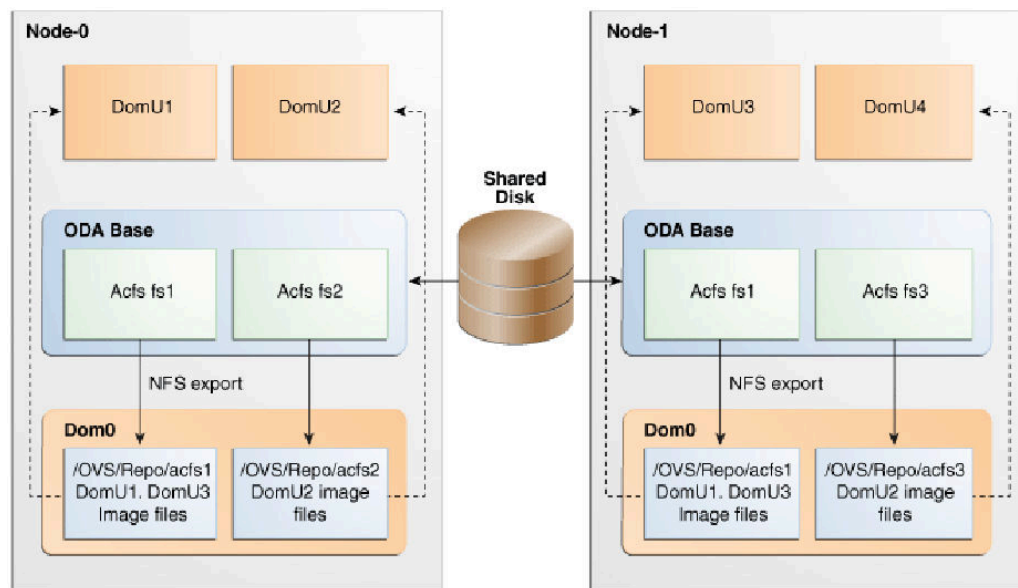
## Shared Repositories

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 resizable 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 12-2 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.

## 12.3 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 myvm1 -addnetwork net1
```

You assign default VLANs to `ODA_BASE` during the installation and configuration of Oracle Database Appliance Virtualized Platform. For example, you can add three tagged VLANs: for backups (`backup`), applications (`application`), and management (`mgnt`) on an Oracle Database Appliance node. You can connect the backup VLAN to `ODA_BASE`, the application VLAN to `domu1`, and the management VLAN to `domu1` and `domu2`.

## 12.4 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 12-8)  
Use the `oakcli create repo` command to create a shared repository on Oracle Database Appliance Virtualized Platforms.
- [Showing the Status of Shared Repositories](#) (page 12-9)  
Use the `oakcli show repo` command to display information about virtual machine repositories on Oracle Database Appliance Virtualized Platforms.
- [Starting a Shared Repository](#) (page 12-9)  
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 12-10)  
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 12-10)  
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 12-11)  
Use the `oakcli configure repo` command to increase the size of a shared repository on Oracle Database Appliance Virtualized Platforms.

### 12.4.1 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 `oakcli create repo` command, you identify the repository name using the option `repo`, you identify the disk group that you want to use for its storage (DATA or RECO) using the option `-dg`, and you identify the size of the repository in gigabytes or megabytes (the default size unit is gigabytes) using the `-size` 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 repo1 -dg data -size 30
```



## 12.4.2 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 12-1 Example of Showing the Status of All Shared Repositories

To show the status of all shared repositories, use the `oakcli show repo` command:

```
oakcli show repo
NAME                TYPE          NODENUM  FREE SPACE  STATE
----                -
odarepo1            local         0         N/A         N/A
odarepo2            local         1         N/A         N/A
repo1               shared        0         68.25%      ONLINE
repo1               shared        1         68.25%      ONLINE
repo2               shared        0         N/A         OFFLINE
repo2               shared        1         89.83%      ONLINE
```

### Example 12-2 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 `repo1` 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           : repo1_0
  Node           : all
  RepoType       : shared
  Size           : 30720
  State         : Online
  Version        : 2
```

## 12.4.3 Starting a Shared Repository

Use the `oakcli 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 `oakcli start repo` command to start the repository and make the storage available. Note that the `oakcli start repo` 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 12-3 Example of Starting a Shared Repository

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

```
oakcli start repo repo1 -node 1
```

## 12.4.4 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.

#### Note:

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

### Example 12-4 Example of Stopping a Shared Repository

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

```
oakcli stop repo repo1 -node 0
```

## 12.4.5 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.

#### Note:

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

### Example 12-5 Example of Deleting a Shared Repository

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

```
oakcli delete repo repo1
```

## 12.4.6 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 `-repo reponame` option, where *reponame* identifies the repository that you want to expand. Use the option `-incsize size` to specify the size of the increase that you want to configure, where *size* is the size (in gigabytes) that you want to add to the configured size.

### Example 12-6 Example of Increasing the Size of a Shared Repository

The following command increases the size of the shared repository `repo1` by 2 gigabytes:

```
# oakcli configure repo repo1 -incsize 2G
```

```
Configured Shared Repo : repo1 with new size 3712.0.
```

## 12.5 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 12-11)  
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 12-12)  
Use the command `oakcli show vdisk` to view information about virtual disks on Oracle Database Appliance Virtualized Platforms.
- [Cloning Virtual Disks](#) (page 12-12)  
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 12-13)  
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 12-13)  
Use the `oakcli delete vdisk` command to remove a virtual disk from a shared repository on Oracle Database Appliance Virtualized Platforms.

### 12.5.1 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 `oakcli create vdisk name`, where *name* is the name of the vdisk you create. Identify the repository in which you create the vdisk by using the `-repo reponame` option, where *reponame* identifies the

repository where you want to create the vdisk. Use the option `-size sizeG` to specify the vdisk size (in gigabytes), where `sizeG` 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 `-type shared` to designate the vdisk as a shared disk.

#### Example 12-7 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
```

## 12.5.2 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 `oakcli show vdisk` by itself to see information about all of your configured virtual disks. To see information about an individual virtual disk, enter the command `oakcli show vdisk diskname -repo reponame`, where `diskname` is the name of the disk that you want to check, and `reponame` is the name of the shared repository where the virtual disk is located.

#### Example 12-8 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 12-9 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
```

## 12.5.3 Cloning Virtual Disks

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

The command `oakcli clone 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 `oakcli clone vdisk name`, where `name` is the name of the vdisk you create. Identify the repository in which you

create the vdisk by using the `-repo reponame` option, where *reponame* is the name of the repository where the original vdisk is located. Use the option `-src sourcevdiskname`, where *sourcevdiskname* is the name of the virtual disk that you are cloning. Add the option `-h` to display help for this command.

 **Note:**

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 12-10 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
```

## 12.5.4 Attaching a Virtual Disk to a Virtual Machine

Use the `oakcli modify vm` command to attach a virtual disk to a virtual machine on Oracle Database Appliance Virtualized Platforms.

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

### Example 12-11 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 myol6u_test -attachvdisk sdisk1
```

## 12.5.5 Deleting a Virtual Disk

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

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

### Example 12-12 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
```

## 12.6 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 12-14)  
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 12-15)  
Use the `oakcli show vmtemplate` command to display virtual machine template details.
- [Importing Virtual Machine Templates](#) (page 12-16)  
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 12-17)  
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 12-18)  
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 12-18)  
Use the `oakcli modify vmtemplate` command to modify a virtual machine template.
- [Removing a Virtual Machine Template](#) (page 12-19)  
Use the `oakcli delete vmtemplate` command to remove a virtual machine template.

### 12.6.1 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 `odarepo1` and on Node 1, the local repository is named `odarepo2`. 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.

 **Note:**

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.

 **Note:**

Find virtual machine templates at the following URL:

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

## 12.6.2 Listing Virtual Machine Templates

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

The `oakcli show vmtemplate` 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_odarepol` virtual template:

```
oakcli show vmtemplate sample_odarepol
Resource: sample1_odarepol
  CPUPriority      :      100
  Disks           :      |file:/OVS/Repositories/odarepol/Te
                    |mplates/otml_sample1_odarepol/Syste
                    |m.img,xvda,w||file:/OVS/Repositorie
                    |s/odarepol/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_odarepol
  Networks       :      |bridge=priv1||bridge=net1||bridge=
                    |net2|
  NodeNum        :      0
  OS             :      OL_5
```

```
ProcessorCap : 100
RepoName    : odarepo1
Vcpu        : 2
```

## 12.6.3 Importing Virtual Machine Templates

Use the `oakcli import vmtemplate` 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 `Dom0 /OVS` 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 vmtemplatename -files image_files | -assembly assembly_file
-repo repo_name [- node 0 | 1 ]
```

### Example 12-13 Example of Importing Virtual Machine Templates from an External Repository Assembly File

Use the `oakcli import vmtemplate vmtemplatename -assembly assembly_file -repo repo_name` 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 12-14 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 -repo
odarepol
```

### Example 12-15 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.

This example imports a virtual machine template named `OVM_OL5U7_x86_64_PVM_10GB.tgz` from an external template repository at the URL `'http://example.com/assemblies/OEL6/OVM_OL6U1_x86_PVHVM.tgz'`. Note the single quotation marks that enclose the URL. The template is assigned the name `OL5U7`, and is imported into the `odarepol` repository:

```
oakcli import vmtemplate OL5U7 -files 'http://example.com/assemblies/OEL6/
OVM_OL6U1_x86_PVHVM.tgz'-repo odarepol
```

## 12.6.4 Configuring a Virtual Machine Template

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 `oakcli configure vm` command.

### Example

Set values for the virtual machine template named `myol5u7_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.

## 12.6.5 Showing Configured Values for a Virtual Machine Template

Use the `oakcli show vmtemplate` command to show values for the configurable options in a virtual machine template.

### Example

Display information about the `sample1_odarepol` virtual template:

```
oakcli show vmtemplate sample_odarepol
Resource: sample1_odarepol
      CPUPriority      :      100
      Disks            :      |file:/OVS/Repositories/odarepol/Te
                           mplates/otml_sample1_odarepol/Syste
                           m.img,xvda,w||file:/OVS/Repositorie
                           s/odarepol/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_odarepol
      Networks        :      |bridge=priv1||bridge=net1||bridge=
                           net2|
      NodeNum         :      0
      OS              :      OL_5
      ProcessorCap    :      100
      RepoName        :      odarepol
      Vcpu            :      2
```

## 12.6.6 Modifying a Virtual Machine Template Configuration

Use the `oakcli modify 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 `oakcli show vmtemplate` command. If you need to reconfigure the template for specific requirements, then use the `oakcli configure vmtemplate` 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 `oakcli configure vm` command after you deploy the template.

When you are satisfied with the configuration of your virtual machine template, use the `oakcli modify` 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
```

## 12.6.7 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 `myo16u_15gb3` from Oracle Database Appliance Virtualized Platform:

```
oakcli delete vmtemplate myo16u_15gb3
```

## 12.7 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 12-19)  
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 12-20)  
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 12-20)  
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 12-21)  
Use the `oakcli clone vm` command to create a snap clone of an existing virtual machine on Oracle Database Appliance Virtualized Platforms.

### 12.7.1 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.

## 12.7.2 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 `oakcli clone vm` to create a virtual machine from a virtual machine template. Use the `-repo name` option to provide the name of the shared repository, where *name* is the name of the repository. Use the `-node number` option to identify the node on which you want to perform the cloning process, where *number* is the number of the node.



### Note:

The `-node` 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 `oakcli configure vm`.

### Example 12-16 Example of Creating a Virtual Machine Clone from a Virtual Machine Template

This example creates a virtual machine named `myol6u_test` from the virtual machine template named `myol6u_15gb1`, which is located in a shared repository named `repo2` on Node 0:

```
oakcli clone vm myol6u_test -vmtemplate myol6u_15gb1 -repo repo2 -node 0
```

## 12.7.3 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 12-17 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 `myol15u`:

```
oakcli clone vm myol15u_snap -vmtemplate myol15u -snap
```

## 12.7.4 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 12-18 Example of Creating a Snap Clone From an Existing Virtual Machine

This example creates a snap clone named `myo115u_test1` from a virtual machine named `myo115u_test`:

```
oakcli clone vm myo115u_test1 -vm myo115u_test1 -snap
```

## 12.8 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 12-22)  
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 12-23)  
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.
- [Creating a Virtual Machine](#) (page 12-24)  
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 12-24)  
Use the `oakcli configure vm` command to configure a virtual machine on Oracle Database Appliance Virtualized Platform.
- [Starting and Stopping a Virtual Machine](#) (page 12-25)  
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 12-25)  
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 12-26)  
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 12-26)  
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 12-26)  
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 12-27)  
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 12-27)  
Use the `oakcli delete vm` command to delete the virtual machine and reclaim its storage and resources.
- [Performing a Live Migration for an Oracle Database Appliance Virtual Machine](#) (page 12-28)  
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.

## 12.8.1 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.



### Note:

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

## 12.8.2 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_odarepo1 odarepo2	2048	2	OFFLINE	
test1_odarepo1 odarepo1	2048	2	OFFLINE	
test2_odarepo2 odarepo2	2048	2	OFFLINE	
vm1_odarepo1 odarepo1	4096	4	ONLINE	
vm2_odarepo2 odarepo2	2048	2	OFFLINE	
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 `vm1_odarepo1` virtual machine:

```
oakcli show vm vm1_odarepo1
```

```
Resource: vm1_odarepo1
  AutoStart      : restore
  CPUPriority    : 100
  Disks          : |file:/OVS/Repositories/odarepo1/VirtualMachines/vm1_odarepo1/System.img,xvda,w|file:/OVS/Repositories/odarepo1/VirtualMachines/vm1_odarepo1/u01.img,xvdb,w|
  Domain        : XEN_PVM
  ExpectedState  : online
  FailOver      : false
  IsSharedRepo  : false
  Keyboard      : en-us
  MaxMemory     : 3000
  MaxVcpu       : 4
  Memory        : 4096
  Mouse         : OS_DEFAULT
  Name          : vm1_odarepo1
  Networks      : |mac=00:21:F6:00:00:E4|
  NodeNum       : 0
  NodeNumStart  :
```

```

OS           :      OL_5
PrivateIP    :      None
ProcessorCap :      100
RepoName     :      odarepo1
State        :      Online
TemplateName :      otml_sample1_odarepo1
Vcpu         :      4
cpupool      :      twocpu
vncport      :      5901

```

## 12.8.3 Creating a Virtual Machine

Create a virtual machine by cloning an imported template, cloning an assembly that contains configured virtual machines, or cloning an existing virtual machine.

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.

## 12.8.4 Configuring a Virtual Machine

Use the `oakcli configure vm` 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 12-1 Parameters Available for Configuring a Virtual Machine**

Parameter	Description
<code>-vcpu 2</code>	Sets two (2) as the number of CPUs to be assigned to the virtual machine when started
<code>-cpuprio 150</code>	Sets the CPU access priority to 150
<code>-cpucap 20</code>	Sets the maximum percentage of a CPU's capacity that will be assigned to the virtual machine to 20%
<code>-memory 1G</code>	Sets the amount of memory assigned when the virtual machine starts to 1 GB
<code>-cpupool linpool</code>	Specifies <code>linpool</code> as the CPU pool to be assigned to the virtual machine
<code>-keyboard en-us</code>	Defines the keyboard type used to access the virtual machine as <code>en-us</code>
<code>-mouse USB_MOUSE</code>	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.

 **Note:**

CPU capacity is controlled by the CPU pool assigned to a virtual machine by either the `-cpupool` parameter or by the `default_unpinned_pool` (if the virtual machine is not configured with a `-cpupool` parameter). Values for `-vcpu` and `-maxvcpu` parameters that are larger than the number of CPUs in the assigned CPU pool are ignored.

Use the `oakcli configure` command and parameters to configure the virtual machine:

```
# oakcli modify vm vmname parameters
```

**Example 12-19 Example of Configuring a Virtual Machine**

Set values for specific resources in the virtual machine named `myo115u`:

```
oakcli configure vm myo15u
-vcpu 2 -cpuprio 150 -cpucap 20 -memory 1G
-cpupool linpool -keyboard en-us -mouse USB_MOUSE
```

## 12.8.5 Starting and Stopping a Virtual Machine

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.

 **Note:**

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.

## 12.8.6 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](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/oda-automatedvmprovisioning-2348232.pdf>

## 12.8.7 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 `oakcli modify vm` command with the `-s` parameter) to allow access from the OAKCLI command line instead of a graphical user interface (GUI) virtual machine console.

Use the `oakcli show vmconsole vm name` to open a console for a virtual machine. Open a For example, use the following command to open a console for the virtual machine named `vm1_odarepo1`:

```
oakcli show vmconsole vm1_odarepo1
```

## 12.8.8 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 `oakcli clone` 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 `-snap` clause in the `oakcli clone` command.

## 12.8.9 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 `vm016u3` (which has `ovmd`) with the IP address `192.168.16.51` for the `eth0` interface and sets the `root` password.

```
oakcli clone vm vmol6u3 -vmtemplate ol6u3 -repo shrepo -node 0
oakcli modify vm vmol6u3 -addnetwork privl
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:password'
```

## 12.8.10 Adding or Removing a Virtual Disk to or from a Virtual Machine

Use the `oakcli modify vm` 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
```

## 12.8.11 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 `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 `ovu22` virtual machine from both nodes.

```
oakcli delete vm ovu22
```

## 12.8.12 Performing a Live Migration for an Oracle Database Appliance Virtual Machine

If your system meets requirements for live migration, then you can use the `oakcli migrate vm` 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 `oakcli migrate vm vmname` 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 12-20 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
```

## 12.9 How to Create Driver Domain Virtual Machines

Use driver domain virtual machines to improve performance.

- [About Driver Domain Virtual Machines](#) (page 12-29)  
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 12-30)  
Create a driver domain virtual machine from a virtual machine template.
- [Converting a Virtual Machine to a Driver Domain Virtual Machine](#) (page 12-31)  
Convert a guest virtual machine to a driver domain virtual machine to improve performance.
- [Converting a Root Disk to a Driver Domain Disk](#) (page 12-32)  
Set up your guest virtual machine (guest VM) root disk as a driver domain and create a new disk as the boot driver.

## 12.9.1 About Driver Domain Virtual Machines

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.

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 I/O performance by enabling guest virtual machines to use `ODA_BASE` instead of `Dom0` 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 `ODA_BASE` to a guest virtual machine. 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`.

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.

## 12.9.2 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 `Dom0` and uses the template to create a driver domain virtual machine. The virtual machine image is named `myol6u_test myol6u_ol5u7_vm_alpha` from the virtual machine template named `myol6u_15gb1 (OL5U7)`, which is stored in the shared repository named `repo2 (odarepo1)` on Node 0 in driver domain mode.

This example

1. Use the `oakcli import vmtemplate` command to import a virtual machine template and name the template.

For example, import virtual machine template `OVM_OL5U7_X86_64_PVM_10GB.tgz` from the `/OVS` directory in `Dom0` into the `odarepo1` shared repository on Node 0 in driver domain mode and name the template file `OL5U7`.

```
oakcli import vmtemplate OL5U7 -files /OVS/OVM_OL5U7_X86_64_PVM_10GB.tgz -repo odarepo1
```

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_ol5u7` 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 vm1_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
```

4. Use the `oakcli start vm` command to start the virtual machine.

For example, start the virtual machine named `vm1_ol5u7` on Node 0.

```
oakcli start vm vm1_ol5u7 -node 0
```

### Related Topics

- [oakcli import vmtemplate](#) (page 15-72)  
Use the `oakcli import vmtemplate` command to import virtual machine templates.
- [oakcli clone vm](#) (page 15-61)  
Use the `oakcli clone vm` command to create clones and snap clones of virtual machines.
- [oakcli show vm](#) (page 15-67)  
Use the `oakcli show vm` command to display information about virtual machines.

- [oakcli start vm](#) (page 15-69)  
Use the `oakcli start vm` command to start a virtual machine on a node.

## 12.9.3 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 `Dom0` to create a clone virtual machine that uses the driver domain `ODA_BASE` instead of `Dom0`.

In this example, virtual machine `vm-dom0_ol5u7` is on `Dom0` and is not a driver domain virtual machine. The example creates a clone virtual machine named `vm-dd1_ol5u7` that uses the driver domain `ODA_BASE`.

1. Use the `oakcli stop vm` command to shut down the virtual machine.

For example, stop the virtual machine named `vm-dom0_ol5u7`. 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_ol5u7` from the original virtual machine named `vm-dom0_ol5u7`. 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 `oakDom1` is 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_ol5u7`, 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_ol5u7` on Node 0.

```
oakcli start vm vm-dd1_ol5u7 -node 0
```

**Related Topics**

- [oakcli stop command](#) (page 15-48)  
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 15-61)  
Use the `oakcli clone vm` command to create clones and snap clones of virtual machines.
- [oakcli show vm](#) (page 15-67)  
Use the `oakcli show vm` command to display information about virtual machines.
- [oakcli start vm](#) (page 15-69)  
Use the `oakcli start vm` command to start a virtual machine on a node.

## 12.9.4 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 `OL6U7_x86_64_PVHVM` or `OVM_OL5U7_X86_64_PVM_10GB.tgz`, that are available in the `/OVS` 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=b072e1e9-05a9-4544-a4dd-b15ba49cea2f / ext4 defaults 1 1
UUID=301e09e2-78e4-47d6-b501-d4f1098b419d /boot ext4 defaults 1 2
UUID=39e5a125-ald8-48f4-9e81-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]`

#### Note:

You must stop the virtual machine before taking a snapshot.

For example, create a driver domain guest VM named `OL6U7` from the `OL6U7_x86_64_PVHVM` source VM template. Use the `-snap` option to designate that you want to create a snapshot of the source virtual machine and the `-driverdomain` 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 `odarepo1` 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 `OL6U7` virtual machine is in the `odarepo1` 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_ol6u7_u01/
VirtualDisks/oakvdk_ol6u7_u01,xvdb,w,oakDom1',
u'file:/u01/app/sharedrepo/odarepo1/.ACFS/snaps/oakvdk_ol6u7_bootdisk/
VirtualDisks/oakvdk_ol6u7_bootdisk,xvdc,w,oakDom1']
(...)
```

The following example shows the `newboot` virtual disk:

```
disk =
[u'file:/OVS/Repositories/odarepo1/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvda,w',
u'file:/u01/app/sharedrepo/odarepo1/.ACFS/snaps/oakvdk_ol6u7_u01/
VirtualDisks/oakvdk_ol6u7_u01,xvdb,w,oakDom1',
u'file:/OVS/Repositories/odarepo1/.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.

```
echo -e "n\np\n1\n\n\n\n\n83\na\n1\n\nw" | fdisk /dev/xvdc
Device      Boot Start End Blocks Id System
/dev/xvdc1 *          1  63  506016 83 Linux
```

#### 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`:

```
# 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/stage1" 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.
succeeded
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=b072e1e9-05a9-4544-a4dd-b15ba49cea2f / ext4 defaults 1 1
#UUID=301e09e2-78e4-47d6-b501-d4f1098b419d /boot ext4 defaults 1 2 <<---
Original boot device
UUID=3d7a177b-0fa0-4212-9c0c-c5554bb1817a /boot ext4 defaults 1 2

UUID=39e5a125-ald8-48f4-9e81-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 `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,oakDom1',
<<-- original u01 disku'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/
VirtualMachines/OL6U7/newboot.img,xvdc,w'
<<-- new boot disk
```

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
```

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'
cpus =
'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 =
'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/
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
```

 **Note:**

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 VDIs that are attached to the guest VM. Use the `oakcli delete vdisk` command to remove the orphan VDIs.

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

```

## 12.10 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 `oakcli configure vm` 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 `oakcli configure vm` with the `-failover` option to configure fail over from one node to another.

## 12.11 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 12-40)  
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 12-41)  
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 12-41)  
Use the command `oakcli create cpupool` to create a CPU pool.
- [Showing the CPU Pools Configured on Oracle Database Appliance Virtualized Platform Nodes](#) (page 12-42)  
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 12-42)  
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 12-42)  
Use the command `oakcli configure vm` to assign a virtual machine to a CPU pool.

### 12.11.1 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 `odaBaseCpuPool`. 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 `odaBaseCpuPool`. 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 12-21 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 cpupool` commands, one for each node:

```
oakcli show cpupool -node 0
      Pool                               Cpu List
default-unpinned-pool [14, 15, 16, 17, 18, 19, 20, 2
                               1, 22, 23]
      twocpu                             [12, 13]
odaBaseCpuPool [0, 1, 2, 3, 4, 5, 6, 7, 8, 9,
                               10, 11]

oakcli show cpupool -node 1
      Pool                               Cpu List
default-unpinned-pool [12, 13, 14, 15, 16, 17, 18, 1
                               9, 20, 21, 22, 23]
odaBaseCpuPool [0, 1, 2, 3, 4, 5, 6, 7, 8, 9,
                               10,11]
```

## 12.11.2 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.

## 12.11.3 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 12-22 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
```

## 12.11.4 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 12-23 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
```

## 12.11.5 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 12-24 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
```

## 12.11.6 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.

 **Note:**

Do not manage `odaBaseCpuPool` by using `oakcli cpupool` commands. Instead, use commands that configure `ODA_BASE`, as discussed in "How to Resize `ODA_BASE`."

**Example 12-25 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
```

# 13

## Managing Oracle Database Appliance KVM Virtualization

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

- [About KVM Virtualization](#) (page 13-1)  
KVM virtualization uses a kernel-based virtual machine (KVM) to create a virtualized environment for your Linux applications.

### 13.1 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.

# 14

## 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 14-2)  
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 14-5)  
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 14-7)  
Use the `configure` and `update` commands to configure the appliance.
- [odacli Apply Patch and Update Commands](#) (page 14-9)  
Use the commands `odacli update` and `apply patch` to apply patches and update the appliance.
- [odacli Appliance Commands](#) (page 14-17)  
Use the `odacli appliance` commands to perform lifecycle activities for the appliance.
- [odacli Backup and Recovery Commands](#) (page 14-19)  
Use the `odacli backup` and `recover` commands to backup to and restore from Oracle Cloud Infrastructure Object Storage or disk.
- [odacli CPU Core Commands](#) (page 14-36)  
Use the CPU Core commands to enable CPU cores and display current and historical CPU core configurations.
- [odacli Database Commands](#) (page 14-39)  
Use the `odacli database` commands to perform database lifecycle operations.
- [odacli DBHome Commands](#) (page 14-48)  
Use the `odacli DBHome` commands to manage database Home operations.
- [odacli Database Storage Commands](#) (page 14-52)  
Use the Database Storage commands to list, describe, create, and delete Oracle database storage.
- [odacli Job Commands](#) (page 14-56)  
Use the `odacli list-jobs` and `odacli describe-job` commands to display job details.
- [odacli Network Commands](#) (page 14-59)  
Use the `odacli network` commands to list and describe network interfaces.
- [odacli Oracle Auto Service Request Commands](#) (page 14-63)  
Use the Oracle Auto Service Request (Oracle ASR) commands to configure, update, test, and delete Oracle ASR on the system.

- [odacli OS Commands](#) (page 14-69)  
Use the `odacli os` commands to list and update operating system (OS) parameters.
- [odacli validate-storagetopology](#) (page 14-71)  
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 14-71)  
Use the `hardware monitoring` commands to display hardware configurations.
- [odaadmcli Storage Commands](#) (page 14-76)  
Use the `odaadmcli storage` commands to perform storage diagnostics.
- [odaadmcli VLAN Management Commands](#) (page 14-86)  
Use the `odaadmcli VLAN` commands to list and manage virtual local area networks (VLANs) for Oracle Database Appliance bare metal platform.
- [odacli-adm set-credential](#) (page 14-89)  
Use the `odacli-adm set-credential` command to change the `oda-admin` user credentials.

## 14.1 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 `odacli` commands to perform lifecycle management tasks and the `odaadmcli` 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 `odacli` and `odaadmcli` utilities combine the capabilities of the `sys` database administrator role and the operating system Superuser (`root` 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 (NVMe)s
- 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`.

## Command-Line Interface Syntax

The command-line interface commands and parameters are case-sensitive.

An `odacli` or `odaadmcli` command uses the following command syntax:

```
odacli command [options]
```

- *command* is an action you want to perform on the appliance. For example:  
`odacli list-networks` or `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 14-1 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)
--characteraset, -cs
        Character Set (default:AL32UTF8)          Default: AL32UTF8
--databaseUniqueName, -u
        database unique name
--dbclass, -cl
        Database Class EE: OLTP/DSS/IMDB, SE: OLTP    Default: OLTP
--dbconsole, -co
        Enable Database Console (Inverse option: --no-dbconsole/-no-co)
--dbhomeid, -dh
        Database Home ID (Use Existing DB Home)
--dblanguage, -l
        Database Language (default:AMERICAN)        Default: AMERICAN
* --dbname, -n
        Database Name
--dbshape, -s
        Database Shape{odbls,odbl,odb2,etc.}        Default: odbl
--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
--nlscharacteraset, -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
```



## 14.2 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 14-2 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.

 **Note:**

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 `ODACLI_CMDS`. 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 :
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]:
1  => OLTP
2  => DSS
3  => In-Memory
```

### Example 14-3 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 describe-appliance
oracle ALL=      DCSCMDS

$ 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 `jdoue2` tries to run the `sudo odacli list-databases` command, which is not part of the set of commands that is configured for that user. SUDO prevents `jdoue2` from running the command.

```
[jdoue2@servernode1 ~]$ sudo /opt/oracle/oak/bin/odacli list-databases
```

```
Sorry, user jdoue2 is not allowed to execute '/opt/oracle/oak/bin/odacli list-databases' as root on servernode1.
```

## 14.3 Configure Command

Use the `configure` and `update` commands to configure the appliance.

- [configure-firstnet](#) (page 14-7)  
Use the command `configure-firstnet` to configure the first network in the appliance after racking and connecting the power and network cables.

### 14.3.1 configure-firstnet

Use the command `configure-firstnet` 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
```

#### Usage Notes

Oracle Database Appliance X7-2 has two dual-port public network interfaces, a 10GBase-T (copper) and a 25GbE SFP28 (fiber) network interface. Oracle Database Appliance uses the interface to create the initial network connection and to create virtual local area networks (VLANs). This command ensures that the system is available in the network, enabling you to manage the deployment through the Oracle Appliance Manager Web Console.

- Bonded network configuration: Bonded dual-ported interface. With the bonded configuration, you can only enable one of the interfaces. The bonded configuration supports VLANs. The bonded network configuration uses `btbond1`. Default setting.
- Non-bonded network configuration: Two separate physical network interfaces, this configuration does not support VLANs. The non-bonded network configuration uses `em2` and `em3` as public interfaces.

- To change a non-bonded network configuration to a bonded configuration, run the Oracle Database Appliance Cleanup Script and redeploy the appliance.

#### Example 14-4 Configuring the First Network as a Bonded Network

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
:::~::~:
```

#### Example 14-5 Configuring the First Network as a Non-Bonded Network

The following is an example of a non-bonded configuration. For a non-bonded configuration, answer `no` to using a bonding public interface.

```
# configure-firstnet
Using bonding public interface (yes/no) [yes]: no
INFO: Breaking the bonding on btbond1
INFO: remove bonding module: rmmmod bonding
INFO: remove slave setup in /etc/sysconfig/network-scripts/ifcfg-em2
INFO: remove slave setup in /etc/sysconfig/network-scripts/ifcfg-em3
INFO: Restarting the network
Shutting down interface em1: [ OK ]
Shutting down interface plp1: [ OK ]
Shutting down interface plp2: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface em1: [ OK ]
Bringing up interface em2: [ OK ]
Bringing up interface em3: [ OK ]
Bringing up interface plp1: Determining if ip address 192.168.16.24 is already in
use for device plp1... [ OK ]
Bringing up interface plp2: Determining if ip address 192.168.17.24 is already in
use for device plp2... [ OK ]
INFO: Restarting the network
```

```

Select the Interface to configure the network on (em2 em3) [em2]:
Configure DHCP on em2 (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
/usr/share/system-config-network/netconfpkg/NCHostsList.py:100: DeprecationWarning:
BaseException.message has been deprecated as of Python 2.6
    badlines.append((num, value_exception.message))
/usr/share/system-config-network/netconfpkg/NCHostsList.py:105: DeprecationWarning:
BaseException.message has been deprecated as of Python 2.6
    """ % (value_exception.message, num)
/usr/share/system-config-network/netconfpkg/NCProfileList.py:142:
DeprecationWarning: BaseException.message has been deprecated as of Python 2.6
    self.error = e.message
INFO: Restarting the network
Shutting down interface em1:                [ OK ]
Shutting down interface em2:                [ OK ]
Shutting down interface em3:                [ OK ]
Shutting down interface plp1:               [ OK ]
Shutting down interface plp2:               [ OK ]
Shutting down loopback interface:           [ OK ]
Bringing up loopback interface:             [ OK ]
Bringing up interface em1:                  [ OK ]
Bringing up interface em2: Determining if ip address 10.1.10.2 is already in use
for device em2...
                                                [ OK ]
Bringing up interface em3:                  [ OK ]
Bringing up interface plp1: Determining if ip address 192.0.2.24 is already in use
for device plp1...
                                                [ OK ]
Bringing up interface plp2: Determining if ip address 192.0.2.25 is already in use
for device plp2...
                                                [ OK ]

```

## 14.4 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 14-10)  
Use the `odacli describe-component` command to display the installed version and the latest available version for each component.
- [odacli describe-latestpatch](#) (page 14-11)  
Use the `odacli describe-latestpatch` command to display a list of the latest supported patch versions for each component.
- [odacli update-dbhome](#) (page 14-12)  
Use the `odacli update-dbhome` command to update a specific RDBMS Home to the latest patch bundle version.
- [odacli update-dcsagent](#) (page 14-13)  
Use the `odacli update-dcsagent` command to update the agent.

- [odacli update-repository](#) (page 14-14)  
Use the `odacli update-repository` command to update the repository with the new Oracle Database Appliance software.
- [odacli update-server](#) (page 14-16)  
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 14-17)  
Use the `odacli update-storage` command to update the storage.

## 14.4.1 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
<code>--dbhomes, -d</code>	(Optional) Lists the database home versions and available versions.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--local</code>	(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.
<code>--node, -v</code>	(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}
<code>--server, -s</code>	(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, the command provides details across all nodes. Use the `--node` or `--local` option to get component details for a specific node.

### Example 14-6 Displaying Patch Details for Components

```
# odacli describe-component
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
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 14-7 List DB Home Details

```
# odacli describe-component -d

System Version
-----
12.2.1.1.0

Component           Installed Version   Available Version
-----
DB {
[ OraDB12201_home1 ] 12.2.0.1.170814   up-to-date
[ OraDB12102_home1 ] 12.1.0.2.170814   up-to-date
[ OraDB11204_home1 ] 11.2.0.4.170814   up-to-date
}
```

### Example 14-8 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
```

## 14.4.2 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 14-9 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
```

## 14.4.3 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 `Configured` status are updated. Use the `odacli list-database` command to see a list of configured databases. Databases in any other status are skipped during the update.

### Example 14-10 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
```

## 14.4.4 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
<code>--version, -v</code>	Defines the Oracle Database Appliance version after update.
<code>--help, -h</code>	(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.

 **Note:**

Before updating the agent, ensure that you do not have any jobs running or pending during the update window.

### Example 14-11 Updating the Agent

To update the `dcs-agent` to version 12.2.1.3.012.1.2.10:

```
# odacli update-dcsagent -v 12.2.1.3.0
{
```

```

"jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
"status" : "Created",
"message" : null,
"reports" : [ ],
"createTimestamp" : "March 26, 2018 14:09:24 PM CST",
"description" : "DcsAgent patching",
"updatedAt" : "March 26, 2018 14:09:24 PM CST"
}

```

## 14.4.5 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:



#### Note:

The file names in the examples 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_1of2.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_1of2.zippart` and `oda-sm-12.2.1.1.0-171031-server_2of2.zippart`

```
# cat oda-sm-12.2.1.1.0-171031-server_1of2.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 `oda-sm-12.2.1.1.0-171031-server.zip`.

```
# cat oda-sm-12.2.1.1.0-171031-server_1of2.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
<code>--filename, -f</code>	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.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--help, -h</code>	(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.
- Upload the patches to `dom0` on Node0. On multi-node systems, the DCS-Agent copies the patch to Node1 and updates the patch repository on both nodes.

### Example 14-12 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:

```
# ./odacli update-repository -f /u01/tmpdir/oda-sm-12.2.1.1.0-171031-server.zip
{
  "jobId" : "d3510276-da05-447b-990e-6d30964f8f79",
  "status" : "Created",
  "message" : "/u01/tmpdir/oda-sm-12.2.1.1.0-171031-server.zip",
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 14:13:45 AM CST",
  "description" : "Repository Update",
  "updatedAt" : "March 26, 2018 14:13:45 AM CST"
}
[root@oak1 tmpdir]# ./odacli list-jobs
# odacli list-jobs
ID                               Description                Created                    Status
-----
6f27a29a-959f-44e1-b984-7473e3c918ad  Server Patching           March 26, 2018 14:19:05 AM CST  Success
```

## 14.4.6 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
<code>--local, -v</code>	Updates the Database Home locally.
<code>--precheck, -v</code>	Analyzes the patch.
<code>--version, -v</code>	Defines the version to update.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--help, -h</code>	(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.



#### Note:

Before updating the server, ensure that you do not have any jobs running or pending during the update window.

### Example 14-13 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",
    "updatedAtTime" : "November 7, 2017 14:13:45 PM CST"
}

```

## 14.4.7 odacli update-storage

Use the `odacli update-storage` command to update the storage.

### File Path

```
/opt/oracle/dcs/bin/odacli
```

### Syntax

```
odacli update-storage -v version [-h] [-j]
```

### Parameters

Parameter	Description
<code>--version, -v</code>	Defines the version to update.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Usage Notes

#### Example 14-14 Updating the Storage

```
# odacli update-storage -v 12.2.1.1.0
```

## 14.5 odacli Appliance Commands

Use the `odacli appliance` commands to perform lifecycle activities for the appliance.

- [odacli create-appliance](#) (page 14-18)  
Use the `odacli create-appliance` command in a JSON file format to provision Oracle Database Appliance.
- [odacli describe-appliance](#) (page 14-18)  
Use the `odacli describe-appliance` command to display appliance details.

## 14.5.1 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]
```

#### Note:

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
<code>--requestjson, -r</code>	JSON input for appliance creation.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--help, -h</code>	(Optional) Displays help for using the command.

## 14.5.2 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
<code>--details, -d</code>	(Optional) Displays the agent CLI build details.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output.

Parameter	Description
<code>--no-details, -no-d</code>	(Optional) Displays no detailed information. Use this flag if you do not want to display details.

### Example 14-15 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
```

## 14.6 odacli Backup and Recovery Commands

Use the `odacli` backup and recover commands to backup to and restore from Oracle Cloud Infrastructure Object Storage or disk.

Topics:

- [odacli create-backup](#) (page 14-21)  
Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.
- [odacli create-backupconfig](#) (page 14-22)  
Use the command `odacli create-backupconfig` to create a backup configuration.
- [odacli create-objectstoreswift](#) (page 14-23)  
Use the command `odacli create-objectstoreswift` to create and store the Oracle credential details required to backup to Oracle Object Store.
- [odacli delete-backup](#) (page 14-24)  
Use the command `odacli delete-backup` to delete backups.
- [odacli delete-backupconfig](#) (page 14-25)  
Use the command `odacli delete-backupconfig` to delete a backup configuration.

- [odacli delete-objectstoreswift](#) (page 14-25)  
Use the command `odacli delete-objectstoreswift` to delete the credentials for the ObjectStore account.
- [odacli describe-backupreport](#) (page 14-26)  
Use the command `odacli describe-backupreport` to display details of a specific backup report.
- [odacli describe-schedule](#) (page 14-27)  
Use the command `odacli describe-schedule` to display details for a specific schedule.
- [odacli irestore-database](#) (page 14-28)  
Use the command `odacli irestore-database` to restore a database from one system to other system from ObjectStore based on a LongTerm BackupReport.
- [odacli list-backupreports](#) (page 14-29)  
Use the command `odacli list-backupreports` to display a list of all backup reports.
- [odacli list-backupconfigs](#) (page 14-29)  
Use the command `odacli list-backupconfig` to list a backup configuration.
- [odacli list-objectstoreswifts](#) (page 14-30)  
Use the command `odacli list-objectstoreswifts` to display a list of credentials for the ObjectStore account.
- [odacli list-schedules](#) (page 14-30)  
Use the command `odacli list-schedules` to display a list of the scheduled backups.
- [odacli list-schedule](#) (page 14-31)  
Use the command `odacli list-schedule` to display details for a specific schedule.
- [odacli recover-database](#) (page 14-32)  
Use the `odacli recover-database` command to recover or restore a database from backup.
- [odacli update-backupconfig](#) (page 14-33)  
Use the command `odacli update-backupconfig` to create a backup configuration.
- [odacli update-database](#) (page 14-34)  
Use the command `odacli update-database` to associate a backup configuration to a database.
- [odacli update-objectstoreswift](#) (page 14-35)  
Use the command `odacli update-objectstoreswift` to change the credentials for the ObjectStore account.
- [odacli update-schedule](#) (page 14-36)  
Use the command `odacli update-schedule` to update the schedule for a database, or to disable the database backup schedule.



## 14.6.1 odacli create-backup

Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.

### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

### Syntax

```
odacli create-backup -iDatabase Resource ID [-bt] [-c] [-h] [-j] [-k] [-t]
```

### Parameters

Parameter	Description
<code>--backupType, -bt {Regular-L0 Regular-L1 Longterm}</code>	Defines the type of backup. The options are not case sensitive.
<code>--component, -c {Database}</code>	(Optional) Defines the component. Database is the only supported option.
<code>--dbid, -i</code>	Defines the Database Resource ID.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--keepDays, -k</code>	Defines the Keep Days. For Longterm Backup Type only.
<code>--tag, -t</code>	Defines the name of the backup. A tag is alphanumeric, up to 30 characters. Required for Longterm Backup Type.

### Usage Notes

- Use the command `odacli create-backup` for a specified Database Resource ID and provide a tag for the backup name. Use up to 30 alphanumeric characters for the backup name tag. Three types of backups are available:
  - Level 0: An RMAN incremental backup that backs up all data blocks in the data files being backed up. An incremental backup at level 0 is identical in content to a full backup, but unlike a full backup, the level 0 backup is part of an incremental backup strategy.
  - Level 1: An RMAN incremental backup that includes only those blocks that have been changed since the "parent" backup was taken. A parent backup can be either a level 0 or a level 1 backup. If you do not select a backup type (level 0, level 1, or LongTerm), a level 1 backup is performed.
  - Longterm: Longterm backups are only available when backing up to Oracle Cloud Infrastructure Object Storage (Oracle Object Storage).
- This command creates a Backup Report with a Resource ID. To get the ID, use the command `odacli describe-job -i job_id-j` and look for the `resourceId` attribute in `resourceList`.

**Example 14-16 Create a Manual Database Backup**

Create a long term backup that is kept for 90 days and named q12018HR.

```
# odacli create-backup -i Database Resource ID -bt Longterm -c database -k 90 -t q12018HR
```

**Example 14-17 Create a Level 0 Database Backup**

Create a Level 0 backup named 2017Dec22ProductionLevel0 for resource ID 20576eb1-bc32-4e34-bf97-fda0b60ca15b

```
# odacli create-backup -i20576eb1-bc32-4e34-bf97-fda0b60ca15b -bt Regular-L0 -t 2017Dec22ProductionLevel0
```

**Related Topics**

- [Creating a Database Backup in the Web Console](#) (page 11-9)  
Apply a backup policy to a database, create a manual backup, update a database backup schedule, or update an archive log backup.

## 14.6.2 odacli create-backupconfig

Use the command `odacli create-backupconfig` to create a backup configuration.

**File Path**

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

**Syntax**

```
odacli create-backupconfig -n backup configuration name -d backup destination{Disk|ObjectStore|None} [-c] [-cr] [-h] [-j] [-no-cr] [-o][-w]
```

**Parameters**

Parameter	Description
<code>--backupdestination, -d {Disk ObjectStore None}</code>	Defines the backup destination. The options are not case sensitive.
<code>--container, -c</code>	(Optional) Defines the object store container.
<code>--crosscheck, -cr</code>	(Optional) Enable crosscheck.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--name, -n</code>	Defines the backup configuration name.
<code>--no-crosscheck, -no-cr</code>	(Optional) Disable crosscheck.
<code>--objectstoreswiftId, -o</code>	(Optional) Defines the swift object store credential ID.
<code>--recoverywindow, -wDisk: {1-14}   ObjectStore: {1-31}</code>	(Optional) Defines the Recovery Window in days. {1-14} days for Disk and {1-31} days for Object Storage in the cloud.

### Usage Notes

- The recovery window that is defined in the backup configuration determines when backups are considered obsolete. The following are guidelines:
  - Disk: 1-14 days
  - Object Storage: 1-31 days

### Example 14-18 Create a Backup Configuration for Disk

Create a backup configuration named `production` that backs up to disk with a 14 day recovery window.

```
# odacli create-backupconfig -d Disk -n production -w 14
```

## 14.6.3 odacli create-objectstoreswift

Use the command `odacli create-objectstoreswift` to create and store the Oracle credential details required to backup to Oracle Object Store.

### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

### Syntax

```
# odacli create-objectstoreswift -e swift end point URL [-h] [-j] -n Object Store Swift name [-p] swiftpassword -t Object Store tenant name -u Object Store user name
```

### Parameters

Parameter	Description
<code>--endpointurl, -e</code>	Defines the swift end point URL.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--name, -n</code>	Defines the Object Store Swift name.
<code>--swiftpassword, -p</code>	(Optional) Defines the Object Store Swift password.
<code>--tenantname, -t</code>	Defines the Object Store Swift tenant name.
<code>--username, -u</code>	Defines the Object Store Swift user name.

### Usage Notes

The command creates and stores the Oracle Cloud Infrastructure Object Storage credential details in the system and stores the password in an encrypted Oracle wallet. You can attach the credentials to one or more backup configurations.

The credentials are validated during the command `odacli create-backupconfig` with `objectstore` as the destination. The credentials are not validated against endpoint URL and tenancy.

## 14.6.4 odacli delete-backup

Use the command `odacli delete-backup` to delete backups.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

### Syntax

```
odacli delete-backup -iDatabase Resource ID [-br] [-h] [-j]
```

### Parameters

Parameter	Description
<code>--backupreport, -br</code>	(Optional) Defines the backup report. To delete a Long Term backup, use a JSON input file for the backupreport.
<code>--dbid, -i</code>	Defines the Database Resource Identifier (ID). To delete a level 0 or level 1 backup, use the database resource ID.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

### Usage Notes

- Delete older, obsolete level 0 and level 1 backups with the Database Resource ID. The recovery window that is defined in the backup configuration determines when backups are considered obsolete.
- Delete long term backups from Oracle Object Storage by using a JSON file with the `--backupreport` option.
- To locate the database ID, view the databases in the Web Console or use the command `odacli list-databases`.

#### Example 14-19 Delete a Level 0 or Level 1 Backup

```
# odacli delete-backup -i20576eb1-bc32-4e34-bf97-fda0b60ca15b
```

#### Example 14-20 Delete a Long Term Backup Report

Delete a Long Term backup using a JSON input file for the Backup Report. In this example, `backupreport.json` is the JSON input for the backupreport.

```
# odacli delete-backup -i 20576eb1-bc32-4e34-bf97-fda0b60ca15b -br backupreport.json
```

## 14.6.5 odacli delete-backupconfig

Use the command `odacli delete-backupconfig` to delete a backup configuration.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

### Syntax

```
odacli delete-backupconfig -i backup configuration id [-h] [-j]
```

### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--id, -i</code>	Defines the Backup Config identifier (ID).
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

### Usage Notes

You cannot delete a backup configuration if it is attached to a database.

### Example 14-21 Deleting a Backup Configuration

Delete a backup configuration named `production` that backs up to disk with a 14 day recovery window.

```
# odacli delete-backupconfig -d Disk -n production -w 14
```

## 14.6.6 odacli delete-objectstoreswift

Use the command `odacli delete-objectstoreswift` to delete the credentials for the ObjectStore account.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

### Syntax

```
# odacli delete-objectstoreswift [-h] [-j] -i Object Store Swift id
```

### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

Parameter	Description
<code>--objectstoreswiftid, -i</code>	Defines the Object Store Swift identifier (ID).

### Usage Notes

You cannot delete the Object Store credentials if they are attached to a backup configuration.

### Example 14-22 Deleting the Oracle Object Store Credentials

```
# odacli delete-objectstoreswift -i Object Store Swift id
```

## 14.6.7 odacli describe-backupreport

Use the command `odacli describe-backupreport` to display details of a specific backup report.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

### Syntax

```
odacli describe-backupreport [-h] [-j] [-i]
```

### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--id, -i</code>	Defines the backup report ID.

### Example 14-23 Display Details of a Specific Backup Report

```
# odacli describe-backupreport -i 2d82460c-d648-4e75-8c7d-72cc90bc442a
{
  "id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
  "dbResId" : "b5fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
  "dbId" : "2717054291",
  "dbName" : "ExampleDB",
  "dbUniqueName" : "ExampleDBu",
  "backupType" : "REGULAR-L1",
  "keepDays" : null,
  "backupLocation" : "https://swiftobjectstorage.example.com/v1/dbaasimage/
backupbucket",
  "cfBackupHandle" : "c-2717054291-20180108-04",
  "spfBackupHandle" : "c-2717054291-20180108-04",
  "pitrTimeStamp" : "January 08, 2018 12:43:14 PM UTC",
  "pitrSCN" : "1175058",
  "resetLogsTimeStamp" : "January 08, 2018 09:55:34 AM UTC",
  "resetLogsSCN" : "1112268",
  "oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
  "sqlPatches" : "25811364,26609817",
```

```

    "backupLogLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/
backupbucket/scaoda702c1n1/rmanlog/ExampleDBu/2717054291/2018-01-08/
rman_backup_2018-01-08_12-42-41.0545.log",
    "tdeWalletLoc" : null,
    "dbConfigLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/
scaoda702c1n1/dbconfig/ExampleDBu/2717054291/2018-01-08/
DBCONFIG_TAG20180108T124407_2018-01-08_12-44-07.0533.tar.gz",
    "name" : "Backup_Report_ExampleDB",
    "createTime" : "January 08, 2018 12:42:08 PM UTC",
    "state" : {
        "status" : "CONFIGURED"
    },
    "updatedAt" : "January 08, 2018 12:44:12 PM UTC",
    "backupReportLogDetail" : "https://swiftobjectstorage.example.com/v1/dbaasimage/
backupbucket/scaoda702c1n1/rmandetaillogreport/ExampleDBu/2717054291/2018-01-08/
rman_list_backup_detail_2018-01-08_12-44-04.0362.log",
    "dbInfo" : {
        "dbClass" : "OLTP",
        "dbType" : "RAC",
        "dbShape" : "odb1",
        "dbEdition" : "EE",
        "dbStorage" : "ASM"
    },
    "dbDataSize" : "1542M",
    "dbRedoSize" : "16403M"
}

```

## 14.6.8 odacli describe-schedule

Use the command `odacli describe-schedule` to display details for a specific schedule.

### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

### Syntax

```
# odacli describe-schedule [-h] [-j] [-i]
```

### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--scheduleid, -id</code>	Defines the schedule with an identifier (ID).

### Example 14-24 Display Schedule Details

```
# odacli describe-schedule -i scheduleid
```

## 14.6.9 odacli irestore-database

Use the command `odacli irestore-database` to restore a database from one system to other system from ObjectStore based on a LongTerm BackupReport.

### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

### Syntax

```
odacli recover-database -iDatabase Resource ID [-bp] [-r] [-cl] [-co] [-s] [-dr]
[-y] [-h] [-j] [-c] [-oid] [-tp] [-tf]
```

### Parameters

Parameter	Description
<code>--backupPassword(s), -bp</code>	(Optional) Defines the RMAN password for recovery. You can provide more than one password, but the passwords must be separated by a comma(,).
<code>--backupReport, -r</code>	JSON input for a backup report.
<code>--dbClass, -cl {EE: OLTP/DSS/IMDB, SE: OLTP}</code>	(Optional) Defines the Database class.
<code>--dbConsoleEnable, -co</code>	(Optional) Enables the Database Console.
<code>--dbShape, -s {odb1,odb2, and so on}</code>	(Optional) Defines the database shape.
<code>--dbStorage, -dr {ACFS ASM}</code>	(Optional) Defines the database storage. Database Storage {ACFS ASM} (non case-sensitive). The default is ASM.
<code>--dbType, -y</code>	(Optional) Defines the type of database. The default is single instance (SI).
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--noOfRmanChannels, -c</code>	(Optional) Defines the number of RMAN channels (parallelism) Default: SE Edition: 1, Other Enterprise Editions: 5
<code>--objectStoreId, -oid</code>	Defines the Swift Object Store credential ID
<code>--sysPassword, -m</code>	Defines the password for the SYS user.
<code>--tdePassword, -tp</code>	(Optional) Defines the password for the TDE Wallet.
<code>--tdefilesLocation, -tf</code>	(Optional) Identifies the TDE Wallet location in Objectstore.

### Usage Notes

The command `odacli irestore-database` restores a database to a system using the Backup Report of a long term backup that is in the Oracle Object Store. You can restore a database from one appliance to another appliance, or to the same appliance after the source database is deleted.

An Oracle wallet (ObjectStoreSwift credentials) must be created to access the backups in Oracle Object Store. This command performs the environment checks, validation checks, and tasks needed to restore a database to an Oracle Database Appliance system.



**Example 14-25 Restoring a Database to the Same System**

To restore to the same system, delete the source database, then use the backup report to restore.

Run the command `odacli irestore-database` with the backup report. Enter the SYS user password when prompted.

```
# odacli irestore-database -r backupreport.json -oid Object Store ID -m
```

**Example 14-26 Restoring a Database to a Different System**

To restore to a different system, copy the backup report to the other machine's `\bin` folder, then run the command `odacli irestore-database` with the backup report. Enter the SYS user password when prompted.

```
# odacli irestore-database -r backupreport.json -oid Object Store ID -m
```

## 14.6.10 odacli list-backupreports

Use the command `odacli list-backupreports` to display a list of all backup reports.

**File Path**

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

**Syntax**

```
# odacli list-backupreports [-h] [-j]
```

**Parameters**

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

**Usage Notes**

Displays a list of all database backup reports generated from the command `odacli create-backup`.

**Example 14-27 Display a List of all Backup Reports**

```
# odacli list-backupreports
```

## 14.6.11 odacli list-backupconfigs

Use the command `odacli list-backupconfig` to list a backup configuration.

**File Path**

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

**Syntax**

```
odacli list-backupconfig [-h] [-j]
```

**Parameters**

Parameter	Description
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.

**Example 14-28 Displaying a List of Backup Configuration**

Display a list of backup configurations.

```
# odacli list-backupconfig -d Disk -n production -w 14
```

## 14.6.12 odacli list-objectstoreswifts

Use the command `odacli list-objectstoreswifts` to display a list of credentials for the ObjectStore account.

**File Path**

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

**Syntax**

```
# odacli list-objectstoreswifts [-h] [-j]
```

**Parameters**

Parameter	Description
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.

**Example 14-29 Displaying a List of ObjectStore Swift Credentials**

```
# odacli list-objectstoreswifts
```

## 14.6.13 odacli list-schedules

Use the command `odacli list-schedules` to display a list of the scheduled backups.

**File Path**

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

**Syntax**

```
# odacli list-schedules [-h] [-j]
```

## Parameters

Parameter	Description
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.

## Usage Notes

The command lists all of the schedules in the system, including database backup schedules and some internal maintenance schedules.

### Example 14-30 Display a List of Scheduled Database Backups

Display a list of all scheduled database backups and details.

```
# odacli list-schedules
```

## 14.6.14 odacli list-schedule

Use the command `odacli list-schedule` to display details for a specific schedule.

### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

### Syntax

```
# odacli describe-schedule [-e] [-h] [-j] [-i]
```

## Parameters

Parameter	Description
--executionid, -e	(Optional) Displays the execution ID.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--scheduleid, -id	Defines the schedule with an identifier (ID).

### Example 14-31 Display a List of Executed Schedules

```
# odacli list-schedule
```

## 14.6.15 odacli recover-database

Use the `odacli recover-database` command to recover or restore a database from backup.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

### Syntax

```
odacli recover-database -iDatabase Resource ID [-br] [-i] [-h] [-j] [-r] [-t] [-p] [-s]
```

### Parameters

Parameter	Description
<code>--backupReport, -br{Regular-L0 Regular-L1 Longterm}</code>	(Optional) JSON input for a backup report.
<code>--dbid, -i</code>	Defines the Database Resource ID.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--recoveryTimeStamp, -r</code>	(Optional) Defines the date and time of the backup. The Recovery Timestamp (in format mm/dd/yyyy hh:mm:ss) is required when the recovery is a point in time recovery (PITR).
<code>--recoverytype, -t {Latest PITR SCN}</code>	(Optional) Defines the recovery type. Do not provide the recovery type if you define the Backup Report.
<code>--rmanrecoverypassword(s), -p</code>	(Optional) Defines the password for recovery. You can provide more than one password, but the passwords must be within single quote separated by comma(,).
<code>--scn, -s</code>	(Optional) Defines the SCN recovery type. Required when the RecoveryType is SCN.

### Usage Notes

Recovers a database to the latest, a point in time recovery (PITR), or System Change Number (SCN) as input. You can also recover a database from a Backup Report provided as JSON input file.

This command performs various environment and validation checks in order to attempt to ensure that recovery of database is successful. If backups are in ObjectStore, the RMAN recovery passwords are needed to recover the database. This includes RMAN restore and recovery.

This command always performs a full RMAN database restore and recovery. This command is most useful when there is a complete database loss or when the majority of the database files are lost. If you do not require a full RMAN restore, you can perform a manual recovery. For example, a single datafile loss or controlfile loss.

### Example 14-32 Recovering a Database to a Point-in-Time

```
# odacli recover-database -i b5fc646e-01a6-4c8b-8286-7633346c4 -t PITR -r 11/08/2017 12:57:33 -p
```

**Example 14-33 Recovering a Database to the Latest**

```
# odacli recover-database -i b5fc646e-01a6-4c8b-8286-7633346c4 -t Latest -p
```

**Example 14-34 Recovering a Database to an SCN**

```
# odacli recover-database -i b5fc646e-01a6-4c8b-8286-7633346c4 -t SCN -s 392375947
```

## 14.6.16 odacli update-backupconfig

Use the command `odacli update-backupconfig` to create a backup configuration.

**File Path**

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

**Syntax**

```
odacli update-backupconfig -n backup configuration name -d backup destination{Disk|ObjectStore|None} [-c] [-cr] [-h] [-j] [-no-cr] [-o][-w]
```

**Parameters**

Parameter	Description
<code>--backupdestination, -d{Disk ObjectStore None}</code>	Defines the backup destination. The options are not case sensitive
<code>--container, -c</code>	(Optional) Defines the object store container.
<code>--crosscheck, -cr</code>	(Optional) Enable Crosscheck.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--name, -n</code>	Defines the backup configuration name.
<code>--no-crosscheck, -no-cr</code>	(Optional) Disable crosscheck.
<code>--objectstoreswiftId, -o</code>	(Optional) Defines the swift object store credential ID.
<code>--recoverywindow, -w</code> Disk: {1-14} ObjectStore: {1-30}	(Optional) Defines the Recovery Window in days. {1-14} days for Disk and {1-30} days for Object store.

**Usage Notes**

- The recovery window that is defined in the backup configuration determines when backups are considered obsolete. The following are guidelines:
  - Disk: 1-14 days
  - ObjectStore in Casper: 1-30 days

**Example 14-35 Revise a Backup Configuration for Disk**

Create a backup configuration named `production` that backs up to disk with a 14 day recovery window.

```
# odacli update-backupconfig -d Disk -n production -w 14
```

## 14.6.17 odacli update-database

Use the command `odacli update-database` to associate a backup configuration to a database.

### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

### Syntax

```
odacli update-database -bi backup configuration ID [-i database resource ID] [-h] [-j] [-hrp hidden RMAN backup password] [-rp RMAN backup password]
```

### Parameters

Parameter	Description
<code>--backupconfigid, -bi</code>	(Optional) Defines the Backup Config ID.
<code>--backupconfign, -bin</code>	(Optional) Defines the Backup Config Name.
<code>--dbid, -i</code>	Defines the Database Resource ID.
<code>--dbin, -in</code>	Defines the Database Name.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--hiddenrmanbkuppassword, -hrp</code>	(Optional) Defines the Rman backup password.
<code>--rmanbkuppassword, -rp</code>	(Optional) Defines the RMAN backup password.

### Usage Notes

For backup to the Oracle Object Store, you can set an RMAN backup password. The password is encrypted and stored in an Oracle wallet. The password is used when using the command `odacli create-backup` to create a database backup.

#### Example 14-36 Associating a Backup Configuration with a Database

```
# odacli update-database -i database resource ID -bi backup configuration ID -hrp hidden RMAN backup password
```

#### Example 14-37 Updating an Existing Database Using the Resource ID

Update an existing database to attach the backup configuration to the database using the Database Resource ID.

```
# odacli update-database -i d3c4d8f6-5eb7-4f9e-ab27-7bdd5013ac90 -bi 9d942e0a-ba00-4cbc-9bfb-0de83ed279e5 -bp
```

#### Example 14-38 Updating an Existing Database Using the Resource Name

Update an existing database to attach the backup configuration to the database using the Database Resource Name.

In the following example, the Database Resource Name is `mydb`:

```
# odacli update-database -in mydb -bi 9d942e0a-ba00-4cbc-9bfb-0de83ed279e5 -bp
```

In the following example, the Database Resource Name is `mydb` and the backup configuration name is `mybcfg`:

```
# odacli update-database -in mydb -bin mybcfg -bp
```

## 14.6.18 odacli update-objectstoreswift

Use the command `odacli update-objectstoreswift` to change the credentials for the ObjectStore account.

### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

### Syntax

```
# odacli update-objectstoreswift [-h] [-j] -i Object Store Swift id [-p] swift password [-u] Object Store user name
```

### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--objectstoreswiftid, -i</code>	Defines the Object Store Swift identifier (ID).
<code>--swiftpassword, -p</code>	(Optional) Defines the Object Store Swift password.
<code>--username, -u</code>	(Optional) Defines the Object Store Swift user name.

### Usage Notes

Use this command to update the password when it is changed for an ObjectStore account. The command updates the Oracle ObjectStore credential details in the system and stores the password in an encrypted Oracle wallet.

The credentials are validated during the command `odacli update-backupconfig` with `objectstore` as the destination. The credentials are not validated against endpoint URL and tenancy.

#### Example 14-39 Changing the Oracle Casper ObjectStore Password

```
# odacli update-objectstoreswift -i Object Store Swift id -p swift password
```

#### Example 14-40 Changing the Oracle ObjectStore User Name

```
# odacli update-objectstoreswift -i Object Store Swift id -u Object Store user name
```

## 14.6.19 odacli update-schedule

Use the command `odacli update-schedule` to update the schedule for a database, or to disable the database backup schedule.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

### Syntax

```
# odacli update-schedule [-x] [-t] [-d] [-e] [-h] [-j] [-id]
```

### Parameters

Parameter	Description
<code>--cronExpression, -x</code>	(Optional) Defines the date and time for the update.
<code>--description, -t</code>	(Optional) Provides a description for the update schedule.
<code>--disable, -d</code>	(Optional) Disables the schedule.
<code>--enable, -e</code>	(Optional) Enables a disabled schedule.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--scheduleid, -id</code>	Defines the schedule with an identifier (ID).

### Usage Notes

Backups incur overhead on the system. When possible, do not schedule backups to run when users are trying to access data.

Use a utility, such as [www.croncronmaker.com](http://www.croncronmaker.com), to generate a valid cron expression.

#### Example 14-41 Change What Time the Backup Occurs

Edit the cron expression to change the time of scheduled backups for a given schedule ID.

```
# odacli update-schedule -i scheduleid -x 0 0 13 1/1 * ? *
```

#### Example 14-42 Disable Scheduled Database Backups

```
# odacli update-schedule -i scheduleid -d
```

## 14.7 odacli CPU Core Commands

Use the CPU Core commands to enable CPU cores and display current and historical CPU core configurations.



- [odacli list-cpucores](#) (page 14-37)  
Use the `odacli list-cpucores` command lists the history of core configuration changes in the system.
- [odacli describe-cpucore](#) (page 14-37)  
Use the `odacli describe-cpucore` command to display the current core configuration and the modification date and time.
- [update-cpucore](#) (page 14-38)  
Use the `odacli update-cpucore` command to enable the number of CPU cores in the system.

## 14.7.1 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-43 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
```

## 14.7.2 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 14-44 Displaying the Current Core Configuration**

```
# odacli describe-cpucore

Node  Cores  Modified                               Job Status
-----
0      8      July 25, 2016 9:39:59 AM SGT           Configured
```

## 14.7.3 update-cpucore

Use the `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 14-45 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",
```

```
"updatedAtTime" : 1469410799194
}
```

## 14.8 odacli Database Commands

Use the `odacli database` commands to perform database lifecycle operations.

- [odacli list-databases](#) (page 14-39)  
Use the `odacli list-databases` command to list all databases on the appliance.
- [odacli describe-database](#) (page 14-40)  
Use the `odacli describe-database` command to display database details.
- [odacli create-database](#) (page 14-41)  
Use the `odacli create-database` command to create a new database.
- [odacli register-database](#) (page 14-44)  
Use the `odacli register-database` command to register a migrated database with the appliance.
- [odacli delete-database](#) (page 14-47)  
Use the `odacli delete-database` command to delete a database.

### 14.8.1 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

#### Example 14-46 Displaying a List of Databases

Display a list of databases:

```
# odacli list-databases
```

```
ID                               DB Name   DB Version  CDB
-----
ad6c7326-e460-411e-94df-230dedbef743  rdb121a  12.1.0.2   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

## 14.8.2 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
<code>--dbid, -i</code>	Identifies the database home identifier (ID) to display. Use the <code>odacli list-databases</code> command to obtain the dbid.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-47 Displaying Database Details

Display information for database named `ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f` :

```
# odacli describe-database -i ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f

Database details
-----
ID: ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f
Description: rdb1
DB Name: rdb1
DB Version: 12.1.0.2
DBID: 1339792271
CDB: true
PDB Name: rlpdb1
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
```

## 14.8.3 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
<code>--adminpassword, -m</code>	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.
<code>--backupconfigid, -bi</code>	(Optional) Defines the backup configuration identifier for future use.
<code>--cdb, -c</code>	(Optional) Creates the database as a container database. Use the <code>-c</code> flag to create a container database and use the <code>-no-c</code> flag to create a non-CDB database. The default is <code>-no-c</code> .
<code>--characterset, -cs</code>	Defines the character set. The default is AL32UTF8.
<code>--databaseUniqueName, -u</code>	(Optional) Defines a unique name for the database.
<code>--dbclass, -cl {OLTP DSS IMDB}</code>	Defines the database class. The default is OLTP. The options are as follows: <ul style="list-style-type: none"> <li>Enterprise Edition: OLTP, DSS, or IMDB.</li> <li>Standard Edition: OLTP</li> </ul>
<code>--dbconsole, -co</code>	(Optional) Enables the Database Console. Use the <code>-no-co</code> flag to disable the Database Console. If not selected, the default is no database console.
<code>--dbhomeid, -dh</code>	(Optional) Identifies the existing Database Home ID.
<code>--dblanguage, -l</code>	Defines the database language. The default language is AMERICAN.
<code>--dbname, -n</code>	Defines the name given to the new database (dbname.)
<code>--dbshape, -s</code>	Identifies the database shape (template) and determines the total memory allocated to the database. For example, odb1 and odb2. The default is odb1.
<code>--dbstorage, -r {ACFS ASM}</code>	Defines the Database Storage, either Oracle ACFS or Oracle ASM. The default value is Oracle ASM.
<code>--dbterritory, -dt</code>	Defines the database territory. The default territory is AMERICA.
<code>--dbtype, -y [SI]</code>	Defines the database type. The default database type is SI.
<code>--help, -h</code>	(Optional) Displays help for using the command.

Parameter	Description
<code>--instanceonly, -io</code>	(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.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--nlscharacteraset, -ns</code>	Defines the NLS National Character Set. The default is AL16UTF16.
<code>--no-cdb, -no-c</code>	(Optional) Creates a database that is <i>not</i> a container database. Use this flag when you want to create a non-CDB database. Use the <code>-c</code> flag to create a container database.
<code>--no-dbconsole, -no-co</code>	(Optional) Disables Database Console. Use the <code>-co</code> flag to enable Database Console.
<code>--pdbadmin, -d</code>	Defines the Pluggable Database (PDB) Admin User.
<code>--pdbname, -p</code>	Defines the Pluggable Database (PDB) name. The default value is <code>pdb1</code> .
<code>--version, -v</code>	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

- Flash cache is disabled by default.
- 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 ASM.
- 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 the following option to specify the `adminpassword`:
  - Interactive mode: Use the `-m` option and enter the password when prompted.
- 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
  - 12.2.0.1.171017
  - 12.2.0.1.170814
  - 12.1.0.2
  - 12.1.0.2.171017
  - 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
  - 11.2.0.4.171017
  - 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 14-48 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 pdb1

Password for SYS,SYSTEM and PDB Admin:
{
  "jobId" : "f12485f2-dcbe-4ddf-aeel-de24d37037b6",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 03:54:03 AM EDT",
  "description" : "Database service creation with db name: hrdb",
  "updatedAtTime" : "March 26, 2018 03:54:03 AM EDT"
}
```

**Example 14-49 Creating a Database in Non-Interactive Mode**

This example creates an 12.1.0.2 OLTP database named `crmdb` with shape `odb2` and enables you to specify the password in the command-line. To define the password in the command-line, use the `-hm` option and define the password. Because the container database flag (`-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" : "March 26, 2018 03:59:22 AM EDT",
  "description" : "Database service creation with db name: crmdb",
  "updatedAtTime" : "March 26, 2018 03:59:22 AM EDT"
}
```

**Example 14-50 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
```

## 14.8.4 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: <ul style="list-style-type: none"> <li>Enterprise Edition: OLTP, DSS, or IMDB.</li> <li>Standard Edition: OLTP</li> </ul>
--dbconsole, -co	(Optional) Enables the Database Console. Use the <code>-no-co</code> flag 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 <code>-co</code> flag 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, <code>hostname:port/servicename</code> . The Port number is the port configured for the listener, as part of the deployment.
--syspassword, -p	Defines the proxy user password for SYS.

## Usage Notes



### Note:

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/password@//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 register-database` command.

### Example 14-51 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",
  "updatedAtTime" : "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

## 14.8.5 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 <code>odacli list-databases</code> command to obtain the --dbid.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output.

## Usage

### Note:

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 14-52 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
7e28bf52-1a09-49fd-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
```

## 14.9 odacli DBHome Commands

Use the `odacli DBHome` commands to manage database Home operations.

- [odacli list-dbhomes](#) (page 14-49)  
Use the `odacli list-dbhomes` command to display a list of Oracle Home directories.
- [odacli describe-dbhome](#) (page 14-49)  
Use the `odacli describe-dbhome` command to display Oracle Database Home details.

- [odacli create-dbhome](#) (page 14-50)  
Use the `odacli create-dbhome` command to create an Oracle Database Home.
- [odacli delete-dbhome](#) (page 14-51)  
Use the `odacli delete-dbhome` command to delete database home that is not associated with a database.

## 14.9.1 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 14-53 Displaying a List of Oracle Home Directories

Run the following command to display a list of Oracle Home directories:

```
# odacli list-dbhomes

ID                               Name                               DB Version
-----
b727bf80-c99e-4846-ac1f-28a81a725df6 OraDB12102_home1 12.1.0.2

(continued)
Home Location
-----
/u01/app/orauser/product/12.1.0.2/dbhome_1
```

## 14.9.2 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 <i>dbhomeid</i>	Identifies the database home ID. Use the <code>odacli list-dbhomes</code> 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.
-v <i>dbversion</i>	(Optional) Identifies the Database Home Version. Use the <code>odacli list-dbhomes -v</code> command to get the <i>dbversion</i> .

### Example 14-54 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
Home Location: /u01/app/orauser/product/12.1.0.2/dbhome_1
Created: Jun 2, 2016 10:19:23 AM
```

## 14.9.3 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 <i>version number</i>	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

 **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 14-55 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
```

## 14.9.4 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
<code>--id, -i</code>	Identifies the database home using a database identifier (ID).
<code>--help, -h</code>	(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 14-56 Deleting an Empty Database Home**

```
# odacli delete-dbhome -i 0ce547ca-3df2-4178-a7e6-eefa613aeab4
```

## 14.10 odacli Database Storage Commands

Use the Database Storage commands to list, describe, create, and delete Oracle database storage.

- [odacli list-dbstorages](#) (page 14-52)  
Use the `odacli list-dbstorages` command to display a list of all of the database storage configured in the appliance.
- [odacli describe-dbstorage](#) (page 14-53)  
Use the `odacli describe-dbstorage` command to display storage configuration details.
- [odacli create-dbstorage](#) (page 14-54)  
Use the `odacli create-dbstorage` command to create the file system for database migrations.
- [odacli delete-dbstorage](#) (page 14-55)  
Use the `odacli delete-dbstorage` command to delete database storage that is not associated with a database.

### 14.10.1 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
<code>--help, -h</code>	(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 14-57 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

## 14.10.2 odacli describe-dbstorage

Use the `odacli 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
<code>--id, -i</code>	Identifies the database storage.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--help, -h</code>	(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 14-58 Displaying Database Oracle ACFS Storage Details**

The following example displays Oracle ASM Cluster file system (ACFS) storage details:

```
# odacli describe-dbstorage -i 9fe39332-cc1a-4b4b-8393-165524a6ef6b
```

```
DBStorage details
-----
ID: 9fe39332-cc1a-4b4b-8393-165524a6ef6b
DB Name: rdb121a
DBUnique Name: rdb121a
DB Resource ID: ad6c7326-e460-411e-94df-230dedbef743
```

```
Storage Type: Acfs
DATA Location: /u02/app/oracle/oradata/rdb121a
RECO Location: /u03/app/oracle/fast_recovery_area/
REDO Location: /u03/app/oracle/redo/
State: ResourceState(status=Configured)
Created: July 22, 2016 12:07:12 PM SGT
UpdatedTime: July 22, 2016 12:26:39 PM SGT
```

### Example 14-59 Displaying Database Oracle ASM Storage Details

The following example displays Oracle Automatic Storage Management (Oracle ASM) storage details:

```
# odacli describe-dbstorage -i 4f2a1b59-ca66-4d80-951c-425ab7b0acae

DBStorage details
-----
ID: 4f2a1b59-ca66-4d80-951c-425ab7b0acae
DB Name: ee12db
DBUnique Name: ee12db
DB Resource ID: fb4d02f3-2413-47ca-8584-a768e23ec2e7
Storage Type: Asm
DATA Location: DATA
RECO Location: RECO
REDO Location: RECO
State: ResourceState(status=Configured)
Created: July 22, 2016 1:13:51 PM SGT
UpdatedTime: July 22, 2016 1:13:52 PM SGT
```

## 14.10.3 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
<code>--dbname, -n</code>	Defines the name of the database.
<code>--dataSize, -s</code>	(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.

Parameter	Description
<code>--databaseUniqueName, -u</code>	(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: <code>/u02/app/oracle/oradata/db unique name</code>
<code>--dbstorage, -r [ASM ACFS]</code>	(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: ASM
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Usage Notes

- The `odacli create-dbstorage` command registers the storage metadata with the Appliance Manager.
- Oracle Database is supported on both Oracle Automatic Storage Management (Oracle ASM) and Oracle ASM Cluster file system (ACFS). The default is Oracle ASM.
- 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 14-60 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",
  "updatedAt" : "August 09, 2016 06:19:35 AM WSST"
}
```

## 14.10.4 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 14-61 Deleting Empty Database Storage**

```
# odacli delete-dbstorage -i 9fe39332-cc1a-4b4b-8393-165524a6ef6b
```

## 14.11 odacli Job Commands

Use the `odacli list-jobs` and `odacli describe-job` commands to display job details.

- [odacli list-jobs](#) (page 14-56)  
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 14-57)  
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.
- [odacli list-scheduledExecutions](#) (page 14-58)

### 14.11.1 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 14-62 Displaying a List of Jobs**

To display a list of jobs:

```
# odacli list-jobs
```

```
ID                               Description                       Created
-----
a6084067-72a1-4625-bea7-efd      Provisioning service              creation Jun 2, 2016 10:19:23 AM
```

(Continued)

Status

-----

Success

## 14.11.2 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 <code>list-jobs</code> command.
--json, -j	(Optional) Displays JSON output.
--help, -h	(Optional) Displays help for using the command.

**Example 14-63 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
```

## 14.11.3 odacli list-scheduledExecutions

Use the command `odacli list-scheduledExecutions` to display a list of jobs that were executed.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

### Syntax

```
odacli list-scheduledExecutions [-j] [-h]
```

### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

### Example 14-64 Displaying a List of Scheduled and Executed Jobs

Display a list of scheduled tasks, the status, and the date and time that the task was executed. In the following example, three (3) scheduled tasks were executed. One task, Schedule ID `04b5750c-0d13-42cf-aba3-85416e8edafb`, was executed twice.

```
# odacli list-scheduledExecutions

ID                               ScheduledId
JobId
-----
9890508c-ff6d-4307-972f-7962ec390871  04b5750c-0d13-42cf-
aba3-85416e8edafb
10a33e08-695c-4d13-b970-7dc7215f3cdd
7ee1e2aa-80a8-4297-97f7-365b84bcce4d
4a9e9796-4bed-4df7-af1e-de49362dda97  04b5750c-0d13-42cf-aba3-85416e8edafb

(Continued)
Status   Executed Time
-----
Executed February 4, 2018 12:00:00 AM UTC
Executed February 4, 2018 12:00:00 AM UTC
Executed February 5, 2018 12:00:00 AM UTC
```

To learn more about a scheduled backup, run the command `odacli list-schedules`. The output displays the ID, name, description, and schedule for each task.

```
# odacli list-schedules

ID                               Name
Description
-----
d136cc72-4a80-4ab8-9f1e-120b995b2794  metastore maintenance      internal
metastore maintenance
04b5750c-0d13-42cf-aba3-85416e8edafb  AgentState metastore cleanup  internal
agentstateentry metastore maintenance
7ee1e2aa-80a8-4297-97f7-365b84bcce4d  backupreport maintenance     backup reports
```

```
deletion
```

```
(Continued)
```

```
CronExpression          Disabled
-----
0 0 0 1/1 * ? *        true
0 0 0 1/1 * ? *        false
0 0 0 1/3 * ? *        false
```

## 14.12 odacli Network Commands

Use the `odacli network` commands to list and describe network interfaces.

- [odacli list-networks](#) (page 14-59)  
Use the `odacli list-networks` command to display networks.
- [odacli describe-network](#) (page 14-60)  
Use the `odacli describe-network` command to display the details of a specific network.
- [odacli create-network](#) (page 14-61)  
Use the `odacli create-network` command to create a network.
- [odacli update-network](#) (page 14-61)  
Use the `odacli update-network` command to update an existing network configuration.
- [odacli delete-network](#) (page 14-62)  
Use the command `odacli delete-network` to delete a network.

### 14.12.1 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
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--help, -h</code>	(Optional) Displays help for using the command.

#### Example 14-65 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
-----
7e3fd7e7-0975-4c74-9720-a01a2a7a838d Private-network priv0    192.0.2.1
```

```
e37b0ae9-1420-4e05-943b-7a8ee912cafb Public-network btbond1 10.20.30.100
```

(Continued)

```
Subnet Mask      Gateway
-----
255.255.255.240
255.255.252.0    10.20.30.1
```

## 14.12.2 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
<code>--id, -i</code>	Identifies the network ID. Use the <code>odacli list-networks</code> command to obtain the id.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-66 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
```



## 14.12.3 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
<code>--defaultnetwork, -d</code>	Identifies the default network.
<code>--gateway, -g</code>	Defines the network gateway. The gateway is required for the default network.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--interface, -n</code>	Defines the name of the network interface.
<code>--ipaddress, -p</code>	Defines the network IP address.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--networktype, -w</code>	Defines the type of network. Options are: {Public Private Dataguard Backup Other}
<code>--no-defaultnetwork, no-d</code>	Identifies a network as not the default network. Use <code>--defaultnetwork, -d</code> to identify a default network.
<code>subnetmask, -s</code>	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 14-67 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
```

## 14.12.4 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 14-68 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
```

## 14.12.5 odacli delete-network

Use the command `odacli delete-network` 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 14-69 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" : "March 26, 2018 23:14:32 PM EDT",
  "endTime" : "March 26, 2018 23:14:32 PM EDT",
  "status" : "Running",
  "taskDescription" : null,
  "parentTaskId" : "TaskSequential_135",
  "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
  "tags" : [ ],
  "reportLevel" : "Info",
  "updatedAt" : "March 26, 2018 23:14:32 PM EDT"
},{
"taskId" : "TaskZJsonRpcExt_142",
  "taskName" : "Setting up Network",
  "taskResult" : "Network setup success",
  "startTime" : "March 26, 2018 23:14:32 PM EDT",
  "endTime" : "March 26, 2018 23:14:32 PM EDT",
  "status" : "Success",
  "taskDescription" : null,
  "parentTaskId" : "TaskParallel_141",
  "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
  "tags" : [ ],
  "reportLevel" : "Info",
  "updatedAt" : "March 26, 2018 23:14:32 PM EDT" } ],
"createTimestamp" : "March 26, 2018 23:14:32 PM EDT",
"description" : "Network service delete",
"updatedAt" : "March 26, 2018 23:14:32 PM EDT"
}
```

## 14.13 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 14-64)

- [odacli update-asr](#) (page 14-65)
- [odacli describe-asr](#) (page 14-67)
- [odacli test-asr](#) (page 14-67)
- [odacli delete-asr](#) (page 14-68)

## 14.13.1 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
<code>--asrip, -i</code>	(Optional) Identifies the external Oracle ASR Manager IP address.
<code>--asrpassword, -a</code>	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.
<code>--asrtype, -e {internal   external}</code>	Defines the Oracle ASR Configuration Type. The default is internal.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--proxypassword, -ppwd</code>	(Optional) Defines the proxy user password.
<code>--proxyport, -t</code>	(Optional) Defines the proxy server port.
<code>--proxyserver, -r</code>	(Optional) Defines the Proxy Server Address.
<code>--proxyuser, -y</code>	(Optional) Defines the proxy user name needed to authenticate the proxy server.
<code>--snmpversion, -s [V2 V3]</code>	(Optional) Defines Simple Network Management Protocol (SNMP) Version 2 or SNMP Version 3. The default is V2.
<code>--username, -u</code>	Defines the Oracle ASR user name. The user name is the My Oracle Support user name under which the server is registered.

### Usage Notes

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 14-70 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.

```
# odacli configure-asr -u john.smith1@example.com -a -t 80 -r www-proxy.example.com
Asr User password:
```

Job details

```
-----
ID: d99559b6-d98d-4cb7-b44d-8577cab26667
Description: Configure ASR
Status: Created
Created: August 9, 2016 6:12:19 AM W SST
Message:
```

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

#### Example 14-71 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",
  "updatedAtTime" : "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.

## 14.13.2 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
<code>--asrip, -i</code>	(Optional) Identifies the external Oracle ASR Manager IP address.
<code>--asrpassword, -a</code>	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.
<code>--asrtype, -e [internal   external]</code>	Defines the Oracle ASR Configuration Type. The default is internal.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--proxypassword, -ppwd</code>	(Optional) Defines the proxy user password.
<code>--proxyport, -t</code>	(Optional) Defines the proxy server port.
<code>--proxyserver, -r</code>	(Optional) Defines the Proxy Server Address.
<code>--proxyuser, -y</code>	(Optional) Defines the proxy user name needed to authenticate the proxy server.
<code>--snmpversion, -s [v2 v3]</code>	(Optional) Defines Simple Network Management Protocol (SNMP) Version 2 or SNMP Version 3. The default is v2.
<code>--username, -u</code>	Defines the Oracle ASR user name. The user name is the My Oracle Support user name under which the server is registered.

## Usage Notes

- Enter the password during Oracle ASR configuration.
- 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 14-72 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`.

```
# odacli update-asr -u scott.tiger@example.com --asrpassword --proxyserver www-
proxy2.example.com --proxyport 80
Asr User password:
```

Job details

```

-----
ID: 79cb2baa-1644-45c5-a004-a303e3111807
Description: Update ASR
Status: Created
Updated: July 15, 2016 9:53:54 AM PST
Message:

```

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

## 14.13.3 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-73 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

```

## 14.13.4 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 14-74 Testing the Oracle ASR Configuration

```
# odacli test-asr
```

```
Job details
```

```
-----
ID: ec6783f4-551d-4686-ab1b-22e2d9e59c98
Description: Test ASR
Status: Created
Created: July 25, 2016 9:03:15 AM SGT
Message:
```

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

## 14.13.5 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 14-75 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",
```



```
"updatedAt" : 1469409622458
}
```

## 14.14 odacli OS Commands

Use the `odacli os` commands to list and update operating system (OS) parameters.

- [odacli list-osconfigurations](#) (page 14-69)  
Use the command `odacli list-osconfigurations` to display the current HugePage and memlock values and view suggested values based on the total available space.
- [odacli update-osconfigurations](#) (page 14-70)  
Use the command `odacli update-osconfigurations` to update the HugePage and memlock values.

### 14.14.1 odacli list-osconfigurations

Use the command `odacli list-osconfigurations` to display the current HugePage and memlock values and view suggested values based on the total available space.

#### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odacli
```

#### Syntax

```
odacli list-osconfigurations [-h] [-j]
```

#### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

#### Usage Notes

The command displays the configured values for HugePage and memlock from the `/etc/sysctl.conf` and `/etc/security/limits.conf` files. Based on the total available space, suggested values are calculated for the parameters.

#### Example 14-76 Displaying a List of Configured and Suggested Memlock and HugePage Configurations

```
# odacli list-osconfigurations
```

Parameter	User	ConfiguredValue	SuggestedValue
Memlock	grid	295971180KB	289034355KB
Memlock	oracle	295971180KB	289034355KB

HugeSpace          default          101430MB          101161MB

## 14.14.2 odacli update-osconfigurations

Use the command `odacli update-osconfigurations` to update the HugePage and memlock values.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

### Syntax

`odacli update-osconfigurations [-h] [-hs] [-j] [-m]`

### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--hugespace, -hs</code>	(Optional) Updates the HugePage value.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>--memlock, -m</code>	(Optional) Updates the memlock value.

### Usage Notes

The command updates memlock in the `/etc/security/limits.conf` file and HugePage in the `/etc/sysctl.conf` file with the suggested values.

You can update memlock or hugepage. If no option is provided, then both parameters are updated to the suggested values.

### Example 14-77 Updating the HugePage and Memlock Parameters to the Suggested Values

```
odacli update-osconfigurations
{
  "jobId" : "954cf7a5-9cad-451c-8820-3140a716af26",
  "status" : "Created",
  "message" : "Successfully submitted a request to configure OS
parameters.",
  "reports" : [ ],
  "createTimestamp" : "February 06, 2018 00:03:51 AM MST",
  "resourceList" : [ ],
  "description" : "Configuring OS Parameter",
  "updatedAtTime" : "February 06, 2018 00:03:51 AM MST"
}
[root@rwsoda6s002 ~]# odacli describe-job -i
954cf7a5-9cad-451c-8820-3140a716af26
Job details
-----
ID: 954cf7a5-9cad-451c-8820-3140a716af26
Description: Configuring OS Parameter
Status: Success
Created: February 6, 2018 12:03:51 AM MST
Message:
Task Name                    Start Time                    End Time
Status
```

```

-----
-----
Setting up memlock. February 6, 2018 12:03:51 AM MST February 6, 2018 12:03:51 AM MST
Success
Setting up HugeSpace February 6, 2018 12:03:51 AM MST February 6, 2018 12:03:51 AM MST
Success

```

## 14.15 odacli validate-storagetopology

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).

Oracle recommends that you run the `odacli validate-storagetopology` 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

## 14.16 odaadmcli Hardware Monitoring Commands

Use the `hardware monitoring` commands to display hardware configurations.

- [odaadmcli show cooling](#) (page 14-72)  
Use the `odaadmcli show cooling` command to show cooling details.
- [odaadmcli show env\\_hw](#) (page 14-72)  
Use the `odaadmcli show env_hw` command to display information about the environment and hardware.
- [odaadmcli show fs](#) (page 14-73)  
Use the `odaadmcli show fs` command to display filesystem details.
- [odaadmcli show memory](#) (page 14-73)  
Use the `odaadmcli show memory` command to display memory details.
- [odaadmcli show network](#) (page 14-74)  
Use the `odaadmcli show network` command to show network details.
- [odaadmcli show power](#) (page 14-75)  
Use the `odaadmcli show power` command to display power supply details.
- [odaadmcli show processor](#) (page 14-75)  
Use the `odaadmcli show processor` command to display processor details.

- [odaadmcli show server](#) (page 14-76)  
Use the `odaadmcli show server` command to display server details.

## 14.16.1 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

## 14.16.2 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-78 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 system.

```
# odaadmcli show env_hw
```

```
BM ODA_Lite X7-2 Medium
```

## 14.16.3 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-79 Displaying Filesystem Details

```
# odaadmcli show fs
```

Type	Total Space	Free Space	Total DG Space	Free DG Space
ext3	30237M	7763M	-	-
ext3	484M	416M	-	-
ext3	60475M	38149M	-	-
ext3	100793M	22060M	-	-
acfs	102400M	102158M	4894016M	2418668M
acfs	102400M	100501M	4894016M	2418668M
acfs	102400M	100601M	4894016M	2418668M

(Continued)

Diskgroup	Mount Point
	/
	/boot
	/opt
	/u01
DATA	/u02/app/oracle/oradata/ACFSDB1
DATA	/u02/app/oracle/oradata/ACFSDB2
DATA	/u02/app/oracle/oradata/EE12NCDB

## 14.16.4 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 14-80 Display Memory Details

```
# odaadmcli show memory
```

```
NAME      HEALTH HEALTH_DETAILS PART_NO.      SERIAL_NO.
DIMM_0    OK      -              3A4K40BB1-CRC 00CE01154602EADA96
DIMM_11   OK      -              3A4K40BB1-CRC 00CE01154602EADADA
DIMM_3    OK      -              3A4K40BB1-CRC 00CE01154602EADBC7
DIMM_8    OK      -              3A4K40BB1-CRC 00CE01154602EADBA0
```

(Continued)

```
LOCATION  MANUFACTURER MEMORY_SIZE 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
```

## 14.16.5 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 14-81 Showing Network Details

```
# odaadmcli show network
```

```
NAME      HEALTH HEALTH_DETAILS LOCATION PART_NO  MANUFACTURER
Ethernet_NIC_0 OK      -              NET0    X540    INTEL
Ethernet_NIC_1 OK      -              NET1    X540    INTEL
Ethernet_NIC_2 -       -              NET2    X540    INTEL
Ethernet_NIC_3 -       -              NET3    X540    INTEL
```

(Continued)

```
MAC_ADDRESS LINK_DETECTED DIE_TEMP
00:10:e0:95:98:ec yes (em1) 61.250 degree C
00:10:e0:95:98:ed yes (em2) 61.250 degree C
```

```
90:e2:ba:ae:1e:ad no (em4) -
90:e2:ba:ae:1e:ac no (em3) -
```

## 14.16.6 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 14-82 Displaying Power Supply Details

```
# 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
```

## 14.16.7 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 14-83 Displaying Processor Details

```
# odaadmcli show processor
```

NAME	HEALTH	HEALTH_DETAILS	PART_NO.	LOCATION	MODEL
CPU_0 E5-2630	OK	-	060F P0	(CPU 0)	Intel(R) Xeon(R) CPU

(Continued)

MAX_CLK_SPEED	TOTAL_CORES	ENABLED_CORES
2.200 GHz	10	10

## 14.16.8 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-84 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
```

## 14.17 odaadmcli Storage Commands

Use the `odaadmcli storage` commands to perform storage diagnostics.

- [odaadmcli expand storage](#) (page 14-77)  
Use the `odaadmcli expand storage` command to expand storage.
- [odaadmcli show disk](#) (page 14-79)  
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 14-81)  
Use the `odaadmcli show diskgroup` command to list configured diskgroups or display a specific diskgroup configuration.
- [odaadmcli show controller](#) (page 14-81)  
Use the `odaadmcli show controller` command to display details of the controller.
- [odaadmcli show raidsyncstatus](#) (page 14-82)  
Use the `odaadmcli show raidsyncstatus` command to display the RAID SYNC status.
- [odaadmcli show storage](#) (page 14-83)  
Use the `odaadmcli show storage` command to show the storage controllers, expanders, and disks.
- [odaadmcli stordiag](#) (page 14-84)  
Use the `odaadmcli stordiag` command to collect detailed information for each disk or NVMe.
- [odaadmcli manage diagcollect](#) (page 14-84)  
Use the `odaadmcli manage diagcollect` command to collect diagnostic logs for storage components.
- [odaadmcli power disk](#) (page 14-85)  
Use the `odaadmcli power disk` command to power a disk on or off.

## 14.17.1 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
<code>--enclosure {0 1}</code>	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.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>-ndisk</code>	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).



### Note:

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 14-85 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 14-86 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 14-87 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 14-88 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 ...
```

## 14.17.2 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
<i>disk_name</i>	(Optional) Define the disk resource name. The resource name format is <code>pd_[0..3]</code> .
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-89 Displaying the Status of All Disks

To display the status of all the disks on the system:

```
# odaadmcli show disk
NAME          PATH          TYPE      STATE      STATE_DETAILS
pd_00         /dev/nvme0n1 NVD       ONLINE    Good
pd_01         /dev/nvme1n1 NVD       ONLINE    Good
```

### Example 14-90 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 : MS1PC2DD30RA3.2T
  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
```

## 14.17.3 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 14-91 Listing All Diskgroups

```
# odaadmcli show diskgroup
```

```
DiskGroups
-----
DATA
RECO
```

### Example 14-92 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
```

## 14.17.4 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
<i>controller_id</i> , <i>id</i>	Defines the controller.
--help, -h	(Optional) Displays help for using the command.

### Example 14-93 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 = MS1PC2DD30RA3.2T
  pci-slot-number = 11
  nvme-power-control = 1
  sun-nac-name = /SYS/DBP/NVME1
```

## 14.17.5 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 14-94 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%
```

## 14.17.6 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 14-95 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/nvme1n1 Samsung NVD 3200gb slot: 1 pci : 1

==== END STORAGE DUMP =====
```

## 14.17.7 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]
```

### Parameters

Parameter	Description
<code>-n <i>disk_name</i></code>	Defines the disk resource name. The resource name format is <code>pd_[0..3]</code> .
<code>--help, -h</code>	(Optional) Displays help for using the command.

### Example 14-96 Displaying NVMe Details

To display detailed information for NVMe `pd_00`:

```
# odaadmcli stordiag pd_00
```

## 14.17.8 odaadmcli manage diagcollect

Use the `odaadmcli manage diagcollect` 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 14-97 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
```

## 14.17.9 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
<i>disk_name</i>	Defines the disk resource name. The resource name format is <code>pd_[0..3]</code> .
{on off status}	Power on a disk, power off a disk, display status.
--help, -h	(Optional) Displays help for using the command.

### Example 14-98 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 14-99 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
```

## 14.18 odaadmcli VLAN Management Commands

Use the odaadmcli VLAN commands to list and manage virtual local area networks (VLANs) for Oracle Database Appliance bare metal platform.

Topics:

- [odaadmcli create vlan](#) (page 14-86)  
Use the `odaadmcli create vlan` command to create a virtual local area network (VLAN).
- [odaadmcli delete vlan](#) (page 14-88)  
Use the `odaadmcli delete vlan` command to delete a VLAN.
- [odaadmcli show vlan](#) (page 14-88)  
Use the `odaadmcli show vlan` command to display a list of virtual local area networks (VLANs) and details.

### 14.18.1 odaadmcli create vlan

Use the `odaadmcli create vlan` command to create a virtual local area network (VLAN).

#### File Path

```
$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli
```

#### Syntax

```
odaadmcli create vlan vlanname -vlanid identifier -if {bond0|bond1} -node {0|1} -
setuptype type {backup | management | public | custom} -ip address -netmask address -
gateway address [-h] [-j]
```

#### Parameters

Parameter	Description
-gateway	Defines the gateway address. Define the gateway as 0.0.0.0 when the VLAN interface does not require a gateway.
--help, -h	(Optional) Displays help for using the command.
-if {bond0 bond1}	Defines the name of the interface on which the VLAN network is created. The options are bond0 or bond1.
--json, -j	(Optional) Displays JSON output.
-netmask	Defines the netmask address.
-node {0 1}	Defines the node for the VLAN. The options are 0 or 1. The default is 0.
-setuptype {backup   management   public   custom}	Defines the setup type. For example, management. The default is public.

Parameter	Description
-vlanid	Defines the VLAN identifier (ID) to which the VLAN network belongs. The VLAN ID must be unique for a single node platform. For a multi-node platform, you can use the same ID to create a network on Node0 and Node1.

### Usage Notes

- Two physical ports, either copper or fiber, are bonded as bond0. When you create a VLAN, you create it on bond0 of a specific node, Node0 or Node1.
- Use the `odaadmcli show vlan` command to obtain the existing VLAN names and details.
- When naming the VLAN, use a logical name for the network. The name must be unique in a given node. However, you can create the same named network on both Node0 and Node1 of a multi-node platform.
- Because a virtual machine (VM) that resides on a shared repository can be started on either node, create a VLAN network with the same name on both nodes. If the needed network is not available, then the VM cannot be started on that node.
- The supported setup types are as follows:
  - Backup: Configure for backup operations.
  - Management: Configure for management traffic, such as Oracle Enterprise Manager, and access to the management capabilities of a switch. You must provide an IP address and default gateway for the Management VLAN. A best practice is that the Management VLAN is not the primary VLAN (VLAN1) and does not carry user data traffic.
  - Public: Configure for the public access. This is the default public interface. Only one VLAN should be a public VLAN.
  - Custom: Configure for VLAN for other uses.
- Dynamic Host Configuration Protocol (DHCP) is not supported.

#### Example 14-100 Creating a VLAN on Node0

Use the `odaadmcli create vlan` command to create a VLAN named `vlan105` on Node0:

```
# odaadmcli create vlan vlan105 -vlanid 105 -if bond0 -node 0 -setuptype management -
ip 10.0.2.254 -netmask 255.255.0.0 -gateway 10.214.0.1
Created Vlan : vlan105
```

#### Example 14-101 Creating a VLAN on Node1

Use the `odaadmcli create vlan` command to create a VLAN named `vlan105` on Node1:

```
# odaadmcli create vlan vlan105 -vlanid 105 -if bond0 -node 1 -setuptype management -
ip 10.0.2.254 -netmask 255.255.0.0 -gateway 10.214.0.1
Created Vlan : vlan105
```

## 14.18.2 odaadmcli delete vlan

Use the `odaadmcli delete vlan` command to delete a VLAN.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli`

### Syntax

```
odaadmcli delete vlan vlanname -node {0|1} [-h]
```

### Parameters

Parameter	Description
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>-node {0 1}</code>	Defines the node for the VLAN. The options are 0 or 1.

### Usage Notes

Use the `odaadmcli show vlan` command to obtain the VLAN name and node location.

#### Example 14-102 Deleting a VLAN

Use the `odaadmcli delete vlan` command to delete a VLAN named `vlan105` on Node0:

```
# odaadmcli delete vlan vlan105 -node 0
Deleted Vlan : vlan105
```

#### Example 14-103 Deleting a VLAN on Node1

Use the `odaadmcli delete vlan` command to delete a VLAN named `vlan105` on Node1:

```
# odaadmcli delete vlan vlan105 -node 1
Deleted Vlan : vlan105
```

## 14.18.3 odaadmcli show vlan

Use the `odaadmcli show vlan` command to display a list of virtual local area networks (VLANs) and details.

### File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli`

### Syntax

```
odaadmcli show vlan [-h]
```

## Parameters

Parameter	Description
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output.

### Example 14-104 Displaying VLANs

Use the `odaadmcli show vlan` command to display a list of VLANs:

```
# odaadmcli show vlan
NAME    ID    INTERFACE  CONFIG_TYPE  IP_ADDRESS    NETMASK      GATEWAY      NODENUM
vlan101 101   bond1      management   10.0.2.254    255.255.0.0  10.214.0.1   0
vlan101 101   bond1      management   10.0.2.254    255.255.0.0  10.214.0.1   1
vlan102 102   bond1      management   10.0.2.254    255.255.0.0  10.214.0.1   0
vlan102 102   bond1      management   10.0.2.254    255.255.0.0  10.214.0.1   1
vlan103 103   bond0      management   10.0.2.254    255.255.0.0  10.214.0.1   0
vlan103 103   bond0      management   10.0.2.254    255.255.0.0  10.214.0.1   1
```

## 14.19 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]
```

### Parameters

Parameter	Description
--password, -p	Agent password. The Agent password is needed to access the Oracle Appliance Manager Web Console.
--username, -u	User name required to access the Oracle Appliance Manager Web Console. The default user name is <code>oda-admin</code> .
--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 14-105 Resetting the oda-admin Password in Interactive Mode

To reset the `oda-admin` user password to a new password in interactive mode:

```
# odacli-adm set-credential --password --username oda-admin
Agent password: password
```

# 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 15-3)  
The oakcli 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 15-4)  
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 15-6)  
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 15-7)  
Use the oakcli configure commands to configure components on Oracle Database Appliance.
- [oakcli copy](#) (page 15-12)  
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 15-13)  
Use the oakcli create commands to create components on Oracle Database Appliance.
- [oakcli delete commands](#) (page 15-20)  
Use the oakcli delete commands to delete components from Oracle Database Appliance.
- [oakcli deploy](#) (page 15-23)  
Use the command oakcli deploy to deploy Oracle Grid Infrastructure for a cluster on Oracle Database Appliance.
- [oakcli expand storage](#) (page 15-25)  
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 15-25)  
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 15-26)  
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.
- [oakcli manage diagcollect](#) (page 15-26)  
Use the `oakcli manage diagcollect` command to collect diagnostic information about Oracle Database Appliance for troubleshooting purposes, and for working with Oracle Support Services.
- [oakcli modify database](#) (page 15-28)  
Use the `oakcli modify database` command to modify the database type or size class for a named database.
- [oakcli orachk](#) (page 15-29)  
Use the `oakcli orachk` command to audit configuration settings with the ORAchK utility.
- [oakcli reconfigure osparams](#) (page 15-30)  
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 15-31)  
Use the `oakcli resize 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 15-32)  
Use the `oakcli restart oda_base` command to stop and restart ODA\_BASE on the local node.
- [oakcli show commands](#) (page 15-32)  
Use the `oakcli show commands` to display the status of Oracle Database Appliance components.
- [oakcli start commands](#) (page 15-47)  
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 15-48)  
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 stordiag](#) (page 15-49)  
Use the `oakcli stordiag` command to run diagnostic tests on a disk in the storage shelf or storage expansion shelf.
- [oakcli test asr](#) (page 15-50)  
Use the `oakcli test asr` command to send a test trap to determine if Oracle Auto Service Request (Oracle ASR) is configured and working correctly.
- [oakcli unpack](#) (page 15-51)  
Use the `oakcli unpack` command to unpack packages into the Oracle Appliance Manager repository.
- [oakcli update](#) (page 15-51)  
Use the `oakcli update` command to apply Oracle Database Appliance patches.
- [oakcli update-cpucore](#) (page 15-53)  
Use the `oakcli update-cpucore` command to enable a specified number of licensed CPU cores for Oracle Database Appliance.

- [oakcli upgrade](#) (page 15-54)  
Use the `oakcli upgrade` command to upgrade the Oracle Database software on Oracle Database Appliance.
- [oakcli validate](#) (page 15-55)  
Validates the state of an Oracle Database Appliance or the viability of an operating system patch.
- [oakcli Virtual Disk Commands](#) (page 15-58)  
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 15-61)  
Use the `oakcli virtual machine` commands to list and manage virtual machines (VMs).
- [oakcli Virtual Machine Template Commands](#) (page 15-69)  
Use the `oakcli Virtual Machine template` commands to list and manage virtual machine (VM) templates.
- [oakcli VLAN Management Commands for Virtual Platform](#) (page 15-75)  
Use the `oakcli VLAN` commands to list and manage virtual local area networks (VLANs) on an Oracle Database Appliance virtualized platform.

## 15.1 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
```

## 15.2 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 `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.

## 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 `/etc/sudoers` 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 is `jdoe`. 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.

### Note:

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
```

```

default parameters for DB creation
Please enter the 'SYSASM' password:
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]:
1   => OLTP
2   => DSS
3   => In-Memory

```

### 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:

```

## oakcli commands
Cmnd_Alias OAKENV = /opt/oracle/oak/bin/oakcli show env_hw
Cmnd_Alias OAKVER = /opt/oracle/oak/bin/oakcli show version
oracle ALL= OAKENV,OAKVER

```

The following are sample outputs for the commands:

```

$ sudo /opt/oracle/oak/bin/oakcli show env_hw
VM-ODA_BASE ODA X6-2-HA

```

```

$ sudo /opt/oracle/oak/bin/oakcli show version
Version
-----
12.2.1.2.0

```

In this example, the user `jdoue2` tries to run the `oakcli show databases` command, which is not part of the set of commands that is configured for that user. Sudo prevents `jdoue2` from running the command.

```

$ sudo /opt/oracle/oak/bin/oakcli show databases
Sorry, user oracle is not allowed to execute '/opt/oracle/oak/bin/oakcli show
databases' as root on servernode1.

```

## 15.3 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.

## 15.4 oakcli configure commands

Use the `oakcli configure` commands to configure components on Oracle Database Appliance.

- [oakcli configure additionalnet](#) (page 15-7)  
Use the `oakcli configure additionalnet` command to configure any unconfigured public networks in bare metal, Domain 0, and ODA\_BASE.
- [oakcli configure asr](#) (page 15-8)  
Use the `oakcli configure asr` command to configure Oracle Auto Service Request (Oracle ASR) on Oracle Database Appliance.
- [oakcli configure cpupool](#) (page 15-9)  
Use the `oakcli configure cpupool` command to configure a CPU pool on one Oracle Database Appliance Virtualized Platform node.
- [oakcli configure firstnet](#) (page 15-9)  
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 15-10)  
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 15-11)  
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 15-12)  
Use the `oakcli configure repo` command to increase the size of a shared repository.

### 15.4.1 oakcli configure additionalnet

Use the `oakcli configure additionalnet` 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 `oakcli configure 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

 **Note:**

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.

## 15.4.2 oakcli configure asr

Use the `oakcli configure asr` 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 `oakcli configure asr` 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.

 **Note:**

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
```

### 15.4.3 oakcli configure cpupool

Use the `oakcli configure cpupool` 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
<i>poolname</i>	Unique name for the CPU pool
-numcpu <i>cpu_count</i>	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 `twnode` with two cores on Node 1 of Oracle Database Appliance Virtualized Platform:

```
oakcli configure cpupool twnode -numcpu 2 -node 1
```

### 15.4.4 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 `oakcli 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:

```
oakcli configure firstnet
Select the interface to configure network on [bond0 bond1 bond2 xbond0]:bond0
Configure DHCP on bond0?(yes/no):no
    INFO: Static configuration selected
    Enter the IP address to configure:192.0.2.18
    Enter the netmask address to configure:255.255.252.0
    Enter the gateway address to configure:192.0.2.1
Plumbing the IPs now
Restarting the network
::::::::::::::::::
```

### 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.

## 15.4.5 oakcli configure network

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.

### Syntax

```
oakcli configure network [-changeNetCard|-publicNet][-h]
```

### Parameters

Parameter	Description
<code>-changeNetCard</code>	Configures the network card after it has been replaced. You must run the <code>oakcli configure network -changeNetCard</code> 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 Dom0 on virtualized platforms.
<code>-publicNet</code>	Configures the network after you have swapped the public network from copper to fiber and vice versa. You must run the <code>oakcli configure network -publicNet</code> 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.

Parameter	Description
-h	(Optional) Display help for using the command.

## 15.4.6 oakcli configure oda\_base

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.

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_base` command.

#### Changing the CPU Core Count in ODA\_BASE

Change the CPU core count from six to eight in ODA\_BASE:

```
# oakcli configure oda_base
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
Current CPU Cores      :6
Selection[1 : 6](default 12 CPU Cores) : 4
ODA base domain memory in GB(min 8, max 88)(Current Memory 64G)[default
32]      :
INFO: Using default memory size i.e. 32 GB
Additional vlan networks to be assigned to oda_base? (y/n) [n]:
Vlan network to be removed from oda_base (y/n) [n]
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.

## 15.4.7 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 repo1 -incsize 2G
```

```
Configured Shared Repo : repo1 with new size 3712.0.
```

## 15.5 oakcli copy

Use the `oakcli copy` 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 <i>absolute_conf_file</i>	Specifies the full path name of the configuration file
-h	(Optional) Display help for using the command.

### Example 15-1 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 `myserver1.conf` to `/tmp`, then enter the following command:

```
oakcli copy -conf /tmp/myserver1.conf
```

## 15.6 oakcli create commands

Use the `oakcli create` commands to create components on Oracle Database Appliance.

- [oakcli create cpupool](#) (page 15-13)  
Use the command `oakcli create cpupool` to create a CPU pool on one Oracle Database Appliance Virtualized Platform node.
- [oakcli create database](#) (page 15-14)  
Use the `oakcli create database` command to create additional databases on Oracle Database Appliance.
- [oakcli create dbhome](#) (page 15-16)  
Use the `oakcli create dbhome` command to create a new database home on Oracle Database Appliance.
- [oakcli create dbstorage](#) (page 15-17)  
Use the `oakcli create dbstorage` command to create a storage structure for migrating databases from Oracle ASM to Oracle ACFS.
- [oakcli create db\\_config\\_params](#) (page 15-18)  
Use the `oakcli create db_config_params` command to generate a database configuration file.
- [oakcli create repo](#) (page 15-19)  
Use the `oakcli create repo` command to create a new shared repository on Oracle Database Appliance Virtualized Platform.
- [oakcli create snapshotdb](#) (page 15-20)  
Use the `oakcli create snapshotdb` command to create a snapshot database from an existing database.

### 15.6.1 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
<i>poolname</i>	Uniquely names the CPU pool
<code>-numcpu <i>cpu_count</i></code>	Defines the number of CPUs for the CPU pool
<code>-node <i>nodenum</i></code>	Defines the node where the CPU pool will be created (0 or 1)
<code>-h</code>	(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
```

## 15.6.2 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.

### 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.

### 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
<code>-cdb</code>	(Optional) Creates the database as a container database.
<code>-db <i>db_name</i></code>	Name of the database that you want to create.
<code>-oh <i>home</i></code>	(Optional) Name of an existing Oracle home to use when creating the database. By default, the command creates a new database home.
<code>-params <i>params_file</i></code>	(Optional) Name of the configuration file. By default, Oracle Database Appliance uses the default configuration file.
<code>-storage [ASM ACFS]</code>	(Optional) Creates an Oracle 12c database with the specified storage, either Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage Management Cluster File System (Oracle ACFS). Oracle ASM storage is the default storage.

Parameter	Description
<code>-version version</code>	(Optional) Version of the database that you want to create. By default, Oracle Database Appliance uses the highest version that you have downloaded.
<code>-h</code>	(Optional) Display help for using the command.

### Usage Notes

- Flash cache is disabled and cannot be enabled.
- 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. Oracle ASM is the default storage.

### Examples

This section shows different scenarios for using the command `oakcli create database`.

#### Example 15-2 Creating a New Database Showing Prompts

When you run the command `oakcli create database`, 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:
```

```

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
1
The selected value is : OLTP

1 => EE : Enterprise Edition
2 => RACONE
3 => RAC1
3
Selected value is : RAC

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 .. 10]:
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-08 ( 8 cores , 64 GB memory)
7  => odb-10 ( 10 cores , 80 GB memory)

```

### Example 15-3 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 15-4 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
```

## 15.6.3 oakcli create dbhome

Use the `oakcli create dbhome` command to create a new database home on Oracle Database Appliance.

### Syntax

```
oakcli create dbhome [-version version] [-h]
```

### Parameters

Parameter	Description
<code>-version <i>version</i></code>	(Optional) Version that you want to install. If this is not provided, then Oracle Database Appliance uses the latest available version.

Parameter	Description
-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
```

## 15.6.4 oakcli create dbstorage

Use the `oakcli create dbstorage` 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 <i>db_name</i>	Sets up the required Oracle ACFS storage structure for the database to be created called <i>db_name</i>
-cdb	Must be passed if you are creating a multitenant container database
-h	(Optional) Display help for using the command.

### Example

The `oakcli create dbstorage` 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:
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)
...
```

## 15.6.5 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
<code>-conf filename</code>	Name you want to give to the configuration file, without its path name.
<code>-h</code>	(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
1
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
3
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
1
Selected value is: en
Successfully generated the Database parameter file 'newconf'

```

## 15.6.6 oakcli create repo

Use the `oakcli create repo` 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
<i>repo_name</i>	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
```

## 15.6.7 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
<code>-db <i>snap_dbname</i></code>	Name of the snapshot database to be created
<code>-from <i>source_dbname</i></code>	Name of the source database
<code>-h</code>	(Optional) Display help for using the command

### Example

Create a new snapshot database, name `snapprod`, from the database named `prod`:

```
oakcli create snapshotdb -db snapprod -from prod
```

## 15.7 oakcli delete commands

Use the `oakcli delete` commands to delete components from Oracle Database Appliance.

- [oakcli delete cpupool](#) (page 15-21)  
Use the `oakcli delete cpupool` command to delete a CPU pool from one Oracle Database Appliance Virtualized Platform node.
- [oakcli delete database](#) (page 15-21)  
Use the `oakcli delete database` command to delete a database from Oracle Database Appliance.
- [oakcli delete db\\_config\\_params](#) (page 15-22)  
Use the `oakcli delete db_config_params` command to delete a database configuration file.

- [oakcli delete dbhome](#) (page 15-22)  
Use the `oakcli delete dbhome` command to delete a database home from Oracle Database Appliance.
- [oakcli delete dbstorage](#) (page 15-22)  
Use the `oakcli delete dbstorage` 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 15-23)  
Use the `oakcli delete repo` command to delete a shared repository.

## 15.7.1 oakcli delete cpupool

Use the `oakcli delete cpupool` 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
<i>poolname</i>	Name of the CPU pool to be deleted
-node <i>nodenum</i>	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
```

## 15.7.2 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
<i>db_name</i>	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
```

## 15.7.3 oakcli delete db\_config\_params

Use the `oakcli delete db_config_params` command to delete a database configuration file.

### Syntax

```
oakcli delete db_config_params -conf filename [-h]
```

### Parameters

Parameter	Description
<code>-conf filename</code>	Name of the configuration file that you want to remove, without its path name
<code>-h</code>	(Optional) Display help for using the command

## 15.7.4 oakcli delete dbhome

Use the `oakcli delete dbhome` command to delete a database home from Oracle Database Appliance.

### Syntax

```
oakcli delete dbhome -oh oracle_home [-h]
```

### Parameters

Parameter	Description
<code>-oh oracle_home</code>	The database home to be uninstalled
<code>-h</code>	(Optional) Display help for using the command.

### Example

Delete a database home called `ora11_1`:

```
oakcli delete dbhome -oh ora11_1
```

## 15.7.5 oakcli delete dbstorage

Use the `oakcli delete dbstorage` 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 <i>db_name</i>	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
```

## 15.7.6 oakcli delete repo

Use the `oakcli delete repo` command to delete a shared repository.

### Syntax

```
oakcli delete repo repository_name [-h]
```

### Parameter

Parameter	Description
<i>repository_name</i>	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 `testrepo01` is active on one or both nodes.

## 15.8 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 <i>config_file</i>	(Optional) Preload the configuration stored in the named configuration file, <i>config_file</i> .

Parameter	Description
-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 15-5 Deploying the Complete Oracle Database Appliance

```
oakcli deploy
```

#### Example 15-6 Running the Configurator

```
oakcli deploy -config
```

#### Example 15-7 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 15-8 Preloading an Existing Configuration File

Preload the configuration stored in the configuration file `MYCONFIG-VM`:

```
oakcli deploy -conf myconfig -vm_file
```

#### Example 15-9 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**.
4. Click **Finish**.

#### Example 15-10 Viewing the Log File

The command `oakcli deploy` creates a log file that is prepended with the character string `STEP*`. The log file is stored in the following location:

```
/opt/oracle/oak/onecmd/tmp/
```

## 15.9 oakcli expand storage

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.

### 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 `oakcli 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 15-11 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 ...
```

## 15.10 oakcli diskwritecache

Use the `oakcli diskwritecache` 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 <i>disk_name</i>	(Optional) Disable disk write cache for named disk.
enable <i>disk_name</i>	(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 15-12 Displaying the Write Cache Status of Disks**

Show the write cache status of all disks:

```
oakcli diskwritecache status
```

## 15.11 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
<i>diskname</i>	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 15-13 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
```

## 15.12 oakcli manage diagcollect

Use the `oakcli manage diagcollect` 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 <i>crs_home_dir</i>	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 <code>root.sh</code> .
--adr <i>adr_location</i>	Collect diagnostic information for ADR, where <i>adr_location</i> specifies the location of the ADR information.
--afterdate <i>date</i>	Collect archives from the specified date. Specify the date in the <code>mm/dd/yyyy</code> format.
--aftertime <i>time</i>	Collect the archives after the specified time. Enter the time using the format <code>YYYYMMDDHHMMSS24</code> . Supported only with the <code>-adr</code> parameter.
--beforetime <i>time</i>	Collect the archives before the specified time. Enter the time using the format: <code>YYYYMMDDHHMMSS24</code> . Supported only the with the <code>-adr</code> parameter.
--chmos	Collect Cluster Health Monitor data.
--incidenttime <i>time</i>	Collect Cluster Health Monitor data from the specified time. Enter the time using the format: <code>YYYYMMDDHHMMSS24</code> . If you do not use the <code>--incidenttime</code> parameter, then the command collects data for the past 24 hours.
--incidentduration <i>time</i>	Collect Cluster Health Monitor data for the duration after the specified time. Enter the time using the format: <code>HH:MM</code> . If you do not specify a duration, then the command collects all Cluster Health Monitor data after the specified incident time.
--excl [ <i>comp1,comp2...</i> ]	Exclude the specified component logs. Valid components are: <code>acfs, invt, sys, ocr, crs, home, and base</code> .
--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.



## 15.13 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 <i>db-name</i>	Identifies the database being modified.
-dbtype <i>OLTP</i> / <i>DSS</i> / <i>in-Memory</i>	(Optional) Changes the database type. The parameter <code>dbtype</code> takes one of the following three options: <ul style="list-style-type: none"><li>• <code>OLTP</code>: Online transaction processing</li><li>• <code>DSS</code>: Decision support system</li><li>• <code>in-Memory</code>: Oracle Database In-Memory</li></ul>
-to <i>dbclass</i>	(Optional) Changes the database size class.
-h	(Optional) Displays help for using the command.

### Usage Notes



#### Note:

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 15-14 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 15-15 Modifying the Database Size

Change the database size for the database named `dbhome_1` to a 6-core CPU Oracle Database Appliance `DSS` database template:

```
oakcli modify database dbhome_1 -to odb-06
```

## 15.14 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]listlist
```

### 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 -o	Perform check on pre-upgrade best practices (-u -o pre) or on post-upgrade best practices (-u -o post).
-o	As an argument to an option, if -o is followed by v, V, Verbose, or 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>

## 15.15 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 `oakcli reconfigure osparams` command to display the current configuration and suggested values for `memlock` and `vm.nr_hugepages`. When prompted, answer `yes` 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.



#### Note:

When adjusting the settings, ensure that you make the changes on both nodes.

### Example 15-16 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 15-17 Reconfiguring the Kernel Based on Available RAM

In this example, the output displays the configured and suggested values for `memlock` and `vm.nr_hugepages`. The `memlock` value does not require changing. A new value is suggested for `vm.nr_hugepages`. When prompted, enter `yes` to update to the suggested value.

#### Note:

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
```

## 15.16 oakcli resize dbstorage

Use the `oakcli resize 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 `oakcli show fs` and then add space using `oakcli resize dbstorage`.

#### Note:

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
<code>-data size</code>	Extendable size in GB for the DATA volume.
<code>-reco size</code>	Extendable size in GB for the REDO volume.
<code>-redo size</code>	Extendable size in GB for the RECO volume.
<code>-db db_name</code>	Database for which these volumes must be resized.
<code>-h</code>	(Optional) Display help for using the command.

**Example 15-18 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
```

## 15.17 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 Dom0. 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.

## 15.18 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`:

 **Note:**

Depending on your model and version of Oracle Database Appliance software, the `oakcli show` 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 `oakcli show -h`.

- [oakcli show asr](#) (page 15-34)  
Use the `oakcli show asr` command to display your Oracle Auto Service Request configuration details.
- [oakcli show cooling](#) (page 15-35)  
Use the `oakcli show cooling` command to display the status of the cooling units.

- [oakcli show controller](#) (page 15-35)  
Use the `oakcli show controller` command to display information about the disk controllers.
- [oakcli show cpupool](#) (page 15-36)  
Use the `oakcli show cpupool` command to display core allocations to virtual machine mappings.
- [oakcli show databases](#) (page 15-36)  
Use the `oakcli 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 15-37)  
Use the `oakcli show db_config_params` command to display configuration file names and parameters.
- [oakcli show dbhomes](#) (page 15-37)  
Use the `oakcli show dbhomes` command to display information about each existing Oracle database home, including home name, home location, and database version.
- [oakcli show dbstorage](#) (page 15-38)  
Use the `oakcli show dbstorage` command to display database storage information for databases created on Oracle Automatic Storage Management Cluster File System (Oracle ACFS).
- [oakcli show disk](#) (page 15-39)  
Use the `oakcli show disk` command to display disk information.
- [oakcli show diskgroup](#) (page 15-40)  
Use the `oakcli show diskgroup` command to display Oracle Automatic Storage Management (Oracle ASM) disk group information.
- [oakcli show enclosure](#) (page 15-40)  
Use the `oakcli show enclosure` command to display information about the storage enclosure subsystem on the node where the command is executed.
- [oakcli show env\\_hw](#) (page 15-41)  
Use the `oakcli show env_hw` command to display the environment type and hardware version of the current node.
- [oakcli show expander](#) (page 15-41)  
Use the `oakcli show expander` command to display information about a SAS expander.
- [oakcli show ismaster](#) (page 15-41)  
Use the `oakcli show ismaster` command to determine which node is the master node.
- [oakcli show fs](#) (page 15-42)  
Use the `oakcli show fs` 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 15-42)  
Use the `oakcli show memory` command to display information about memory modules.
- [oakcli show network](#) (page 15-42)  
Use the `oakcli show network` command to display information about the network subsystem.

- [oakcli show power](#) (page 15-42)  
Use the `oakcli show power` command to display information about the power supply subsystem.
- [oakcli show processor](#) (page 15-43)  
Use the `oakcli show processor` command to display information about CPU processors.
- [oakcli show raidsyncstatus](#) (page 15-43)  
Use the `oakcli show raidsyncstatus` command to display the status of the RAID rebuild after a failed local disk is replaced.
- [oakcli show repo](#) (page 15-44)  
Use the `oakcli show repo` command to display information about virtual machine repositories.
- [oakcli show server](#) (page 15-45)  
Use the `oakcli show server` command to display information about the server subsystem.
- [oakcli show storage](#) (page 15-45)  
Use the `oakcli show storage` command to display information about the storage for controllers, expanders, and disks.
- [oakcli show validation storage](#) (page 15-45)  
Use the `oakcli show validation storage` command to show whether validation storage is enabled or disabled.
- [oakcli show validation storage errors](#) (page 15-45)  
Use the `oakcli show validation storage errors` command to show hard storage errors.
- [oakcli show validation storage failures](#) (page 15-46)  
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.
- [oakcli show version](#) (page 15-46)  
Use the `oakcli show version` command to display the applied patch versions for Oracle Database Appliance software and firmware.

## 15.18.1 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.

## 15.18.2 oakcli show cooling

Use the `oakcli 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 cooling
NAME    HEALTH HEALTH_DETAILS LOCATION FAN % 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 % 3900 RPM
Fan_14  OK      -             FM3     24 % 4700 RPM
Fan_15  OK      -             FM3     14 % 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 % 3700 RPM
Fan_6   OK      -             FM1     33 % 6400 RPM
Fan_7   OK      -             FM1     22 % 3800 RPM
Fan_8   OK      -             FM2     33 % 6400 RPM
Fan_9   OK      -             FM2     22 % 3900 RPM
```

## 15.18.3 oakcli show controller

Use the `oakcli show controller` command to display information about the disk controllers.

### Syntax

```
oakcli show controller controller_id [-h]
```

### Parameters

Parameter	Description
<code>controller_id</code>	Specifies the controller for which to display information
<code>-h</code>	(Optional) Display help for using the command.

### Displaying Disk Controller Details

Display details of controller 0:

```
oakcli show controller 0
```



## 15.18.4 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, 18, 19, 20, 21, 22, 23] ['test1_odarepo1','sample5_odarepo1',
                                     'vm_very_long_name_sample1_odarepo1',
                                     'win_vm1']
      twocpu        [12, 13]          ['vm1_odarepo1']
      odaBaseCpuPool [0, 1, 2, 3, 10, 11] ['oakDom1']
```

## 15.18.5 oakcli show databases

Use the `oakcli 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, the minimum supported Oracle Database release is 11.2.0.4. Oracle Database 11.2.0.3.x is not supported.

### Example 15-19 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 15-20 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	RACOneNode	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)

## 15.18.6 oakcli show db\_config\_params

Use the `oakcli show db_config_params` command to display configuration file names and parameters.

The command searches for files with the extension `.dbconf` located in the `/opt/oracle/oak/install/dbconf` directory.

### Syntax

```
oakcli show db_config_params [-conf filename] [-detail] [-h]
```

### Parameters

Parameter	Description
<code>-conf filename</code>	(Optional) Name of configuration file to be displayed. If not included, then the command displays all configuration files.
<code>-detail</code>	(Optional) Display the parameter values stored in the configuration file or files.
<code>-h</code>	(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
```

## 15.18.7 oakcli show dbhomes

Use the `oakcli show dbhomes` command to display information about each existing Oracle database home, including home name, home location, and database version.

### Syntax

```
oakcli show dbhomes [-detail] [-h]
```

## Parameters

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, the minimum supported Oracle Database release is 11.2.0.4. Oracle Database 11.2.0.3.x is not supported.

### Example 15-21 Displaying DB Home Details

```
# 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 15-22 Displaying DB Home Details

```
oakcli show dbhomes -detail
```

Oracle HomeName	Oracle Home Version	Oracle HomeLocation	Database Name	Database Type
OraDb11204_home1	11.2.0.4.8(21352635,21352649)	/u01/app/oracle/product/11.2.0.4/dbhome_1	no DB	available
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	one43	RACOneNode
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	ee120	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	one311	RACOneNode
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	ee311	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	rac311	RAC
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	ee43	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	one120	RACOneNode
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	odacn	RAC
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	rac43	RAC
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	rac120	RAC

## 15.18.8 oakcli show dbstorage

Use the `oakcli show dbstorage` 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] db_name[-h]
```

## Parameters

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.

## Usage Notes

Add additional information about the command here.

### Example 15-23 Oracle Database Appliance with Non-CDB Databases

Here is an example of the `oakcli show dbstorage` command output for an Oracle Database Appliance. 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_area/datastore
                  4958G  21.05G   4936.95G   495G    RECO
```

## 15.18.9 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]
```

### Parameters

Parameter	Description
-local	(Optional) Display information for all of the local disks.
-shared	(Optional) Display information for all of the shared disks.
-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 15-24 Displaying Information About the Local Disks

```
oakcli show disk -local
```

#### Example 15-25 Displaying Information About the Shared Disks

```
oakcli show disk -shared
```

#### Example 15-26 Displaying Information About a Specific Shared Disk

Display information about the shared disk named `pd_01`:

```
oakcli show disk -shared pd_01
```

## 15.18.10 oakcli show diskgroup

Use the `oakcli show diskgroup` command to display Oracle Automatic Storage Management (Oracle ASM) disk group information.

### Syntax

```
oakcli show diskgroup [disk_group_name][-h]
```

### Parameters

Parameter	Description
<i>disk_group_name</i>	(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.

## 15.18.11 oakcli show enclosure

Use the `oakcli show enclosure` 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.

## 15.18.12 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
```

## 15.18.13 oakcli show expander

Use the `oakcli show expander` command to display information about a SAS expander.

### Syntax

```
oakcli show expander [expander_id] [-h]
```

### Parameter

Parameter	Description
<i>expander_id</i>	(Optional) Identifies the specific SAS expander
<code>-h</code>	(Optional) Display help for using the command.

## 15.18.14 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
<code>-h</code>	(Optional) Display help for using the command.

### Example 15-27 Determining Which Node is the Master Node

```
# oakcli show ismaster
```

## 15.18.15 oakcli show fs

Use the `oakcli show fs` 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.

## 15.18.16 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.

## 15.18.17 oakcli show network

Use the `oakcli show network` command to display information about the network subsystem.

### Syntax

```
oakcli show network
```

### Parameter

(Optional) `-h` displays help for using the command.

## 15.18.18 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 15-28 Displaying Power Supply Information**

Display the power supply information of the node where the command is executed:

```
# oakcli show power

NAME          HEALTH HEALTH_DETAILS PART_NO. SERIAL_NO.          LOCATION
INPUT_POWER  OUTPUT_POWER INLET_TEMP      EXHAUST_TEMP
Power_Supply_0 OK        -              7047410 476856F+1242CE0020 PS0
Present      113 watts  33.250 degree C 36.688 degree C
Power_Supply_1 OK        -              7047410 476856F+1242CE004J PS1
Present      89 watts  37.000 degree C 39.438 degree C
```

## 15.18.19 oakcli show processor

Use the `oakcli 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
```

## 15.18.20 oakcli show raidsyncstatus

Use the `oakcli show raidsyncstatus` command to display the status of the RAID rebuild after a failed local disk is replaced.

 **Note:**

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.

## 15.18.21 oakcli show repo

Use the `oakcli show repo` command to display information about virtual machine repositories.

**Syntax**

```
oakcli show repo [reponame -node 0|1] [-h]
```

**Parameters**

Parameter	Description
<code>reponame</code>	[Optional] Identifies a specific repository name
<code>-node</code>	[Optional] Identifies the node number 0 or 1
<code>-h</code>	[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 15-29 Displaying the Available Virtual Machine Repositories**

Display the virtual machine repositories on Oracle Database Appliance Virtualized Platform nodes:

```
oakcli show repo
      NAME      REPOTYPE  NODENUM
  odarepo1    local     0
  odarepo2    local     1
  repo1       shared    0
  repo1       shared    1
```

**Example 15-30 Displaying Details About a Specific Shared Repository**

Display information about the repository named `repo1` on Node 1:

```
oakcli show repo repo1 -node 1
```

```
Resource: repo1_1
  AutoStart      :      restore
  DG             :      DATA
  Device         :      /dev/asm/repo1-286
  ExpectedState  :      Online
  MountPoint     :      /u01/app/repo1
  Name           :      repo1_0
  Node           :      all
  RepoType       :      shared
  Size           :      102400
  State          :      Online
```

## 15.18.22 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.

## 15.18.23 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]
```

### Parameters

Parameter	Description
<code>-errors</code>	Display detailed information about reported errors.
<code>-h</code>	(Optional) Display help for using the command.

## 15.18.24 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 15-31 Determining if Storage Validation is Enabled

```
# oakcli show validation storage  
Enabled
```

## 15.18.25 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.

## 15.18.26 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.

## 15.18.27 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
<code>-detail</code>	(Optional) Display detailed version information.
<code>-h</code>	(Optional) Display help for using the command.

**Usage Notes**

When you apply the patch and then run the command `oakcli show version -detail`, the output shows the installed version and that the supported versions are `Up-to-date` for each component. If you unpack the patch bundle (`oakcli unpack -pack`) and then run the command `oakcli show version -detail` before applying the patch, the output shows `No-update` in the Supported Version column.

**Note:**

After unpacking the patch bundle, but before applying the patch, use the `oakcli update -patch version --verify` command to verify the contents of the patch instead of issuing `oakcli show version -detail`.

**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 `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...
System Version  Component Name          Installed Version          Supported 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 ]
  [ 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 ]
  }
SSD_LOCAL              0R3Q                     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
HMP                    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 15-51)  
Use the `oakcli update` command to apply Oracle Database Appliance patches.

## 15.19 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 15-48)  
Use the `oakcli start oda_base` command to start ODA\_BASE on the local node.

- [oakcli start repo](#) (page 15-48)  
Use the `oakcli start repo` command to start a shared repository on a node.

## 15.19.1 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 15-32 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
```

## 15.19.2 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
<i>repo_name</i>	<i>repo_name</i> is the name of the shared repository to be started.
<code>-node <i>node_number</i></code>	Specifies the node on which to start the shared repository. <i>node_number</i> is the number of the node where it is to be started, either 0 or 1. If <code>-node</code> is not specified, the shared repository is started on both nodes.
<code>-h</code>	(Optional) Displays help for using the command.

### Example 15-33 Starting a Shared Repository on Node 0

Start the shared repository named `repo1` on Node 0:

```
oakcli start repo repo1 -node 0
```

## 15.20 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 <i>vm_name</i>	<i>vm_name</i> is the name of the virtual machine to be stopped.
-force	(Optional) forces the virtual machine to stop.
repo <i>repo_name</i>	<i>repo_name</i> is the name of the shared repository to be stopped.
-node <i>node_number</i>	<i>node_number</i> 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 15-34 Forcing a Virtual Machine to Stop

Force the virtual machine named `vm1_odarepo1` to stop:

```
oakcli stop vm vm_odarepo1 -force
```

### Example 15-35 Stopping a Shared Repository

Stop the shared repository named `repo1` on Node 0:

```
oakcli stop repo repo1 -node 0
```

### Example 15-36 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
```

## 15.21 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
<i>resource_type</i>	Prefix that depends on the configuration. See "Usage Notes."

Parameter	Description
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 15-37 Running Diagnostic Tests on a Disk in the Expansion Storage Shelf

Runs the diagnostic tests on disk 3 in the expansion storage shelf:

```
# oakcli stordiag e1_pd_3
Node Name : hr0
Test : Diagnostic Test Description

  1 : OAK Check
      NAME          PATH          TYPE          STATE          STATE_DETAILS
      pd_03         /dev/sdw     HDD           ONLINE        Good

  2 : ASM Check
  . . .
<output truncated>
```

## 15.22 oakcli test asr

Use the `oakcli test asr` 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.

## 15.23 oakcli unpack

Use the `oakcli unpack` command to unpack packages into the Oracle Appliance Manager repository.

### Syntax

```
oakcli unpack -package absolute_package_name
```

### Parameters

Parameters	Description
<i>absolute_package_name</i>	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 15-38 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
```

## 15.24 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.

### Note:

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
- <i>patch version</i>	Patch version that you want to install. For example: 12.2.1.3.0.
--server	Contains the patches previously obtained in earlier releases from the Infrastructure (infra) and Grid Infrastructure (gi) patch updates.



Parameter	Description
--storage	Contains only patches for shared storage components.
--database	(Optional) Patches Oracle database homes.
--local	Patches the component only on the local node on bare metal deployments. By default, this is set to false.
--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.



#### Note:

When patching a virtualized platform, the --local option is not supported.

### Example 15-39 Verify the Contents of a Patch Bundle

Display the installed version and the version available in the 12.2.1.3.0 release patch bundle for each of the components on the node. When the latest supported version is installed, Up-to-date appears in the Proposed column.

```
# oakcli update -patch 12.2.1.3.0 --verify
```

```
INFO: 2017-02-13 14:20:37: Reading the metadata file now...
```

Patch Version	Component Name	Installed Version	Proposed
	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 {		
	[ c2d20,c2d21,c2d22,c2d23 ]	A29A	Up-to-date
	[ c2d0,c2d1,c2d2,c2d3,c2d4,c2d5,c2d6,c2d7,c2d8,c2d9,c2d10,c2d11,c2d12,c2d13,c2d14,c2d15,c2d16,c2d17,c2d18,c2d19 ]	A29A	Up-to-date
	}		
	SSD_LOCAL	0R3Q	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	12.2.1.2	12.2.1.3.0

OL	6.8	Up-to-date
GI_HOME	12.1.0.2.161018(2400 6101,23854735)	12.1.0.2.170117(2473 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 appliance with the 12.2.1.3.0 patch:

```
oakcli update -patch 12.2.1.3.0
```

Patch the server on the current node with the 12.2.1.3.0 patch:

```
oakcli update -patch 12.2.1.3.0 --server --local
```

Patch the grid home only on the local node:

```
oakcli update -patch 12.2.1.3.0 --storage --local
```

Patch the Oracle Database homes on both nodes:

```
oakcli update -patch 12.2.1.3.0 --database
```

## 15.25 oakcli update-cpucore

Use the `oakcli update-cpucore` 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 <code>ALL</code> 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 15-40 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 15-41 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
```

## 15.26 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 <i>db_names</i>	Specifies the name or names (in a comma-delimited list) of the database or databases you want to upgrade
-from <i>source_home</i>	Specifies the current Oracle Database home of the databases you are upgrading
-to <i>destination_home</i>	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
```

## 15.27 oakcli validate

Validates the state of an Oracle Database Appliance or the viability of an operating system patch.

### Syntax

```
oakcli validate [[-V | -l | -h]] | [[-v][-f output_file] [-a | -d | -c checklist][-ver patch_version]]
```

### Parameters

Parameter	Description
<code>-V</code>	Display the version of <code>oakValidation</code> .
<code>-l</code>	List the items that can be checked (and their descriptions).
<code>-h</code>	(Optional) Display help for using the command.
<code>-v</code>	Show verbose output (must be used with a parameter that generates a validation report).
<code>-f <i>output_file</i></code>	Send output to a file with a fully qualified file name, <i>output_file</i> , instead of to the screen ( <code>stdout</code> ).
<code>-a</code>	Run all system checks, including <code>DiskCalibration</code> . Oracle recommends that you use this command to validate system readiness before deployment. Do not run <code>oakcli validate</code> with this option on a busy production system, because the <code>DiskCalibration</code> system check can cause performance issues.
<code>-d</code>	Run only the default checks. The default checks are <code>NetworkComponents</code> , <code>OSDiskStorage</code> , <code>SharedStorage</code> , and <code>SystemComponents</code> . The <code>NetworkComponents</code> validation check is not available on Oracle Database Appliance V1.
<code>-c <i>checklist</i></code>	Run the validation checks for the items identified in <i>checklist</i> , a comma-delimited list. Use this parameter to check either a single item or subset of items.

Parameter	Description
-c ospatch	Run the validation checks for the patch version identified in <code>-ver patch_version</code> .
-ver <i>patch_version</i>	Report any reasons for not being able to patch Oracle Database Appliance with the patch named in <i>patch_version</i> .

### 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

```

\* -- These checks are also performed as part of default checks

### 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):

```
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 Node0
SUCCESS : Overall Cable Validation on Node0
INFO : Check Node Identification status
SUCCESS : Node Identification
SUCCESS : Node name based on cable configuration found : NODE0
INFO : Check Nickname
SUCCESS : Nickname set correctly : Oracle Database Appliance - E0
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 `oakcli validate ospatch -ver patch_version` command to report any reasons for not being able to patch Oracle Database Appliance with the patch named in `patch_version`. 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/
orapkg/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
```

## 15.28 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 15-58)  
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 15-59)  
Use the `oakcli clone vdisk` command to create clones of virtual disks.
- [oakcli delete vdisk](#) (page 15-60)  
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 15-60)  
Use the `oakcli show vdisk` command to display information about virtual disks on Oracle Database Appliance Virtualized Platform.

### 15.28.1 oakcli create vdisk

Use the `oakcli create vdisk` 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
<i>vdisk_name</i>	Name assigned to the virtual disk that is unique within the name repository
<code>-repo repository_name</code>	Name of the shared repository where the virtual disk will be created and from which it will acquire its storage
<code>-size size</code>	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)
<code>-type shared   local</code>	Sets the option of allowing the virtual disk to be shared by more than one virtual machine ( <code>shared</code> ) or used by only one virtual machine ( <code>local</code> )
<code>-sparse</code>	Creates a sparse vdisk
<code>-h</code>	(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
```

## 15.28.2 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]
```

## Parameters

Parameter	Description
<i>new_vdisk_name</i>	Name given to the clone virtual disk
<i>repo_name</i>	Name of the repository source for the virtual disk being cloned
<i>source_vdisk_name</i>	Name of the virtual disk being cloned
<code>-h</code>	(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 15-42 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
```

## 15.28.3 oakcli delete vdisk

Use the `oakcli delete vdisk` 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
<i>vdisk_name</i>	Name assigned to the virtual disk
-repo <i>repository_name</i>	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
```

## 15.28.4 oakcli show vdisk

Use the `oakcli show vdisk` 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
<i>vdisk_name</i>	(Optional) Display information for just one virtual disk.
-repo <i>repository_name</i>	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 15-43 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 15-44 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
VmAttached : 0
```

## 15.29 oakcli Virtual Machine Commands

Use the oakcli virtual machine commands to list and manage virtual machines (VMs).

- [oakcli clone vm](#) (page 15-61)  
Use the `oakcli clone vm` command to create clones and snap clones of virtual machines.
- [oakcli configure vm](#) (page 15-63)  
Use the `oakcli configure vm` 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 15-66)  
Use the `oakcli delete vm` command to delete a virtual machine.
- [oakcli migrate vm](#) (page 15-66)  
Use the `oakcli migrate vm` command to migrate a currently running virtual machine to another node.
- [oakcli modify vm](#) (page 15-66)  
Use the `oakcli modify vm` command to modify an existing virtual machine.
- [oakcli show vm](#) (page 15-67)  
Use the `oakcli show vm` command to display information about virtual machines.
- [oakcli show vmconsole](#) (page 15-69)  
Use the `oakcli show vmconsole` command to open a GUI virtual machine console to manage a specific virtual machine.
- [oakcli start vm](#) (page 15-69)  
Use the `oakcli start vm` command to start a virtual machine on a node.

### 15.29.1 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]
```

## Parameters

Parameter	Description
-vm <i>vm_name</i>	Identifies the name given to the new cloned virtual machine.
-vmtemplate <i>template_name</i>	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 <i>0 1</i>	Identifies the Oracle Database Appliance node that contains the shared repository from which the virtual machine is to be cloned.
-vm <i>src_name</i>	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 15-45 Creating a Virtual Machine Image

Create a virtual machine image named `myol6u_test` from the virtual machine template named `myol6u_15gb1`, 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 15-46 Creating a Virtual Machine Image in Driver Domain Mode

Create a virtual machine image named `myol6u_test` from the virtual machine template named `myol6u_15gb1`, which is stored in the shared repository named `repo2` on Node 0 in driver domain mode:

```
oakcli clone vm myol6u_test -vmtemplate myol6u_15gb1 -repo repo2 -node 0 -
driverdomain
```

## 15.29.2 oakcli configure vm

Use the `oakcli configure vm` 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]
```

## Parameters

Parameter	Description
<i>name</i>	The name assigned to the virtual machine.
<i>-vcpu 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
<i>-maxvcpu 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.
<i>-cpuprio priority</i>	Priority for CPU usage, where larger values have higher priority. The range is 1 to 65535.
<i>-cpucap cap</i>	Percentage of a CPU the virtual machine can receive. The range is 10 to 100.
<i>-memory memsize</i>	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.
<i>-maxmemory max_memsize</i>	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.
<i>-os sys</i>	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)
<i>-keyboard lang</i>	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, n--be, no, pl, pt, pt-br, ru, sl, sv, th, or tr)
<i>-mouse mouse_type</i>	Mouse type used by the virtual machine (OS_DEFAULT, PS2_MOUSE, USB_MOUSE, or USB_TABLET)
<i>-domain dom</i>	Domain type from the following options: <ul style="list-style-type: none"> <li>• Hardware virtualized guest (XEN_HVM) <ul style="list-style-type: none"> <li>- The kernel or operating system is not virtualization-aware and can run unmodified.</li> <li>- Device drivers are emulated.</li> </ul> </li> <li>• Para virtualized guest (XEN_PVM) <ul style="list-style-type: none"> <li>- The guest is virtualization-aware and is optimized for a virtualized environment.</li> <li>- PV guests use generic, idealized device drivers.</li> </ul> </li> <li>• Hardware virtualized guest (XEN_HVM_PV_DRIVERS) <ul style="list-style-type: none"> <li>The PV drivers are hypervisor-aware and significantly reduce the overhead of emulated device input/output.</li> </ul> </li> <li>• Hardware virtualized guest (UNKNOWN)</li> </ul>
<i>-network netlist</i>	MAC address and list of networks used by the virtual machine
<i>-autostart astart</i>	Startup option for virtual machine (always, restore, or never)

Parameter	Description
<code>-disk disks</code>	List of disks (slot, disktype, and content) used by virtual machine
<code>-bootoption bootstrap</code>	Boot option used to bootstrap the virtual machine (PXE, DISK, or CDROM)
<code>-cpupool pool</code>	Named CPU pool assigned to the virtual machine
<code>-prefnode 0 1</code>	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.
<code>-failover true  false</code>	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 <code>-prefnode</code> parameter. This parameter is only valid for virtual machines created in shared repositories.
<code>-h</code>	(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](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](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
```

## 15.29.3 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
<code>vm <i>vm_name</i></code>	(Optional) Name of the virtual machine to be deleted
<code>-server <i>node_number</i></code>	(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.
<code>-h</code>	(Optional) Display help for using the command.

### Example

Delete the `ovu22` virtual machine from Node 1:

```
oakcli delete vm ovu22 -server 1
```

## 15.29.4 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
<code><i>vmname</i></code>	Name of the virtual machine to be migrated
<code>-h</code>	(Optional) Display help for using the command.

## 15.29.5 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
<code>-attachvdiskvdisk_name</code>	(Optional) Attaches the named VDisk (virtual disk) to the named virtual machine.
<code>-detachvdiskvdisk_name</code>	(Optional) Detaches the named VDisk disk from the named virtual machine.
<code>-s</code> <code>key1:value1;key2:value2;</code> <code>...</code>	(Optional) Identifies a message consisting of one or more semicolon separated key:value pairs to send to the ovmf 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.
<code>-addnetworkvlanname</code>	(Optional) Adds a VLAN network to the named virtual machine.
<code>-deletenetworkvlanname</code>	(Optional) Removes a VLAN network from the named virtual machine.
<code>-h</code>	(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 15-47 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:password"
```

## 15.29.6 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
<code>vm_name</code>	(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.
<code>-h</code>	(Optional) Display help for using the command.

### Usage Notes

When a virtual machine is configured in driver domain mode, the output of the `oakcli show vm vmname` command displays TRUE for the DriverDomain attribute.



## Examples

Here are examples of how to use the `oakcli show vm` command.

### Example 15-48 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 15-49 Displaying Information for a Single Virtual Machine

Display information about the `vm1_odarepo1` virtual machine:

```
oakcli show vm vm1_odarepo1
```

```
Resource: vm1_odarepo1
  AutoStart      :      restore
  CPUPriority    :      100
  Disks          :      |file:/OVS/Repositories/odarepo1/Vi
                    rtualMachines/vm1_odarepo1/System.i
                    mg,xvda,w||file:/OVS/Repositories/o
                    darepo1/VirtualMachines/vm1_odarepo
                    1/u01.img,xvdb,w|
  Domain         :      XEN_PVM
  ExpectedState  :      online
  FailOver       :      false
  IsSharedRepo   :      false
  Keyboard       :      en-us
  MaxMemory      :      3000
  MaxVcpu        :      4
  Memory         :      4096
  Mouse          :      OS_DEFAULT
  Name           :      vm1_odarepo1
  Networks       :      |mac=00:21:F6:00:00:E4|
  NodeNum        :      0
  NodeNumStart   :
  OS              :      OL_5
  PrivateIP      :      None
  ProcessorCap   :      100
  RepoName       :      odarepo1
  State          :      Online
  TemplateName   :      otml_sample1_odarepo1
  Vcpu           :      4
  cpupool        :      twocpu
  vncport        :      5901
```

## 15.29.7 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
<i>vm_name</i>	Name of the virtual machine for which you want to open a console.
-h	(Optional) Display help for using the command.

### Example 15-50 Opening a Virtual Machine Console

Open a console for the virtual machine named `vm1_odarepol`:

```
oakcli show vmconsole vm1_odarepol
```

## 15.29.8 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]
```

### Parameters

Parameter	Description
<i>vm_name</i>	<i>vm_name</i> is the name of the virtual machine to be started.
-node <i>node_number</i>	Specifies the node on which to start the virtual machine. <i>node_number</i> 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 15-51 Starting a Virtual Machine on Node 0

Start the virtual machine named `vm1_odarepol` on Node 0.

```
oakcli start vm vm_odarepol -node 0
```

## 15.30 oakcli Virtual Machine Template Commands

Use the oakcli Virtual Machine template commands to list and manage virtual machine (VM) templates.

- [oakcli configure vmtemplate](#) (page 15-70)  
Use the `oakcli configure vmtemplate` command to configure a virtual machine template on Oracle Database Appliance Virtualized Platform.
- [oakcli delete vmtemplate](#) (page 15-72)  
Use the `oakcli delete vmtemplate` command to delete a virtual machine template.
- [oakcli import vmtemplate](#) (page 15-72)  
Use the `oakcli import vmtemplate` command to import virtual machine templates.
- [oakcli modify vmtemplate](#) (page 15-74)  
Use the `oakcli modify vmtemplate` command to add networks to or delete networks from an existing virtual machine template.
- [oakcli show vmtemplate](#) (page 15-74)  
Use the `oakcli show vmtemplate` command to display information about virtual machine templates.

## 15.30.1 oakcli configure vmtemplate

Use the `oakcli configure vmtemplate` 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
<i>name</i>	Name assigned to the virtual machine template
-vcpu <i>cpucount</i>	Number of nodes assigned to virtual machines cloned from the template.
-maxvcpu <i>maxcpu</i>	Maximum number of CPUs that virtual machines cloned from the template can consume.
-cpuprio <i>priority</i>	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 <i>memsize</i>	Amount of memory given to virtual machines cloned from the template (1G to 88 G or 1M to 90112M)
-maxmemory <i>max_memsize</i>	Maximum amount of memory allowed for virtual machines cloned from the template
-os <i>sys</i>	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 <i>lang</i>	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, n-be, no, pl, pt, pt-br, ru, sl, sv, th, or tr)

Parameter	Description
<code>-mouse <i>mouse_type</i></code>	Mouse type used by virtual machines cloned from the template (OS_DEFAULT, PS2_MOUSE, USB_MOUSE, or USB_TABLET)
<code>-domain <i>dom</i></code>	Domain type from the following options: <ul style="list-style-type: none"> <li>• Hardware virtualized guest (XEN_HVM) <ul style="list-style-type: none"> <li>- The kernel or operating system is not virtualization-aware and can run unmodified.</li> <li>- Device drivers are emulated.</li> </ul> </li> <li>• Para virtualized guest (XEN_PVM) <ul style="list-style-type: none"> <li>- The guest is virtualization-aware and is optimized for a virtualized environment.</li> <li>- PV guests use generic, idealized device drivers.</li> </ul> </li> <li>• Hardware virtualized guest (XEN_HVM_PV_DRIVERS) <ul style="list-style-type: none"> <li>The PV drivers are hypervisor-aware and significantly reduce the overhead of emulated device input/output.</li> </ul> </li> </ul>
<code>-network <i>netlist</i></code>	MAC address and list of networks used by virtual machines cloned from the template
<code>-disk <i>disks</i></code>	List of disks (slot, disktype, and content) used by virtual machines cloned from the template
<code>-h</code>	(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](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](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 myo15u7_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.

## 15.30.2 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
<i>template_name</i>	Name of the virtual machine template to be removed
<code>-server <i>node_number</i></code>	(Optional) Oracle Database Appliance node 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.
<code>-h</code>	(Optional) Display help for using the command.

### Example

Delete the `ovu22` virtual machine template from both nodes:

```
oakcli delete vmtemplate ovu22
```

## 15.30.3 oakcli import vmtemplate

Use the `oakcli import vmtemplate` command to import virtual machine templates.

### Syntax

```
oakcli import vmtemplate vmtemplatename -files image_files | -assembly assembly_file  
-repo repo_name [- node 0 | 1 ][-h]
```

### Parameters

Parameter	Description
<i>vmtemplatename</i>	Name that you want to assign to the template

Parameter	Description
<code>-files</code>	Use the <code>-files</code> option when importing one or more files that comprise a template.
<code>image_files</code>	<code>image_files</code> is one of the following: <ul style="list-style-type: none"> <li>• A single template file name</li> <li>• A comma-separated list of files that comprise a single template</li> <li>• A URL enclosed in single quotation marks that links to a template file</li> </ul>
<code>-assembly</code>	Use the <code>-assembly</code> option when importing an assembly file.
<code>assembly_file</code>	An assembly file, or a URL enclosed in single quotation marks, that links to an assembly file
<code>repo_name</code>	Name of the repository to store the template or templates that you are importing
<code>-node</code>	When you are importing to a shared repository, use the <code>-node</code> option with a value of 0 or 1 to identify the node.
<code>-h</code>	(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 15-52 Importing a Virtual Machine Template from Dom0

Import the required template (`OVM_OL5U7_X86_64_PVM_10GB.tgz`) from the `/OVS` directory in Dom0 into the `odarepo1` repository and name the template file `OL5U7`:

```
oakcli import vmtemplate OL5U7 -files /OVS/OVM_OL5U7_X86_64_PVM_10GB.tgz -repo
odarepo1
```

#### Example 15-53 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 15-54 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 `odarepo1` repository:

```
oakcli import vmtemplate OL6U1 -assembly 'http://example.com/assemblies/OEL6/
OVM_OL6U1_x86_PVHVM.ova' -repo odarepo1
```

**Example 15-55 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
```

## 15.30.4 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
<code>-addnetworkvlanname</code>	(Optional) Adds a VLAN network to the named virtual machine template
<code>-deketenetworkvlanname</code>	(Optional) Deletes a VLAN network from the named virtual machine template
<code>-h</code>	(Optional) Displays help for using the command.

**Example 15-56 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
```

## 15.30.5 oakcli show vmtemplate

Use the `oakcli show vmtemplate` command to display information about virtual machine templates.

**Syntax**

```
oakcli show vmtemplate [vmtemplate_name | -h]
```

## Parameters

Parameter	Description
<i>vmtemplate_name</i>	(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 15-57 Display Information About a Virtual Template

Display information about the `sample1_odarepol` virtual template:

```
oakcli show vmtemplate sample_odarepol
Resource: sample1_odarepol
      CPUPriority      :      100
      Disks             :      |file:/OVS/Repositories/odarepol/Te
                           mplates/otml_sample1_odarepol/Syste
                           m.img,xvda,w||file:/OVS/Repositorie
                           s/odarepol/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_odarepol
      Networks         :      |bridge=priv1||bridge=net1||bridge=
                           net2|
      NodeNum          :      0
      OS               :      OL_5
      ProcessorCap     :      100
      RepoName         :      odarepol
      Vcpu             :      2
```

## 15.31 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 15-76)  
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 15-76)  
Use the `oakcli delete vlan` command to delete a virtual local area network.
- [oakcli show vlan](#) (page 15-77)  
Use the `oakcli show vlan` command to display information about virtual local area networks (VLANs) configured on Oracle Database Appliance.



## 15.31.1 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
<i>vlan_name</i>	Name assigned to the VLAN.
-vlanid <i>tag_id</i>	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 <i>interface_name</i>	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
```

## 15.31.2 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 <i>node_number</i>	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
```

## 15.31.3 oakcli show vlan

Use the `oakcli show vlan` 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 15-58 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	1	bond1	0
	net1	1	bond1	1
	net2	1	bond2	0
	net2	1	bond2	1
	net3	1	bond3	0
	net3	1	bond3	1
	net4	1	xbond0	0
	net4	1	xbond0	1
	priv1	1	bond0	0
	priv1	1	bond0	1

# 16

## 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 16-1)  
If you have problems logging into the Web Console, then it might be your browser or credentials.
- [Troubleshooting Tools and Commands](#) (page 16-2)  
This section describes additional tools and commands for diagnosing and troubleshooting problems with Oracle Database Appliance.
- [Preparing Log Files for Oracle Support Services](#) (page 16-6)  
If necessary, use the command `odaadmcli manage diagcollect` to collect diagnostic files to send to Oracle Support Services.

### 16.1 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.

#### Note:

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.

1. 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.

If you are using the default password, a message appears advising you to change the default password to comply with your system security requirements.

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` and open the Web Console in a different window or tab.

#### Related Topics

- <http://www.oracle.com/technetwork/indexes/products/browser-policy-2859268.html>
- [Changing the Password](#) (page 6-2)  
Change the administrative account passwords to secure your system.

## 16.2 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 16-2)  
Use the ORAchk Health Check Tool to audit configuration settings and check system health.
- [Disk Diagnostic Tool](#) (page 16-4)  
Use the Disk Diagnostic Tool to help identify the cause of disk problems.
- [Trace File Analyzer Collector](#) (page 16-4)  
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 16-5)  
The Oracle Database Appliance Hardware Monitoring Tool displays the status of different hardware components in Oracle Database Appliance server.

### 16.2.1 ORAchk Health Check Tool

Use the ORAchk Health Check Tool to audit configuration settings and check system health.

The ORAchk utility performs proactive health 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>

1. Open the command-line interface as root.
2. Navigate to the ORAchk tool in the `/suptools` directory.

```
/u01/app/12.2.0.1/grid/suptools/orachk
```

3. 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.

4. 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 OELRH64 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 checks with the following status:  
 Fail  Warning  Info  Pass
- Show details of the following regions:  
 Top 10 Time Consuming Checks
- Show details of the checks:  
 Expand All  Collapse All

## 16.2.2 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
```

## 16.2.3 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)

## 16.2.4 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 `odaadmcli show -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 `oakcli show -h`

To see information about specific components, use the command syntax `oakcli show component`, where *component* is the hardware component that you want to query. For example, the command `oakcli show power` 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
Power Supply_1	OK	-	7047410	476856F+1242CE004J

(Continued)

LOCATION	INPUT	POWER OUTPUT	POWER INLET TEMP	EXHAUST TEMP
PS0	Present	88 watts	31.250 degree C	34.188 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.

## 16.3 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	<i>/u01/app/release-specific_name/gi owner</i>
Grid base	<i>/u01/app/gi owner</i>
Oracle home	<i>/u01/app/rdbms owner/product/dbhome_release-specific_name sequence_number</i>
Oracle base	<i>/u01/app/rdbms owner</i>
Oracle Inventory	<i>/u01/app/oraInventory</i>

## 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 `/opt/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 `dcs-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 `/opt/oracle/dcs/log/dcscli.log` 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 6.9 with 4.1.12-94.4.1.el6uek.x86_64

**Table A-2 (Cont.) System Configuration for Oracle Database Appliance**

Item	Value
Oracle Database release	12.2.0.1.180116, 12.1.0.2.180116 and 11.2.0.4.180116 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 <i>hostname</i> is the name of the Oracle Database Appliance server:  <code>https://hostname:5500/em</code>
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 <i>hostname</i> is the name of the Oracle Database Appliance server:  <code>https://hostname:1158/em</code>

# 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-5)  
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-6)  
Review the table for the approximate amount of usable space for high performance or high capacity on Oracle Database Appliance X7-2-HA.
- [Usable Free Space with Oracle ASM](#) (page B-7)  
When Oracle ASM calculates usable Free Space, it determines the amount of space to reserve in the case of a disk failure.

### 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. Beginning with Oracle Database Appliance 12.2, if you do not select a storage type, the default storage is Oracle ASM.

#### **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 its own mount points, `/u02/app/oracle/oradata/dbid`. When you delete a database, you should clean up the files.

- [About Database File Storage](#) (page B-2)  
Use Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage Management Cluster File System (Oracle ACFS) for database files storage.
- [Oracle ACFS Mount Points and Storage Space](#) (page B-3)  
Review Oracle ASM Cluster file system (ACFS) mount points for Oracle Database Appliance.
- [Displaying Mounted Disk Details](#) (page B-4)  
Use the Oracle Automatic Storage Management `lsdgs` command to display mounted disk groups and their information for Oracle Database Appliance.

## B.1.1 About 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 Automatic Storage Management Cluster File System (Oracle ACFS) or Oracle Automatic Storage Management (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 datafiles 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 datafiles, 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 its own mount points, `/u02/app/oracle/oradata/dbid`. When you delete a database, you should clean up the files.

### Storage Configuration Options

When Oracle Database Appliance is deployed, you can configure how the storage capacity is shared between DATA diskgroup and RECO diskgroup. You can choose anywhere from 10% to 90% for DATA and the remainder for RECO. The amount of usable storage is determined by the percentage configured for DATA. You can run the command `lsdgs` to determine the usable storage on the DATA disk group.

## B.1.2 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	<code>/dev/asm/datdbname-<i>nnn</i></code> For example: <code>/dev/asm/datodacn-123</code>	<code>/u02/app/oracleuser/oradata/<i>dbname</i></code> For example: <code>/u02/app/example/oradata/odacn</code>

**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- <i>nn</i>	<p>/u03/app/oracleuser</p> <p>This mount point is shared by all databases for <i>fast_recovery_area</i> and redo logs.</p> <p>For <i>fast_recovery_area</i>, the path is: /u03/app/oracleuser/<i>fast_recovery_area/db_name</i></p> <p>For redo logs, the path is: /u03/app/oracleuser/redo/<i>db_name</i></p>

**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
1% /u02/app/oracle/oradata/ndb11
/dev/asm/datndb12-268      104857600 247160 104610440
1% /u02/app/oracle/oradata/ndb12
```

### B.1.3 Displaying Mounted Disk Details

Use the Oracle Automatic Storage Management `lsdgs` 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.

1. Log in as a `grid` user.
2. Run the Oracle Automatic Storage Management `lsdgs` command.



### Example B-2 Determining Storage on the DATA Disk Group

```
ASMCMD [+] > lsdg data
```

```
State      Type      Rebal  Sector  Block      AU      Total_MB  Free_MB  Req_mir_free_MB
Usable_file_MB
MOUNTED   NORMAL    N           512    4096    4194304    12288    8835
1117                                3859
```

(continued)

```
Offline_disks  Voting_files  Name
              0                N  DATA
```

## 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 2 drives (12.8TB raw storage)	<ul style="list-style-type: none"> <li>DATA: 5.24 TB</li> <li>RECO: 0.58 TB</li> </ul>	Not applicable
X7-2M 2 drives (12.8TB raw storage)	<ul style="list-style-type: none"> <li>DATA: 5.24 TB</li> <li>RECO: 0.58 TB</li> </ul>	Not applicable
X7-2M 5 drives (32TB raw storage)	<ul style="list-style-type: none"> <li>DATA: 10.48 TB</li> <li>RECO: 1.16 TB</li> <li>Reservation: 2.91 TB</li> </ul>	<ul style="list-style-type: none"> <li>DATA: 5.24 TB</li> <li>RECO: 0.58 TB</li> <li>Reservation: 5.82 TB</li> </ul>
X7-2M 8 drives (51.2TB raw storage)	<ul style="list-style-type: none"> <li>DATA: 18.34 TB</li> <li>RECO: 2.04 TB</li> <li>Reservation: 2.91 TB</li> </ul>	<ul style="list-style-type: none"> <li>DATA: 10.48 TB</li> <li>RECO: 1.16 TB</li> <li>Reservation: 5.82 TB</li> </ul>

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 3.2 TB 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)	<ul style="list-style-type: none"> <li>DATA: 5.24 TB</li> <li>RECO: 0.58 TB</li> <li>REDO: 0.97 TB</li> <li>Reservation: 0.97 TB</li> </ul>	<ul style="list-style-type: none"> <li>DATA: 2.62 TB</li> <li>RECO: 0.29 TB</li> <li>REDO: 0.97 TB</li> <li>Reservation: 1.94 TB</li> </ul>
10 drives (32 TB raw storage)	<ul style="list-style-type: none"> <li>DATA: 11.79 TB</li> <li>RECO: 1.31 TB</li> <li>REDO: 0.97 TB</li> <li>Reservation: 0.97 TB</li> </ul>	<ul style="list-style-type: none"> <li>DATA: 6.98 TB</li> <li>RECO: 0.78 TB</li> <li>REDO: 0.97 TB</li> <li>Reservation: 1.94 TB</li> </ul>
15 drives (48 TB raw storage)	<ul style="list-style-type: none"> <li>DATA: 18.34 TB</li> <li>RECO: 2.04 TB</li> <li>REDO: 0.97 TB</li> <li>Reservation: 0.97 TB</li> </ul>	<ul style="list-style-type: none"> <li>DATA: 11.35 TB</li> <li>RECO: 1.26 TB</li> <li>REDO: 0.97 TB</li> <li>Reservation: 1.94 TB</li> </ul>
20 drives (64 TB raw storage)	<ul style="list-style-type: none"> <li>DATA: 24.88 TB</li> <li>RECO: 2.76 TB</li> <li>REDO: 0.97 TB</li> <li>Reservation: 0.97 TB</li> </ul>	<ul style="list-style-type: none"> <li>DATA: 15.72 TB</li> <li>RECO: 1.75 TB</li> <li>REDO: 0.97 TB</li> <li>Reservation: 1.94 TB</li> </ul>
40 drives (128 TB raw storage)	<ul style="list-style-type: none"> <li>DATA: 51.08 TB</li> <li>RECO: 5.68 TB</li> <li>REDO: 1.94 TB</li> <li>Reservation: 0.97 TB</li> </ul>	<ul style="list-style-type: none"> <li>DATA: 33.18 TB</li> <li>RECO: 3.69 TB</li> <li>REDO: 1.94 TB</li> <li>Reservation: 1.94 TB</li> </ul>

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 0.8 TB total usable space. The REDO disk group uses high redundancy that provides approximately 0.3 TB 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)	<ul style="list-style-type: none"> <li>• DATA: 57.30 TB</li> <li>• RECO: 6.37 TB</li> <li>• REDO: 0.97 TB</li> <li>• Flash: 5.52 TB</li> <li>• Reservation: 4.5 TB</li> </ul>	<ul style="list-style-type: none"> <li>• DATA: 35.47 TB</li> <li>• RECO: 3.94 TB</li> <li>• REDO: 0.97 TB</li> <li>• Flash: 2.61 TB</li> <li>• Reservation: 9.0 TB</li> </ul>
30 drives (300 TB raw storage)	<ul style="list-style-type: none"> <li>• DATA: 118.69 TB</li> <li>• RECO: 13.19 TB</li> <li>• REDO: 1.94 TB</li> <li>• Flash: 12.50 TB</li> <li>• Reservation: 4.5 TB</li> </ul>	<ul style="list-style-type: none"> <li>• DATA: 76.40 TB</li> <li>• RECO: 8.49 TB</li> <li>• REDO: 1.94 TB</li> <li>• Flash: 7.16 TB</li> <li>• Reservation: 9.0 TB</li> </ul>

## B.4 Usable Free Space with Oracle ASM

When Oracle ASM calculates usable Free Space, it determines the amount of space to reserve in the case of a disk failure.

For Oracle Database Appliance with 2 or 4 NVMe drives, this reserved space is not required. When you query Oracle ASM or Oracle Database Appliance commands to view the amount of storage available, the `usable_file_MB` value may report a negative number.

**Table B-5 Oracle ASM Calculations**

Number of Drives	Redundancy	Total_MB	Free_MB	Req_mir_free_MB	Usable_file_MB	Name
2	NORMAL	4894016	4893372	0	1220644	RECO/
4	NORMAL	1231176	1230996	610468	305150	RECO/



**Note:**

Note: 1TB = MB divided by 1024<sup>2</sup>

**How Oracle ASM and Oracle Database Appliance Define Capacity**

The following table describes how capacity terms are defined by Oracle ASM and Oracle Database Appliance.

**Table B-6 Definition of Terminology**

<b>Term</b>	<b>Oracle ASM Definition</b>	<b>Oracle Database Appliance Definition</b>
Total_MB	Size of the disk group in MB	Total usable storage. For example, for 2 NVMe drives, total usable storage is 5.8TB.
Free_MB	Free space in the disk group in MB, without regard to redundancy.	Total usable storage after formatting to Oracle ASM disk groups. For example, for 2 NVMe drives, total usable storage is 5.8TB.
Req_mir_free_MB	Amount of space that must be available in the disk group to restore full redundancy after the worst failure that can be tolerated by the disk group.	Total usable storage after formatting to Oracle ASM disk groups. For example, for 2 NVMe drives, total usable storage is 5.8TB.
Usable_file_MB	Amount of free space, adjusted for mirroring, that is available for new files.	Total usable space taking into consideration the mirroring level. Oracle ASM also calculates the amount of space required.

# 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.

#### 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, you will lose network access to both the host and Oracle ILOM.

#### Readme

The readme is located in the `/opt/oracle/dcs/sample` 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.



### Note:

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" : "odbl",
    "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").

```

{
  "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" : false,
    "osUserGroup" : {
      "groups" : [ {
        "groupId" : 1001,

```



```

        "groupName" : "oinstall",
        "groupRole" : "oinstall"
    }, {
        "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_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"
}
}

```

## 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":"odahaboxcl-scan",
    "ipAddresses":[
        "10.31.98.182",
        "10.31.98.183"
    ]
},
"vip":[
    {
        "nodeName":"0",
        "vipName":"odahaboxcln2-vip",
        "ipAddress":"10.31.98.159"
    },
    {
        "nodeName":"1",
        "vipName":"odahaboxcln1-vip",
        "ipAddress":"10.31.98.158"
    }
],
"language":"en",
"enableAFD":"TRUE"
},
"database":{
    "dbName":"myTestDb",
    "databaseUniqueName":"myTestDb_sealkj",
    "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
<code>-griduser grid_user</code>	Defines the grid user name. The default user is <code>grid</code> .
<code>-dbuser db_user</code>	Defines the database user name. The default user is <code>oracle</code> .
<code>-groups comma separated list of groups</code>	Lists the groups in a comma separated list. The default groups are <code>oinstall,dba,asmadmin,asmoper,asmdba</code> .

### Usage

When the `grid_user` and `db_user` are the same (`roleSeparation=false`), you must still run the script for each user (`-gridUser` and `-dbUser`).

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 `dom0` on Node 0 to remove ODA\_BASE and the initial network configuration.

```
/opt/oracle/oak/tools/clean0dabase.py
```

# E

## 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	128	64	6400	16	128
odb36	36	144	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	128	64	6400	384	16	128
odb36	36	144	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**

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

**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	40	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.

## **External backup location**

Storage capacity is split between 80% for DATA and 20% for RECO. Other backup location options are Internal and Custom.

## **Internal backup location**

Storage capacity is split between 40% for DATA and 60% for RECO. Other backup location options are External and Custom.

## **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.

# Index

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