Oracle® Database Appliance

X6-2S/X6-2M/X6-2L Deployment and User's Guide

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Oracle Database Appliance X6-2S/X6-2M/X6-2L Deployment and User's Guide, Release 12.2.1.4.0 for Linux x86-64

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Preface

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

Audience

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

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

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

Documentation Accessibility

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

Access to Oracle Support

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

Related Documents

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

- *Oracle Database Appliance Release Notes*

- *Oracle Database Appliance Licensing Information User Manual*

- *Oracle Database Appliance Security Guide*

- *Oracle Database Appliance Accessibility Guide*

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

- *Oracle Database Appliance X6-2-HA Deployment and User's Guide*

- *Oracle Database Appliance X6-2S/M/L Deployment and User's Guide*

- *Oracle Database Appliance Getting Started Guide*

- *Oracle Database Appliance Administration and Reference Guide*

- Oracle Database Appliance Setup Posters and Booklets (a full-size printed copy ships with Oracle Database Appliance)

- *Oracle Database Appliance Owner's Guide*

- *Oracle Database Appliance Service Manual*

- *Oracle Database Appliance Series Safety and Compliance Guide*

The following My Oracle Support Notes contain additional information:

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

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

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

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

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

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

- *Oracle Database Security Guide*

- *Oracle Database Administrator's Guide*

- *Oracle Database SQL Language Quick Reference*

- *Oracle Database Backup and Recovery User's Guide*

- *Oracle Database Backup and Recovery Reference*

- *Oracle Database Utilities*

- *Oracle Automatic Storage Management Administrator's Guide*

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

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

Conventions

The following text conventions are used in this document:

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

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About Oracle Database Appliance

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

- Oracle Database Appliance Components (page 1-1)
  Oracle Database Appliance X6-2S, X6-2M, and X6-2L components that are installed or available for download are described in the following table.

- Overview of Oracle Database Appliance Deployment (page 1-2)
  Review the steps you must complete to deploy Oracle Database Appliance.

- About the Oracle Appliance Manager Web Console (page 1-3)
  Use the Oracle Appliance Manager Web Console to view and create databases and to view job activity.

- Viewing Job Activity (page 1-4)
  Use the Oracle Appliance Manager Web Console to view job activity, the status of tasks in a job, and job status.

1.1 Oracle Database Appliance Components

Oracle Database Appliance X6-2S, X6-2M, and X6-2L components that are installed or available for download are described in the following table.

Components listed as **Installed** are typically available on Oracle Database Appliance when you receive it, and components listed as **Downloaded** are components that you can download and deploy yourself.

> ✎ **Note:**
>
> The components listed in this table are not available with every release.

Table 1-1   Software for Oracle Database Appliance

Component	Component Contents	Installed or Downloaded
Oracle Database Appliance Operating System Image	Oracle Appliance Manager command-line interface Oracle Appliance Manager (Web Console) Oracle Linux Hardware drivers	Installed

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

Component	Component Contents	Installed or Downloaded
Oracle Database Appliance Single Instance Software Bundle	Oracle Database clone binaries Oracle Database templates, customized for Oracle Database Appliance deployments Oracle Grid Infrastructure clone binaries Oracle Appliance Manager Web Console Oracle Appliance Manager command-line interface Oracle Appliance Manager software	Downloaded

> **Note:**
>
> Oracle Database Appliance supports Oracle Database 12.1.0.2 and 11.2.0.4. Oracle Database 11.2.0.3 is not supported on Oracle Database Appliance X6-2S, X6-2M, and X6-2L.

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 and mouse to USB ports and video display to VGA port.

    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 Single Instance Software Bundles to a system on the network.

    b. Copy the Oracle Database Appliance Single Instance Software Bundles to Oracle Database Appliance.

    c. Run the `update-image` command to install the bundles.

4. Deploy Oracle Database Appliance.

    a. Log into the Oracle Database Appliance Web Console.

    b. Click **Create Appliance**.

    c. Enter the configuration details.

    d. Click **Submit** to start the deployment.

    e. Monitor the progress on the **Activity** tab.

1.3 About the Oracle Appliance Manager Web Console

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

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

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

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

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

- Deploy the appliance
- View existing databases
- Create and delete databases
- View existing database homes
- Create and delete database homes
- View job activity
- Configure and enable Oracle Auto Service Request (Oracle ASR)

> **✎ Note:**
>
> The preferred browser is Google Chrome.

Auto Refresh Feature

The Auto Refresh option is available in the upper right corner of the console. When you turn on Auto Refresh, all pages in the console refresh every 30 seconds. By default, Auto Refresh is Disabled.

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

1.4 Viewing Job Activity

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

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

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

2. Enter the following credentials:

   - User name: `oda-admin`
   - Password: *password*

3. Click **Activity**.

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

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

Provisioning service creation

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

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

Message: Fail torun root scripts :

Status: Failure

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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.

Tasks:

- Registering Your Support Identifier on My Oracle Support (page 2-1)
  Add your hardware Support Identifier (SI) to your My Oracle Support account profile.
- Planning Oracle Database Appliance Configuration Options (page 2-1)
  Determine how many CPU cores you want to enable, determine your database configuration options, and gather the system information for your Oracle Database Appliance Bare Metal deployment configuration.
- Gathering System Requirement Information (page 2-6)
  Use these checklists to collect information before deploying Oracle Database Appliance.

2.1 Registering Your Support Identifier on My Oracle Support

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

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

> ✎ **Note:**
>
> You cannot obtain support or software from Oracle without registered SIs.

2.2 Planning Oracle Database Appliance Configuration Options

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

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

- Selecting an Oracle Database Appliance Configuration (page 2-2)
  Compare and select an Oracle Database Appliance X6-2S, X6-2M, or X6-2L hardware configuration.
- Selecting Operating System Groups and Users (page 2-2)
  Determine how you want to configure your operating system groups and users and whether or not you want to allow operating system role separation.
- Selecting Database Deployment Options (page 2-4)
  See the Oracle Database editions that are available for deployment.
- Selecting Database Shapes for Oracle Database Appliance (page 2-5)
  Oracle Database Appliance software includes preconfigured templates, known as shapes, that incorporate Oracle best practices with optimization for different classes of databases.

2.2.1 Selecting an Oracle Database Appliance Configuration

Compare and select an Oracle Database Appliance X6-2S, X6-2M, or X6-2L hardware configuration.

- Oracle Database Appliance X6-2S is a small configuration designed for smaller or entry-level deployments.
- Oracle Database Appliance X6-2M is a medium-sized configuration designed for performance.
- Oracle Database Appliance X6-2L is a large configuration designed for larger databases and database consolidation.

You cannot expand or reconfigure Oracle Database Appliance to a different configuration. For example, you cannot expand Oracle Database Appliance X6-S to Oracle Database Appliance X6-2M. For Oracle Database Appliance X6-2 configuration details, see the *Oracle Database Appliance Owner's Guide*.

2.2.2 Selecting Operating System Groups and Users

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

About Operating System Groups and Users

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

Without role separation, a single user owns all of the Oracle installations. All of the databases are installed under a single user. Role separation enables you to have separate users for Oracle and Oracle Clusterware. You can install multiple databases

without sharing operating system authentication for system privileges. In addition, each Oracle software installation is owned by a separate installation owner, to provide operating system user authentication for modifications to Oracle Database binaries.

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

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

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

Default Configuration: Two Users with Six Groups

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

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

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

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

Two Custom Users with Six Custom Groups

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

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

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

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

Figure 2-1   Two Custom Users with Six Custom Groups

Single Custom User with Six Custom Groups

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

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

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

Single User with Two Groups

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

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

2.2.3 Selecting Database Deployment Options

See the Oracle Database editions that are available for deployment.

Oracle Appliance Manager installs Oracle Database software on mirrored disks that are internal to Oracle Database Appliance. You specify the database edition in the Web Console during the initial deployment. You cannot use both Oracle Database Enterprise Edition and Standard Edition on the same appliance.

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

- **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.

- **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 Real Application Clusters (Oracle RAC).

- **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.

> **Note:**
>
> Review the Oracle Database licensing guide for 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.

Related Topics

- Database Shapes for Oracle Database Appliance (page E-1)
  Use the information in this appendix to select database shapes, or templates, for your planned databases.

2.3 Gathering System Requirement Information

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

- List of Information You Need Before Deployment (page 2-6)
  Collect security, storage, and network information required to prepare for deploying Oracle Database Appliance.

- Checklist for System Details (page 2-9)
  Use the checklist to gather system information that you need to obtain for Oracle Database Appliance. Record the values for your system.

- Checklist for Custom Network Address Configuration (page 2-10)
  Use the checklist to identify the IP addresses required for Oracle Database Appliance.

2.3.1 List of Information You Need Before Deployment

Collect security, storage, and network information required to prepare for deploying Oracle Database Appliance.

Review your security requirements for `root` passwords, determine your storage requirements and network administration requirements, and complete any required configuration before your Oracle Database Appliance hardware is delivered.

Security Requirements

- 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.

Storage Administration Requirements

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

Oracle Database Appliance X6-2S, X6-2M, and X6-2L use 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)

- Operational files are stored on mirrored internal system disks.

You can configure for External, Internal, or Custom backup location. Depending on backup location, you can select one of the following configuration options to divide the storage capacity between DATA diskgroup and RECO diskgroup:

- External: Storage capacity is split between 80% for DATA and 20% for RECO.

- Internal: Storage capacity is split between 40% for DATA and 60% for RECO.

- Custom: Storage capacity is configurable from 10% to 90% for DATA and the remainder for RECO.

> **Note:**
>
> Oracle Database Appliance X6-2S and X6-2M ship with two 3.2 TB non-volatile memory express (NVMe) drives for a total of 6.4 TB of NVMe storage. With Oracle Database Appliance X6-2M, you have the option to expand the system to a 4 disk configuration, which doubles the NVMe storage capacity. Oracle Database Appliance X6-2L ships with six 3.2 TB non-volatile memory express (NVMe) drives with the option to add three (3) disks for a total of nine (9) NVMe disks.

Network Administration Requirements

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. The following are the public interfaces:

  – Oracle Database Appliance X6-2S: `btbond1` or `sfpbond1`

  – Oracle Database Appliance X6-2M: `btbond1`, `btbond2` and `sfpbond1`

  – Oracle Database Appliance X6-2L: `btbond1`, `btbond2` and `sfpbond1`

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

- `btbond` are bonded interface based on onboard NIC 10GBase-T (copper) ports

- `sfpbond` is bonded interface based on the 10GbE SFP+ (fiber) PCIe card

When you use the `configure-first` command during the initial setup, you can choose one of the bonded interfaces for the public network. Use one of the remaining

bonded interfaces for management, backup, data guard, or other network. Be prepared to provide a netmask and gateway for each network, as both are required when you configure a network connection for Oracle Database Appliance.

Answer These Questions

Determine the answers to the following questions:

*   What is your domain name?

    For example: `example.com`.

*   Do you want to use DNS?

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

*   Do you have a Network Time Protocol (NTP) service configured for each server, so that the local system time for each server is synchronized?

*   Which network interface do you want to use for your public network?

    –   10GBase-T (copper)

    –   10GbE 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`

*   Do you want the ability to configure additional networks?

*   Do you want to use Oracle Integrated Lights Out Manager (Oracle ILOM) to manage Oracle Database Appliance independent of the operating system?

    (Optional) Collect the following 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`

2.3.2 Checklist for System Details

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

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

System Information	Description
Host Name	The name for the Oracle Database Appliance System. The name must conform with the RFC 952 standard, which allows alphanumeric characters and hyphens (-), but does not allow underscores (_). The name should not begin with a numeral or hyphen and should not end in a hyphen. Oracle recommends that you use all lowercase characters for the host name.
Domain Name	Your domain name. For example: `example.com`
Master Password	The password set for the root password of the system, OS users, database users, and pdbadmin. The password is also used to set the database `SYS` and `SYSTEM` passwords. Ensure that the password you provide is in compliance with common security practices.
DNS Server	(Optional) DNS server details.
NTP Server	(Optional) Network Time Protocol (NTP) service details.
Region	The region where you plan to operate the Oracle Database Appliance system.
Timezone	Select the time zone where you plan to operate the Oracle Database Appliance system.
Database Edition	Select an Oracle Database edition, either Enterprise Edition or Standard Edition. You cannot mix editions. The database edition you select determines the database editions that you create in the appliance. To change editions, you must redeploy Oracle Database Appliance.
Backup Location	Determine the backup location setting. The setting determines how the NVMe Disks are partitioned between DATA and RECO. Select External, Internal, or Custom: • **External** reserves 80% of the storage for DATA and 20% for RECO. • **Internal** reserves 40% of the storage for DATA and 60% for RECO. • **Custom** reserves anywhere from 10% to 90% of the storage for DATA, and the remainder is reserved for RECO.
Percentage of Storage Reserved for Data	If you select a Custom backup location, determine the amount of reserves for DATA storage. The percentage must be a whole number between 10 and 90.
Diskgroup Redundancy	If the machine has 4 NVMe, select **normal** redundancy (two way mirror) or **high** redundancy (three way mirror). If the machine has 2 NVMe, 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
Network Information	Obtain network information: • Public network • (Optional) Additional network • (Optional) Oracle Integrated Lights Out Manager (Oracle ILOM) network
Initial Database Details (if you want to create one during deployment)	• Database name • Normal or container database • Class (database template) • Database characterset • Database language • Database version • Shape (for example: odb1 or odb2) • Storage (Oracle ASM or Oracle ACFS) • Configure Oracle Enterprise Manager console

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.

Topics:

- About Interconnect Cabling (page 3-1)
  Interconnect is reserved for Oracle Grid Infrastructure (GI) and Oracle Relational Database Management System (RDBMS).

- Attaching Network Cables to Oracle Database Appliance (page 3-2)
  Connect Oracle Database Appliance X6-2S, X6-2M, or X6-2L to either a 10GBase-T (copper) or 10GbE SFP+ (fiber) network.

- Attaching Peripheral Devices (page 3-3)
  Complete this task if you have direct access to Oracle Database Appliance and you intend to use a locally connected monitor, keyboard and mouse.

- First Startup of Oracle Database Appliance (page 3-4)
  Use this procedure to start up either a newly-installed Oracle Database Appliance, or to start up the appliance after you power it down.

- Configuring Oracle Integrated Lights Out Manager (page 3-6)
  Configure Oracle Integrated Lights Out Manager (Oracle ILOM) to manage Oracle Database Appliance independent of the operating system.

- Configuring an Initial Network Connection (page 3-7)
  Configure a temporary network configuration framework to build your network information during deployment.

- Downloading Oracle Database Appliance Software (page 3-9)
  Download the Oracle Database Appliance 12.2.1.4.0 Patch Bundle, also known as the Single Instance Bundle (SIB) for Oracle Database Appliance X6-2S, X6–2M, and X6–2L.

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.

When you power on Oracle Database Appliance for the first time, the system automatically defines your public network interface based on the interconnect. If you use the InfiniBand cards, then the InfiniBand network is used for the interconnect. If you ordered the configuration that contains the 10GbE SFP+ (fiber) cards instead of InfiniBand cards, then the onboard 10GBase-T (Copper) ports are used for the interconnect.

3.2 Attaching Network Cables to Oracle Database Appliance

Connect Oracle Database Appliance X6-2S, X6-2M, or X6-2L to either a 10GBase-T (copper) or 10GbE SFP+ (fiber) network.

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

Figure 3-1   Connect the Fiber and Copper Network Cables for Oracle Database Appliance X6-2S or X6-2M
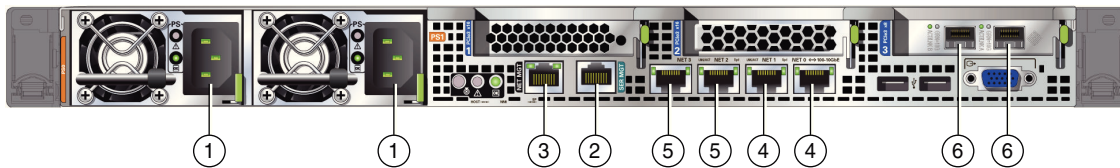
Figure 3-2   Connect the Fiber and Copper Network Cables for Oracle Database Appliance X6-2L
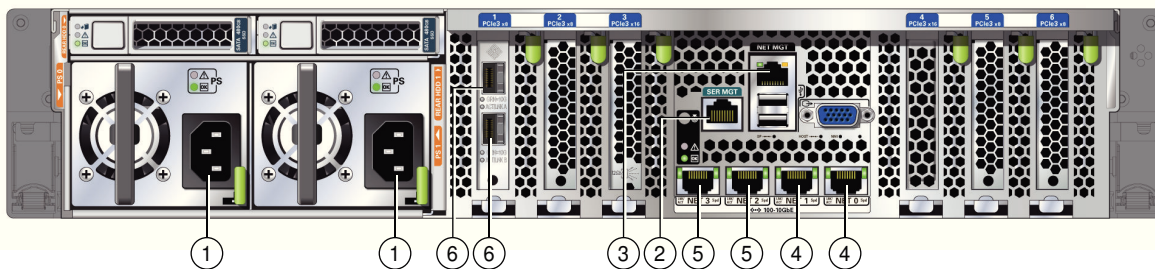
Table 3-1   Location of Network Ports and Power Cabling for Oracle Database Appliance

Callout Number	Description
1	Power cables
2	(Optional) ILOM SER MGT port. Service processor RJ-45 serial port
3	ILOM NET MGT port. Service processor 10/100/1000Base-T network interface

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

Callout Number	Description
4	10 GbE network interface port with RJ-45 connector (btbond1)
5	10 GbE network interface port with RJ-45 connector (btbond2)
	These ports are not available on Oracle Database Appliance X6-2S.
6	10 GbE dual-rate SFP+ (fiber network) ports (sfpbond1)

For 10 GbE SFP+ PCI cards, you can use fiber cables or copper cables.

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
10 GbE Transceiver SR (SFP+)	X2129A-N
10 GbE Transceiver LR (SFP+)	X5562A-Z

Copper Cables

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

Name	Length	Part Number
TwinAx 1m	1m	X2130A-1M-N
TwinAx 3m	3m	X2130A-3M-N
TwinAx 5m	5m	X2130A-3M-N

3.3 Attaching Peripheral Devices

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

Oracle Database Appliance is not equipped with human-computer interface devices, such as a monitor or keyboard. If you want to log in locally, instead of through a network, then you must attach interface devices.

Attach a monitor to the graphics card port, and attach a keyboard and a mouse to the USB ports. Refer to the figure and table to identify the ports.
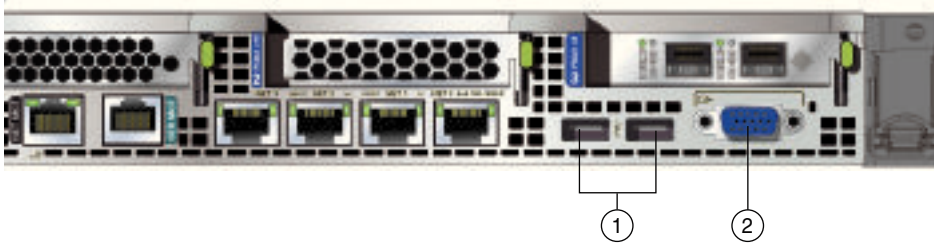
In the figure, callout 1 identifies the ports for the keyboard and mouse. Callout 2 identifies the monitor port.

Table 3-2   Peripheral Device Connections for Oracle Database Appliance

Callout Number	Description
1	USB ports for the keyboard and mouse
2	Graphics card port for the monitor

3.4 First Startup of Oracle Database Appliance

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

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

- Attaching Power Cords and Initializing Components (page 3-4)
  Attach power cords for Oracle Database Appliance.
- Powering On Oracle Database Appliance the First Time (page 3-5)
  Use this procedure the first time you power on Oracle Database Appliance.

3.4.1 Attaching Power Cords and Initializing Components

Attach power cords for Oracle Database Appliance.

> ⚠ **Caution:**
>
> Before plugging in the power cords, ensure that the electrical outlets providing the power are grounded.

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

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

3.4.2 Powering On Oracle Database Appliance the First Time

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

> **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. 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.

The power button and the system initialization status indicator lights are located on the power panel. The following figure is an example of the location on the X6-2S and X6-2M. The layout on the X6-2L is slightly different.

Figure 3-3   Front of Oracle Database Appliance Power Panel for X6-2S and X6-M
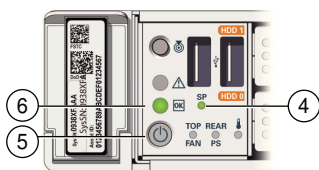
Table 3-3   Description of Callouts for Powering On Oracle Database Appliance

Callouts for X6-2S and X6-2M	Function
4	SP OK LED light, located on the front panel of the appliance.
5	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.
6	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.

2. 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 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 Configuring an Initial Network Connection

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

Oracle Database Appliance X6-2S has two highly available networks and Oracle Database Appliance X6-2M and X6-2L have three available networks. Use either the 10GBase-T or the 10GbE SFP+ network bonded interface. Oracle does not support breaking the bond interface for Oracle Database Appliance X6-2S, X6-2M, and X6-2L models.

Use the initial network connection to transfer deployment software to Oracle Database Appliance and deploy the appliance with the Web Console.

> ✎ **Note:**
>
> The initial network configuration is temporary. It is replaced during the final image deployment.

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

To configure the initial network, you will 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.

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

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

   ```
   # configure-firstnet

   Select the Interface to configure the network on (btbond1 sfpbond1): 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 btbon1: bonding: btbond1: Removing slave em1.
   bonding btbon1: Warning: the permanent HWaddr of em1 - <mac> - is still in use
   by btbon1. Set the HWaddr of em1 to a different address to avoid conflicts.
   bonding: btbond1: releasing active interface em1
   bonding: btbond1: making interface em2 the new active one.
   bonding: btbond1: Removing slave em2.
   bonding: btbond1: releasing active interface em2
   :::::::::::
   bonding: btbond1: Setting em1 as primary slave.
   :::::::::::
   bonding: btbond2: Setting em3 as primary slave.
   :::::::::::
   bonding: sfpbond1: Setting p3p1 as primary slave.
   ```

Related Topics

- [configure-firstnet](#) (page 13-7)
  Use the `configure-firstnet` command to configure the first network in the appliance after racking and connecting the power and network cables.

- [configure-firstnet](#) (page 13-7)
  Use the `configure-firstnet` command to configure the first network in the appliance after racking and connecting the power and network cables.

3.7 Downloading Oracle Database Appliance Software

Download the Oracle Database Appliance 12.2.1.4.0 Patch Bundle, also known as the Single Instance Bundle (SIB) for Oracle Database Appliance X6-2S, X6–2M, and X6–2L.

This file contains the latest patches for DCS Agent, DCS Controller, OAK , GI and RDBMS 12.1 and 11.2 homes.

If you have Oracle Database Appliance X6-2S or X6-2M with dcs-agent version 12.1.2.7, you must apply patch 24391174 before applying this patch.

24391174
Use the `rpm –qa |grep dcs-agent` command to check the dcs-agent version .

```
#  rpm -qa |grep dcs-agent
dcs-agent-12.1.2.7.0_LINUX.X64_160601.x86_64
```

Oracle Database Appliance release 12.1.2.7 is no longer supported for the X6-2S and X6-2M models.

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

2. Locate patch 28216794 for the Oracle Database Appliance.

   https://updates.oracle.com/download/28216794.html

3. Select the patch version for Oracle Appliance Kit 12.2.1.4.0.

4. Click **Download** to download the zip files onto your external client.

   ```
   p28216794_122140_Linux-x86-64_1of3.zip
   p28216794_122140_Linux-x86-64_2of3.zip
   p28216794_122140_Linux-x86-64_3of3.zip
   ```

5. Use either a Secure Copy (scp) command or a USB storage device to copy the file from the external client to `dom0` on Node 0. Use the `/tmp` directory as the target location.

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

6. Unzip `p28216794_122140_Linux-x86-64_1of3.zip` to extract the file `oda-sm-12.2.1.4.0-180703-server1of3.zip`.

```
# cd /tmp
# unzip p28216794_122140_Linux-x86-64_1of3.zip
```

Related Topics

- https://updates.oracle.com/Orion/PatchDetails/process_form?patch_num=24391174

4

Deploying Oracle Software on Oracle Database Appliance

Complete these tasks to deploy the Oracle Database Appliance software.

- About Deploying Oracle Database Appliance Software (page 4-1)
  Review this information to understand the available deployment options.

- Verifying the DCS Agent Version (page 4-2)
  Ensure that your appliance has the latest `dcs-agent` before updating the repository.

- Special Instructions for Upgrading from a 12.1.2.7.0 Environment (page 4-2)
  If you are using Oracle Database Appliance 12.1.2.7.0, then you must upgrade the `dcs-agent` to 12.1.2.8.0 before installing the latest Oracle Database Appliance Patch Bundle. If you are using 12.1.2.8 or later, you do not need to update the `dsc-agent`.

- Updating the Infrastructure with the Latest Patch Bundle (page 4-3)
  If an older version of the `dcs-agent` is installed, then download the latest patch bundle and update the repository, `dcs-agent`, and server components.

- Copying the Oracle Database Appliance Software (page 4-4)
  Copy the software bundle to the system and update the image to the latest version before deploying the appliance.

- Deploying Oracle Database Appliance (page 4-6)
  Configure the system, network, user groups, database, and Oracle Auto Service Request (Oracle ASR) and deploy the appliance.

4.1 About Deploying Oracle Database Appliance Software

Review this information to understand the available deployment options.

The procedure to deploy software consists of the following steps:

1. Copy the Oracle Database Appliance Single Instance software bundle that you downloaded earlier.

2. Update the repository with Oracle Database Appliance Single Instance software bundle.

3. Deploy your configuration.

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

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

4.2 Verifying the DCS Agent Version

Ensure that your appliance has the latest `dcs-agent` before updating the repository.

1. Check the `dcs-agent rpm` version.

   ```
   # rpm -qa | grep dcs-agent
   dcs-agent-12.1.2.11.0_LINUX.X64_170607-1.x86_64
   ```

2. See the *Oracle Database Appliance Release Notes* for details about the latest agent, most recently released versions and patches, and known issues.

3. If you have an older version of the `dcs-agent`, then upgrade the `dcs-agent` before applying the latest patch bundle and updating both `dcsagent` and server components.

4.3 Special Instructions for Upgrading from a 12.1.2.7.0 Environment

If you are using Oracle Database Appliance 12.1.2.7.0, then you must upgrade the `dcs-agent` to 12.1.2.8.0 before installing the latest Oracle Database Appliance Patch Bundle. If you are using 12.1.2.8 or later, you do not need to update the `dsc-agent`.

The 12.1.2.8.0 version of the `dcs-agent` includes changes and information not available in the 12.1.2.7.0 version of the `dcs-agent`. The information is needed to use the command-line interface to install the update bundle and update the agent, server, and databases. Use the `describe-job` command to monitor the progress of each patching job. Run the `update-image` command to update the `dcs-agent` image to the latest version.

> **Note:**
>
> If you are using 12.1.2.7.0, you must run the `update-image` command to update the `dcs-agent` image to version 12.1.2.8.0. Once you are on version 12.1.2.8.0, use the `update-repository` command and follow the steps to install the latest update release. before using the patching command-line interface.

1. Log into My Oracle Support and search for patch 24391174 for the 12.1.2.8.0 release. Review the ReadMe, then click **Download** to download the patch.

   https://support.oracle.com/

2. Log in to Oracle Database Appliance as a root user.

3. Unzip the downloaded patch.

4. Update the `dcs-agent` using the `update-image` command.

   ```
   # /opt/oracle/oak/bin/update-image --image-files /tmp/oda-
   sm-12.1.2.8.0-160xxx-DCS.zip
   ```

The agent automatically restarts. It may take 1-2 minutes for the `dcs-agent` to complete restarting. Wait until the agent completes restarting before updating the patch repository or performing any tasks.

5. When the `dcs-agent` is upgraded to 12.1.2.8 and restarted, apply the latest patch bundle and update both the`dcsagent` and server components.

> ⚠ **Caution:**
>
> Do not patch Oracle Database Appliance using individual patches for Oracle Grid Infrastructure, Oracle Database, or Oracle Linux. Also do not use individual infrastructure patches, such as firmware patches. You must only use Oracle Database Appliance patches.
>
> If you use patches that are not intended for Oracle Database Appliance, or if you use Opatch, or a similar patching tool, then Oracle Database Appliance inventory is not updated, and you cannot complete future patch updates.

Related Topics

• Patch 24391174

• Updating Oracle Database Appliance Software (page 6-1)
To keep Oracle Database Appliance running with the latest software, check for and apply Oracle Database Appliance patch bundles when they are released.

4.4 Updating the Infrastructure with the Latest Patch Bundle

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

In some cases, a machine might ship with an older version of the `dcs-agent`.

> ✎ **Note:**
>
> If you are on version 12.1.2.7, then you must upgrade the agent to a version that supports patching.

1. Log in to Oracle Database Appliance as a root user.

2. Download the latest `dcs-agent` patch from My Oracle Support.

3. Update the repository.

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

4. Update the `dcs-agent` .

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

```
# odacli update-dcsagent -v 12.2.1.4.0
{
```

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

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

> **Note:**
>
> Wait until the agent completes restarting before performing the next step.

5. Update the server components.

```
  odacli update-server -version version
```

```
# odacli update-server -v 12.2.1.4.0
{
  "jobId" : "6f27a29a-959f-44e1-b984-7473e3c918ad",
  "status" : "Created",
  "message" : "Success of Server Update may trigger reboot of node after 4-5
minutes. Please wait till node restart",
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 14:13:45 PM CST",
  "resourceList" : [ ],
  "description" : "Server Patching",
  "updatedTime" : "March 26, 2018 14:13:45 PM CST"
}
```

Related Topics

- Special Instructions for Upgrading from a 12.1.2.7.0 Environment (page 4-2)
  If you are using Oracle Database Appliance 12.1.2.7.0, then you must upgrade the `dcs-agent` to 12.1.2.8.0 before installing the latest Oracle Database Appliance Patch Bundle. If you are using 12.1.2.8 or later, you do not need to update the `dsc-agent`.

- Updating Oracle Database Appliance Software (page 6-1)
  To keep Oracle Database Appliance running with the latest software, check for and apply Oracle Database Appliance patch bundles when they are released.

4.5 Copying the Oracle Database Appliance Software

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

You must copy the Oracle Database Appliance Single Instance software bundle to the Oracle Database Appliance.

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

your network, enabling you to use the Oracle Appliance Manager Web Console to deploy Oracle Database Appliance.

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

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

1. Copy the Oracle Database Appliance Single Instance software bundle (SIB) from the external client to Oracle Database Appliance. Use the `scp` or `sftp` protocol to copy the bundle.

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

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

   For example, if you use the `scp` command, then enter a command similar to the following, where the temporary host address is `oda_host`, the release number is 12.2.1.4.0, and you are copying the bundle to `/tmp`:

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

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

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

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

   ```
   sftp root@oda_host
   ```

   Enter the root password.

   ```
   put oda-sm-12.2.1.4.0-date-DB-12.1.0.2.zip
   ```

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

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

   ```
   # opt/oracle/dcs/bin/odacli update-repository –f /tmp/oda-
   sm-12.2.1.4.0-160XXXX-GI-12.1.0.2.zip,/tmp/oda-sm-12.2.1.4.0-160XXXX-
   DB-12.1.0.2.zip,/tmp/oda-sm-12.2.1.4.0-160XXXX-DB-11.2.0.4.zip
   ```

Related Topics

- Configuring an Initial Network Connection (page 3-7)
  Configure a temporary network configuration framework to build your network information during deployment.

4.6 Deploying Oracle Database Appliance

Configure the system, network, user groups, database, and Oracle Auto Service Request (Oracle ASR) and deploy the appliance.

You must configure the initial network connection before you deploy, or create, Oracle Database Appliance.

Launch the Web Console to complete the following configuration steps to deploy Oracle Database Appliance:

1. Configure the system

2. Configure the client access network

3. (Optional) Configure an additional network and an Oracle ILOM network

4. Configure a database

5. (Optional) Configure Oracle ASR

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

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

   The Google Chrome browser is preferred.

   ```
   https://ODA-host-ip-address:7093/mgmt/index.html
   ```
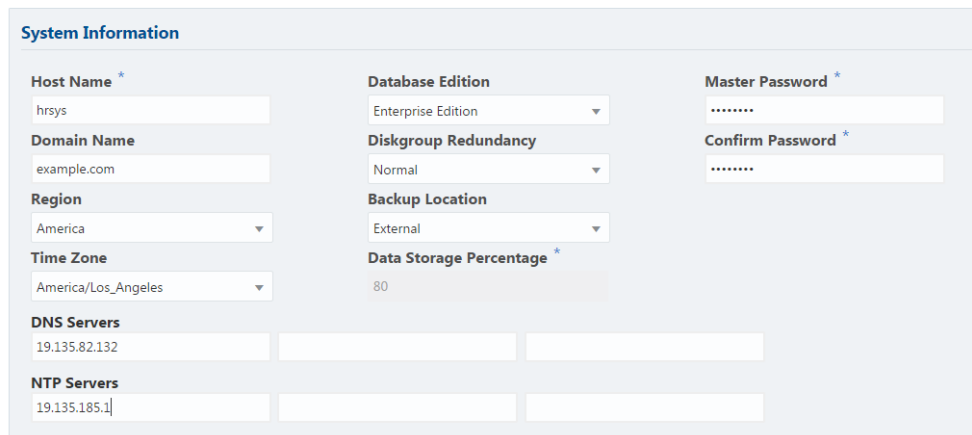
2. Log in as administrator with the user name `oda-admin`. See Appendix A for the default password and instructions on how to change it.

3. Click **Create Appliance**.

4. Enter the following 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. (Optional) **Domain Name**: Enter the domain name.

   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. (Optional) **DNS Servers**: Enter addresses for one or more DNS servers.

   f. (Optional) **NTP Servers**: Enter addresses for one or more NTP servers.

   g. **Database Edition**: Select the Oracle Database edition, either **Enterprise Edition** or **Standard Edition**.

> **✏ Note:**
>
> You cannot mix editions. The database edition you select on this page determines the database editions that you create in the appliance. To change editions, you must redeploy Oracle Database Appliance.

h. **Diskgroup Redundancy**: This field appears when the Web Console detects that the system has 4 NVMe. Select **Normal** or **High**.

If the system has 2 NVMe, redundancy is automatically set to Normal and this field does not appear.

i. **Backup Location**: Select one of the following backup locations:

- **External**: reserves 80% of the storage for DATA and 20% for RECO.

- **Internal**: reserves 40% of the storage for DATA and 60% for RECO.

- **Custom** : enables you to define the percentage of storage for DATA, anywhere from 10% to 90%, the remainder is reserved for RECO.

j. **Data Storage Percentage**: If you selected **Custom** in the previous step, enter a whole number between 10 and 90 to define the percentage of storage reserved for DATA.

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

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

5. Enter the following information to configure the network:

This page enables you to configure the primary client access network, an additional network and an ILOM network. You are only required to configure the client access network.

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. **Client Access Network Interface**: Enter the interface for the primary client access network.

e. (Optional) **Additional Network IP Address**: Enter an IP address to configure an additional network.

f. (Optional) **Additional Network Subnet Mask**: Enter the subnet mask address for the additional network.

g. (Optional) **Additional Network Gateway**: Enter the gateway address for the additional network.

h. (Optional) **Additional Network Interface**: Enter the interface for the additional network.

i. (Optional) **ILOM Host Name**: Enter the name of the Oracle ILOM host.

j. (Optional) **ILOM Network IP Address**: Enter the IP address for the ILOM.

k. (Optional) **ILOM Network Subnet Mask**: Enter the subnet mask address for the ILOM.

l. (Optional) **ILOM Network Gateway**: Enter the gateway address for the ILOM.

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

• Two users with six groups: Customize Users and Groups, select **No**. Allow OS Role Separation, select **Yes**. This is the default configuration.

• Two customized users with six customized groups: Customize Users and Groups, select **Yes**. Allow OS Role Separation, select **Yes**.

- Single user with two groups: Customize Users and Groups, select **No**. Allow OS Role Separation, select **No**

- Single user with six groups: Customize Users and Groups, select **Yes**. Allow OS Role Separation, select **No**. SAP deployments use this configuration.

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 the database:

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

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

   b. (Optional) **DB Version**: Select a database bundle patch number.

   c. (Optional) **CDB**: Select **Yes** or **No** to specify whether or not you want a Container Database (CDB).

   d. (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 (_).

   e. (Optional) **Characterset**: Select a characterset.

   f. (Optional) **National Characterset**: Select a national characterset.

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

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

   i. (Optional) **Database Class**: Select a database class from the list.

   Enterprise Edition supports OLTP, DSS, or IMDB. Standard Edition supports OLTP.

   j. (Optional) **Shape**: Select a database shape from the list.

   k. (Optional) **Storage**: Select **ACFS** or **ASM**.

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

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

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

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**.

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.

Click the **Activity** tab to monitor the job progress. 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 administrator password for `oda-admin`. Change these passwords to comply with your user security protocols.

Related Topics

- About Configuring Oracle ASR (page 7-1)
  Configure Oracle Auto Service Request (Oracle ASR) to automatically generate service requests for specific hardware faults.

- Configuring Oracle ASR in the Web Console (page 7-1)
  Use the Web Console to configure Oracle ASR.

- odacli configure-asr (page 13-63)

5

Oracle Database Appliance Postinstallation Tasks

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

- Changing the Oracle Installation Owner Passwords (page 5-1)
  You must change the default administrative account passwords after installation to secure your system.

- Changing the Web Console Password (page 5-1)
  After your initial log in, change the Oracle Database Appliance Web Console password to secure your system.

- Changing the Password (page 5-2)
  Change the administrative account passwords to secure your system.

- Shutdown the VNC Server (page 5-2)
  After successfully deploying Oracle Database Appliance, shutdown your VNC server.

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-adm set-credential`.

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

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

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

   A confirmation message appears.

4. Click **About**, then click **Sign Out**.

5. Log back into the Web Console with the new password.

Related Topics

- odacli-adm set-credential (page 13-88)
  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
   ```

5.4 Shutdown the VNC Server

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

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

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

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

6

Updating Oracle Database Appliance Software

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

- About Updating Oracle Database Appliance Software (page 6-1)
  Oracle Database Appliance patching is done using the quarterly Oracle Database Appliance Patch Bundle.

- About Update Pre-Checks (page 6-3)
  Use the pre-checks to reduce potential update problems before applying patches.

- Updating Oracle Database Appliance from the Web Console (page 6-5)
  Use the Web Console to update the patch repository and install the Oracle Database Appliance Patch Bundle.

- Updating Oracle Database Appliance from the CLI (page 6-9)
  Use the command-line interface (CLI) to update the patch repository and install the Oracle Database Appliance Patch Bundle.

- Updating Components Without Using a Patch Update (page 6-15)
  The patch bundle updates provide all relevant patches for the entire system and are designed to work with Oracle Database Appliance and future update patch bundles.

- Performing a Bare Metal Restore (page 6-17)
  Reimage Oracle Database Appliance to perform a bare metal restore of Oracle Database Appliance.

6.1 About Updating Oracle Database Appliance Software

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

The GI Clone Patch Bundle for Oracle Database Appliance X6-2S, X6-2M, and X6-2L, contains the latest patches for DCS Agent, DCS Controller, OAK, GI, RDBMS 12.1 and 11.2 homes, enhancements, and fixes.

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

- BIOS

- Hardware drivers, Hardware Management Pack (HWM), and firmware drivers for various components

- Oracle Appliance Manager

- Oracle Linux

- Oracle VM Server

- Java Development Kit (JDK)

- Oracle Integrated Lights Out Manager (Oracle ILOM)

- Oracle Database Bundle patch (BP) and Oracle Database Patch Set Update (PSU)

- Oracle Auto Service Request (Oracle ASR)

- Oracle Grid Infrastructure

- Intelligent Platform Management Interface (IPMI)

About Oracle Database Appliance Software Updates

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

> ⚠ **Caution:**
>
> Do not patch Oracle Database Appliance using individual patches for Oracle Grid Infrastructure, Oracle Database, or Oracle Linux. Also do not use individual infrastructure patches, such as firmware patches. You must only use Oracle Database Appliance patches.
>
> If you use patches that are not intended for Oracle Database Appliance, or if you use Opatch, or a similar patching tool, then Oracle Database Appliance inventory is not updated, and you cannot complete future patch updates.

Minimum Supported Appliance Manager Software Versions

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

The minimum supported software version in the table represents the minimum version of software that must run on Oracle Database ApplianceODA X6-2S, X6-2M, and X6-2L. Review the *Oracle Database Appliance Release Notes* for the latest release and the path to update.

Table 6-1   Minimum Supported Appliance Manager Software Versions

Oracle Database Appliance Hardware Version	Minimum Supported Software Version
X6-2S	12.1.2.8.0
X6-2M	12.1.2.8.0
X6-2L	12.1.2.8.1

It is recommended that you apply the latest update patches on a regular basis. See the *Oracle Database Appliance Release Notes* for the upgrade paths.

Overview of the Patch Upgrade

Oracle Database Appliance Patch Bundle releases include new enhancements, including a comprehensive patching solution for Oracle Database Appliance X6-2S, X6-2M, and X6-2L. You must have a database deployed before updating the repository, agent, server, or database. Do not have any jobs running or pending during the update window.

> **✎ Note:**
>
> If you are using Oracle Database Appliance 12.1.2.7, then you must upgrade the `dcs-agent` before installing the latest patch bundle. The `dcs-agent` upgrade includes changes that enable you to install the Oracle Database Appliance Patch Bundle. Use the `odacli describe-job` command to monitor the progress of each patching job.

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

Related Topics

- odacli describe-job (page 13-58)
  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.

6.2 About Update Pre-Checks

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

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

Commands to Generate Patching Pre-Checks Report

Run the `create-prepatchreport` command to generate a pre-check report.

```
odacli create-prepatchreport -s -v 12.2.1.4.0
```

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

```
odacli describe-prepatchreport -i f45f9750-ec9b-411f-ba53-43205cb17f87
```

For more information about the parameters for these commands, see the chapter *Oracle Database Command-Line Interface*.

> **Note:**
>
> The pre-checks commands are available on Oracle Database Appliance release 12.2.1.2.0 or later. Update the DCS agent to support the pre-checks commands.

Components Verified by Patching Pre-Checks

The following system update pre-checks are performed:

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

The following server update pre-checks are performed:

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

The following DBHome update pre-checks are performed:

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

6.3 Updating Oracle Database Appliance from the Web Console

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

Topics:

- Updating the Patch Repository (page 6-5)
  Use the Web Console to view the current component versions, upload the Oracle Database Appliance Patch Bundle to the patch repository, and deploy the patch bundle.

- Updating the Agent, Storage, and Database Components (page 6-6)
  Use the Web Console to view the available Oracle Database Appliance component versions and deploy the patch bundle to update the components.

- Updating a Database Home (page 6-8)
  Update the version of a database home.

6.3.1 Updating the Patch Repository

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

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

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

1. Download the Oracle Database Appliance patches from My Oracle Support and save them in a directory on the appliance.

    a. See the *Oracle Database Appliance Release Notes* for a list of available patches and links to download the patches.

    b. From an external client machine, log in to My Oracle Support, then locate the patch to download.

    c. Select the Oracle Database Appliance release.

    d. Click **Download** to download the zip file to your local system.

    e. Upload the files from your local system to a temporary location on Oracle Database Appliance.

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

    f. Unzip the files.

2. Log into the Web Console with the `oda-admin` user name and password.

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

3. Click **Patch Manager**.

4. Enter the absolute file path and patch name, then click **Update Repository** to start the update repository job.

   You can list more than one file to update to the repository with a comma separated list, without spaces, or you can update each file, one at a time.

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

6.3.2 Updating the Agent, Storage, and Database Components

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

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

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

The DCS agent is automatically updated when the server or storage is updated. The DCS agent is first updated, and then you must resubmit the Update Server or the Update Storage action.

Perform the following tasks before updating Oracle Database Appliance:

- Do not have any jobs running or pending during the update window.

- Disable (Turn Off) Auto Refresh.

1. Click **Patch Manager** in the Web Console.

2. Wait for the Component Details to load. If you just updated the Patch Repository, click **Refresh** in the Component Details section of the page.

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

3. Select **Precheck**, click **Update Components**, then click **Submit** to verify the patches in the repository and check for conflicts.

   When the job finishes, go to the next step. Click **Activity** for job status.

4. On the Patch Manager page, Click **Refresh** to refresh the Component Details. Select **Update Server**, click **Update Components**, then click **Submit** to begin the job to patch the server components.

   When the job finishes, go to the next step. Click **Activity** for job status.

5. On the Patch Manager page, Click **Refresh** to refresh the Component Details. Select **Update Storage**, click **Update Components**, then click **Submit** to begin the job to patch the storage components.

   Click **Activity** for job status.

6. Review the Component Versions list.

7. Select **Update Server**, then click **Update Components** to update the Server components.

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

   The DCS agent is automatically updated whenever the Server or Storage components are updated.

8. Click **Activity** to monitor the progress. When the job completes successfully, go to the next step.

9. Click **Patch Manager**, then refresh the page.

10. Select **Update Storage**, then click **Update Components** to update the Storage components.

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

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

6.3.3 Updating a Database Home

Update the version of a database home.

1. Log in to the Web Console:

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

2. Click the **Database** tab, then click **Patches** on the left menu.
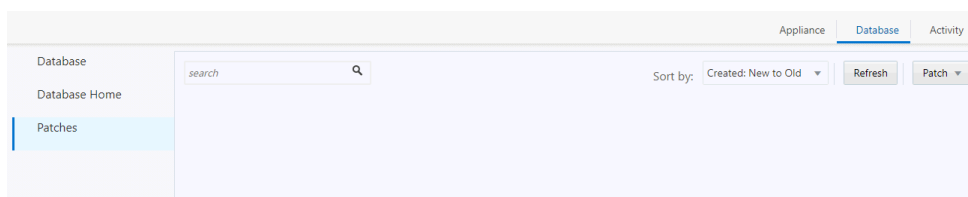
   When all database homes are using the latest version in the patch repository, a message appears on the page. If later Oracle Database Appliance RDBMS versions are available, add the patch to the Patch Repository, then click **Refresh**.

3. Select the database home to patch, click **Patch**, then select **Precheck**.

   The precheck reviews the patch for conflicts. When the job completes successfully, go to the next step.

4. Select the database home to patch, click **Patch**, then select **Apply**.

   When the job completes successfully, go to the next step.

5. Click **Refresh** to verify that all database homes are updated to the latest version.
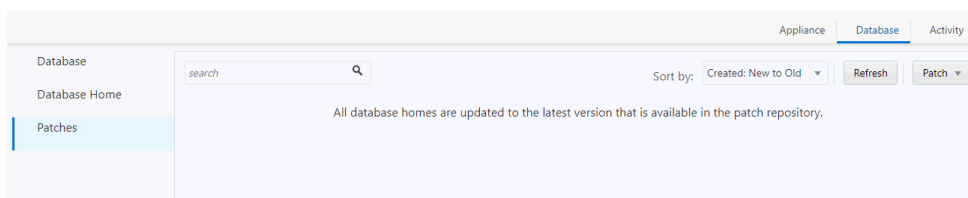
Related Topics

- Updating the Patch Repository (page 6-5)
  Use the Web Console to view the current component versions, upload the Oracle Database Appliance Patch Bundle to the patch repository, and deploy the patch bundle.

6.4 Updating Oracle Database Appliance from the CLI

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

Topics:

- Step 1: Update the Patch Repository (page 6-9)
  Download the Oracle Database Appliance Patch Bundle from My Oracle Support and update the repository with the new patches.

- Step 2: Update the Agent (page 6-10)
  Run the command `update-dcsagent` to update the agent version.

- Step 3: Update the Server (page 6-12)
  Run the command `update-server` to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.

- Step 4: Update Oracle Database (page 6-13)
  Run the command `update-dbhome` to update a specific RDBMS Home to the latest patch bundle version.

6.4.1 Step 1: Update the Patch Repository

Download the Oracle Database Appliance Patch Bundle from My Oracle Support and update the repository with the new patches.

Ensure that there are no jobs running or pending during the update window.

1. Ensure that your appliance has at least version 12.1.2.8.0 of the agent.

   Oracle Database Appliance release 12.1.2.7 is no longer supported for the X6-2S and X6-2M models. Use the `rpm -qa |grep dcs-agent` command to check the `dcs-agent` version.

   ```
   #  rpm -qa |grep dcs-agent
   dcs-agent-12.1.2.7.0_LINUX.X64_160601.x86_64
   ```

   If you have Oracle Database Appliance X6-2S or X6-2M with `dcs-agent` version 12.1.2.7, then you must download and apply patch 24391174 before updating to the latest release.

2. From an external client machine, log on to My Oracle Support and locate patch 28216794 for Oracle Database Appliance.

3. Select the patch version for Oracle Appliance Kit, then click **Download** to download the zip files onto your external client.

   ```
   p28216794_122140_Linux-x86-64_1of3.zip
   p28216794_122140_Linux-x86-64_2of3.zip
   p28216794_122140_Linux-x86-64_3of3.zip
   ```

4. Use either a Secure Copy (scp) command or a USB storage device to upload the files from your local system to a temporary location on Oracle Database Appliance.

5. Unzip `p28216794_122140_Linux-x86-64_1of3.zip` to extract the file `oda-sm-12.2.1.4.0-180703-server1of3.zip`. Unzip `p28216794_122140_Linux-x86-64_2of3.zip` to extract the file `oda-sm-12.2.1.4.0-180703-server2of3.zip`. Unzip

`p28216794_122140_Linux-x86-64_3of3.zip` to extract the file `oda-sm-12.2.1.4.0-180703-server3of3.zip`.

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

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

   ```
   # /opt/oracle/dcs/bin/odacli update-repository -f comma separated list of
   enduser bundles
   ```
   For example:

   ```
   # /opt/oracle/dcs/bin/odacli update-repository -f
   oda-sm-12.2.1.4.0-180703-server1of3.zip,oda-sm-12.2.1.4.0-180703-server2of3.zip,
   oda-sm-12.2.1.4.0-180703-server3of3.zip.zip
   ```

7. Verify that the job completed successfully.

   ```
   # odacli describe-job -i c5288c4f-4a0e-4977-9aa4-4acbf81b65a1
   Job details
   ----------------------------------------------------------------

   ID:  c5288c4f-4a0e-4977-9aa4-4acbf81b65a1
   Description:  Repository Update
   Status:  Success
   Created:  June 7, 2018 6:52:01 AM WSDT
   Message:  /u01/tmpdir/12214_patch.zip
   Task Name                          Start Time
   End Time                                       Status
   ------------------- ---------------------------------
   --------------------------------- -------
   Unzip patch bundle      June 7, 2018 6:52:01 AM WSDT      June 7, 2018 6:52:31 AM
   WSDT        Success
   ```

   Ensure the job completes successfully before proceed to the next step.

   Related Topics

   • Viewing Job Activity (page 1-4)
     Use the Oracle Appliance Manager Web Console to view job activity, the status of tasks in a job, and job status.

   • Special Instructions for Upgrading from a 12.1.2.7.0 Environment (page 4-2)
     If you are using Oracle Database Appliance 12.1.2.7.0, then you must upgrade the `dcs-agent` to 12.1.2.8.0 before installing the latest Oracle Database Appliance Patch Bundle. If you are using 12.1.2.8 or later, you do not need to update the `dsc-agent`.

6.4.2 Step 2: Update the Agent

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

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

1. Log in as the root user.

2. Run the command `update-dcsagent` to define the patch set bundle version and update the agent.

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

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

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

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

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

Example 6-1   Updating the DCS Agent Version

Run the following command to update the DCS Agent to version 12.2.1.4.0:

```
# odacli update-dcsagent -v 12.2.1.4.0
{
  "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 10:30:02 AM EDT",
  "description" : "DcsAgent patching",
  "updatedTime" : "March 26, 2018 10:30:02 AM EDT"
}
```

Example 6-2   Verifying the DCS Agent Version

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

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

Job details
----------------------------------------------------------------
                    ID: 77e454d3-eb68-4130-a247-7633f8d6192b
           Description: DcsAgent patching
                Status: Success
               Created: March 26, 2018 10:39:02 AM EDT
               Message:
Task Name                       Start Time
-------------------             -------------------------------
dcsagent rpm version checking March 26, 2018 10:39:02 AM EDT
Patch location validation     March 26, 2018 10:39:02 AM EDT
Apply dcsagent patch          March 26, 2018 10:39:02 AM EDT

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

6.4.3 Step 3: Update the Server

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

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

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

1. Log in as the root user.

2. Run the command `update-server -v version`, where `version` is the patch set bundle version.

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

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

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

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

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

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

Example 6-3   Updating the Server Version

Run the following command to update the server to version 12.2.1.4.0:

```
# odacli update-server -v 12.2.1.4.0
{
  "jobId" : ""94685c73-55c2-40b1-a02e-265a23c45642",
  "status" : "Created",
  "message" : "Success of Server Update may trigger reboot of node after 4-5
minutes. Please wait till node restart",
  "reports" : [ ],
  "createTimestamp" : "March 26, 2018 14:13:45 PM CST",
  "resourceList" : [ ],
  "description" : "Server Patching",
  "updatedTime" : "March 26, 2018 14:13:45 PM CST"
}
```

Example 6-4   Verifying that the Server is on the Updated Version

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

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

Job details
--------------------------------------------------------------

            ID: 94685c73-55c2-40b1-a02e-265a23c45642
   Description: Server Patching
```

```
             Status: Success
            Created: March 26, 2018 11:02:30 AM EDT
            Message:

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

(Continued)
End Time                          Status
--------------------------        ------
March 26, 2018 11:02:31 AM EDT    Success
March 26, 2018 11:02:31 AM EDT    Success
March 26, 2018 11:02:32 AM EDT    Success
March 26, 2018 11:02:32 AM EDT    Success
March 26, 2018 11:02:32 AM EDT    Success
March 26, 2018 11:02:33 AM EDT    Success
March 26, 2018 11:02:33 AM EDT    Success
March 26, 2018 11:02:33 AM EDT    Success
March 26, 2018 11:03:02 AM EDT    Success
March 26, 2018 11:03:05 AM EDT    Success
March 26, 2018 11:03:05 AM EDT    Success
March 26, 2018 11:03:06 AM EDT    Success
March 26, 2018 11:03:06 AM EDT    Success
March 26, 2018 11:03:09 AM EDT    Success
March 26, 2018 11:03:14 AM EDT    Success
March 26, 2018 11:04:15 AM EDT    Success
March 26, 2018 11:04:50 AM EDT    Success
March 26, 2018 11:16:08 AM EDT    Success
March 26, 2018 11:16:17 AM EDT    Success
```

6.4.4 Step 4: Update Oracle Database

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

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

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

1. Log in as the root user.

2. Run the command `odacli list-dbhomes` to get a list of database homes in the system and the *dbhomeid* for each database.

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

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

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

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

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

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

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

Example 6-5   Getting a List of Database Home IDs

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

```
# /opt/oracle/dcs/bin/odacli list-dbhomes -j
 [ {
    "id" : "ab3cecaf-2223-4726-b95c-488f0aec914a",
    "name" : "OraDB12201_home1",
    "dbVersion" : "12.2.0.1.180417 ",
    "dbHomeLocation" : "/u01/app/oracle/product/12.2.0.1/dbhome_1",
    "createTime" : "March 26, 2018 08:46:52 AM PDT",
    "state" : {
      "status" : "CONFIGURED"
  },
 "updatedTime" : "March 26, 2018 11:55:55 AM PDT"
 }, {
    "id" : "d5b01e27-799e-4e8a-bfe6-07a781f79526",
    "name" : "OraDB12201_home2",
    "dbVersion" : "12.2.0.1.180417",
    "dbHomeLocation" : "/u01/app/oracle/product/12.2.0.1/dbhome_2",
    "createTime" : "March 26, 2018 22:34:31 PM PDT",    "state" : {
```

```
      "status" : "CONFIGURED"
    },
    "updatedTime" : "March 26, 2018 22:36:59 PM PDT"
  } ]
```

Example 6-6   Updating the Database Home Version

The following example updates database home ID d5b01e27-799e-4e8a-
bfe6-07a781f79526 to Oracle Database Appliance version 12.2.1.4.0.

```
# odacli update-dbhome -i d5b01e27-799e-4e8a-bfe6-07a781f79526 -v 12.2.1.4.0

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

Example 6-7   Verifying that Database Home is Updated

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

```
# /opt/oracle/dcs/bin/odacli describe-job -i "576cdbfa-ece4-4e5f-becd-9bc6e6bf430b"
Job details
 ----------------------------------------------------------------
                    ID: 576cdbfa-ece4-4e5f-becd-9bc6e6bf430b
           Description: DbHome Patching: Home Id is d5b01e27-799e-4e8a-
bfe6-07a781f79526
                Status: Success
               Created: March 26, 2018 11:08:35 AM PDT
               Message:

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

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

6.5 Updating Components Without Using a Patch Update

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

The patch bundle includes relevant patches, including the following:

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

> **⚠ Caution:**
>
> Do not patch Oracle Database Appliance using individual patches for Oracle Grid Infrastructure, Oracle Database, and most Oracle Linux RPM updates. Do not use individual infrastructure patches, such as firmware patches. You must only use Oracle Database Appliance patches.
>
> If you use patches that are not intended for Oracle Database Appliance, or if you use OPatch, or a similar patching tool, then you can encounter problems with storage, communication, and applying patch updates in the future.

Updating Oracle Linux RPMs

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

> **⚠ Caution:**
>
> For database nodes, do not update the following:
>
> - Oracle Linux Kernel (kernel*)
> - Oracle Optimal Flexible Architecture (ofa*)
> - Oracle InfiniBand-related packages (ofed*)
>
> For storage, do not apply *any* RPM updates.

Using a Different Version of Java Development Kit (JDK)

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

6.6 Performing a Bare Metal Restore

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

- About Performing a Bare Metal Restore (page 6-17)
  Bare metal operating system (OS) re-imaging installs Oracle Database Appliance operating system software on the local (boot) drive.

- Downloading the ISO Image for Bare Metal Restore (page 6-18)
  Download the Oracle Database Appliance 12.2.1.4.0 Bare Metal ISO image to your desktop or external client to prepare for a bare metal restore on Oracle Database Appliance.

- Re-imaging Oracle Database Appliance (page 6-18)
  Re-image Oracle Database Appliance to perform a bare metal restore of Oracle Database Appliance.

6.6.1 About Performing a Bare Metal Restore

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

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

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

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

- Deploy Bare Metal with latest Oracle Database Appliance software.

  In some cases, the Oracle Database Appliance machine is shipped from the factory with an earlier release of Oracle Database Appliance software. To deploy the machine with the latest software, you can perform an update or you can reimage the machine.

- Roll back to an earlier version of Oracle Database Appliance software.

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

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

6.6.2 Downloading the ISO Image for Bare Metal Restore

Download the Oracle Database Appliance 12.2.1.4.0 Bare Metal ISO image to your desktop or external client to prepare for a bare metal restore on Oracle Database Appliance.

Before downloading the image, ensure that the initial network connection is configured. To use `scp` or `sftp`, you must first set up a static IP address (for example, `oda_host`) and configure Oracle Database Appliance with that address by using the `configure-firstnet` command. This command ensures the system is available in your network, enabling you to use the Oracle Appliance Manager Web Console to deploy Oracle Database Appliance.

1. From an external client machine, log on to My Oracle Support. Locate patch 23530609 for the Oracle Database Appliance Bare Metal ISO Image.

   https://updates.oracle.com/download/23530609.html

2. Select the patch version for Oracle Appliance Kit 12.2.1.4.0, then click **Download** to download the zip files onto your external client.

   ```
   23530609_122140_Linux-x86-64.zip
   ```

3. Use either a Secure Copy (scp) command or a USB storage device to copy the file from the external client to `dom0` on Node 0. Use the `/tmp` directory as the target location.

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

4. Unzip the patch bundle.

   ```
   # cd /tmp
   # unzip 23530609_122140_Linux-x86-64.zip
   ```

Related Topics

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

6.6.3 Re-imaging Oracle Database Appliance

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

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

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

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

https://*ilom-ip-address*

2. Launch the Remote Console.

   a. Expand **Remote Control** in the left navigation.

   b. Click the **Redirection** tab.

   c. Click **Launch** for the Remote Console in the Actions menu.

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

3. Add the image.

   a. Click the **KVMS** tab, then select **Storage**.

   b. Click **Add**.

   c. Browse to the Oracle Database Appliance Bare Metal ISO Image, highlight the image, then click **Select**.

   d. Click **Connect**.

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

   e. Click **OK**

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

4. Configure the CD-ROM as the next boot device.

   a. Expand **Host Management** in the left menu of the ILOM Remote Console tab.

   b. Click **Host Control**.

   c. Select **CDROM** from the Next Boot Device menu, then click **Save**.

5. Power cycle the node.

   a. Click **Power Control** in the **Host Management** menu.

   b. Select **Power Cycle** , then click **Save**.

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

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

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

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

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

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

7

Configuring and Using Oracle Auto Service Request (ASR)

Configure and use Oracle ASR to automatically generate a service request for specific hardware faults.

Topics:

- Configuring Oracle ASR in the Web Console (page 7-1)
  Use the Web Console to configure Oracle ASR.

- Testing Oracle ASR (page 7-4)
  Use the `odacli test-asr` command to confirm that your Oracle ASR configuration is working.

- Managing an Oracle ASR Configuration (page 7-4)
  Use the command-line to review an existing configuration, make changes to a configuration, or delete a configuration.

- Additional Resources for Oracle ASR (page 7-5)
  Refer to these sections for more information about Oracle ASR.

7.1 Configuring Oracle ASR in the Web Console

Use the Web Console to configure Oracle ASR.

- About Configuring Oracle ASR (page 7-1)
  Configure Oracle Auto Service Request (Oracle ASR) to automatically generate service requests for specific hardware faults.

- Configuring Internal Oracle ASR (page 7-2)
  Use the Oracle Appliance Manager Web Console to configure Oracle Auto Service Request (Oracle ASR) in Oracle Database Appliance.

- Registering with External Oracle ASR Manager (page 7-3)
  Use the Oracle Appliance Manager Web Console to register Oracle Database Appliance with an existing Oracle Auto Service Request (Oracle ASR) Manager.

7.1.1 About Configuring Oracle ASR

Configure Oracle Auto Service Request (Oracle ASR) to automatically generate service requests for specific hardware faults.

Oracle ASR is a secure support feature that can improve system availability through expedited diagnostics and priority service request handling. You can configure Oracle ASR on Oracle Database Appliance to use its own ASR Manager (**internal Oracle ASR**) or use Oracle ASR Manager configured on another server in the same network as your appliance (**external Oracle ASR**). If you already have Oracle ASR Manager configured in your environment, you can register Oracle Database Appliance with your existing Oracle ASR Manager.

> **Note:**
>
> With an internal Oracle ASR Manager, an alert is not sent when the server goes down. If a critical event occurs on Oracle Database Appliance with an external Oracle ASR Manager, then an alert can still be sent to Oracle.

You can configure Oracle ASR as part of deploying the appliance, or you can use the Oracle Appliance Manager Web Console or command-line interface to configure or edit an Oracle ASR after deployment.

You need the following items to support Oracle ASR:

- Oracle Database Appliance hardware must be associated with a Support Identifier (SI) in My Oracle Support.

- If a proxy server is required for Internet access to Oracle, then you must also provide the name of the proxy server. You can optionally configure Oracle ASR to use Simple Network Management Protocol (SNMP) Version 2 or SNMP Version 3.

- To configure an internal Oracle ASR Manager, you need a My Oracle Support account user name (e-mail address) and password associated with the My Oracle Support account under which the server is registered.

- To register with an external Oracle ASR Manager, you need the IP address of the Oracle ASR Manager.

Related Topics

- Configuring Internal Oracle ASR (page 7-2)
  Use the Oracle Appliance Manager Web Console to configure Oracle Auto Service Request (Oracle ASR) in Oracle Database Appliance.

- Configuring External Oracle ASR (page 7-3)
  Use the Oracle Appliance Manager Web Console to register Oracle Database Appliance with an existing Oracle Auto Service Request (Oracle ASR) Manager.

- odacli configure-asr (page 13-63)

7.1.2 Configuring Internal Oracle ASR

Use the Oracle Appliance Manager Web Console to configure Oracle Auto Service Request (Oracle ASR) in Oracle Database Appliance.

You can register with an internal Oracle ASR Manager at any time, or edit an existing registration. Before configuring, verify that the Oracle Database Appliance hardware is associated with a Support Identifier (SI) in My Oracle Support.

You need the following information to configure Oracle ASR:

- The e-mail address associated with the My Oracle Support account under which the server is registered

- The password associated with the My Oracle Support account under which the server is registered

- If a proxy server is required for Internet access to Oracle, then you must also provide the name of the proxy server

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

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

2. Login as `oda-admin`.

3. Click the **Appliance** tab.

4. Click the Oracle ASR menu.

5. If Oracle ASR is already configured,

6. Click **Configure ASR**.

7. Select **Internal** from the ASR Type menu.

8. In the ASR User Name field, enter e-mail address associated with the My Oracle Support account under which the server is registered.

9. In the Password field, enter the password associated with the My Oracle Support account under which the server is registered.

10. Select **V2** or **V3** from the SNMP Version menu.

11. (Optional) If you are using an HTTP Proxy for upload to Oracle ASR, complete the following:

    a. **HTTP Proxy used for Upload to ASR**: Select **Yes**.

    b. **Proxy User Name**: If you are using a proxy for upload, enter the proxy user name.

    c. **Proxy Port**: If you are using a proxy for upload, enter the proxy port.

    d. **(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**.

    e. **(Optional) Proxy Password**: If you are using a proxy for upload and require authentication, enter the proxy password.

12. Click **Create**.

7.1.3 Registering with External Oracle ASR Manager

Use the Oracle Appliance Manager Web Console to register Oracle Database Appliance with an existing Oracle Auto Service Request (Oracle ASR) Manager.

You can register with an external Oracle ASR Manager at any time.

Before configuring, verify that the Oracle Database Appliance hardware is associated with a Support Identifier (SI) in My Oracle Support.

To configure Oracle ASR, you need the IP Address for the Oracle ASR Manager:

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

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

2. Login as `oda-admin`.

3. Click the **Appliance** tab.

4. Click the Oracle ASR menu.

5. If Oracle ASR is already configured,

6. Click **Configure ASR**.

7. Select **External** from the ASR Type menu.

8. Enter the IP Address for the Oracle ASR Manager in the ASR Manager IP field.

9. Select **V2** or**V3** from the SNMP Version menu.

10. Click **Create**.

7.2 Testing Oracle ASR

Use the `odacli test-asr` command to confirm that your Oracle ASR configuration is working.

The command internally invokes the SNMP test trap by invoking `/SP/alertmgmt/rules/1 testrule=true`. Attempting to test the configuration outside of the `odacli test-asr` command might not provide the expected test result.

1. Log in as root user.

2. Run the `odacli test-asr` command.

```
# 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
------------------------------ -------------------- ---------------- ----------
```

3. If the results are not as expected, use the `odacli show-asr` command to review your Oracle ASR configuration.

7.3 Managing an Oracle ASR Configuration

Use the command-line to review an existing configuration, make changes to a configuration, or delete a configuration.

You can view and edit the configuration details, but you cannot change the Oracle ASR type. For example, from internal to external. To change the Oracle ASR type, delete the existing configuration and then re-configure Oracle ASR.

All log files for Oracle ASR are located in the `/var/opt/asrmanager/log/` directory.

1. To display Oracle Auto Service Request (Oracle ASR) configuration details, use the `odacli describe-asr` command.

```
# 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, 2017 8:53:54 AM PST
Updated: July 15, 2017 8:53:54 AM PST
```

2. (Optional) To make changes to Oracle ASR configuration details after deploying the appliance, use the `odacli update-asr` command.

3. (Optional) To remove the Oracle ASR configuration from the system, use the `odacli delete-asr`command.

```
# odacli delete-asr
{
"jobId" : "5d70bd17-ec4a-48da-8196-1364105db99d",
"status" : "Running",
"message" : null,
"reports" : [ ],
"createTimestamp" : 1469409622451,
"description" : "Delete ASR",
"updatedTime" : 1469409622458
}
```

Related Topics

- odacli Oracle Auto Service Request Commands (page 13-63)
  Use the Oracle Auto Service Request (Oracle ASR) commands to configure, update, test, and delete Oracle ASR on the system.

7.4 Additional Resources for Oracle ASR

Refer to these sections for more information about Oracle ASR.

- Oracle ASR product page:

  http://www.oracle.com/asr

- Oracle Database Appliance products qualified for Oracle ASR:

  – Oracle ASR Qualified Oracle Database Appliance Products

  – **IMPORTANT**: Oracle ASR Qualifed Product and Fault Rule Coverage Supplement (Doc ID 2142295.1)

- Oracle ASR user documentation:

  http://docs.oracle.com/cd/E37710_01/index.htm

8

Managing Oracle Databases

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

-

8.1 Administrative Groups and Users on Oracle Database Appliance

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

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

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

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

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

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

8.2 Data Migration and Management and Oracle Database Appliance

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

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

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

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

8.3 Working with Databases

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

8.3.1 Viewing Databases in the Web Console

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

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

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

2. Log in as `oda-admin`.

3. Click the **Database** tab.

4. Click **Delete** next to a database entry to delete the database.

8.3.2 Creating a Database in the Web Console

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. The database edition selected during Oracle Database Appliance deployment determines the database editions that you create in the appliance. To change editions, you must redeploy Oracle Database Appliance.

Oracle Database 12.1 is supported on both Oracle Automatic Storage Management (Oracle ASM) and Oracle ASM Cluster file system (ACFS). Oracle Database 11.2 is only supported on Oracle ACFS. When databases are created in Oracle ACFS, each database is configured with its own Oracle ACFS file system for the datafiles and uses the following naming convention: `/u02/app/db user/oradata/db unique name`. The default size of this mount point is 100 GB.
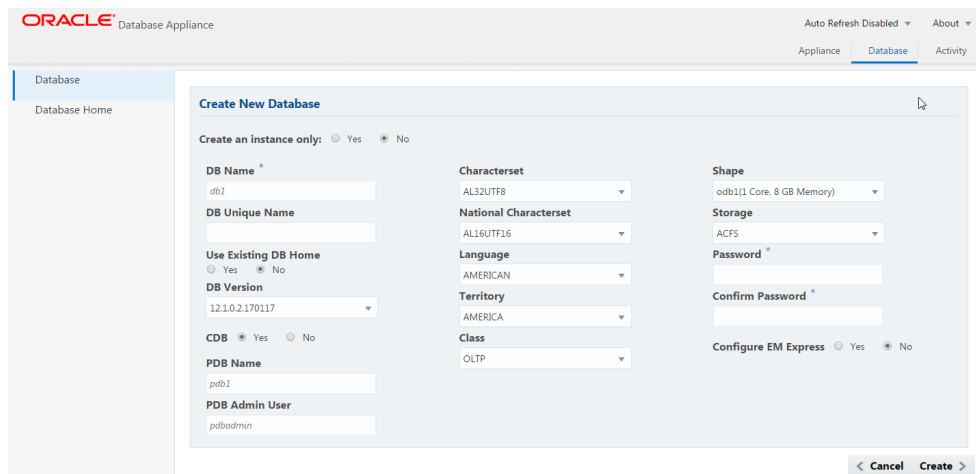
The fields in the Web Console adjust, depending on which database version you select. For example, if you select database version 11.2.0.4.161018, the storage field does not appear in the Web Console because Oracle ACFS is the only option available.

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

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

2. Login as `oda-admin`.

3. Click the **Database** tab.

4. Click **Create Database** to display the Create New Database page.

   The image shows the fields completed to create a new database named `db1` using database version `12.1.0.2.170117` with a new database home. The database is a container database. The pluggable database (PDB) name is `pdb1` and the PDB Admin User is `pdbadmin`. The Characterset, National Characterset, Language, Territory, and Class are all default options. The shape is `odb1`, which has 1 core and 8 GB of memory. The database uses ACFS storage and is not configured for EM Express.

5. Enter the following information on the Create New Database page to configure the database:

a. For the **Create an instance only** option, keep the default value**No**.

b. 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. In Oracle Database Appliance X6-2, the Oracle system identifier (SID) is always set to the database name.

c. (Optional) In the **DB Unique Name** field, enter a name to define a unique name for the database.

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. In the **DB Home** field, select **Create a new DB Home** or select a version from the drop-down list. The list is populated with database homes that you created earlier.

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

g. In the **PDB Name** field, enter a name for the pluggable database (PDB). This field is not available for Oracle Database version 11.

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

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

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

i. In the **Characterset** field, select an option from the drop-down list. The default is AL32UTF8.

j. In the **National Characterset** field, select an option from the drop-down list. The default is AL16UTF16.

k. In the **Language** field, select a database language from the drop-down list. The default is American.

l. In the **Territory** field, select a territory or location for the database from the drop-down list. The default is America.

m. In the **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.

n. 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).

o. In the **Storage** field, select ACFS or ASM from the drop-down list. The default is Oracle ASM. For Oracle Database version 11, Oracle ACFS is the only option and the field does not appear in the Web Console.

p. 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.

q. In the Confirm Password field, enter the password again to confirm.

r. For the **Configure EM Express** or **Configure EM Console** option, select **Yes** or **No**. The default is **No**.

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

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. Click the job number to view the tasks. 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.

8.3.3 Creating a Database from Backup

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

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

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

1. Obtain Object Store Credentials for the host.

2. Create a backup policy using the object store credentials as the backup destination.

3. Attach the backup policy to the database that you want to backup.

4. Create a manual backup of the database and save the file.

1. Log into the Web Console:

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

2. Click the **Database** tab.

3. Verify that **Auto Refresh Disabled** appears on the page.

4. Click **Create Database from Backup**, then click **Next** to display the Create Database from Backup page.

5. Select your Object Store Credential name.

6. Enter the password in the **Backup Encryption Passwords** field and the **Confirm Backup Encryption Passwords** field.

7. Click **Browse** and select the backup report.

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

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

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

9. Enter the password in the **SYS User Password** field and the **Confirm SYS User Password** field.

10. Click **Create**.

11. Click **Yes** to confirm that you want to create a database from the selected Object Store backup.

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

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

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

8.4 Working with Database Homes

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

- About Managing Multiple Oracle Homes on Oracle Database Appliance (page 8-7)
  Create and manage one or more Oracle home directories and Oracle databases on Oracle Database Appliance.

- Downloading an RDBMS Clone File (page 8-9)
  Download an Oracle Database Appliance RDBMS Clone file onto your local machine to create a new database home.

- Viewing Database Homes in the Web Console (page 8-10)
  Use the Oracle Appliance Manager Web Console to display a list of database homes, database home details, and to delete database homes in Oracle Database Appliance.

- Creating Database Homes with the Web Console (page 8-11)
  Use the Oracle Appliance Manager Web Console to create database homes in Oracle Database Appliance.

8.4.1 About Managing Multiple Oracle Homes on Oracle Database Appliance

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

Oracle home is the directory in which you install Oracle Database binaries, and from which Oracle Database runs. Oracle Database Appliance supports multiple Oracle homes, including support of different release Oracle Database homes. You can create multiple Oracle databases on a given Oracle home. Use Oracle Appliance Manager ODACLI commands 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 related *Readme* files or the *Release Notes* to obtain information about the specific Oracle software releases supported for your Oracle Database Appliance platform.

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

> **Note:**
>
> If you are not upgrading from an earlier release, then download the Oracle Database Appliance End-User Bundle for the Oracle Database version that you want to install.

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

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

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

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

Related Topics

- [Downloading the ISO Image for Bare Metal Restore](#) (page 6-18)
  Download the Oracle Database Appliance 12.2.1.4.0 Bare Metal ISO image to your desktop or external client to prepare for a bare metal restore on Oracle Database Appliance.

8.4.2 Downloading an RDBMS Clone File

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

This software clone file contains the Oracle Database software images for Oracle Database Appliance:

- Use the Oracle 12.1.0.2.x RDBMS Software Clone file to create any new 12.1 database homes.

- Use the Oracle 11.2.0.4.x RDBMS Software Clone file for creating any new 11.2 database homes.

  Oracle Database Appliance X6-2 models do not support Oracle Database 11.2.0.3.*x*.

Before you transfer these files to Oracle Database Appliance, complete the hardware setup and configure the public network interface with the command `configure-firstnet` on Oracle Database Appliance.

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

2. Select the Oracle Database Appliance RDBMS Clone file (Patch) for the supported Oracle Database version.

   - 12.1.0.2.180417: Patch 23494992. Select the latest release from the Release drop down box.

   - 11.2.0.4.180417: Patch 23494997. Select the latest release from the Release drop down box.

3. Click **Download** to download the zip file onto your external client.

4. Use either a Secure Copy (scp) command or a USB storage device to copy the file from the external client to `dom0` on Node 0. Use the `/tmp` directory as the target location.

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

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

```
# cd /tmp
# unzip p23494997_1212110_Linux-x86-64.zip .
# odacli update-repository -fileName /tmp/oda-sm-12.1.2.11.0-161116-
DB-11.2.0.4.zip
```

Related Topics

• https://updates.oracle.com/download/23494992.html

• https://updates.oracle.com/download/23494997.html

8.4.3 Viewing Database Homes in the Web Console

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

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

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

2. Enter the following credentials:

   • User name: `oda-admin`

   • Password: `welcome1`

3. Click the **Database** tab.

4. Click **Database Home** on the left menu.

5. Click **Create Database Home**.

6. Click **Delete** next to a database home entry to delete the database home.

8.4.4 Creating Database Homes with the Web Console

Use the Oracle Appliance Manager 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.

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

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

2. Log in as `oda-admin`.

3. Click the **Database** tab.

4. Click **Database Home** on the left menu.

5. Click **Create Database Home**.
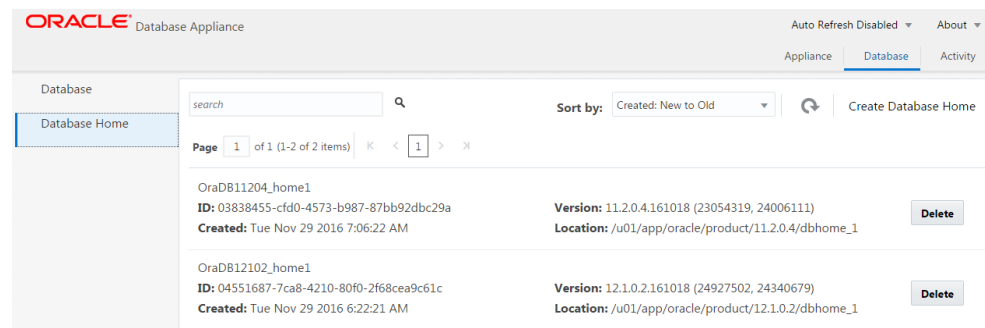
6. Select a database version from the list of available versions.
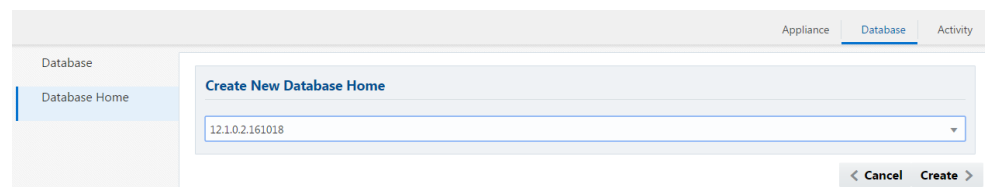
7. Click **Create**. When prompted, click **Yes** to confirm that you want to start the job.

8.5 Migrating Databases

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

- About Migrating Databases (page 8-12)
  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.

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8.5.1 About Migrating Databases

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

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

- Source database: The existing database to be migrated.

- Target database: The new database created on an Oracle Database Appliance environment.

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

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

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

   Confirm that the provisioning completed successfully.

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

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

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

   - If you have a bare metal platform, use the command `odacli create-database` with the `instanceonly` flag on an Oracle Database Appliance machine. The new database is the target database.

   - If you have a virtualized platform, use the command `oakcli create-database` with the `instanceonly` flag on an Oracle Database Appliance machine. The new database is the target database.

   Creating an instance only database also creates the following:

   - ACFS Filesystem used to store the database files

   - Directory structures that are required by the database instance/rman duplicate command

   - Password file for the SYS user

3. **Configure a static listener.**

4. **Migrate the existing database to the target database using the backup and restore operations.**

5. **Register the migrated database with the appliance.**

8.5.2 Creating an Instance Only Database

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

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

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

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

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

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

   (continued)
   Home Location
   ----------------------------------------
   /u01/app/orauser/product/12.1.0.2/dbhome_1
   ```

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

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

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

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

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

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

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

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

8.5.3 Configuring a Static Listener

Configure a static listener before you duplicate a database.

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

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

1. Log in as a grid user.

2. Navigate to `/u01/app/12.1.0.2/grid/network/admin/` directory.

3. Edit the default `listener.ora` file and append the static database entry.

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

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

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

4. Save the file.

5. Restart the listener.

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

8.5.4 Migrating a Database

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

Before migrating the database, ensure that the following prerequisites are met:

- Oracle Database Appliance X6-2S, X6-2M, or X6-2L with at least version 12.1.2.9.0.

  Use the `odacli list-jobs` and `odacli describe-job` commands to verify the status.

- Verify that a network connection exists between the source and destination databases.

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

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

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

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

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

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

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

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

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

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

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

```
# odacli describe-dbstorage -i ff2023d9-338d-4cff-8bb4-e73a89e32ce4
DBStorage details
----------------------------------------------------------------
ID: ff2023d9-338d-4cff-8bb4-e73a89e32ce4
DB Name: PRODDB
DBUnique Name: PRODDB
DB Resource ID: c5b77384-634e-4dc8-b10b-fa2831d2c59b
Storage Type: Acfs
DATA Location: /u02/app/oracle/oradata/PRODDB
RECO Location: /u03/app/oracle/fast_recovery_area/
REDO Location: /u03/app/oracle/redo/
State: ResourceState(status=Configured)
Created: November 22, 2016 12:07:12 PM SGT
UpdatedTime: November 22, 2016 12:26:39 PM SGT
```

5. Duplicate the database.

Use the RMAN duplicate database command to duplicate the database.

```
rman target sys/Welcome__12@source database hostname:PORT
(Continued)
```

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

8.5.5 Registering a Database

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

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

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

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

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

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

3. Register the database with Oracle Database Appliance.

```
odacli register-database -c OLTP -s odb1 -sn proddb.example.com -p
Password for SYS:
{
  "jobId" : "317b430f-ad5f-42ae-bb07-13f053d266e2",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "August 08, 2016 05:55:49 AM EDT",
  "description" : "Database service registration with
```

```
                         db service name: proddb.example.com",
      "updatedTime" : "August 08, 2016 05:55:49 AM EDT"
    }
    rpandrap: ]# odacli describe-job -i "317b430f-ad5f-42ae-bb07-13f053d266e2"

    Job details
    ----------------------------------------------------------------
                ID: 317b430f-ad5f-42ae-bb07-13f053d266e2
       Description: Database service registration with
                    db service name: proddb.example.com
            Status: Success
           Created: November 23, 2016 5:55:49 AM EDT
           Message:

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

    (Continued)
       End Time                       Status
    ------------------------------- --------
    November 23, 2016 5:56:08 AM EDT    Success
    November 23, 2016 5:56:13 AM EDT    Success
    November 23, 2016 5:57:05 AM EDT    Success
    November 23, 2016 5:57:36 AM EDT    Success
    November 23, 2016 5:57:49 AM EDT    Success
```

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

8.6 About Managing Multiple Database Instances Using Instance Caging

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

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

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

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

> **✎ Note:**
>
> Oracle strongly recommends that you use the Oracle Database Appliance templates, because they implement best practices and are configured specifically for Oracle Database Appliance.
>
> The Oracle Database Appliance Manager interface refers to the database sizing templates as database classes.

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

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

8.7 Oracle EM Express and DB Console

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

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

The EM Express console provides the following features:

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

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

9
Managing Storage

Expand storage capacity and replace disks in Oracle Database Appliance.

- About Managing NVMe Storage Disks (page 9-1)
  Depending on the available drives, you can expand Oracle Database Appliance X6-2S, X6-2M, or X6-2L storage to add NVMe disks or replace existing NVMe disks.

- About Storage Expansion Options for Oracle Database Appliance X6-2 (page 9-2)
  With this release, you can add X7-2 S/M 6.4TB Intel NVMe storage disks to X6-2 Oracle Database Appliance, with some configuration changes.

9.1 About Managing NVMe Storage Disks

Depending on the available drives, you can expand Oracle Database Appliance X6-2S, X6-2M, or X6-2L storage to add NVMe disks or replace existing NVMe disks.

Use the ODAADMCLI commands to perform appliance storage maintenance tasks, including perform storage diagnostics and collect diagnostic logs for storage components.

Changing NVMe Storage Disks

The default configuration for Oracle Database Appliance X6-2S or X6-2M includes two (2) NVMe disks. You can expand storage by adding two (2) additional disks for a total of four (4) NVMe disks. When you expand storage, you must add both NVMe drives, adding just one is not supported.

The default configuration for Oracle Database Appliance X6-2L includes six (6) NVMe disks. You can expand storage by adding three (3) disks for a total of nine (9) NVMe disks. When you expand storage, you must add all three NVMe drives, adding just one or two is not supported.

Oracle Database Appliance uses special commands to add or remove NVMe storage.

> ⚠ **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.

Drive LED Indicators

Each NVMe drive slot has a light-emitting diode (LED) indicator indicating the disk status:

- Green LED: OK/Activity. Disk is working normally. It is not safe to pull the drive when the green indicator light is on.

- Amber LED: Service needed or there is a critical warning. It is not safe to pull the drive when the amber indicator light is on.

- Blue LED: The disk is powered off and it is safe to remove the drive from the system.

9.2 About Storage Expansion Options for Oracle Database Appliance X6-2

With this release, you can add X7-2 S/M 6.4TB Intel NVMe storage disks to X6-2 Oracle Database Appliance, with some configuration changes.

Oracle Database Appliance X6-2S, X6-2M, and X6-2L use 3.2 TB NVMe disks. When you order for Oracle Database Appliance X7-2 storage, you receive the default 6.4 TB NVMe disks. Oracle Database Appliance uses special commands to add or remove NVMe storage.

When you expand storage with the 6.4 TB NVMe disks, they are formatted down to match the 3.2 TB drives that are delivered with Oracle Database Appliance X6-2S, X6-2M, and X6-2L. If you want to be able to utilize the full 6.4 TB drives, you must remove the 3.2 TB drives and re-image your Oracle Database Appliance. The re-image process removes all databases and files on the system. Ensure that you backup your databases and files, so that you can restore them after the re-image process.

10

Managing Networks

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

Related Topics

10.1 About Network Infrastructure and VLANs on Oracle Database Appliance

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

Virtual local area networks (VLANs) are multiple logical networks that are created from a single physical network switch port. VLANs provide network security isolation for multiple workloads that share a common network. For example, application, backup, and management networks. Each VLAN acts as an independent logical network operating with other VLANs over the same physical connection.

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

Connections to user domains are through the selected interfaces. A switch that supports tagged VLANs uses VLAN IDs to identify the packet, including to which network the packet belongs.

> **Note:**
>
> You cannot modify the Public and Private-interfaces after the system is
> deployed. To use VLANs with Oracle Database Appliance, you must
> configure them before you deploy the appliance.

Use the Web Console to display all physical and virtual networks. Use the command-
line interface to create, list, and delete VLANs.

10.2 Viewing Configured Networks

Use the Oracle Appliance Manager Web Console to display a list of configured
networks and network details.
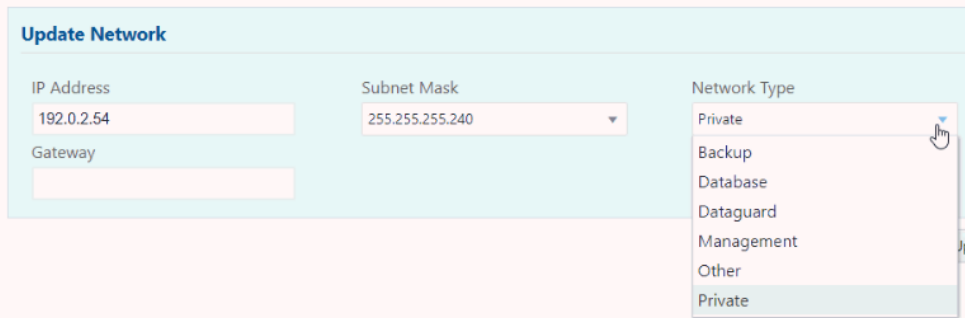
1. Open a browser and enter the following URL to launch the Web Console:

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

2. Enter the following credentials:

    *   User name: `oda-admin`

    *   Password: `welcome1`

3. Click the **Network** tab.

    You can view network details, create a new network, update an existing network,
    and delete a network.

10.3 Creating a Network

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

The Web Console provides a quick and easy method of creating networks. You can
create the following types of networks: Public, Private, Dataguard, Backup, and Other.

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

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

2. Login as `oda-admin`.

3. Click the **Network** tab.

4. Click **Create Network** to display the Create New Network page.

5. Enter the following information on the Create New Network page to configure the network:

   a. In the **IP Address** field, enter the network's IP address.

   b. In the **Interface** field, select an interface from the menu.

   c. In the **Subnet Mask** field, enter the subnet mask.

   d. In the **Network Type** field, select an option from the drop-down list. The options are: Public, Private, Dataguard, Backup, and Other.

   e. In the **Gateway** field, enter the gateway. The gateway is required for the default network.

   f. For the Default Network, select **Yes** or **No** to identify whether or not the network is the default network.

   In this example the fields are completed to create a new Other type network that uses an sfpbond1 interface with a defined IP address, subnet mask, and gateway.

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

10.4 Updating a Network

Use the Oracle Appliance Manager Web Console to update an existing network configuration.

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

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

2. Login as `oda-admin`.

3. Click the **Network** tab.

4. Select **Update** from the Actions menu next to the network you want to update.

5. Edit the fields, as needed, on the Update Network page to update the network configuration:

   a. In the **IP Address** field, enter the network's IP address.

   b. In the **Interface** field, enter the name of the network interface.

   c. In the **Subnet Mask** field, enter the subnet mask.

   d. In the **Network Type** field, select an option from the drop-down list. The default is Other.

   e. In the **Gateway** field, enter the gateway. The gateway is required for the default network.

   f. For the Default Network, select **Yes** or **No** to identify whether or not the network is the default network.

6. Click **Update**. When prompted, click **Yes** to confirm that you want to start the job to update the network.

10.5 Deleting a Network

Use the Oracle Appliance Manager Web Console to delete a specific network.

> **Note:**
>
> You can only delete networks that are not public or private networks. The delete option is disabled for the private and public networks.

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

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

2. Login as `oda-admin`.

3. Click the **Network** tab.

4. Select **Delete** from the Actions menu next to a network entry.

11
Backup, Restore and Recover Databases

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

11.1 About Database Backup, Restore and Recover

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

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

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

The following backup options are available:

- Backup to an Oracle Fast Recovery Area (FRA) disk

- Backup to Oracle Cloud Infrastructure Object Storage (Oracle Object Storage)

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

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

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

> **✎ Note:**
>
> You cannot backup databases that use Transparent Data Encryption (TDE).

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

Backup Configuration

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

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

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

Backup Levels

The backup configuration that you create defines the backup level:

- **Level 0**: The backup captures all blocks in the datafile. By default level 0 backups occur every Sunday. A level 0 backup is a full backup and is used as the parent for a level 1 backup.

- **Level 1**: The backup is an incremental backup that captures only those blocks that change between backups in each datafile. By default, a level 1 backup occurs daily, Monday through Saturday, and captures images of each block in a datafile

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

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

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

Backup to Disk

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

Advantages to backing up to disk are as follows:

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

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

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

1. Create a backup configuration to define the backup location (disk), backup level, and recovery window.

2. Create a database and attach the backup configuration as part of creating the database. When the backup configuration is associated with a database, backups are automatically created.

3. Manage obsolete backups.

4. Recover the database from a backup on the disk.
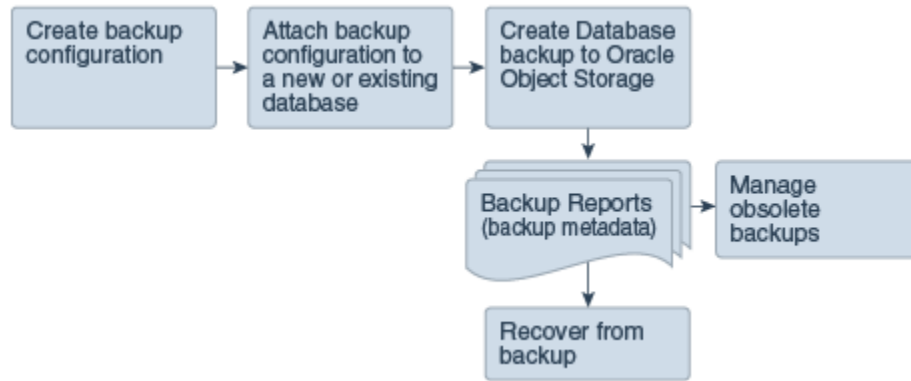
Backup to Oracle Object Storage

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

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

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

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

Advantages to using Oracle Object Storage are as follows:

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

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

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

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

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

1. Create a ObjectStoreSwift object with your credentials.

2. Create a backup configuration to define the backup location (ObjectStore), resource id of ObjectStoreSwift, the container (bucket) name where you want to store backups, and the recovery window.

3. Create a database and attach the backup configuration as part of creating the database. When the backup configuration is associated with a database, backups are automatically created.

4. Manage obsolete backups.

5. Restore from backup. When you save your backups to Oracle Object Storage, you can restore the database to the same system or to a different system.

6. Recover the database from a backup on Oracle Object Storage.
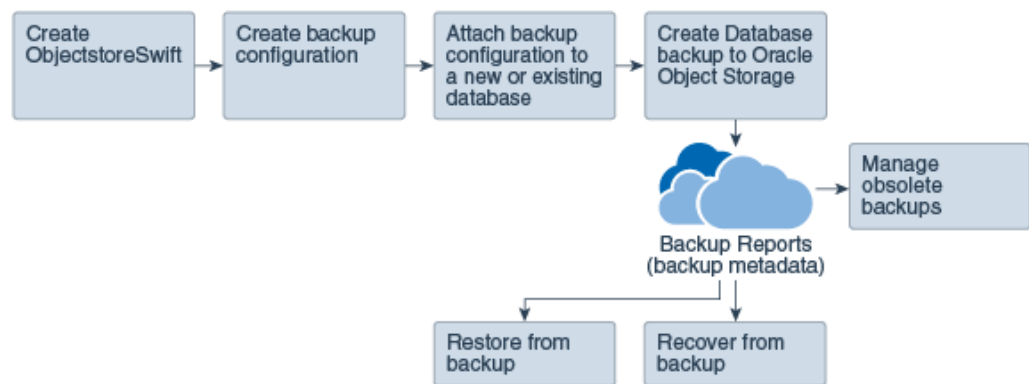
> **Note:**
>
> Before you can use this backup option, you must create an Oracle Cloud Infrastructure Object Storage account. When you create the account, you define the account credentials, end point URL, and bucket. Go to the Oracle Store and sign up for Oracle Cloud Infrastructure Object Storage.

Backup Reports

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

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

```
{
  "id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
  "dbResId" : "b5fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
```

```
    "dbId" : "2717054291",
    "dbName" : "HRDbO",
    "dbUniqueName" : "HRDbOu",
    "backupType" : "REGULAR-L1",
    "keepDays" : null,
    "backupLocation" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket",
    "cfBackupHandle" : "c-2717054291-20171108-04",
    "spfBackupHandle" : "c-2717054291-20171108-04",
    "pitrTimeStamp" : "November 08, 2017 12:43:14 PM UTC",
    "pitrSCN" : "1175058",
    "resetLogsTimeStamp" : "November 08, 2017 09:55:34 AM UTC",
    "resetLogsSCN" : "1112268",
    "oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
    "sqlPatches" : "25811364,26609817",
    "backupLogLoc" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/scaoda702c1n1/rmanlog/
HRDbOu/2717054291/2017-11-08/rman_backup_2017-11-08_12-42-41.0545.log",
    "tdeWalletLoc" : null,
    "dbConfigLoc" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/scaoda702c1n1/dbconfig/
HRDbOu/2717054291/2017-11-08/DBCONFIG_TAG20171108T124407_2017-11-08_12-44-07.0533.tar.gz",
    "name" : "Backup_Report_HRDbO",
    "createTime" : "November 08, 2017 12:42:08 PM UTC",
    "state" : {
      "status" : "CONFIGURED"
    },
    "updatedTime" : "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" : "odb1",
      "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 then the query environment SCN.

4. Commit. Every commit generates an SCN (commit SCN) that marks a transaction boundary. Group commits are possible too.

Obsolete Database Backups

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

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

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

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

• Disk: 1-14 days

• Object Storage: 1-31 days

Related Topics

- [odacli Backup and Recovery Commands](#) (page 13-20)
  Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.

11.2 Creating a Database Backup Policy

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

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

1. Click the **Database** tab in the Web Console.

2. Click **Backup Policy** in the left navigation to display a list of backup policies.

3. Click **Create Backup Policy**.

4. Enter a name for the backup policy and select the number of days for the recovery window. Select **Enable Crosscheck** to determine if the files on the disk on in the media management catalog correspond to data in the RMAN repository. Select one of the following as the backup destination:

   - To backup to disk, select **Disk** as the backup destination.

   - To backup to the cloud, select **ObjectStore** as the backup destination. If you have more than one Object Store, then select the Object Store Credential Name from the list. Enter a name in the Container Name field.

   - To not define a destination, select **None**.

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

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

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.

11.3 Updating a Database Backup Policy

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

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

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

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

11.4 Backing Up a Database

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

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

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

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

   If the action is disabled, then apply a backup policy.
5. Click **Yes** to confirm the job.

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

11.5 Viewing Backup Logs

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

1. In the Web Console, click the **Database** tab, then click the database name in the list of databases.

   Information about the database appears on the Database Information page.

2. Scroll to the bottom of the page to view a list of Backups.

3. Click the Job ID for a backup to view the Backup Report and more details about the backup.

11.6 Updating a Database with a Backup Configuration File

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

1. In the Web Console, click the **Database** tab, then select a database from the list.

2. Expand the **Actions** menu, then click **Update Database with Backup Config**.

   If the action is disabled, then you must create a backup configuration file.

3. Select a backup configuration name from the list of available files, then click **Update**.

4. Expand the **Actions** menu, then click **View** to display the Database Information page.

   The details include whether or not AutoBackup is disabled, the Backup Config ID number, and options to create a backup and enable or disable automatic backups.

5. (Optional) Click **Create Backup** to create a single backup, to enable automatic backups, and to display a list of backups.

6. (Optional) Click the Database details to display the Backup Config ID, to create a manual backup, or enable automatic backups.

7. Click the **Activity**tab to check the job status.

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

11.7 Restoring a Database

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

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

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

1. Obtain Object Store Credentials for the host.

2. Create a backup policy using the object store credentials as the backup destination.

3. Attach the backup policy to the database that you want to backup.

4. Create a manual backup of the database and save the file.

1. Click the **Database** tab.

2. Verify that **Auto Refresh Disabled** appears on the page.

3. Click **Restore Database from Backup**, then click **Next** to display the Restore Database from Backup page.

4. Select your Object Store Credential name from the list.

5. Enter the password in the **Backup Encryption Passwords** field and the **Confirm Backup Encryption Passwords** field.

6. Click **Browse** and select the backup report.

7. Click **Restore** .

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

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

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

9. Enter the password in the **SYS User Password** field and the **Confirm SYS User Password** field.

10. Click **Restore**.

11. Click **Yes** to confirm that you want to restore the database from the selected Object Store backup.

12. Validate that the job completed. You can track the job in the **Activity** tab in the Web Console.

11.8 Recovering a Database

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

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

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

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

   ```
   # odacli list-backupreports
   ```

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

```
# odacli describe-backupreport -i 2d82460c-d648-4e75-8c7d-72cc90bc442a
{
  "id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
  "dbResId" : "b5fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
  "dbId" : "2717054291",
  "dbName" : "ExampleDB",
  "dbUniqueName" : "ExampleDBu",
  "backupType" : "REGULAR-L1",
  "keepDays" : null,
  "backupLocation" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket",
  "cfBackupHandle" : "c-2717054291-20180108-04",
  "spfBackupHandle" : "c-2717054291-20180108-04",
  "pitrTimeStamp" : "January 08, 2018 12:43:14 PM UTC",
  "pitrSCN" : "1175058",
  "resetLogsTimeStamp" : "January 08, 2018 09:55:34 AM UTC",
  "resetLogsSCN" : "1112268",
  "oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
  "sqlPatches" : "25811364,26609817",
  "backupLogLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/system_namec1n1/
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_namec1n1/
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_namec1n1/
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"
}
```

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.

Related Topics

- odacli Backup and Recovery Commands (page 13-19)
  Use the odacli backup and recover commands to backup to and restore from
  Oracle Cloud Infrastructure Object Storage or disk.

11.9 Deleting Backups

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

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

- Backup to disk: between 1 and 14 days

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

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

1. Display a list of all backup reports.

   ```
   #  odacli  list-backupreports
   ```

2. Obtain the Database ID and type of backup.

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

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

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

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

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

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

Related Topics

- odacli Backup and Recovery Commands (page 13-19)
  Use the odacli backup and recover commands to backup to and restore from
  Oracle Cloud Infrastructure Object Storage or disk.

11.10 Deleting a Backup Policy

Use the Web Console to delete a database backup policy.

1. Click the **Database** tab in the Web Console.

2. Click **Backup Policy** in the left navigation to display a list of backup policies.

3. Expand the **Actions** menu for a backup policy, then click **Delete**. Click **Yes** to
   confirm that you want to delete the backup policy.

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

11.11 Using the CLI to Backup, Restore, and Recover

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

11.11.1 Preparing for Database Backup to Disk

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

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

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

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

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

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

   ```
   # odacli create-backupconfig -d Disk -n mkg1dailydisk -w 1
   ```

2. Check the job status.

   ```
   # odacli list-jobs
   ```

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

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

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

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

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

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

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

You can create manual backups or scheduled backups to disk.

Related Topics

- [odacli Backup and Recovery Commands](#) (page 13-20)
  Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.

11.11.2 Preparing for Database Backup to Oracle Cloud

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

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

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

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

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

   For example:

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

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

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

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

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

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

> **Note:**
>
> If the ObjectstoreSwift Object was not created with valid credentials, then creating the backup configuration will fail.

3. Check the job status.

```
# odacli list-jobs
```

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

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

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

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

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

Related Topics

- odacli Backup and Recovery Commands (page 13-20)
  Use the command `odacli create-backup` to create a Level 0, Level 1, or Longterm backup configuration.
- Oracle Store

11.11.3 Backing Up a Database with the CLI

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

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

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

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

1. Verify that a backup configuration file is associated with the database.

2. Create a single backup, outside of the automatic backups, by using the command `odacli create-backup`.

   Use the Database Resource ID to identify the database to backup, specify the type of backup, and use a tag to create a name for the backup. You can use up to 30 alphanumeric characters for the backup name tag. If you do not select a backup type (level 0, level 1, or LongTerm), a level 1 backup is performed. For example, create a level 0 backup named `2018Jan02_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
   ```

Related Topics

- [odacli Backup and Recovery Commands](#) (page 13-19)
  Use the odacli backup and recover commands to backup to and restore from Oracle Cloud Infrastructure Object Storage or disk.

11.11.4 Restoring a Database with the CLI

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

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

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

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

- To restore to the same system, delete the source database and use the backup report generated by the command `odacli create-backup`.

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

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

   ```
   # odacli list-backupreports
   ```

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

```
# odacli describe-backupreport -i 2d82460c-d648-4e75-8c7d-72cc90bc442a
{
  "id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
  "dbResId" : "b5fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
  "dbId" : "2717054291",
  "dbName" : "ExampleDB",
  "dbUniqueName" : "ExampleDBu",
  "backupType" : "REGULAR-L1",
  "keepDays" : null,
  "backupLocation" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket",
  "cfBackupHandle" : "c-2717054291-20180108-04",
  "spfBackupHandle" : "c-2717054291-20180108-04",
  "pitrTimeStamp" : "January 08, 2018 12:43:14 PM UTC",
  "pitrSCN" : "1175058",
  "resetLogsTimeStamp" : "January 08, 2018 09:55:34 AM UTC",
  "resetLogsSCN" : "1112268",
  "oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
  "sqlPatches" : "25811364,26609817",
  "backupLogLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/backupbucket/system_namec1n1/
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_namec1n1/
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_namec1n1/
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"
}
```

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

```
# odacli create-backup
```

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

```
# odacli list-objectstoreswifts
```

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

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

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

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

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

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

Related Topics

- odacli Backup and Recovery Commands (page 13-19)
  Use the odacli backup and recover commands to backup to and restore from
  Oracle Cloud Infrastructure Object Storage or disk.

- odacli Backup and Recovery Commands (page 13-20)
  Use the command `odacli create-backup` to create a Level 0, Level 1, or
  Longterm backup configuration.

12
Managing Oracle Database Appliance KVM Virtualization

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

- About KVM Virtualization (page 12-1)
  KVM virtualization uses a kernel-based virtual machine (KVM) to create a virtualized environment for your Linux applications.

12.1 About KVM Virtualization

KVM virtualization uses a kernel-based virtual machine (KVM) to create a virtualized environment for your Linux applications.

Beginning with Oracle Database Appliance 12.1.2.11.0, the required RPMs are included in the Oracle Database Appliance patch bundle. When you upgrade to Oracle Database Appliance 12.1.2.12.0 or later, the Oracle Linux KVM hypervisor is installed as part of the Oracle Linux kernel and uses CPU extensions (HVM) for virtualization. The Linux KVM is a Type II hypervisor, which means that it is one layer above the operating system. When you run your Linux applications in a virtualized environment, you can isolate your database from your applications. One of the advantages to isolating the applications is that you can update your Oracle Database without impacting the applications, which enables you to deploy both the database and application on the same system to create a Solution-in-a-Box.

The following are limitations with using KVM:

- All virtual machines (VM), or guests, are Oracle Linux operating systems and only Linux applications are supported in the KVM.

- You cannot deploy an Oracle Database in the KVM. Oracle Databases must run on the base Oracle Linux operating system.

- KVM on Oracle Linux does not support hard partitioning. This means that all enabled cores/sockets on Oracle Database Appliance are licensed for databases and applications running on the appliance using the appropriate licensing metric for the database edition and application. Using KVM does not limit licensing, capacity on demand for Oracle Database Appliance still applies.

> **✎ See Also:**
>
> For more about Oracle Linux KVM on Oracle Database Appliance, see the KVM series in the Oracle Database Appliance blog at https://blogs.oracle.com/oda/kvm.

13

Oracle Appliance Manager Command-Line Interface

Oracle Appliance Manager Command-Line Interface has different classes of tools to manage Oracle Database Appliance.

Topics:

- odacli Oracle Auto Service Request Commands (page 13-63)
  Use the Oracle Auto Service Request (Oracle ASR) commands to configure, update, test, and delete Oracle ASR on the system.

- odacli OS Commands (page 13-68)
  Use the `odacli OS` commands to list and update operating system (OS) parameters.

- odacli validate-storagetopology (page 13-71)
  Use the `odacli validate-storagetopology` command to check the cable connections between the system controllers and the storage shelf, as well as the cable connection to the storage expansion shelf (if one is installed).

- odaadmcli Hardware Monitoring Commands (page 13-71)
  Use the `hardware monitoring` commands to display hardware configurations.

- odaadmcli Storage Commands (page 13-76)
  Use the `odaadmcli storage` commands to perform storage diagnostics.

- odaadmcli VLAN Management Commands (page 13-85)
  Use the odaadmcli VLAN commands to list and manage virtual local area networks (VLANs) for Oracle Database Appliance bare metal platform.

- odacli-adm set-credential (page 13-88)
  Use the `odacli-adm set-credential` command to change the `oda-admin` user credentials.

13.1 About Oracle Appliance Manager Command-line Interface

Three classes of tools are available to perform configuration, lifecycle management, and system administration on Oracle Database Appliance.

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 command-line 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.

You can perform the following deployment and configuration tasks:

- Configure the first network in the appliance
- Unzip and copy the Oracle Database Appliance Single Instance Software Bundle to the correct locations
- Set the number of CPU Cores for the system

You can perform the following appliance lifecycle tasks with `odacli` commands:

- Create and describe the appliance
- Create, list, describe, and delete databases
- Create, list, describe, and delete Oracle Database Homes
- Create, list, and describe the networks
- List and describe the jobs

You can perform the following appliance administration tasks with `odaadmcli` commands:

- Show storage, disks, diskgroups, and controllers
- Display storage diagnostics for disks and NVM Express (NVMes)
- Locate disks
- Show server, memory, processor, power, cooling, and network details

Depending on your version of Oracle Appliance Manager and your hardware, some of the `odacli` commands may not be available to you. To see which commands are supported on your version of Oracle Appliance Manager and your hardware, run the `odacli` help command: `odacli -h`.

ODACLI Command Location and Path Configuration

The Oracle Appliance Manager command-line interface is in the following directory:

`/opt/oracle/dcs/bin/odacli`

Configure the root user account on your Oracle Database Appliance servers to have the PATH variable defined to search for `odacli` commands in the path `/opt/oracle/oda/bin/odacli`.

ODACLI Syntax

Oracle Appliance Manager command-line interface commands and parameters are case-sensitive.

An odacli command uses the following command syntax:

`odacli command [options]`

- *command* is an action you want to perform on the appliance. For example: `list-networks`, `create-appliance`, or `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. When appending `-j` to the odacli command, the output is returned in JSON format. The help option (`-h`) is an option that is available with almost all commands. When you include the `-h` option, you can obtain additional information about the command that you want to perform.

Example 13-1   Command-Line Interface Syntax

```
# odacli create-database -h

Usage: create-database [options]
Options:
 * --adminpassword, -m
      Password for SYS,SYSTEM and PDB Admin
  --backupconfigid, -bi
      Backup Config ID
  --cdb, -c
      Create Container Database (Inverse option: --no-cdb/-no-c)
  --characterset, -cs
      Character Set (default:AL32UTF8)        Default: AL32UTF8
  --databaseUniqueName, -u
      database unique name
  --dbclass, -cl
      Database Class EE: OLTP/DSS/IMDB, SE: OLTP     Default: OLTP
  --dbconsole, -co
      Enable Database Console (Inverse option: --no-dbconsole/-no-co)
  --dbhomeid, -dh
      Database Home ID (Use Existing DB Home)
  --dblanguage, -l
      Datbase Language (default:AMERICAN)       Default: AMERICAN
* --dbname, -n
      Database Name
  --dbshape, -s
      Database Shape{odb1s,odb1,odb2,etc.}       Default: odb1
  --dbstorage, -r
      Database Storage {ACFS|ASM}       Default: ACFS
  --dbterritory, -dt
      Database Territory (default:AMERICA)       Default: AMERICA
  --dbtype, -y
      Database Type: SI        Default: SI
  --help, -h
      get help
  --instanceonly, -io
      Create Instance Only (For Standby)
  --json, -j
      json output
  --nlscharacterset, -ns
      NLS Character Set (default:AL16UTF16)       Default: AL16UTF16
   --no-cdb, -no-c
   Won't create Container Database (Inverse option: --cdb/-c)
   --no-dbconsole, -no-co
   Disable Database Console (Inverse option: --dbconsole/-co)
  --pdbadmin, -d
      Pluggable Database Admin User
  --pdbname, -p
      Pluggable Database Name
  --version, -v
      Database Version
```

Oracle Database Appliance Manager Command-Line Interface Help

Run the `-h` command to see the usage information for all commands available for your Oracle Database Appliance. For example:

```
odacli -h
```

Run `odacli` *command* `-h` or `odacliadm` *command* `-h` to see detailed help about a specific command. For example, to see detailed help for the `odacli describe-dbhome` command, use the following:

```
odacli describe-dbhome -h
```

13.2 Managing ODACLI Privileges and Security with SUDO

Oracle Appliance Manager command-line utility requires `root` system privileges for most administration actions. You may want to use SUDO as part of your system auditing and security policy.

For most tasks, Oracle recommends that you log in as `root` to use the Oracle Appliance Manager command-line interface on Oracle Database Appliance. If you are not logged in as `root`, then you cannot carry out most actions on the appliance. For example, if you are not logged in as `root`, then you can view storage information, but you cannot modify the storage.

Allowing Root User Access Using SUDO

In environments where system administration is handled by a different group than database administration, or where security is a significant concern, you may want to limit access to the `root` user account and password. SUDO enables system administrators to grant certain users (or groups of users) the ability to run commands as `root`, while logging all commands and arguments as part of your security and compliance protocol.

A SUDO security policy is configured by using the file `/etc/sudoers`. Within the `sudoers` file, you can configure groups of users and sets of commands to simplify and audit server administration with SUDO commands.

> ⚠ **Caution:**
>
> Configuring SUDO to allow a user to perform any operation is equivalent to giving that user `root` privileges. Consider carefully if this is appropriate for your security needs.

> ✏ **See Also:**
>
> The SUDO man pages for more information about configuring and using SUDO:
>
> http://www.sudo.ws/sudo.html

Example 13-2   SUDO Example 1: Allow a User to Perform Any ODACLI Operation

This example shows how to configure SUDO to enable a user to perform any ODACLI operation. You do this by adding lines to the commands section in the `/etc/sudoers` file:

```
## The commands section may have other options added to it.
##
Cmnd_Alias ODACLI_CMDS=/opt/oracle/oak/bin/odacli *
jdoe ALL = ODACLI_CMDS
```

In this example, the user name is `jdoe`. The file parameter setting `ALL= ODACLI_CMDS` grants the user `jdoe` permission to run all `odacli` commands that are defined by the command alias `ODACLI_CMDS`. After configuration, you can copy one `sudoers` file to multiple hosts. You can also create different rules on each host.

> **Note:**
>
> Before database creation, you must set up user equivalency with SSH for the root user on each server. If you do not set up user equivalency and configure SSH on each server, then you are prompted to provide the root password for each server during database creation.

After you configure the `sudoer` file with the user, the user jdoe can run the set of `odacli` commands configured with the command alias `ODACLI_CMDS`. For example:

```
$ sudo odacli create database -db newdb

INFO: 2015-08-05 14:40:55: Look at the logfile  '/opt/oracle/oak/log/scaoda1011/
tools/12.1.2.4.0/createdb_newdb_91715.log' for more details

INFO: 2015-08-05 14:40:59: Database parameter file is not provided. Will be using
default parameters for DB creation
Please enter the 'SYSASM'  password :
Please re-enter the 'SYSASM' password:

INFO: 2015-08-05 14:41:10: Installing a new home: OraDb12102_home3 at /u01/app/
oracle/product/12.1.0.2/dbhome_3

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

Example 13-3   SUDO Example 2: Allow a User to Perform Only Selected ODACLI Operations

To configure SUDO to allow a user to perform only selected ODACLI operations, add lines to the commands section in the `/etc/sudoers` file as follows:

```
## DCS commands for oracle user
Cmnd_Alias DCSCMDS = /opt/oracle/dcs/bin/odacli 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 `jdoe2` 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 `jdoe2` from running the command.

```
[jdoe2@servernode1 ~]$ sudo /opt/oracle/oak/bin/odacli list-databases

Sorry, user jdoe2 is not allowed to execute '/opt/oracle/oak/bin/odacli list-
databases' as root on servernode1.
```

13.3 Configure Command

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

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

13.3.1 configure-firstnet

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

File Path

`$ORACLE_HOME/opt/oracle/oak/bin/configure-firstnet`

Syntax

```
configure-firstnet
```

Example 13-4   Configuring the First Network

This command ensures that the system is available in the network, enabling you to manage the deployment through the Oracle Appliance Manager Web Console.

Configure the first network to use a `btbond1` interface without configuring DHCP. Complete the IP address, netmask address, and gateway address.

Values that you need to provide are shown in *italic font*, with the exception of the net1 gateway address; the program obtains the gateway IP address. The program derives this gateway address using the network information you provided for the other IP addresses. Accept this value, unless your network administrator provides an alternative gateway address that is different from the default that the appliance command-line interface detects.

```
# configure-firstnet

Select the Interface to configure the network on (btbond1 sfpbond1): 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 btbon1:
bonding: btbond1: Removing slave em1.
bonding btbon1: Warning: the permanent HWaddr of em1 - <mac> - is still in use by
btbon1. Set the HWaddr of em1 to a different address to avoid conflicts.
bonding: btbond1: releasing active interface em1
bonding: btbond1: making interface em2 the new active one.
bonding: btbond1: Removing slave em2.
bonding: btbond1: releasing active interface em2
:::::::::::
bonding: btbond1: Setting em1 as primary slave.
:::::::::::
bonding: btbond2: Setting em3 as primary slave.
:::::::::::
bonding: sfpbond1: Setting p3p1 as primary slave.
```

13.4 odacli Apply Patch and Update Commands

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

- odacli describe-component (page 13-9)
  Use the `odacli describe-component` command to display the installed version and the latest available version for each component.

- odacli describe-latestpatch (page 13-10)
  Use the `odacli describe-latestpatch` command to display a list of the latest supported patch versions for each component.

- odacli create-prepatchreport (page 13-11)
  Use the `odacli create-prepatchreport` command to run pre-checks for patching.

- odacli describe-prepatchreport (page 13-12)
  Use the `odacli describe-prepatchreport` command to display the pre-check report, with a list of pre-checks run with status and comments.

- odacli update-dcsagent (page 13-14)
  Use the `odacli update-dcsagent` command to update the agent.

- update-image (page 13-15)
  Use the `odacli update-repository` command to unzip the Single Instance Software Bundle (SIB). For releases earlier than 12.1.2.9.0, use the `update-image` command to unzip and copy the Single Instance Software Bundle to the appropriate locations so that the system is ready for deployment.

- odacli update-repository (page 13-15)
  Use the `odacli update-repository` command to unzip and copy the patch bundle and update the repository with the new patches.

- odacli update-server (page 13-16)
  Use the `odacli update-server` command to update the operating system, firmware, Oracle Appliance Kit, Oracle Clusterware, and all other infrastructure components.

13.4.1 odacli describe-component

Use the `odacli describe-component` command to display the installed version and the latest available version for each component.

If there are multiple DB Homes installed in Oracle Database Appliance, then the output will display the version details for each of the installed homes. You can use this command to check the component version after applying a patch.

File Path

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

Syntax

```
odacli describe-component [-d][-j][-h][-s][-v]
```

Parameters

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

Usage Notes

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

Example 13-5   Displaying Patch Details for Components

```
# odacli describe-component
System Version
--------------
12.2.1.1.0

Component                              Installed Version   Available Version
-------------------------------------- ------------------- -------------------
OAK                                    12.2.1.1.0          up-to-date
GI                                     12.2.0.1.170814     up-to-date
DB {
[ OraDB12102_home1 ]                   12.1.0.2.170814     up-to-date
[ OraDB11204_home1 ]                   11.2.0.4.170814     up-to-date
}
ILOM                                   4.0.0.22.r120818    up-to-date
BIOS                                   41017100            up-to-date
OS                                     6.8                 up-to-date
```

Example 13-6   List DB Home Details

```
# 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 13-7   List the Server Components and Versions

```
# odacli describe-component -s
System Version
--------------
12.2.1.1.0

Component        Installed Version   Available Version
---------------- ------------------- -------------------
OAK              12.2.1.1.0          up-to-date
GI               12.2.0.1.170814     up-to-date
ILOM             4.0.0.22.r119604    4.0.0.22.r120818
BIOS             41016500            41017100
OS               6.8                 up-to-date
```

13.4.2 odacli describe-latestpatch

Use the `odacli describe-latestpatch` command to display a list of the latest supported patch versions for each component.

File Path

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

Syntax

```
odacli describe-latestpatch [-h]
```

Parameters

Parameter	Description
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.

Example 13-8   Listing the Latest Supported Versions

```
#  odacli describe-latestpatch

componentType   availableVersion
--------------- -------------------
gi              12.1.0.2.170117
db              11.2.0.4.161018
db              12.1.0.2.170117
oak             12.1.2.10.0
ilom            3.2.8.24.114611
bios            39070000
os              6.8
```

13.4.3 odacli 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
--dbhome, -d	(Optional) Specifies the database home component for running the pre-checks.
--dbhomeid, -i	(Optional) Specifies the IDs of the database homes for running the pre-checks.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--local, -l	(Optional) Runs patch pre-checks only on the local node.
--node, -n	(Optional) Runs patch pre-checks on specified nodes.

Parameter	Description
--server, -s	(Optional) Specify this option to run the patch pre-checks for the server components.
--version, -v	(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 13-9   Creating Pre-Check Report

```
# odacli create-prepatchreport -v 12.2.1.4.0 -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
--------------------------------------- ------------------------------------
----------------------------
```

13.4.4 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 13-10   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 13-11   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
```

13.4.5 odacli update-dcsagent

Use the `odacli update-dcsagent` command to update the agent.

File Path

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

Syntax

```
odacli update dcsagent  -v version  [-j] [-h]
```

Parameters

Parameter	Description
--version, -v	Defines the Oracle Database Appliance version after update.
--help, -h	(Optional) Displays help for using the command.

Usage Notes

The `update dcsagent` command updates the `dcs-agent` to the RPM package that is located in the *location* and restarts the `dcs-agent`. After the update is applied, the agent automatically restarts. It will take a few minutes to reconnect to the `dcs-agent`. Wait until the agent shuts down and completes restarting before performing any tasks.

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

Example 13-12   Updating the Agent

To update the `dcs-agent` to version 12.2.1.4.012.1.2.10:

```
# odacli update-dcsagent -v 12.2.1.4.0
{
  "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
  "status" : "Created",
```

```
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "March 26, 2018 14:09:24 PM CST",
    "description" : "DcsAgent patching",
    "updatedTime" : "March 26, 2018 14:09:24 PM CST"
}
```

13.4.6 update-image

Use the `odacli update-repository` command to unzip the Single Instance
Software Bundle (SIB). For releases earlier than 12.1.2.9.0, use the `update-image`
command to unzip and copy the Single Instance Software Bundle to the appropriate
locations so that the system is ready for deployment.

> **✎ Note:**
>
> The `update-image` command is discontinued. It is used for earlier releases
> and is only included for backward compatibility.

Syntax

To update an image:

```
update-image --image-files  absolute file names
```

Parameters

Parameter	Description
`--image-files` `file1,file2,file3`	Identifies the file names. Use a comma separated list of absolute file names. Ensure that there are no spaces after the comma.
`--help, -h`	(Optional) Displays help for using the command.

Example 13-13   Updating the Image

To update the Single Instance Software Bundle:

```
#  update-image --image-files file1,file2,file3
```

13.4.7 odacli update-repository

Use the `odacli update-repository` command to unzip and copy the patch
bundle and update the repository with the new patches.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

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

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

Parameters

Parameter	Description
`--filename, -f`	Defines the zip filename of patch bundle or RDBMS clones downloaded from My Oracle Support. Provide a comma-separated list of absolute file paths of the end user and patch bundles.
`--json, -j`	(Optional) Displays JSON output. The default is false.
`--help,-h`	(Optional) Displays help for using the command.

Usage Notes

> **Note:**
>
> Before updating the repository, ensure that you do not have any jobs running or pending during the update window.

Example 13-14   Updating the Repository

To update the `dcs-repository` with the latest patches:

```
# odacli update-repository -f /root/12.1.2.8/oda-sm-12.1.2.8.0-160719-GI-12.1.0.2.zip
{
  "jobId" : "d3510276-da05-447b-990e-6d30964f8f79",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "August 08, 2016 03:45:39 AM EDT",
  "description" : "Repository Update",
  "updatedTime" : "August 08, 2016 03:45:39 AM EDT"
}
```

13.4.8 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
`--version, -v`	Defines the version to update.
`--json, -j`	(Optional) Displays JSON output. The default is false.
`--help, -h`	(Optional) Displays help for using the command.

Usage Notes

The `update-server` command applies the patches to various infrastructure components and Oracle Clusterware. Before executing the `update-server` command , use the `update-dcsagent` command to update the agent to the current version.

After the update is applied, the agent automatically restarts. It will take a few minutes to reconnect to the server. Wait until the agent shuts down and completes restarting before performing any tasks. Allow at least two (2) minutes for the job to complete before running the next command.

> **Note:**
>
> Before updating the server, ensure that you do not have any jobs running or pending during the update window.

Example 13-15   Updating the Server

Run the odacli update-server command to update the server to version 12.2.1.2.

```
# odacli update-server -v 12.2.1.2
{
  "jobId" : "6f27a29a-959f-44e1-b984-7473e3c918ad",
  "status" : "Created",
  "message" : "Success of Server Update may trigger reboot of node after 4-5
minutes. Please wait till node restart",
  "reports" : [ ],
  "createTimestamp" : "November 7, 2017 14:13:45 PM CST",
  "resourceList" : [ ],
  "description" : "Server Patching",
  "updatedTime" : "November 7, 2017 14:13:45 PM CST"
}
```

13.5 odacli Appliance Commands

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

- odacli create-appliance (page 13-17)
  Use the `odacli create-appliance` command in a JSON file format to provision Oracle Database Appliance.
- odacli describe-appliance (page 13-18)
  Use the `odacli describe-appliance` command to display appliance details.

13.5.1 odacli create-appliance

Use the `odacli create-appliance` command in a JSON file format to provision Oracle Database Appliance.

File Path

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

Syntax

To view help for the `odacli create-appliance` command:

```
odacli create-appliance  -r requestjson [-j] [-h]
```

> **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
`--requestjson, -r`	JSON input for appliance creation.
`--json, -j`	(Optional) Displays JSON output.
`--help, -h`	(Optional) Displays help for using the command.

13.5.2 odacli describe-appliance

Use the `odacli describe-appliance` command to display appliance details.

File Path

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

Syntax

`odacli describe-appliance [-d|-no-d][-j][-h]`

Parameters

Parameter	Description
`--details, -d`	(Optional) Displays the agent CLI build details.
`--help, -h`	(Optional) Displays help for using the command.
`--json, -j`	(Optional) Displays JSON output.
`--no-details, -no-d`	(Optional) Displays no detailed information. Use this flag if you do not want to display details.

Example 13-16   Displaying Appliance Details

```
# odacli describe-appliance -d

Appliance Information
----------------------------------------------------------------
ID: 78e9a6b8-c4f8-42b2-9e72-7d23c2636544
Platform: OdaliteL
```

```
Data Disk Count: 6
CPU Core Count: 20
Created: November 17, 2016 5:14:41 AM EST

System Information
----------------------------------------------------------------
Name: rwsoda6f002
Domain Name: example.com
Time Zone: America/New_York
DB Edition: EE
DNS Servers: 10.204.32.1
NTP Servers: 10.68.0.41 10.68.0.42

Disk Group Information
----------------------------------------------------------------
DG Name      Redundancy     Percentage
-----------  -------------  -----------
Data         High           80
Reco         High           20
```

13.6 odacli Backup and Recovery Commands

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

Topics:

- odacli create-backup (page 13-20)
  Use the command `odacli create-backup` to create a Level 0, Level 1, or
  Longterm backup configuration.

- odacli create-backupconfig (page 13-22)
  Use the command `odacli create-backupconfig` to create a backup
  configuration.

- odacli create-objectstoreswift (page 13-23)
  Use the command `odacli create-objectstoreswift` to create and store
  the Oracle credential details required to backup to Oracle Object Store.

- odacli delete-backup (page 13-23)
  Use the command `odacli delete-backup` to delete backups.

- odacli delete-backupconfig (page 13-24)
  Use the command `odacli delete-backupconfig` to delete a backup
  configuration.

- odacli delete-objectstoreswift (page 13-25)
  Use the command `odacli delete-objectstoreswift` to delete the
  credentials for the ObjectStore account.

- odacli describe-backupreport (page 13-26)
  Use the command `odacli describe-backupreport` to display details of a
  specific backup report.

- odacli describe-schedule (page 13-27)
  Use the command `odacli describe-schedule` to display details for a specific
  schedule.

- **odacli irestore-database** (page 13-27)
  Use the command `odacli irestore-database` to restore a database from one system to other system from ObjectStore based on a LongTerm BackupReport.

- **odacli list-backupreports** (page 13-29)
  Use the command `odacli list-backupreports` to display a list of all backup reports.

- **odacli list-backupconfigs** (page 13-29)
  Use the command `odacli list-backupconfig` to list a backup configuration.

- **odacli list-objectstoreswifts** (page 13-30)
  Use the command `odacli list-objectstoreswifts` to display a list of credentials for the ObjectStore account.

- **odacli list-schedules** (page 13-30)
  Use the command `odacli list-schedules` to display a list of the scheduled backups.

- **odacli list-schedule** (page 13-31)
  Use the command `odacli list-schedule` to display details for a specific schedule.

- **odacli recover-database** (page 13-31)
  Use the `odacli recover-database` command to recover or restore a database from backup.

- **odacli update-backupconfig** (page 13-33)
  Use the command `odacli update-backupconfig` to create a backup configuration.

- **odacli update-database** (page 13-34)
  Use the command `odacli update-database` to associate a backup configuration to a database.

- **odacli update-objectstoreswift** (page 13-35)
  Use the command `odacli update-objectstoreswift` to change the credentials for the ObjectStore account.

- **odacli update-schedule** (page 13-36)
  Use the command `odacli update-schedule` to update the schedule for a database, or to disable the database backup schedule.

13.6.1 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 13-17   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 13-18   Create a Level 0 Database Backup

Create a Level 0 backup named `2017Dec22ProductionLevel0` for resource ID `20576eb1-bc32-4e34-bf97-fda0b60ca15b`

```
# odacli  create-backup -i20576eb1-bc32-4e34-bf97-fda0b60ca15b -bt Regular-L0 -t
2017Dec22ProductionLevel0
```

Related Topics

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

13.6.2 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
--backupdestination, -d {Disk|ObjectStore|None}	Defines the backup destination. The options are not case sensitive.
--container, -c	(Optional) Defines the object store container.
--crosscheck, -cr	(Optional) Enable crosscheck.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--name, -n	Defines the backup configuration name.
--no-crosscheck, -no-cr	(Optional) Disable crosscheck.
--objectstoreswiftId, -o	(Optional) Defines the swift object store credential ID.
--recoverywindow, -wDisk: {1-14} | ObjectStore: {1-31}	(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 13-19   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
```

13.6.3 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
`--endpointurl, -e`	Defines the swift end point URL.
`--help, -h`	(Optional) Displays help for using the command.
`--json, -j`	(Optional) Displays JSON output. The default is false.
`--name, -n`	Defines the Object Store Swift name.
`--swiftpassword, -p`	(Optional) Defines the Object Store Swift password.
`--tenantname, -t`	Defines the Object Store Swift tenant name.
`--username, -u`	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.

13.6.4 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 -i
```
Database Resource ID `[-br] [-h] [-j]`

Parameters

Parameter	Description
--backupreport, -br	(Optional) Defines the backup report. To delete a Long Term backup, use a JSON input file for the backupreport.
--dbid, -i	Defines the Database Resource Identifier (ID). To delete a level 0 or level 1 backup, use the database resource ID.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(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 13-20   Delete a Level 0 or Level 1 Backup

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

Example 13-21   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
```

13.6.5 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
--help, -h	(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 13-22   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
```

13.6.6 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 13-23   Deleting the Oracle Object Store Credentials

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

13.6.7 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
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--id, -i	Defines the backup report ID.

Example 13-24   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"
  },
  "updatedTime" : "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"
}
```

13.6.8 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
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--scheduleid, -id	Defines the schedule with an identifier (ID).

Example 13-25   Display Schedule Details

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

13.6.9 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 13-26   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 13-27   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
```

13.6.10 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
--help, -h	(Optional) Displays help for using the command.
--json, -j	(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 13-28   Display a List of all Backup Reports

```
#  odacli  list-backupreports
```

13.6.11 odacli list-backupconfigs

Use the command `odacli list-backupconfig` to list a backup configuration.

File Path

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

Syntax

```
  odacli  list-backupconfig  [-h] [-j]
```

Parameters

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

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

Example 13-29   Displaying a List of Backup Configuration

Display a list of backup configurations.

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

13.6.12 odacli list-objectstoreswifts

Use the command `odacli list-objectstoreswifts` to display a list of credentials for the ObjectStore account.

File Path

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

Syntax

```
# odacli list-objectstoreswifts [-h] [-j]
```

Parameters

Parameter	Description
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.

Example 13-30   Displaying a List of ObjectStore Swift Credentials

```
# odacli list-objectstoreswifts
```

13.6.13 odacli list-schedules

Use the command `odacli list-schedules` to display a list of the scheduled backups.

File Path

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

Syntax

```
#  odacli  list-schedules  [-h] [-j]
```

Parameters

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

Parameter	Description
`--json`, `-j`	(Optional) Displays JSON output. The default is false.

Usage Notes

The command lists all of the schedules in the system, including database backup schedules and some internal maintenance schedules.

Example 13-31   Display a List of Scheduled Database Backups

Display a list of all scheduled database backups and details.

```
#  odacli  list-schedules
```

13.6.14 odacli list-schedule

Use the command `odacli list-schedule` to display details for a specific schedule.

File Path

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

Syntax

```
#  odacli  describe-schedule [-e] [-h] [-j] [-i]
```

Parameters

Parameter	Description
`--executionid`, `-e`	(Optional) Displays the execution ID.
`--help`, `-h`	(Optional) Displays help for using the command.
`--json`, `-j`	(Optional) Displays JSON output. The default is false.
`--scheduleid`, `-id`	Defines the schedule with an identifier (ID).

Example 13-32   Display a List of Executed Schedules

```
#  odacli  list-schedule
```

13.6.15 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 13-33   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 13-34   Recovering a Database to the Latest

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

Example 13-35   Recovering a Database to an SCN

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

13.6.16 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
--backupdestination, -d{Disk|ObjectStore|None}	Defines the backup destination. The options are not case sensitive
--container, -c	(Optional) Defines the object store container.
--crosscheck, -cr	(Optional) Enable Crosscheck.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--name, -n	Defines the backup configuration name.
--no-crosscheck, -no-cr	(Optional) Disable crosscheck.
--objectstoreswiftId, -o	(Optional) Defines the swift object store credential ID.
--recoverywindow, -w 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 13-36   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
```

13.6.17 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
--backupconfigid, -bi	(Optional) Defines the Backup Config ID.
--backupconfign, -bin	(Optional) Defines the Backup Config Name.
--dbid, -i	Defines the Database Resource ID.
--dbin, -in	Defines the Database Name.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--hiddenrmanbkuppassword, -hrp	(Optional) Defines the Rman backup password.
--rmanbkuppassword, -rp	(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 13-37   Associating a Backup Configuration with a Database

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

Example 13-38   Updating an Existing Database Using the Resource ID

Update an existing database to attach the backup configuration to the database using the Database Resource ID.

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

Example 13-39   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
```

13.6.18 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
--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).
--swiftpassword, -p	(Optional) Defines the Object Store Swift password.
--username, -u	(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 13-40   Changing the Oracle Casper ObjectStore Password

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

Example 13-41   Changing the Oracle ObjectStore User Name

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

13.6.19 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
--cronExpression, -x	(Optional) Defines the date and time for the update.
--description, -t	(Optional) Provides a description for the update schedule.
--disable, -d	(Optional) Disables the schedule.
--enable, -e	(Optional) Enables a disabled schedule.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
--scheduleid, -id	Defines the schedule with an identifier (ID).

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 13-42   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 13-43   Disable Scheduled Database Backups

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

13.7 odacli CPU Core Commands

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

- odacli list-cpucores (page 13-37)
  Use the `odacli list-cpucores` command lists the history of core configuration changes in the system.

- odacli describe-cpucore (page 13-37)
  Use the `odacli describe-cpucore` command to display the current core configuration and the modification date and time.

- update-cpucore (page 13-38)
  Use the `odacli update-cpucore` command to enable the number of CPU cores in the system.

13.7.1 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
--help, -h	(Optional) Displays help for using the command.

Example 13-44   Displaying a List of Cores

```
# odacli list-cpucores

Node  Cores  Modified                     Job Status
----- ------ ---------------------------- ---------------
0     10     July 22, 2016 12:06:08 PM SGT  Configured
0     8      July 25, 2016 9:39:59 AM SGT   Configured
```

13.7.2 odacli describe-cpucore

Use the `odacli describe-cpucore` command to display the current core configuration and the modification date and time.

File Path

`/opt/oracle/dcs/bin/odacli`

Syntax

```
 odacli describe-cpucore  [-h]
```

Parameters

Parameter	Description
`--help, -h`	(Optional) Displays help for using the command.

Example 13-45   Displaying the Current Core Configuration

```
# odacli describe-cpucore

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

13.7.3 update-cpucore

Use the `odacli update-cpucore` command to enable the number of CPU cores in the system.

File Path

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

Syntax

```
odacli update-cpucore  -c cores [-h]
```

Parameters

Parameter	Description
`--cores, -c`	Defines the number of cores to be enabled in the system.
`--help, -h`	(Optional) Displays help for using the command.

Usage Notes

• The number of cores you enable must be a multiple of 2.

• After the initial configuration, you cannot reduce the number of cores. You can only increase the number of cores.

Example 13-46   Enabling CPU Cores

The following command enables 8 CPU cores.

```
# odacli update-cpucore -c 8

{
"jobId" : "2807f6ae-3ba5-48a5-8941-b8b365d89d24",
"status" : "Created",
"message" : null,
"reports" : [ ],
"createTimestamp" : 1469410799194,
"description" : "CPU cores service update",
```

```
"updatedTime" : 1469410799194
}
```

13.8 odacli Database Commands

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

- odacli list-databases (page 13-39)
  Use the `odacli list-databases` command to list all databases on the appliance.

- odacli describe-database (page 13-40)
  Use the `odacli describe-database` command to display database details.

- odacli create-database (page 13-41)
  Use the `odacli create-database` command to create a new database.

- odacli register-database (page 13-44)
  Use the `odacli register-database` command to register a migrated database with the appliance.

- odacli update-tdekey (page 13-47)

- odacli delete-database (page 13-48)
  Use the `odacli delete-database` command to delete a database.

13.8.1 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 13-47   Displaying a List of Databases

Display a list of databases:

```
# odacli  list-databases

ID                                   DB Name     DB Version  CDB
------------------------------------ ----------  ---------- ----
ad6c7326-e460-411e-94df-230dedbef743   rdb121a     12.1.0.2    true
fb4d02f3-2413-47ca-8584-a768e23ec2e7   ee12db      12.1.0.2    false

(Continued)
Class    Shape   Storage  Status
```

```
------ ------- ----------
OLTP   odb1    ACFS      Configured
IMDB   odb1    ASM       Configured
```

13.8.2 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 `odacli list-databases` command to obtain the `dbid`.
--json, -j	(Optional) Displays JSON output.
--help, -h	(Optional) Displays help for using the command.

Example 13-48   Displaying Database Details

Display information for database named `ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f` :

```
# odacli describe-database -i ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f

Database details
----------------------------------------------------------------
ID: ac48e0d2-a7b0-4ffd-a27e-f8e42b028c5f
Description: rdb1
DB Name: rdb1
DB Version: 12.1.0.2
DBID: 1339792271
CDB: true
PDB Name: r1pdb1
PDB Admin User Name: pdbadmin
Class: OLTP
Shape: odb2
Storage: ASM
CharacterSet: DbCharacterSet(characterSet=AL32UTF8, nlsCharacterset=AL16UTF16,
dbTerritory=AMERICA, dbLanguage=AMERICAN)
Home ID: fe87f30c-b810-45d1-8b96-13996ad7a255
Console Enabled: true
Created: Jun 14, 2016 6:21:14 PM
```

13.8.3 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
--adminpassword, -m	Defines the password for SYS, SYSTEM, and PDB Admin. Use this option to specify the password interactively. When using this option, do not enter the password in the command-line.
--backupconfigid, -bi	(Optional) Defines the backup configuration identifier for future use.
--cdb, -c	(Optional) Creates the database as a container database. Use the -c flag to create a container database and use the -no-c flag to create a non-CDB database. The default is -no-c.
--characterset, -cs	Defines the character set. The default is AL32UTF8.
--databaseUniqueName, -u	(Optional) Defines a unique name for the database.
--dbclass, -cl {OLTP|DSS|IMDB}	Defines the database class. The default is OLTP. The options are as follows: • Enterprise Edition: OLTP, DSS, or IMDB. • Standard Edition: OLTP
--dbconsole, -co	(Optional) Enables the Database Console. Use the -no-co flag to disable the Database Console. If not selected, the default is no database console.
--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.

Parameter	Description
`--instanceonly, -io`	(Optional) Creates a database instance, password file and also the underlying Oracle ACFS mount point. You can use the instance as an auxiliary instance for RMAN duplicate.
`--json, -j`	(Optional) Displays JSON output.
`--nlscharacterset, -ns`	Defines the NLS National Character Set. The default is AL16UTF16.
`--no-cdb, -no-c`	(Optional) Creates a database that is *not* a container database. Use this flag when you want to create a non-CDB database. Use the `-c` flag to create a container database.
`--no-dbconsole, -no-co`	(Optional) Disables Database Console. Use the `-co` flag to enable Database Console.
`--pdbadmin, -d`	Defines the Pluggable Database (PDB) Admin User.
`--pdbname, -p`	Defines the Pluggable Database (PDB) name. The default value is `pdb1`.
`--version, -v`	Defines the database bundle patch number. To install the latest bundle patch for a release, specify 11.2.0.4 or 12.1.0.2. The default version is 12.1.0.2. To specify a specific supported bundle, use the 5 digit format. For example, 12.1.0.2.170814 or 11.2.0.4.170814.

Usage Notes

- 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 13-49   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-aee1-de24d37037b6",
   "status" : "Created",
   "message" : null,
   "reports" : [ ],
   "createTimestamp" : "March 26, 2018 03:54:03 AM EDT",
   "description" : "Database service creation with db name: hrdb",
   "updatedTime" : "March 26, 2018 03:54:03 AM EDT"
}
```

Example 13-50   Creating a Database in Non-Interactive Mode

This example creates an 12.1.0.2 OLTP database named `crmdb` with shape `odb2` and enables you to specify the password in the command-line. To define the password in the command-line, use the `-hm` option and define the password. Because the container database flag (`-c`) is not used, the database created is not a container database.

```
# odacli create-database -n crmdb -hm WelCome__12 -cl OLTP -s odb2
{
   "jobId" : "30b5e2a6-493b-4461-98b8-78e9a15f8cdd",
   "status" : "Created",
   "message" : null,
   "reports" : [ ],
   "createTimestamp" : "March 26, 2018 03:59:22 AM EDT",
   "description" : "Database service creation with db name: crmdb",
   "updatedTime" : "March 26, 2018 03:59:22 AM EDT"
}
```

Example 13-51   Creating a Database Against a Different Version

Either of the following statements creates a database against a home with Oracle Database Bundle (170718) applied:

```
# odacli create-database -m -n hrmsdb1 -v 12.1.0.2
# odacli create-database -m -n hrmsdb2 -v 12.1.0.2.170718
```

The following statement creates a new database against a home with Oracle Database Bundle patch 170814:

```
# odacli create-database -m -n hrmsdb3 -v 12.1.0.2.170814
```

13.8.4 odacli register-database

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

File Path

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

Syntax

```
odacli register-database  -c {OLTP|DSS|IMDB} -s dbshape -t dbtypeSI
-o hostname -sn servicename -p syspassword[-bi backupconfigid] [-co|-no-co] [-h][-j]
```

Parameters

Parameter	Description
--backupconfigid, -bi	(Optional) Defines the backup configuration identifier for future use.
--dbclass, -c {OLTP|DSS|IMDB}	Defines the database class. The database class setting determines the database SGA memory and instance PGA memory configuration. The options are as follows: • Enterprise Edition: OLTP, DSS, or IMDB. • Standard Edition: OLTP
--dbconsole, -co	(Optional) Enables the Database Console. Use the -no-coflag to disable the Database Console. If not selected, the default is no Database Console.
--dbshape, -s	Identifies the database shape (template) and determines the total memory allocated to the database. For example, odb1 and odb2. The default is odb1.
--dbtype, -t [SI]	Defines the type of database. The database type is Single Instance. The default is SI.
--help, -h	(Optional) Displays help for using the command.
--hostname, -o	Defines the host name. Default: local host name
--json, -j	(Optional) Displays JSON output.
--no-dbconsole, -no-co	(Optional) Disables Database Console. Use the -coflag to enable Database Console.
--servicename, -sn	Defines the Database Service Name. Using this service name, the EZCONNECT String is derived for connecting to the database. For example, hostname:port/servicename. The Port number is the port configured for the listener, as part of the deployment.
--syspassword, -p	Defines the proxy user password for SYS.

Usage Notes

> **Note:**
>
> It is a good practice to use Easy Connect (EZCONNECT) to test the
> database connectivity before registering the database.
> Log in as the `sys` user and enter the following command:
>
> ```
> sqlplus sys/password@//hostname:1521/service name
> ```

- To execute the command in non-interactive mode, use the hidden parameter `-hp` to specify the password in the command line instead of using the `-p` parameter to specify the password.

- The migrated database is registered with the listener configured during the provisioning of the appliance. The migrated database must be in read-write or read-only mode for the registration to succeed.

- The `register-database` command validates the `datafile` and log file locations and moves the `controlfile` and `spfile` to the correct locations.

- 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.

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" : "March 08, 2018 05:55:49 AM EDT",
  "description" : "Database service registration with db service name:
crmdb.example.com",
  "updatedTime" : "March 08, 2018 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: March 8, 2018 5:55:49 AM EDT
               Message:

Task Name                     Start Time
---------------------------- -------------------------------
restore control file          March 8, 2018 5:55:49 AM EDT
move spfile to right location March 8, 2018 5:56:08 AM EDT
register DB with clusterware  March 8, 2018 5:56:13 AM EDT
reset db parameters           March 8, 2018 5:57:05 AM EDT
Running DataPatch             March 8, 2018 5:57:36 AM EDT

(Continued)
  End Time                    Status
------------------------------ --------
March 8, 2018 5:56:08 AM EDT   Success
March 8, 2018 5:56:13 AM EDT   Success
March 8, 2018 5:57:05 AM EDT   Success
March 8, 2018 5:57:36 AM EDT   Success
March 8, 2018 5:57:49 AM EDT   Success
```

13.8.5 odacli update-tdekey

Use the `odacli update-tdekey` command to update the Transparent Data Encryption (TDE) parameters for Oracle Database Appliance.

File Path

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

Syntax

odacli update-tdekey -i *databaseId* -p -n *pdbNames* -t *tagName* -r *dbStorage* [-r|-no-r]
[-h][-j]

Parameters

Parameter	Description
--databaseId, -i	Identifies the database home identifier (ID) for which the key is to be rotated.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output.

Parameter	Description
`--no-rootDatabase,-no-r`	Rotates the key for a non-root container database. For a root container database, use the `-r` flag.
`--password, -p, --hiddenPassword, -hp`	Defines the Transparent Data Encryption (TDE) Admin wallet password. To use non-interactive mode, use the `-p` option. To specify the password interactively, use the `-hp` option.
`--pdbNames, -n`	Defines the names of the Pluggable Databases (PDB) to be rotated.
`--rootDatabase, -r`	Rotates the key for a root database if it is a container database. Use `-no-r` to rotate the key for a non-root container database.
`--tagName, -t`	Defines the name used to backup the wallet. The default tag name is OdaRotateKey.

Example 13-52   Updating a TDE Key for a Root Container Database

```
# odacli -i a3f4a6c0-a0c9-4c79-bad7-898afcf9de46 -r -p -t
TDE Admin wallet password: <enter the pwd here>
{
"jobId" : "d47bd867-6ee6-45f6-82ed-ba99352856ec",
"status" : "Created",
"message" : null,
"reports" : [ ],
"createTimestamp" : 1467869434888,
"description" : "TDE update",
"updatedTime" : 1467869434888
}
```

13.8.6 odacli delete-database

Use the `odacli delete-database` command to delete a database.

File Path

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

Syntax

To delete a database:

```
odacli delete-database -i dbid  [-h] [-j]
```

Parameters

Parameter	Description
`--dbid, -i`	Identifies the database home identifier (ID) to display. Use the `odacli list-databases` 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 13-53   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
```

13.9 odacli DBHome Commands

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

- odacli list-dbhomes (page 13-50)
  Use the `odacli list-dbhomes` command to display a list of Oracle Home directories.
- odacli describe-dbhome (page 13-50)
  Use the `odacli describe-dbhome` command to display Oracle Database Home details.
- odacli create-dbhome (page 13-51)
  Use the `odacli create-dbhome` command to create an Oracle Database Home.
- odacli delete-dbhome (page 13-52)
  Use the `odacli delete-dbhome` command to delete database home that is not associated with a database.

13.9.1 odacli list-dbhomes

Use the `odacli list-dbhomes` command to display a list of Oracle Home directories.

File Path

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

Syntax

To display a list of Oracle Home directories:

```
odacli  list-dbhomes  [-h] [-j]
```

Parameters

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

Example 13-54   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
```

13.9.2 odacli describe-dbhome

Use the `odacli describe-dbhome` command to display Oracle Database Home details.

File Path

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

Syntax

To display details about Oracle Database Home:

```
odacli describe-dbhome -i dbhomeid [-h] [-j] [-v]
```

Parameters

Parameter	Description
-i *dbhomeid*	Identifies the database home ID. Use the `odacli list-dbhomes` command to get the *dbhomeid*.
--help, -h	(Optional) Displays help for using the command.
--json, -j	(Optional) Displays JSON output. The default is false.
-v*dbversion*	(Optional) Identifies the Database Home Version. Use the `odacli list-dbhomes -v` command to get the *dbversion*.

Example 13-55   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
```

13.9.3 odacli create-dbhome

Use the `odacli create-dbhome` command to create an Oracle Database Home.

File Path

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

Syntax

To create an Oracle Database Home:

```
 odacli create-dbhome -v version [-j] [-h]
```

Parameters

Parameter	Description
-v *version number*	Defines the database bundle patch number.
--json, -j	(Optional) Displays JSON output.
--help, -h	(Optional) Displays help for using the command.

Usage Notes

For the version number, you can specify the database version, either 12.2.0.1, 12.1.0.2 or 11.2.0.4, or you can use a 5 digit format to specify a specific patch bundle version. For example, 12.1.0.2.161018. If you use the database version without specifying the bundle patch number, then the latest bundle patch is used.

The following values are supported:

- 12.2.0.1
- 12.2.0.1.170814
- 12.1.0.2
- 12.1.0.2.170718
- 12.1.0.2.170418
- 12.1.0.2.161018
- 12.1.0.2.160719
- 12.1.0.2.160419
- 11.2.0.4
- 11.2.0.4.170718
- 11.2.0.4.170418
- 11.2.0.4.161018
- 11.2.0.4.160719

> **Note:**
>
> Oracle Database 11.2.0.4.160419 is not supported. Attempts to create an Oracle Database 11.2 against an 11.2.0.4.160419 database home will fail.

Example 13-56   Creating an Oracle Database Home

The following example creates an Oracle Database Home version 12.1.0.2.170718.

```
# odacli  create-dbhome -v 12.1.0.2.170718
```

13.9.4 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
--id, -i	Identifies the database home using a database identifier (ID).
--help, -h	(Optional) Displays help for using the command.

Usage Notes

- Use the `odacli list-dbhomes` command to locate the identifier.

- To delete, or uninstall, a database home (dbhome), there must not be any associated databases in the dbhome.

- Use the `odacli delete-database` command to delete an existing database.

Example 13-57   Deleting an Empty Database Home

```
# odacli delete-dbhome -i 0ce547ca-3df2-4178-a7e6-eefa613aeab4
```

13.10 odacli Database Storage Commands

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

- odacli list-dbstorages (page 13-53)
  Use the `odacli list-dbstorages` command to display a list of all of the database storage configured in the appliance.

- odacli describe-dbstorage (page 13-54)
  Use the `odacli describe-dbstorage` command to display storage configuration details.

- odacli create-dbstorage (page 13-55)
  Use the `odacli create-dbstorage` command to create the file system for database migrations.

- odacli delete-dbstorage (page 13-56)
  Use the `odacli delete-dbstorage` command to delete database storage that is not associated with a database.

13.10.1 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
`--help, -h`	(Optional) Displays help for using the command.

Usage Notes

This command displays a list of all of the filesystems that are configured with the `create-database` command and the `create-dbstorage` command.

Example 13-58   Displaying a List of all Database Storage

```
# odacli list-dbstorages

ID Type                               DBUnique  Name         Status
------------------------------------  --------  -----------  ----------
9fe39332-cc1a-4b4b-8393-165524a6ef6b  Acfs        rdb121a    Configured
4f2a1b59-ca66-4d80-951c-425ab7b0acae  Asm         ee12db     Configured
0266edac-c729-4539-861f-3f3d543be9e4  Acfs        db12SE     Configured
```

13.10.2 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
--id, -i	Identifies the database storage.
--json, -j	(Optional) Displays JSON output. The default is false.
--help, -h	(Optional) Displays help for using the command.

Usage Notes

• Use the `odacli list-dbstorages` command to get the database storage identifier (ID).

• The DATA Location corresponds to the `init.ora` parameter `db_create_file_dest`.

• RECO Location corresponds to the `init.ora` parameter `db_recovery_file_dest`

• REDO Location corresponds to the `init.ora` parameter `db_create_online_log_dest_1`

Example 13-59   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 13-60   Displaying Database Oracle ASM Storage Details

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

```
# odacli describe-dbstorage -i 4f2a1b59-ca66-4d80-951c-425ab7b0acae

DBStorage details
--------------------------------------------------------------
ID: 4f2a1b59-ca66-4d80-951c-425ab7b0acae
DB Name: ee12db
DBUnique Name: ee12db
DB Resource ID: fb4d02f3-2413-47ca-8584-a768e23ec2e7
Storage Type: Asm
DATA Location: DATA
RECO Location: RECO
REDO Location: RECO
State: ResourceState(status=Configured)
Created: July 22, 2016 1:13:51 PM SGT
UpdatedTime: July 22, 2016 1:13:52 PM SGT
```

13.10.3 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.

Parameter	Description
`--databaseUniqueName, -u`	(Optional) Defines a unique name for the database. Specify only if the database unique name is different than the database name. The command creates the following mount point: `/u02/app/oracle/oradata/`*db unique name*
`--dbstorage, -r [ASM|ACFS]`	(Optional) Defines the type of database storage, either ASM or ACFS. When you select ASM, the command only creates the supporting directory structure for storing non-database files. The default is: ASM
`--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 13-61   Creating Database Storage

The following statement creates 50 GB ACFS database storage for the APPSDB database.

```
# odacli create-dbstorage -n APPSDB -s 50 -r ACFS
{
    "jobId" : "fc6bf8fd-60c2-44f3-b8b7-efd0e9a2149f",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "August 09, 2016 06:19:35 AM WSST",
    "description" : "Database storage service creation with db name: APPSDB",
    "updatedTime" : "August 09, 2016 06:19:35 AM WSST"
}
```

13.10.4 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 13-62   Deleting Empty Database Storage

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

13.11 odacli Job Commands

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

- odacli list-jobs (page 13-57)
  Use the `odacli list-jobs` command to display a list of jobs, including the job IDs, status, and the job created date and time stamp.

- odacli describe-job (page 13-58)
  Use the `odacli describe-job` command to display details about a specific job, including the job ID, status, tasks, and the job created date and time stamp.

13.11.1 odacli list-jobs

Use the `odacli list-jobs` command to display a list of jobs, including the job IDs, status, and the job created date and time stamp.

File Path

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

Syntax

To list jobs and view job details and status:

```
odacli list-jobs [-j] [-h]
```

Parameters

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

Example 13-63 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
```

13.11.2 odacli describe-job

Use the `odacli describe-job` command to display details about a specific job, including the job ID, status, tasks, and the job created date and time stamp.

File Path

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

Syntax

To view a specific job, status, and tasks:

```
   odacli describe-job   -i jobid [-j] [-h]
```

Parameters

Parameter	Description
`--jobid, -i` *jobid*	Identifies the job. To get the job identifier (jobid), run the `list-jobs` command.
`--json, -j`	(Optional) Displays JSON output.
`--help, -h`	(Optional) Displays help for using the command.

Example 13-64 Displaying Details for a Job

To display details of a specific job with jobid `02df22c8-c21f-4162-8265-97f7826c243a`:

```
 # odacli describe-job -i 02df22c8-c21f-4162-8265-97f7826c243a
```

13.12 odacli Network Commands

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

- odacli list-networks (page 13-59)
  Use the `odacli list-networks` command to display networks.
- odacli describe-network (page 13-60)
  Use the `odacli describe-network` command to display the details of a specific network.
- odacli create-network (page 13-60)
  Use the `odacli create-network` command to create a network.
- odacli update-network (page 13-61)
  Use the `odacli update-network` command to update an existing network configuration.
- odacli delete-network (page 13-62)
  Use the command `odacli delete-network` to delete a network.

13.12.1 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 13-65   Displaying a List of Networks

Use the `odacli list-networks` command to display a list of networks:

```
# odacli list-networks

ID                                    Name             NIC      IP Address
-----------------------------------    ---------------  -------  -----------
7e3fd7e7-0975-4c74-9720-a01a2a7a838d   Private-network  priv0    192.0.2.1
e37b0ae9-1420-4e05-943b-7a8ee912cafb   Public-network   btbond1  10.20.30.100

(Continued)
Subnet Mask       Gateway
-----------------  ---------
255.255.255.240
255.255.252.0      10.20.30.1
```

13.12.2 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 `odacli list-networks` command to obtain the `id`.
--json, -j	(Optional) Displays JSON output.
--help, -h	(Optional) Displays help for using the command.

Example 13-66   Displaying Network Details

Enter the following command to display the details of network ID 9e5ba92b-3f64-4ca7-9067-48be0952510a:

```
# odacli describe-network -i 9e5ba92b-3f64-4ca7-9067-48be0952510a

Network details
--------------------------------------------------------------
ID: 9e5ba92b-3f64-4ca7-9067-48be0952510a
Name: Public-network
NIC: btbond1
IP Address: 192.0.2.1
Subnet Mask: 255.255.252.0
Gateway: 10.20.30.1
Type: Public
Default: true
Created: July 28, 2016 10:10:49 AM EDT
```

13.12.3 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
`--defaultnetwork, -d`	Identifies the default network.
`--gateway, -g`	Defines the network gateway. The gateway is required for the default network.
`--help, -h`	(Optional) Displays help for using the command.
`--interface, -n`	Defines the name of the network interface.
`--ipaddress, -p`	Defines the network IP address.
`--json, -j`	(Optional) Displays JSON output.
`--networktype, -w`	Defines the type of network. Options are: {Public|Private|Dataguard|Backup|Other}
`--no-defaultnetwork, no-d`	Identifies a network as not the default network. Use `--defaultnetwork. -d` to identify a default network.
`subnetmask, -s`	Defines the Network Subnet Mask.

Usage Notes

Use this command to create an additional network not done in `create-appliance`.

You are only allowed to create a network on the bond interface.

Example 13-67   Creating a Network

The following example creates a new network, `sfpbond1`, with IP address `192.0.2.15`. The network is an additional network that uses subnet mask `255.255.255.0` and is not a default network.

```
# odacli create-network -n sfpbond1 -p 192.0.2.15 -w Backup -s 255.255.255.0 -no-d
```

13.12.4 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.

Parameter	Description
--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 13-68   Updating a Network

The following example updates network ID `192.0.0.2` and designates the network as a backup network:

```
# odacli update-network -i 192.0.0.2 -w Backup
```

13.12.5 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 13-69   Deleting a Network

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

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


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

13.13 odacli Oracle Auto Service Request Commands

Use the Oracle Auto Service Request (Oracle ASR) commands to configure, update, test, and delete Oracle ASR on the system.

- odacli configure-asr (page 13-63)
- odacli update-asr (page 13-65)
- odacli describe-asr (page 13-67)
- odacli test-asr (page 13-67)
- odacli delete-asr (page 13-68)

13.13.1 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
`--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

All log files for Oracle ASR are located in the `/var/opt/asrmanager/log/` directory.

To configure an external Oracle ASR Manager, you must define the Oracle ASR Configuration Type as external (`-e external`). For example, `odacli configure-asr -e external -i 198.51.100.1`

Example 13-70   Configuring Oracle ASR with a Proxy Server

This example configures Oracle ASR for user name scott.tiger@example.com. A proxy server, www-proxy.example.com, and port 80 are defined.

```
# odacli configure-asr -u john.smithl@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 13-71   Configuring an External Oracle ASR

This example configures Oracle Database Appliance to use an external Oracle ASR instance at IP address 10.20.30.40.

```
# odacli configure-asr --asrip 10.20.30.40 --asrtype External
{
  "jobId" : "ea054a2f-d18d-4253-83bc-b57434e3598e",
  "status" : "Created",
  "message" : "Please run the script '/tmp/activateExternalAssets.pl' on the
ASRManager host once the current job is successful.",
  "reports" : [ ],
  "createTimestamp" : "November 20, 2016 22:12:34 PM EST",
  "description" : "Configure ASR",
  "updatedTime" : "November 20, 2016 22:12:34 PM EST"
}
```

When the job completes successfully, run the /tmp/activateExternalAssets.pl script on the Oracle ASR Manager host.

13.13.2 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.

Parameter	Description
`--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 13-72   Updating Oracle ASR with a New Proxy Server

This example updates Oracle ASR for user name scott.tiger@example.com. The password is not defined in the command-line. You are prompted to enter the password during configuration. The proxy server is updated to www-proxy2.example.com.

```
# odacli update-asr -u scott.tiger@example.com --asrpassword --proxyserver www-
proxy2.example.com --proxyport 80
Asr User password:

Job details
----------------------------------------------------------
ID: 79cb2baa-1644-45c5-a004-a303e3111807
Description: Update ASR
Status: Created
Updated: July 15, 2016 9:53:54 AM PST
Message:

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

13.13.3 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
--help, -h	(Optional) Displays help for using the command.

Example 13-73   Displaying Oracle ASR Details

```
# odacli describe-asr

ASR details
----------------------------------------------------------------
ID: e841d74a-687b-4e87-9548-1baa2090d48e
Name: UserName: scott.tiger@example.com
ProvyServerName: www-proxy.example.com
ProxyPort: 80
ProxyUserName:
SnmpVersion: V3
State: N/A
Created: July 15, 2016 8:53:54 AM PST
Updated: July 15, 2016 8:53:54 AM PST
```

13.13.4 odacli test-asr

Use the `odacli test-asr` command to test the Oracle Auto Service Request (Oracle ASR) configuration.

File Path

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

Syntax

```
# odacli test-asr [-h]
```

Parameters

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

Usage Notes

This command internally invokes the SNMP test trap by invoking `/SP/alertmgmt/rules/1 testrule=true`.

Example 13-74   Testing the Oracle ASR Configuration

```
# odacli test-asr

Job details
----------------------------------------------------------------
ID: ec6783f4-551d-4686-ab1b-22e2d9e59c98
Description: Test ASR
Status: Created
Created: July 25, 2016 9:03:15 AM SGT
Message:

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

13.13.5 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 13-75   Deleting Oracle ASR From the System

```
# odacli delete-asr
{
"jobId" : "5d70bd17-ec4a-48da-8196-1364105db99d",
"status" : "Running",
"message" : null,
"reports" : [ ],
"createTimestamp" : 1469409622451,
"description" : "Delete ASR",
"updatedTime" : 1469409622458
}
```

13.14 odacli OS Commands

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

- odacli list-osconfigurations (page 13-69)
  Use the command `odacli list-osconfigurations` to display the current HugePage and memlock values and view suggested values based on the total available space.

- odacli update-osconfigurations (page 13-70)
  Use the command `odacli update-osconfigurations` to update the HugePage and memlock values.

13.14.1 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 13-76   Displaying a List of Configured and Suggested Memlock and HugePage Configurations

```
# odacli list-osconfigurations

Parameter       User            ConfiguredValue               SuggestedValue
--------------- --------------- ----------------------------- ---------------
Memlock         grid            295971180KB                   289034355KB

Memlock         oracle          295971180KB                   289034355KB

HugeSpace       default         101430MB                      101161MB
```

13.14.2 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
--help, -h	(Optional) Displays help for using the command.
--hugespace, -hs	(Optional) Updates the HugePage value.
--json, -j	(Optional) Displays JSON output. The default is false.
--memlock, -m	(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 13-77   Updating the HugePage and Memlock Parameters to the Suggested Values

```
odacli update-osconfigurations
{
"jobId" : "954cf7a5-9cad-451c-8820-3140a716af26",
"status" : "Created",
"message" : "Successfully submitted a request to configure OS
parameters.",
"reports" : [ ],
"createTimestamp" : "February 06, 2018 00:03:51 AM MST",
"resourceList" : [ ],
"description" : "Configuring OS Parameter",
"updatedTime" : "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
```

13.15 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
--help, -h	(Optional) Displays help for using the command.

13.16 odaadmcli Hardware Monitoring Commands

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

- odaadmcli show cooling (page 13-72)
  Use the `odaadmcli show cooling` command to show cooling details.

- odaadmcli show env_hw (page 13-72)
  Use the `odaadmcli show env_hw` command to display information about the environment and hardware.

- odaadmcli show fs (page 13-73)
  Use the `odaadmcli show fs` command to display filesystem details.

- odaadmcli show memory (page 13-73)
  Use the `odaadmcli show memory` command to display memory details.

- odaadmcli show network (page 13-74)
  Use the `odaadmcli show network` command to show network details.

- odaadmcli show power (page 13-75)
  Use the `odaadmcli show power` command to display power supply details.

- odaadmcli show processor (page 13-75)
  Use the `odaadmcli show processor` command to display processor details.

- odaadmcli show server (page 13-76)
  Use the `odaadmcli show server` command to display server details.

13.16.1 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.

13.16.2 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 13-78   Displaying Environment and Hardware Details

To display the hardware details, enter the command `odaadmcli show env_hw`. The results show a bare metal Oracle Database Appliance system.

```
# odaadmcli show env_hw

BM ODA_Lite X7-2 Medium
```

13.16.3 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 13-79   Displaying Filesystem Details

```
# odaadmcli show fs

Type    Total Space    Free Space    Total DG Space  Free DG Space
ext3    30237M          7763M         -               -
ext3    484M             416M         -               -
ext3    60475M          38149M        -               -
ext3    100793M         22060M        -               -

acfs    102400M         102158M       4894016M        2418668M
acfs    102400M         100501M       4894016M        2418668M
acfs    102400M         100601M       4894016M        2418668M

(Continued)
Diskgroup Mount Point
        /
        /boot
        /opt
        /u01
DATA    /u02/app/oracle/oradata/ACFSDB1
DATA    /u02/app/oracle/oradata/ACFSDB2
DATA    /u02/app/oracle/oradata/EE12NCDB
```

13.16.4 odaadmcli show memory

Use the `odaadmcli show memory` command to display memory details.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show memory details:

```
odaadmcli show memory [-h]
```

Parameters

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

Example 13-80   Display Memory Details

```
# odaadmcli show memory

NAME      HEALTH  HEALTH_DETAILS   PART_NO.         SERIAL_NO.
DIMM_0    OK      -                3A4K40BB1-CRC        00CE01154602EADA96
DIMM_11   OK      -                3A4K40BB1-CRC        00CE01154602EADADA
DIMM_3    OK      -                3A4K40BB1-CRC        00CE01154602EADBC7
DIMM_8    OK      -                3A4K40BB1-CRC        00CE01154602EADBA0

(Continued)
LOCATION MANUFACTURER  MEMORY_SIZE  CURR_CLK_SPEED  ECC_Errors
P0/D0    Samsung          32 GB     2400 MHz        0
P0/D1    Samsung          32 GB     2400 MHz        0
P0/D3    Samsung          32 GB     2400 MHz        0
P0/D8    Samsung          32 GB     2400 MHz        0
```

13.16.5 odaadmcli show network

Use the `odaadmcli show network` command to show network details.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show network details:

```
odaadmcli show network [-h]
```

Parameters

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

Example 13-81   Showing Network Details

```
# odaadmcli show network
NAME            HEALTH    HEALTH_DETAILS LOCATION PART_NO  MANUFACTURER
Ethernet_NIC_0  OK        -              NET0     X540     INTEL
Ethernet_NIC_1  OK        -              NET1     X540     INTEL
Ethernet_NIC_2  -         -              NET2     X540     INTEL
Ethernet_NIC_3  -         -              NET3     X540     INTEL

(Continued)
MAC_ADDRESS        LINK_DETECTED   DIE_TEMP
00:10:e0:95:98:ec  yes (em1)       61.250 degree C
00:10:e0:95:98:ed  yes (em2)       61.250 degree C
```

```
90:e2:ba:ae:1e:ad   no (em4)       -
90:e2:ba:ae:1e:ac   no (em3)       -
```

13.16.6 odaadmcli show power

Use the `odaadmcli show power` command to display power supply details.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show power supply details:

```
odaadmcli show power [-h]
```

Parameters

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

Example 13-82   Displaying Power Supply Details

```
# odaadmcli show power

NAME            HEALTH  HEALTH_DETAILS   PART_NO.      SERIAL_NO.
Power_Supply_0  OK          -            7079395     476856Z+1514CE056G

(Continued)
LOCATION    INPUT_POWER    OUTPUT_POWER   INLET_TEMP        EXHAUST_TEMP
PS0         Present        112 watts      28.000 degree C   34.938 degree C
```

13.16.7 odaadmcli show processor

Use the `odaadmcli show processor` command to display processor details.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show processor details:

```
odaadmcli show processor  [-h]
```

Parameters

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

Example 13-83   Displaying Processor Details

```
# odaadmcli show processor
```

```
NAME      HEALTH HEALTH_DETAILS  PART_NO.  LOCATION    MODEL
CPU_0     OK     -               060F P0   (CPU 0)     Intel(R) Xeon(R) CPU
E5-2630

(Continued)
MAX_CLK_SPEED    TOTAL_CORES     ENABLED_CORES
2.200 GHz        10              10
```

13.16.8 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 13-84   Displaying Server Details

```
# odaadmcli show server

Power State : On
Open Problems : 0
Model : ORACLE SERVER X7-2
Type : Rack Mount
Part Number : 7320190
Serial Number : 1605NM10JJ
Primary OS : Not Available
ILOM Address : 10.209.8.215
ILOM MAC Address : 00:10:E0:95:98:F0
Description : Oracle Database Appliance X7-2 Small 1606NM1s02
Locator Light : Off
Actual Power Consumption : 135 watts
Ambient Temperature : 24.250 degree C
Open Problems Report : System is healthy
```

13.17 odaadmcli Storage Commands

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

- odaadmcli expand storage (page 13-77)
  Use the `odaadmcli expand storage` command to expand storage.

- odaadmcli show disk (page 13-77)
  Use the `odaadmcli show disk` command to display the status of a single disk or of all disks on the system.

- odaadmcli show diskgroup (page 13-79)
  Use the `odaadmcli show diskgroup` command to list configured diskgroups or display a specific diskgroup configuration.

- odaadmcli show controller (page 13-80)
  Use the `odaadmcli show controller` command to display details of the controller.

- odaadmcli show iraid (page 13-81)
  Use the `odaadmcli show iraid` command to display details of the internal RAID sub-system.

- odaadmcli show raidsyncstatus (page 13-81)
  Use the `odaadmcli show raidsyncstatus` command to display the RAID SYNC status.

- odaadmcli show storage (page 13-82)
  Use the `odaadmcli show storage` command to show the storage controllers, expanders, and disks.

- odaadmcli stordiag (page 13-83)
  Use the `odaadmcli stordiag` command to collect detailed information for each disk or NVMe.

- odaadmcli manage diagcollect (page 13-83)
  Use the `odaadmcli manage diagcollect` command to collect diagnostic logs for storage components.

- odaadmcli power disk (page 13-84)
  Use the `odaadmcli power disk` command to power a disk on or off.

13.17.1 odaadmcli expand storage

Use the `odaadmcli expand storage` command to expand storage.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To expand storage:

```
odaadmcli expand storage [-h]
```

Parameters

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

13.17.2 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
disk_name	(Optional) Define the disk resource name. The resource name format is `pd_[0..3]`.
`--help`, `-h`	(Optional) Displays help for using the command.

Example 13-85   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 13-86   Displaying the Status of a Single Disk

To display the status of a disk named `pd_00`:

```
# odaadmcli show disk pd_00

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

```
PrevUsrDevName :
SectorSize : 512
SerialNum : S2LHNAAH000001
Size : 3200631791616
SlotNum : 0
SmartDiskWarnin : 0
SmartTemperatur : 37
State : Online
StateChangeTs : 1465263789
StateDetails : Good
TotalSectors : 6251233968
TypeName : 0
UsrDevName : NVD_S00_S2LHNAAH101026
VendorName : Samsung
gid : 0
 mode : 660
uid : 0
```

13.17.3 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 13-87   Listing All Diskgroups

```
# odaadmcli show diskgroup

DiskGroups
----------
DATA
RECO
```

Example 13-88   Displaying DATA Configurations

```
# odaadmcli show diskgroup DATA

ASM_DISK  PATH                           DISK    STATE    STATE_DETAILS
data_00   /dev/NVD_S00_S2LHNAAH101026p1  pd_00   ONLINE   Good
data_01   /dev/NVD_S01_S2LHNAAH101008p1  pd_01   ONLINE   Good
```

13.17.4 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
controller_id, *id*	Defines the controller.
--help, -h	(Optional) Displays help for using the command.

Example 13-89   Showing Controller Details

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

13.17.5 odaadmcli show iraid

Use the `odaadmcli show iraid` command to display details of the internal RAID sub-system.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display details of the internal RAID subsystem:

```
odaadmcli show iraid [-h]
```

Parameters

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

Example 13-90   Displaying Details of the Internal RAID Sub-system

To display details of the internal RAID sub-system:

```
# odaadmcli show iraid

 NAME         CTRL#  PRODUCT     SERIAL_NO  BIOS_VER     FW_VER
IR_0_0_0 0  LSI     MegaRAID   9361-8i     SV52756042  6.17.04.2_4.16.08.00_0x06060A
IR_0_0_1 0  LSI     MegaRAID   9361-8i     SV52756042  6.17.04.2_4.16.08.00_0x06060A


VDISK_TYPE       VDISK_STATE  PDISK_MODEL
4.230.40-3739    RAID1          Optl MS4SC2JH2ORA480G
4.230.40-3739    RAID1          Optl MS4SC2JH2ORA480G


EID:SLT   PDISK_STATE   SIZE          CV_MODEL   CV_STATE   CV_TEMP
252:0      Onln          446.102 GB    CVPM02     Optimal    25C
252:1      Onln          446.102 GB    CVPM02     Optimal    25C
```

13.17.6 odaadmcli show raidsyncstatus

Use the `odaadmcli show raidsyncstatus` command to display the RAID SYNC status.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display the status of RAID SYNC:

```
odaadmcli show raidsyncstatus [-h]
```

Parameters

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

Example 13-91   Displaying the RAID SYNC Status

To display the RAID SYNC details and status:

```
# odaadmcli show raidsyncstatus

Raid Type  Raid Device  Raid Status  maintainPdFailHistory  Rebuildrate
H/W Raid   /dev/sda     Optimal      ON                     30%
```

13.17.7 odaadmcli show storage

Use the `odaadmcli show storage` command to show the storage controllers, expanders, and disks.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display the storage controllers, expanders, and disks:

```
odaadmcli show storage [-h]
```

To show storage errors:

```
odaadmcli show storage -errors [-h]
```

Parameters

Parameter	Description
--errors	(Optional) Shows storage errors.
--help, -h	(Optional) Displays help for using the command.

Example 13-92   Displaying Storage Devices

The following example displays details about the storage devices on an appliance.

```
# odaadmcli show storage

==== BEGIN STORAGE DUMP ========
Host Description: Oracle Corporation:ORACLE SERVER X6-2
Total number of controllers: 2
    Id = 0
    Pci Slot = 10
    Serial Num = S2LHNAAH101026
     Vendor = Samsung
   Model = MS1PC2DD3ORA3.2T
   FwVers = KPYA7R3Q
   strId = nvme:19:00.00
      Pci Address = 19:00.0
```

```
          Id = 1
          Pci Slot = 11
          Serial Num = S2LHNAAH101008
          Vendor = Samsung
       Model = MS1PC2DD3ORA3.2T
      FwVers = KPYA7R3Q
       strId = nvme:1b:00.00
    Pci Address = 1b:00.0


Total number of expanders: 0
Total number of PDs: 2
    /dev/nvme0n1 Samsung NVD 3200gb slot: 0 pci : 19
    /dev/nvme1n1 Samsung NVD 3200gb slot: 1 pci : 1

==== END STORAGE DUMP =========
```

13.17.8 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
-n *disk_name*	Defines the disk resource name. The resource name format is `pd_[0..3]`.
--help, -h	(Optional) Displays help for using the command.

Example 13-93   Displaying NVMe Details

To display detailed information for NVMe `pd_00`:

`# odaadmcli stordiag pd_00`

13.17.9 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 13-94   Collecting Storage Logs

```
# odaadmcli manage diagcollect --storage
Collecting storage log data. It will take a while, please wait...
Collecting oak data. It will take a while, please wait...
tar: Removing leading `/' from member names
tar: /opt/oracle/oak/onecmd/tmp/OakCli-Command-Output.log: file changed as we read it

Logs are collected to : /opt/oracle/oak/log/rwsoda6f002/oakdiag/oakStorage-
rwsoda6f002-20161120_2217.tar.gz
```

13.17.10 odaadmcli power disk

Use the `odaadmcli power disk` command to power a disk on or off.

File Path

$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To power a disk on or off:

```
odaadmcli power disk {on|off|status} disk_name [-h]
```

Parameters

Parameter	Description
disk_name	Defines the disk resource name. The resource name format is pd_[0..3].
{on|off|status}	Power on a disk, power off a disk, display status.
--help, -h	(Optional) Displays help for using the command.

Example 13-95   Powering a Disk Off

This example shows how to power off a disk.

```
# odaadmcli power disk off pd_00
Disk 'pd_00' is already part of ASM

Are you sure you want to power OFF the disk?: 'pd_00'?
[yes/no]:
```

```
yes
Powered OFF pd_00
```

Example 13-96   Checking the Disk Status

This example shows how to get the status of disk pd_00.

```
# odaadmcli power disk status pd_00
The disk is powered ON
```

13.18 odaadmcli VLAN Management Commands

Use the odaadmcli VLAN commands to list and manage virtual local area networks (VLANs) for Oracle Database Appliance bare metal platform.

Topics:

- odaadmcli create vlan (page 13-85)
  Use the `odaadmcli create vlan` command to create a virtual local area network (VLAN).

- odaadmcli delete vlan (page 13-87)
  Use the `odaadmcli delete vlan` command to delete a VLAN.

- odaadmcli show vlan (page 13-87)
  Use the `odaadmcli show vlan` command to display a list of virtual local area networks (VLANs) and details.

13.18.1 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.

Parameter	Description
`-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 13-97   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 13-98   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
```

13.18.2 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 13-99   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 13-100   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
```

13.18.3 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 13-101   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
```

13.19 odacli-adm set-credential

Use the `odacli-adm set-credential` command to change the `oda-admin` user credentials.

Syntax

To reset the `oda-admin` user credentials in interactive mode:

```
odacli-adm set-credential --password --username username [-j] [-h]
```

Parameters

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

Usage Notes

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

Example 13-102   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
```

14

Validating and Troubleshooting Oracle Database Appliance

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

- Logging into the Web Console (page 14-1)
  If you have problems logging into the Web Console, then it might be your browser or credentials.

- Troubleshooting Tools and Commands (page 14-2)
  This section describes additional tools and commands for diagnosing and troubleshooting problems with Oracle Database Appliance.

- Preparing Log Files for Oracle Support Services (page 14-6)
  If necessary, use the command `odaadmcli manage diagcollect` to collect diagnostic files to send to Oracle Support Services.

14.1 Logging into the Web Console

If you have problems logging into the Web Console, then it might be your browser or credentials.

Oracle Database Appliance uses self-signed certificates. Depending on the browser and browser version, you might receive a warning or error that the certificate is invalid or not trusted because it is self-signed, or that the connection is not private.

> ✏️ **Note:**
>
> For browsers other than Google Chrome, you must accept the security certificate on the two different websites. If you do not, the log in appears to work, but the agent is not logged in.

1. Open a browser window.
   - If you are using Google Chrome, go to Step 2.
   - If you are using Mozilla Firefox or another browser, perform the following steps:
   a. Enter the following URL: `https://ODA-host-ip-address:7070/login`
   b. Get the security certificate (or certificate), confirm the security exception, and add an exception.
   c. Open a new browser window or tab, then go to Step 2.
2. Go to the following URL: `https://ODA-host-ip-address:7093/mgmt/index.html`

3. Get the security certificate (or certificate), confirm the security exception, and add an exception.

4. Log in with your Oracle Database Appliance credentials.

   If you are using the default password, a message appears advising you to change the default password to comply with your system security requirements.

   The following error message indicates that the agent is not logged in: No Response Returned from Authentication. Go to Step 1 and accept the security certificate for the following URL: `https://ODA-host-ip-address:7070/login` and open the Web Console in a different window or tab.

Related Topics

- http://www.oracle.com/technetwork/indexes/products/browser-policy-2859268.html

- Changing the Password (page 5-2)
  Change the administrative account passwords to secure your system.

14.2 Troubleshooting Tools and Commands

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

- ORAchk Health Check Tool (page 14-2)
  Use the ORAchk Health Check Tool to audit configuration settings and check system health.

- Disk Diagnostic Tool (page 14-4)
  Use the Disk Diagnostic Tool to help identify the cause of disk problems.

- Trace File Analyzer Collector (page 14-4)
  Trace File Analyzer (TFA) Collector simplifies diagnostic data collection on Oracle Grid Infrastructure and Oracle Real Application Clusters systems.

- Oracle Database Appliance Hardware Monitoring Tool (page 14-5)
  The Oracle Database Appliance Hardware Monitoring Tool displays the status of different hardware components in Oracle Database Appliance server.

14.2.1 ORAchk Health Check Tool

Use the ORAchk Health Check Tool to audit configuration settings and check system health.

The ORAchk utility performs proactive heath checks for the Oracle software stack and scans for known problems.

The ORAchk Configuration Audit Tool audits important configuration settings for Oracle RAC two-node deployments in the following categories:

- Operating system kernel parameters and packages

- RDBMS

- Database parameters, and other database configuration settings

- Oracle Grid Infrastructure, which includes Oracle Clusterware and Oracle Automatic Storage Management

ORAchk is aware of the entire system. It checks the configuration to indicate if best practices are being followed.

> **✎ See Also:**
>
> For more information about ORAchk, see My Oracle Support note 1268927.2, "ORAchk Health Checks for the Oracle Stack" at https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=1268927.2

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

14.2.2 Disk Diagnostic Tool

Use the Disk Diagnostic Tool to help identify the cause of disk problems.

The tool produces a list of 14 disk checks for each node. To display details, where n represents the disk resource name, enter the following command:

```
# odaadmcli stordiag n
```

For example, to display detailed information for NVMe pd_00:

```
# odaadmcli stordiag pd_00
```

14.2.3 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&amp;type=NOT&amp;id=1513912.1

14.2.4 Oracle Database Appliance Hardware Monitoring Tool

The Oracle Database Appliance Hardware Monitoring Tool displays the status of different hardware components in Oracle Database Appliance server.

The tool is implemented with the Trace File Analyzer collector. Use the tool both on bare-metal and on virtualized systems. The Oracle Database Appliance Hardware Monitoring Tool reports information only for the node on which you run the command. The information it displays in the output depend on the component that you select to review.

Bare Metal Platform

You can see the list of monitored components by running the command `odaadmcli show -h`

To see information about specific components, use the command syntax `odaadmcli show component`, where `component` is the hardware component that you want to query. For example, the command `odaadmcli show power` shows information specifically about the Oracle Database Appliance power supply:

```
# odaadmcli show power

NAME            HEALTH  HEALTH_DETAILS  PART_NO.    SERIAL_NO.
Power_Supply_0  OK         -            7079395     476856Z+1514CE056G

(Continued)
LOCATION    INPUT_POWER   OUTPUT_POWER   INLET_TEMP       EXHAUST_TEMP
PS0         Present       112 watts      28.000 degree C  34.938 degree C
```

Virtualized Platform

You can see the list of monitored components by running the command `oakcli show -h`

To see information about specific components, use the command syntax `oakcli show component`, where `component` is the hardware component that you want to query. For example, the command `oakcli show power` shows information specifically about the Oracle Database Appliance power supply:

```
# oakcli show power

NAME             HEALTH HEALTH DETAILS  PART_NO.  SERIAL_NO.
Power Supply_0  OK      -              7047410   476856F+1242CE0020
Power Supply_1  OK      -              7047410   476856F+1242CE004J

(Continued)

LOCATION   INPUT       POWER OUTPUT  POWER INLET TEMP   EXHAUST TEMP
PS0        Present     88 watts      31.250 degree C    34.188 degree C
PS1        Present     66 watts      31.250 degree C    34.188 degree C
```

> **Note:**
>
> Oracle Database Appliance Server Hardware Monitoring Tool is enabled during initial startup of ODA_BASE on Oracle Database Appliance Virtualized Platform. When it starts, the tool collects base statistics for about 5 minutes. During this time, the tool displays the message "Gathering Statistics…" message.

14.3 Preparing Log Files for Oracle Support Services

If necessary, use the command `odaadmcli manage diagcollect` to collect diagnostic files to send to Oracle Support Services.

If you have a system fault that requires help from Oracle Support Services, then you may need to provide log records to help Oracle support diagnose your issue.

Collect log file information by running the command `odaadmcli manage diagcollect`. This command consolidates information from log files stored on Oracle Database Appliance into a single log file for use by Oracle Support Services. The location of the file is specified in the command output.

The following is an example of collecting log file information for storage.

```
# odaadmcli manage diagcollect --storage
Collecting storage log data. It will take a while, please wait...
Collecting oak data. It will take a while, please wait...
tar: Removing leading `/' from member names
tar: /opt/oracle/oak/onecmd/tmp/OakCli-Command-Output.log: file changed as we read it

Logs are collected to : /opt/oracle/oak/log/rwsoda6f002/oakdiag/oakStorage-
rwsoda6f002-20161120_2217.tar.gz
```

A
Oracle Database Appliance Software Configuration Defaults

Oracle Database Appliance software configuration defaults.

- Directory Paths for Oracle Database Appliance (page A-1)
  Oracle homes on Oracle Database Appliance follow Optimal Flexible Architecture guidelines.

- Location of Log Files (page A-2)
  Log files are available for actions performed in the command-line interface and Web Console and are useful when you need to track and debug jobs.

- Oracle Groups and User Configurations for Oracle Database Appliance (page A-3)
  Review the groups and default users when you use the Web Console to deploy the appliance. All passwords are set to the Master password that you define during deployment.

- System Configuration for Oracle Database Appliance (page A-3)
  Review the system configuration for Oracle Database Appliance X6-2S, X6-2M, and X6-2L.

A.1 Directory Paths for Oracle Database Appliance

Oracle homes on Oracle Database Appliance follow Optimal Flexible Architecture guidelines.

Table A-1   Directory Paths for Oracle Database Appliance

Item	Directory Path
Grid home	`/u01/app/`*`release-specific_name`*`/`*`gi owner`*
Grid base	`/u01/app/`*`gi owner`*
Oracle home	`/u01/app/`*`rdbms owner`*`/product/dbhome_`*`release-specific_namesequence_number`*
Oracle base	`/u01/app/`*`rdbms owner`*
Oracle Inventory	`/u01/app/oraInventory`

A.2 Location of Log Files

Log files are available for actions performed in the command-line interface and Web Console and are useful when you need to track and debug jobs.

You can also use the Oracle Appliance Manager Web Console to view job activity, including the tasks that make up the job. The status of each task appears in the Web Console and you can drill down to get greater details.

If you log a Service Request, upload all of the logs in the `/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.

Related Topics

- Viewing Job Activity (page 1-4)
  Use the Oracle Appliance Manager Web Console to view job activity, the status of tasks in a job, and job status.

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-2   Default Operating System Groups and Users Configuration for Oracle Database Appliance

Groups and Users	Default Value
Oracle Grid Infrastructure installation owner	`grid`, UID 1001
Oracle Database installation owner	`oracle`, UID 1000
Oracle Database system administrator	`sys`
Oracle Database generic administrator	`system`
Oracle Inventory system privileges group	`oinstall`, GID 1001
Oracle ASM Administrators system privileges	`asmadmin`, GID 1004
Oracle ASM Users system privileges	`asmdba`, GID 1006
Oracle ASM Operator system privileges	`asmoper`, GID 1005
Oracle Database Administrators system privileges	`dba`, GID 1003
Oracle Database Operator system privileges	`dbaoper`, GID 1002

Oracle Groups and User Configurations

You can use the Web Console or the `odacli create-appliance` command and a JSON file to deploy the appliance. The following configurations are supported:

- 2 Users with 6 groups (operating system role separation)
- Single User with 6 groups (no operating system role separation)
- Single user with 2 groups (no operating system role separation)

You can customize `groupname`, `username`, and `UID`.

A.4 System Configuration for Oracle Database Appliance

Review the system configuration for Oracle Database Appliance X6-2S, X6-2M, and X6-2L.

Table A-3   System Configuration for Oracle Database Appliance X6-2S, X6-2M, and X6-2L

Item	Value
Oracle Linux with the Red Hat-compatible kernel	Oracle Linux 6.9 with 4.1.12-112.14.1.el6uek.x86_64

Table A-3 (Cont.) System Configuration for Oracle Database Appliance X6-2S, X6-2M, and X6-2L

Item	Value
Oracle Database release	12.1.0.2.180417 and 11.2.0.4.180417
	Oracle Database Enterprise Edition, Oracle Database Standard Edition 2, Oracle Database Standard Edition 1, Oracle Database Standard Edition
Oracle Enterprise Manager Express 12*c*	Port 5500
	To access Oracle Enterprise Manager, enter the following URL string, where *hostname* is the name of the Oracle Database Appliance server:
	`https://hostname:5500/em`
Oracle Enterprise Manager 11.2 database console	Port 1158
	To access Oracle Enterprise Manager, enter the following URL string, where *hostname* is the name of the Oracle Database Appliance server:
	`https://hostname:1158/em`

B

Storage on Oracle Database Appliance

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

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

- Determining Usable Disk Capacity on Oracle Database Appliance for X6-2S, X6-2M, and X6-2L (page B-4)
  Review the usable disk capacity available for Oracle Database Appliance X6-2S, X6-2M, and X6-2L and how capacity is derived.

B.1 About Oracle Database Appliance Storage

Use Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage Management Cluster File System (Oracle ACFS) for database files storage.

Database file systems are used exclusively for storing database files, and they include a DATA file system for database data files and a RECO file system for storing archive files and backups. Oracle Database Appliance supports Oracle ACFS and Oracle ASM database file storage. You determine the type of database storage when you create the database.

About Oracle ASM Database Storage

Use Oracle ASM with Oracle Database 12c release 1 (12.1.0.2).

With Oracle ASM, database data files are stored in DATA diskgroup. Redo and archive files are in RECO diskgroup.

About Oracle ACFS Database Storage

Use Oracle ACFS with Oracle Database 12c release 1 (12.1.0.2) or Oracle Database 11g release 2 (11.2.0.4).

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.

- About Database File Storage (page B-2)
  Understand how database file storage is configured for Oracle Database Appliance X6-2.

- Oracle ACFS Mount Points and Storage Space (page B-3)
  Review Oracle ASM Cluster file system (ACFS) mount points for Oracle Database Appliance.

- Displaying Mounted Disk Details (page B-4)
  Use the Oracle Automatic Storage Management `lsdg` command to display mounted disk groups and their information for Oracle Database Appliance.

B.1.1 About Database File Storage

Understand how database file storage is configured for Oracle Database Appliance X6-2.

Database file systems are used exclusively for storing database files, and they include a DATA file system for database data files and a RECO file system for storing archive files and backups. Oracle Database Appliance supports Oracle Automatic Storage Management Cluster File System (Oracle ACFS) or Oracle Automatic Storage Management (Oracle ASM) database file storage. You determine the type of database storage when you create the database.

About Oracle ASM Database Storage

Use Oracle ASM with Oracle Database 12c release 1 (12.1.0.2).

With Oracle ASM, database datafiles are stored in DATA diskgroup. Redo and archive files are in RECO diskgroup.

Reserved storage is the amount of Oracle Automatic Storage Management (Oracle ASM) storage required to maintain redundancy in the event of a disk failure. If you use the reserve storage capacity, then the system continues to run, and it is protected through Oracle ASM mirroring. However, in the event of a second disk failure, the system is then running in a non-protected and degraded mode. In this event, you must replace disks immediately.

About Oracle ACFS Database Storage

Use Oracle ACFS with Oracle Database 12c release 1 (12.1.0.2) or Oracle Database 11g release 2 (11.2.0.4).

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.

Storage Configuration Options

When Oracle Database Appliance X6-2 is deployed, you can select one of the following configuration options to divide the storage capacity between DATA diskgroup and RECO diskgroup:

- External: Storage capacity is split between 80% for DATA and 20% for RECO.

- Internal: Storage capacity is split between 40% for DATA and 60% for RECO.

- Custom: Storage capacity is configurable from 10% to 90% for DATA and the remainder for RECO.

When you configure Oracle Database Appliance to use Custom data storage, the amount of usable storage is determined by the percentage configured for DATA.

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

Example B-1   Oracle ACFS Storage Space

When the Oracle ACFS file systems are created, they do not initially consume all of the storage in the appliance. Space is preserved for additional repositories, or in some cases, database files stored directly in Oracle ASM. You can check for available storage space in your file systems by running the operating system command `df -k` as shown in the following example.

```
# df -k
Filesystem                            1K-blocks    Used       Available  Use%
```

```
Mounted on
/dev/mapper/VolGroupSys-LogVolRoot    30963708    14203568     15187276   49%    /
tmpfs                                 65952292      647800     65304492
1%      /dev/shm
/dev/sda1                               495844       43872       426372   10%    /
boot
/dev/mapper/VolGroupSys-LogVolOpt     61927420    18594420     40187272   32%    /
opt
/dev/mapper/VolGroupSys-LogVolU01    103212320    49621560     48347880   51%    /
u01
/dev/asm/reco-62                      76546048     1469676     75076372
2%      /u03/app/oracle
/dev/asm/datrdb2-268                 104857600     3872368    100985232
4%      /u02/app/oracle/oradata/rdb2
/dev/asm/datndb11-268                104857600      247160    104610440
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 `lsdg` 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 `lsdg` command.

Example B-2   Determining Storage on the DATA Disk Group

```
ASMCMD [+] > lsdg data

State      Type     Rebal   Sector   Block       AU    Total_MB   Free_MB   Req_mir_free_MB
Usable_file_MB
MOUNTED    NORMAL   N         512     4096   4194304      12288      8835
1117            3859

(continued)
Offline_disks   Voting_files   Name
        0                 N   DATA
```

B.2 Determining Usable Disk Capacity on Oracle Database Appliance for X6-2S, X6-2M, and X6-2L

Review the usable disk capacity available for Oracle Database Appliance X6-2S, X6-2M, and X6-2L and how capacity is derived.

Oracle Database Appliance X6-2S, X6-2M, and X6-2L use 3.2 TB raw NVMe flash Solid-State Drives. The usable data capacity in the following tables varies because it is derived by converting terabytes reported in decimal (based on 1 kilobyte equals 1,000 bytes) into terabytes reported in binary (based on 1 kilobyte equals 1,024 bytes) and splitting the usable capacity into Oracle Automatic Storage Management (Oracle ASM) disk groups.

In summary, each NVMe SSD usable storage is approximately 2.91TB. This is calculated by the storage usable capacity of the drive converted to TB. 3.2 TB divided by 1.024^4 = 2.91TB.

Usable Disk Capacity on Oracle Database Appliance X6-2S and X6-2M

The following table provides the approximate amount of usable space for the Oracle Database Appliance X6-2S and X6-2M.

Table B-2   Usable Disk Capacity on Oracle Database Appliance X6-2S and X6-2M

Description	Sizing for X6-2S and X6-2M with 2 NVMe Drives	Sizing for X6-2S and X6-2M with 4 NVMe Drives
Number of NVMe Drives	2	4
Total Usable Space	5.8TB	11.6TB
Total Usable Normal (Double Mirror) Oracle ASM Redundancy	2.9TB	5.8TB
DATA Disk Group (90% Usable)	2.6TB	5.2TB
RECO Disk Group (10% Usable)	0.3TB	0.6TB
Total Usable High (Triple Mirror) Oracle ASM Redundancy	NA. Triple mirroring is not applicable for the X6-2S and X6-2M.	3.9TB
DATA Disk Group (90% usable)	NA. Triple mirroring is not applicable for the X6-2S and X6-2M.	3.5TB
RECO Disk Group (10% usable)	NA. Triple mirroring is not applicable for the X6-2S and X6-2M.	0.4TB

Usable Disk Capacity on Oracle Database Appliance X6-2L

Based on the calculations of the capacity of the storage drives and including the reserved space for redundancy, the following table reflects the approximate usable storage of the Oracle Database Appliance X6-2L.

Table B-3   Usable Storage on Oracle Database Appliance X6-2L

Description	Sizing for X6-2L with 6 NVMe Drives	Sizing for X6-2L with 9 NVMe Drives
Number of NVMe Drives	6	9
Total Usable Space	17.4TB	26.1TB
Reserved Space Normal Redundancy	2.9TB	2.9TB
Total Usable Normal (Double Mirror) Oracle ASM Redundancy	7.2TB	11.6TB
DATA Disk Group (90% usable)	6.5TB	10.4TB
RECO Disk Group (10% usable)	0.7TB	1.2TB
Reserved Space High Redundancy	5.8TB	5.8TB
Total Usable High (Triple Mirror) Oracle ASM Redundancy	3.8TB	6.8TB

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Table B-3   (Cont.) Usable Storage on Oracle Database Appliance X6-2L

Description	Sizing for X6-2L with 6 NVMe Drives	Sizing for X6-2L with 9 NVMe Drives
DATA Disk Group (90% usable)	3.4TB	6.1TB
RECO Disk Group (10% usable)	0.4TB	0.7TB

The Reserved Space values represent the amount of storage required to maintain full redundancy in case of disk failure.

Oracle ASM Calculations

When Oracle ASM calculates usable Free Space, it determines the amount of space to reserve in the case of a disk failure. For Oracle Database Appliance X6-2S or X6-2M with 2 or 4 NVMe drives, this reserved space is not required. When you query Oracle ASM or Oracle Database Appliance commands to view the amount of storage available, the `usable_File_MB` value may report a negative number.

Table B-4   Oracle ASM Calculations

Number of Drives	Redundancy	Total_MB	Free_MB	Req_mir_free _MB	Usable_file_M B	Name
2	NORMAL	4894016	4893372	0	1220644	RECO/
4	NORMAL	1231176	1230996	610468	305150	RECO/

> **Note:**
>
> Note: 1TB = MB divided by 1024^2

The following table describes how capacity terms are defined by Oracle ASM and Oracle Database Appliance.

Table B-5   Definition of Terminology

Term	Oracle ASM Definition	Oracle Database Appliance Definition
Total_MB	Size of the disk group in MB	Total usable storage. For example, for 2 NVMe drives, total usable storage is 5.8TB.
Free_MB	Free space in the disk group in MB, without regard to redundancy.	Total usable storage after formatting to Oracle ASM disk groups. For example, for 2 NVMe drives, total usable storage is 5.8TB.
Req_mir_free_MB	Amount of space that must be available in the disk group to restore full redundancy after the worst failure that can be tolerated by the disk group.	Total usable storage after formatting to Oracle ASM disk groups. For example, for 2 NVMe drives, total usable storage is 5.8TB.

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Table B-5   (Cont.) Definition of Terminology

Term	Oracle ASM Definition	Oracle Database Appliance Definition
Usable_file_MB	Amount of free space, adjusted for mirroring, that is available for new files.	Total usable space taking into consideration the mirroring level. Oracle ASM also calculates the amount of space required.

C

Create Appliance Using JSON File

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

- Readme for the odacli create-appliance Command (page C-1)
  Use the readme and example JSON file to create a JSON file to use the command-line interface to create the appliance.

- Example JSON Files for the odacli create-appliance Command (page C-3)
  Use these JSON file examples and the readme to create a JSON file that you can use to create the appliance with the command-line interface.

C.1 Readme for the odacli create-appliance Command

Use the readme and example JSON file to create a JSON file to use the command-line interface to create the appliance.

Readme

Review this readme carefully along with the provided JSON example files. Create a JSON file with the necessary changes based on your environment and requirements. The examples on this page and the readme are also 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, you will lose network access to both the host and Oracle ILOM.

Definitions

```
instance:
    name: display name for the appliance instance resource
    instanceBaseName: This is the base name used for the service to derive the names
for the other entities
    dbEdition: Enter "EE" for enterprise edition, or "SE" for standard edition
    timeZone: OS timeZone
    ntpServers: IP address for ntp server configured in /etc/ntp.conf, enter null if
NTP is not configured
    dnsServers: IP address for DNS server configured in /etc/resolv.conf, enter null
if dns is not configured.
    domainName: domain name (for example, example.com)
    isRoleSeperated: true|false
        set isRoleSeperated=true if role separation is required during the
installation.
            need to specify 6 groups and two users. groupName and userName can be
customized
```

```
                 Set isRoleSeperated=false if role separation is not required.
                     Need to specify 2 groups and one user. groupName and userName can be
customized
nodes:
    nodeNumber: 0 (Use 0 for ODA S|M|L)
    nodeName: the Name used to configure the host name.
    network:
        nicName: the NIC name used for the network.
            For ODA S: btbond1, sfpbond1
            For ODA M: btbond1, btbond2, sfpbond1
            For ODA L: btbond1, btbond2, sfpbond1
        ipAddress: IP address for this network
        subNetMask: subnet mask for this network
        gateway: gateway address for this network
        networkType: Public|Backup|Other
        isDefaultNetwork: true|false
    ilom:
        ilomName: ilom name
        ipAddress: ilom ip address
        subNetMask: subnet mask for the ilom network
        gateway: gateway for ilom network

grid:
    diskGroup: (ODA S|M|L contains DATA and RECO Diskgroups)
        diskgroupName: DATA|RECO
        redundancy: Normal|High (for 2 NVMEs, only Normal is supported, for 4 NVMEs,
both Normal and High is supported)
        diskPercentage: Percentage of NVMe drive capacity is used for this
particular diskgroup.
    language: language used for GI installation

database:
    dbName: dbname for the database
    dbVersion: Use "12.1.0.2" for 12c database, "11.2.0.4" for 11.2 database.
    instanceOnly:
        true: only database instance is created without any data files
        false: create a complete database (with datafiles, redo logs, etc)
    isCdb: "true" if this database is container DB. Only valid for 12.1.0.2
database. "False" if this is non-cdb
    pdBName: pdbName if isCdb is "true", use "null" if isCdb is "false"
    pdbAdminuserName: pdb admin user name, use "null" if isCdb is "false"
    adminPassword: master password for the database.
    dbType: use "SI" , single instance database for ODA S|M|L
    dbTargetNodeNumber: use "0" for ODA S|M
    dbClass: OLTP|DSS|IMDB. For SE, only OLTP is supported. For EE, OLTP, DSS,
IMDB(12c db only) are supported
    dbShape: database shape, decide which database template to use for this database.
    dbStorage: ACFS|ASM. Only ACFS is supported for 11.2.0.4. Both ACFS and ASM are
supported for 12.1.0.2.
    dbCharacterSet: Characterset for this database.
    dbConsoleEnable: true|false. Whether or not to create dbconsole (11.2.0.4) or EM
express (12.1.0.2)

asr:
    userName/password: username/password for the ASR
    proxyServerName/proxyPort/proxyUserName/proxyPassword: information about proxy
server.
    snmpVersion: use "v3"
```

C.2 Example JSON Files for the odacli create-appliance Command

Use these JSON file examples and the readme to create a JSON file that you can use to create the appliance with the command-line interface.

You must create a JSON file to use the `odacli create-appliance` command. You can use the example JSON files that are located here and the information located in the readme as a template to create a file for your environment. The examples on this page and the readme are also 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-1   JSON File to Create an Oracle Database Appliance X6-2 with Role Separation

The following is an example of a JSON file that creates an Oracle Database Appliance X6-2S, X6-2M, or X6-2L. The example uses role separation.

```
$ cat create-appliance.json
{
  "instance" : {
    "name" : "odambox",
    "instanceBaseName" : "odambox",
    "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" : "255.255.255.0",
          "gateway" : "10.0.1.1",
          "networkType" : [ "Public" ],
          "isDefaultNetwork" : true
        },
        {
          "nicName" : "btbond2",
          "ipAddress" : "192.168.18.24",
          "subNetMask" : "255.255.255.0",
          "gateway" : "192.168.18.1",
          "networkType" : [ "Backup" ],
          "isDefaultNetwork" : false
        }
      ],
      "ilom" : {
        "ilomName":"odambox-c",
        "ipAddress":"10.0.2.10",
        "subNetMask":"255.255.255.0",
        "gateway":"10.0.2.1"
      }
    } ],
    "grid" : {
      "diskGroup" : [ {
        "diskGroupName" : "DATA",
        "redundancy" : "NORMAL",
        "diskPercentage" :70
      }, {
        "diskGroupName" : "RECO",
        "redundancy" : "NORMAL",
        "diskPercentage" :30
      } ],
      "language" : "en"
    },
    "database" : {
      "dbName" : "db1",
      "dbVersion" : "12.1.0.2",
```

```
      "instanceOnly" : false,
      "isCdb" : true,
      "pdBName" : "pdb1",
      "pdbAdminuserName" : "pdbuser",
      "adminPassword" : "password",
      "dbType" : "SI",
      "dbTargetNodeNumber" : "0",
      "dbClass" : "OLTP",
      "dbShape" : "odb1",
      "dbStorage" : "ACFS",
      "dbCharacterSet" : {
        "characterSet" : "AL32UTF8",
        "nlsCharacterset" : "AL16UTF16",
        "dbTerritory" : "AMERICA",
        "dbLanguage" : "AMERICAN"
      },
      "dbConsoleEnable" : false
    },
    "asr" :{
      "userName":"john.smith@example.com",
      "password":"xxxxx",
      "proxyServerName":"www-proxy.example.com",
      "proxyPort":"80",
      "proxyUserName":"",
      "proxyPassword":"",
      "snmpVersion":"v3"
    }
}
```

Example C-2   JSON File to Create an Oracle Database Appliance X6-2 without Role Separation

The following is an example of a JSON file that creates an Oracle Database Appliance X6-2S, X6-2M, or X6-2L without using role separation. This example creates two groups (oinstall and dba) and one user ("oracle").

```
$ cat create-appliance.json
{
  "instance" : {
    "name" : "odambox",
    "instanceBaseName" : "odambox",
    "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" : "255.255.255.0",
          "gateway" : "10.0.1.1",
          "networkType" : [ "Public" ],
          "isDefaultNetwork" : true
        },
        {
          "nicName" : "btbond2",
          "ipAddress" : "192.168.18.24",
          "subNetMask" : "255.255.255.0",
          "gateway" : "192.168.18.1",
          "networkType" : [ "Backup" ],
          "isDefaultNetwork" : false
        }
      ],
      "ilom" : {
        "ilomName":"odambox-c",
        "ipAddress":"10.0.2.10",
        "subNetMask":"255.255.255.0",
        "gateway":"10.0.2.1"
      }
    } ],
    "grid" : {
      "diskGroup" : [ {
        "diskGroupName" : "DATA",
        "redundancy" : "NORMAL",
        "diskPercentage" :70
      }, {
        "diskGroupName" : "RECO",
        "redundancy" : "NORMAL",
        "diskPercentage" :30
      } ],
      "language" : "en"
    },
    "database" : {
      "dbName" : "db1",
      "dbVersion" : "12.1.0.2",
      "instanceOnly" : false,
      "isCdb" : true,
      "pdBName" : "pdb1",
      "pdbAdminuserName" : "pdbuser",
      "adminPassword" : "password",
      "dbType" : "SI",
      "dbTargetNodeNumber" : "0",
      "dbClass" : "OLTP",
      "dbShape" : "odb1",
      "dbStorage" : "ACFS",
      "dbCharacterSet" : {
        "characterSet" : "AL32UTF8",
        "nlsCharacterset" : "AL16UTF16",
```

```
        "dbTerritory" : "AMERICA",
        "dbLanguage" : "AMERICAN"
      },
      "dbConsoleEnable" : false
    },
    "asr" :{
      "userName":"john.smith@example.com",
      "password":"xxxxx",
      "proxyServerName":"www-proxy.example.com",
      "proxyPort":"80",
      "proxyUserName":"",
      "proxyPassword":"",
      "snmpVersion":"v3"
    }
}
```

D

Oracle Database Appliance Cleanup Script

Use the cleanup deploy script tool to perform clean up tasks.

Use the Oracle Database Appliance cleanup deploy script, `cleanup.pl` for the following activities:

- Uninstall Oracle Auto Service Request (Oracle ASR)
- Uninstall Oracle Trace File Analyzer (TFA)
- Delete Oracle Database Console (dbconsole) files
- Uninstall GI and Oracle stack
- Reset the Oracle Linux `udev` rules
- Delete Oracle Linux `udev` rules
- Delete users and groups that were created when the appliance was created. For default users and groups, use the `DROP USER` statement. If you used a custom user name and group name when you deployed the appliance, use `-griduser`, `-dbuser`, `-groups` arguments to pass to the `cleanup.pl` script.

The script removes the `firstnet config` and the client access VLAN UNIX_DB, but does not delete any other VLANs.

File Path

$ORACLE_HOME`/opt/oracle/oak/onecmd/`

Syntax

```
# ./cleanup.pl [-griduser grid_user] [-dbuser db_user] [-groups comma separated list
of groups]
```

Parameters

Parameter	Description
`-griduser` *grid_user*	Defines the grid user name. The default user is `grid`.
`-dbuser` *db_user*	Defines the database user name. The default user is `oracle`.
`-groups` *comma separated list of groups*	Lists the groups in a comma separated list. The default groups are `oinstall,dba,asmadmin,asmoper,asmdba`.

Usage

When the `grid_user` and `db_user` are the same (roleSeparation=false), you must still run the script for each user (`-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.

- About Database Shapes (page E-1)
  Review this information to help determine the database shape to use.

- OLTP Database Shapes (page E-2)
  Use Oracle Database Appliance OLTP Database Shapes if your database workload is primarily online transaction processing (OLTP).

- In-Memory Database Shapes (page E-3)
  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.

- DSS Database Shapes (page E-4)
  Use DSS database shapes if your database workload is primarily decision support services (DSS) or data warehousing.

E.1 About Database Shapes

Review this information to help determine the database shape to use.

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.

The Oracle Appliance Manager Configurator refers to the database sizing shapes as *classes* of databases.

> **✏ 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 that:

- The information in the tables assumes that you are creating disk backups. The information in the tables assume 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 OLTP Database Shapes

Use Oracle Database Appliance OLTP Database Shapes if your database workload is primarily online transaction processing (OLTP).

Table E-1   Oracle Database Appliance OLTP Database Shape Sizes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	200	1	16
odb1	1	4	2	200	1	16
odb2	2	8	4	400	1	16

Table E-1 (Cont.) Oracle Database Appliance OLTP Database Shape Sizes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb4	4	16	8	800	1	32
odb6	6	24	12	1200	2	64
odb08	8	32	16	1600	2	64
odb10	10	40	20	2000	2	64
odb12 (X6-2M and X6-2L only)	12	48	24	2400	4	64
odb16 (X6-2M and X6-2L only)	16	64	32	3200	4	64
odb20 (X6-2M and X6-2L only)	20	80	40	4000	4	64

E.3 In-Memory Database Shapes

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.

Table E-2 Oracle Database Appliance In-Memory Database Shape Size

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	1	16
odb1	1	4	2	2	200	1	16
odb2	2	8	4	4	400	1	16
odb4	4	16	8	8	800	1	32
odb6	6	24	12	12	1200	2	64
odb08	8	32	16	16	1600	2	64
odb10	10	40	20	20	2000	2	64
odb12 (X6-2M and X6-2L only)	12	48	24	24	2400	4	64
odb20 (X6-2M and X6-2L only)	20	80	40	40	4000	4	64

E.4 DSS Database Shapes

Use DSS database shapes if your database workload is primarily decision support services (DSS) or data warehousing.

Table E-3   Oracle Database Appliance DSS Database Shape Sizes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	1	2	200	1	16
odb1	1	2	4	200	1	16
odb2	2	4	8	400	1	16
odb4	4	8	16	800	1	32
odb6	6	12	24	1200	2	64
odb8	8	16	32	1600	2	64
odb10	10	20	40	2000	2	64
odb12 (X6-2M and X6-2L only)	12	24	48	2400	4	64
odb20 (X6-2M and X6-2L only)	20	40	80	4000	4	64

Glossary

Backup location

Determine the backup location you want: External, Internal, or Custom.

Bare metal

A non-virtualized Oracle Database Appliance configuration.

Custom backup location

Enables you to determine the amount of reserves for DATA storage. Storage capacity is configurable from 10% to 90% for DATA and the remainder for RECO. The percentage for DATA must be a whole number between 10 and 90. Other backup location options are Internal and External.

Data Storage Percentage

Defines the percentage of storage assigned to DATA. The remainder is applied to RECO.

Oracle Database Edition

Oracle Database Appliance supports Oracle Database Enterprise Edition and Standard Edition. You cannot mix editions. The database edition you select determines the database editions that you create in the appliance. To change editions, you must redeploy Oracle Database Appliance.

EM Express

If you choose the option when you deploy Oracle Database Appliance, you can use the Oracle Enterprise Manager Database Express (EM Express) console for Oracle Database 12.1.0.2 or the Database Control Console for Oracle Database 11.2.0.4 to manage the database. See Oracle Enterprise Manager Cloud Control documentation for more information about the console.

External backup location

Storage capacity is split between 80% for DATA and 20% for RECO. Other backup location options are Internal and Custom.

Internal backup location

Storage capacity is split between 40% for DATA and 60% for RECO. Other backup location options are External and Custom.

Master Password

During system configuration, the master password is the password set for UNIX users, oracle, and grid. The password is also used to set the database SYS and SYSTEM passwords and the root password of the system.

Oracle Appliance Manager

The Oracle Database Appliance Web Console. Use the Web Console to deploy Oracle Database Appliance and create databases.

Oracle Database Appliance Operating System Image

Contains the components typically installed and available on Oracle Database Appliance. The following components are typically included:

- Oracle Appliance Manager command-line interface
- Oracle Appliance Manager (Web Console)
- Oracle Linux
- Hardware drivers

Support Identifier (SI)

A hardware Support Identifier (SI) is supplied when you purchase Oracle Database Appliance. To obtain software and support from Oracle, you must register the SI with My Oracle Support.

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