

Oracle® Database Appliance

X7-2 Deployment and User's Guide



Release 18.2 For Linux x86-64

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Preface

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

Audience

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

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

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

Documentation Accessibility

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Related Documents

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

- *Oracle Database Appliance Release Notes*

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

The following My Oracle Support Notes contain additional information:

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

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

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

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

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

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

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

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action or terms defined in the text.
<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.

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 18.2.0.0.0

Patch	Description
Oracle Database Appliance GI Clone	Use to perform an initial deployment of Oracle Database Appliance. The bundle contains the latest Grid Infrastructure.
RDBMS Clone	Use the RDBMS Software Clone files to get the RDBMS clone binaries for Oracle Database 18.2.0.0.0 for Oracle Database Appliance X7-2S, X7-2M, and X7-2-HA. The RDBMS clone file is needed to create Oracle databases and database homes.
Bare Metal ISO Image	Use to reimage the appliance for Oracle Database Appliance 18.2.0.0.0. Two versions of the ISO image are available, one for single node systems (X7-2S and X7-2M) and one for multi-node systems (X7-2-HA).

 **Note:**

See the *Oracle Database Appliance Release Notes* for the patch numbers and download locations and the component versions. 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 ISO image software to a system on the network.
 - b. Re-install Oracle Database Appliance software.
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.

- (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 to run root scripts :

Status: Failure

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

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

2

Preparing for Oracle Database Appliance Installation and Deployment

Complete these setup tasks before Oracle Database Appliance is delivered.

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.

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

The screenshot shows the 'User & Group Selection' configuration interface. It features two columns of input fields for user and group configuration. The left column lists user and group names, while the right column lists their corresponding IDs. At the top, there are two radio button options: 'Customize Users & Groups' (selected as 'Yes') and 'Allow OS Role Separation' (selected as 'Yes').

Field Name	Value
GI User *	grid
DB User *	oracle
Install Group *	oinstall
DBA Oper Group *	dbaoper
DBA Group *	dba
ASM Admin Group *	asmadmin
ASM Oper Group *	asmoper
ASM DBA Group *	asmdba
GI UserID *	1000
DB UserID *	1001
Install GroupID *	1001
DBA Oper GroupID *	1002
DBA GroupID *	1003
ASM Admin GroupID *	1004
ASM Oper GroupID *	1005
ASM DBA GroupID *	1006

Single Custom User with Six Custom Groups

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

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

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

Single User with Two Groups

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

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

2.2.3 Selecting Database Deployment Options

Review the Oracle Database editions that are available for deployment.

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



Note:

It is important to understand your Oracle Database licensing before you create databases. You cannot provision Oracle Database Enterprise Edition and Standard Edition databases in the same bare metal platform, subject to Oracle Database licensing requirements.

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.

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.

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.

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 ports
- 25GbE SFP+ ports

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 port
 - 25GbE SFP+ ports
- 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`, 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 ports
- 25GbE SFP+ ports

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. 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`

- 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: <code>example.com</code>
Region	The region where you plan to operate the Oracle Database Appliance system.
Timezone	The time zone where you plan to operate the Oracle Database Appliance system.
Diskgroup Redundancy	Determine the redundancy level for DATA, RECO, and FLASH: Normal redundancy (two way mirror) or High redundancy (three way mirror). If you select High redundancy, then DATA, RECO, and FLASH are all High redundancy. If the system has less than five (5) NVMe storage devices, then redundancy is automatically set to Normal and this field does not appear.

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

System Information	Description
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.
Network Information for the client access network	Obtain the following network information for the public network: <ul style="list-style-type: none">• IP address• Subnet Mask• Gateway
Network Information for the Oracle Integrated Lights Out Manager (ILOM) network	(Optional) Obtain the following ILOM network information: <ul style="list-style-type: none">• ILOM host name• ILOM address• Subnet mask• Gateway
User and group information	Determine how you want to configure your users and groups and whether or not you want to allow operating system role separation. The default is two users with six groups.

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

System Information	Description
Initial Database Details (if you want to create one during deployment)	<p>(Optional) If you choose to create an initial database during deployment, determine the following configuration details:</p> <ul style="list-style-type: none"> • Database name • Database unique name • Database version (based on the database clones that are registered with the Oracle Database Appliance): <ul style="list-style-type: none"> – 12.2.0.1 – 12.1.0.2 – 11.2.0.4 • Determine the Oracle Database edition licensing that you have, either Enterprise Edition or Standard Edition. You cannot mix editions. • Container database, or not • Shape (for example: odb1 or odb2) • Class (database template): <ul style="list-style-type: none"> – Enterprise Edition, 12c: OLTP, DSS, or IMDB – Enterprise Edition, 11g: OLTP or DSS – Standard Edition: OLTP • Database character set • Database language • Storage (Oracle ASM or Oracle ACFS). All version 11.2.0.4 databases are provisioned on top of Oracle ACFS. • Configure Oracle Enterprise Manager console. If you are using Enterprise Manager Cloud Control with this appliance, do not choose this option.
Oracle Auto Service Request (Oracle ASR) information	<p>(Optional) Do you want to Configure and enable Oracle ASR at deployment or later?</p>

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. 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

3

Readying Oracle Database Appliance for Deployment

Complete these tasks to prepare to deploy Oracle Database 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.

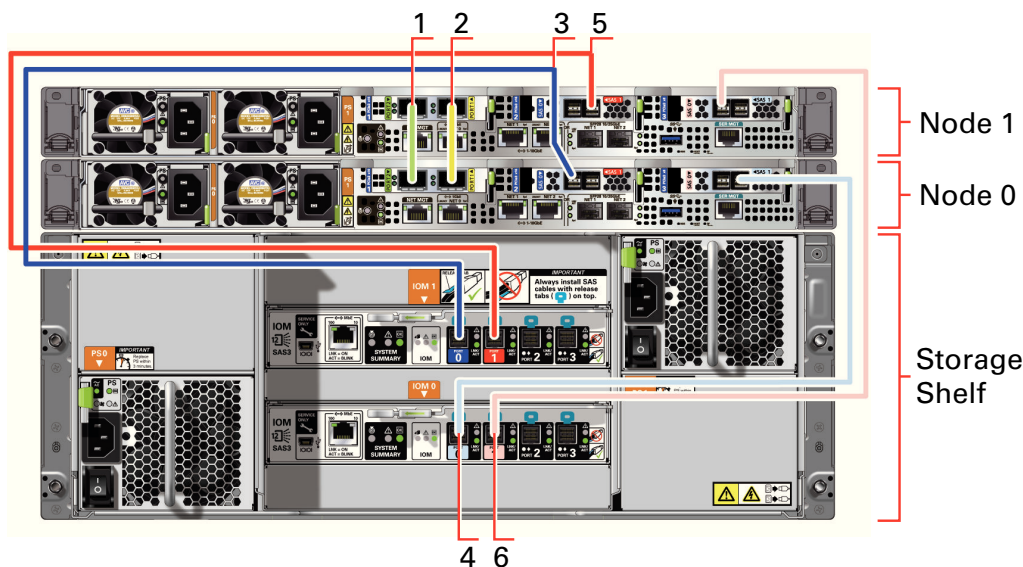
3.2 Attaching Network Cables to Oracle Database Appliance X7-2-HA

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)
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

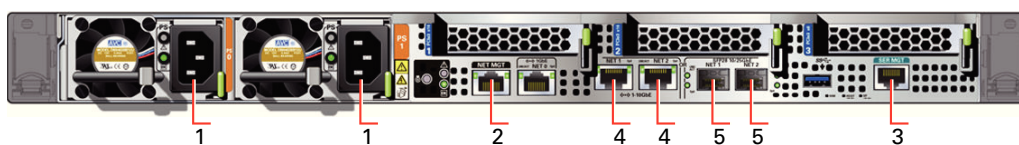


Table 3-2 Location of Ports and Power Cabling for Oracle Database Appliance

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

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

Callout Number	Description
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

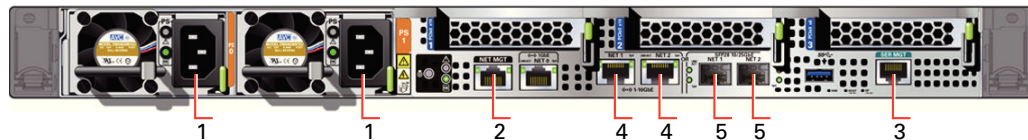
3.3 Attaching Network Cables to Oracle Database Appliance X7-2S or X7-2M

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.

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

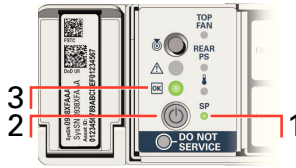


Table 3-8 Description of Callouts for Powering On Oracle Database Appliance

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.

4

Deploying Oracle Software on Oracle Database Appliance

Complete these tasks to deploy the Oracle Database Appliance software.

4.1 About Deploying Oracle Database Appliance 18.2

Review this information to understand how to deploy Oracle Database Appliance 18.2.

Oracle Database Appliance ships from the factory with a bare metal configuration, default ISO image, and Appliance Manager installed. To deploy Oracle Database Appliance to use Oracle Database 18.2, you must re-image the machine with the 18.2 image. Re-imaging uses ILOM to install Oracle Database Appliance software for Oracle Database 18.2 on the local (boot) drive.

After imaging is completed, redeploy the End User image, then restore from backup, as needed.

Re-imaging does not patch the firmware or update the component versions, it only re-images the local system disk from an OS perspective. Re-imaging with older release of Oracle Database Appliance software does not rollback the firmware version.

To reimage the Oracle Database Appliance node, use the Oracle Integrated Lights Out Manager (ILOM) interface that you configured as part of readying the system for deployment .

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.

Re-imaging and deploying Oracle Database Appliance requires a direct connection to the system to configure the Oracle Integrated Lights Out Manager (ILOM) and the first network.

The procedure to deploy software consists of the following steps:

1. Ready the system, including configuring the ILOM interface.
2. If you are re-imaging an appliance that is already deployed, create a backup, if needed.
3. Download the Oracle Database Appliance 18.2 image.
4. Re-image the system with Oracle Database Appliance 18.2.
5. Download the Oracle Database Appliance GI and DB software.
6. Update the repository with Oracle Database Appliance GI and DB software.
7. Launch the Web Console to deploy your configuration. The Web Console provides all of the fields necessary to deploy Oracle Database Appliance, including

configuring the system, network, database, and optionally, Oracle Auto Service Request (Oracle ASR).

8. Restore from backup, if needed.

 **Note:**

Oracle Database Appliance 18.2 is only available for bare metal DCS platforms. When you deploy Oracle Database Appliance 18.2, the only database version available is Oracle Database 18.2.0.0.0.

4.2 Re-imaging Oracle Database Appliance with an Oracle Database 18.2 Image

Use Oracle Integrated Lights Out Manager (ILOM) to re-image Oracle Database Appliance with an Oracle Database 18.2 image.

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 the ISO patch for the Oracle Database Appliance 18.2 ISO Image for your hardware model.
See the *Oracle Database Appliance Release Notes* for patch information and links to download the patch for your hardware model.
2. Select the patch version for Oracle Appliance Kit 18.2, then click **Download** to download the zip file onto your external client.
3. Use either a Secure Copy (`scp`) command or a USB storage device to copy the file from the external client to Oracle Database Appliance.

 **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.
5. Open a browser and connect to Oracle Integrated Lights Out Manager (ILOM) on Node0 as root.
`https://ilom-ip-address`
6. 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.
7. Add the Oracle Database 18.2 for Oracle Database Appliance ISO 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.
8. 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**.
9. 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.

10. If the machine is a multi-node server, then repeat the steps for Node1.

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.

4.3 Updating the Repository with the GI and RDBMS Files

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

Update the patch repository with the following patch files:

- GI Clone: Contains the latest Oracle Grid Infrastructure components needed to deploy, or create, an Oracle Database Appliance.

- RDBMS 18.2.0.0.0 Software Clone file: Contains the components needed to create database homes and databases in Oracle Database Appliance.

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

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

1. From an external client machine, log on to My Oracle Support.
2. Locate and download the GI patch.
See the *Oracle Database Appliance Release Notes* for patch information and download links. Select 18.2.0.0.0 from the release drop-down menu.
 - a. Download the GI patch to a temporary location on the external client.
 - b. Unzip the file. For example, a file named **p27604593_18.zip**.
3. Locate and download the 18.2.0.0.0 RDBMS Clone patch to a temporary location on the external client.

See the *Oracle Database Appliance Release Notes* for patch information and download links. Select 18.2.0.0.0 from the release drop-down menu.

4. Upload the files from the external client to the appliance. You can use the `scp` protocol, `sftp` protocol, or a USB storage device to copy the files.
5. Navigate to the directory and unzip each patch.
6. Run the command `odacli update-repository` to unpack the bundle to the correct locations in the file system. You must include the fully qualified directory.
If you have more than one bundle, you can use a comma-separated list. Spaces are not allowed between the filenames.

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

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

```
# odacli list-jobs
```

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

4.4 Deploying a Single Node Bare Metal Platform

Configure the system, network, user groups, and database and deploy the single node Oracle Database Appliance (X7-2S, X7-2M, X6-2S, X6-2M, or X6-2L.)

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](#) 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

Host Name *	Data Storage Percentage *	Master Password *
hrs1	80	*****
Domain Name *		Confirm Password *
example.com		*****
Region		
Other	▼	
Time Zone		
GMT	▼	
DNS Servers		
NTP Servers		

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

The Network Information page enables you to configure the primary client access network and an Oracle Integrated Lights Out Manager (ILOM) network. You are only required to configure the client access network. The ILOM configuration is optional if you already configured the ILOM for the appliance and you do not need to make changes.
 - 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 *	ILOM Host Name
192.0.2.254	ilom
Subnet Mask *	IP Address
255.255.255.240	198.51.100.1
Gateway *	Subnet Mask
10.209.12.1	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. The Enterprise Edition supports OLTP, DSS, or IMDB, the Standard Edition only supports OLTP.
- j. (Optional) **Storage:** Select **ACFS** or **ASM**.
The default is ASM.
- k. (Optional) **Configure EM Express:** Select **Yes** to configure the Oracle Enterprise Manager Database Express (EM Express) console.
- l. (Optional) **Characterset:** Select a characterset.
- m. (Optional) **National Characterset:** Select a national characterset.
- n. (Optional) **Language:** Select the database language.
- o. (Optional) **Territory:** Select a territory or location from the list.

Database Information

Create Initial Database Yes No

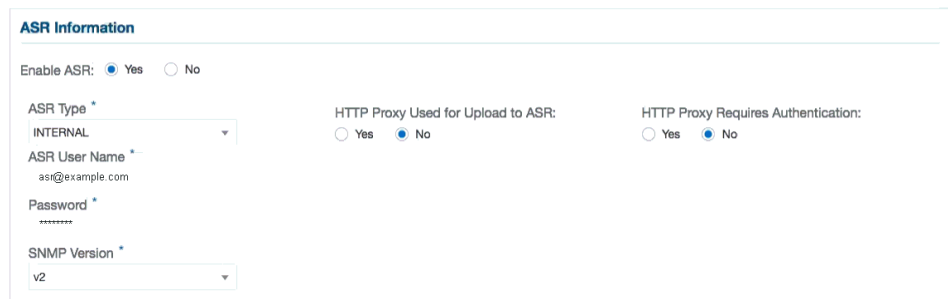
DB Name *	Database Edition	Characterset
hrdb	Enterprise Edition	AL32UTF8
DB Unique Name	Shape	National Characterset
hrdb#1	odb1(1 Core, 6.0GB Memory)	AL16UTF16
DB Version	Database Class	Language
12.2.0.1.170814	OLTP	AMERICAN
CDB <input checked="" type="radio"/> Yes <input type="radio"/> No	Storage	Territory
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.

4.5 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](#) for more information.

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

1. Open a browser and enter the following URL to launch the Web Console:
The URL must include the host name or IP address of the first node (Node0).

```
https://Node0-ODA-host-ip-address:7093/mgmt/index.html
```
2. Enter the 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

The screenshot shows a web form titled "System Information" with the following fields and values:

- System Name ***: hrsys
- Domain Name ***: example.com
- Region**: Other (dropdown)
- Time Zone**: GMT (dropdown)
- DNS Servers**: 19.135.85.132
- NTP Servers**: 19.135.185.1
- Diskgroup Redundancy**: High (dropdown)
- Data Storage Percentage ***: 80
- Master Password ***: [Redacted]
- Confirm Password ***: [Redacted]

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
Node0 Host Name * <input type="text" value="hrsyst1"/> IP Address * <input type="text" value="192.0.1.254"/>	Node0 VIP Name * <input type="text"/> VIP Address * <input type="text"/>	Node0 ILOM Host Name <input type="text"/> IP Address <input type="text"/>
Node1 Host Name * <input type="text" value="hrsyst2"/> IP Address * <input type="text" value="192.0.2.254"/>	Node1 VIP Name * <input type="text"/> VIP Address * <input type="text"/>	Node1 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 OLTP, DSS, or IMDB.
- k. **Storage:** Select **ACFS** or **ASM**.
ASM is the default.
- 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** to configure the Oracle Enterprise Manager Database Express (EM Express) console.
- n. **Characterset:** Select a character set.
- o. **National Characterset:** Select a national character set.
- p. **Language:** Select the database language.
- q. **Territory:** Select a territory or location from the list.

Database Information

Create Initial Database Yes No

DB Name *
hrdb

DB Unique Name
hrdb:#1

CDB Yes No

PDB Name

PDB Admin User

Database Edition
Enterprise Edition

Deployment
RAC

Shape
ocb1(1 Core, 6.0GB Memory)

Database Class
OLTP

Storage
ASM

Data Files on Flash Storage Yes No

Characterset
AL32UTF8

National Characterset
AL16UTF16

Language
AMERICAN

Territory
AMERICA

Configure EM Express Yes No

- 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.

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.

5

Oracle Database Appliance Postinstallation Tasks

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

5.1 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.

5.2 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](#)
Use the `odacli-adm set-credential` command to change the `oda-admin` user credentials.

5.3 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

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.

6.1 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 6-1 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)	<code>oinstall</code>	1001	yes (primary group)	yes (primary group)
OSOPER for dbaoper group	<code>dbaoper</code>	1002	yes	yes
OSDBA group	<code>dba</code>	1003	no	yes
OSASM Group for Oracle ASM	<code>asmadmin</code>	1004	yes	no
OSOPER for ASM group	<code>asmoper</code>	1005	yes	no
OSDBA for ASM group	<code>asmdba</code>	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.

**Note:**

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

6.2 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.

6.3 Working with Databases

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

6.3.1 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.

Database	ID	CDB	DB Version	Shape	Storage	Actions
dbcore	2119b1d5-d347-4a34-9a62-c50746a010ab	false	12.2.0.1	odb36	ASM	View, Upgrade, Delete
db121	640905d6-70e9-4f1f-860d-f50539db0eac	true	12.1.0.2	odb4	ACFS	View, Upgrade, Delete
odacn	ba15a000-21e7-4086-abb0-8122ff5245ca	true	12.2.0.1	odb12	ASM	View, Upgrade, Delete

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

6.3.2 Creating a Database

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

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 18.2 is supported on both Oracle Automatic Storage Management (Oracle ASM) and Oracle ASM Cluster file system (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 the database version you select.

- Log into the Web Console:
`https://host-ip-address:7093/mgmt/index.html`
- Click the **Database** tab.
- Verify that **Auto Refresh Disabled** appears on the page.
- Click **Create Database** to display the Create New Database page.
- 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 18.2, select **Yes** or **No**, depending on whether or not you want the database to be a container database (CDB). The default is **Yes**.

- f. In the **PDB Name** field, enter a name for the pluggable database (PDB).

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.

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.

- 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 18.2. 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 18.2.0.0.0-180417. 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.

6.3.3 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 18.2.0.0.0-180417 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 18.2.0.0.0
```

(continued)

Home Location

```
-----
/u01/app/orauser/product/18.2.0.0.0/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 18.2.0.0.0.

```
# odacli create-dbhome -v 18.2.0.0.0
```

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 18.2.0.0.0 that uses an existing database home with ID `b727bf80-c99e-4846-ac1f-28a81a725df6`:

```
#odacli create-database -n PRODDB -v 18.2.0.0.0 -io -m -dh b727bf80-c99e-4846-ac1f-28a81a725df6
```

To create an instance only database named `PRODDB` with database version 18.2.0.0.0 and a database home:

```
#odacli create-database -n PRODDB -v 18.2.0.0.0 -io -m
```

6.3.4 Deleting a Database

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

1. Log into the Web Console:

```
https://host name or ip-address:7093/mgmt/index.html
```
2. Click the **Database** tab.
3. Click **Actions** next to the database that you want, then select **Delete**.
4. Confirm the action.

6.4 Working with Database Homes

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

6.4.1 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.

6.4.2 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/management/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.

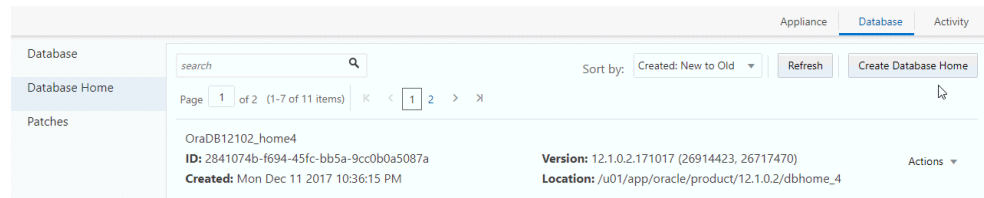
6.4.3 Creating a Database Home

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/management/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.

6.4.4 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.

6.5 Migrating Databases

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

6.5.1 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.

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.

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.

6.5.2 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/18.2.0.0.0/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 18.2.0.0.0 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/18.2.0.0.0/dbhome_2)
      (SID_NAME=PRODDB)
      (ENVS="TNS_ADMIN=/u01/app/oracle/product/18.2.0.0.0/dbhome_2/network/
admin"))
    )
```

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

```

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

```

6.5.3 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          rdbl           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;
}
```

6.5.4 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. 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",
  "updatedAt" : "August 08, 2016 05:55:49 AM EDT"
}
rpsandrap: ]# 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

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

6.6 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.

6.7 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 18.2.0.0.0, 12.2.0.1, and 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.

7

Managing Storage

Expand storage capacity and replace disks in Oracle Database Appliance.

7.1 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

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

7.2 Storage on Single Node Platforms

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

7.2.1 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 7-1 Storage Options for Oracle Database Appliance X7-2S and X7-2M

Configuration	Oracle Database Appliance X7-2S	Oracle Database Appliance X7-2M
Base Configuration	1 x 10 CPU 192 GB memory 2 x 6.4 TB NVMe	2 x 18 CPU 384 GB memory 2 x 6.4 TB NVMe
Expansion Options	None	Options: <ul style="list-style-type: none"> 384 GB memory (part number 7117433; quantity: 2) Three (3) NVMe Drives or Six (6) NVMe Drives

7.3 Storage on Multi Node Platforms

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

7.3.1 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:**

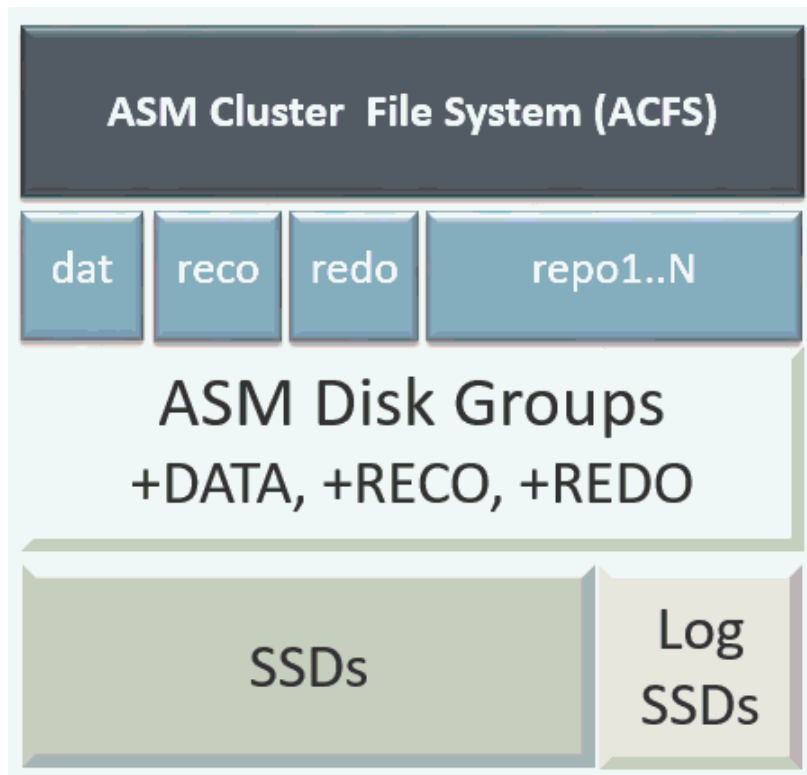
The base storage shelf must be fully populated before you can add an expansion shelf and the expansion shelf must have the same storage configuration as the base shelf. Once you select a base configuration, you cannot change the type of storage expansion.

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
- Expansion Storage shelf: additional shelf storage configuration must be identical to the storage configuration of the base shelf. See the topic *“Adding the Storage Expansion Shelf”* in this chapter, for the procedure to add the storage expansion shelf.

 **Note:**

When you expand storage to include HDD on the base storage shelf, 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.

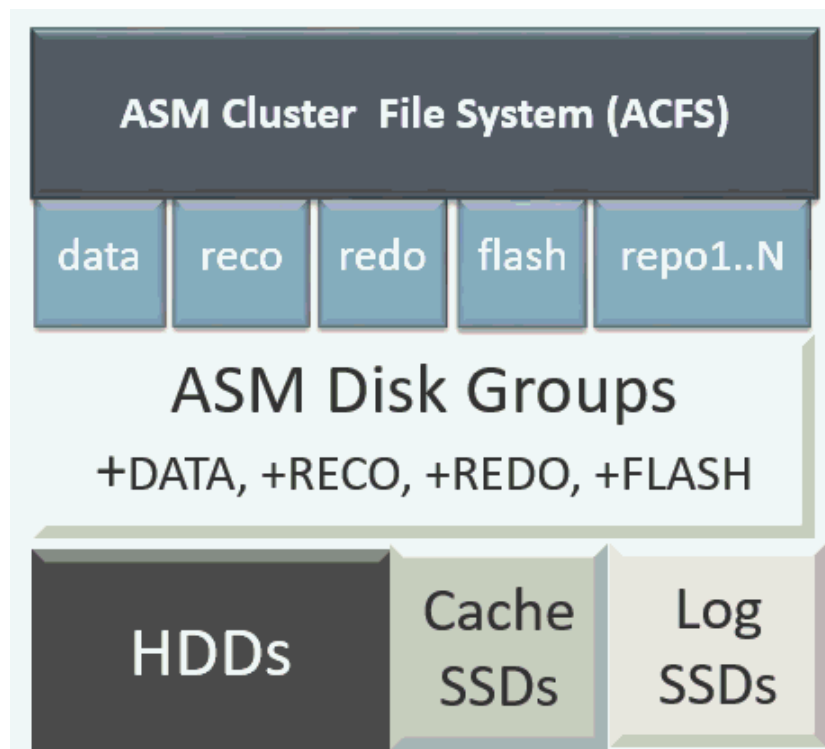


Table 7-2 Storage Options for Oracle Database Appliance X7-2-HA

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	<p>2 servers, each with:</p> <ul style="list-style-type: none"> • 2 x 18 CPU • 384GB memory <p>JBOD:</p> <ul style="list-style-type: none"> • 4 x 800GB SSD • 5 x 3.2TB SSD 	<p>2 servers, each with:</p> <ul style="list-style-type: none"> • 2 x 18 CPU • 384GB memory <p>JBOD:</p> <ul style="list-style-type: none"> • 4 x 800GB SSD • 20 x 3.2TB SSD 	<p>2 servers, each with:</p> <ul style="list-style-type: none"> • 2 x 18 CPU • 384GB memory <p>JBOD:</p> <ul style="list-style-type: none"> • 4 x 800GB SSD • 5 x 3.2TB SSD • 15 x 10TB HDD
Expansion Options	<p>Options:</p> <ul style="list-style-type: none"> • 768GB memory (part number 7117433, quantity: 6) • Options to fully populate the base configuration: <ul style="list-style-type: none"> – 5 pack 3.2 TB (part number 7117369; quantity 1, 2, or 3) – If the base is not fully populated with SSD, you can order 15 x 10TB HDD to the base. (part number 7117704) <p>Note: You must redeploy Oracle Database Appliance if you choose this option.</p> • Options for the Expansion Shelf: <ul style="list-style-type: none"> – You can only add an expansion shelf with the same storage configuration as the base configuration 	<p>Options:</p> <ul style="list-style-type: none"> • 768GB memory (part number 7117433, quantity: 6) • Expansion Shelf (part number 7117465): <ul style="list-style-type: none"> – 4 x 800GB SSD – 20 x 3.2TB SSD 	<p>Options:</p> <ul style="list-style-type: none"> • 768GB memory (part number 7117433, quantity: 6) • Expansion Shelf (part number 7117466): <ul style="list-style-type: none"> – 4 x 800GB SSD – 5 x 3.2TB SSD – 15 x 10TB HDD

8

Managing Networks

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

8.1 About Managing Networks

Create and manage virtual local area networks (VLANs) to provide network security isolation for multiple workloads that share a common network.

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. 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.

You can create VLANs using either the copper ports or SFP+ fiber physical ports for the network. You cannot add host bus adapters (HBA). The network interfaces differ, depending on your Oracle Database Appliance hardware. 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. Depending on the platform, the VLANs are created on `btbond0` or `bond0`.

Managing Virtual Local Area Networks (VLANs)

The command-line interface enables you to create, list, and delete VLANs. For a bare metal deployment, use the `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.

You can use the command-line interface to list all networks, or use the Web Console to display all physical and virtual networks.

 **See Also:**

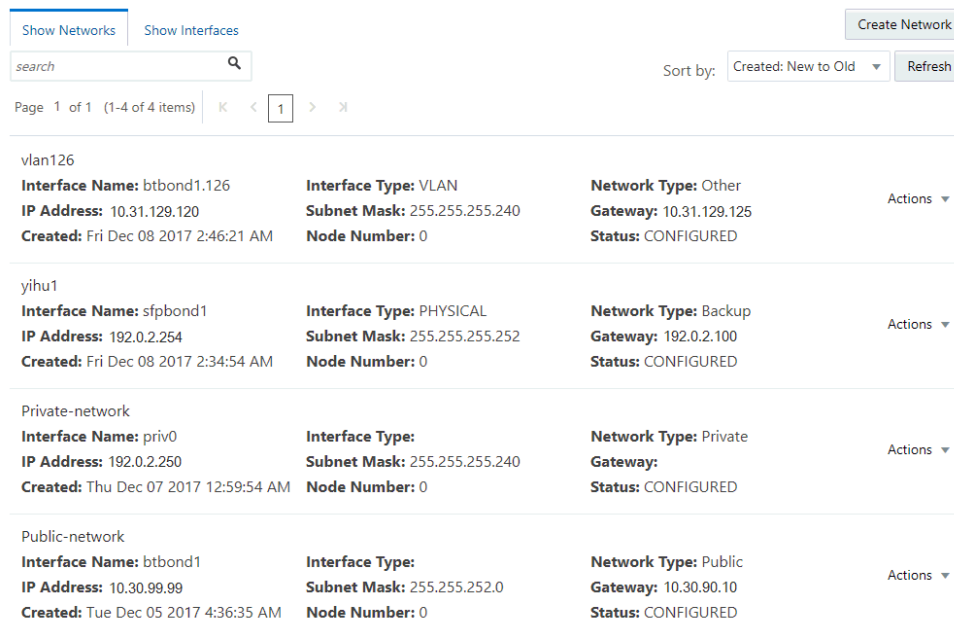
Oracle Database Appliance: Virtual Local Area Network White Paper at <http://www.oracle.com/technetwork/database/database-appliance/overview/oda-vp-vlan-2418821.pdf>

8.2 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	Subnet Mask	Network Type	Gateway	Status	Actions
vlan126	btbond1.126	VLAN	255.255.255.240	Other	10.31.129.125	CONFIGURED	Actions
yihu1	sfpbond1	PHYSICAL	255.255.255.252	Backup	192.0.2.100	CONFIGURED	Actions
Private-network	priv0		255.255.255.240	Private		CONFIGURED	Actions
Public-network	btbond1		255.255.252.0	Public	10.30.90.10	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.

8.3 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 in the 'Appliance' tab. It contains several fields: 'Name *', 'Interface *', 'Subnet Mask *', 'IP Address *', 'Gateway', 'Network Type', and 'Backup'. The 'Subnet Mask' field is set to '255.255.255.252'. The 'Network Type' dropdown is set to 'Backup'. There are 'Cancel' and 'Create' buttons at the bottom right.

8.4 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**.

Update Network

The screenshot shows the 'Update Network' form with the following fields and values:

Field	Value
IP Address	192.0.2.54
Subnet Mask	255.255.255.240
Gateway	
Network Type	Backup

8.5 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.

The screenshot shows a web-based network management interface. At the top, there are two tabs: "Show Networks" (selected) and "Show Interfaces". To the right is a "Create Network" button. Below the tabs is a search bar with the placeholder text "search" and a magnifying glass icon. To the right of the search bar is a "Sort by:" dropdown menu set to "Created: New to Old" and a "Refresh" button. Below the search and sort options is a pagination control showing "Page 1 of 1 (1-4 of 4 items)" and navigation arrows. The main content area displays a table with one row of network information:

vlan126	Interface Name: btbond1.126	Interface Type: VLAN	Network Type: Other
	IP Address: 10.31.129.120	Subnet Mask: 255.255.255.240	Gateway: 10.31.129.125
	Created: Fri Dec 08 2017 2:46:21 AM	Node Number: 0	Status: CONFIGURED

To the right of the table is an "Actions" dropdown menu with two options: "Delete" and "Update". A mouse cursor is pointing at the "Update" option.

5. Confirm the action when prompted.

9

Backup, Restore and Recover Databases

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

9.1 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)



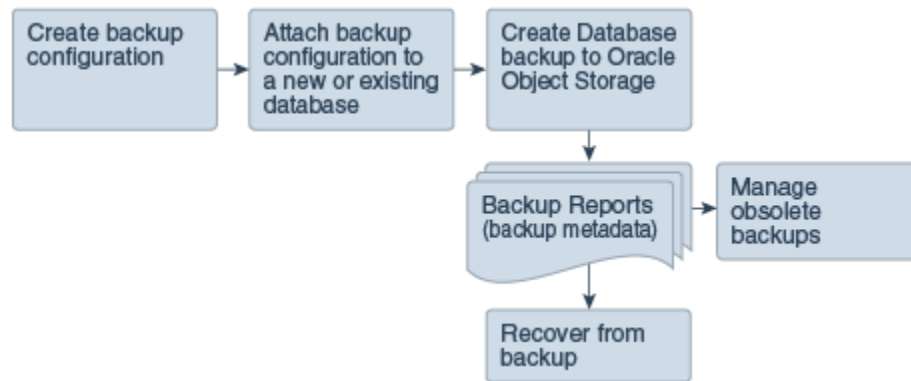
Note:

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.

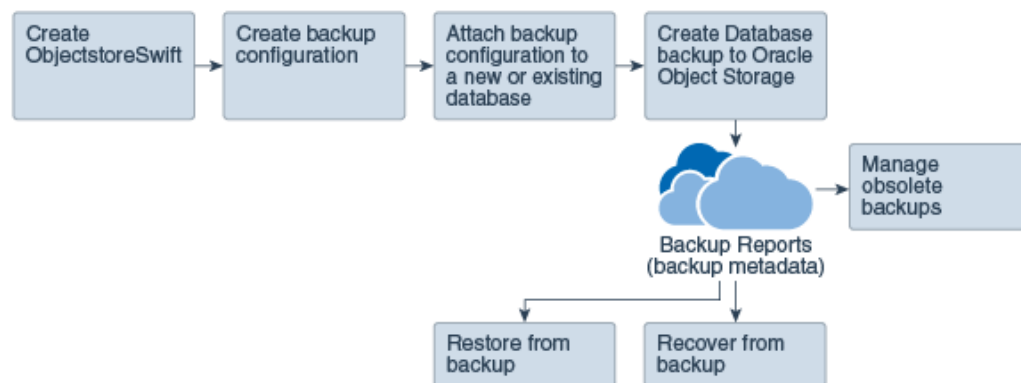
 **Note:**

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](#)
Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.

9.2 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

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 `dcs-agent` schedules daily automatic backups for the database.

9.3 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 or 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.

9.4 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.

9.5 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.

9.6 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.

9.7 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.

9.8 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_namecnl/
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_namecnl/
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"
  },
  "updatedTime" : "January 08, 2018 12:44:12 PM UTC",
  "backupReportLogDetail" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/
system_namecnl/
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.

9.9 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
```

9.10 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.

9.11 Using the CLI to Backup, Restore, and Recover

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

9.11.1 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](#)
Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.

9.11.2 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](#)
Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.
- [Oracle Store](#)

9.11.3 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_HRLevel0` 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
```

9.11.4 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_namecn1/
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_namecn1/
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_namecn1/
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 -i jobId
```

Related Topics

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

10

Oracle Database Appliance Command-Line Interface

The command-line interface has different classes of tools to manage Oracle Database Appliance.

10.1 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 10-1 Command-Line Interface Syntax

```
# odacli create-database -h
```

```
Usage: create-database [options]
```

```
Options:
```

```
* --adminpassword, -m
    Password for SYS,SYSTEM and PDB Admin
--backupconfigid, -bi
    Backup Config ID
--cdb, -c
    Create Container Database (Inverse option: --no-cdb/-no-c)
--characterset, -cs
    Character Set (default:AL32UTF8)          Default: AL32UTF8
--databaseUniqueName, -u
    database unique name
```

```

--dbclass, -cl
    Database Class EE: OLTP/DSS/IMDB, SE: OLTP      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
--nlscharacterst, -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
```

10.2 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 10-2 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/scaodal011/
tools/18.2.0.0.0/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: OraDb18200_home3 at
/u01/app/oracle/product/18.2.0.0.0/dbhome_3

Please select one of the following for Database type [1 .. 3]:
1 => OLTP
2 => DSS
3 => In-Memory
```

Example 10-3 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
Cmd_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.
```

10.3 Configure Command

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

10.3.1 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 10-4 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 10-5 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 ]

```

10.4 odacli Apply Patch and Update Commands

Use the commands `odacli update` and `apply patch` to apply patches and update the appliance.

10.4.1 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.

Parameter	Description
--json, -j	(Optional) Displays JSON output. The default is false.
--local	(Optional) Describes the components for the local node. Use to display details on the local node of multi-node high availability (HA) systems. This option is not needed to display component details on single node systems.
--node, -v	(Optional) Describes the components for a specific node on multi-node high availability (HA) systems. This option is not needed to display component details on single node systems. {0 1}
--server, -s	(Optional) Lists the server components and versions and the available versions to which you can patch them.

Usage Notes

Use the `odacli describe-component` command to get component details. On a multi-node environment, the command provides details across all nodes. Use the `--node` or `--local` option to get component details for a specific node.

Example 10-6 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 10-7 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 10-8 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
```

10.4.2 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
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

Example 10-9 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
```

10.4.3 odacli create-prepatchreport

Use the `odacli create-prepatchreport` command to run pre-checks for patching.

Patching pre-checks help identify and remedy any problems before attempting to patch, and ensure all components are ready for updates.

File Path`ORACLE_HOME/opt/oracle/dcs/bin/odacli`**Syntax**`odacli create-prepatchreport -v -s`**Parameters**

Parameter	Description
<code>--dbhome, -d</code>	(Optional) Specifies the database home component for running the pre-checks.
<code>--dbhomeid, -i</code>	(Optional) Specifies the IDs of the database homes for running the pre-checks.
<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, -l</code>	(Optional) Runs patch pre-checks only on the local node.
<code>--node, -n</code>	(Optional) Runs patch pre-checks on specified nodes.
<code>--server, -s</code>	(Optional) Specify this option to run the patch pre-checks for the server components.
<code>--version, -v</code>	(Optional) Specifies the version for running the pre-checks.

Usage Notes

Use the `odacli create-prepatchreport` command to generate a pre-check report. Use the `--node` or `--local` option to run the patch pre-checks on specific nodes or the local node.

Example 10-10 Creating Pre-Check Report

```
# odacli create-prepatchreport -v 18.2 -s
Job details
-----
                ID: e54ff307-84d1-40e4-b604-4b3e47f315de
Description:    Run pre-checks for patching
                Status: Created
                Created: May 18, 2018 6:14:18 AM GMT
                Message:
Task Name      Start Time    End Time      Status
-----
```

10.4.4 odacli describe-prepatchreport

Use the `odacli describe-prepatchreport` command to display the pre-check report, with a list of pre-checks run with status and comments.

Patching pre-checks help identify and remedy any problems before attempting to patch, and ensure all components are ready for updates.

File Path`ORACLE_HOME/opt/oracle/dcs/bin/odacli`

Syntax

```
odacli describe-prepatchreport -i
```

Parameters

Parameter	Description
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--jobid, -i	Specifies the Job ID for the pre-check report.

Usage Notes

Use the `odacli describe-prepatchreport` command to display the pre-check report.

Example 10-11 Displaying the Patch Pre-Checks Report

```
# odacli describe-prepatchreport -i 39ef1eeb-70d3-47ad-b3f5-48960ca0607b
Patch pre-check report
```

```
-----
                Job ID: 39ef1eeb-70d3-47ad-b3f5-48960ca0607b
                Description: Pre-Check report for patching [GI, ILOM, OS]
                Status: COMPLETED
                Result: One or more pre-checks failed for [GI]
Node Name
-----
node n1
Pre-Check          Status      Comments
-----
  __OS__
Validate patching tag      Success      Validated patching tag: 12.2.1.2.0
Is patch location available  Success      Patch location is available
Verify OS patch            Success      There are no packages available
                                for an update
  __ILOM__
Validate patching tag      Success      Validated patching tag: 12.2.1.2.0
Is patch location available  Success      Patch location is available
Checking Ilom patch Version  Success      Successfully verified the versions
Patch location validation    Success      Successfully validated location
  __GI__
Is clusterware running     Success      Clusterware is running
Validate patching tag      Success      Validated patching tag: 12.2.1.2.0
Validate available space    Success      Validated free space under /u01
Is system provisioned       Success      Verified system is provisioned
Validate minimum agent version  Success      GI patching enabled in current
                                DCSAGENT version
Validate GI patch metadata   Failed       Internal error encountered:
                                patchmetadata for 12.2.1.2.0
                                missing target version for GI.
Is patch location available  Success      Patch location is available
Patch location validation    Failed       Internal error encountered:
                                specified location
Patch verification          Failed       Internal error encountered: Unable
                                to get patch number on node
                                n1.
Opatch updation            Success      Successfully updated the opatch in
                                GiHome /u01/app/12.2.0.1/grid on
```

```
node n1
Patch conflict check          Failed      Internal error encountered:
                               Invalid patch location in metadata.
```

Example 10-12 Example of a Successful Patch Pre-Checks Report

```
# odacli describe-prepatchreport -i aec9373c-96aa-43ce-9aae-8091ec9cd4eb
Patch pre-check report
-----
                Job ID:  aec9373c-96aa-43ce-9aae-8091ec9cd4eb
Description:    Pre-Check report for patching [DB]
                Status:  COMPLETED
                Result:  All pre-checks succeeded

Node Name
-----
node1
Pre-Check          Status      Comments
-----
  __DB__
Validate patching tag          Success    Validated patching tag: 12.2.1.2.0
Validate available space      Success    Validated free space required
                               under /u01
Is system provisioned         Success    Verified system is provisioned
Is patch location available   Success    Patch location is available
Validate minimum agent version Success    Validated minimum agent version
Verify DBHome patch tag      Success    Verified DB Home patch tag
Is GI upgraded                 Success    Validated GI is upgraded
Patch location validation     Success    Successfully validated location
Patch verification            Success    Patch 26710464 not applied on DB
                               home
Is patch rollback required    Success    No DB patch is required to rollback
Opatch updation               Success    Successfully updated the opatch in
                               DbHome
Patch conflict check          Success    No patch conflicts found on DBHome
```

10.4.5 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
<code>--dbhomeid, -i</code>	Defines the Oracle Database Home to update.
<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>--local, -v</code>	Updates the Database Home locally.
<code>--precheck, -v</code>	Analyzes the patch.
<code>--version, -v</code>	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 10-13 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
```

10.4.6 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 10-14 Updating the Agent

To update the `dcs-agent` to version 18.212.1.2.10:

```
# odacli update-dcsagent -v 18.2
{
  "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "July 26, 2018 14:09:24 PM CST",
  "description" : "DcsAgent patching",
  "updatedAtTime" : "July 26, 2018 14:09:24 PM CST"
}
```

10.4.7 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_lof2.zippart` and `oda-sm-12.2.1.1.0-171031-server_2of2.zippart`

```
# cat oda-sm-12.2.1.1.0-171031-server_lof2.zippart oda-sm-12.2.1.1.0-171031-server_2of2.zippart > oda-sm-12.2.1.1.0-171031-server.zip
```

4. Concatenate the zip files into a single zip file. For example, a file named `oda-sm-12.2.1.1.0-171031-server.zip`.

```
# cat oda-sm-12.2.1.1.0-171031-server_lof2.zippart oda-sm-12.2.1.1.0-171031-server_2of2.zippart > oda-sm-12.2.1.1.0-171031-server.zip
```

The file is named `oda-sm-12.2.1.1.0-171031-server.zip`

5. Use the concatenated zip file to update the repository

File Path

`$ORACLE_HOME/opt/oracle/dcs/bin/odacli`

Syntax

To unpack and copy the patch bundle to the correct locations in the file system:

```
odacli update-repository -f filename [-j] [-h]
```

Parameters

Parameter	Description
<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 10-15 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" : "July 26, 2018 14:13:45 AM CST",
"description" : "Repository Update",
"updatedAt" : "July 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           July 26, 2018 14:19:05 AM CST  Success

```

10.4.8 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 10-16 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",
  "updatedAt" : "November 7, 2017 14:13:45 PM CST"
}
```

10.4.9 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 10-17 Updating the Storage**

```
# odacli update-storage -v 12.2.1.1.0
```

10.5 odacli Appliance Commands

Use the `odacli appliance` commands to perform lifecycle activities for the appliance.

10.5.1 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.

10.5.2 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 10-18 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
```

10.6 odacli Backup and Recovery Commands

Use the `odacli backup` and `odacli recover` commands to backup to and restore from Oracle Cloud Infrastructure Object Storage or disk.

Topics:

10.6.1 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
--backupType, -bt {Regular-L0 Regular-L1 Longterm}	Defines the type of backup. The options are not case sensitive.
--component, -c {Database}	(Optional) Defines the component. Database is the only supported option.
--dbid, -i	Defines the Database Resource ID.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--keepDays, -k	Defines the Keep Days. For Longterm Backup Type only.
--tag, -t	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 10-19 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 10-20 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
```

10.6.2 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 10-21 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
```

10.6.3 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.

10.6.4 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 10-22 Delete a Level 0 or Level 1 Backup

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

Example 10-23 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
```

10.6.5 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.

Parameter	Description
--id, -i	Defines the Backup Config identifier (ID).
--json, -j	(Optional) Displays JSON output. The default is false.

Usage Notes

You cannot delete a backup configuration if it is attached to a database.

Example 10-24 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
```

10.6.6 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
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--objectstoreswiftid, -i	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 10-25 Deleting the Oracle Object Store Credentials

```
# odacli delete-objectstoreswift -i Object Store Swift id
```

10.6.7 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 10-26 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"
  },
  "updatedAtTime" : "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"
}

```

10.6.8 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 10-27 Display Schedule Details

```
# odacli describe-schedule -i scheduleid
```

10.6.9 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
--backupPassword(s), -bp	(Optional) Defines the RMAN password for recovery. You can provide more than one password, but the passwords must be separated by a comma(,).
--backupReport, -r	JSON input for a backup report.
--dbClass, -cl {EE: OLTP/DSS/IMDB, SE: OLTP}	(Optional) Defines the Database class.
--dbConsoleEnable, -co	(Optional) Enables the Database Console.
--dbShape, -s {odb1,odb2, and so on}	(Optional) Defines the database shape.
--dbStorage, -dr {ACFS ASM}	(Optional) Defines the database storage. Database Storage {ACFS ASM} (non case-sensitive). The default is ASM.
--dbType, -y	(Optional) Defines the type of database. The default is single instance (SI).
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--noOfRmanChannels, -c	(Optional) Defines the number of RMAN channels (parallelism) Default: SE Edition: 1, Other Enterprise Editions: 5
--objectStoreId, -oid	Defines the Swift Object Store credential ID
--sysPassword, -m	Defines the password for the SYS user.
--tdePassword, -tp	(Optional) Defines the password for the TDE Wallet.
--tdefilesLocation, -tf	(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 10-28 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 10-29 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
```

10.6.10 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 10-30 Display a List of all Backup Reports

```
# odacli list-backupreports
```

10.6.11 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

Parameter	Description
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

Example 10-31 Displaying a List of Backup Configuration

Display a list of backup configurations.

```
# odacli list-backupconfig -d Disk -n production -w 14
```

10.6.12 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
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.

Example 10-32 Displaying a List of ObjectStore Swift Credentials

```
# odacli list-objectstoreswifts
```

10.6.13 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

Parameter	Description
<code>--json, -j</code>	(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 10-33 Display a List of Scheduled Database Backups

Display a list of all scheduled database backups and details.

```
# odacli list-schedules
```

10.6.14 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
<code>--executionid, -e</code>	(Optional) Displays the execution 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>--scheduleid, -id</code>	Defines the schedule with an identifier (ID).

Example 10-34 Display a List of Executed Schedules

```
# odacli list-schedule
```

10.6.15 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
--backupReport, -br{Regular-L0 Regular-L1 Longterm}	(Optional) JSON input for a backup report.
--dbid, -i	Defines the Database Resource ID.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--recoveryTimeStamp, -r	(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).
--recoverytype, -t {Latest PITR SCN}	(Optional) Defines the recovery type. Do not provide the recovery type if you define the Backup Report.
--rmanrecoverypassword(s), -p	(Optional) Defines the password for recovery. You can provide more than one password, but the passwords must be within single quote separated by comma(,).
--scn, -s	(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 10-35 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 10-36 Recovering a Database to the Latest

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

Example 10-37 Recovering a Database to an SCN

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


10.6.16 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 10-38 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
```

10.6.17 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 10-39 Associating a Backup Configuration with a Database

```
# odacli update-database -i database resource ID -bi backup configuration ID -hrp hidden RMAN backup password
```

Example 10-40 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-9bf8-0de83ed279e5 -bp
```

Example 10-41 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
```

10.6.18 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 10-42 Changing the Oracle Casper ObjectStore Password

```
# odacli update-objectstoreswift -i Object Store Swift id -p swift password
```

Example 10-43 Changing the Oracle ObjectStore User Name

```
# odacli update-objectstoreswift -i Object Store Swift id -u Object Store user name
```

10.6.19 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, to generate a valid cron expression.

Example 10-44 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 10-45 Disable Scheduled Database Backups

```
# odacli update-schedule -i scheduleid -d
```

10.7 odacli CPU Core Commands

Use the CPU Core commands to enable CPU cores and display current and historical CPU core configurations.

10.7.1 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 10-46 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
```

10.7.2 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

Example 10-47 Displaying the Current Core Configuration

```
# odacli describe-cpucore
```

```
Node Cores Modified Job Status
-----
0 8 July 25, 2016 9:39:59 AM SGT Configured
```

10.7.3 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
<code>--cores, -c</code>	Defines the number of cores to be enabled in the system.
<code>--help, -h</code>	(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 10-48 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
}
```

10.8 odacli Database Commands

Use the `odacli database` commands to perform database lifecycle operations.

10.8.1 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
--help, -h	(Optional) Displays help for using the command.

Example 10-49 Displaying a List of Databases

Display a list of databases:

```
# odacli list-databases
```

```
ID
-----
ad6c7326-e460-411e-94df-230dedbef743
fb4d02f3-2413-47ca-8584-a768e23ec2e7

DB Name      DB Version  CDB
-----
rdb121a      12.1.0.2    true
eel2db       12.1.0.2    false
```

(Continued)

```
Class  Shape  Storage  Status
-----
OLTP   odb1   ACFS     Configured
IMDB   odb1   ASM      Configured
```

10.8.2 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
--dbid, -i	Identifies the database home identifier (ID) to display. Use the <code>odacli list-databases</code> command to obtain the dbid.
--json, -j	(Optional) Displays JSON output.
--help, -h	(Optional) Displays help for using the command.

Example 10-50 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: rdbl
DB Name: rdbl
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
```

10.8.3 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"> Enterprise Edition: OLTP, DSS, or IMDB. Standard Edition: OLTP

Parameter	Description
--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.
--dbhomeid, -dh	(Optional) Identifies the existing Database Home ID.
--dblanguage, -l	Defines the database language. The default language is AMERICAN.
--dbname, -n	Defines the name given to the new database (dbname.)
--dbshape, -s	Identifies the database shape (template) and determines the total memory allocated to the database. For example, odb1 and odb2. The default is odb1.
--dbstorage, -r{ACFS ASM}	Defines the Database Storage, either Oracle ACFS or Oracle ASM. The default value is Oracle ASM.
--dbterritory, -dt	Defines the database territory. The default territory is AMERICA.
--dbtype, -y [SI]	Defines the database type. The default database type is SI.
--help, -h	(Optional) Displays help for using the command.
--instanceonly, -io	(Optional) Creates a database instance, password file and also the underlying Oracle ACFS mount point. You can use the instance as an auxiliary instance for RMAN duplicate.
--json, -j	(Optional) Displays JSON output.
--nlscharacteraset, -ns	Defines the NLS National Character Set. The default is AL16UTF16.
--no-cdb, -no-c	(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.
--no-dbconsole, -no-co	(Optional) Disables Database Console. Use the <code>-co</code> flag to enable Database Console.
--pdbadmin, -d	Defines the Pluggable Database (PDB) Admin User.
--pdbname, -p	Defines the Pluggable Database (PDB) name. The default value is pdb1.
--version, -v	Defines the database bundle patch number. To install the latest bundle patch for a release, specify 11.2.0.4 or 12.1.0.2. The default version is 12.1.0.2. To specify a specific supported bundle, use the 5 digit format. For example, 12.1.0.2.170814 or 11.2.0.4.170814.

Usage Notes

- 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 10-51 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" : "July 26, 2018 03:54:03 AM EDT",
  "description" : "Database service creation with db name: hrdb",
  "updatedAtTime" : "July 26, 2018 03:54:03 AM EDT"
}
```

Example 10-52 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" : "July 26, 2018 03:59:22 AM EDT",
  "description" : "Database service creation with db name: crmdb",
  "updatedAtTime" : "July 26, 2018 03:59:22 AM EDT"
}
```

Example 10-53 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
```

10.8.4 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
<code>--backupconfigid, -bi</code>	(Optional) Defines the backup configuration identifier for future use.
<code>--dbclass, -c {OLTP DSS IMDB}</code>	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"> Enterprise Edition: OLTP, DSS, or IMDB. Standard Edition: OLTP
<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>--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>--dbtype, -t [SI]</code>	Defines the type of database. The database type is Single Instance. The default is SI.
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--hostname, -o</code>	Defines the host name. Default: local host name
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--no-dbconsole, -no-co</code>	(Optional) Disables Database Console. Use the <code>-co</code> flag to enable Database Console.

Parameter	Description
<code>--servicename, -sn</code>	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.
<code>--syspassword, -p</code>	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 10-54 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",
  "updatedAt" : "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

10.8.5 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 10-55 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
```

10.9 odacli DBHome Commands

Use the `odacli DBHome` commands to manage database Home operations.

10.9.1 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
<code>--help,-h</code>	(Optional) Displays help for using the command.
<code>--json,-j</code>	(Optional) Displays JSON output.

Example 10-56 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
```

10.9.2 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
<code>-i dbhomeid</code>	Identifies the database home ID. Use the <code>odacli list-dbhomes</code> command to get the <code>dbhomeid</code> .
<code>--help, -h</code>	(Optional) Displays help for using the command.
<code>--json, -j</code>	(Optional) Displays JSON output. The default is false.
<code>-vdbversion</code>	(Optional) Identifies the Database Home Version. Use the <code>odacli list-dbhomes -v</code> command to get the <code>dbversion</code> .

Example 10-57 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
```

10.9.3 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
<code>-v version number</code>	Defines the database bundle patch number.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--help, -h</code>	(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 10-58 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
```

10.9.4 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 10-59 Deleting an Empty Database Home

```
# odacli delete-dbhome -i 0ce547ca-3df2-4178-a7e6-eeefa613aeab4
```

10.10 odacli Database Storage Commands

Use the Database Storage commands to list, describe, create, and delete Oracle database storage.

10.10.1 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 10-60 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

10.10.2 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 10-61 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 10-62 Displaying Database Oracle ASM Storage Details

The following example displays Oracle Automatic Storage Management (Oracle ASM) storage details:

```
# odacli describe-dbstorage -i 4f2alb59-ca66-4d80-951c-425ab7b0acae

DBStorage details
-----
ID: 4f2alb59-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
```

10.10.3 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
--dbname, -n	Defines the name of the database.
--dataSize, -s	(Optional) Defines the size, in gigabytes (GB), of the filesystem for storing database files and temp files. The default is: 100 GB The minimum size is 10 GB. When entering the size, do not include GB. For example, for 50 GB, use 50.
--databaseUniqueName, -u	(Optional) Defines a unique name for the database. Specify only if the database unique name is different than the database name. The command creates the following mount point: <code>/u02/app/oracle/oradata/db unique name</code>
--dbstorage, -r [ASM ACFS]	(Optional) Defines the type of database storage, either ASM or ACFS. When you select ASM, the command only creates the supporting directory structure for storing non-database files. The default is: ASM

Parameter	Description
--help, -h	(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 10-63 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",
  "updatedAtTime" : "August 09, 2016 06:19:35 AM WSST"
}
```

10.10.4 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 10-64 Deleting Empty Database Storage

```
# odacli delete-dbstorage -i 9fe39332-cc1a-4b4b-8393-165524a6ef6b
```

10.11 odacli Job Commands

Use the `odacli list-jobs` and `odacli describe-job` commands to display job details.

10.11.1 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
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--help, -h</code>	(Optional) Displays help for using the command.

Example 10-65 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

10.11.2 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
<code>--jobid, -i <i>jobid</i></code>	Identifies the job. To get the job identifier (<i>jobid</i>), run the <code>list-jobs</code> command.
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--help, -h</code>	(Optional) Displays help for using the command.

Example 10-66 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
```

10.11.3 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 10-67 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
```

10.12 odacli Network Commands

Use the `odacli network` commands to list and describe network interfaces.

10.12.1 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
--json, -j	(Optional) Displays JSON output.
--help, -h	(Optional) Displays help for using the command.

Example 10-68 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
```

10.12.2 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
--id, -i	Identifies the network ID. Use the <code>odacli list-networks</code> command to obtain the <code>id</code> .
--json, -j	(Optional) Displays JSON output.
--help, -h	(Optional) Displays help for using the command.

Example 10-69 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
```

10.12.3 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 10-70 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
```

10.12.4 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|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 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 10-71 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
```

10.12.5 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.
--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 10-72 Deleting a Network

The following example deletes a backup network with a network ID of 55db39db-d95c-42c5-abbd-b88eb99b83ec.

```
# odacli delete-network -i 55db39db-d95c-42c5-abbd-b88eb99b83ec
```

```
"jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
"status" : "Running",
"message" : null,
"reports" : [ {
  "taskId" : "TaskSequential_137",
  "taskName" : "deleting network",
  "taskResult" : "Running",
  "startTime" : "July 26, 2018 23:14:32 PM EDT",
  "endTime" : "July 26, 2018 23:14:32 PM EDT",
  "status" : "Running",
  "taskDescription" : null,
  "parentTaskId" : "TaskSequential_135",
  "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
  "tags" : [ ],
  "reportLevel" : "Info",
  "updatedAt" : "July 26, 2018 23:14:32 PM EDT"
},{
  "taskId" : "TaskZJsonRpcExt_142",
  "taskName" : "Setting up Network",
  "taskResult" : "Network setup success",
  "startTime" : "July 26, 2018 23:14:32 PM EDT",
  "endTime" : "July 26, 2018 23:14:32 PM EDT",
  "status" : "Success",
  "taskDescription" : null,
  "parentTaskId" : "TaskParallel_141",
  "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
  "tags" : [ ],
  "reportLevel" : "Info",
  "updatedAt" : "July 26, 2018 23:14:32 PM EDT" } ],
"createTimestamp" : "July 26, 2018 23:14:32 PM EDT",
"description" : "Network service delete",
"updatedAt" : "July 26, 2018 23:14:32 PM EDT"
}
```

10.13 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.

10.13.1 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 10-73 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 WSST
Message:
```

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

Example 10-74 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.

10.13.2 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
--asrip, -i	(Optional) Identifies the external Oracle ASR Manager IP address.
--asrpassword, -a	Defines the My Oracle Support password associated with the user name. Use this option to specify the password interactively. When using this option, do not enter the password in the command-line.
--asrtype, -e [internal external]	Defines the Oracle ASR Configuration Type. The default is internal.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output.
--proxypassword, -ppwd	(Optional) Defines the proxy user password.
--proxyport, -t	(Optional) Defines the proxy server port.
--proxyserver, -r	(Optional) Defines the Proxy Server Address.
--proxyuser, -y	(Optional) Defines the proxy user name needed to authenticate the proxy server.
--snmpversion, -s [v2 v3]	(Optional) Defines Simple Network Management Protocol (SNMP) Version 2 or SNMP Version 3. The default is v2.
--username, -u	Defines the Oracle ASR user name. The user name is the My Oracle Support user name under which the server is registered.

Usage Notes

- 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 10-75 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

10.13.3 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 10-76 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
```

10.13.4 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
<code>--help, -h</code>	(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 10-77 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
-----
```

10.13.5 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 10-78 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",
  "updatedAtTime" : 1469409622458
}
```

10.14 odacli OS Commands

Use the `odacli OS` commands to list and update operating system (OS) parameters.

10.14.1 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
--help, -h	(Optional) Displays help for using the command.
--json, -j	(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 10-79 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

10.14.2 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 10-80 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",
  "updatedAt" : "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
```

10.15 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.

10.16 odaadmcli Hardware Monitoring Commands

Use the `hardware monitoring` commands to display hardware configurations.

10.16.1 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
--help, -h	(Optional) Displays help for using the command.

10.16.2 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
--help, -h	(Optional) Displays help for using the command.

Example 10-81 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
```

10.16.3 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
--help, -h	(Optional) Displays help for using the command.

Example 10-82 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

10.16.4 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

Example 10-83 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

10.16.5 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

Example 10-84 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)       -
```

10.16.6 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

Example 10-85 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

10.16.7 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
<code>--help, -h</code>	(Optional) Displays help for using the command.

Example 10-86 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

10.16.8 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
--help, -h	(Optional) Displays help for using the command.

Example 10-87 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
```

10.17 odaadmcli Storage Commands

Use the `odaadmcli storage` commands to perform storage diagnostics.

10.17.1 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
--enclosure {0 1}	Defines the JBOD or shelf number. The base storage shelf is 0. The storage expansion shelf is 1. This option is only available for multi-node platforms. It is not supported on Oracle Database Appliance X7-2S and X7-2M single node platforms.
--help, -h	(Optional) Displays help for using the command.

Parameter	Description
-ndisk	Defines the number of disks to be added in the enclosure.

Usage Notes

Various storage options are available. On multi-node platforms, the base storage is SSD and you can choose to add either SSD or HDD disks. When adding a storage expansion shelf, all disks must be the same type (you cannot combine SSD and HDD disks).

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 10-88 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 10-89 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 10-90 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 10-91 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 ...
```

10.17.2 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 pd_[0..3].
--help, -h	(Optional) Displays help for using the command.

Example 10-92 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 10-93 Displaying the Status of a Single Disk

To display the status of a disk named pd_00:

```
# odaadmcli show disk pd_00

The Resource is : pd_00
ActionTimeout : 1500
ActivePath : /dev/nvme0n1
  AsmDiskList : |data_00||reco_00|
AutoDiscovery : 1
AutoDiscoveryHi : |data:80:NVD||reco:20:NVD|
CheckInterval : 300
ColNum : 0
CriticalWarning : 0
DependListOpr : add
  Dependency : |0|
DiskId : 360025380144d5332
DiskType : NVD
Enabled : 1
ExpNum : 19
HbaPortNum : 10
IState : 0
Initialized : 0
IsConfigDepende : false
  ModelNum : MS1PC2DD3ORA3.2T
  MonitorFlag : 1
MultiPathList : |/dev/nvme0n1|
Name : pd_00
NewPartAddr : 0
OSUserType : |userType:Multiuser|
PlatformName : X7_1_LITE_S
PrevState : Invalid
PrevUsrDevName :
SectorSize : 512
SerialNum : S2LHNAAH000001
Size : 3200631791616
SlotNum : 0
SmartDiskWarnin : 0
SmartTemperatur : 37
State : Online
StateChangeTs : 1465263789
```

```

StateDetails : Good
TotalSectors : 6251233968
TypeName : 0
UsrDevName : NVD_S00_S2LHNAAH101026
VendorName : Samsung
gid : 0
  mode : 660
uid : 0

```

10.17.3 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 10-94 Listing All Diskgroups

```
# odaadmcli show diskgroup
```

```

DiskGroups
-----
DATA
RECO

```

Example 10-95 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

```

10.17.4 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
<code>controller_id</code> , <i>id</i>	Defines the controller.
<code>--help</code> , <code>-h</code>	(Optional) Displays help for using the command.

Example 10-96 Showing Controller Details

```
# odaadmcli show controller 1
Controller [1] information:
  sun-controller-id = nvme:1b:00.00
  sun-id = nvme:1b:00.00
  sun-controller-manufacturer = Samsung
  pci-vendor-id = 0x0000144d
  sun-controller-model = 0xa821
  pci-device-id = 0x0000a821
  sun-controller-type = NVMe
  sun-card-manufacturer = Sun Microsystems
  pci-subvendor-id = 0x0000108e
  sun-card-model = 0xa803
  pci-subdevice-id = 0x0000a803
  pci-address = 1b:00.0
  sun-version-firmware = KPYA7R3Q
  sun-serial-number = S2LHNAAH101008
  sun-product-name = MS1PC2DD3ORA3.2T
  pci-slot-number = 11
  nvme-power-control = 1
  sun-nac-name = /SYS/DBP/NVME1
```

10.17.5 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 10-97 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%
```

10.17.6 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 10-98 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 = MS1PC2DD30RA3.2T
  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 =====

```

10.17.7 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 disk_name</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 10-99 Displaying NVMe Details

To display detailed information for NVMe `pd_00`:

```
# odaadmcli stordiag pd_00
```

10.17.8 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 10-100 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
```

10.17.9 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 10-101 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 10-102 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
```

10.18 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:

10.18.1 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.
-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 10-103 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 10-104 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
```

10.18.2 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
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output.
-node {0 1}	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 10-105 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 10-106 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
```

10.18.3 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 10-107 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
```

10.19 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
<code>--password, -p</code>	Agent password. The Agent password is needed to access the Oracle Appliance Manager Web Console.
<code>--username, -u</code>	User name required to access the Oracle Appliance Manager Web Console. The default user name is <code>oda-admin</code> .
<code>--json, -j</code>	(Optional) Displays JSON output.
<code>--help, -h</code>	(Optional) Displays help for using the command.

Usage Notes

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

Example 10-108 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
```

11

Validating and Troubleshooting Oracle Database Appliance

This chapter contains information about how to validate changes and troubleshoot Oracle Database Appliance problems.

11.1 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>

11.2 Troubleshooting Tools and Commands

This section describes additional tools and commands for diagnosing and troubleshooting problems with Oracle Database Appliance.

11.2.1 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 OELRHEL 6 4.1.12-94.4.1.el6uek.x86_64
CRS Home - Version	/u01/app/12.2.0.1/grid - 12.2.0.1.0
DB Home - Version - Names	/u01/app/oracle/product/12.2.0.1/dbhome_1 - 12.2.0.1.0 - 2 /u01/app/oracle/product/12.1.0.2/dbhome_1 - 12.1.0.2.0 - tb12 /u01/app/oracle/product/11.2.0.4/dbhome_1 - 11.2.0.4.0 - sam11
Number of nodes	1
Database Servers	1
orachk Version	12.1.0.2.7_20160526
Collection	orachk_myhost 003_PDB1_110117_132904.zip
Duration	2 mins, 38 seconds
Executed by	root
Arguments	-noupgrade
Collection Date	01-Nov-2017 13:29:28

Table of Contents

- [Database Server](#)
- [Top 10 Time Consuming Checks](#)

Report Feature

- Show Failed checks only
- Show 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

11.2.2 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 storddiag n
```

For example, to display detailed information for NVMe *pd_00*:

```
# odaadmcli storddiag pd_00
```

11.2.3 Trace File Analyzer Collector

Trace File Analyzer (TFA) Collector simplifies diagnostic data collection on Oracle Grid Infrastructure and Oracle Real Application Clusters systems.

TFA behaves in a similar manner to the *ion* utility packaged with Oracle Clusterware. Both tools collect and package diagnostic data. However, TFA is much more powerful than *ion*, because TFA centralizes and automates the collection of diagnostic information.

TFA provides the following key benefits and options:

- Encapsulation of diagnostic data collection for all Oracle Grid Infrastructure and Oracle RAC components on all cluster nodes into a single command, which you run from a single node
- Option to "trim" diagnostic files during data collection to reduce data upload size
- Options to isolate diagnostic data collection to a given time period, and to a particular product component, such as Oracle ASM, RDBMS, or Oracle Clusterware
- Centralization of collected diagnostic output to a single node in Oracle Database Appliance, if desired
- On-Demand Scans of all log and trace files for conditions indicating a problem
- Real-Time Scan Alert Logs for conditions indicating a problem (for example, Database Alert Logs, Oracle ASM Alert Logs, and Oracle Clusterware Alert Logs)

See Also:

Refer to My Oracle Support note 1513912.1 "TFA Collector - Tool for Enhanced Diagnostic Gathering" for more information. <https://support.oracle.com/CSP/main/article?cmd=show&&type=NOT&&id=1513912.1>

11.2.4 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

11.3 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.

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	<code>/u01/app/release-specific_name/gi owner</code>
Grid base	<code>/u01/app/gi owner</code>
Oracle home	<code>/u01/app/rdbms owner/product/dbhome_release-specific_name sequence_number</code>
Oracle base	<code>/u01/app/rdbms owner</code>
Oracle Inventory	<code>/u01/app/oraInventory</code>

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

Table A-1 (Cont.) Default Operating System Groups and Users Configuration for Oracle Database Appliance

Groups and Users	Default Value
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`.

B

Storage on Oracle Database Appliance

Review this section to understand Oracle Database Appliance storage architecture and options and how to determine usable storage.

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

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

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.

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

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

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 `lsdg` 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	<i>/dev/asm/datdbname-<i>nnn</i></i> For example: <i>/dev/asm/datodacn-123</i>	<i>/u02/app/oracleuser/oradata/<i>dbname</i></i> For example: <i>/u02/app/example/oradata/odacn</i>
RECO	+RECO	<i>/dev/asm/reco-<i>nn</i></i>	<i>/u03/app/oracleuser</i> This mount point is shared by all databases for <i>fast_recovery_area</i> and redo logs. For <i>fast_recovery_area</i> , the path is: <i>/u03/app/oracleuser/fast_recovery_area/<i>db_name</i></i> For redo logs, the path is: <i>/u03/app/oracleuser/redo/<i>db_name</i></i>

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 [+] > lsdgs 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"> • DATA: 5.24 TB • RECO: 0.58 TB 	Not applicable
X7-2M 2 drives (12.8TB raw storage)	<ul style="list-style-type: none"> • DATA: 5.24 TB • RECO: 0.58 TB 	Not applicable
X7-2M 5 drives (32TB raw storage)	<ul style="list-style-type: none"> • DATA: 10.48 TB • RECO: 1.16 TB • Reservation: 2.91 TB 	<ul style="list-style-type: none"> • DATA: 5.24 TB • RECO: 0.58 TB • Reservation: 5.82 TB
X7-2M 8 drives (51.2TB raw storage)	<ul style="list-style-type: none"> • DATA: 18.34 TB • RECO: 2.04 TB • Reservation: 2.91 TB 	<ul style="list-style-type: none"> • DATA: 10.48 TB • RECO: 1.16 TB • Reservation: 5.82 TB

The Reservation value represents the amount of storage required to maintain full redundancy in case of disk failure.

B.3 Usable Space on Oracle Database Appliance X7-2-HA

Review the table for the approximate amount of usable space for high performance or high capacity on Oracle Database Appliance X7-2-HA.

Usable Space for High Performance

Oracle Database Appliance X7-2-HA use 3.2 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"> DATA: 5.24 TB RECO: 0.58 TB REDO: 0.97 TB Reservation: 0.97 TB 	<ul style="list-style-type: none"> DATA: 2.62 TB RECO: 0.29 TB REDO: 0.97 TB Reservation: 1.94 TB
10 drives (32 TB raw storage)	<ul style="list-style-type: none"> DATA: 11.79 TB RECO: 1.31 TB REDO: 0.97 TB Reservation: 0.97 TB 	<ul style="list-style-type: none"> DATA: 6.98 TB RECO: 0.78 TB REDO: 0.97 TB Reservation: 1.94 TB
15 drives (48 TB raw storage)	<ul style="list-style-type: none"> DATA: 18.34 TB RECO: 2.04 TB REDO: 0.97 TB Reservation: 0.97 TB 	<ul style="list-style-type: none"> DATA: 11.35 TB RECO: 1.26 TB REDO: 0.97 TB Reservation: 1.94 TB
20 drives (64 TB raw storage)	<ul style="list-style-type: none"> DATA: 24.88 TB RECO: 2.76 TB REDO: 0.97 TB Reservation: 0.97 TB 	<ul style="list-style-type: none"> DATA: 15.72 TB RECO: 1.75 TB REDO: 0.97 TB Reservation: 1.94 TB
40 drives (128 TB raw storage)	<ul style="list-style-type: none"> DATA: 51.08 TB RECO: 5.68 TB REDO: 1.94 TB Reservation: 0.97 TB 	<ul style="list-style-type: none"> DATA: 33.18 TB RECO: 3.69 TB REDO: 1.94 TB Reservation: 1.94 TB

The Reservation value represents the amount of storage required to maintain full redundancy in case of disk failure.

The REDO disk group uses 800 GB raw Solid-State Drives or 0.8 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"> • DATA: 57.30 TB • RECO: 6.37 TB • REDO: 0.97 TB • Flash: 5.52 TB • Reservation: 4.5 TB 	<ul style="list-style-type: none"> • DATA: 35.47 TB • RECO: 3.94 TB • REDO: 0.97 TB • Flash: 2.61 TB • Reservation: 9.0 TB
30 drives (300 TB raw storage)	<ul style="list-style-type: none"> • DATA: 118.69 TB • RECO: 13.19 TB • REDO: 1.94 TB • Flash: 12.50 TB • Reservation: 4.5 TB 	<ul style="list-style-type: none"> • DATA: 76.40 TB • RECO: 8.49 TB • REDO: 1.94 TB • Flash: 7.16 TB • Reservation: 9.0 TB

C

Create Appliance Using JSON File

Review this section to understand the command `odacli create-appliance` and to see an example JSON file.

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" : "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"
  }
}

```

C.3 Example JSON File to Create a Multi-Node Appliance with the CLI

Follow the JSON file example to create a JSON file to deploy a multi-node appliance with the command `odacli create-appliance`.

Use the example JSON files and the information located in the readme as a template to create a file for your environment. Examples and the readme are located in the `/opt/oracle/dcs/sample` directory.

Note:

It is important to review the readme and the examples carefully before creating your JSON file. If you do not enter your network and Oracle ILOM information correctly based on your setup, then network access is lost to both the host and Oracle ILOM.

Example C-3 JSON File to Create a Multi-Node Oracle Database Appliance with Role Separation

The following is an example of a JSON file that creates a multi-node appliance on Oracle Database Appliance X7-2-HA bare metal platform. The example uses role separation. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```

{
  "instance":{
    "name": "odahabox",
    "instanceBaseName": "odahabox",
    "dbEdition": "EE",
    "timeZone": "UTC",
    "ntpServers" : [ "10.0.3.14" ],
    "dnsServers" : [ "10.0.4.10", "10.0.4.11", "10.0.4.12" ],
    "domainName": "example.com",
    "isRoleSeparated": true,
    "osUserGroup": {
      "groups": [
        {
          "groupId": 1001,
          "groupName": "oinstall",
          "groupRole": "oinstall"
        }
      ]
    }
  }
}

```

```

    },
    {
      "groupId":1002,
      "groupName":"dbaoper",
      "groupRole":"dbaoper"
    },
    {
      "groupId":1003,
      "groupName":"dba",
      "groupRole":"dba"
    },
    {
      "groupId":1004,
      "groupName":"asmadmin",
      "groupRole":"asmadmin"
    },
    {
      "groupId":1005,
      "groupName":"asmoper",
      "groupRole":"asmoper"
    },
    {
      "groupId":1006,
      "groupName":"asmdba",
      "groupRole":"asmdba"
    }
  ],
  "users":[
    {
      "userId":101,
      "userName":"grid",
      "userRole":"gridUser"
    },
    {
      "userId":102,
      "userName":"oracle",
      "userRole":"oracleUser"
    }
  ]
},
"objectStoreCredentials":null
},
"nodes":[
  {
    "nodeNumber":"0",
    "nodeName":"odahaboxc1n2",
    "network":[
      {
        "nicName":"btbond1",
        "ipAddress":"10.31.98.133",
        "subNetMask":"255.255.240.0",
        "gateway":"10.31.96.1",
        "networkType":[
          "Public"
        ],
        "isDefaultNetwork":true
      }
    ],
    "ilom":{
      "ilomName":"odahabox2-c",
      "ipAddress":"10.31.16.140",

```

```

        "subNetMask": "255.255.240.0",
        "gateway": "10.31.16.1"
    },
    {
        "nodeNumber": "1",
        "nodeName": "odahaboxc1n1",
        "network": [
            {
                "nicName": "btbond1",
                "ipAddress": "10.31.98.132",
                "subNetMask": "255.255.240.0",
                "gateway": "10.31.96.1",
                "networkType": [
                    "Public"
                ],
                "isDefaultNetwork": true
            }
        ],
        "ilom": {
            "ilomName": "odahabox1-c",
            "ipAddress": "10.31.16.139",
            "subNetMask": "255.255.240.0",
            "gateway": "10.31.16.1"
        }
    }
],
"grid": {
    "diskGroup": [
        {
            "diskGroupName": "DATA",
            "redundancy": "HIGH",
            "diskPercentage": 80
        },
        {
            "diskGroupName": "RECO",
            "redundancy": "HIGH",
            "diskPercentage": 20
        },
        {
            "diskGroupName": "REDO",
            "redundancy": "HIGH",
            "diskPercentage": null
        }
    ],
    "scan": {
        "scanName": "odahaboxc1-scan",
        "ipAddresses": [
            "10.31.98.182",
            "10.31.98.183"
        ]
    },
    "vip": [
        {
            "nodeNumber": "0",
            "vipName": "odahaboxc1n2-vip",
            "ipAddress": "10.31.98.159"
        },
        {
            "nodeNumber": "1",
            "vipName": "odahaboxc1n1-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
```

E

Database Shapes for Oracle Database Appliance

Use the information in this appendix to select database shapes, or templates, for your planned databases.

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
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

Table E-5 (Cont.) 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)
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
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

Table E-7 (Cont.) 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)
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

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