Oracle® Database Appliance X5-2 Deployment and User's Guide





Oracle Database Appliance X5-2 Deployment and User's Guide, Release 19.8 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
- Documentation Accessibility
- Related Documents
- Conventions

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 X8-2 Deployment and User's 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 X5-2/X4-2 Deployment and User's 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

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.



Introduction to Oracle Database Appliance

Oracle Database Appliance saves time and money by simplifying deployment, maintenance, and support of database solutions for organizations of every size. Oracle Database Appliance hardware models are optimized to run Oracle Database Standard Edition and Enterprise Edition.

- About Oracle Database Appliance
 Understand Oracle Database Appliance hardware models, deployment plans, and database options.
- Oracle Database Appliance Software Terminology
 Understand the software patches available for Oracle Database Appliance.
- About the Browser User Interface
 Use the Oracle Appliance Manager Browser User Interface to deploy and manage the appliance, databases, networks, and jobs.

About Oracle Database Appliance

Understand Oracle Database Appliance hardware models, deployment plans, and database options.

About Oracle Database Appliance Hardware Models

Choose the Oracle Database Appliance hardware model that suits your business needs.

Oracle Database Appliance Hardware Model	Deployment Use Case
Oracle Database Appliance X8-2S, X8-2M, X8-2-HA	 Oracle Database Appliance X8-2S is a small configuration designed for smaller or entry-level deployments.
	 Oracle Database Appliance X8-2M is a medium-sized configuration designed for performance.
	 Oracle Database Appliance X8-2-HA is a large configuration designed for larger databases and high-availability.
Oracle Database Appliance X7-2S, X7-2M, X7-2-HA	 Oracle Database Appliance X7-2S is a small configuration designed for smaller or entry-level deployments.
	 Oracle Database Appliance X7-2M is a medium-sized configuration designed for performance.
	 Oracle Database Appliance X7-2-HA is a large configuration designed for larger databases and high-availability.

Oracle Database Appliance Hardware Model	Deployment Use Case
Oracle Database Appliance X6-2S, X6-2M, X6-2L	 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.
Oracle Database Appliance X6-2-HA	Highly-available two-node Oracle RAC clusters that can support both Oracle RAC and single-instance databases.
Oracle Database Appliance X5-2	Highly-available two-node Oracle RAC clusters that can support both Oracle RAC and single-instance databases.

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

About Oracle Database Appliance Deployment Plans

Oracle Database Appliance X8-2S and X8-2M are single node systems that you deploy as a bare metal platform.

Oracle Database Appliance X8-2-HA is a two-node system with the option to deploy as a bare metal platform or a virtualized platform.

Oracle Database Appliance X7-2S and X7-2M are single node systems that you deploy as a bare metal platform.

Oracle Database Appliance X7-2-HA is a two-node system with the option to deploy as a bare metal platform or a virtualized platform.

Oracle Database Appliance X6-2S, X6-2M, X6-2L are single node systems that you deploy as a bare metal platform.

Oracle Database Appliance X6-2-HA is a two-node system with the option to deploy as a bare metal platform or a virtualized platform.

Oracle Database Appliance X5-2 is a two-node system with the option to deploy as a bare metal platform or a virtualized platform.

About Database Deployment Options for Oracle Database Appliance

The following Oracle Database editions are available:

Database Edition	Supported Releases
Oracle Database Enterprise Edition	Oracle Database release 19c, 18c, 12.2.0.1, 12.1.0.2, and 11.2.0.4
Oracle Database Standard Edition 2	Oracle Database release 19c, 18c, 12.2.0.1, 12.1.0.2, and 11.2.0.4



Database Edition	Supported Releases
Oracle Database Standard Edition 1	Oracle Database release 11.2.0.4



It is important to understand your Oracle Database licensing before you create databases. You cannot provision Oracle Database Enterprise Edition and Standard Edition databases in the same bare metal platform, or the same ODA_BASE virtualized deployment, subject to Oracle Database licensing requirements. Review the *Oracle Database Licensing Information User Manual* for the Oracle Database release to review supported options and products.

Oracle Database Appliance Software Terminology

Understand the software patches available for Oracle Database Appliance.

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



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

Table 1-1 Software for Oracle Database Appliance

Patch	Description
Oracle Database Appliance patch bundle (quarterly patch release)	Use the patch bundle to update to the latest release after Oracle Database Appliance is deployed. The patch updates the Oracle Database Appliance server, storage, and database components.
Oracle Database Appliance GI/ RDBMS Clone	Use to perform an initial deployment of Oracle Database Appliance.
	The bundle contains the latest Grid Infrastructure and RDBMS components, Oracle Database Appliance Manager software, Oracle Linux and hardware drivers for deployment on an Oracle Database Appliance that is shipped from factory state.
	If you reimage Oracle Database Appliance with the Bare Metal ISO Image, download the GI/RDBMS Clone patch to deploy Oracle Database Appliance.
RDBMS Clone	Use the RDBMS Software Clone files to get the latest RDBMS clone binaries for Oracle Database releases 19c, 18c, 12.2.0.1, 12.1.0.2, and 11.2.0.4. The RDBMS clone files are needed to create Oracle databases and database homes.
Bare Metal ISO Image	Use to reimage the appliance and reset the system back to the factory configuration.



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

Patch	Description
VM ISO Image (DOM0) (Virtualized Platform ISO Image)	Use to re-image Oracle Database Appliance before deploying the ODA_Base Template and virtualized platform. The Oracle Database Appliance virtualized operating system image contains the following:
	 Oracle Database Appliance Manager oakcli command-line interface Oracle Database Appliance Manager Configurator Oracle Linux Hardware drivers Required for Virtualized Platform deployments on multi-node high availability (HA) systems.
ODA_BASE Template (Virtualization Template)	Use to create the ODA_Base virtual machine for a virtualized database appliance. The template contains the following: Oracle Virtual Machine template Oracle Database clone binaries Oracle Database templates, customized for Oracle Database Appliance deployments Oracle Grid Infrastructure clone binaries Required for Virtualized Platform deployments on multi-node HA systems.



See the *Oracle Database Appliance Release Notes* for the patch numbers and download locations and the component versions available in the patch bundle.

Note:

Starting with Oracle Database 18c, Oracle provides quarterly updates in the form of Release Updates (Updates) and Release Update Revisions (Revisions). Oracle no longer releases patch sets. For more information, see My Oracle Support Note 2285040.1.

Oracle Database releases are of type version and version_full releases. The version release is designated in the form major release version.0.0.0.0. The major release version is based on the last two digits of the year in which an Oracle Database version is released for the first time. The version_full release is an update of a version release and is designated based on the major release version, the quarterly release update version (Update), and the quarterly release update revision version (Revision).

Prior to Oracle Database release 18c, changing the first or second digit in the release number was an upgrade, and changing the fourth digit indicated an update. With 18c and later releases, changing the first digit is an upgrade, and changing the second indicates an update.



About the Browser User Interface

Use the Oracle Appliance Manager Browser User Interface to deploy and manage the appliance, databases, networks, and jobs.

The Browser User Interface provides a user-friendly interface to quickly view and perform many of the tasks needed to deploy, patch, and manage your bare metal system. The *Oracle Database Appliance Deployment and User's Guide* for your hardware model describes how to use the Browser User Interface to perform many of the tasks related to deployment, patching, and management of your appliance.

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

Appliance

- Appliance information
- System information
- Disk group information including storage utilization such as free and used space
- Information about all databases that use a storage disk group
- All the patches and hardware and software components installed on the appliance
- List of RPMs and RPM Drift information

Network

- View network details
- Create, update, and delete networks
- View interface details

Oracle ASR

- View Oracle Auto Service Request (Oracle ASR) configuration details
- Configure, update, test, and delete Oracle ASR

Patch Manager

- Update the patch repository with Oracle Database Appliance patches
- View component details of the patch and versions that are installed on the appliance
- View component details of the patch and versions that are available, but not yet installed, on the appliance
- Run patch prechecks before applying the patch
- Update the server and storage components

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

Database

- Create a database
- View database details
- Apply a backup policy for the database



- Create a manual backup
- Recover a database from a backup
- View and update the database backup schedule and update the archive log backup schedule for the database
- Modify associated networks, database shape and class, and the associated backup policy for a database
- Create, update, and delete backup policies
- Create, update, and delete database homes
- Create and delete database backup
- Clone a database from a database backup or an Oracle ACFS database snapshot
- Patch database homes
- Move databases from one Oracle home to another

Object Store

- Create Object Store Credentials for backup and recovery
- View the details for Object Store Credentials, including the endpoint URL, user name, and tenant
- Update and delete Object Store Credentials

Monitoring

- View the status of hardware, storage, memory, cooling, networking, and power
- View monitoring information for each node, in the case of High-Availability deployments
- View system health status and drilldown to details of incidents
- Click the hardware image to view details

Activity

- View a list of jobs, details, and status
- Click a job description to view job details

Update ILOM and User Settings

Expand **About** in the upper right corner of the Browser User Interface to perform the following tasks:

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



You can access the Oracle Database Appliance documentation set from the Browser User Interface. For the latest updates to the documentation for a release, see the online Oracle Database Appliance documentation library at https://docs.oracle.com/en/engineered-systems/oracle-database-appliance/index.html.



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
 Add your hardware Support Identifier (SI) to your My Oracle Support account
 profile.
- Planning Oracle Database Appliance Configuration Options
 Use these topics to help you to make decisions about your Oracle Database Appliance configuration.
- Gathering System Requirement Information
 Use these checklists to collect information before deploying Oracle Database Appliance.

Registering Your Support Identifier on My Oracle Support

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

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



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

Planning Oracle Database Appliance Configuration Options

Use these topics to help you to make decisions about your Oracle Database Appliance configuration.

These topics help you to select the correct Oracle Database Appliance and plan for deployment. Record your decisions and the information that you require before you proceed to complete system configuration checklists.

A

Caution:

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.

Topics:

- Selecting Database Deployment Options for Oracle Database Appliance
 If you plan to create an initial database during deployment, then use these lists to
 select an Oracle Database deployment option, and prepare for the deployment.
- 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.
- Calculating Required Cores
 After you select templates for your planned Oracle Database, identify your workload type, and determine the total number of CPUs that you require to support the templates.
- 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.

Selecting Database Deployment Options for Oracle Database Appliance

If you plan to create an initial database during deployment, then use these lists to select an Oracle Database deployment option, and prepare for the deployment.

Oracle Appliance Manager installs Oracle Database software on mirrored disks that are internal to Oracle Database Appliance. During the initial deployment, you can either create a database or you can defer database creation to a later time.

Options:

- Enterprise Edition: Oracle Database 18c Enterprise Edition (no automated failover), with the following characteristics:
 - Single-instance Oracle Database Enterprise Edition home
 - Oracle Database software installation on both nodes
- Oracle Real Application Clusters (Oracle RAC) One Node: Oracle RAC One Node 18c, with the following characteristics:
 - Oracle RAC One Node has a designated Oracle Database Appliance home node
 - Oracle RAC One Node software is installed on both servers
 - Automated failover is configured



- Enterprise Edition license is required
- Oracle RAC One Node license on each server is required
 Exception: If you designate one server as a backup server, then you can use that server without a license, in accordance with the 10-day rule.
- Oracle RAC: Oracle Real Application Clusters 18c, with the following characteristics:
 - Oracle RAC home
 - Oracle RAC software is installed on both servers
 - Enterprise Edition license is required
 - Oracle RAC license on each server is required (not eligible for the 10-day rule)



For information about the 10-day rule, see the *Oracle Software Investment Guide* at https://www.oracle.com/corporate/pricing/.

Selecting Database Shapes for Oracle Database Appliance

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

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

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

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

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



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



Calculating Required Cores

After you select templates for your planned Oracle Database, identify your workload type, and determine the total number of CPUs that you require to support the templates.

Oracle Database Appliance templates are configured and tuned for specific types of Oracle Database workloads:

- Generic templates
- Online analytic transaction templates (OLTP)
- Decision support services templates (DSS)
- In-Memory database templates

These templates 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 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, which you accommodate later by adjusting System Global Area (SGA) and Program Global Area (PGA) sizes, as well as the number of cores.

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.



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.



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.



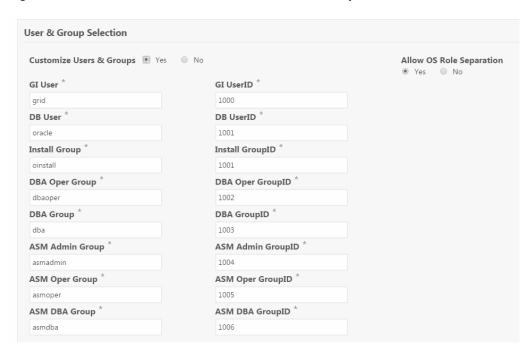


Figure 2-1 Two Custom Users with Six Custom Groups

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.

Gathering System Requirement Information

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

List of Information You Need Before Deployment
 Collect storage and network information required to prepare for deploying Oracle
 Database Appliance.



- 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.
- Checklist for Custom Network Address Configuration
 Use the checklist to identify the IP addresses required for Oracle Database
 Appliance.

List of Information You Need Before Deployment

Collect 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 includes integrated storage for operational files (operating system, Oracle Grid Infrastructure home, Oracle Database homes, tools), user data (database files), and log files (database redo logs). Operational files are stored on mirrored internal system disks in each server.

Data and database redo log files are stored on shared disks:

 On Oracle Database Appliance X5-2, data files are stored in the storage shelf and the optional storage expansion shelf. Database redo log files are stored on solidstate drives (SSDs) in the storage shelf, and on the optional storage expansion shelf.

Oracle Database Appliance X5-2 contains four 400 GB SSDs, which are configured as an ASM disk group, using ACFS for an additional database cache. Also, on Oracle Database Appliance X5-2, four 200 GB SSDs are used for attribute caching, in addition to the database redo logs.

Note:

Oracle Database Appliance X5-2 ships with 4 TB shared disks. Disk hardware capacity is measured using the formula that 1 KB equals 1,000 bytes; software storage requirements are based on 1 KB equals 1,024 bytes. This difference of 24 bytes means that a disk that has a rated capacity of 4 TB actually has about 3.725 TB of available space for software storage.



Network Administration Requirements

Ensure that the names and addresses that you provide for network configuration are configured in your Domain Name System (DNS) servers. With Patch Set 1 and later, 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.

If you are deploying Oracle Database Appliance X5-2 or X4-2, then you have the option to connect either to a copper, or to a fiber public network. To connect to a fiber network on Oracle Database Appliance X5-2, you must also replace the InfiniBand cards with 10 GbE SFP+ fiber cards. Ensure that your network planning is based on the correct type of public network.

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

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

A correctly configured Oracle Database Appliance requires at least six public addresses on the same subnet for the nodes:

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

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 for each node. This interface is bond0, or Eth1 on Oracle Database Appliance Virtualized Platform, (a bond of Eth2 and Eth3), which is used for the host IP address for the node.

If you select a Custom installation, then provide names and addresses for the following optional interfaces that you need:

- bond1 (Ethernet bond): This applies to all Oracle Database Appliance platforms.
- bond2 (Ethernet bond): This applies only to Oracle Database Appliance Version 1.
- xbond0 (for high capacity transfers, such as backups): This applies only to Oracle Database Appliance Version 1.

Use bond1 and bond2 for management, backup, disaster recovery, or other options where you require a network interface. Be prepared to provide a netmask and a gateway for each interface, as both are required when you configure network connections for Oracle Database Appliance.

Also determine answers to the following questions:

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



If you have NTP servers, and you want to synchronize time between Oracle Database Appliance nodes using NTP, then be prepared to provide the addresses for the servers. If you do not provide addresses for NTP servers, then Oracle Grid Infrastructure software configures time synchronization between nodes using Cluster Time Synchronization Service (CTSS).

 Do you want to plug in the public IP address cables to redundant switches, so that you can avoid a single point of failure for Oracle Database Appliance? Oracle recommends that you use redundant switches for High Availability.

IP Address Questions to Ask Your Network Administrator

Confirm with your network administrator that the IP addresses that you configure for Oracle Database Appliance meet these three criteria:

- They are static IP addresses.
- 2. They are on the same subnet as all other IP addresses, virtual IP (VIP) addresses (used for Oracle Real Application Clusters communication), and SCAN addresses.
- 3. They include the following:
 - One public IP address configured on the DNS server for each node and resolvable to that node before installation.
 - A VIP address for each node configured on the DNS server that is not currently in use.
 - SCANs for Oracle Database Appliance with the following characteristics:
 - Configured on the DNS server before installation, so that the two IP addresses are associated with the name provided as the SCAN, and both addresses are returned in random order to the requester by the DNS server
 - Configured on the DNS server before installation to resolve to addresses that are not currently in use
 - Have names that do not begin with a numeral



Caution:

Do not change the IP addresses and subnet for the private network.



Configuring SCANs in a Network Information Service (NIS) is not supported.

Additional Information

See *Oracle Database Appliance Owner's Guide* for information about replacing the InfiniBand cards with 10 GbE SFP+ fiber cards. For a comprehensive introduction to SCANs, see "Oracle Single Client Access Name (SCAN)", a technical paper on Oracle Technology, and *Oracle Grid Infrastructure Installation Guide for Linux*.



Related Topics

Oracle Grid Infrastructure Installation Guide for Linux

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
Oracle Database Appliance System Name	Provide the name for the cluster running on Oracle Database Appliance. This name is also used as the default root word for Oracle Database Appliance network addresses. The name must be unique across your enterprise, must be at least one character long and no more than 13 characters in length, must be alpha-numeric, cannot begin with a numeral, and may contain hyphens (-). Underscore characters (_) are not allowed.
	The name you choose will become the default first part of the names for the following items. The default (generated names) can be changed.
	 Oracle ILOM host names for Nodes 1 and 2 (systemname1-ilom and systemname2-ilom respectively)
	SCAN host name (systemname-scan)
	 Node 0 and Node 1 Public IP addresses (systemname1 and systemname2 respectively) Node 0 and Node 1 Virtual IP addresses (systemname1-vip and systemname2-vip respectively)
	The name should comply with the host name specifications described in the RFC 952 standard.
Type of	Typical, which has the most default values.
Configuration	Custom (recommended by Oracle), which allows you to override default values for any or all of the following:
	 Database block size, language, territory, backup file location, or disk redundancy level for the DATA and RECO disk groups
	 Oracle Integrated Lights Out Manager (Oracle ILOM) server
	Oracle Auto Service Request (Oracle ASR) configuration
	Oracle Cloud File System mount point and file system size
	Network Time Protocol (NTP) service server
Mode	Bare metal or virtualized platform
Region	Select 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.
Initial Database Details (if you want to create one during deployment)	 Database name Normal or container database Class (database template) Database language Database deployment (Oracle Enterprise Edition single instance, Oracle RAC One Node,
	or Oracle RAC) (Container databases only) Data file size, in gigabytes (GB)
Root password	You are prompted to provide a root password for the system. Ensure that the root password you provide is in compliance with common security practices.



Note:

Oracle recommends that you use all lowercase characters for the host name. The names are generated from the system name. For example, if you use <code>mysystem</code> as the name of your system, then the derived host names are <code>mysystem0</code> and <code>mysystem1;</code> the derived host virtual IP names are <code>mysystem0-vip</code> and <code>mysystem1-vip;</code> and the ILOM names are <code>mysystem0-ilom</code> and <code>mysystem1-ilom</code>.

Checklist for Custom Network Address Configuration

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



Oracle does not recommend changing the default Host Private Address. 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	InfiniBand has bonded interface ibbond0. The system configures icbond0 on non-InfiniBand High-Availability systems. The subnet 192.168.16.0/24 is configured.	Not applicable: the private addresses are defined before deployment and should not be changed



Readying Oracle Database Appliance for Deployment

Complete these tasks to prepare to deploy Oracle Database Appliance.

Topics:

- About Interconnect Cabling
 Interconnect is reserved for Oracle Grid Infrastructure (GI) and Oracle Relational
 Database Management System (RDBMS).
- Attaching Supplied Cables for Oracle Database Appliance
 If you are using Oracle Database Appliance with a single storage shelf, attach the interconnect cables.
- Attaching a Storage Expansion Shelf to Oracle Database Appliance
 Review these topics to install and cable a storage expansion shelf for Oracle
 Database Appliance.
- 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.
- Attaching Power Cords and Initializing Components
 Attach power cords for Oracle Database Appliance.
- Powering On Oracle Database Appliance the First Time
 Use this procedure to power on Oracle Database Appliance.
- Defining Your Public Network Interface Type
 Understand how you can define the public network interface type before deploying the appliance.
- Configuring Oracle Integrated Lights Out Manager
 Configure Oracle Integrated Lights Out Manager (Oracle ILOM) to manage Oracle
 Database Appliance independent of the operating system.

About Interconnect Cabling

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

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



Do not use interconnect for other applications.

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.

Attaching Supplied Cables for Oracle Database Appliance

If you are using Oracle Database Appliance with a single storage shelf, attach the interconnect cables.

Topics:

- Attaching Cables for Oracle Database Appliance X5-2
 Use the diagram in this topic to understand how to attach cable connections between ports on Oracle Database Appliance model X5-2 with a single storage shelf:
- Attaching Cables for Oracle Database Appliance Models X4-2
 Use the diagram in this topic to understand how to attach cable connections between ports on Oracle Database Appliance model X4-2.
- Cabling Oracle Database Appliance to Connect to Fiber Public Networks (Optional)
 You can configure X5-2 appliances to use fiber connections for the public network.

Attaching Cables for Oracle Database Appliance X5-2

Use the diagram in this topic to understand how to attach cable connections between ports on Oracle Database Appliance model X5-2 with a single storage shelf:

Figure 3-1 Interconnects and Cables for a Single Storage Shelf on Oracle Database Appliance X5-2

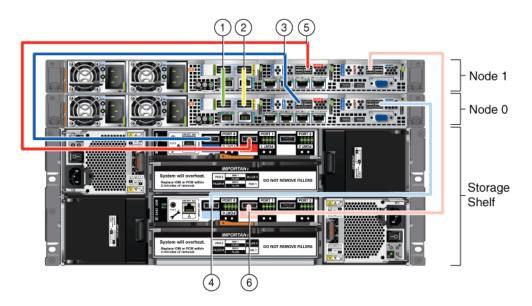




Table 3-1 Description of Callouts for Cabling Oracle Database Appliance X5-2 With Single Storage Shelf

Callout Number	Description
1	Green InfiniBand Cable (Oracle Database Appliance X5-2)
	 From: Node 0, PCle slot 1, PORT2
	 To: Node 1, PCle slot 1, PORT2
2	Yellow InfiniBand Cable (Oracle Database Appliance X5-2)
	 From: Node 0, PCIe slot 1, PORT1
	 To: Node 1, PCle slot 1, PORT1
3	Dark blue SAS cable:
	 From: Node 0, PCIe slot 2, SAS0
	 To: Storage shelf, top I/O port 0
4	Light blue SAS cable:
	 From: Node 0, PCIe slot 3, SAS1
	 To: Storage shelf, bottom I/O port 0
5	Dark red SAS cable:
	 From: Node 1, PCIe slot 2, SAS1
	 To: Storage shelf, top I/O port 1
6	Light red SAS cable:
	 From: Node 1, PCIe slot 3, SAS0
	 To: Storage shelf, bottom I/O port 1



The back panel of each node contains three PCIe generation 3 terminal slots, with two sockets in each slot. The PCIe slots are labeled \boldsymbol{X} PCIe3, where \boldsymbol{X} is the PCIe slot number.

Attaching Cables for Oracle Database Appliance Models X4-2

Use the diagram in this topic to understand how to attach cable connections between ports on Oracle Database Appliance model X4-2.

The following figure illustrates the cable connections between ports on Oracle Database Appliance model X4-2 in a single storage shelf.



Model X4-2

Model X3-2

1 2 3 5 6 4

Node 1

Node 0

Storage Shelf

Figure 3-2 Interconnects and Cables for Single Storage Shelf on Oracle Database Appliance X4-2

Table 3-2 Description of Callouts for Cabling Oracle Database Appliance X4-2 With Single Storage Shelf

Callout Number	Description
1	Green-labelled twinax cable (Oracle Database Appliance X4-2): From: Node 0, PCIe slot 1, NET0 To: Node 1, PCIe slot 1, NET0
2	Yellow-labeled twinax cable (Oracle Database Appliance X4-2) From: Node 0, PCle slot 1, NET1 To: Node 1, PCle slot 1, NET1
3	Dark blue SAS cable: From: Node 0, PCIe slot 2, SAS0 To: Storage shelf, top I/O port 0
4	Light blue SAS cable: From: Node 0, PCIe slot 3, SAS1 To: Storage shelf, bottom I/O port 0
5	Dark red SAS cable: From: Node 1, PCIe slot 2, SAS1 To: Storage shelf, top I/O port 1
6	Light red SAS cable: From: Node 1, PCIe slot 3, SAS0 To: Storage shelf, bottom I/O port 1



A

Caution:

Do not attach cables to ethernet ports in the I/O modules labeled "SERVICE ONLY" when cabling the system. These ports are intended for use by service engineers only. You must use Oracle Appliance Manager to manage Oracle Database Appliance storage.

Note:

The back panel of each node contains three PCIe generation 3 terminal slots, with two sockets in each slot. The PCIe slots are labeled \boldsymbol{X} PCIe3, where \boldsymbol{X} is the PCIe slot number.

Cabling Oracle Database Appliance to Connect to Fiber Public Networks (Optional)

You can configure X5-2 appliances to use fiber connections for the public network.

For Oracle Database Appliance X5-2 installations, if you want to use fiber connections between Oracle Database Appliance and your public network, then you must cable the interconnect by using the green and yellow copper ports (onboard ports net0 and net1). The green and yellow Category 6 (Cat 6) interconnect cables for these ports ship with the base system.

For Oracle Database Appliance X5-2, if you want to use a fiber port connection, then you must replace the InfiniBand cards with 10 GbE SFP+ (fiber) cards. Fiber ports do not exist in the base configuration for X5-2. You must re-image Oracle Database Appliance X5-2 after you replace the PCIe cards. After you replace the cards, Oracle Database Appliance auto-detects the network configuration changes.



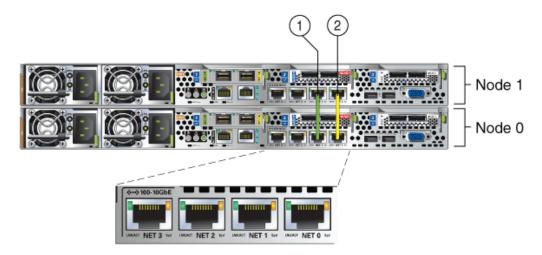
Caution:

If you replace the InfiniBand interconnect cards on Oracle Database Appliance X5-2, then you disable the Oracle Database Appliance in-memory fault tolerance feature. Also, interconnect bandwidth is reduced from 40 GB to 10 GB. If you have Oracle RAC databases, then you may experience slower intercommunication speeds, depending on the system workload.

In the following figure, callouts 1 and 2 show how to cable the interconnect between Node 1 and Node 0 using the green and yellow copper ports (onboard ports net0 and net1) to use a fiber public network. Note that the illustration shows the rear panel of an Oracle Database Appliance X4-2. The rear panel of the Oracle Database Appliance X5-2 is slightly different, but the interconnect cabling is the same.



Figure 3-3 Interconnects When Using Fiber Connections to the Public Network on Oracle Database Appliance Models X5-2



The following sections show the cabling options for 10 GbE SFP+ PCI cards.

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	Oracle Sun 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 Sun. These cables have built-in SFP+ connectors:

Name	Length	Oracle Sun Part Number
TwinAx 1m	1m	X2130-1M
TwinAx 3m	3 m	X2130-3M
TwinAx 5m	5m	X2130-5M

Attaching a Storage Expansion Shelf to Oracle Database Appliance

Review these topics to install and cable a storage expansion shelf for Oracle Database Appliance.

Topics:



- About Attaching and Cabling Storage Shelves
 Review these options and best practices for adding storage shelves for Oracle
 Database Appliance X3-2, X4-2 and X5-2.
- Installing and Cabling a Storage Expansion Shelf
 Use this procedure to install and cable a storage expansion shelf for Oracle
 Database Appliance

About Attaching and Cabling Storage Shelves

Review these options and best practices for adding storage shelves for Oracle Database Appliance X3-2, X4-2 and X5-2.

Storage Shelf Options for Oracle Database Appliance X3-2, X4-2 and X5-2

Oracle Database Appliance models X3-2, X4-2, and X5-2 can be shipped with one or two storage shelves. You can obtain the second shelf at a later time to double your storage capacity.

If you originally deployed Oracle Database Appliance with one storage shelf, then you can add a storage expansion shelf at any time without having to shut down your databases or applications.

Best Practice Guidelines for Adding Storage Expansion Shelves

Oracle recommends that you add a storage expansion shelf when you have relatively little activity on your databases. When the system discovers the new storage, Oracle ASM automatically rebalances the disk groups. The rebalance operation may degrade database performance until the operation completes.



Caution:

Review cabling instructions to ensure that you have carried out cabling correctly. Incorrect connections can cause data loss when adding a storage expansion shelf to Oracle Database Appliance with existing databases.

Do not attach cables to Ethernet ports in the I/O modules labeled "SERVICE ONLY" when cabling the system. These ports are intended for use by service engineers only.

Installing and Cabling a Storage Expansion Shelf

Use this procedure to install and cable a storage expansion shelf for Oracle Database Appliance

1. Place the storage expansion shelf below your Oracle Database Appliance, if possible, or else close enough to connect the provided cables.

The storage expansion shelf normally sits at the bottom of Oracle Database Appliance, beneath the storage shelf. However, because racks should always be provisioned from the bottom up, that space may be unavailable. In that case, to avoid re-rack mounting the entire system, you can position the storage expansion shelf above the server nodes, or in a different, but adjacent, rack.



- 2. Install the extension storage shelf in exactly the same manner as the original storage shelf.
- 3. Use the figures in this topic to assist you to cable the storage expansion shelf for your Oracle Database Appliance model.



Caution:

Incorrect connections can cause data loss when adding a storage expansion shelf to Oracle Database Appliance with existing databases.

4. Attach the supplied power cords. Refer to the section "Attaching Power Cords and Initializing Components" to obtain information and see figures showing how to attach power cords.

Figures Showing How to Cable a Storage Expansion Shelf

The following figure shows you how to insert the required cables into the storage expansion shelf of Oracle Database Appliance. The cables for the two nodes and the original storage shelf are included in the illustration for reference.

The cables are color-coded. Match the colors of the labels at the ends of each cable with the colored line shown in the following illustration. Also match the cable colors to the background colors of the socket identification labels.

You can also use the callouts in the diagrams and the callout table that follows the diagrams to identify the cables and ports. Because all cables with the same terminations are interchangeable, you can ignore the color coding.



Note:

The back panel of each node contains three PCIe generation 3 terminal slots, with two sockets in each slot. The PCIe slots are labeled X PCIe3, where X is the PCIe slot number. Review the callout table that follows the figures for more information.



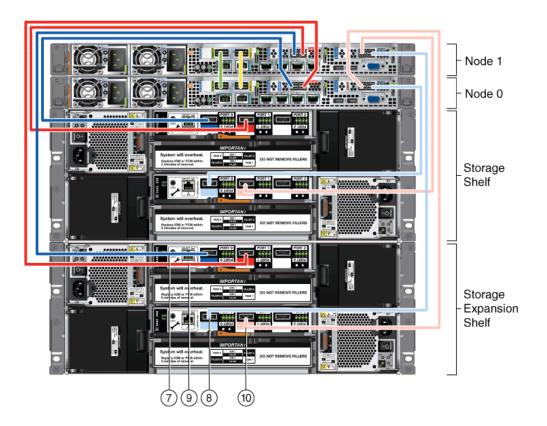


Figure 3-4 Cables for Storage Expansion Shelf on Oracle Database Appliance X5-2

The cables identified with callout numbers in the preceding figures are included with each shipped Oracle Database Appliance storage expansion shelf. These cables are all black, but have colored labels at each end that match the references to cable colors in the text and the label colors on the back panels.

Table 3-3 Description of Callouts for Cabling Oracle Database Appliance Storage Expansion Shelf

Callout Number	Description
7	Dark blue SAS cable:
	 From: Node 1, PCle slot 2, SAS0
	 To: Storage expansion shelf, top I/O port 0
8	Light blue SAS cable:
	 From: Node 1, PCle slot 3, SAS1
	 To: Storage expansion shelf, bottom I/O port 0
9	Dark red SAS cable:
	 From: Node 0, PCle slot 2, SAS1
	 To: Storage expansion shelf, top I/O port 1
10	Light red SAS cable:
	 From: Node 0, PCIe slot 3, SAS0
	 To: Storage expansion shelf, bottom I/O port 1



Caution:

Do not attach cables to Ethernet ports in the I/O modules labeled "SERVICE ONLY" when cabling the system. These ports are intended for use by service engineers only.



See Also:

Attaching Power Cords and Initializing Components

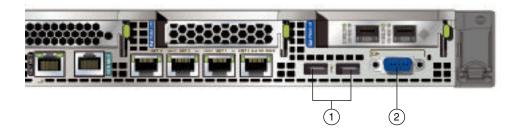
To review information about installing optional components for Oracle Database Appliance, see the section "Optional Component Installation" in Chapter 4 of Oracle Database Appliance Owner's Guide.

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 3-4 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



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*.

Powering On Oracle Database Appliance the First Time

Use this procedure to power on Oracle Database Appliance.

Before starting to power on the appliance, make sure that all of the required power cables are attached to both Oracle Database Appliance nodes, and to all storage shelves, if they are included with your 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.

- Power on the storage shelves. If attached, switch each storage shelf storage power supply On/Off switch to the On position.
 - Each storage shelf has two power switches on the rear panel. One switch is on the right side, and one switch is on the left side. Turn on both power switches.
 - The storage disks begin to initialize, which can take several minutes.
- Check the Green SP OK LEDs on the storage shelves and the server nodes to see if they are fully initialized. When they are all fully initialized, push the recessed power button on each node to turn it on.



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 nodes and on any attached storage nodes are still blinking. then wait for them to complete their initialization steps. Do not power on the server nodes (Node 0 and Node 1) until the storage shelves are fully initialized.

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

Table 3-5 Description of Callouts for Powering On Oracle Database Appliance

Callout	Function
1	SP OK LED light, located on the front panel of each node.
2	Recessed On/Off power button, which is located on the front panel for each node (Node 0 and Node 1). Push this button only once. Do not repeatedly push the power button.
3	Green Power OK LED for a node, located on the node's front panel. These lights must be in the steady ON position (Green light does not blink) before you log on to the system.

Figure 3-5 Front of Oracle Database Appliance Models X3-2, X4-2, and X5-2: Power Panel

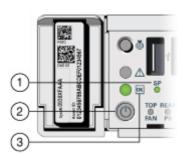
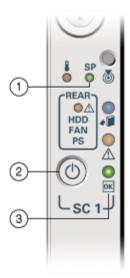




Figure 3-6 Front of Oracle Database Appliance Version 1: Power Panel



3. Wait for Oracle Database Appliance to complete startup.



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

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

4. For X5-2, X4-2, and X3-2 models of Oracle Database Appliance: To ensure that the storage and interconnect is properly configured, log into the console as root and run the following oakcli validate command:

/opt/oracle/oak/bin/oakcli validate -c storagetopology

Defining Your Public Network Interface Type

Understand how you can define the public network interface type before deploying the appliance.

For Oracle Database Appliance X5-2 and X6-2 High-Availability non-InfiniBand deployments, the system by default, configures the fiber cards as public network, and copper cards as private network.

Optionally, before provisioning the appliance, if you want to switch the public network to copper, then follow these steps:

- 1. Log into both nodes as root.
- Configure the network.



For bare metal deployments, run the command on both nodes:

/opt/oracle/dcs/bin/odacli configure-network -publicNet copper

For Virtualized Platform deployments, run the command on both nodes:

oakcli configure network -publicNet copper

For Oracle Database Appliance X4-2, the system by default, configures the copper cards as public network, and fiber cards as private network.

Optionally, before provisioning the appliance, if you want to switch the public network to fiber, then follow these steps:

- 1. Log into both nodes as root.
- 2. Configure the network.

 For bare metal deployments, run the command on both nodes:

/opt/oracle/dcs/bin/odacli configure-network -publicNet fiber

For Virtualized Platform deployments, run the command on both nodes:

oakcli configure network -publicNet fiber

Configuring Oracle Integrated Lights Out Manager

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

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

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

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

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

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





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

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

- 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"
```



4

Provisioning Oracle Database Appliance Bare Metal System

Understand the process to configure Oracle Database Appliance bare metal system.

The Browser User Interface is the preferred method of deploying your bare metal platform configuration. The Browser User Interface 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.

Plumbing the Network

Plumb the Oracle Database Appliance network with the public internet protocol (IP) information assigned to a node, to enable provisioning of the Oracle Database Appliance software.

- Verifying Cabling and Network Connections
 - After powering on Oracle Database Appliance, verify that the network connections are set up correctly.
- Downloading Oracle Database Appliance Software
 Download Oracle Database Appliance software and copy to a temporary location before applying updates to your appliance.
- Installing Oracle Database Appliance Software
 Install Oracle Database Appliance software, before creating the appliance.
- Creating the Appliance
 Create the appliance using the Browser User Interface.

Plumbing the Network

Plumb the Oracle Database Appliance network with the public internet protocol (IP) information assigned to a node, to enable provisioning of the Oracle Database Appliance software.

- Connect to Oracle ILOM remote console, then log into Oracle Database Appliance as root.
- 2. Run the command configure-firstnet on both nodes.

```
# /opt/oracle/dcs/bin/odacli configure-firstnet
Using bonding public interface (yes/no) [yes]:
Select the Interface to configure the network on (btbond1)
[btbond1]:
Configure DHCP on btbond1 (yes/no) [no]:
INFO: You have chosen Static configuration
Use VLAN on btbond1 (yes/no) [no]:
```

3. Complete the network configuration as prompted and configure the public network interface. Also provide the netmask and gateway IP address.

You use this network connection to transfer the software to the server node.

Example 4-1 Example of a Bonded Configuration

For a bonded configuration, answer yes to using a bonding public interface and configure the first network to use a btbond1 interface without configuring DHCP.

```
# /opt/oracle/dcs/bin/odacli configure-firstnet
Select the Interface to configure the network on (btbond1 btbond2
sfpbond1) [btbond1]:
Configure DHCP on btbond1 (yes/no) [no]:
INFO: You have chosen Static configuration
Use VLAN on btbond1 (yes/no) [no]:
Enter the IP address to configure : 10.209.13.109
Enter the Netmask address to configure : 255.255.252.0
Enter the Gateway address to configure[10.209.12.1] :
INFO: Plumbing the IPs now
INFO: Restarting the network
Shutting down interface btbond1: [ OK ]
Shutting down interface btbond2: [ OK ]
Shutting down interface p3p1: [ OK ]
Shutting down interface p3p2: [ OK ]
Shutting down interface sfpbond1: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface btbondl: Determining if ip address 10.209.13.109
is already in use for device btbond1...
[ OK ]
Bringing up interface btbond2: [ OK ]
Bringing up interface sfpbond1: [ OK ]
```

Example 4-2 Example of a Non-Bonded Configuration

To create a non-bonded configuration and disable VLAN capabilities, answer ${\tt no}$ to using a bonding public interface.

```
# /opt/oracle/dcs/bin/odacli configure-firstnet
Using bonding public interface (yes/no) [yes]: no
INFO: Breaking the bonding on btbond1
INFO: remove bonding module: rmmod bonding
INFO: remove slave setup in /etc/sysconfig/network-scripts/ifcfg-em2
INFO: remove slave setup in /etc/sysconfig/network-scripts/ifcfg-em3
INFO: Restarting the network
Shutting down interface eml: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface em1: [ OK ]
Bringing up interface em2: [ OK ]
Bringing up interface em3: [ OK ]
INFO: Restarting the DCS agent
initdcsagent stop/waiting
initdcsagent start/running, process 57629
Select the Interface to configure the network on (em2 em3) [em2]:
```



```
Configure DHCP on em2 (yes/no) [no]:
INFO: You have chosen Static configuration
Enter the IP address to configure : 10.31.102.101
Enter the Netmask address to configure : 255.255.240.0
Enter the Gateway address to configure[10.31.96.1] :
INFO: Plumbing the IPs now
INFO: Restarting the network
Shutting down interface em1: [ OK ]
Shutting down interface em2: [ OK ]
Shutting down interface em3: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface em1: [ OK ]
Bringing up interface em2: Determining if ip address 10.31.102.101 is
already in use for device em2...
[ OK ]
Bringing up interface em3: [ OK ]
```

Example 4-3 Example of Configuring VLAN

```
# /opt/oracle/dcs/bin/odacli configure-firstnet
Using bonding public interface (yes/no) [yes]:
Select the Interface to configure the network on (btbond1) [btbond1]:
Configure DHCP on btbond1 (yes/no) [no]:
INFO: You have chosen Static configuration
Use VLAN on btbond1 (yes/no) [no]:yes
Configure VLAN on btbond1, input VLAN ID [2 - 4094] 122
INFO: using network interface btbond1.122
Enter the IP address to configure : 192.0.2.24
Enter the Netmask address to configure : 192.0.2.24
Enter the Gateway address to configure[192.0.2.24] :
INFO: Restarting the network
                                                           [ OK ]
Shutting down interface btbond1:
                                                           [ OK ]
Shutting down interface em1:
Shutting down interface plp1:
                                                           [ OK ]
Shutting down interface p1p2:
                                                           [ OK ]
Shutting down loopback interface:
                                                             OK ]
                                                           [
Bringing up loopback interface:
                                                           [ OK ]
Bringing up interface btbond1:
Determining if ip address 192.0.2.24 is already in use for device
btbond1...
                                                           [ OK ]
Bringing up interface eml:
                                                             OK ]
Bringing up interface plp1:
Determining if ip address 192.0.2.24 is already in use for device
p1p1...
[ OK ]
Bringing up interface p1p2:
Determining if ip address 192.0.2.24 is already in use for device
p1p2...
                                                           [ OK ]
Bringing up interface btbond1.122:
Determining if ip address 192.0.2.24 is already in use for device
btbond1.122...
```



[OK

```
INFO: Restarting the DCS agent initdcsagent stop/waiting initdcsagent start/running, process 32104
```

Verifying Cabling and Network Connections

After powering on Oracle Database Appliance, verify that the network connections are set up correctly.

Run the validation scripts only on Oracle Database Appliance HA models.

- 1. Log into the Oracle Database Appliance console and access the server node with user name as root and password welcome1.
- 2. Run validation scripts on both nodes, to verify cabling. For example:

```
# /opt/oracle/dcs/bin/odacli validate-storagetopology
```

```
INFO: ODA Topology Verification
INFO: Running on Node0
INFO: Check hardware type
SUCCESS: Type of hardware found: X7-2
INFO : Check for Environment(Bare Metal or Virtual Machine)
SUCCESS: Type of environment found: Bare Metal
INFO: Check number of Controllers
SUCCESS: Number of ahci controller found: 1
SUCCESS: Number of External SCSI controllers found: 2
INFO : Check for Controllers correct PCIe slot address
SUCCESS: Internal RAID controller:
SUCCESS: External LSI SAS controller 0: 3b:00.0
SUCCESS: External LSI SAS controller 1: 5e:00.0
INFO: Check if JBOD powered on
SUCCESS: 2JBOD: Powered-on
INFO : Check for correct number of EBODS(2 or 4)
SUCCESS: EBOD found: 4
INFO: Check for External Controller 0
SUCCESS: Cable check for port 0 on controller 0
SUCCESS: Cable check for port 1 on controller 0
SUCCESS: Overall Cable check for controller 0
INFO: Check for External Controller 1
SUCCESS: Cable check for port 0 on controller 1
SUCCESS: Cable check for port 1 on controller 1
SUCCESS: Overall Cable check for controller 1
INFO: Check for overall status of cable validation on NodeO
SUCCESS: Overall Cable Validation on NodeO
SUCCESS: JBODO Nickname set correctly
SUCCESS: JBOD1 Nickname set correctly
```

3. If there is a storage expansion shelf connected to the appliance, then power it on. Run the storagetopology command on both nodes to make sure the cabling is correct. For example:

/opt/oracle/dcs/bin/odacli validate-storagetopology

INFO : ODA Topology Verification

INFO: Running on Node0



```
INFO : Check hardware type
SUCCESS: Type of hardware found: X7-2
INFO : Check for Environment(Bare Metal or Virtual Machine)
SUCCESS: Type of environment found: Bare Metal
INFO : Check number of Controllers
SUCCESS: Number of ahci controller found: 1
SUCCESS: Number of External SCSI controllers found: 2
INFO: Check for Controllers correct PCIe slot address
SUCCESS: Internal RAID controller:
SUCCESS: External LSI SAS controller 0: 3b:00.0
SUCCESS: External LSI SAS controller 1: 5e:00.0
INFO: Check if JBOD powered on
SUCCESS : 2JBOD : Powered-on
INFO : Check for correct number of EBODS(2 or 4)
SUCCESS: EBOD found: 4
INFO: Check for External Controller 0
SUCCESS: Cable check for port 0 on controller 0
SUCCESS: Cable check for port 1 on controller 0
SUCCESS: Overall Cable check for controller 0
INFO: Check for External Controller 1
SUCCESS: Cable check for port 0 on controller 1
SUCCESS: Cable check for port 1 on controller 1
SUCCESS: Overall Cable check for controller 1
INFO: Check for overall status of cable validation on NodeO
SUCCESS: Overall Cable Validation on NodeO
SUCCESS: JBODO Nickname set correctly
SUCCESS: JBOD1 Nickname set correctly
```

4. Verify the interconnect network:

Settings for plp1: Supported ports: [FIBRE]

Supported link modes: 1000baseT/Full

Supported pause frame use: Symmetric Receive-only

Supports auto-negotiation: Yes

Advertised link modes: 1000baseT/Full

10000baseT/Full

ethtool p1p1

Advertised pause frame use: No Advertised auto-negotiation: Yes

Speed: 25000Mb/s <<<<<<< check speed

Duplex: Full

Port: Direct Attach Copper

PHYAD: 1

Transceiver: internal Auto-negotiation: on

Current message level: 0x00000000 (0)

Link detected: yes # ethtool p1p2

Settings for p1p2: Supported ports: [FIBRE]

Supported link modes: 1000baseT/Full

Supported pause frame use: Symmetric Receive-only

Supports auto-negotiation: Yes

Advertised link modes: 1000baseT/Full



```
10000baseT/Full
Advertised pause frame use: No
Advertised auto-negotiation: Yes
Speed: 25000Mb/s <<<<<<<<<<<<<< check speed
Duplex: Full
Port: Direct Attach Copper
PHYAD: 1
Transceiver: internal
Auto-negotiation: on
Current message level: 0x00000000 (0)
Link detected: yes
```

Downloading Oracle Database Appliance Software

Download Oracle Database Appliance software and copy to a temporary location before applying updates to your appliance.

 Download the software files from My Oracle Support to a temporary location on an external client. Refer to the release notes for details about the software for the latest release.

For example, download the Oracle Database Appliance GI Clone for ODACLI/DCS stack (patch 30403673) and Oracle Database Appliance RDBMS Clone for ODACLI/DCS stack (patch 30403662) for 19.8:

```
p30403673_198000_Linux-x86-64.zip
p30403662_198000_Linux-x86-64.zip
```

Unzip the software — it contains README.html and one or more zip files for the patch.

```
unzip p30403673_198000_Linux-x86-64.zip unzip p30403662_198000_Linux-x86-64.zip
```

The GI and RDBMS Clone files for release 19.8 are extracted.

```
odacli-dcs-19.8.0.0.0-200713-GI-19.8.0.0.zip
odacli-dcs-19.8.0.0.0-200713-DB-19.8.0.0.zip
```

3. Copy the software files from the external client to Oracle Database Appliance. Use the scp or sftp protocol to copy the bundle.

Example using scp command:

```
scp software_file root@oda_host:/tmp
```

Example using sftp command:

```
sftp root@oda_host
```



Enter the root password, and then copy the file.

```
put software_file
```

For example, for release 19.8:

```
put odacli-dcs-19.8.0.0.0-200713-GI-19.8.0.0.zip
put odacli-dcs-19.8.0.0.0-200713-DB-19.8.0.0.zip
```

The GI and RDBMS Clone files are copied to the temporary location on the appliance. You can update the repository, and create the appliance, as explained in the next topic.

Installing Oracle Database Appliance Software

Install Oracle Database Appliance software, before creating the appliance.

Ensure that the Oracle Database Appliance patches are downloaded and available for updating the repository, as described in the topic *Downloading Oracle Database Appliance Software*.

 Verify the current system version by running the following command on both nodes:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli describe-component -v
```

On a single-node Oracle Database Appliance system, run the command odaclidescribe-component without the -v option.

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli describe-component
```

2. Update the repository with Oracle Grid Infrastructure and Database software.

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli update-repository -
f /tmp/GI_clone_file,/tmp/DB_clone_file
```

For example, for release 19.8:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli
update-repository -f /tmp/odacli-dcs-19.8.0.0.0-200713-
DB-19.8.0.0.zip,/tmp/odacli-dcs-19.8.0.0.0-200713-GI-19.8.0.0.zip
```

3. Confirm that the repository update is successful:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli describe-job -i job_ID
```

4. Delete the software zip files from the temporary location on the appliance to save space:

```
[root@odal opt]# rm software_file
rm: remove regular file software_file? y
```



You have now updated the repository with the Oracle Database Appliance software, and can create your appliance, as described in the next topic.

Creating the Appliance

Create the appliance using the Browser User Interface.

Ensure that ports 7070 and 7093 on the network between Oracle Database Appliance and the client machine, are open.

 Navigate to the Browser User Interface. You are prompted to set the password for the oda-admin user.

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

2. Log into the Browser User Interface with the new password.

When you launch the Browser User Interface on an unconfigured appliance, the Appliance page notifies you that the appliance is not configured and provides a link to the pages needed to configure and create the appliance.



If you face any issues when logging into the Oracle Database Appliance Browser User Interface, then see the topic *Errors When Logging into the Browser User Interface* in the chapter *Troubleshooting Oracle Database Appliance*.

- 3. Click Create Appliance.
- 4. In the Create Appliance page, if you want to create the appliance from a saved configuration, click **Browse**, and select the JSON file. The information from the saved configuration file is loaded. You can retain or edit the fields. Otherwise, manually, provide the values to create the appliance.
- 5. In the System Information section, specify the values as follows.
 - a. Host Name: Enter the host name.

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

- **b. Domain Name**: Enter the domain name.
- Region: Select the region of the world where the Oracle Database Appliance is located.
- Time Zone: Select the time zone where the Oracle Database Appliance is located.
- e. (Optional) DNS Servers: Enter addresses for one or more DNS servers.
- f. (Optional) NTP Servers: Enter addresses for one or more NTP servers.
- g. Diskgroup Redundancy: If there are two disks, then you can select the disk group redundancy as Normal or Flex. To select the the redundancy as High, there must exist more than four disks, and a quorum disk. If five or more disks



are configured, then the quorum disk is not required. Select **Normal**, **High**, or **Flex**, as per your deployment requirement.

The Flex parameter defines the disk group redundancy. Flex redundancy requires at least 3 storage devices, including a quorum. For a database to be placed on Oracle ASM, you can set the database redundancy during its creation. For a database to be placed on Oracle ACFS, the database inherits the redundancy of the ACFS file system. You can specify an ACFS file system redundancy during its creation. You can set the disk group redundancy only during appliance creation. The database redundancy can be set anytime you create the database.

The redundancy level for DATA, RECO, and FLASH can be set to Normal, Flex, or High based on whether there are two, four, or more disks.

Note: For Oracle Database Appliance hardware models other than X8-2, the redundancy level for REDO is always High.

- h. Data Storage Percentage: Enter a whole number between 10 and 90 to define the percentage of storage reserved for DATA, the remainder is reserved for RECO. For example, if you enter 80, then 80% of the storage for DATA and 20% for RECO.
- System Password and Confirm Password: Enter the system password in both fields.

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

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

Specify the following, depending on whether it is a single-node or two-node Oracle Database Appliance deployment:

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



- j. (Optional) ILOM Network Gateway: Enter the gateway address for the ILOM.
- k. Client Access Network Subnet Mask: Enter the subnet mask address for the primary client access network.
- Client Access Network Gateway: Enter the gateway address for the primary client access network.
- m. Client Access Network Interface: Enter the interface for the primary client access network.
- 7. 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.
- 8. Do you want to create an initial database? Select **Yes** and go to Step 9 or select **No** and go to Step 10.
- **9.** Enter the following information to configure an initial database:
 - a. **DB Name**: Enter a name for the database.

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

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

Databases with the same DB Name within the same domain (for example, copies of a database created for reporting or a physical standby) must have a different DB Unique Name that is unique within the enterprise. The name must contain alphanumeric, underscore (_), dollar (\$), and pound (#) characters, but must begin with an alphabetic character. No other special characters are permitted in a database name. The unique name cannot exceed 30 characters.

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

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

- f. PDB Admin User: Enter an Admin user name for the pluggable database (PDB).
- g. **Database Edition**: Select the Oracle Database edition, either Standard Edition and Enterprise Edition. Your license determines which database edition you are eligible to create in the appliance.

For Oracle Database 19c Standard Edition, you can only create single-instance Oracle Database, with or without high-availability.



- **h. Password**: Provide a password for the database.
- i. **Deployment**: Select a deployment type from the list. The options are RAC, RAC-One, or SI (single instance database). If you select a single instance database, then select the node for the SI database deployment.

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

- j. **Shape**: Select a database shape from the list.
- k. In the **Database Class** field, select a database class from the drop-down list. If an option is not available in the list, it is not supported for the database edition on the Oracle Database Appliance or the version that you selected. The default is OLTP.
- In the **Storage** field, select **ACFS** or **ASM** from the drop-down list. The default is Oracle ASM.
 - Oracle 12.1 and later databases can use Oracle ASM storage. Oracle Database 11.2 is only supported on Oracle ACFS.
- m. If you specified the disk group redundancy as **Flex**, then you can select the **Database Redundancy** value as **Mirror** or **High**.
- n. Data Files on Flash Storage: Select Yes or No.

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

o. Configure EM Express: Select Yes or No.

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

- p. Character set: Select a character set.
- National Characterset: Select a national characterset.
- r. Language: Select the database language.
- **s. Territory**: Select a territory or location from the list.
- **10.** (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 Browser User Interface 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. V3 is the default and recommended version.
- d. HTTP Proxy used for Upload to ASR: Select Yes or No.
- **e. Proxy Server Name**: If you are using a proxy for upload, enter the proxy server name.
- **f. Proxy Port**: If you are using a proxy for upload, enter the proxy port.
- g. (Optional) HTTP Proxy Requires Authentication: If you are using a proxy for upload, select Yes if you require authentication. If you do not require authentication, select No.
- Proxy User Name: If you are using a proxy for upload, enter the proxy user name.
- i. **(Optional) Proxy Password**: If you are using a proxy for upload and require authentication, enter the proxy password.
- **11.** Click **Submit**. When prompted, click **Yes** to confirm that you want to start the job to deploy the appliance.
- 12. Verify that the appliance is deployed. Run the odacli describe-system command. For multi-node deployments, run the command on both nodes.

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

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



5

Provisioning an Oracle Database Appliance Virtualized Platform

Oracle Database Appliance provides you with the option to reimage the system and configure the appliance as a virtualized platform.



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

- Determining if the System is Configured with a Virtualized OS Image
 Before deploying a Virtualized Platform on Oracle Database Appliance, determine if the system has the Virtualized OS ISO image.
- Setting Up the Virtualized Platform
 Set up the dom0 virtualized operating system on both nodes and configure the initial public network.
- Installing Virtualized Platform Software and Deploying the Appliance
 Deploy the ODA_BASE domain for a virtualized platform and then deploy the
 appliance.
- Creating a Configuration File for a Virtualized Platform
 If you want to use the Configurator to create a virtualized platform configuration
 file before your Oracle Database Appliance system is delivered, then review these
 topics.

Determining if the System is Configured with a Virtualized OS Image

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

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

A bare metal system uses the odacli and odaadmcli commands. A virtualized system uses the oakcli commands.

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

- 1. Log in as root.
- 2. To verify that a system is a virtualized platform, enter the command oakcli show env hw. For example:

```
# oakcli show env_hw
VM-ODA_BASE ODA X7-2-HA
```

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

If the system is configured as a bare metal platform, then the command <code>oakcli</code> show <code>env_hw</code> is invalid.

Setting Up the Virtualized Platform

Set up the ${\tt dom0}$ virtualized operating system on both nodes and configure the initial public network.

You must provision the virtualized operating system image on both nodes, either at the same time, or one after another.

- 1. Download the Oracle Database Appliance 19.8 Virtualized OS ISO Image.
 - a. From an external client machine, log on to My Oracle Support.
 - **b.** Locate the patch for the Oracle Database Appliance Virtualized OS ISO Image. Refer to the *Oracle Database Appliance Release Notes* for the patch number.
 - **c.** Select the patch version for release 19.8.
 - **d.** Click **Download** to download the zip file onto your external client. Unzip the zip file onto external client to get the ISO image.
- Open a browser and connect to Oracle Integrated Lights Out Manager (ILOM) on Node0 as root.

The Summary home page appears.

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

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

- 4. Add the Virtualized OS ISO Image.
 - a. Click the **Devices** tab, then select **CD-ROM**.
 - A file browser on the local client opens.
 - **b.** Browse to the Oracle Database Appliance Virtualized OS ISO Image, highlight the image, then click **Open**.
- **5.** Configure the CD-ROM as the next boot device.
 - a. Expand **Host Management** in the left menu of the ILOM Remote Console tab.



- b. Click Host Control.
- c. Select **CDROM** from the Next Boot Device menu, then click **Save**.
- 6. Power cycle the system.
 - a. Click Power Control in the Host Management menu.
 - b. Select Power Cycle.

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

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

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

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

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

7. Repeat Steps 1 through 6 for Node1.

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

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

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

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

Note: Ensure that you provide the node numbers for both nodes during the reboot. Specify node number 0 for the first node and node number 1 for the second node.

9. Use the command oakcli configure firstnet to configure a local or global network. For local network, run the command on both nodes. For global network, run the command on any one node.

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

oakcli configure firstnet

```
Configure the network for the node(s)(local, global) [global]:
The network configuration for both nodes:
Domain Name: example.com
DNS Server(s): Primary Dns Server: 192.0.2.18
Secondary Dns Server: 192.0.2.19
Tertiary Dns Server:
Node Name Host Name
0 node1
1 node2
Choose the network interface to configure (net1, net2) [net1]:
Configure DHCP on net1 (yes/no) [no]:
```



10. Check the IP addresses to the nodes with the command oakcli show firstnet. For example:

```
# oakcli show firstnet
```

Installing Virtualized Platform Software and Deploying the Appliance

Deploy the ODA_BASE domain for a virtualized platform and then deploy the appliance.

- 1. Download and copy the template files to the /OVS directory on dom0 (Node 0).
 - a. From an external client machine, log on to My Oracle Support and download the Oracle Database Appliance VM Template.
 - **b.** Select the latest version from the menu.
 - c. Click **Download** for each of the zip files to download the current Oracle Database Appliance template onto your external client.
- 2. Copy the template files to the /OVS directory on Node 0 (oak1-dom0).



a. Use either a Secure Copy (scp) command or a USB storage device to copy the ODA_BASE template from the external client to dom0 on Node 0. Use the /OVS directory on Node 0 (test0-dom0) as the target location.



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

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

```
unzip p16186172_19.8.0.0.0_Linux-x86-64_10f4.zip unzip p16186172_19.8.0.0.0_Linux-x86-64_20f4.zip unzip p16186172_19.8.0.0.0_Linux-x86-64_30f4.zip unzip p16186172_19.8.0.0.0_Linux-x86-64_40f4.zip
```

When extracted, you will have the following files: oda_base_19.8.0.0.0.gz01, oda_base_19.8.0.0.0.gz02, oda_base_19.8.0.0.0.gz03, and oda_base_19.8.0.0.0.gz04.

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

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

```
cat oda_base_19.8.0.0.0.gz01 oda_base_19.8.0.0.0.gz02
oda_base_19.8.0.0.0.gz03 oda_base_19.8.0.0.0.gz04 >
oda base 19.8.0.0.0.tar.gz
```

Make a note of the file name and location. You need to specify the following in the next step: $/oVS/oda_base_19.8.0.0.0.tar.gz$

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

The deploy oda base option automatically deploys ODA BASE on both nodes.

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

- # /opt/oracle/oak/bin/oakcli create vlan vl200 -vlanid 200 -if bond0
 Created vlan vl200
- # /opt/oracle/oak/bin/oakcli deploy oda_base
 Enter the template location: /OVS/oda base 19.8.tar.qz



```
Core Licensing Options:
  1. 2 CPU Cores
  2. 4 CPU Cores
  3. 6 CPU Cores
  4. 8 CPU Cores
  5. 10 CPU Cores
  6. 12 CPU Cores
  7. 14 CPU Cores
  8. 16 CPU Cores
   9. 18 CPU Cores
 10. 20 CPU Cores
 11. 22 CPU Cores
 12. 24 CPU Cores
 <continued ...>
   Selection[1 .. 37] (default 74 CPU Cores): 10
INFO: Using the 20 cores
   DA base domain memory in GB(min 16, max 244)[default 244]: 244
INFO: Using default memory size i.e. 244 GB
Additional vlan networks to be assigned to oda_base ? (y/n) [n]:
INFO: Deployment in non local mode
INFO: Verifying active cores on local node
INFO: Verified active cores on local node
INFO: Verifying active cores on remote node
NFO: Verified active cores on remote node
INFO: Running the command to copy the template /OVS/
oda_base_19.8.tar.gz to remote node 1
oda_base_19.8.tar.gz
                        100% 7475MB 62.8MB/s
INFO: Spawned the process 17728 in the deployment node 0
INFO: Spawned the process 17729 in the node 1
INFO: Validating LSI HBA PCI Cards on node 0
INFO: Validating LSI HBA PCI Cards on node 0
INFO: Validating LSI HBA PCI Cards on node 1
INFO: Validating LSI HBA PCI Cards on node 1
INFO: Deployment in local mode
INFO: Deployment in local mode
templateBuild-2017-02-14-23-51/swap.img
templateBuild-2017-02-14-23-51/swap.img
templateBuild-2017-02-14-23-51/System.img
templateBuild-2017-02-14-23-51/System.img
templateBuild-2017-02-14-23-51/u01.img
templateBuild-2017-02-14-23-51/u01.img
INFO: Extracted the image files on node 1
INFO: The VM Configuration data is written to /OVS/Repositories/
odabaseRepo/VirtualMachines/oakDom1/vm.cfg file
INFO: Running /sbin/losetup /dev/loop0 /OVS/Repositories/
odabaseRepo/VirtualMachines/oakDom1/System.img command to mount the
image file
INFO: Mount is successfully completed on /dev/loop0
INFO: Extracted the image files on node 0
INFO: Validated dom0 and odabase version
INFO: Making change to the /OVS/Repositories/odabaseRepo/
VirtualMachines/oakDom1
/tmpmnt/boot/grub/grub.conf file
INFO: Assigning IP to the second node...
```

```
INFO: The VM Configuration data is written to /OVS/Repositories/
odabaseRepo/VirtualMachines/oakDom1/vm.cfg file
INFO: Running /sbin/losetup /dev/loop0 /OVS/Repositories/
odabaseRepo/VirtualMachines/oakDom1/System.img command to mount the
image file
INFO: Mount is successfully completed on /dev/loop0
INFO: Created oda base pool
INFO: Validated dom0 and odabase version
INFO: Making change to the /OVS/Repositories/odabaseRepo/
VirtualMachines/oakDom1
/tmpmnt/boot/grub/grub.conf file
INFO: Assigning IP to the first node...
INFO: Created oda base pool
INFO: Starting ODA Base...
INFO: Starting ODA Base...
Using config file "/OVS/Repositories/odabaseRepo/VirtualMachines/
oakDom1/vm.cfg"
Started domain oakDom1 (id=1)
INFO: Storing the odabase configuration information
Using config file "/OVS/Repositories/odabaseRepo/VirtualMachines/
oakDom1/vm.cfg"
Started domain oakDom1 (id=1)
INFO: Storing the odabase configuration information
```

The ODA_BASE setup is complete.

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

Run the command oakcli show oda_base

```
# /opt/oracle/oak/bin/oakcli show oda_base
ODA base domain
ODA base CPU cores :2
ODA base domain memory :32
ODA base template :/OVS/oda_base_19.8.tar.gz
ODA base vlans :[ 'priv1', 'net1']
ODA base current status :Running
```



5. (Optional) After deployment of oda_base, if you want to change CPU or memory of ODA_BASE, run oakcli configure oda_base:

oakcli configure oda_base

```
Core Licensing Options:
        1. 2 CPU Cores
        2. 4 CPU Cores
        3. 6 CPU Cores
        4. 8 CPU Cores
        5. 10 CPU Cores
        6. 12 CPU Cores
        7. 14 CPU Cores
        8. 16 CPU Cores
        Current CPU Cores :10
        Selection[1 .. 8](default 16 CPU Cores) : 5
        ODA base domain memory in GB(min 16, max 244)(Current
Memory 160G)[default 160] : 100
Additional vlan networks to be assigned to oda_base ? (y/n) [n]: n
Vlan network to be removed from oda_base ? (y/n) [n]: n
Configure VNC password for oda_base ? (y/n) [n]: y
Please input your password:
Please confirm your password:
```

To ensure your changes are reflected in the system, run the ${\tt oakcli\ restart\ oda_base\ command}.$

- 6. Connect to ODA_BASE using vncviewer or vncsession using the dom0 host name and port 5900 (test0-dom0:5900).
- 7. Use the oakcli configure firstnet to configure an initial public network on the first node (Node 0) to complete the ODA_BASE deployment.
 - a. ssh to 192.168.16.27 from test0-dom0
 - **b.** Log in as root user.
 - c. Run the command oakcli configure firstnet from the /opt/ oracle/oak/oakcli directory. Enter the ODA_BASE (Node 0) network information.

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

When prompted to configure the network nodes, select the local option that configures the network on the logged-on node.

Configure net1 as the network interface.

/opt/oracle/oak/bin/oakcli configure firstnet

```
Select the Interface to configure the network on (eth1 eth2) [eth1]:
Configure DHCP on eth1 (yes/no) [no]:
INFO: You have chosen Static configuration
Enter the IP address to configure : ip_odabase_node
Enter the Netmask address to configure : ip_netmask
Enter the Gateway address to configure : ip_gateway
```



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

8. Check the firmware versions on both nodes with the following command:

```
[root@test0 ~]# oakcli show version -detail
```

9. If all the component versions are not either up-to-date or at a higher version, then unpack the patch bundle on both nodes.

```
[root@test0 tmp]# oakcli unpack -package patch_number
```

10. Use the oakcli update command to update the server components such as disks, ILOM, BIOS, and firmware.

```
[root@test0 tmp]# oakcli update -patch release number --server
INFO: DB, ASM, Clusterware may be stopped during the patch if
required
INFO: Both Nodes may get rebooted automatically during the patch if
Do you want to continue: [Y/N]?: y
INFO: User has confirmed for the reboot
INFO: Patch bundle must be unpacked on the second Node also before
applying the patch
Did you unpack the patch bundle on the second Node? : [Y/N]? : y
INFO: All the VMs except the oda_base will be shutdown forcefully
Do you want to continue : [Y/N]? : y
INFO: Running pre-install scripts
INFO: Running prepatching on node 0
INFO: Running prepatching on node 1
oakcli update -patch release_number --storage
[root@test0 ~]# oakcli update -patch release_number --storage
WARNING: OAKD is not running in foreground mode.
INFO: Cannot determine if VMs or shared repos are running.
INFO: Patching may not shutdown all VMs/repos before patching
Do you want to continue: [Y/N]?: y
INFO: Proceeding with patching...
INFO: DB, ASM, Clusterware may be stopped during the patch if
required
INFO: Both Nodes may get rebooted automatically during the patch if
required
Do you want to continue: [Y/N]?: y
INFO: User has confirmed for the reboot
Please enter the 'root' password :
Please re-enter the 'root' password:
INFO: Setting up the SSH
.....Completed
INFO: Running pre-install scripts
.....Completed
INFO: Running prepatching on node 0
INFO: Running prepatching on node 1
INFO: Completed pre-install scripts
INFO: Shared Storage components need to be patched
INFO: Patching storage on node 192.168.16.28
```



11. After the firmware patching is completed, confirm that all appropriate components are updated

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

- **12.** Deploy the Oracle Grid Infrastructure and Oracle Database software on the appliance.
 - With the VNC connection, start the xterm session and navigate to the /opt/ oracle/oak/bin directory and execute the command oakcli deploy to start the Oracle Database Appliance Manager Configurator.

```
# xinit /usr/bin/xterm
# /opt/oracle/oak/bin/oakcli deploy
The Oracle Appliance Manager Welcome window is displayed.
```

You can also use X11 tunnelling and deploy the software. From an X11 capable desktop, run the command:

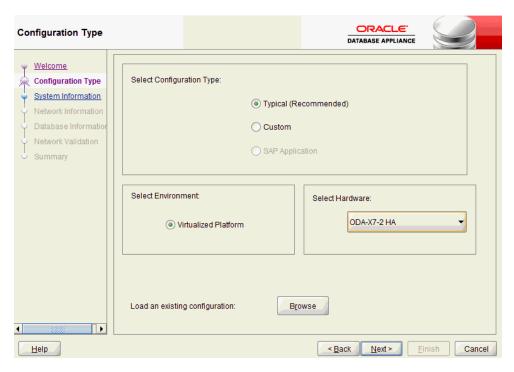
```
# ssh -g -Y ODA_BASE IP -l root
```

Within the ssh session, run the command:

```
# /opt/oracle/oak/bin/oakcli deploy
```

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





- **15.** Enter or review the configuration details for your system, network, and database information. For details, see "Running the Standalone Oracle Database Appliance Configurator".
- **16.** On the Summary page, review your configuration options and deploy your configuration.
 - a. (Optional) Click **Save** to save the configuration file.
 - b. Click **Install** to deploy the configuration.

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

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

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

- **18.** If you configured ASR, then verify the deployment, by running the following the command on **Node0**:
 - # oakcli test asr

Creating a Configuration File for a Virtualized Platform

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



- About the Standalone Oracle Database Appliance Configurator
 Use the standalone Oracle Database Appliance Configurator to create an Oracle
 Database Appliance Virtualized Platform offline deployment plan and validate your
 network settings before the actual deployment.
- Running the Standalone Oracle Database Appliance Configurator
 Download and run the standalone Oracle Database Appliance Configurator
 to create a configuration file for the Oracle Database Appliance Virtualization
 Platform

About the Standalone Oracle Database Appliance Configurator

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

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

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

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

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

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

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

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



review your configuration entries for deployment planning purposes and as a checklist for setting up your external network configuration.

Running the Standalone Oracle Database Appliance Configurator

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

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

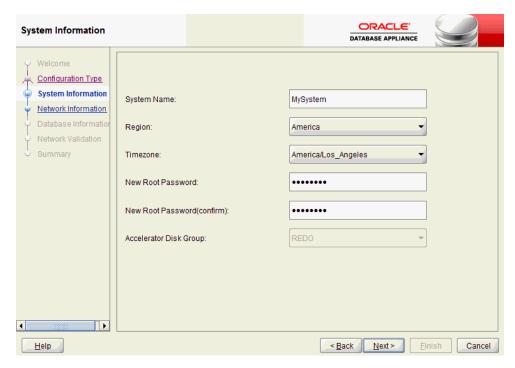
The steps described here enable you to create a typical virtualized platform configuration file.

- Download the standalone Oracle Database Appliance Manager Configurator software to a client.
 - a. Go to the following URL http://www.oracle.com/technetwork/database/database-appliance/overview/index.html
 - b. Click the **Downloads** tab.
 - c. Review the License Agreement, then select **Accept License Agreement**.
 - **d.** Download the latest version of the Oracle Database Appliance Manager Configurator zip file to a client.
 - e. Extract the files from the zip.
- Start the Configurator using the command config.bat on a Windows client, or the command ./config.sh on a Linux or UNIX client. When the Oracle Database Appliance Manager Welcome page appears, click Next.
- Select the Custom configuration type and select the hardware model from the menu. Click Next.
 - The **Browse** option is not useful during the initial run, because there are no configuration files to load. If you have an existing configuration file created with this version of the Configurator that you want to load and edit, then click **Browse** and locate the file on your client.
- 4. On the System Information page, provide the system name, and select the correct value from the lists for your region and time zone. In the New Root Password and New Root Password (confirm) fields, enter a new password for the root user. Click Next.

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

.





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

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

Node 0 public IP address: 192.0.2.18

Node 1 public IP address: 192.0.2.19

Node 0 virtual IP (VIP) address: 192.0.2.20

Node 1 virtual IP (VIP) address: 192.0.2.21

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

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

- Database Name. Enter a name for the database.
- **Is Container Database**. The default is **false**. If you leave the default value, then the Configurator builds a non-container database.
- Database Type. The default type is OLTP. You can also select DSS, or select In-Memory.



- Database Class. Select the database class that you want to deploy. Not all
 options are available for all models of Oracle Database Appliance; the default
 class is odb-06.
- Database Language. The default language is AMERICAN
- Database Deployment. Select one of the following, where RAC is the default:
 - Oracle RAC
 - Oracle RAC One Node
 - Oracle Database Enterprise Edition (no Oracle RAC)
- Data File Size (GB). If you indicate that you want to build a container database, then provide a database data file size in the final field on this page. (This field does not accept input unless the Is Container Database selection is True.)
- **Data Files on Flash Storage**. This option is only available if you have configured for High-Capacity storage.
- On the Network Validation page, validate your network settings and save the validation output in a file, or bypass the validation step, then click **Next** to go to the next step.

The following options are available:

Click Run Validations to perform network validation.

Note:

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

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





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

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





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



6

Oracle Database Appliance Postinstallation Tasks

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

Configuring CPU Core Count

Oracle Database Appliance is delivered with all cores on each server enabled. Follow this procedure to reduce the number of cores, if required.

- Securing Oracle ILOM Service Processors
 Change the Oracle ILOM default password after completing Oracle Database Appliance deployment.
- Changing Oracle Database Appliance Passwords
 After deploying your appliance, ensure that you change the following passwords
 for securing your system.

Configuring CPU Core Count

Oracle Database Appliance is delivered with all cores on each server enabled. Follow this procedure to reduce the number of cores, if required.

To reduce the number of cores, run the following command on Node 0 only:
 Set the cores in multiples of 2, for example, 12:

```
[root@oak1 opt]# /opt/oracle/dcs/bin/odacli update-cpucore --cores
12
```

2. Check if the job completed successfully:

```
[root@oakl opt]# /opt/oracle/dcs/bin/odacli describe-job -i job_ID
```

3. Verify that the core count is updated on both nodes:

[root@oak1 opt]# /opt/oracle/dcs/bin/odacli describe-cpucore

Securing Oracle ILOM Service Processors

Change the Oracle ILOM default password after completing Oracle Database Appliance deployment.

Do not change the default password until after you have completed software deployment on the Oracle Database Appliance.

Changing Oracle ILOM Password from the Console

- In the Oracle ILOM console, from the Administration menu, select User Management, and then navigate to the User Accounts subtab.
- 2. Select root user and click Edit.
- 3. Change the root user password.

Changing Oracle ILOM Password Using CLI Commands

1. Connect to the Oracle ILOM service processor (SP) through SSH:

```
# ssh -l root SP-ipaddr
```

2. Set the new password:

```
-> set /SP/users/root password=new_password
Changing password for user /SP/users/root/password...
Enter new password again: *******
New password was successfully set for user /SP/users/root
```

Changing Oracle Database Appliance Passwords

After deploying your appliance, ensure that you change the following passwords for securing your system.

Changing the Oracle Installation Owner Passwords

During deployment, the root and database users SYS, SYSTEM and PDBADMIN are set to the system password. After deployment, the oracle and grid passwords are also set to the system 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.

Changing the oda-admin User Password through the Command-Line

- 1. Log in to the appliance as root.
- 2. Run the odacli-adm set-credential command to reset the password. Enter the new password when prompted.

```
# odacli-adm set-credential --password --username oda-admin
Agent password: new password
```

Changing the the oda-admin User Password through the Browser User Interface

- 1. Log into the Browser User Interface using the user name oda-admin.
- Click About, then User Settings in the upper right corner of the Browser User Interface.
- Enter the password in the Password field and the Password Confirmation field, then click Submit.



A confirmation message is displayed.

- 4. Click About, then click Sign Out.
- 5. Log back into the Browser User Interface with the new password.



The oda-admin password expiration period is 90 days.



7

Patching Oracle Database Appliance

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

- About Patching Oracle Database Appliance
 Use the Oracle Database Appliance Patch Bundle to patch your appliance.
- About Patching Pre-Checks
 Patching pre-checks are designed to detect and flag problems that might be encountered during patching.
- Running Patching Pre-Checks Before Applying Patches
 After updating the repository with patches, use the pre-checks to reduce potential update problems, and then apply patches.
- Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line
 - Follow these steps to apply patches to your Oracle Database Appliance bare metal deployment and existing Oracle Database homes, using CLI commands.
- Patching Oracle Database Appliance Bare Metal Systems Using the Browser User Interface
 - Upload the Oracle Database Appliance Server Patch to the patch repository, deploy the patch bundle using the Browser User Interface, and then update the DCS agent and components using CLI commands.
- Updating Oracle Database Appliance Repository with Database Clone Files For Bare Metal Systems
 - Follow these steps to update the Oracle Database Appliance repository with Oracle Database clone files for the latest release using CLI commands.
- Patching Existing Database Homes on Bare Metal Systems Using the Browser User Interface
 - Use the Browser User Interface to patch database homes to the latest release on bare metal systems.
- Upgrading the Operating System and Patching Oracle Database Appliance Virtualized Platform
 - When you patch your deployment to Oracle Database Appliance release 19.8, you also upgrade the operating system to Oracle Linux 7. Follow these steps to apply patches to Oracle Database Appliance OAKCLI Virtualized Platform using CLI commands.
- Updating Oracle Database Appliance Repository with Database Clone Files For Virtualized Platform
 - Follow these steps to update the Oracle Database Appliance repository with Oracle Database clone files for Virtualized Platform for the latest release using CLI commands.
- Applying Additional Patches and Updates on Bare Metal Systems
 Configure additional patch repositories and patch your operating system and databases to ensure that your deployment has the latest updates and security fixes.

- Cleaning Up the Patch Repository
 Use the Browser User Interface or Command Line Interface to delete obsolete or old patches from the repository.
- About Upgrading to a Different Database Home
 Understand how to upgrade to a different database home using either the Browser
 User Interface or odacli commands.

About Patching Oracle Database Appliance

Use the Oracle Database Appliance Patch Bundle to patch your appliance.

Patches offer new features and may improve the functionality of existing features.

About Oracle Database Appliance Patch Bundles

The Oracle Database Appliance Patch Bundle contains the latest patches for DCS Admin, DCS Components, OAK, Oracle Grid Infrastructure, Oracle Database homes, enhancements, and fixes.

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



Caution:

Do not patch Oracle Database Appliance using individual patches for Oracle Grid Infrastructure 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. If you apply out-of-cycle Oracle Database Release Update (RU), then ensure that you follow the recommendations described in the Readme for the RU.

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 Runtime Environment (JRE)
- Oracle Integrated Lights Out Manager (Oracle ILOM)



- Oracle Database Bundle Patch (BP), Oracle Database Patch Set Update (PSU), and Oracle Database Release Update (RU)
- Oracle Auto Service Request (Oracle ASR)
- Oracle Grid Infrastructure
- Oracle Intelligent Platform Management Interface (Oracle IPMI)
- Network Card Patches for relevant hardware models

About 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 RDMA packages (oracle-rdma-release)

For storage, do not apply any RPM updates.

About Patching Pre-Checks

Patching pre-checks are designed to detect and flag problems that might be encountered during patching.

The pre-checks view the state of the appliance, including the version and hardware specific upgrades, verify that the necessary conditions and checks are complete before attempting an upgrade, and identify conditions that might cause an upgrade to fail. You can avoid potential patching problems by correcting the conditions and resolving the issues before applying the patch.

The 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.



Note:

Patching pre-checks are available only when patching ODACLI stack. If you are patching and migrating from OAKCLI to ODACLI stack for bare metal system, then follow the procedure in the topic *Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line*. For patching Virtualized Platform, see the topic *Patching Oracle Database Appliance Virtualized Platform*.



Components Verified by Patching Pre-Checks

Check	Component Verified
System patching pre-checks	Checks that the agent 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
Server patching pre-checks	Confirms that Oracle Grid Infrastructure patch is installed
	Confirms that Oracle Clusterware is running on all nodes
	Performs a check for required components using opatch prereq checkcomponents
	Analyzes the patch using opatchauto
	Performs a patch conflict check
	Checks the available disk space
	Confirms that the yum repository directory exists
	Performs a yum check and yum check- update
	Performs a test (dry run) yum update to check for dependencies in the RPMs
DBHome patching pre-checks	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
Storage pre-checks	Validates storage patch location and tag
	Validates Oracle ASM disk groups status



Running Patching Pre-Checks Before Applying Patches

After updating the repository with patches, use the pre-checks to reduce potential update problems, and then apply patches.



Follow the procedure in this topic only when patching ODACLI stack. If you are patching and migrating from OAKCLI to ODACLI stack for bare metal system, then follow the procedure in the topic *Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line*. For patching Virtualized Platform, see the topic *Patching Oracle Database Appliance Virtualized Platform*.

Before running the patching pre-checks, ensure that the dcs-agent is updated.

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

```
odacli create-prepatchreport -s -v release_number
```

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

odacli describe-prepatchreport -i job_ID

Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line

Follow these steps to apply patches to your Oracle Database Appliance bare metal deployment and existing Oracle Database homes, using CLI commands.

To patch your Oracle Database Appliance deployment and your existing database homes to the current release, you must download the Oracle Database Appliance Server Patch and update the repository. To patch your existing databases to the latest release, you do **not** need the Oracle RDBMS clone files for the release. Download Oracle RDBMS clone files for a release only if you want to create new database homes for that release.



Run the commands in this topic in the same order as documented. Run the odacli update-dcsadmin and odacli update-dcscomponents commands before running the odacli update-server command.

Follow these steps to apply patches to your Oracle Database Appliance and update existing database homes.

1. Download the Oracle Database Appliance Server Patch for the ODACLI/DCS stack (patch 31481816) from My Oracle Support to a temporary location on an

external client. Refer to the release notes for details about the software for the latest release.

For example, download the server patch for 19.8:

```
p31481816_198000_Linux-x86-64_1of2.zip
p31481816_198000_Linux-x86-64_2of2.zip
```

2. Unzip the software — it contains README.html and one or more zip files for the patch.

```
unzip p31481816_198000_Linux-x86-64_10f2.zip unzip p31481816_198000_Linux-x86-64_20f2.zip
```

The zip file contains the following software files:

```
oda-sm-19.8.0.0.0-200718-serverlof2.zip
oda-sm-19.8.0.0.0-200718-server2of2.zip
```

3. Copy all the software files from the external client to Oracle Database Appliance. For High-Availability deployments, copy the software files to only one node. The software files are copied to the other node during the patching process. Use the scp or sftp protocol to copy the bundle.

Example using scp command:

```
# scp software_file root@oda_host:/tmp
```

Example using sftp command:

```
# sftp root@oda_host
```

Enter the root password, and copy the files.

```
put software_file
```

4. Update the repository with the server software:

```
# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
software_file1,/tmp/software_file2
```

For example, for 19.8:

```
# /opt/oracle/dcs/bin/odacli update-
repository -f /tmp/oda-sm-19.8.0.0.0-200718-server1of2.zip,/tmp/oda-
sm-19.8.0.0.0-200718-server2of2.zip
```

5. Confirm that the repository update is successful:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli describe-job -i job_ID
```



6. Update the DCS agent:

[root@odal opt]# /opt/oracle/dcs/bin/odacli update-dcsagent -v
19.8.0.0.0

7. Update DCS admin:

[root@odal opt]# /opt/oracle/dcs/bin/odacli update-dcsadmin -v
19.8.0.0.0

8. Update the DCS components:

[root@odal opt]# /opt/oracle/dcs/bin/odacli update-dcscomponents -v
19.8.0.0.0

This command updates the DCS components such as Zookeeper.

9. Run patching pre-checks:

[root@odal opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport s -v version

For example, for 19.8:

[root@odal opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport s -v 19.8.0.0.0

10. Verify that the patching pre-checks ran successfully:

[root@odal opt]# /opt/oracle/dcs/bin/odacli list-prepatchreports

For example:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli list-prepatchreports
3797791f-72ac-42b6-8bb8-ed5e5c9b32c1 Patch pre-checks for [OS,
ILOM, GI, ORACHKSERVER] June 30, 2020 6:29:30 AM UTC Running

Use the command odacli describe-prepatchreport to view details of the prepatchreport.

11. Apply the server update:

[root@odal opt]# /opt/oracle/dcs/bin/odacli update-server -v version

For example, for 19.8:

[root@odal opt]# /opt/oracle/dcs/bin/odacli update-server -v
19.8.0.0.0



12. Confirm that the server update is successful:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli describe-job -i job_ID
```

13. Update the storage components.

Specify the -rolling option to patch shared disks in a rolling fashion.

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli update-storage -v
version --rolling
```

For example, for 19.8:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli update-storage -v
19.8.0.0.0 --rolling
```

- 14. To patch existing Oracle Database Homes to release 19.8:
 - a. Run the patching pre-checks and review the prepatch report. For example:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli create-
prepatchreport --dbhome --dbhomeid DB_Home_ID -v release_number
[root@odal opt]# odacli describe-prepatchreport -i Job_ID
```

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli create-
prepatchreport --dbhome --dbhomeid 7c67c5b4-f585-4ba9-865f-
c719c63c0a6e -v 19.8.0.0.0
[root@odal opt]# odacli describe-prepatchreport -i
39efleeb-70d3-47ad-b3f5-48960ca0607b
```

b. Update the database home to the latest release:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli update-dbhome --
dbhomeid DB_Home_ID -v release_number
```

For example, for 19.8:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli update-dbhome -- dbhomeid 7c67c5b4-f585-4ba9-865f-c719c63c0a6e -v 19.8.0.0.0
```

15. Confirm that the patch jobs are successful:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli list-jobs
```

16. Delete the software zip files from the temporary location on the appliance to save space:

```
[root@odal opt]# rm software_file
rm: remove regular file software_file? y
```



Related Topics

Patching Existing Database Homes on Bare Metal Systems Using the Browser User Interface

Use the Browser User Interface to patch database homes to the latest release on bare metal systems.

Related Topics

Oracle Database Appliance Release Notes

Patching Oracle Database Appliance Bare Metal Systems Using the Browser User Interface

Upload the Oracle Database Appliance Server Patch to the patch repository, deploy the patch bundle using the Browser User Interface, and then update the DCS agent and components using CLI commands.

Updating the Patch Repository Using the Browser User Interface

- Download the Oracle Database Appliance patches from My Oracle Support and save them in a directory on the appliance. See the Oracle Database Appliance Release Notes for a list of available patches and links to download the patches.
- Log into the Browser User Interface with the oda-admin user name and password.

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

- 3. Click Patch Manager.
- 4. In the Update Patch Repository page, 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.
- Click Activity to monitor the progress. When the job completes successfully, the Patch Repository is updated.

Running Patching Prechecks and Patching Agent, Server, and Storage Using the Browser User Interface



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

- 1. Do not have any jobs running or pending during the update window.
- Click the Appliance tab, and then click Patch Manager in the Browser User Interface.
- 3. 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.

4. 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.

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.

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.

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

6. 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.

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

For high-availability environment, you can select the **Rolling** check box to perform rolling patching of storage components.

Click Activity to monitor the progress, and verify that the job completes successfully.

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

Updating the DCS Admin and DCS Components After Patching

After patching your appliance using the Browser User Interface, you must update the DCS admin and DCS components manually, through CLI commands.

Follow these steps:

1. Update DCS admin:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli update-dcsadmin -v
19.8.0.0.0
```

2. Confirm that the update is successful:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli describe-job -i job_ID
```

3. Update the DCS components:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcscomponents -v
19.8.0.0.0
```



Updating Oracle Database Appliance Repository with Database Clone Files For Bare Metal Systems

Follow these steps to update the Oracle Database Appliance repository with Oracle Database clone files for the latest release using CLI commands.

To create new databases of a specific release version, you must update the Oracle Database Appliance repository with the RDBMS Clone files for a release. Follow these steps to update the repository with Oracle Database clone files for the latest release.

1. Download the RDBMS Clone software file for a release, for example, p30403662_198000_Linux-x86-64.zip, and extract the RDBMS Clone software:

For example, download the RDBMS Clone software patch for 19.8:

```
unzip /tmp/p30403662_198000_Linux-x86-64.zip odacli-dcs-19.8.0.0.0-200713-DB-19.8.0.0.zip
```

2. Copy all the software files from the external client to Oracle Database Appliance. For High-Availability deployments, copy the software files to only one node. The software files are copied to the other node during the patching process. Use the scp or sftp protocol to copy the bundle.

Example using scp command:

```
# scp software_file root@oda_host:/tmp
```

Example using sftp command:

```
# sftp root@oda_host
```

Enter the root password, and copy the files.

```
put software file
```

3. Update the repository with latest release database software:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli update-repository -
f /tmp/odacli-dcs-db-clone-file.zip/
```

For example, for 19.8:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli update-repository -
f /tmp/odacli-dcs-19.8.0.0.0-200713-DB-19.8.0.0.zip
```

Follow the same steps to update the repository with the RDBMS Clone software for other supported database versions such as 12.2, 12.1, and so on.



Confirm that the repository update is successful:

```
[root@odal opt]# /opt/oracle/dcs/bin/odacli list-jobs
[root@odal opt]# /opt/oracle/dcs/bin/odacli describe-job -i job_ID
```

5. Delete the software zip files from the temporary location on the appliance to save space:

```
[root@odal opt]# rm software_file
rm: remove regular file software file? y
```

Patching Existing Database Homes on Bare Metal Systems Using the Browser User Interface

Use the Browser User Interface to patch database homes to the latest release on bare metal systems.

Before patching the database home, upload the RDBMS Clone Files for the database version, to the repository. See *Updating Oracle Database Appliance Repository with Database Clone Files Using the CLI* for the procedure to update the repository with the latest RDBMS Clone Files.

 Log into the Browser User Interface with the oda-admin user name and password.

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

- 2. Click the **Database** tab, and then click **Patch** on the left pane.
- 3. Click Patch, and then select the Action as **Precheck** to run pre-checks before patching the database.
 - Click Activity for job status.
- 4. On the Patch page, for the database to be patched, click View and select Prepatch reports to view the pre-check report. Fix any errors, and then select Action as Apply to patch the database.
- 5. Verify that the patching job completes successfully.

Related Topics

 Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line

Follow these steps to apply patches to your Oracle Database Appliance bare metal deployment and existing Oracle Database homes, using CLI commands.

Related Topics

Oracle Database Appliance Release Notes



Upgrading the Operating System and Patching Oracle Database Appliance Virtualized Platform

When you patch your deployment to Oracle Database Appliance release 19.8, you also upgrade the operating system to Oracle Linux 7. Follow these steps to apply patches to Oracle Database Appliance OAKCLI Virtualized Platform using CLI commands.

Download the Oracle Database Appliance Server Patch for OAK Stack and Virtualized Platform and update the repository with the server zip files for Oracle Database Appliance release 19.8. Free up space in the patch repository, before you start patching your deployment. Ensure that at least 21 GB of space is available to download the server patch.

See the topic *Backup and Recovery for Oracle Database Appliance Upgrades on Virtualized Platform* in this guide for the procedure to take a backup and restore from backup for Oracle Database Appliance virtualized platform.

Follow these steps to upgrade the operating system to Oracle Linux 7 on Oracle Database Appliance Virtualized Platform deployment, using CLI commands. You must upgrade the operating system on the first node successfully. The upgraded node is rebooted automatically, and then you must upgrade the operating system on the other node.

 On both nodes, ensure that you free up space for the patch files on your appliance by deleting earlier Oracle Grid Infrastructure and Oracle Database clone files or patches that are not needed.

Run the following commands and delete any old Oracle Grid Infrastructure clones and patches:

```
# cd /opt/oracle/oak/pkgrepos/orapkgs/GI
# du -sh *
```

Run the following commands and delete any old Oracle Database clones and patches:

```
# cd /opt/oracle/oak/pkgrepos/orapkgs/DB
# du -sh *
```

2. Download the Oracle Database Appliance Server Patch for OAK Stack and Virtualized Platforms (patch 31481822) from My Oracle Support to a temporary location on an external client. Refer to the *Oracle Database Appliance Release Notes* for 19.8, for details about the software for the latest release.

For example, download the Oracle Database Appliance Server Patch for OAK Stack and Virtualized Platform for 19.8:

```
OAKPatchBundle_19.8.0.0.0_200718_10f3.zip
OAKPatchBundle_19.8.0.0.0_200718_20f3.zip
OAKPatchBundle_19.8.0.0.0_200718_30f3.zip
```



Note: Download OAKPatchBundle_19.8.0.0.0_200718_1of3.zip and OAKPatchBundle_19.8.0.0.0_200718_3of3.zip to upgrade the operating system and patch Oracle Database Appliance server on Virtualized Platform. Complete the operating system upgrade and server patching, and delete the patch files. To ensure that you have adequate space for patching your appliance, download OAKPatchBundle_19.8.0.0.0_200718_2of3.zip and unpack the software when you want to patch the databases in your deployment to the latest release.

3. Copy the software files from the external client to Oracle Database Appliance. Ensure that you copy the software files to ODA_BASE on **both** nodes. Use the scp or sftp protocol to copy the bundle.

Example using scp command:

```
scp software_file root@oda_host:/tmp
```

Example using sftp command:

```
sftp root@oda host
```

Enter the root password, and copy the files.

```
put software file
```

- 4. (Optional) Run this step if you want to save the input and output commands in a log file, so that they can be used for debugging, if required.
 - a. Login to dom0.
 - **b.** Run the command:

```
script -a node-odabase-date.log
```

c. Within the prompt, after running script, log into the ODA_BASE console:

```
xm console oakDom1
```

- **d.** Run the next steps in this procedure. The typed commands and output are logged in *node*-odabase-*date*.log.
- 5. Unpack the patch bundle. Run the command on **both** nodes.

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli unpack -package
path_to_patch_file
```

For example, for 19.8:

```
# /opt/oracle/oak/bin/oakcli unpack -package /tmp/
OAKPatchBundle_19.8.0.0.0_200718_1of3.zip
# /opt/oracle/oak/bin/oakcli unpack -package /tmp/
OAKPatchBundle_19.8.0.0.0_200718_2of3.zip
# /opt/oracle/oak/bin/oakcli unpack -package /tmp/
OAKPatchBundle_19.8.0.0.0_200718_3of3.zip
```



After the unpack operation completes successfully, remove the patch bundle to free up space.

6. Run the oakcli update -patch command with the pre-patchreport option to generate the pre-patch report. Run the command on **both** nodes.

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch
19.8.0.0.0 --pre-patchreport --local
INFO: Running OS prepatch checks ...
INFO: Validate supported versions
SUCCESS: Validated minimum supported versions.
INFO: Validate patching tag
SUCCESS: Validated patching tag: 19.8.0.0.0
INFO: Is patch location available
SUCCESS: Patch location is available.
INFO: Space checks for OS upgrade
SUCCESS: Validated space checks.
INFO: Install OS upgrade software
INFO: This action might take a while if packages need to be
uncompressed
SUCCESS: Extracted OS upgrade patches into /root/oda-upgrade.
Do not remove this directory untill OS upgrade completes.
INFO: Verify OS upgrade by running preupgrade checks
INFO: This operation will take long, please wait
SUCCESS: Results stored in: '/root/preupgrade-results/
preupg_results-200618165535.tar.gz' .
Read complete report file '/root/preupgrade/result.html' before
attempting OS upgrade.
INFO: Validate custom rpms installed
WARNING: Found additional RPMs installed
Warning: user is responsible for updating custom RPM files
SUCCESS: All OS prepatch tasks ran correctly
INFO: Running Storage prepatch checks ...
INFO: Validate patching tag
SUCCESS: Validated patching tag: 19.8.0.0.0
INFO: Patch location validation
SUCCESS: Verified patch location.
INFO: Patch tag validation
SUCCESS: Verified patching tag.
INFO: Verify ASM disks status
SUCCESS: ASM disk are online.
SUCCESS: All Storage prepatch tasks ran correctly
SUCCESS: Pre patch report ended successfully
```

See the topic *Analyzing the Pre-Checks Report for Operating System Upgrades on Virtualized Platform* in this guide, for detailed information about various checks in the report and the suggested actions for failed checks.

Ensure that the pre-patch report checks complete successfully on **both** nodes. If there are any errors, then fix the errors before you proceed to step 6.



7. On the local node, run the oakcli update -patch with the pre-osupgrade option to stop the Virtual Machines, shared repositories, Oracle Clusterware, and databases:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch
19.8.0.0.0 --pre-osupgrade --local
INFO: Trying to ping dom0 agent
INFO: dom0 agent is live
INFO: dom0 agent is not updated
INFO: Updating dom0 agent, this will take a while...
SUCCESS: dom0 agent updated
INFO: Stopping Vms and Repos on both nodes. This may take a while...
SUCCESS: Repos and vms stopped
INFO: Disabling start repo
Start repo operation is now DISABLED on node 0
Start repo operation is now DISABLED on node 1
SUCCESS: Start repo disabled
INFO: Stopping CRS in local node
INFO: 2020-06-23 02:08:27: Clusterware is running on local node
INFO: 2020-06-23 02:08:27: Attempting to stop clusterware and its
resources locally
SUCCESS: 2020-06-23 02:09:29: Successfully stopped the clusterware
on local node
SUCCESS: CRS stopped in local node
SUCCESS: Loop devices check passed
SUCCESS: Pre-OSupgrade finished successfully
```

See the topic *Analyzing the Preupgrade Checks Report for Operating System Upgrades on Virtualized Platform* in this guide, for detailed information about various checks in the report and the suggested actions for failed checks.

If you did not fix the failures described in the prepatch report, then running the above command may display an error. You can use the --force option to ignore errors and run the command. However, it is recommended that you fix all failures described in the prepatch report and then proceed with the operating system upgrade.

8. Run the oakcli update -patch with the osupgrade option to upgrade the operating system to Oracle Linux 7:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch 19.8.0.0.0 --osupgrade --local

INFO: Validating local resources are stopped 2020-06-16--19:04:09 - Performing ODA pre-upgrade steps: Copy /boot/grub/grub.conf to /root/oda-upgrade/grub.conf 2020-06-16--19:04:09 - Running pre-upgrade script /root/oda-upgrade/scripts/convert-cmdline-grubdefault.sh 2020-06-16--19:04:09 - Running pre-upgrade script /root/oda-upgrade/scripts/convert-cmdline-envfile.sh 2020-06-16--19:04:09 - Disabling repos in /etc/yum.repos.d/oracle-linux-ol6.repo

Copy /boot/grub/grub.conf to /root/oda-upgrade/grub.conf 2020-06-14--14:17:20 - Running pre-upgrade script /root/oda-upgrade/scripts/convert-cmdline-grubdefault.sh
```

```
2020-06-14--14:17:20 - Running pre-upgrade script /root/oda-upgrade/
scripts/convert-cmdline-envfile.sh
2020-06-14--14:17:20 - Disabling repos in /etc/yum.repos.d/oracle-
linux-ol6.repo
2020-06-14--14:17:20 - Disabling repos in /etc/yum.repos.d/uek-
ol6.repo
Device "priv0" does not exist.
2020-06-14--14:17:20 - Info: No need to migrate nic names for
private interconnect.
2020-06-14--14:17:20 - Stopping CRS
CRS-2791: Starting shutdown of Oracle High Availability Services-
managed resources on 'test1'
CRS-2673: Attempting to stop 'ora.crf' on 'test1'
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'test1'
CRS-2673: Attempting to stop 'ora.mdnsd' on 'test1'
CRS-2673: Attempting to stop 'ora.gpnpd' on 'test1'
CRS-2677: Stop of 'ora.crf' on 'test1' succeeded
CRS-2673: Attempting to stop 'ora.gipcd' on 'test1'
CRS-2677: Stop of 'ora.drivers.acfs' on 'test1' succeeded
CRS-2677: Stop of 'ora.mdnsd' on 'test1' succeeded
CRS-2677: Stop of 'ora.gpnpd' on 'test1' succeeded
CRS-2677: Stop of 'ora.gipcd' on 'test1' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed
resources on 'test1' has completed
CRS-4133: Oracle High Availability Services has been stopped.
2020-06-14--14:17:23 - Disable CRS autostart
CRS-4621: Oracle High Availability Services autostart is disabled.
2020-06-14--14:17:23 - Done performing ODA pre-upgrade steps.
/tmp/osupgrade.expspawn /bin/sh /root/oda-upgrade/oda-upgrade.sh -u
2020-06-14--14:17:23 - Running redhat-upgrade-tool:
setting up repos...
upgradeiso | 3.6 kB 00:00 ...
upgradeiso/primary_db | 1.3 MB 00:00 ...
Preupgrade assistant risk check found risks for this upgrade.
You can run preupg --riskcheck --verbose to view these risks.
Addressing high risk issues is required before the in-place upgrade
and ignoring these risks may result in a broken upgrade and
unsupported upgrade.
Please backup your data.
List of issues:
preupq.risk.MEDIUM: We detected that some packages installed on the
system were removed between Oracle Linux 6 and Oracle Linux 7. This
might break the functionality of the packages that depend on the
removed packages.
. . .
HOOK-pkgdowngrades: INFO: DEP: enforcing package installation
'info.x86_64'
HOOK-pkgdowngrades: INFO: DOWNGRADE: enforcing package installation
'grep.x86_64'
HOOK-pkgdowngrades: INFO: DOWNGRADE: enforcing package installation
'kernel-uek-firmware.noarch'
HOOK-pkgdowngrades: INFO: done
Finished. Reboot to start upgrade.
Finished. Reboot to start upgrade.
```

```
2020-06-20--10:57:51 - Modifying /boot/grub/grub.conf to specify console to ttyS0 2020-06-20--10:57:51 - Done running redhat-upgrade-tool. INFO: Ready to upgrade OS INFO: Reboot the system to upgrade OS Monitor the progress of the upgrade. After successful upgrade, the operating system restarts.
```

You can use the --force option to ignore errors and run the command. However, it is recommended that you fix all failures described in the preupgrade report and then proceed with the operating system upgrade.

You can run the ODA_BASE upgrade from the console and monitor the progress of the upgrade. Start the console from dom0 with xm start oakDom1. Note that the xm start oakDom1 session is closed when each ODA_BASE node is rebooted after upgrade. You can restart the xm start oakDom1 session and monitor the progress of the upgrade.

9. Review the progress of the upgrade operation. The output on the screen displays the status of the upgrade.

When the operating system upgrade is completed successfully, the node is rebooted automatically.

10. Run the oakcli update -patch with the post-osupgrade option to verify that the operating system upgrade succeeded:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch 19.8.0.0.0 --post-osupgrade --local INFO: OS has been upgraded to 4.14.35-1902.301.1.el7uek successfully.
INFO: ODA software has been upgraded to 19.8.0.0.0 successfully.
INFO: GI software has been upgraded to 18.8.0.0.191015(30112122,30581079) successfully.
INFO: Starting CRS
...
INFO: Patching post-osupgrade command finished successfully
```

If you have installed custom RPMs on ODA_BASE, then review the RPMs listed in the directories /root/oda-upgrade/rpms-added-from-Oracle and /root/oda-upgrade/rpms-added-from-ThirdParty, and re-install the custom RPMs after the operating system is upgraded to Oracle Linux 7.

See the topic *Analyzing the Post Upgrade Checks Report for Operating System Upgrades on Virtualized Platform* in this guide, for detailed information about various checks in the report and the suggested actions for failed checks.

You can use the --force option to ignore errors and run the command. However, it is recommended that you fix all failures described in the post upgrade report.

- **11.** After the post checks complete successfully, upgrade the operating system on the second node by running steps 6 to 9 on the second node.
- **12.** Apply the server update:

[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch version
--server



For example, for 19.8:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch
19.8.0.0.0 --server
```

After Oracle Grid Infrastructure patching completes successfully, you can free up space by detaching 18c and 12c grid homes from the inventory and deleting the grid homes as follows:

a. Run the following from Node 0:

```
# /u01/app/19.0.0.0/grid/oui/bin/runInstaller -nowait -
waitforcompletion
-ignoreSysPrereqs -updateNodeList ORACLE_HOME=/u01/app/19.0.0.0/
grid
"CLUSTER_NODES={NODE0,NODE1}" CRS=true LOCAL_NODE=NODE0
# /u01/app/19.0.0.0/grid/oui/bin/runInstaller -detachHome -
silent
ORACLE_HOME=/u01/app/18.0.0.0/grid
```

b. You can also detach 12c grid homes and delete the Oracle Grid Infrastructure software from /u01:

```
# rm -rf /u01/app/18.0.0.0
```

c. Delete the Oracle Grid Infrastructure clone:

```
# cd /opt/oracle/oak/pkgrepos/orapkgs/GI/19.8.0.0.200714/Base/
# rm grid19.tar.gz
```

13. Update the storage components.

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch version
--storage
```

For example, for 19.8:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch
19.8.0.0.0 --storage
```

14. To patch existing Oracle Database Homes to release 19.8:

a. Download OAKPatchBundle_19.8.0.0.0_200718_2of3.zip to /tmp location and unpack the software:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli unpack -
package /tmp/OAKPatchBundle_19.8.0.0.0_200718_2of3.zip
```

b. Update the database homes with latest release database software:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch
version --database
```



For example, for 19.8:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli update -patch
19.8.0.0.0 --database
```

- **c.** Use the interactive command line to specify the database homes that you want to update to the latest release.
- 15. Verify that the updates are applied.

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli show version -detail
```

16. Delete the software zip files from the temporary location on the appliance to save space:

```
[root@hostname ~]# rm software_file
rm: remove regular file software_file? y
```

17. Enable the discovery of repositories from ODA_BASE.

```
[root@hostname ~]# oakcli enable startrepo -node 0
[root@hostname ~]# oakcli enable startrepo -node 1
```

18. Restart the system:

```
[root@hostname ~]# oakci restart oak
```

19. After the upgrade completes successfully, verify that all the programs work correctly on ODA_BASE, and backup the logs and temporary files.

Clean up the following directories used for patching, so that you can save space:

```
/root/preupgrade
/root/oda-upgrade/
/root/preupgrade-results
```

Related Topics

 Analyzing the Pre-Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching pre-checks report and the components checked during the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.

 Analyzing the Preupgrade Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching preupgrade checks report before performing the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.

 Analyzing the Post Upgrade Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching post upgrade checks report after performing the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.



 Backup and Recovery for Oracle Database Appliance Upgrades on Virtualized Platform

Before patching your deployment to Oracle Database Appliance release 19.8 on virtualized platform, understand how you can take a backup before the upgrade and then restore from the backup, if necessary.

Updating Oracle Database Appliance Repository with Database Clone Files For Virtualized Platform

Follow these steps to update the Oracle Database Appliance repository with Oracle Database clone files for Virtualized Platform for the latest release using CLI commands.

To create new databases of a specific release version, you must update the Oracle Database Appliance repository with the RDBMS Clone files for a release. Follow these steps to update the repository with Oracle Database clone files for the latest release.

 Download the RDBMS Clone software for Virtualized Platform for a release, for example, patch 30403653 for release 19.8, and extract the Oracle Database Clone software:

For example, download the Oracle Database Clone software patch for 19.8:

```
p30403653_198000_Linux-x86-64.zip
```

2. Copy the software file from the external client to Oracle Database Appliance. For High-Availability deployments, copy the software file to only one node. The software file is copied to the other node during the patching process. Use the scp or sftp protocol to copy the bundle.

Example using scp command:

```
# scp software_file root@oda_host:/tmp
```

Example using sftp command:

```
# sftp root@oda_host
```

Enter the root password, and copy the files.

```
put software file
```

3. Unpack the software:

```
[root@hostname ~]# /opt/oracle/oak/bin/oakcli unpack -package /tmp/
p30403653_198000_Linux-x86-64.zip
```

4. Use the oakcli create database command to create a database of a specific release.



Applying Additional Patches and Updates on Bare Metal Systems

Configure additional patch repositories and patch your operating system and databases to ensure that your deployment has the latest updates and security fixes.

Enabling Kernel Updates

Oracle Ksplice enables you to update your systems with the latest kernel security and bug fix updates.

Applying Out-of-Cycle Database Patches

The out-of-cycle patching feature enables administrators to patch databases in the Oracle Database Appliance deployment with the latest Oracle Database Release Update, outside of the Oracle Database Appliance releases.

Enabling Kernel Updates

Oracle Ksplice enables you to update your systems with the latest kernel security and bug fix updates.

You can download and install the latest Oracle Ksplice updates (uptrack-updates) with either the local ULN repository or ULN channel.

Follow these steps to install Oracle KSplice:

- Register your server with Unbreakable Linux Network (ULN). By default, you are registered for the Oracle Linux Latest channel for your operating system and hardware.
- Log in to Unbreakable Linux Network:

https://linux.oracle.com

3. Ensure that you have access to the Internet on the server where you want to use Ksplice. For example, if you are using a proxy server, then set the proxy server and port values in the shell with commands similar to the following:

```
# export http_proxy=http://proxy.company.com:port
# export https_proxy=http://proxy.company.com:port
```

Register the server:

```
# uln_register
```

- 5. Set up the local repository as described in the Oracle Ksplice user documentation. This enables you to download the latest Ksplice update packages at regular intervals without requiring a direct connection to the Oracle Uptrack server or to ULN.
- 6. To update a system to a specific effective kernel version, install the uptrackupdates package for the current kernel.

```
yum -y install uptrack-updates-'uname -r'
```



You can also download the uptrack-updates RPM from the Ksplice channel and install the RPM manually. For example:

```
# rpm -Uvh uptrack-
updates-4.14.35-1902.11.3.1.el7uek.x86_64-20200325-0.noarch.rpm
```

See Also:

Oracle Linux Ksplice User's Guide for information about configuring Oracle Ksplice at:

https://docs.oracle.com/cd/E37670_01/E39380/html/ksplice-enhanced-offline.html

Applying Out-of-Cycle Database Patches

The out-of-cycle patching feature enables administrators to patch databases in the Oracle Database Appliance deployment with the latest Oracle Database Release Update, outside of the Oracle Database Appliance releases.

You can apply Oracle Database Release Update (RU) patches manually using OPatch. Refer to the relevant section in this topic to run the OPatch for your database version.

Note:

The OPatch commands and procedures described in this topic are examples, and may need modifications based on a specific Oracle Database Release Update (RU). Always refer to the Readme of the Oracle Database Release Update (RU) for additional commands and steps.

Note:

It is strongly recommended that you patch your deployment through the Oracle Database Appliance releases, whenever possible.

Note:

You can apply out-of-cycle patches to both baremetal and Virtualized Platform deployments using this procedure.



Using OPatchauto to Manually Patch Oracle Database Release 12c and Later

 Confirm that the dcs-agent and other components are updated to the latest release.

```
# odacli describe-component
# odacli list-dbhomes
```

- 2. Update OPatch to the latest version, if available:
 - a. Download the latest OPatch version from My Oracle Support.
 - **b.** Copy the files to the local host and extract them to the <code>ORACLE_HOME/OPatch</code> directory.
 - c. Update the OPatch tool as oracle user.

```
/bin/rm -rf $ORACLE_HOME/OPatch/
su - oracle -c /usr/bin/unzip -q -o OPatch_zip_location/
p6880880_122010_Linux-x86-64.zip -d $ORACLE_HOME
```

Download the latest database patches from My Oracle Support and copy the files to the local host.

```
scp patchfilename root@hostname:directory
```

 Unzip patches to an empty directory, for example, /tmp/patchesDir as oracle user

This creates sub directories under / tmp/patchesDir with bug numbers. If the patch you are applying is a Release Update (RU), then the patch directory has multiple sub-directories.

```
/usr/bin/unzip -o location_of_patches/p29301631_180000_Linux-x86-64.zip -d /tmp/patchesDir
```

- 5. For Oracle Database Appliance High-Availability deployments, set up SSH Keys for secure connection.
- 6. Analyze the patches.

```
$ORACLE_HOME/OPatch/opatchauto apply
directory_with_patches_extracted -analyze -oh $ORALCE_HOME -
log /tmp/opatchAutoAnalyzePatch.log
```

7. As root user, apply the patches.

- 8. When patching is completed on both nodes, run utlrp.sql and catcon.pl scripts to recompile invalid objects in the database.
- **9.** Update the registry to ensure that system component values are registered.

```
# odacli update-registry -n dbhome -f
```



Using OPatch to Manually Patch Oracle Database Release 11.2.0.4

 Confirm that the dcs-agent and other components are updated to the latest release.

```
# odacli describe-component
# odacli list-dbhomes
```

- 2. Update OPatch to the latest version, if available:
 - a. Download the latest OPatch version from My Oracle Support.
 - **b.** Copy the files to the local host and extract them to the <code>ORACLE_HOME/OPatch</code> directory.
 - c. Update the OPatch tool as oracle user.

```
/bin/rm -rf $ORACLE_HOME/OPatch
su - oracle -c /usr/bin/unzip -q -o OPatch_zip_location/
p29141056_112040_Linux-x86-64.zip -d $ORACLE_HOME
```

3. Download the latest database patches from My Oracle Support and copy the files to the local host. Unzip the database patches to an empty directory, for example, /tmp/patchesDir as oracle user.

This creates sub directories under /tmp/patchesDir with bug numbers. If the patch you are applying is an Oracle Database Release Update (RU), then the patch directory has multiple sub-directories.

```
su - oracle -c '/usr/bin/unzip -o p29141056_112040_Linux-x86-64.zip
-d /tmp/patchesDir'
```

- Delete bug#2015 if it exists in the inventory.
 - a. Check if bug#2015 exists in the inventory:

```
su - oracle
export ORACLE_HOME=path_to_the_11.2.0.4_ORACLE_HOME
$ORACLE_HOME/OPatch/opatch lspatches | grep -i "OCW" | cut -d
':' -f1
```

b. The command returns a bug number, for example, 28729234. Navigate to the inventory:

```
cd $ORACLE_HOME/inventory/oneoffs/bug# from above command/etc/
config
```

c. Check if inventory.xml contains a string such as 'bug number="2015"'. If no match is found, then no action is required, and you can continue with step 6 in this procedure.

```
grep 'bug number="2015"' inventory.xml
echo $? ( the command returns 0, if match found )
```



d. Take a backup of inventory.xml.

```
cp inventory.xml inventory.xml.$(date +%Y%m%d-%H%M)
```

e. Delete entry like <bug number="2015" ...> from inventory.xml.

```
sed '/bug number="2015"/d' inventory.xml
```

5. Run prechecks using the opatch command for every patch.

```
su - oracle -c '$ORACLE_HOME/OPatch/opatch prereq CheckComponents
-ph /tmp/patchesDir/29301631 -oh $ORACLE_HOME'
su - oracle -c '$ORACLE_HOME/OPatch/opatch prereq
CheckConflictAgainstOH -ph /tmp/patchesDir/29301631 -oh
$ORACLE_HOME'
```

Run both commands for all the sub patches also. If there are any conflicting bugs, then rollback the one-off patches.

6. Apply the patch using the opatch auto command.

```
$ORACLE_HOME/OPatch/opatch auto /tmp/patchesDir/29301631 -oh
$ORACLE_HOME -ocmrf /opt/oracle/dcs/rdbaas/config/default-ocm.rsp
```

7. Verify that the database is up and running after applying the patch.

```
/u01/app/18.0.0.0/grid/bin/crsctl status resource ora.on6i.db -n patched\_db
```

8. Run catbundle.sql on all databases in this home.

Cleaning Up the Patch Repository

Use the Browser User Interface or Command Line Interface to delete obsolete or old patches from the repository.

About Cleaning Up the Patch Repository

After patching Oracle Database Appliance with the latest patches, old unused clone files may remain and consume space in the repository. Cleanup repository deletes the unused clone/patch files to reclaim space. You can clean up the repository using the Browser User Interface or ODACLI commands.



Cleaning Up the Patch Repository Using ODACLI command

Specify the clone file names and the node from which you want to delete the old patches.

For details about the command options, see the chapter *Oracle Database Appliance Command-Line Interface*.

Cleaning Up the Patch Repository Using the Browser User Interface

Follow these steps to clean up the patch repository:

- 1. In the Browser User Interface, click Patch Manager.
- Click the Cleanup Repository tab, and then click Refresh to list the available patches in the repository.
- 3. Select the Components, such as old Oracle Grid Infrastructure or Oracle Database clone files that you want to clean up from the repository, and the Patch Version, for example, an older release of Oracle Database Appliance.
- **4.** Click **Cleanup Clone Files** to clean up clone files for selected components from the repository at /opt/oracle/oak/pkgrepos/orapkgs/clones/.
- 5. Click **Cleanup Repository** to submit the cleanup repository job.
- Click Activity to monitor the progress. When the job completes successfully, the Patch Repository is updated.

Related Topics

odacli cleanup-patchrepo
 Use the odacli cleanup-patchrepo command to delete obsolete or old patches from the repository.

About Upgrading to a Different Database Home

Understand how to upgrade to a different database home using either the Browser User Interface or odacli commands.

Prerequisites for Upgrading Database Homes

You can upgrade database homes of the following releases:

- Oracle Database 18c to 19c
- Oracle Database 12.2 to 19c
- Oracle Database 12.1 to 19c
- Oracle Database 11.2.0.4 to 19c
- Oracle Database 12.2 to 18c
- Oracle Database 12.1 to 18c
- Oracle Database 11.2.0.4 to 18c



- Oracle Database 12.1 to 12.2
- Oracle Database 11.2.0.4 to 12.2
- Oracle Database 11.2.0.4 to 12.1

Before upgrading to a different database home, upload the Oracle RDBMS Clone Files for the database version, to the repository, and then create the database home. See *Patching Oracle Database Appliance Using the CLI* for the procedure to update the repository with the latest Oracle RDBMS Clone Files.

About Upgrading Database Homes Using the Browser User Interface

Follow these steps to upgrade to a different database home using the Browser User Interface.

 Log into the Browser User Interface with the oda-admin user name and password.

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

- Click the **Database** tab, and then select a database, click **Actions**, and then click **Upgrade**.
- 3. Verify that the database upgrade job completes successfully.

About Upgrading Database Homes Using the Command-Line Interface

Run the following command to upgrade to a different database home using the CLI:

```
odacli upgrade-database -i Comma separated list of database ids -from source dbhome id -to destination dbhome id [-j] [-h]
```

For more information about the options for the upgrade-database command, see the chapter *Oracle Database Appliance Command-Line Interface*.

Related Topics

odacli upgrade-database

You can the odacli upgrade-database command to upgrade a database from a supported release. This command is deprecated and will be desupported in a future release. Instead, use the command odacli move-database to move databases from one Oracle Database home to another.



Re-imaging Oracle Database Appliance

Bare metal operating system 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 operating system perspective. After imaging is completed, redeploy the End User image, then restore from backup, as needed.

- Uninstalling Oracle Database Appliance Components
 Use the Oracle Database Appliance cleanup deploy utility, /opt/oracle/oak/onecmd/cleanup.pl to uninstall Oracle Database Appliance components.
- Restoring an Oracle Database Appliance Baremetal System
 Re-image Oracle Database Appliance to perform a bare metal restore of Oracle
 Database Appliance.
- Performing Secure Erase of Data on Storage Disks
 With this release, you can securely erase data from storage devices. Running the secure erase tool deletes the data on the storage disk permanently.

Related Topics

Errors when re-imaging Oracle Database Appliance
 Understand how to troubleshoot errors that occur when re-imaging Oracle Database Appliance.

Uninstalling Oracle Database Appliance Components

Use the Oracle Database Appliance cleanup deploy utility, /opt/oracle/oak/onecmd/cleanup.pl to uninstall Oracle Database Appliance components.

About the Cleanup Utility

Use the cleanup deploy utility to do the following:

- Uninstall Oracle Auto Service Request (Oracle ASR)
- Uninstall Oracle Trace File Analyzer (TFA)
- Uninstall Oracle ORAchk Health Check Tool
- Uninstall Oracle Grid Infrastructure and the Oracle stack
- Reset or delete the Oracle Linux udev rules
- Delete users and groups that were created when the appliance was created.

The script removes the firstnet config and the client access VLAN UNIX_DB, but does not delete any other VLANs. The script also resets any disabled CPU cores and enables all of the cores.

The cleanup utility runs in two modes: default and force mode. In the default mode, the commands used as part of cleanup do not use the force option. The Oracle ASM disk status is changed from MEMBER to FORMER, but ASM header on the disk is not erased. The default mode can be used only for cleaning up or re-provisioning of the same system.



For High-Availability systems, run the cleanup utility on both nodes sequentially. Ensure that the cleanup utility has completed on the first node, and then start the process on the second node.

Running the Cleanup Utility for a Baremetal Deployment

perl /opt/oracle/oak/onecmd/cleanup.pl [-griduser grid_user] [-dbuser
db user] [-groups comma separated list of groups][-erasedata] [f]

When the *grid_user* and *db_user* are the same (roleSeparation=false), you must run the script for each user (-gridUser and -dbUser).

Table 8-1 Command Options for Cleanup Utility

Option	Description		
grid_user	Describes the Oracle Grid Infrastructure user name. The default user is grid.		
db_user	Describes the database user name. The default user is oracle Example with grid and oracle users:		
	cleanup.pl -griduser oracle - dbuser oracle		
groups	Describes the comma-separated list of groups. The default groups are oinstall,dba,asmadmin,asmoper,asmdba.		
erasedata	Erases the data disks which are used by Oracle Database software. It is mandatory to run this option if intention of cleanup is to reuse or move these disks on other systems.		
	Example of secure erase:		
	cleanup.pl -erasedata		
cleanDefNet	Cleans up the default public network.		



Table 8-1 (Cont.) Command Options for Cleanup Utility

Option	Description	
checkHeader	Checks for OAK/ASM header on disks after successfully running the cleanup script. Use this to validate if the OAK/ASM header was erased by the cleanup script or not. Example of checking disk header:	
	cleanup.pl -checkHeader	
f	In the force mode, all commands use the force option. The ASM disk header is erased. The oakd header on the disk is erased in both default and force modes. Example of default mode:	
	cleanup.pl	
	Example of force mode:	
	cleanup.pl -f	

Running the Cleanup Script for a Virtualized Platform Deployment

You can use the cleanup deploy script tool to clean up ODA_BASE on Oracle Database Appliance Virtualized Platform.

Follow these steps to clean up a Virtualized Platform deployment:

- Before removing ODA_BASE, ensure that you run the /opt/oracle/oak/onecmd/ cleanupDeploy.pl script.
 - # /opt/oracle/oak/onecmd/cleanupDeploy.pl [-h] [-erasedata]
- 2. Run the following command from dom0 on Node 0 to remove ODA_BASE and the initial network configuration.
 - # /opt/oracle/oak/tools/cleanOdabase.py

Restoring an Oracle Database Appliance Baremetal System

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.

Follow these steps to re-image your appliance. For Oracle Database Appliance High-Availability deployment, follow these steps on **both** nodes.

 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.

Performing Secure Erase of Data on Storage Disks

With this release, you can securely erase data from storage devices. Running the secure erase tool deletes the data on the storage disk permanently.

You may want to consolidate storage disks between appliances. For example, you can use X7-2 disks on X6-2 models, and may want to consolidate all X6-2 disks on one system, and use all new X7-2 storage disks on another system. In such cases, use secure erase to erase headers from disks before re-imaging the disks, since the storage disks across the appliances may have different partition ratios.



Running the secure erase tool removes data from storage disks permanently. If you have any data on the disk, then take a backup of your storage disk before running the secure erase tool.

Follow the steps to run the secure erase tool:

 Stop oakd and the database and Oracle Grid Infrastructure before running the secure erase tool.

On bare metal systems, run the command:

```
# odaadmcli stop oak
```

On Virtualized Platforms:

```
# oakcli stop oak
```

To stop Oracle Clusterware resources:

```
# crsctl stop crs -f
```

2. Run the secure erase tool:

```
# /opt/oracle/oak/bin/odaeraser.py
```

3. You can also run the secure erase tool when running the cleanup tool:

```
# /opt/oracle/oak/onecmd/cleanup.pl -erasedata
```



Example 8-1 Options for the Secure Erase Tool

Option	Description		
-a,all	Erases all disks. For example:		
	# /opt/oracle/oak/bin/odaeraser.pyall		
disk disk1,disk2	Erases specified disks. For example:		
	<pre># /opt/oracle/oak/bin/odaeraser.pydisk e0_pd_00,e0_pd_01</pre>		
dryrun	Runs the tool in the test mode		
type HDD SSD NVMe	Erases the type of disk specified		
-v,verbose	Displays verbose output		
-h,help	Displays all CLI options for the tool		



9

Managing Oracle Databases

Manage the Oracle Databases on your Oracle Database Appliance.

- About Administrative Groups and Users on Oracle Database Appliance
 Oracle Database Appliance Browser User Interface deployment creates operating
 system groups and users whose members are granted system administration
 privileges on the appliance.
- About Data Migration Options for Oracle Database Appliance
 Oracle Database Appliance supports the use of standard Oracle Database loading
 and migration tools.
- About Standard Edition High Availability for Oracle Database Appliance
 Oracle Database Appliance supports Standard Edition High Availability solution
 with Oracle Grid Infrastructure that provides cluster-based failover for Oracle
 Database 19c Standard Edition.
- Working with Databases Use the Browser User Interface to display a list of databases, database details, and create and delete databases. You can use CLI commands to manage your databases.
- Working with Database Homes
 Use the Browser User Interface to display a list of database homes, details, and create and delete database homes.
- Migrating Databases
 Review these topics to learn how to prepare for and migrate an entire database to your Oracle Database Appliance.
- About Managing Multiple Database Instances Using Instance Caging
 Use instance caging to manage your system resources on Oracle Database
 Appliance.
- 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.

About Administrative Groups and Users on Oracle Database Appliance

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

During configuration, two administrative accounts are created for Oracle Database Appliance: the user <code>grid</code>, with a user ID (UID) of 1001, and the user <code>oracle</code>, with a UID of 1000. The user <code>grid</code> is the Oracle Grid Infrastructure installation owner. The user <code>oracle</code> is the Oracle Database installation owner, and the owner of all Oracle Database homes (Oracle homes). By default, these users are members of operating

system groups whose members are granted privileges to start up and administer Oracle Database and Oracle Automatic Storage Management.

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

Table 9-1 Operating System Groups and Users on Oracle Database Appliance

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

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

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



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

About Data Migration Options for 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.

About Standard Edition High Availability for Oracle Database Appliance

Oracle Database Appliance supports Standard Edition High Availability solution with Oracle Grid Infrastructure that provides cluster-based failover for Oracle Database 19c Standard Edition.

About Standard Edition High Availability for Oracle Database 19c

With Standard Edition High Availability, when there is an instance or a node failure, the database automatically fails over to the other node, after attempting to restart on the local node. The database is restarted on the surviving node, thereby providing high availability for Oracle Standard Edition databases.

If your Oracle Database deployment contains Standard Edition 2 Oracle Real Application Cluster (Oracle RAC) databases of releases earlier than 19c, then they must be converted to a Standard Edition High Availability configuration as part of the upgrade to Oracle Database 19c.

For more details about this feature, refer to the Oracle Database Documentation Library at https://docs.oracle.com/en/database/oracle/oracle-database/index.html.

About Standard Edition High Availability for Oracle Database Appliance Release 19.8

Standard Edition High Availability for Oracle Database 19c is supported on Oracle Database Appliance for high availability deployments, that is, deployments that have two server nodes, shared storage, and server interconnects.

Oracle Database Appliance enables automatic configuration for failover at deployment time for Oracle Database 19c Standard Edition single-instance databases. Both nodes have Oracle Homes for Standard Edition single-instance databases.

Single-instance Oracle Database 19c Standard Edition databases created using the ODACLI commands or the Browser User Interface (BUI) have Standard Edition High Availability enabled by default. You can also choose to disable the High Availability option. To enable Standard Edition High Availability for existing Standard Edition Oracle RAC databases of releases earlier than 19c, you must convert these Oracle RAC databases to single-instance databases, and then upgrade to single-instance Oracle Database 19c Standard Edition database with Standard Edition High Availability enabled by default.



About Provisioning, Upgrading, and Relocating Standard Edition High Availability Oracle Database

To create a single-instance Oracle Database 19c with Standard Edition High Availability, use the following command:

```
odacli create-database -u db_unique_name -n db_name -dh db_home -y SI -g target_node
```

To upgrade a Standard Edition Oracle RAC Database to Oracle Database 19c Standard Edition, convert the Oracle RAC Database to a single-instance Oracle Database:

```
odacli modify-database -in db_name -y single-instance
```

Then, upgrade the single-instance database to Oracle Database 19c with Standard Edition High Availability as follows:

```
odacli upgrade-database -i db_id -to destination_dbhome -sh
```

To relocate a Standard Edition High Availability Oracle Database from one node to another outside of a failover, use the following command:

```
odacli modify-database -in db_name -g target_node | -th target_host
```

For detailed information about these ODACLI command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.

Related Topics

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

Working with Databases

Use the Browser User Interface to display a list of databases, database details, and create and delete databases. You can use CLI commands to manage your databases.



Oracle Database Appliance enables unified auditing for databases created in new database homes. Unified audit trail captures audit information and places them in one location and in one format. This consolidated view enables auditors to co-relate audit information from different components. Having a single audit trail also improves management and security of the audit trail. For more information about unified audit trail for Oracle Database, see *Oracle Database Security Guide*.



Viewing Databases

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

Creating a Database

Use the Oracle Appliance Manager Browser User Interface to create a database in Oracle Database Appliance.

Creating an Instance-Only Database

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

Cloning a Database from Backup

Use the Browser User Interface to clone a database from a backup.

- Cloning an Oracle ACFS Database Using the Browser User Interface
 Create a database from an existing Oracle ACFS database using the Browser User Interface.
- Cloning an Oracle ACFS Database Using Command Line Interface
 Create a database from an existing Oracle ACFS database using CLI commands.

Modifying a Database

Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to modify a database in Oracle Database Appliance.

Moving a Database from One Oracle Home to Another

Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to move a database from one Oracle home to another of the same database version.

Upgrading a Database

Use the Oracle Appliance Manager Browser User Interface to upgrade an Oracle database to a different database home version.

Deleting a Database

Use the Oracle Appliance Manager Browser User Interface to delete an Oracle database.

Viewing Databases

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

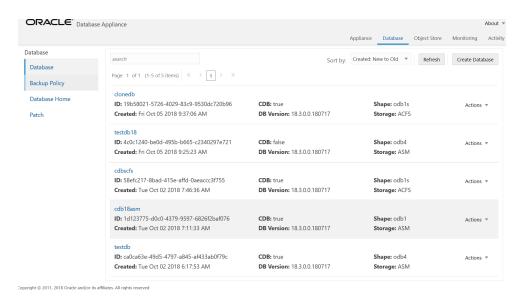
On the Oracle Database Appliance Virtualized Platform, see the command oakcli list databases.

1. Log into the Browser User Interface:

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

2. Click the **Database** tab.





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

Creating a Database

Use the Oracle Appliance Manager Browser User Interface to create a database in Oracle Database Appliance.

Ensure that the repository is updated with Oracle RDBMS Clone files for a database version, before creating the database as described in *Updating Oracle Database Appliance Repository with Database Clone Files Using the CLI*.

Note:

For Standard Edition Oracle Database 19c or later, you cannot create Oracle RAC Or Oracle RAC One Node Database. You can only create single-instance Oracle Database. For Standard Edition Oracle Database 19.6 or later, you can choose to enable high availability for single-instance database.

The Browser User Interface provides a quick and easy method of creating new databases. The Create New Database page in the Browser User Interface 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.

Oracle Database 19.8 is supported on both Oracle Automatic Storage Management (Oracle ASM) and Oracle ASM Cluster file system (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 Browser User Interface adjust, depending on the database version you select.

Follow these steps to create a database:

1. Log into the Browser User Interface:

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

- 2. Click the **Database** tab.
- 3. Click **Create Database** to display the Create Database page.
- 4. Select **Create Database** on the Create Database page.
- Enter the following information on the Create Database page to configure the database:
 - a. In the **DB Name** field, enter a name for the database. The name *db1* appears in the field as an example of a database name, but the field is not populated. You must enter a name.
 - The name must contain lowercase alphanumeric characters and cannot exceed 8 characters. The Oracle system identifier (SID) is always set to the database name.
 - b. (Optional) In the **DB Unique Name** field, enter a name to define a unique name for the database.
 - c. In the Use Existing DB Home field, select Yes or No.
 - **d.** In the **DB Version** field, select a database bundle patch number from the drop-down list.
 - Available database versions with available clones appear in the list in descending order. Supported versions that are not available in the repository appear in light gray font at the bottom of the list. Search is available for the list. To add a supported version to the repository, download the RDBMS clone file and update the repository.
 - e. For the CDB option on Oracle Database version 19.8, select Yes or No, depending on whether or not you want the database to be a container database (CDB). The default is Yes.
 - f. In the **PDB Name** field, enter a name for the pluggable database (PDB).
 - Alphanumeric characters and underscore (_) are valid. The name must begin with an alphanumeric character and cannot exceed 30 characters. The name pdb1 appears in the field in italic text as an example, but it is not populated. You must enter a name.
 - g. In the PDB Admin User field, enter a name.
 - The field shows *pdbadmin* as an example, you must enter a name. Alphanumeric characters and underscore (_) are valid.
 - h. In the Database Edition field, enter the edition for which you have a license, either **Enterprise Edition** or **Standard Edition**.
 - For Standard Edition Oracle Database 19c or later, you can only create single-instance Oracle Database. For Standard Edition Oracle Database 19.6 or later, you can choose to enable high availability for single-instance database.
 - For single-instance Oracle Database deployment, specify the Node, either Node0 or Node1. The default is Node0. Specify whether you want to Enable High Availability.



- j. 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.
- k. In the **Database Class** field, select a database class from the drop-down list. If an option is not available in the list, it is not supported for the database edition on the Oracle Database Appliance or the version that you selected. The default is OLTP.
- In the Storage field, select ACFS or ASM from the drop-down list. The default is Oracle ASM.
- m. If the disk group redundancy was set to Flex during the appliance creation, then you can select the Database Redundancy value as Mirror or High.
- n. Select the **Networks** you want to associate with the database.
- 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 19.8. Selecting **Yes** enables you to use the console to manage the database.
- 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. In the Characterset field, select an option from the drop-down list. The default is AL32UTF8.
- s. In the **National Characterset** field, select an option from the drop-down list. The default is AL16UTF16.
- t. In the **Language** field, select a database language from the drop-down list. The default is American.
- **u.** In the **Territory** field, select a territory or location for the database from the drop-down list. The default is America.
- **6.** Click **Create**. When prompted, click **Yes** to confirm that you want to start the job to create the database.

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

After you close the Job confirmation page, you can click the **Activity** tab to monitor the job progress. Click the job number to view the tasks and status details. Click **Refresh** to refresh the page.



Creating an Instance-Only Database

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



If you provisioned the appliance without creating an initial database, then you must create a Oracle home. If the version of the database home is different from the migrated database, create a 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 19.8 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.

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 19.8.0.0.0.

```
# odacli create-dbhome -v 19.8.0.0.0
```

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

```
\# odacli create-database -n PRODDB -v 19.8.0.0.0 -io -m -dh b727bf80-c99e-4846-ac1f-28a81a725df6
```



To create an instance only database named PRODDB with database version 19.8.0.0.0 and a database home:

odacli create-database -n PRODDB -v 19.8.0.0.0 -io -m

Cloning a Database from Backup

Use the Browser User Interface to clone a database from a backup.

When you backup a database in Oracle Database Appliance, a backup report is created. Save the backup report as a 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 cloning a database from a backup:

- The source database backup location must be Object Store or External FRA (Network File System).
- If you use Object Store backup location, then obtain Object Store Credentials for the host.
- 3. If you use an External FRA (Network File System) backup location, then obtain the Network File System (NFS) mount point location.
- **4.** Create a backup policy using the object store credentials or NFS mount point as the backup destination.
- **5.** Attach the backup policy to the database that you want to backup.
- 6. Create a manual backup of the database and save the backup report generated when the backup completes.

Follow these steps to create a database from backup:

Log into the Browser User Interface:

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

- Click the Database tab.
- 3. Click **Create Database** to display the Create Database page.
- Click Clone Database from Backup, then click Next to display the Clone Database from Backup page.
- 5. Select the Backup Destination from which you want to create the database. If your backup destination is ObjectStore:
 - a. Select Backup Destination as **ObjectStore**.
 - b. Select your Object Store Credential Name.
 - c. Enter the password in the Backup Encryption Passwords field and the Confirm Backup Encryption Passwords field.

If your backup destination is Network File System (NFS):

- Select Backup Destination as External FRA.
- **b.** Specify the **External FRA Mount Point**.
- c. Enter the password in the Backup Encryption Passwords field and the Confirm Backup Encryption Passwords field.



Click Browse and select the backup report from which you want to create the database.

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.

For Standard Edition Oracle Database 19c or later, you cannot clone Oracle RAC or Oracle RAC One Node Database. You can only clone an single-instance Oracle Database. For Standard Edition Oracle Database 19.6 or later, you can choose to enable high-availability for single-instance database.

7. 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.

- Enter the password in the SYS User Password field and the Confirm SYS User Password field.
- 9. Click Create.
- Click Yes to confirm that you want to clone a database from the selected Object Store or External FRA.

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.

11. Validate that the job completed. You can track the job in the **Activity** tab in the Browser User Interface, or run the command odacli describe-job with the job ID.

odacli describe-job -i jobId

Cloning an Oracle ACFS Database Using the Browser User Interface

Create a database from an existing Oracle ACFS database using the Browser User Interface.

Cloning enables to:

- Create a database from another database without bringing down the source database
- Create multiple databases from a gold image, thus ensuring standardized mass deployments
- Optimize space utilization, by use of Oracle ACFS snapshots in cloning
- Create different types of databases, from a single source database type. For
 example, you can create single-instance databases, Oracle RAC databases, or
 Oracle RAC One Node databases from any type of source database
- Depending on the available memory and CPU cores, specify a supported database shape such as odb1s, odb2, and so on, to create any class of database from any source database.

Follow these steps to create a database from an existing Oracle ACFS database:

1. Log into the Browser User Interface:

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

Click the Database tab.



- 3. Click **Create Database** to display the Create Database page.
- 4. Click **Clone a Database**, then click **Next** to display the Clone Database page.
- **5.** Select the **Source Database** from which you want to create the database.
 - For Oracle Database 19c Standard Edition, you can only create single-instance Oracle Database, with or without high-availability.
- **6.** Select the **Database Shape** (template) for your new database. The database shape you select determines the total memory allocated to the database.
- 7. 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.
- **8.** Specify the **DB Unique Name** for the database. If the database unique name is not provided, then the name of the database is set to the database name.
- Enter the password in the SYS User Password field and the Confirm SYS User Password field.
- 10. Click Create.
- Click Yes to confirm that you want to clone a database from the selected source database.
 - 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 Browser User Interface, or run the command odacli describe-job with the job ID.
 - # odacli describe-job -i jobId

Cloning an Oracle ACFS Database Using Command Line Interface

Create a database from an existing Oracle ACFS database using CLI commands.

Cloning enables to:

- Create a database from another database without bringing down the source database
- Create multiple databases from a gold image, thus ensuring standardized mass deployments
- Optimize space utilization, by use of Oracle ACFS snapshots in cloning
- Create different types of databases, from a single source database type. For
 example, you can create single-instance databases, Oracle RAC databases, or
 Oracle RAC One Node databases from any type of source database
- Depending on the available memory and CPU cores, specify a supported database shape such as odb1s, odb2, and so on, to create any class of database from any source database.

Following are the prerequisites to clone a database:

• Ensure that Oracle Clusterware is running on all nodes, and the source database is up and running.



- The source database must use Oracle ACFS storage.
- The source database must not be a multitenant container databases (CDBs)
- The source database must be the primary database.
- The source database must be in the OPEN state.
- The source database must not be in backup mode.
- The source database must be in archive mode.

Note:

For Standard Edition Oracle Database 19c or later, you cannot clone Oracle RAC or Oracle RAC One Node Database. You can only clone an single-instance Oracle Database. For Standard Edition Oracle Database 19.6 or later, you can choose to enable high-availability for single-instance database.

Follow this procedure to clone a database:

Run the odacli clone-database command.

```
odacli clone-database --databaseUniqueName --dbname --dbshape --dbtype |SI --json --sourcedbname
```

Specify the unique name of the database, the name for the new database, the database shape, the type of database, and the source database name. For information about all the command options, see the *ODACLI Command Reference* chapter.

Related Topics

odacli clone-database
 Use the odacli clone-database command to clone a new database from a source database

Modifying a Database

Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to modify a database in Oracle Database Appliance.

Modifying a Database Using the Browser User Interface

- 1. Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click the Database tab.
- For the database that you want to modify, select Modify in the Actions drop down list.
- **4.** In the Modify Database page, you can modify associated networks, database shape and class, and the associated backup policy.



- To modify the Database Class or Database Shape, select the new value in the drop down list.
- To attach or detach networks, modify the values in the Attach Networks and Detach Networks fields.
- 7. To remove the associated backup policy from the database, do not select any value in the **Select Back up Policy** drop down list.
- 8. If you configured Oracle Flex disk group when you created the database, you can also modify the database redundancy. If the database you are modifying is an Oracle ACFS Database, then the database redundancy for all cloned Oracle ACFS databases is modified.
- Click Modify. When prompted, click Yes to confirm that you want to start the job to modify the database.

Modifying a Database Using ODACLI Commands

1. Use the odacli modify-database command to modify the configuration of a database, such as backup configuration, database class, and database type.

```
# odacli modify-database -s database_shape -cl database_class -i
dbid
```

For example:

```
\# odacli modify-database -i 1941d594-c777-4eca-9fce-18b778d5c153 -s odb2 -c1 DSS
```

For more information about the odacli modify-database command options, see the Oracle Database Appliance Command Line Reference chapter in this guide.

Related Topics

odacli modify-database
 Use the odacli modify-database command to modify the configuration of a

Moving a Database from One Oracle Home to Another

database, such as backup configuration, database class, and database type.

Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to move a database from one Oracle home to another of the same database version.

Moving a Database Using the Browser User Interface

- 1. Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click the **Database** tab.
- For the database that you want to modify, select Move in the Actions drop down list
- 4. Select the Destination Database Home where you want to move the database. The destination database home must be of the same base version.
- Click Move. When prompted, click Yes to confirm that you want to start the job to move the database.



Moving a Database Using ODACLI Commands

 Use the odacli move-database command to move a database from one Oracle home to another home of the same database version.

```
# odacli move-database -i database_ID -dh destination database home ID
```

For more information about the odacli move-database command options, see the Oracle Database Appliance Command Line Reference chapter in this guide.

Related Topics

odacli move-database

Use the command odacli move-database to move a database from one Oracle home to another home of the same database version.

Upgrading a Database

Use the Oracle Appliance Manager Browser User Interface to upgrade an Oracle database to a different database home version.

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



You cannot upgrade Oracle RAC or Oracle RAC One Node Database to a destination database home of Standard Edition Oracle Database 19c or later. You must first convert Oracle RAC Or Oracle RAC One Node Database to single-instance Oracle Database using the odacli modify-database command and then upgrade the single-instance Oracle Database to a destination database home of Standard Edition 19c or later.

1. Log into the Browser User Interface:

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

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

When upgrading single-instance Standard Edition Oracle Database 18.9 or later to Standard Edition Oracle Database 19c or later, you can also choose to enable or disable High Availability.

Deleting a Database

Use the Oracle Appliance Manager Browser User Interface to delete an Oracle database.



1. Log into the Browser User Interface:

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

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

Working with Database Homes

Use the Browser User Interface to display a list of database homes, details, and create and delete database homes.

- 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.
- Viewing Database Homes
 Use the Browser User Interface to display a list of database homes and database home details, including databases associated with a DB home.
- Creating a Database Home
 Use the Browser User Interface to create database homes in Oracle Database Appliance.
- Deleting a Database Home
 Use the Browser User Interface to delete an Oracle database home.

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 Browser User Interface to create and manage multiple Oracle homes and databases on Oracle Database Appliance. Oracle Database Appliance Manager automatically creates an Oracle Database Oracle home that is compliant with Oracle's Optimal Flexible Architecture (OFA) standards.

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

When you use 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.

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



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.

Viewing Database Homes

Use the Browser User Interface to display a list of database homes and database home details, including databases associated with a DB home.

Log in to the Browser User Interface:

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

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

Creating a Database Home

Use the Browser User Interface to create database homes in Oracle Database Appliance.

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

1. Log in to the Browser User Interface:

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

- 2. Click the Database tab, then click Database Home.
- 3. Click Create Database Home.



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

Deleting a Database Home

Use the Browser User Interface to delete an Oracle database home.

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

1. Log into the Browser User Interface:

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

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

Migrating Databases

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

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.

Configuring a Static Listener

Configure a static listener before you duplicate a database.

Migrating a Database

Use the ${\tt RMAN}$ ${\tt Duplicate}$ command to migrate the entire database to the appliance.

Registering a Database

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

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. On bare metal systems, use the command odacli list-jobs and the command odacli describe-job to verify the status.

- 2. Create an instance only database from the command-line interface.
 - On bare metal systems, use the command odacli create-database with the instanceonly flag on an Oracle Database Appliance machine. The new database is the target database.

Creating an instance only database also creates the following:

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



You can only migrate and register a database of the same storage type. For example, to migrate and register an Oracle ACFS database, you must create an Oracle ACFS database and then migrate and register it. Similarly, to to migrate an Oracle ASM database, you must create an Oracle ASM database and then migrate it.

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/19.0.0.0/grid/network/admin/ directory.
- 3. Edit the default listener.ora file and append the static database entry.

```
SID_LIST_LISTENER=
(SID_LIST=
(SID_DESC=
```



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

For example, the following file is edited for an 19.8.0.0.0 database named PRODDB in the example.com domain:

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

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

Migrating a Database

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

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

 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</pre>
```

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</pre>
```



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.

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.

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;
}
```

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.



The odacli register-database command is supported only for primary database of type single-instance.

Follow these steps to register a database:

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.



```
}
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, 2018 5:55:49 AM EDT
      Message:
Task Name
                             Start Time
______
restore control file
                           November 23, 2018 5:55:49 AM EDT
move spfile to right location November 23, 2018 5:56:08 AM EDT
register DB with clusterware November 23, 2018 5:56:13 AM EDT
reset db parameters November 23, 2018 5:57:05 AM EDT Running DataPatch November 23, 2018 5:57:36 AM EDT
(Continued)
 End Time
                            Status
______
November 23, 2018 5:56:08 AM EDT Success
November 23, 2018 5:56:13 AM EDT Success
November 23, 2018 5:57:05 AM EDT Success
November 23, 2018 5:57:36 AM EDT Success
November 23, 2018 5:57:49 AM EDT Success
```

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

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.

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 18c, 12.2.0.1, and 12.1.0.2. The DB Console is available for Oracle Database 11.2.0.4. Both consoles are webbased 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.



10

Managing Storage

You can add storage to fully populate the base storage shelf and add a storage expansion shelf to your Oracle Database Appliance.

- About Managing Storage
 You can add storage at any time without shutting down your databases or
 applications.
- Preparing for Storage Expansion
 Review and perform these best practices before adding storage to the base shelf or adding the expansion shelf.

About Managing Storage

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

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

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

The amount of available storage is determined by the location of the FRA backup (external or internal) and if double or triple mirroring is used.

Oracle Database Appliance uses storage shelves, a base shelf and an optional storage expansion shelf. You can expand the base storage by adding a pack of solid-state drives (SSDs) to fully populate the base storage. You can further expand the storage by adding a second storage shelf. External NFS storage is supported for online backups, data staging, or additional database files.



The storage expansion shelf is no longer available for Oracle Database Appliance X7-2-HA and other older models. You can repurpose an existing storage expansion shelf from one Oracle Database Appliance system to another.

Note:

Oracle recommends that you upgrade your deployment to the latest Oracle Database Appliance software release before adding storage to ensure that your appliance has the latest firmware.



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

Preparing for Storage Expansion

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

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

```
# odaadmcli show version -detail
```

```
# odaadmcli inventory -q
```



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

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

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

- # odaadmcli validate -d
- 4. Run the odaadmcli show diskgroup command on each node to display and review Oracle Automatic Storage Management (Oracle ASM) disk group information. Verify that all disks are listed, are online, and are in a good state.

```
# odaadmcli show diskgroup data
```

- # odaadmcli show diskgroup reco
- # odaadmcli show diskgroup redo
- 5. Confirm Oracle ASM and CRS health on both nodes.

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



Run odaadmcli orachk on Node 0:

```
# odaadmcli orachk
...

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

Oracle Stack Status
-----
Host Name CRS Installed ASM HOME RDBMS Installed CRS UP ASM UP RDBMS UP DB Instance Name
-----
odax3rml Yes No Yes No No
No .....
```

Run odaadmcli orachk on Node 1:

```
# odaadmcli orachk
...

Checking Status of Oracle Software Stack - Clusterware, ASM, RDBMS
......
Oracle Stack Status
-----
Host Name CRS Installed ASM HOME RDBMS Installed CRS UP ASM UP RDBMS UP DB Instance
Name
-----
odax3rm2 Yes Yes Yes Yes Yes Yes Yes Yes b22S2
b23S2 b24S2
------
```

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

From each node:

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

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



Backup, Restore and Recover Databases

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

About Database Backup and Recovery Options

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

Creating a Mount Point for NFS Backup Location

Create a mount point for the Network File System (NFS) location, to set up the NFS backup and recovery option.

Configuring Agent Proxy Settings for Object Store Access

If the Object Store IP address is accessible only through proxy setup by the Oracle Database Appliance server, then define the proxy setting for the agent, so that the agent can access the Object Store.

Creating a Database Backup Policy

Understand how to create a policy to backup a database to an internal or external Oracle Fast Recovery Area (FRA) location or to the Object Store using the Browser User Interface.

Updating a Database with a Backup Policy

Attach a backup policy to a database to define the database backup attributes and destination.

Updating a Database Backup Policy

Use the Browser User Interface to update the recovery window, change the ObjectStore Credential, or change the crosscheck option for a database backup policy.

Backing Up a Database Using the Browser User Interface

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

Viewing Backup Reports

Understand how you can use the Browser User Interface to view backup reports.

Recovering a Database Using the Browser User Interface

Understand the recovery options available for recovering a database.

Deleting a Backup Using the Browser User Interface

Use the Browser User Interface to delete database backups.

Deleting a Backup Policy

Use the Browser User Interface to delete a database backup policy.

Using the CLI to Backup, Restore, and Recover

Use the command-line interface to backup, restore, and recover databases.



About Database Backup and Recovery Options

Backup your databases in Oracle Database Appliance and use the restore and recover features to restore a database to the same or 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. The backup feature provides the ability to PITR restore the database, SCN recovery, and latest recovery. You can create a backup policy in the Browser User Interface or from the command-line interface.

The following backup options are available:

- Backup to an Oracle Fast Recovery Area (FRA) disk (Internal FRA)
- Backup to Oracle Cloud Infrastructure Object Storage (Oracle Object Storage)
- Backup to a Network File System (NFS) location (External FRA)

You can use the backup, restore, and recovery features with databases that have backup policy attached to them in the system. You can choose to manage your backups, and set up your backup, restore, and recovery option.

The backup feature enables you to create a backup policy with your backup parameters, such as backup location, recovery window, enable and disable crosscheck, and ObjectStoreSwift Object details. For new and existing databases, you can create and attach a backup policy to a database to perform a daily backup. Once a backup policy is attached to a database, the dcs-agent schedules daily automatic backups for the database. It also schedules archivelog backups for the database. By default, the frequency of the archivelog backup is 30 minutes. 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.



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

Recovering a database in Oracle Database Appliance is a full or whole database recovery using RMAN. You can recover from a Backup Report, a point-in-time (PITR), a System Change Number (SCN), or from the latest backup. When a Backup Report is used for recovery, it performs an SCN recovery, by reading the SCN value from the backup report. For recovery of data block, tablespaces, data files, PDBs, see the *Oracle Database Backup and Recovery Reference Guide*.

Backup Policy

The backup policy defines the backup details. When you create a backup policy, you define the destination for the database backups, either Internal FRA (Disk) or External FRA (NFS location), or Cloud Object Storage, and you define the recovery window.



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

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

You can also specify compression algorithm when creating the backup policy. The supported compression algorithms are BASIC, LOW, MEDIUM, and HIGH. For Objectstore backup policy, you can specify any compression algorithm. By default, if you do not specify the compression algorithm while creating the Objectstore backup policy, then MEDIUM compression algorithm is used. By default, if you do not specify the compression algorithm while creating the Disk or NFS backup policy, then BASIC compression algorithm is used. To use LOW, MEDIUM, or HIGH compression algorithms for Disk or NFS backup policy, there are license considerations.

Backup Levels

Specify the backup level when you take a backup. The back levels are:

- Level 0: The backup captures all blocks in the datafile. By default, level 0 backups occur every Sunday. You can customize your backup settings through the Browser User Interface or the command-line. 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. For long term backups,
 you must use non-FRA locations for backup destinations using the backup policy
 options.
- **Archivelog**: This is a backup of all archivelogs not yet backed up to the backup destination, such as Internal FRA, External FRA (NFS location), or Object Store.

The AutoScheduler creates a level 0 backup on Level 0 Backup Day, by default, 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. It also creates archivelogs backup for the database with a default frequency of 30 minutes.

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
- 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 policy to define the backup destination (disk) and recovery window for the disk destination.
- 2. Create a database and attach the backup policy to the database. When the backup policy is associated with a database, archivelog backups and database backups are automatically created.
- Manage obsolete backups.
- 4. Recover the database from a backup on the disk.

Backup to External FRA (Network File System)

Specifying a Network File System (NFS) location for backups, enables you to safely and securely store or retrieve a database backup at any time.

The advantages of using NFS backup location are:

- With NFS, you can access remote files, locally, by mounting local file systems on a network.
- Provides a centralized backup location, without requiring manual refresh.
- Supports enhanced security options using firewalls and Kerberos.
- Support for encrypted backups using passwords. You optionally, set the backup password, and provide the same during restore operation.

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

- 1. Create a mount point for the NFS location.
 - The mount point must be accessible from both nodes. The <code>oracle</code> user must have read/write permissions to the NFS location. If the request is being made to a remote server, ensure that it is running. See *Creating a Mount Point for NFS Backup Location* for the procedure to create a mount point.
- Create a backup policy specifying the NFS location, and the recovery window for NFS destination.
- **3.** Associate the database with this backup policy, either during database creation, or by updating the backup policy for the database.
- Backups are automatically scheduled, and you can also run manual backups.
 You can specify manual backup options in the Browser User Interface or using ODACLI commands.
- 5. Manage obsolete backups.
- **6.** Restore from backup. When you save your backups to NFS, you can restore the database to the same system or to a different system.



7. Recover the database from a backup on NFS.

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 policy and your Oracle ObjectStoreSwift credentials. The credentials are stored in an encrypted Oracle wallet. You can attach the credentials to one or more backup policies.



Credentials are validated when you create the backup policy 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 Browser User Interface 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.

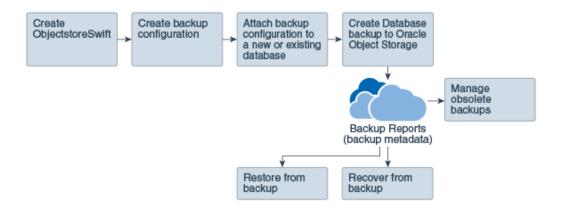
The following is a high-level overview of the workflow for backup and recovery when using Oracle Object Storage:

- 1. Create an Object Store object with your credentials.
- 2. Create a backup policy to define the backup location (Object Store), Object Store Credentials Name, the container (bucket) name where you want to store backups, and the recovery window.
- 3. Create a database and attach the backup policy either as a part of creating the database, or update the database with backup policy after creating the database.



When the backup policy 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.





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",
  "dokesia": "b516646e-Ulab
"tag": null,
"dbTd": "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/scaoda702cln1/
dbconfig/HRDbOu/2717054291/2017-11-08/DBCONFIG_TAG20171108T124407_2017-11-08_12-44-07.0533.tar.gz",
          : "Backup_Report_HRDb0"
```



```
"createTime": "November 08, 2017 12:42:08 PM UTC",
"status": "CONFIGURED"
},
"updatedTime": "November 08, 2017 12:44:12 PM UTC",
"backupReportLogDetail": "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/
scaoda702cln1/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",
   "dbPataSize": "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 SCN. The BackupReport option is similar to SCN, except that the recovery uses the Backup Report SCN instead of a specified SCN.

Point-in-Time Database Recovery

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

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

- You want to recover the database to an SCN before a user or administrative error.
- Complete database recovery failed because all necessary archived redo logs were not available.
- A database upgrade fails.
- You are creating a test database or a reporting database from production database backups.

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:

- 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 policy determines when database backups become obsolete.

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, provide the corresponding backup report as an input and use the command odacli delete-backup 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

Creating a Mount Point for NFS Backup Location

Create a mount point for the Network File System (NFS) location, to set up the NFS backup and recovery option.

Follow these steps to create a mount point for the NFS location:

- 1. Follow these steps on the source machine:
 - a. Create a sharable location on the source machine and give full permissions to this directory.

mkdir /tmp/nfs_test
chmod 777 /tmp/nfs_test



b. Add entries in the /etc/exports file in the format shared_location destination_IPs (permissions).

For example:

```
# cat /etc/exports
/tmp/nfs_test 192.0.2.1(rw,sync)
/tmp/nfs_test 192.0.2.2(rw,sync)
```

c. Restart the NFS server on the host.

```
# service nfs restart
```

d. Check the export list for the entries.

```
# showmount -e
Export list for oda1:
/tmp/nfs_test 192.0.2.1,192.0.2.2
```

- 2. Follow these steps on the client machine:
 - a. Create a client location on the client machine as the oracle user.

```
# sudo -E -u oracle mkdir /tmp/client_location
```

b. Mount this location with the source location in the format mount server: source folder client location.

```
# mount 192.0.2.3:/tmp/nfs_test /tmp/client_location
```

c. Check if the mount details are correct:

```
# mount
192.0.2.3:/tmp/nfs_test on /tmp/client_location type nfs
(rw,vers=4,addr=192.0.2.3,clientaddr=192.0.2.2)
```

Specify this NFS location in the backup configuration, either through the Browser User Interface or CLI commands.

Related Topics

Preparing for Database Backup to NFS Location
 Use the command-line interface to create a policy to backup a database to an External FRA (NFS Location).

Configuring Agent Proxy Settings for Object Store Access

If the Object Store IP address is accessible only through proxy setup by the Oracle Database Appliance server, then define the proxy setting for the agent, so that the agent can access the Object Store.

To create a backup policy that uses Object Store location, the agent must be able to access the Object Store URL.



1. Define the HttpProxyHost and HttpProxyPort settings in the update-agentconfigParameters command.

```
# odacli update-agentConfigParameters -n HttpProxyHost -v www-
proxy.test.com -n HttpProxyPort -v 80 -u
Job details
```

ID: 0b0cbf9b-b0ab-4523-a096-5da4e48fc825

Description: Update agent configuration parameter values

[HttpProxyHost, HttpProxyPort]

Status: Created

Created: October 23, 2018 4:56:53 PM IST

Message:

Task Name Start Time End Time Status

For more information about the agentconfigParameters command usage, see the Oracle Database Appliance Command-Line Interface.

2. Verify that the update succeeded:

3. Run the list-agentconfigParameters command to view the changes in the proxy settings:

```
# odacli list-agentConfigParameters
```

Task Name Start Time End Time Status



You can now use the Browser User Interface or the command-line interface to create a backup policy to use the ObjectStore location for backup.

Related Topics

- odacli update-agentconfig-parameters
 Use the odacli update-agentconfig-parameters command to modify configuration variables used by the appliance.
- odacli list-agentconfig-parameters
 Use the odacli list-agentconfig-parameters command to list configuration variables used by the appliance.

Creating a Database Backup Policy

Understand how to create a policy to backup a database to an internal or external Oracle Fast Recovery Area (FRA) location or to the Object Store using the Browser User Interface.

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).

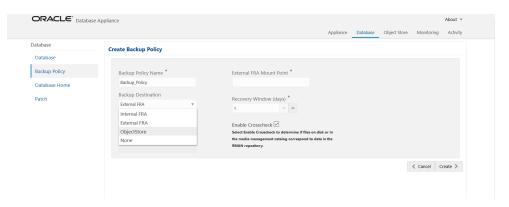
Follow these steps to create a backup policy from the Browser User Interface:

- 1. Click the **Database** tab in the Browser User Interface.
- 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 Internal FRA 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 backup to an NFS location, select External FRA as the backup destination, and specify the NFS mount point location.
 - To not define a destination, select None.

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

The following figure shows the Create Backup Policy page.





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.

Updating a Database with a Backup Policy

Attach a backup policy to a database to define the database backup attributes and destination.

- In the Browser User Interface, click the **Database** tab, then select a database from the list.
- In the Database Information page, click Apply Backup Policy.If the action is disabled, then you must create a backup policy.
- 3. Select a backup policy from the list of available backup policies, and provide the **Backup Encryption Password**. Click **Apply**.
- **4.** Expand the **Actions** menu, then click **View** to display the Database Information page.
 - The details include whether or not Auto Backup is enabled, the Backup Destination, and options to create a backup, enable or disable automatic backups, update the database, and archive log backup schedule.
- (Optional) Click Manual Backup to create a single backup. Click Update
 Database Backup Schedule to schedule automatic backups. Click Update
 Archive Log Backup Schedule to schedule archive log backups.
- Click the Activity tab to check the job status.When the job completes successfully, the backup policy is associated with the database.

Updating a Database Backup Policy

Use the Browser User Interface to update the recovery window, change the ObjectStore Credential, 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.

- Click the **Database** tab in the Browser User Interface.
- 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**.
- To change the recovery window, use the up or down arrow to change the number of days.
- 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.

Backing Up a Database Using the Browser User Interface

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

You can use the Browser User Interface 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.

Before creating a database backup, you must have a backup policy. The backup policy defines the recovery window and the backup destination. You must associate a backup policy with the database, otherwise you cannot create backups.

Follow these steps to backup a database from the Browser User Interface:

- 1. In the Browser User Interface, click the **Database** tab.
- 2. Click a database name to select a database from the list.
- 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 and specify the Backup Encryption Password.
- Click Manual Backup, Update Database Backup Schedule or Update Archive Log Backup Schedule.

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

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.

Viewing Backup Reports

Understand how you can use the Browser User Interface to view backup reports.

A report is generated when a database backup is performed. The backup report lists the type, location, and date and timestamp of the backup.

- In the Browser User Interface, click the **Database** tab, then click the database name in the list of databases.
 - Information about the database appears on the Database Information page.
- 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.

Recovering a Database Using the Browser User Interface

Understand the recovery options available for recovering a database.

- In the Browser User Interface, click the **Database** tab, then select a database from the list.
- 2. On the Database Information page, click **Recover**.
- 3. On the Recover Database page, select any of the following recovery options:

Recover Full Database to the specified Backup: Select the existing backup from which you want to recover the database

Recover Full Database to the Latest: Select this option to recover the database from the last known good state, with the least possible data loss.

Recover Full Database to the specified Timestamp: Specify the timestamp to recover the database.

Recover Full Database to the System Change Number (SCN): Specify the SCN of the backup from which you want to recover the database.

- 4. Specify and confirm the **Backup Encryption Password**.
- 5. Click the **Activity** tab to check the job status.

When the job completes successfully, the database is recovered as per the specified recovery options.

Deleting a Backup Using the Browser User Interface

Use the Browser User Interface to delete database backups.

You can delete Level-0, Level-1, and Archive Log backups anytime. To delete long term backups, you must check the Backup Report for the database to determine when the backup is obsolete.

- 1. Click the **Database** tab in the Browser User Interface.
- 2. Click the database name, in blue font, to display more details about the database for which you want to delete the backup.
- 3. Click Delete Backups .
- 4. Select the Backup type you want to delete, whether Level-0, Level-1, and Archive Log backup or long Term backup, then click Start. Click Yes to confirm that you want to delete the backup.

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

Deleting a Backup Policy

Use the Browser User Interface to delete a database backup policy.

1. Click the **Database** tab in the Browser User Interface.



- 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.

Using the CLI to Backup, Restore, and Recover

Use the command-line interface to backup, restore, and recover databases.

- 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.
- Preparing for Database Backup to NFS Location
 Use the command-line interface to create a policy to backup a database to an External FRA (NFS Location).
- Preparing for Database Backup to Oracle Cloud
 Create a backup configuration to backup a database to Oracle Cloud Infrastructure
 Object Storage.
- Backing Up a Database with the CLI
 Create a level 0, level 1, LongTerm database backup, or archivelog backup with
 the command-line interface.
- Recovering a Database with the CLI
 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.
- 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.
- Deleting Backups with the CLI
 Delete older, obsolete level 0, level 1 and long term backups.

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 policy using the Browser User Interface 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 or the **Backup to Internal FRA** option in the Browser User Interface, requires a lot of disk space (up to two to three times the size of the database).

Follow these steps to create a backup policy through the command-line interface:

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 mkgldailydiskwith a backup to disk and a 1 day recovery window.

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

2. Check the job status.

```
# odacli list-jobs
```

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

3. 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.

Preparing for Database Backup to NFS Location

Use the command-line interface to create a policy to backup a database to an External FRA (NFS Location).

You can create a backup policy using the Browser User Interface 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 NFS location or the **Backup to External FRA** option in the Browser User Interface, requires creation of an NFS mount point.

Follow these steps to create a backup policy through the command-line interface:

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 mkgldailydiskwith a backup to disk and a 1 day recovery window.

```
# odacli create-backupconfig -d NFS -n mkgldailynfs -c absolute-path-to-parent-directory-for-NFS-destination -w 1
```



2. Check the job status.

```
# odacli list-jobs
```

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

(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 NFS location.

Related Topics

Creating a Mount Point for NFS Backup Location
 Create a mount point for the Network File System (NFS) location, to set up the NFS backup and recovery option.

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 the Oracle Object Storage password.

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

 Create an Oracle ObjectStoreSwift object using the command createobjectstoreswift.

```
# 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.rl.oracleiaas.com/vl -n ossnl -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_cloudwith 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 ObjectStoreSwiftObject 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. 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.



Backing Up a Database with the CLI

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

You can create a database backup in the Browser User Interface or with the command-line interface. When you attach a backup configuration object 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, a level 1 the other 6 days of the week, and an archivelog backup every 30 minutes. 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.



To recover a database, there must be a level 0 backup taken, so that the backup report contains information about the base backup. Restoring a database to the same system with a different DB Name and DB Unique Name or to another system does not always require a long term database backup report. You can use archivelog, or level 0, or level 1 backup reports as well. If you use the archivelog backup report , a prior database backup must exist. 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 object 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, LongTerm, or archivelog backup), 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 -i 20576eb1-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



Recovering a Database with the CLI

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
```

Use the Backup Report ID to display the details of the Backup Report. Determine how you want to recover the database: PITR, SCN, or Latest and locate the needed information in the Backup Report.

```
# odacli describe-backupreport -i 2d82460c-
d648-4e75-8c7d-72cc90bc442a
  "id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
  "dbResId" : "b5fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
  "dbId" : "2717054291",
  "dbName" : "ExampleDB",
  "dbUniqueName" : "ExampleDBu",
  "backupType" : "REGULAR-L1",
  "keepDays" : null,
  "backupLocation" : "https://swiftobjectstorage.example.com/v1/
dbaasimage/backupbucket",
  "cfBackupHandle" : "c-2717054291-20180108-04",
  "spfBackupHandle" : "c-2717054291-20180108-04",
  "pitrTimeStamp" : "January 08, 2018 12:43:14 PM UTC",
  "pitrSCN" : "1175058",
  "resetLogsTimeStamp" : "January 08, 2018 09:55:34 AM UTC",
  "resetLogsSCN" : "1112268",
  "oraHomeVersion": "12.2.0.1.170814 (26723265, 26609817)",
  "sqlPatches" : "25811364,26609817",
  "backupLogLoc" : "https://swiftobjectstorage.example.com/v1/
dbaasimage/backupbucket/system namecln1/
rmanlog/ExampleDBu/2717054291/2018-01-08/
rman backup 2018-01-08 12-42-41.0545.log",
  "tdeWalletLoc" : null,
  "dbConfigLoc" : "https://swiftobjectstorage.example.com/v1/
dbaasimage/backupbucket/system_namec1n1/
dbconfig/ExampleDBu/2717054291/2018-01-08/
DBCONFIG TAG20180108T124407 2018-01-08 12-44-07.0533.tar.qz",
  "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_namecln1/
rmandetaillogreport/ExampleDBu/2717054291/2018-01-08/
rman_list_backup_detail_2018-01-08_12-44-04.0362.log",
  "dbInfo" : {
    "dbClass" : "OLTP",
    "dbType" : "RAC",
    "dbShape" : "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 Browser User Interface, or run the command odacli describe-job with the job ID.

```
# odacli describe-job -i jobId
```

When the job completes successfully, the recovery is complete.



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.



For Standard Edition Oracle Database 19c or later, you cannot restore Oracle RAC or Oracle RAC One Node Database.

Follow these steps to restore a database using the command-line (CLI):

 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", the properties of the properti
"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/
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/linearing to the control of the control o
system namecln1/
dbconfig/ExampleDBu/2717054291/2018-01-08/
DBCONFIG_TAG20180108T124407_2018-01-08_12-44-07.0533.tar.gz",
      "name" : "Backup_Report_ExampleDB"
      "createTime" : "January 08, 2018 12:42:08 PM UTC",
      "state" : {
            "status" : "CONFIGURED"
      "updatedTime" : "January 08, 2018 12:44:12 PM UTC",
      "backupReportLogDetail" : "https://swiftobjectstorage.example.com/v1/
dbaasimage/backupbucket/system_namecln1/
rmandetaillogreport/ExampleDBu/2717054291/2018-01-08/
rman_list_backup_detail_2018-01-08_12-44-04.0362.log",
      "dbInfo" : {
             "dbClass" : "OLTP",
            "dbType" : "RAC",
            "dbShape" : "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 <code>Object Store ID</code> -m
```

7. Validate that the job completed. You can track the job in the **Activity** tab in the Browser User Interface, or run the command odacli describe-job with the job ID.

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

Deleting Backups with the CLI

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.

Follow these steps to delete database backups using odacli commands:

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 or Database Name to delete the backup.

```
# odacli delete-backup -i 20576eb1-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
```



Using Oracle Data Guard for Disaster Management and Recovery on Oracle Database Appliance

Understand how you can use Oracle Data Guard for disaster management and recovery on Oracle Database Appliance.

- About Oracle Data Guard on Oracle Database Appliance
 Oracle Database Appliance provides client interface through ODACLI commands
 for easy configuration and management of Oracle Data Guard for high availability,
 data protection, and disaster recovery.
- Configuring Oracle Data Guard on Oracle Database Appliance
 Oracle Database Appliance enables you to set up Oracle Data Guard using
 ODACLI commands.
- Viewing Oracle Data Guard Status on Oracle Database Appliance
 View Oracle Data Guard status using ODACLI commands.
- Performing Oracle Data Guard Operations
 Perform failover, switchover, and reinstate operations on Oracle Data Guard using ODACLI commands.
- Creating an Oracle Data Guard Network
 Create an Oracle Data Guard network and associate it with a database using ODACLI commands.
- Migrating an Oracle Data Guard Database from One System to Another You can migrate Oracle Data Guard databases using ODACLI commands.
- Patching Oracle Data Guard Databases on Oracle Database Appliance
 Understand how you can patch primary and standby databases on Oracle Data Guard using ODACLI commands.
- Upgrading Oracle Data Guard Databases on Oracle Database Appliance
 Understand how you can upgrade primary and standby databases on Oracle Data Guard using ODACLI commands.
- Enabling Oracle Active Data Guard on Existing Configurations
 Understand how you can enable Oracle Active Data Guard on existing configurations.
- Deconfiguring Oracle Data Guard on Oracle Database Appliance
 Deconfigure Oracle Data Guard status using ODACLI commands.

About Oracle Data Guard on Oracle Database Appliance

Oracle Database Appliance provides client interface through ODACLI commands for easy configuration and management of Oracle Data Guard for high availability, data protection, and disaster recovery.

Oracle Data Guard provides a comprehensive set of services that create, maintain, manage, and monitor one or more standby databases to enable production Oracle databases to survive disasters and data corruptions. Oracle Data Guard maintains these standby databases as copies of the production database. Then, if the production database becomes unavailable because of a planned or an unplanned outage, Oracle Data Guard can switch any standby database to the production role, minimizing the downtime associated with the outage. Oracle Data Guard can be used with traditional backup, restoration, and cluster techniques to provide a high level of data protection and data availability. Oracle Data Guard transport services are also used by other Oracle features such as Oracle Streams and Oracle GoldenGate for efficient and reliable transmission of redo from a source database to one or more remote destinations.

With Oracle Data Guard, administrators can optionally improve production database performance by offloading resource-intensive backup and reporting operations to standby systems.



Oracle Database Enterprise Edition includes Oracle Data Guard.

Configuring Oracle Data Guard on Oracle Database Appliance

Oracle Database Appliance enables you to set up Oracle Data Guard using ODACLI commands.

Prerequisites for Oracle Database Guard Configuration

Before you begin:

- Oracle recommends running the primary and the standby databases on separate
 Oracle Database Appliance hardware, so ensure that you have at least two separate Oracle Database Appliance machines.
- Oracle recommends running the primary and the standby databases on two homogeneous Oracle Database Appliance systems. For example, if the primary database is a High-Availability system, then the standby database must be on a similar High-Availability system.
- Oracle recommends that the primary and standby systems have the same Oracle
 Database Appliance configuration. The database must have similar configuration
 for database shape, version, memory, networking, and storage (both must have
 either Oracle ASM or Oracle ACFS storage) to avoid any unpredictability with the
 database switch roles.
- The primary and standby systems must be the same Oracle Database Appliance release, and must be on Oracle Database Appliance release 19.8 or later.
- If you have customized the operating system, then ensure that environments on both machines are identical.
- Ensure that your deployment follows Oracle Maximum Availability Architecture (MAA) best practices. See the Oracle Maximum Availability Architecture (MAA) page on Oracle Technology Network.



- If you decide to use Oracle ObjectStore for backup and recovery, then you must configure access for both the primary and standby systems.
- You need the TrustStore password to configure Oracle Data Guard. The TrustStore password is available in the location /opt/oracle/dcs/dcscli/cacerts.

Setting up Backup and Recovery for Oracle Database Guard Configuration

You can use either Object Store or External FRA (NFS) to set up the backup for primary and standby databases when configuring Oracle Data Guard on Oracle Database Appliance. A backup is necessary to instantiate a standby database.

To set up Object Store backup (recommended):

1. Configure the agent proxy settings:

```
# odacli update-agentConfigParameters -n HttpProxyHost -v www-
proxy.test.com -n HttpProxyPort -v 80 -u
```

For more information, see the topic *Configuring Agent Proxy Settings for Object Store Access* in this guide.

2. Create the Object Store credentials on both primary and standby systems:

```
# odacli create-objectstoreswift -e swift_end_point_URL -
n Object Store_Swift_name -t Object_Store_tenant_name -u
Object Store user name
```

For example:

```
# odacli create-objectstoreswift -e https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1 -n aaa -t test user -u testuser
```

3. View the Object Store Swift name:

```
# odacli list-objectstoreswifts
```

4. Create the backup configuration:

```
# odacli create-backupconfig -d objectstore -c testuser -on aaa -w
7 -cr -n backupConfig7days
```

5. Associate the backup configuration with the database:

```
# odacli modify-database -in test_db -bin backupConfig7days -bp
```

To set up NFS backup:

1. Create the backup configuration. For High-Availability deployments, run the command on one node only.

```
\# odacli create-backupconfig -n nfsbkup -w 10 -d NFS -c /u01/ nfs_backup
```



2. Associate the backup configuration with the database:

```
# odacli modify-database -in test_db -bin nfsbkup
```

Configuring Oracle Data Guard using ODACLI commands

Follow these steps:

1. Take a backup of your primary database to Object Store or External FRA (NFS) with the -ka option to keep archivelogs enabled.

```
# odacli create-backup primary_DB -ka
```

For example:

```
# odacli create-backup --backupType Regular-L0 -in test_db -ka
```

2. Save the backup report:

```
# odacli describe-backupreport -i eba406c7-ae46-4d1d-
ale5-3e985397b171 > backup_report_test_db_0620.json
```

The backup report ID is the ID of the backup created in step 1 and can be obtained by running the odacli list-backupreports command.

3. Copy the backup report to the standby system and restore the backup to a standby database.

```
# odacli irestore-database -ro STANDBY
```

If you want to use Object Store, then specify the Object Store location:

```
# odacli irestore-database -r backup_report.json -u dbUniqueName
-on objectStoreName -bp -ro STANDBY
Rman Backup Encryption Password(s). Multiple passwords needs to be
comma separated.:
Password for SYS user:
```

In the above command, specify the dbUniqueName of the standby system.

If your backup option is NFS, then specify the NFS location:

```
odacli irestore-database -r backup_report.json -u dbUniqueName -bl backup_location -ro STANDBY Password for SYS user:
```

4. Copy the trust store file of the standby machine to the primary machine, and set the file permissions to 400.

```
# scp root@standby_host:/opt/oracle/dcs/dcscli/cacerts /opt/
oracle/dcs/dcscli/cacerts.standby_host_name
# chmod 400 /opt/oracle/dcs/dcscli/cacerts.standby_host_name
```



- 5. Configure Oracle Data Guard, by running the odacli configure-dataguard command on the primary system. Provide the values for your configuration through the interactive command line interface.
 - In the interactive CLI configuration steps, the parameters are as follows:
 - Standby site address is IP address of the standby host. Provide the fully
 qualified domain name and hostname if the primary and the standby systems
 are in the same domain and DNS is configured.
 - The *TrustStore_password* is the value in the <code>TrustStorePassword</code> field in the <code>/opt/oracle/dcs/dcscli/dcscli.conf</code> file on the standby system.
 - Select Oracle Data Guard protection modes to meet availability, performance and data protection requirements. Oracle Data Guard Protection Modes are Maximum Availability, Maximum Performance, and Maximum Protection. The log transport modes are ASYNC, SYNC, and FASTSYNC.
 You can select the following combinations of protection modes and transport types:

Table 12-1 Oracle Data Guard protection modes and transport modes

Protection Mode \ Transport Type	ASYNC	FASTSYNC**	SYNC
MAXPERFORMANC E	Y*	Υ	Υ
MAXAVAILABILITY	N	Υ	Y*
MAXPROTECTION	N	N	Y*

^{*} in the table indicates the default supported pair and ** FASTSYNC mode is available only in Oracle Database 12.1 or later.

```
# odacli configure-dataguard
Standby site address: test domain
BUI username for Standby site (default: oda-admin):
BUI password for Standby site:
TrustStore path for Standby DCS server (copy from /opt/oracle/dcs/
dcscli/cacerts on Standby site to this machine and set file
permissions to 400): /cacerts.a
TrustStore password for Standby DCS server: TrustStore Password
Database name for Data Guard configuration: test db
Primary site network for Data Guard configuration [vlan162, Public-
network] (default: vlan162):
Standby site network for Data Guard configuration [Public-network]
(default: Public-network):
Transport type [ASYNC, FASTSYNC, SYNC] (default: ASYNC):
Primary database syspassword:
Primary machine listener port (default: 1521):
Standby machine listener port (default: 1521):
Data Guard configuration name (default: test db1 test db2):
Data Guard protection mode [MAX_PROTECTION, MAX_PERFORMANCE,
MAX AVAILABILITY] (default: MAX PERFORMANCE):
Enable Active Data Guard? (Y/N, default:N): Y
Enable Flashback? (Y/N, default:Y): Y
The TrustStore of the Standby site should be removed unless it is
necessary for some other purpose. Do you want to delete it? (Y/N,
```



```
default:Y): n
As a requirement, Standby database's SYS password will be set to
Primary database's after Data Guard configuration. Are you sure you
want to proceed? (Y/N): y
Data Guard configuration for database 'test_db' started
Step 1: Validate Data Guard configuration request (Primary site)
Description: Validate DG Config Creation
Job ID: a7053469-1bbe-4fb9-b559-5a3a0d976d7c
Started
Validate create Data Guard configuration request
Finished
**********************
*******
Step 2: Validate Data Guard configuration request (Standby site)
Description: Validate DG Config Creation
Job ID: e240ec9a-c9bb-472a-9b26-2549c0b1d0b9
Validate create Data Guard configuration request
*******************
*******
Step 3: Download password file from Primary database (Primary site)
Description: Download orapwd file from Primary database
Prepare orapwd file for Primary database test_db
**********************
*******
Step 4: Upload password file to Standby database (Standby site)
Description: Upload orapwd file to Standby database
Started
Write orapwd file to Standby database test_db
Finished
***********************
*******
Step 5: Configure Primary database (Primary site)
Description: DG Config service creation - ConfigurePrimary
Job ID: 8e3ccee3-4ee0-4c78-be9f-7c5a991ca680
Started
Configure host DNS on primary env
Configure Data Guard Tns on primary env
Enable Data Guard related Db parameters for primary env
Enable force logging and archivelog mode in primary env
Enable FlashBack
Configure network parameters for local listener on primary env
Restart listener on primary env
Create services for primary db
Finished
**********************
*******
Step 6: Configure Standby database (Standby site)
Description: DG Config service creation - ConfigureStandby
Job ID: 55520496-24d8-4c6f-8b67-3ff59a86a79a
```



```
Started
Configure Data Guard Tns on standby env
Configure host DNS on standby env
Clear Data Guard related Db parameters for standby env
Enable Data Guard related Db parameters for standby env
Enable force logging and archivelog mode in standby env
Populate standby database metadata
Configure network parameters for local listener on standby env
Reset Db sizing and hidden parameters for ODA best practice
Restart listener on standby env
Create services for standby db
Finished
******************
*******
Step 7: Configure and enable Data Guard (Primary site)
Description: DG Config service creation - ConfigureDg
Job ID: c79dea2d-3d2f-4179-bbe2-aee254d5ec32
Started
Config and enable Data Guard
Post check Data Guard configuration
*******************
*******
Step 8: Enable Flashback (Standby machine)
Description: DG Config service creation - EnableFlashback
Job ID: 8220286f-e6d6-4a37-a886-ae9af7c29a6e
Started
Enable FlashBack
Finished
******************
*******
Step 9: Enable Active Data Guard (Standby machine)
Description: DG Config service creation - EnableActivedg
Job ID: 3117c046-2d71-453d-9950-c85bed19f5f2
Started
Open standby db
Restart standby db
Finished
******************
*******
Step 10: Create Data Guard status (Primary site)
Description: DG Status service creation - NewDgconfig
Job ID: 6fb707c5-5f9f-41ab-bc89-7da5e3f3996c
Started
Create Data Guard status
Finished
********************
*******
Step 11: Create Data Guard status (Standby site)
Description: DG Status service creation - NewDgconfig
Job ID: d47aad99-0e64-40aa-bffd-6f76ec00555d
Started
Create Data Guard status
Finished
```



You can also specify a JSON file to configure Oracle Data Guard. An example JSON file is described in this topic.

```
# odacli configure-dataguard -r configdg_ODA_HA.json
Standby machine address: 192.214.108.19
BUI username for Standby machine (default: oda-admin):
BUI password for Standby machine:
TrustStore path for Standby DCS server (copy from /opt/oracle/dcs/
dcscli/cacerts on Standby machine to this machine and set file
permissions to 400): /cacerts.a
TrustStore password for Standby DCS server: TrustStore_password
Primary database syspassword:
The TrustStore of the Standby machine should be removed unless it
is necessary for some other purpose. Do you want to delete it?
(Y/N, default:Y): n
As a requirement, Standby database's SYS password will be set to
Primary database's after Data Guard configuration. Are you sure you
want to proceed? (Y/N): y
Data Guard configuration for database 'test' started
Step 1: Validate Data Guard configuration request (Primary machine)
```

For more information about these command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.

Example JSON for configuring Oracle Data Guard on Oracle Database Appliance

```
"name": "test1_test7",
"protectionMode": "MAX_PERFORMANCE",
"enableFlashback": true,
"enableActiveDg": false,
"replicationGroups": [
    "sourceEndPoints": [
        "endpointType": "PRIMARY",
        "hostName": "test_domain1",
        "listenerPort": 1521,
        "databaseUniqueName": "test1",
        "ipAddress": "192.214.96.214"
      },
    "endpointType": "PRIMARY",
    "hostName": "test_domain2",
    "listenerPort": 1521,
    "databaseUniqueName": "test1",
```



```
"ipAddress": "192.214.96.215"
    ],
    "targetEndPoints": [
        "endpointType": "STANDBY",
        "hostName": "test_domain1",
        "listenerPort": 1521,
        "databaseUniqueName": "test7",
        "ipAddress": "192.214.108.19"
        "endpointType": "STANDBY",
        "hostName": "test_domain2",
        "listenerPort": 1521,
        "databaseUniqueName": "test7",
        "ipAddress": "192.214.108.20"
    ],
    "transportType": "ASYNC"
]
```

Related Topics

- Oracle Data Guard odacli Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle Database Appliance deployment.
- Configuring Agent Proxy Settings for Object Store Access
 If the Object Store IP address is accessible only through proxy setup by the Oracle
 Database Appliance server, then define the proxy setting for the agent, so that the
 agent can access the Object Store.
- https://www.oracle.com/in/database/technologies/high-availability/maa.html

Viewing Oracle Data Guard Status on Oracle Database Appliance

View Oracle Data Guard status using ODACLI commands.

Viewing Oracle Data Guard Status using ODACLI commands

Follow these steps:

• To view the status of primary and standby databases in your Oracle Data Guard configuration, use the following command:

```
# odacli list-dataguardstatus
```



 To view the status of your specific Oracle Data Guard configuration, use the following command:

```
# odacli describe-dataguardstatus -i 5f0ed48a-366d-454c-a389-
fe367772dbb7
```

For more information about these command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.

Related Topics

Oracle Data Guard odacli Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle Database Appliance deployment.

Performing Oracle Data Guard Operations

Perform failover, switchover, and reinstate operations on Oracle Data Guard using ODACLI commands.

Performing Oracle Data Guard operations using ODACLI commands

Follow these steps:

 To switch roles between the primary database and standby database in your Oracle Data Guard configuration, run the following command on the primary system:

```
# odacli switchover-dataguard -i dg_ID -u
standby_db_unique_name_to_switchover
```

For example:

```
# odacli switchover-dataguard -i 75f23ce0-006a-4aeb-ba6d-
b4b60275c19 -u test_db2
```

Confirm that the switchover of roles completed successfully:

```
# odacli describe-dataguardstatus -i 75f23ce0-006a-4aeb-ba6d-
b4b60275c19
```

 A failover provides for transitioning a standby database in your configuration to take over the primary database role, if all instances of an Oracle RAC primary database fail, or are unreachable.

To failover a standby database to the primary database in your Oracle Data Guard configuration, run the following command on your current **standby** system:

```
# odacli failover-dataguard -i dg_ID -u
standby_db_unique_name_to_failover_to
```



For example:

```
# odacli failover-dataguard -i 75f23ce0-006a-4aeb-ba6d-b4b60275c19
-u test_db2
```

Confirm that the requested database failover to the new primary database has completed successfully:

```
# odacli describe-dataguardstatus -i 75f23ce0-006a-4aeb-ba6d-
b4b60275c19
```

 To reinstate a failed primary database after a failover and convert it to a new standby database in your Oracle Data Guard configuration, run the following command on your new primary system:

```
# odacli reinstate-dataguard -i dg_ID -u db_unique_name_to_reinstate
```

For example:

```
# odacli reinstate-dataguard -i 75f23ce0-006a-4aeb-ba6d-b4b60275c19 -u test db2
```

Confirm that the requested database is reinstated as a new standby database:

```
# odacli describe-dataguardstatus -i 75f23ce0-006a-4aeb-ba6d-
b4b60275c19
```

For more information about these command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.

Related Topics

Oracle Data Guard odacli Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle Database Appliance deployment.

Creating an Oracle Data Guard Network

Create an Oracle Data Guard network and associate it with a database using ODACLI commands.

Configuring an Oracle Data Guard Network using ODACLI commands

You can configure Oracle Data Guard using a network of type Public, Database, or Dataguard.

Follow these steps:

Create the network:

```
# odacli create-network -n btbond1 -t VLAN -p 192.209.10.227 -w
Dataguard -no-d -s 255.255.255.240 -v 369 -g 192.209.10.225
```



2. View the new network:

```
# odacli list-networks
NTC
          Interface Type Subnet Mask
                                      Gateway
VLAN ID Node Networks
______
836cfa4b-5d2c-45e3-a62d-099fc7c57984 Private-network
     INTERNAL 255.255.255.240 [ IP Address on
node0: 192.168.16.24 ]
1a312239-761d-4321-84d2-8da406f21e5c Public-network
btbond1.359 VLAN 255.255.255.240
                                      10.209.10.65
359 [ IP Address on node0: 192.209.10.69 ]
f279ac96-5a4a-4b73-86af-lafbdb6ae5d4 vlan369
btbond1.369 VLAN 255.255.255.240
                                      10.209.10.225
369 [ IP Address on node0: 192.209.10.227]
```

3. To attach a network of type Dataguard to a database:

```
# odacli modify-database -in test_db -an vlan369
```

For more information about these command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.

Related Topics

Oracle Data Guard odacli Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your
 Oracle Database Appliance deployment.

Migrating an Oracle Data Guard Database from One System to Another

You can migrate Oracle Data Guard databases using ODACLI commands.

Migrating Oracle Data Guard Database using ODACLI commands

If your database is on an old Oracle Database Appliance hardware model, and you want to move your deployment to a new Oracle Database Appliance hardware, then you can use your Oracle Data Guard configuration on Oracle Database Appliance to migrate from one system to another.

Before you begin:

- Oracle recommends running the primary and the standby databases on separate
 Oracle Database Appliance hardware, so ensure that you have at least two separate Oracle Database Appliance machines.
- The primary and standby systems must be the same Oracle Database Appliance release, and must be on Oracle Database Appliance release 19.8 or later. The instances on the primary and standby databases must have similar configuration for database parameter settings including database version, memory, CPU,



- networking, and storage (Oracle ASM or Oracle ACFS), thus avoiding any unpredictability when the databases switch roles.
- If you have customized the operating system, then ensure that environments on both machines are identical.
- Ensure that your deployment follows Oracle Maximum Availability Architecture (MAA) best practices.

Follow these steps:

1. Take a backup of your primary database to Object Store or External FRA (NFS) with the option to keep archivelogs enabled.

```
# odacli create-backup primary_DB -ka
```

For example:

```
# odacli create-backup --backupType Regular-L0 -in test db -ka
```

2. Save the backup report:

```
# odacli describe-backupreport -i eba406c7-ae46-4d1d-
ale5-3e985397b171 > backup_report_test_db_0620.json
```

The backup report ID is the ID of the backup created in step 1 and can be obtained by running the odacli list-backupreports command.

3. Copy the backup report to the standby system and restore the backup to a standby database.

```
# odacli irestore-database -ro STANDBY
```

If your backup option is Object Store, then specify the Object Store location:

```
# odacli irestore-database -r backup_report.json -u dbUniqueName
-on objectStoreName -bp -ro STANDBY -dh
Password for SYS user:
Rman Backup Encryption Password(s). Multiple passwords needs to be
comma separated.:
```

If your backup option is NFS, then specify the NFS location:

```
odacli irestore-database -r backup_report.json -u dbUniqueName -ro STANDBY
Password for SYS user:
```

4. Copy the trust store file of the standby machine to the primary machine, and set the file permissions to 400.

```
# scp root@standby_host:/opt/oracle/dcs/dcscli/cacerts/opt/
oracle/dcs/dcscli/cacerts.standby_host_name
# chmod 400 /opt/oracle/dcs/dcscli/cacerts.standby_host_name
```



5. Configure Oracle Data Guard, by running the following command on the primary system:

```
# odacli configure-dataguard
Standby site address: test domain
BUI username for Standby site (default: oda-admin):
BUI password for Standby site:
TrustStore path for Standby DCS server (copy from /opt/oracle/dcs/
dcscli/cacerts on Standby site to this machine and set file
permissions to 400): /cacerts.a
TrustStore password for Standby DCS server: TrustStore_Password
Database name for Data Guard configuration: test db
Primary site network for Data Guard configuration [vlan162, Public-
network] (default: vlan162):
Standby site network for Data Guard configuration [Public-network]
(default: Public-network):
Transport type [ASYNC, FASTSYNC, SYNC] (default: ASYNC):
Primary database syspassword:
Primary machine listener port (default: 1521):
Standby machine listener port (default: 1521):
Data Guard configuration name (default: test_db1_test_db2):
Data Guard protection mode [MAX_PROTECTION, MAX_PERFORMANCE,
MAX AVAILABILITY] (default: MAX PERFORMANCE):
Enable Active Data Guard? (Y/N, default:N): Y
The TrustStore of the Standby site should be removed unless it is
necessary for some other purpose. Do you want to delete it? (Y/N,
default:Y): n
As a requirement, Standby database's SYS password will be set to
Primary database's after Data Guard configuration. Are you sure you
want to proceed? (Y/N): y
Data Guard configuration for database 'test_db' started
*******************
Step 1: Validate Data Guard configuration request (Primary site)
Description: Validate DG Config Creation
Job ID: a7053469-1bbe-4fb9-b559-5a3a0d976d7c
Started
Validate create Data Guard configuration request
Finished
******************
*******
Step 2: Validate Data Guard configuration request (Standby site)
Description: Validate DG Config Creation
Job ID: e240ec9a-c9bb-472a-9b26-2549c0b1d0b9
Started
Validate create Data Guard configuration request
**********************
*******
Step 3: Download password file from Primary database (Primary site)
Description: Download orapwd file from Primary database
Started
Prepare orapwd file for Primary database test_db
*******************
```



```
*********
Step 4: Upload password file to Standby database (Standby site)
Description: Upload orapwd file to Standby database
Write orapwd file to Standby database test_db
Finished
*********************
*******
Step 5: Configure Primary database (Primary site)
Description: DG Config service creation - ConfigurePrimary
Job ID: 8e3ccee3-4ee0-4c78-be9f-7c5a991ca680
Started
Configure host DNS on primary env
Configure Data Guard Tns on primary env
Enable Data Guard related Db parameters for primary env
Enable force logging and archivelog mode in primary env
Enable FlashBack
Configure network parameters for local listener on primary env
Restart listener on primary env
Create services for primary db
Finished
******************
*********
Step 6: Configure Standby database (Standby site)
Description: DG Config service creation - ConfigureStandby
Job ID: 55520496-24d8-4c6f-8b67-3ff59a86a79a
Started
Configure Data Guard Tns on standby env
Configure host DNS on standby env
Clear Data Guard related Db parameters for standby env
Enable Data Guard related Db parameters for standby env
Enable force logging and archivelog mode in standby env
Populate standby database metadata
Configure network parameters for local listener on standby env
Reset Db sizing and hidden parameters for ODA best practice
Restart listener on standby env
Create services for standby db
Finished
******************
Step 7: Configure and enable Data Guard (Primary site)
Description: DG Config service creation - ConfigureDg
Job ID: c79dea2d-3d2f-4179-bbe2-aee254d5ec32
Started
Config and enable Data Guard
Post check Data Guard configuration
Finished
**********************
Step 8: Enable Flashback (Standby machine)
Description: DG Config service creation - EnableFlashback
Job ID: 8220286f-e6d6-4a37-a886-ae9af7c29a6e
Started
Enable FlashBack
Finished
```



```
******************
*******
Step 9: Enable Active Data Guard (Standby machine)
Description: DG Config service creation - EnableActivedg
Job ID: 3117c046-2d71-453d-9950-c85bed19f5f2
Started
Open standby db
Restart standby db
Finished
*******
Step 10: Create Data Guard status (Primary site)
Description: DG Status service creation - NewDgconfig
Job ID: 6fb707c5-5f9f-41ab-bc89-7da5e3f3996c
Started
Create Data Guard status
Finished
********************
*******
Step 11: Create Data Guard status (Standby site)
Description: DG Status service creation - NewDgconfig
Job ID: d47aad99-0e64-40aa-bffd-6f76ec00555d
Started
Create Data Guard status
Finished
*********************
Configure Data Guard test_db1_test_db2 completed
********************
*******
```

Note: The *TrustStore_password* is the value in the <code>TrustStorePassword</code> field in the <code>/opt/oracle/dcs/dcscli/dcscli.conf</code> file on the standby system.

6. Check the status of Oracle Data Guard and ensure it is working:

```
# odacli describe-dataguardstatus
```

7. Switch over to the standby database:

```
# odacli switchover-dataguard -i 75f23ce0-006a-4aeb-ba6d-
b4b60275c19 -u houdg02
```

8. Deconfigure Oracle Data Guard. The process also deletes the standby database on the old Oracle Database Appliance hardware machine.

```
# odacli deconfigure-dataguard -i 8396aac4-f7e7-42e4-
a2e8-0cbbc89ce31b
Standby site address: test_domain
BUI username for Standby site (default: oda-admin):
BUI password for Standby site:
TrustStore path for Standby DCS server (copy from /opt/oracle/dcs/dcscli/cacerts on Standby site to this site and set file
permissions to 400): /cacerts.a
```



```
TrustStore password for Standby DCS server:
The TrustStore of the Standby site should be removed unless it is
necessary for some other purpose. Do you want to delete it? (Y/N,
default:Y): n
Standby database will be deleted after Data Guard configuration is
removed. Are you sure you want to proceed? (Y/N): y
Deconfigure Dataguard Started
*********************
*******
Step 1: Deconfigure Data Guard (Primary site)
Description: Deconfigure DG service
Job ID: 8deb3e4c-09cd-4593-8184-f7706dd2ec8a
Started
Deconfigure Data Guard service
Cleanup broker resources
Finished
******************
*******
Step 2: Delete Data Guard status (Primary site)
Description: DG Status service creation - UpdateDgconfig
Job ID: 59c61629-6c7d-474c-8c29-c0a9565d91a3
Started
Update Data Guard status
Finished
********************
*******
Step 3: Delete Data Guard status (Standby site)
Description: DG Status service creation - UpdateDgconfig
Job ID: 93dcf4cd-1019-4bcd-984a-d3efeb3fae6e
Started
Update Data Guard status
Finished
******************
*******
Step 4: Delete Standby database (Standby site)
Description: Database service deletion with db name: test_db with
id : 30dd49da-a54f-4a9a-abbf-d3a4e39abee5
Job ID: 0b1cb921-fd41-4e01-86df-beff3adb6de0
Started
Validate db 30dd49da-a54f-4a9a-abbf-d3a4e39abee5 for deletion
Database Deletion
Unregister Db From Cluster
Kill Pmon Process
Database Files Deletion
Deleting Volume
Delete File Groups of Database test_db
Finished
**********************
Data Guard configuration is removed
```

For more information about these command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.

Related Topics

Oracle Data Guard odacli Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle Database Appliance deployment.

Patching Oracle Data Guard Databases on Oracle Database Appliance

Understand how you can patch primary and standby databases on Oracle Data Guard using ODACLI commands.

Patching Oracle Data Guard primary and standby databases using ODACLI commands

Before patching the database homes, upload the RDBMS Clone Files for the database version, to the repository. See *Updating Oracle Database Appliance Repository with Database Clone Files Using the CLI* for the procedure to update the repository with the latest RDBMS Clone Files. Also ensure that the primary Oracle Database Appliance system and the standby Oracle Database Appliance system are on the same Oracle Database Appliance release. It is recommended that the two systems be on the latest Oracle Database Appliance release. See *Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line* for the procedure to patch your Oracle Database Appliance deployment.

Follow these steps to patch the databases in your Oracle Data Guard configuration on Oracle Database Appliance:

1. Run the following command on the standby database:

```
# odacli update-dbhome
```

2. After patching job on the standby database is successful, run the following command on the primary database:

```
# odacli update-dbhome
```

3. Confirm that the patching jobs are successful:

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

4. Confirm the existing Data Guard configuration is working properly by running the following command on both primary and standby systems:

```
odacli describe-dataguardstatus -i dgid
```

For more information about these command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.



Upgrading Oracle Data Guard Databases on Oracle Database Appliance

Understand how you can upgrade primary and standby databases on Oracle Data Guard using ODACLI commands.

Upgrading Oracle Data Guard primary and standby databases using ODACLI commands

Before upgrading the database homes, upload the RDBMS Clone Files for the database version, to the repository. See *Updating Oracle Database Appliance Repository with Database Clone Files Using the CLI* for the procedure to update the repository with the latest RDBMS Clone Files. Ensure that the primary Oracle Database Appliance system and the standby Oracle Database Appliance system are on the same Oracle Database Appliance release, and on Oracle Database Appliance release 19.8 or later. It is recommended that the two systems be on the latest Oracle Database Appliance release. See *Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line* for the procedure to patch your Oracle Database Appliance deployment.

Follow these steps to upgrade the databases in your Oracle Data Guard configuration on Oracle Database Appliance:

1. Run the following command to disable log transport and apply:

```
EDIT DATABASE primary_database SET STATE='TRANSPORT-OFF';
EDIT DATABASE standby_database SET STATE='APPLY-OFF';
```

2. Upgrade the standby database:

```
# odacli upgrade-database -i standby_databaseId -to
destination DbHomeId
```

Upgrade the primary database:

```
# odacli upgrade-database -i primary_databaseId -to
destination DbHomeId
```

4. Run the following command to enable log transport and apply:

```
EDIT DATABASE primary_database SET STATE='TRANSPORT-ON';
EDIT DATABASE standby_database SET STATE='APPLY-ON';
```

5. Confirm the existing Data Guard configuration is working properly by running the following command on both primary and standby systems several times:

```
odacli describe-dataguardstatus -i dgid
```

For more information about these command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.



Related Topics

Oracle Data Guard odacli Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle Database Appliance deployment.

Enabling Oracle Active Data Guard on Existing Configurations

Understand how you can enable Oracle Active Data Guard on existing configurations.

Oracle Active Data Guard is licensed option to the Oracle Database Enterprise Edition and enables advanced capabilities that extend the basic Oracle Data Guard functionality.

Oracle Active Data Guard function requires database to be open as read-only while enabling the *redo log apply* option. Follow these steps to enable Oracle Active Data Guard on existing configurations:

1. Modify database to have read-only start option:

```
srvctl modify database -d standby_db_unique_name -startoption "read
only"
srvctl stop database -d standby_db_unique_name
srvctl start database -d standby_db_unique_name
```

To check if Oracle Data Guard has read-only start option set, run the following command:

```
srvctl config database -d standby_db_unique_name | grep "Start
options"
```

2. Enable redo log apply by running the following PL/SQL commands:

```
ALTER DATABASE RECOVER MANAGED STANDBY DATABASE CANCEL;
ALTER DATABASE RECOVER MANAGED STANDBY DATABASE DISCONNECT FROM
SESSION;
```

Deconfiguring Oracle Data Guard on Oracle Database Appliance

Deconfigure Oracle Data Guard status using ODACLI commands.

Deconfiguring Oracle Data Guard Status using ODACLI commands

Follow these steps:

 To deconfigure Oracle Data Guard and delete the standby database, run the following command on the primary system:

```
# odacli deconfigure-dataguard -i 8396aac4-f7e7-42e4-
a2e8-0cbbc89ce31b
```



```
Standby site address: test_domain
BUI username for Standby site (default: oda-admin):
BUI password for Standby site:
TrustStore path for Standby DCS server (copy from /opt/oracle/dcs/
dcscli/cacerts on Standby site to this site and set file
permissions to 400): /cacerts.a
TrustStore password for Standby DCS server:
The TrustStore of the Standby site should be removed unless it is
necessary for some other purpose. Do you want to delete it? (Y/N,
default:Y): n
Standby database will be deleted after Data Guard configuration is
removed. Are you sure you want to proceed? (Y/N): y
Deconfigure Dataguard Started
*******************
*******
Step 1: Deconfigure Data Guard (Primary site)
Description: Deconfigure DG service
Job ID: 8deb3e4c-09cd-4593-8184-f7706dd2ec8a
Deconfigure Data Guard service
Cleanup broker resources
Finished
*********************
*******
Step 2: Delete Data Guard status (Primary site)
Description: DG Status service creation - UpdateDgconfig
Job ID: 59c61629-6c7d-474c-8c29-c0a9565d91a3
Update Data Guard status
********************
*******
Step 3: Delete Data Guard status (Standby site)
Description: DG Status service creation - UpdateDgconfig
Job ID: 93dcf4cd-1019-4bcd-984a-d3efeb3fae6e
Started
Update Data Guard status
Finished
******************
*******
Step 4: Delete Standby database (Standby site)
Description: Database service deletion with db name: test_db with
id : 30dd49da-a54f-4a9a-abbf-d3a4e39abee5
Job ID: 0b1cb921-fd41-4e01-86df-beff3adb6de0
Started
Validate db 30dd49da-a54f-4a9a-abbf-d3a4e39abee5 for deletion
Database Deletion
Unregister Db From Cluster
Kill Pmon Process
Database Files Deletion
Deleting Volume
Delete File Groups of Database test db
Finished
```



Data Guard configuration is removed

For deconfiguring Oracle Data Guard, you must specify the Oracle Data Guard Configuration ID. Run the odacli list-dataguardstatus command to find the Oracle Data Guard Configuration ID.

For more information about these command options, see the *Oracle Database Appliance Command Line Reference* chapter in this guide.

Related Topics

Oracle Data Guard odacli Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your
 Oracle Database Appliance deployment.



Managing an Oracle Database Appliance Virtualized Platform

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

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

- About Oracle Database Appliance Virtualized Platform
 You can use Oracle VM to optimize your system resource use for databases and
 applications.
- Oracle Database Appliance Virtualized Platform Architecture
 Review these topics to understand Oracle Database Appliance Virtualized
 Platform, and how you can use it to optimize system resource use.
- About Network Infrastructure and VLANs on Oracle Database Appliance Virtualized Platform
 Oracle Database Appliance Virtualized Platform supports multiple VLANs on the same network port or bond.
- Configuring Additional Networks on Virtualized Platform
 Use the oakcli configure additionalnet command to create additional networks.
- Adding a Network Interface on Virtualized Platform
 Understand how you can add a network interface on Virtualized Platform.
- Deleting a Network on Virtualized Platform
 Understand how you can delete a configured network on Virtualized Platform.
- Deleting a Network Interface on Virtualized Platform
 Understand how you can delete a configured network interface on Virtualized Platform.
- How to Create and Manage Shared Repositories
 These topics describe how to use OAKCLI to create and manage shared repositories on Oracle Database Appliance Virtualized Platform.
- How to Manage Virtual Disks in Shared Repositories
 These topics describe how to use OAKCLI to create, view, clone, attach, and delete virtual disks on Oracle Database Appliance Virtualized Platform.
- How to Manage Virtual Machine Templates
 These topics describe how to use OAKCLI to import, configure, modify and check virtual machine templates on Oracle Database Appliance Virtualized Platform.
- How to Create Clones and Snap Clones of a Template
 Review these topics for an overview of clones and snap clones, and for
 procedures to use to create clones.

 How to Manage Virtual Machines on Oracle Database Appliance Virtualized Platform

Review these topics for an overview of virtual machines, and for procedures to create and manage virtual machines.

- How to Create Driver Domain Virtual Machines
 Use driver domain virtual machines to improve performance.
- How to Manage High Availability on Oracle Database Appliance Virtualized Platform

Use the oakcli configure vm command to configure high availability services for your virtual machines.

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

About Oracle Database Appliance Virtualized Platform

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

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

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

Note:

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

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

Why Virtualize?

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

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



- Deploy database and applications in a single hardware environment.
- Use the pre-configured VM application templates to rapidly deploy database and applications.
- Run the database in a virtual machine (ODA_BASE) with direct access to storage (for native performance).
- Control licensed CPUs by configuring ODA_BASE domain with the required number of CPU cores (and memory).
- Use your CPU cores (and memory) efficiently. CPU cores not assigned to the ODA_BASE domain are not wasted and are available for use by other, nondatabase virtual machines.
- Use virtual local area networks (VLANs) to provide separate networks to different virtual machines.
- Use shared repository to grow storage for the virtual machine (VM) repository.
- Improves data center efficiency by increasing space utilization and reducing energy consumption and cooling costs.

Oracle Database Appliance Virtualized Platform Architecture

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

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

About Oracle Database Appliance Virtualized Platform Architecture

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

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

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



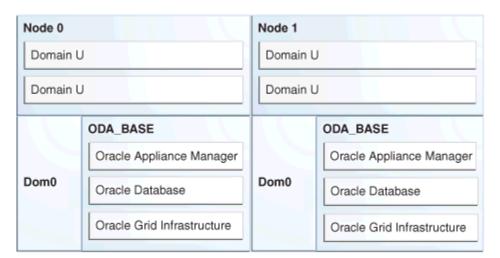


Figure 13-1 Oracle Database Appliance Virtualized Platform Architecture

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

About Virtual Machines and Oracle Database Appliance Virtualized Platforms

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

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



Virtual Machine Templates

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

Virtual Machine Assemblies

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

Domains, Guests and Virtual Machines

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

Virtual Disks

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

A *driver domain* is a user domain that has special privileges and responsibilities for a particular piece of hardware. When you use the driver domain option, the newly created virtual disks are mounted directly from <code>ODA_BASE</code> to a guest virtual machine. The option improves performance by enabling guest virtual machines to use <code>ODA_BASE</code> instead of <code>Dom0</code> to access virtual disks. The driver domain option is available beginning with release 12.1.2.7.0 and is supported with Oracle Linux, Windows, and Oracle Solaris x86 guest operating systems. Live migration of driver domain virtual machines is not supported.

Shared Repositories

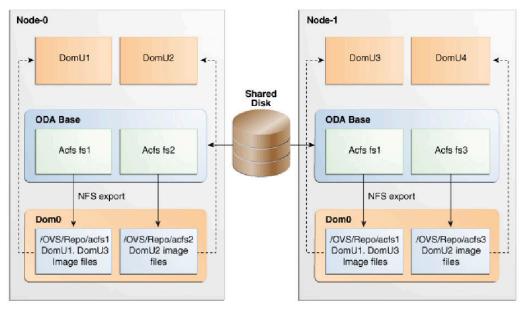
A *shared repository* is a central location for storing resources that are essential to creating and managing virtual machines. These resources include virtual machine templates and assemblies, ISO files (virtual DVD images), virtual machine configuration files, and virtual disks. Shared repositories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



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

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

Figure 13-2 Architecture Overview of Oracle Database Appliance Virtualized Platform Shared Repositories



With the configuration shown in the illustration, you can:

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



Note:

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

About Network Infrastructure and VLANs on Oracle Database Appliance Virtualized Platform

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

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

The physical ports in the system at deployment (either copper or fiber) are bonded as bond0 to bond5. The VLAN is created on bond0/net1 to bond5/net6, if they are available.

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

Configuration Overview of Oracle Database Appliance Virtual Machine Local Area Networks

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

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

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

oakcli modify vm myvml -addnetwork net1

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



About Network Infrastructure and VLANs on Oracle Database Appliance Virtualized Platform

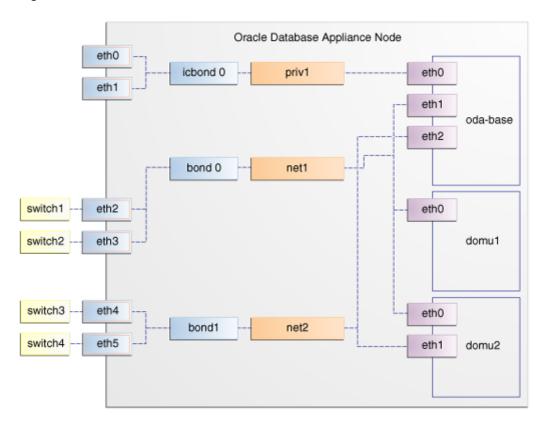


Figure 13-3 Basic Virtual Machine Local Area Network

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



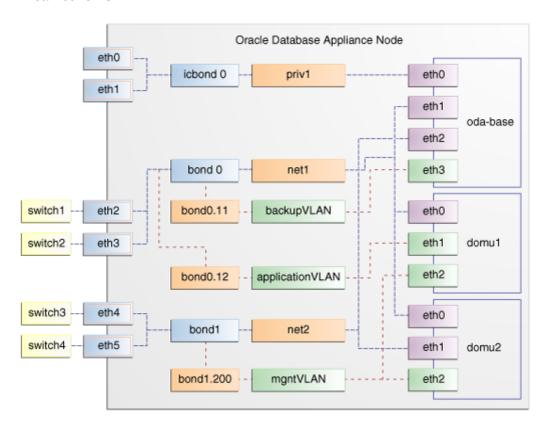


Figure 13-4 Oracle Database Appliance Virtualized Platform with Virtual Local Area Networks

Configuring Additional Networks on Virtualized Platform

Use the oakcli configure additional networks.

The oakcli configure additionalnet command runs an interactive script that requires you to provide the interface name, DHCP [Y/N], IP address, and netmask.

Example of Creating an Additional Network

When you run the command on Dom0, the interface name expects a net name. If you run the command on Dom1, then the interface name expects an eth name.

oakcli configure additionalnet

Related Topics

oakcli configure additionalnet
 Use the oakcli configure additionalnet command to configure any unconfigured public networks in bare metal, Domain 0, and ODA BASE.



Adding a Network Interface on Virtualized Platform

Understand how you can add a network interface on Virtualized Platform.

This procedure explains how to add a network interface card on Oracle Database Appliance X8-2.

- 1. Power off the appliance.
- 2. Add the network interface card.
- 3. Power on the appliance.
- 4. The network bridge is automatically created.
- Attach the network interface to ODA_BASE, VM, and VM_Template by running the commands oakcli configure oda_base, oakcli modify vm, and oakcli modify vmtemplate.

```
[root@oak ~]# oakcli configure oda_base
Core Licensing Options:
        1. 2 CPU Cores
        2. 4 CPU Cores
        3. 6 CPU Cores
        4. 8 CPU Cores
        5. 10 CPU Cores
        6. 12 CPU Cores
        7. 14 CPU Cores
        8. 16 CPU Cores
        9. 18 CPU Cores
        10. 20 CPU Cores
        11. 22 CPU Cores
        12. 24 CPU Cores
        13. 26 CPU Cores
        14. 28 CPU Cores
        15. 30 CPU Cores
        16. 32 CPU Cores
        Current CPU Cores
        Selection[1 .. 16](default 32 CPU Cores)
        ODA base domain memory in GB(min 16, max 362)(Current
Memory 200G)[default 362] : 200
Additional vlan networks to be assigned to oda_base ? (y/n) [n]:
Vlan network to be removed from oda_base ? (y/n) [n]:
Additional networks to be assigned to oda_base ? (y/n) [n]: y
Select the network to assign (net3): net3
Additional networks to be assigned to oda_base ? (y/n) [n]: y
INFO: No networks to add !
Network to be removed from oda_base ? (y/n) [n]:
INFO: Node 0:Configured oda base pool
INFO: Node 1:Configured oda base pool
INFO: Node 0:ODA Base configured with new memory
INFO: Node 0:ODA Base configured with new vcpus
INFO: Node 0:New vlans added in ODA Base
INFO: Changes will be incorporated after the domain is restarted on
Node 0.
```



```
INFO: Node 1:ODA Base configured with new memory
INFO: Node 1:ODA Base configured with new vcpus
INFO: Node 1:New vlans added in ODA Base
INFO: Changes will be incorporated after the domain is restarted on
Node 1.
INFO: Updating /etc/sysctl.conf in oda_base domain with parameter
"vm.nr_hugepages=53776"
INFO: Updating /etc/security/limits.conf in oda_base domain with
new memlock value 150000000
```

6. Identify the bridge assigned to each Virtual Machine.

```
[root@oak ~]# oakcli show oda_base
ODA base domain
ODA base CPU cores
ODA base domain memory :200
ODA base template
                        :/OVS/templateBuild-2019-09-16-03-34.tar.qz
                        :['priv1', 'net1', 'net4', 'vlan10', 'net3']
ODA base vlans
ODA base current status : Running
[root@oak ~]# oakcli restart oda_base
INFO: Stopping ODA base domain...
INFO: Stopping all the shared repos
On ODA BASE, run:
[root@oak ~]# ls -l /sys/class/net/
total 0
lrwxrwxrwx 1 root root 0 Oct 17 11:41 eth0 -> ../../devices/
vif-0/net/eth0
lrwxrwxrwx 1 root root 0 Oct 17 11:41 eth1 -> ../../devices/
vif-1/net/eth1
lrwxrwxrwx 1 root root 0 Oct 17 11:41 eth2 -> ../../devices/
vif-2/net/eth2
lrwxrwxrwx 1 root root 0 Oct 17 11:41 eth3 -> ../../devices/
vif-3/net/eth3
lrwxrwxrwx 1 root root 0 Oct 17 11:41 lo -> ../../devices/
virtual/net/lo
```

7. Restart ODA_BASE and verify that the new network interface displays in ODA_BASE:

```
# oakcli restart oda_base
# ls -l /sys/class/net/
total 0
lrwxrwxrwx 1 root root 0 Oct 17 12:15 eth0 -> ../../devices/
vif-0/net/eth0
lrwxrwxrwx 1 root root 0 Oct 17 12:15 eth1 -> ../../devices/
vif-1/net/eth1
lrwxrwxrwx 1 root root 0 Oct 17 12:15 eth2 -> ../../devices/
vif-2/net/eth2
```

```
lrwxrwxrwx 1 root root 0 Oct 17 12:15 eth3 -> ../../devices/
vif-3/net/eth3
lrwxrwxrwx 1 root root 0 Oct 17 12:15 eth4 -> ../../devices/
vif-4/net/eth4
lrwxrwxrwx 1 root root 0 Oct 17 12:15 lo -> ../../devices/
virtual/net/lo
```

Deleting a Network on Virtualized Platform

Understand how you can delete a configured network on Virtualized Platform.

This procedure explains how to delete a network on Oracle Database Appliance X8-2 Virtualized Platform.

1. Delete the network.

rctl show bridge id	STP enabled	interfaces
8000.b02628321ca0	no	bond0 vif1.1
8000.3cfdfe7a0e33	no	bond3
8000.0010e0dd9c2a	no	eth2
8000.b0262831f3b0	no	icbond0 vif1.0
8000.b02628321ca0	no	bond0.10 vif1.3
	bridge id 8000.b02628321ca0 8000.3cfdfe7a0e33 8000.0010e0dd9c2a 8000.b0262831f3b0	bridge id STP enabled 8000.b02628321ca0 no 8000.3cfdfe7a0e33 no 8000.0010e0dd9c2a no 8000.b0262831f3b0 no

[root@oak ~]# oakcli delete network bond3
Network bond3 has been deleted successfully

2. Verify that the network interface and the corresponding bridge are deleted.

[root@oak ~]# brctl show

bridge name net1	bridge id 8000.b02628321ca0	STP enabled no	interfaces bond0 vif1.1
net3	8000.3cfdfe7a0e30	no	bond2 vif1.2
net7	8000.0010e0dd9c2a	no	eth2
priv1	8000.b0262831f3b0	no	icbond0
			vif1.0
vlan10	8000.b02628321ca0	no	bond0.10

Deleting a Network Interface on Virtualized Platform

Understand how you can delete a configured network interface on Virtualized Platform.

This procedure explains how to delete a network interface card on Oracle Database Appliance X8-2.



 Detach the network interface card from the Virtualized Platform, including ODA BASE, VM, and VM Template.

```
[root@oak ~]# ls -l /sys/class/net/
total 0
lrwxrwxrwx 1 root root 0 Oct 14 22:36 eth0 -> ../../devices/
vif-0/net/eth0
lrwxrwxrwx 1 root root 0 Oct 14 22:36 eth1 -> ../../devices/
vif-1/net/eth1
lrwxrwxrwx 1 root root 0 Oct 14 22:36 eth2 -> ../../devices/
vif-2/net/eth2
lrwxrwxrwx 1 root root 0 Oct 14 22:36 eth3 -> ../../devices/
vif-3/net/eth3
lrwxrwxrwx 1 root root 0 Oct 14 22:35 lo -> ../../devices/
virtual/net/lo
[root@oak ~]# oakcli configure oda base
Core Licensing Options:
        1. 2 CPU Cores
        2. 4 CPU Cores
        3. 6 CPU Cores
        4. 8 CPU Cores
        5. 10 CPU Cores
        6. 12 CPU Cores
        7. 14 CPU Cores
        8. 16 CPU Cores
        9. 18 CPU Cores
        10. 20 CPU Cores
        11. 22 CPU Cores
        12. 24 CPU Cores
        13. 26 CPU Cores
        14. 28 CPU Cores
        15. 30 CPU Cores
        16. 32 CPU Cores
        Current CPU Cores
                                :28
        Selection[1 .. 16](default 32 CPU Cores)
        ODA base domain memory in GB(min 16, max 362)(Current
Memory 200G)[default 362] : 200
Additional vlan networks to be assigned to oda_base ? (y/n) [n]:
Vlan network to be removed from oda_base ? (y/n) [n]:
Additional networks to be assigned to oda_base ? (y/n) [n]: y
INFO: No networks to add!
Network to be removed from oda base ? (y/n) [n]: y
Select the network to remove (net1,net3,net4): net3
Network to be removed from oda base ? (y/n) [n]:
INFO: Node 0:Configured oda base pool
INFO: Node 1:Configured oda base pool
INFO: Node 0:ODA Base configured with new memory
INFO: Node 0:ODA Base configured with new vcpus
INFO: Node 0:Vlans removed from ODA Base
INFO: Changes will be incorporated after the domain is restarted on
INFO: Node 1:ODA Base configured with new memory
```

INFO: Node 1:ODA Base configured with new vcpus

INFO: Node 1:Vlans removed from ODA Base

INFO: Changes will be incorporated after the domain is restarted on

INFO: Updating /etc/sysctl.conf in oda_base domain with parameter

"vm.nr_hugepages=53776"

INFO: Updating /etc/security/limits.conf in oda_base domain with new memlock value 150000000

[root@oak ~]# oakcli show oda_base

ODA base domain

ODA base CPU cores :28 ODA base domain memory :200

ODA base template :/OVS/templateBuild-2019-09-16-03-34.tar.gz

ODA base vlans :['priv1', 'net1', 'net4', 'vlan10']

ODA base current status : Running

[root@oak ~]# oakcli modify vmtemplate vmtemp1 -deletenetwork net3 Modify Network succeeded

[root@oak ~]# oakcli modify vmtemplate vmtemp1 -deletenetwork net3 Modify Network succeeded

- 2. Power off the appliance.
- 3. Remove the network interface card.
- 4. Power on the appliance.
- 5. Run the command oakcli delete network network_name to delete the network interface and the corresponding bridge.

oakcli delete network network_name

[root@oak ~]# oakcli delete-network bond2 Network bond2 has been deleted successfully

6. Verify that the network interface and the corresponding bridge are deleted.

[root@oak ~]# brctl show

bridge name	bridge id	STP enabled	interfaces
net1	8000.b02628321ca0	no	bond0 vif1.1
net3	8000.3cfdfe7a0e30	no	bond2 vif1.2
net7	8000.0010e0dd9c2a	no	eth2
priv1	8000.b0262831f3b0	no	icbond0 vif1.0
vlan10	8000.b02628321ca0	no	bond0.10



How to Create and Manage Shared Repositories

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

Creating a Shared Repository

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

Showing the Status of Shared Repositories

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

Starting a Shared Repository

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

Stopping a Shared Repository

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

Deleting a Shared Repository

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

Increasing the Size of a Shared Repository

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

Creating a Shared Repository

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

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

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

Example of Creating a Shared Repository

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

oakcli create repo repol -dg data -size 30



Showing the Status of Shared Repositories

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

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

Example 13-1 Example of Showing the Status of All Shared Repositories

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

```
# oakcli show repo
NAME
        TYPE NODENUM FREE SPACE STATE SIZE
odarepol local 0
                      N/A
                                 N/A
                                        N/A
odarepo2 local 1
                                 N/A
                      N/A
                                        N/A
srepol shared 0
                       76.24%
                                 ONLINE 1024000.0M
srepol shared 1
                       76.24%
                                 ONLINE 1024000.0M
```

Example 13-2 Example of Showing the Status of a Selected Shared Repository

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

```
# oakcli show repo srepo1 -node 0
The Resource is : srepo1_0
    AutoStart : restore
    DG : RECO
    Device : /dev/asm/srepo1-402
    ExpectedState : Online
    FreeSpace : 780688.2M
    MountPoint : /u01/app/sharedrepo/srepo1
    Name : srepo1_0
    PFreeSpace : 76.24%
    RepoType : shared
    Size : 1024000.0M
    State : Online
    Version : 2
```

Starting a Shared Repository

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

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

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



Example 13-3 Example of Starting a Shared Repository

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

oakcli start repo repol -node 1

Stopping a Shared Repository

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

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



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

Example 13-4 Example of Stopping a Shared Repository

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

oakcli stop repo repo1 -node 0

Deleting a Shared Repository

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

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



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

Example 13-5 Example of Deleting a Shared Repository

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

oakcli delete repo repo1



Increasing the Size of a Shared Repository

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

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

Example 13-6 Example of Increasing the Size of a Shared Repository

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

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

How to Manage Virtual Disks in Shared Repositories

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

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

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

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

Creating a Virtual Disk for Use in a Shared Repository

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

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

The name of the vdisk you create is defined by the command <code>oakcli</code> <code>create vdisk name</code>, where <code>name</code> is the name of the vdisk you create. Identify the repository in which you create the vdisk by using the <code>-repo</code> <code>reponame</code> option, where <code>reponame</code> identifies

the repository where you want to create the vdisk. Use the option $-size \ sizeG$ to specify the vdisk size (in gigabytes), where sizeG is the size (in gigabytes) that you want to add to the configured size. If you want to configure the vdisk as a shared disk, then use the option $-type \ shared$ to designate the vdisk as a shared disk.

Example 13-7 Example of Creating a Shared Virtual Disk

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

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

Viewing Information About Virtual Disks

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

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

Example 13-8 Example of Displaying the Information for All Vdisks

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

Example 13-9 Example of Displaying Information for a Single Vdisk

This example displays information for the virtual disk named myvdisk1:

Cloning Virtual Disks

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

The command oakcli clone vdisk defines the size of the virtual disk, the shared repository in which that disk is created, defines the unique name for that disk within

that shared repository, and defines if the disk is used for one virtual machine, or can be shared by multiple virtual machines.

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



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

Syntax

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

Example 13-10 Example of Cloning a Virtual Disk

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

oakcli clone vdisk my_vdisk2 -repo vrepo1 -src vdisk1

Attaching a Virtual Disk to a Virtual Machine

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

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

Example 13-11 Example of Attaching a Virtual Disk To a Virtual Machine

This example attaches the virtual disk named sdisk1 to the virtual machine named myol6u test:

oakcli modify vm myo16u_test -attachvdisk sdisk1

Deleting a Virtual Disk

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

The command oakcli delete vdisk vdiskname removes a virtual disk, where vdiskname is the name of the virtual disk that you want to remove. The option -repo



reponame indicates the shared repository on which the virtual disk is located, where reponame is the name of the shared repository.

Example 13-12 Example of Deleting a Virtual Disk from a Shared Repository

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

oakcli delete vdisk t2g -repo repoprod1

How to Manage Virtual Machine Templates

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

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

About Managing Virtual Machine Templates

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

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

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



Templates imported into local nodes use the repository name supplied in the import command to identify the node that completes the import, and that provides the storage. On Node 0, the local repository is named <code>odarepo1</code> and on Node 1, the local repository is named <code>odarepo2</code>. If you want to import a template to both local repositories, then you must provide a different template name when you import the template into the second node.



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

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

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



Find virtual machine templates at the following URL:

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

Listing Virtual Machine Templates

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

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

Example

Display information about the sample1_odarepo1 virtual template:

oakcli show vmtemplate sample_odarepo1
Resource: sample1_odarepo1

CPUPriority : 10

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

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

darepo1/u01.img,xvdb,w

Domain : XEN_PVM



Keyboard : en-us
MaxMemory : 2048
MaxVcpu : 2
Memory : 2048
Mouse : OS_DEFAULT
Name : sample1_odarepo1

Networks : |bridge=priv1||bridge=net1||bridge=

net2

 NodeNum
 :
 0

 OS
 :
 OL_5

 ProcessorCap
 :
 100

 RepoName
 :
 odarepol

Vcpu : 2

Importing Virtual Machine Templates

Use the oakcli import vmtemplate command to import virtual machine templates and assemblies on Oracle Database Appliance Virtualized Platforms.

You import virtual machine templates and assemblies contained in an external repository assembly file. Use the name of the shared repository and include a clause to identify the node where you want to import a template or an assembly.

You can import virtual machine templates and assemblies directly from a remote repository using a URL to identify the source of the files. You can choose to use a remote copy command to copy files from the remote repository into your Dom0 /OVS directory, and then import the files using the path and names to identify the downloaded files.



When importing templates or assemblies to a local repository, do not use the -node option. The target node is implicit in the name of the repository.

Syntax

```
\# oakcli import vmtemplate vmtemplatename -files image_files | -assembly assembly_file -repo repo_name [- node 0 | 1 ]
```

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

Use the oakcli import vmteplate *vmtemplatename* -assembly *assembly_file* - repo *repo_name* command to import virtual machine templates contained in an external template repository assembly file.

This example imports the template in an external template repository assembly file located at the URL 'http://example.com/assemblies/OEL6/



OVM_OL6U1_x86_PVHVM.ova' to a new template named OL6U1 in a new repository named odarepo1:

```
# oakcli import vmtemplate OL6U1 -assembly 'http://example.com/
assemblies/OEL6/OVM_OL6U1_x86_PVHVM.ova' -repo odarepo1
```

Note the single quotation marks that enclose the URL.

Example 13-14 Example of Importing a Virtual Machine Template from Dom0

Use this command syntax to import a virtual machine template from the /OVS file system on Dom0:

```
# oakcli import vmtemplate vmtemplatename -files image_files -repo repo_name
```

This example imports the virtual machine template named OVM_OL5U7_X86_64_PVM_10GB.tgz from the /OVS directory in Dom0 into the odarepo1 repository. The template is assigned the name OL5U7:

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

Example 13-15 Example of Importing a Virtual Machine Template Using an External Repository URL

Use the command oakcli import vmtemplate vmtemplatename -files image_files -repo repo_name to import a virtual machine template file from an external template repository.

This example imports a virtual machine template named OVM_OL5U7_X86_64_PVM_10GB.tgz from an external template repository at the URL 'http://example.com/assemblies/OEL6/OVM_OL6U1_x86_PVHVM.tgz'. Note the single quotation marks that enclose the URL. The template is assigned the name OL5U7, and is imported into the odarpol repository:

```
# oakcli import vmtemplate OL5U7 -files 'http://example.com/assemblies/
OEL6/OVM OL6U1 x86 PVHVM.tqz'-repo odarepo1
```

Configuring a Virtual Machine Template

Use the oakcli configure vmtemplate command to configure a virtual machine template on Oracle Database Appliance Virtualized Platform.

The values become the default values for any virtual machine cloned from this template. You can change any or all of them later with the <code>oakcli configure vm</code> command.

Example

Set values for the virtual machine template named myo15u7 10qb:

oakcli configure vmtemplate myol5u7_10gb -vcpu 2 -maxvcpu 4 -cpucap 40 -memory 1536M -maxmemory 2G -os OTHER_LINUX



- -vcpu 2 sets the number of CPUs to be assigned when the virtual machine starts up to 2.
- -maxvcpu 4 sets the maximum number of CPUs that can be assigned to the virtual machine to 4.
- -cpucap 40 sets the maximum percentage of a CPU's capacity that can be assigned to the virtual machine to 40%.
- -memory 1536M sets the amount of memory to be assigned when the virtual machine starts up to 1536 MB.
- -maxmemory 2G sets the maximum amount of memory that can be assigned to the virtual machine to 2 GB.
- -os OTHER_LINUX sets OTHER_LINUX as the operating system used by the virtual machine.

Showing Configured Values for a Virtual Machine Template

Use the <code>oakcli</code> show <code>vmtemplate</code> command to show values for the configurable options in a virtual machine template.

Example

Display information about the sample1_odarepo1 virtual template:

```
# oakcli show vmtemplate sample_odarepo1
Resource: sample1_odarepo1
       CPUPriority :
                             100
                             |file:/OVS/Repositories/odarepo1/Te
       Disks
                             mplates/otml_sample1_odarepo1/Syste
                             m.img,xvda,w||file:/OVS/Repositorie
                             s/odarepo1/Templates/otml_sample1_o
                             darepo1/u01.img,xvdb,w
       Domain
                             XEN_PVM
       Keyboard
                             en-us
                             2048
       MaxMemory
                            2
       MaxVcpu
       Memory
                           2048
                     :
                            OS_DEFAULT
       Mouse
       Name
                             sample1_odarepo1
       Networks
                     :
                             |bridge=priv1||bridge=net1||bridge=
                             net2
       NodeNum
                     :
                             OL_5
       ProcessorCap :
                             100
       RepoName
                             odarepo1
       Vcpu
```

Modifying a Virtual Machine Template Configuration

Use the oakcli modify vmtemplate command to modify a virtual machine template.

After you import a virtual machine template to a storage repository, examine the template configuration parameters with the <code>oakcli show vmtemplate</code> command. If you need to reconfigure the template for specific requirements, then use the <code>oakcli configure vmtemplate</code> command. This is useful if you plan to deploy multiple virtual machines with the same characteristics from a single template. If you will be deploying

only one virtual machine or many virtual machines but with different characteristics, then set required values in the virtual machines with the <code>oakcli configure vm</code> command after you deploy the template.

When you are satisfied with the configuration of your virtual machine template, use the oakcli modify command to assign a new network to the virtual machine template.

Example

Replace the network assigned to the gc_11g virtual machine template with the net1 network:

oakcli modify vmtemplate gc_11g -addnetwork net1

Removing a Virtual Machine Template

Use the oakcli delete vmtemplate command to remove a virtual machine template.

If you no longer need a template that you previously stored, then you can remove the template from the repository.

Example

Remove the virtual machine template named $myo16u_15gb3$ from Oracle Database Appliance Virtualized Platform:

oakcli delete vmtemplate my016u_15gb3

How to Create Clones and Snap Clones of a Template

Review these topics for an overview of clones and snap clones, and for procedures to use to create clones.

- About Creating Clones and Snap Clones of a Template
 You can create, or clone, virtual machines from imported templates (or
 assemblies) or from an existing virtual machine on Oracle Database Appliance
 Virtualized Platforms.
- Cloning a Template With OAKCLI
 Use the oakcli clone vm command to clone virtual machines that have attached virtual disks on Oracle Database Appliance Virtualized Platforms.
- Creating a Snap Clone from a Template With OAKCLI
 Use the oakcli clone vm command to create a snap clone of a virtual machine template on Oracle Database Appliance Virtualized Platforms.
- Creating a Snap Clone of an Existing Virtual Machine With OAKCLI
 Use the oakcli clone vm command to create a snap clone of an existing
 virtual machine on Oracle Database Appliance Virtualized Platforms.

About Creating Clones and Snap Clones of a Template

You can create, or *clone*, virtual machines from imported templates (or assemblies) or from an existing virtual machine on Oracle Database Appliance Virtualized Platforms.



Clones and snap clones can be an effective way to provision and clone new databases for test and development systems. They are much more efficient to create than using RMAN scripts, or other cloning approaches.

You can create virtual machines that are a complete clone of the template or assembly, or you can create virtual machines that are snap clones. Snap clones contain only the metadata defined for the virtual machine.

Creating snap clones is a very fast operation compared to cloning the entire template or assembly. However, if you update the contents of a snap clone, then review your space requirements. Unless your changes to the snap clone are carried out on shared virtual disks, you require additional storage on your system for the clone to retain both the original content, as well as changed content.

Cloning a Template With OAKCLI

Use the oakcli clone vm command to clone virtual machines that have attached virtual disks on Oracle Database Appliance Virtualized Platforms.

When you clone virtual machines with attached virtual disks, a clone of a virtual machine contains the contents of virtual disks attached locally, but does not contain contents of virtual disks attached in shared mode. If needed, you can clone the virtual disks required by a cloned virtual machine in a separate step.

Use the command <code>oakcli clone vm</code> to create a virtual machine from a virtual machine template. Use the <code>-repo name</code> option to provide the name of the shared repository, where <code>name</code> is the name of the repository. Use the <code>-node number</code> option to identify clause to identify the node on which you want to perform the cloning process, where <code>number</code> is the number of the node.



The <code>-node</code> option identifies the node where the cloning activity is carried out. The node value does not assign the default startup node for the virtual machine. You can set the startup assignment with the command <code>oakcliconfigure vm</code>.

Example 13-16 Example of Creating a Virtual Machine Clone from a Virtual Machine Template

This example creates a virtual machine named $myol6u_test$ from the virtual machine template named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$, which is located in a shared repository named $myol6u_15gb1$.

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



Creating a Snap Clone from a Template With OAKCLI

Use the oakcli clone vm command to create a snap clone of a virtual machine template on Oracle Database Appliance Virtualized Platforms.

Use the -vmtemplate name option to provide the name of the virtual machine template that you want to clone, where name is the name of the template. Use the -snap option to designate that you want to create a snap clone.

Example 13-17 Example of Creating a Snap Clone From a Virtual Machine Template

This example creates a snap clone named <code>myol15u_snap</code> from the virtual machine template named <code>myol5u</code>:

oakcli clone vm myol15u snap -vmtemplate myol5u -snap

Creating a Snap Clone of an Existing Virtual Machine With OAKCLI

Use the oakcli clone vm command to create a snap clone of an existing virtual machine on Oracle Database Appliance Virtualized Platforms.

Use the -vm name option to provide the name of the virtual machine that you want to clone, where name is the name of the virtual machine. Use the -snap option to designate that you want to create a snap clone.

Example 13-18 Example of Creating a Snap Clone From an Existing Virtual Machine

This example creates a snap clone named myoll5u_test1 from a virtual machine named myoll5u_test:

oakcli clone vm myol15u_test1 -vm myol15u_test1 -snap

How to Manage Virtual Machines on Oracle Database Appliance Virtualized Platform

Review these topics for an overview of virtual machines, and for procedures to create and manage virtual machines.

- About Managing Virtual Machines on Oracle Database Appliance Virtualized Platform
 - Deploy virtual machines on Oracle Database Appliance Virtualized Platform to run other workloads that are independent of databases running in ODA BASE
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 Create a virtual machine by cloning an imported template, cloning an assembly that contains configured virtual machines, or cloning an existing virtual machine.



Configuring a Virtual Machine

Use the $oakcli\ configure\ vm$ command to configure a virtual machine on Oracle Database Appliance Virtualized Platform.

Starting and Stopping a Virtual Machine

Use the <code>oakcli start vm</code> command to start a virtual machine on Oracle Database Appliance Virtualized Platform and use the <code>oakcli stop vm</code> command to stop a virtual machine.

Externally Configuring a Virtual Machine

You can initially configure your virtual machines externally without connecting to the virtual machine console by using Oracle VM Guest Additions by passing keyvalue pairs to the virtual machine.

Opening a Virtual Machine Console for a Virtual Machine

Use the oakcli show vmconsole command to open a virtual machine console window for an active virtual machine

Creating an Image for a New Virtual Machine

Use the <code>oakcli clone vm</code> command to create an image for a new virtual machine on Oracle Database Appliance Virtualized Platform.

- Setting Up a Virtual Machine for Access from eth0 Using an IP Address
 Configure a network device (eth0) with an IP address for a virtual machine.
- Adding or Removing a Virtual Disk to or from a Virtual Machine
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 storage and resources.
- Performing a Live Migration for an Oracle Database Appliance Virtual Machine
 If your system meets requirements for live migration, then you can use the
 oakcli migrate vm command to migrate a virtual machine from the currently
 running node to another node.

About Managing Virtual Machines on Oracle Database Appliance Virtualized Platform

Deploy virtual machines on Oracle Database Appliance Virtualized Platform to run other workloads that are independent of databases running in ODA BASE

Use OAKCLI commands to create and manage virtual machines, including starting and stopping them, and opening consoles for graphical user interface (GUI) access.



You can use a Virtual Network Computing (VNC) session to open a GUI console for a virtual machine.

You can reconfigure an active virtual machine. However, your changes do not take effect until you stop and restart the virtual machine. You can display high-level information about all of your virtual machines, or display detailed information about the



configuration of single virtual machines. When you no longer have use for a particular virtual machine, delete the virtual machine to regain storage.



Do not modify the default settings for the following parameters in the guest virtual machine:

- xen blkfront.max: Max Indirect Descriptors, default 32
- xen_blkback.max_ring_page_order: Shared Ring Page Order, default 0

Listing the Virtual Machines in Your Repositories

Use the <code>oakcli show vm</code> command to display details for all of your existing virtual machines or to display details of a specific virtual machine.

The command displays the name, the repository, and the current state (online or offline) for each virtual machine. The output also contains the default number of CPUs and default amount of memory that Oracle Database Appliance Virtualized Platform will assign to each virtual machine.

 Use the oakcli show vm command to display the virtual machine names, memory and vCPU allocations, status, virtual disks, and repository name for all virtual machines.

```
# oakcli show vm

NAME NODENUM MEMORY VCPU STATE REPOSITORY

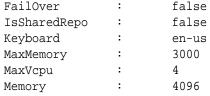
vm1 0 8192M 4 ONLINE srepo1

vm2 0 8192M 4 ONLINE srepo1
```

Use the oakcli show vm *virtual machine name* command to display information about a specific virtual machine.

For example, use the following command to display details about the $vml_odarepol$ virtual machine:

```
# oakcli show vm vml_odarepo1
 Resource: vml_odarepol
      AutoStart :
                            restore
       CPUPriority :
                            100
       Disks
                             file:/OVS/Repositories/odarepo1/Vi
                            rtualMachines/vml_odarepol/System.i
                            mq,xvda,w||file:/OVS/Repositories/o
                            darepo1/VirtualMachines/vm1_odarepo
                            1/u01.img,xvdb,w
       Domain
                     :
                            XEN PVM
                            online
       ExpectedState :
                            false
       FailOver
```





Mouse : OS_DEFAULT
Name : vml_odarepol

Networks : | mac=00:21:F6:00:00:E4|

NodeNum : 0

NodeNumStart :

OS : OL_5
PrivateIP : None
ProcessorCap : 100
RepoName : odarepol
State : Online

TemplateName : otml_sample1_odarepo1

Vcpu : 4
cpupool : twocpu
vncport : 5901

Creating a Virtual Machine

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

A virtual machine is a software emulation of a computer system that is granted virtual resources, and can be started, stopped, and restarted independently.

When you clone a template, the template is imported as an archive, unpacked, and stored as a virtual machine configuration file with disk images. The disk images are cloned to create a new instance in the form of a virtual machine.

Instead of creating a complete clone of a template or assembly, you can create a snap clone, which contains only the metadata defined for the virtual machine.

Related Topics

How to Create Clones and Snap Clones of a Template
Review these topics for an overview of clones and snap clones, and for
procedures to use to create clones.

Configuring a Virtual Machine

Use the $oakcli\ configure\ vm$ command to configure a virtual machine on Oracle Database Appliance Virtualized Platform.

Include a -prefnode clause, to identify the node where you want the virtual machine to run by default and a -failover clause to indicate if you want the virtual machine to use the other node when the preferred node is not available (either at startup or while already active).

If you reconfigure a virtual machine that is currently running, then your changes do not take effect until you stop and restart the virtual machine.

Table 13-1 Parameters Available for Configuring a Virtual Machine

Parameter	Description
-vcpu 2	Sets two (2) as the number of CPUs to be assigned to the virtual machine when started



Table 13-1 (Cont.) Parameters Available for Configuring a Virtual Machine

Parameter	Description
-cpuprio 150	Sets the CPU access priority to 150
-cpucap 20	Sets the maximum percentage of a CPU's capacity that will be assigned to the virtual machine to 20%
-memory 1G	Sets the amount of memory assigned when the virtual machine starts to 1 GB
-cpupool linpool	Specifies linpool as the CPU pool to be assigned to the virtual machine
-keyboard en-us	Defines the keyboard type used to access the virtual machine as en-us
-mouse USB_MOUSE	Defines the mouse type used to access the virtual machine as a USB mouse

These values will override values assigned to these same parameters in the virtual machine template from which this virtual machine was derived. The virtual machine will use default values for parameters that are not defined in either the parent template or in a configuration command.



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

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

oakcli modify vm vmname parameters

Example 13-19 Example of Configuring a Virtual Machine

Set values for specific resources in the virtual machine named myoll5u:

```
# oakcli configure vm myol5u
-vcpu 2 -cpuprio 150 -cpucap 20 -memory 1G
-cpupool linpool -keyboard en-us -mouse USB_MOUSE
```



Starting and Stopping a Virtual Machine

Use the <code>oakcli start vm</code> command to start a virtual machine on Oracle Database Appliance Virtualized Platform and use the <code>oakcli stop vm</code> command to stop a virtual machine.



If you reconfigure a virtual machine that is currently running, then your changes will not be effective until you stop and restart the virtual machine.

Externally Configuring a Virtual Machine

You can initially configure your virtual machines externally without connecting to the virtual machine console by using Oracle VM Guest Additions by passing key-value pairs to the virtual machine.

Use the oakcli modify vm -s command to pass parameters to the virtual machine:

```
# oakcli modify vm vmname -s 'key1:value1;key2:value2...'
```

The following example has two value pairs:

```
# oakcli modify vm vmo16u3 -s
'com.oracle.linux.network.device.0:eth0;com.oracle.linux.network.ipaddr.
0:192.1.2.18'
```

Note:

- For more information about Oracle VM Guest Additions, see "Using the Oracle VM Guest Additions" in the Oracle VM Utilities Guide for x86 at http://docs.oracle.com/cd/E35328_01/E35333/html/vmutl-guestadd.html.
- Refer to the whitepaper *Oracle Database Appliance: Automated Virtual Machine Provisioning* for more information.

Related Topics

 http://www.oracle.com/technetwork/database/database-appliance/overview/odaautomatedvmprovisioning-2348232.pdf



Opening a Virtual Machine Console for a Virtual Machine

Use the oakcli show vmconsole command to open a virtual machine console window for an active virtual machine

If the console does not display correctly, then close the console, set the DISPLAY environment variable to an appropriate value for your monitor, and then rerun the oakcli show vmconsole command.

You can also configure your virtual machine (using oakcli modify vm command with the -s parameter) to allow access from the OAKCLI command line instead of a graphical user interface (GUI) virtual machine console.

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

oakcli show vmconsole vml_odarepol

Creating an Image for a New Virtual Machine

Use the <code>oakcli clone vm</code> command to create an image for a new virtual machine on Oracle Database Appliance Virtualized Platform.

By default, the image inherits the content and configuration information from the template or from the virtual machine that you are cloning and resides in the same repository as the source. Unless you are using local repositories for your virtual machines, include the-node clause in the <code>oakcli clone</code> command to identify the node that should run the cloning process. To create a snap clone, which will only contain the configuration metadata, include the <code>-snap</code> clause in the <code>oakcli clone</code> command.

Setting Up a Virtual Machine for Access from eth0 Using an IP Address

Configure a network device (eth0) with an IP address for a virtual machine.

The following set of commands configures the virtual machine vmo16u3 (which has ovmd) with the IP address 192.168.16.51 for the eth0 interface and sets the root password.

```
# oakcli clone vm vmol6u3 -vmtemplate ol6u3 -repo shrepo -node 0
# oakcli modify vm vmol6u3 -addnetwork priv1
# oakcli start vm vmol6u3
# oakcli modify vm vmol6u3 -s 'com.oracle.linux.network.device.0:eth0'
# oakcli modify vm vmol6u3 -s 'com.oracle.linux.network.onboot.0:yes'
# oakcli modify vm vmol6u3 -s
'com.oracle.linux.network.bootproto.0:static'
# oakcli modify vm vmol6u3 -s
'com.oracle.linux.network.ipaddr.0:192.168.16.51'
# oakcli modify vm vmol6u3 -s
'com.oracle.linux.network.netmask.0:255.255.255.0'
# oakcli modify vm vmol6u3 -s 'com.oracle.linux.root-password:password'
```



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

Use the oakcli modify vm command to add or remove a virtual disk (vdisk) from a virtual machine.

Do not use the -attachvdisk or the -detachvdisk option with the -addnetwork, -deletenetwork, or -s key:value pair parameters.

• To attach a virtual disk to a virtual machine, use the oakcli modify vm vm_name command with the -attachvdisk clause that names the virtual disk.

```
# oakcli modify vm vm name -attachvdisk vdisk name
```

• To detach a virtual disk from a virtual machine, use the oakcli modify vm vm_name command with the -detachvdisk clause that names the virtual disk.

```
# oakcli modify vm vm name -detachvdisk vdisk name
```

Removing a Virtual Machine from a Shared Repository

Use the oakcli delete vm command to delete the virtual machine and reclaim its storage and resources.

When you no longer have use for a particular virtual machine, delete the machine. When deleting the machine, you can specify the Oracle Database Appliance node from which you want to remove the virtual machine. If this optional parameter is not included, then the virtual machine is removed from both nodes.

Delete the virtual machine from Node 1.

For example, run the following command to delete the ovu22 virtual machine from Node 1.

```
# oakcli delete vm ovu22 -server 1
```

Delete the virtual machine from both nodes.

For example, run the following command to delete the ovu22 virtual machine from both nodes.

```
# oakcli delete vm ovu22
```

Performing a Live Migration for an Oracle Database Appliance Virtual Machine

If your system meets requirements for live migration, then you can use the <code>oakclimigrate vm</code> command to migrate a virtual machine from the currently running node to another node.

Live Migration refers to the process of moving a running virtual machine between physical machines without disconnecting the client or application running in the



virtual machine. Memory, storage, and network connectivity of the virtual machine are transferred from the original host machine to the destination.

You must meet the following requirements before performing a live migration:

- The virtual machine must be on a shared repository and the repository must be online on both nodes.
- The virtual machine must be running.
- The destination host must have the required resources (memory, CPUs and so on) for successful migration.
- The destination host must have a CPU pool with the same name as the CPU pool
 of the virtual machine that is being migrated.

Use the <code>oakcli migrate vm vmname</code> command to migrate a virtual machine from the currently running node to another node. <code>vmname</code> is the name of the virtual machine to be migrated.

When you run this command, the virtual machine must be online and corresponding, and the shared repository must be online on both nodes. If a virtual machine is in the migration process, then OAKCLI will display the virtual machine state as MIGRATING.

Example 13-20 Example of Migrating a Virtual Machine from the Currently Running Node to Another Node

This example migrates a virtual machine named myvm1

oakcli migrate vm myvm1

How to Create Driver Domain Virtual Machines

Use driver domain virtual machines to improve performance.

- About Driver Domain Virtual Machines
 Use driver domain virtual machines to improve performance by enabling guest virtual machines (VMs) to use ODA_BASE instead of Dom0 to access virtual disks.
- Creating a Driver Domain Virtual Machine from a Template
 Create a driver domain virtual machine from a virtual machine template.
- Converting a Virtual Machine to a Driver Domain Virtual Machine
 Convert a guest virtual machine to a driver domain virtual machine to improve performance.
- Converting a Root Disk to a Driver Domain Disk
 Set up your guest virtual machine (guest VM) root disk as a driver domain and create a new disk as the boot driver.

About Driver Domain Virtual Machines

Use driver domain virtual machines to improve performance by enabling guest virtual machines (VMs) to use <code>ODA_BASE</code> instead of <code>Dom0</code> to access virtual disks.

A *driver domain* is a user domain that has special privileges and responsibilities for a particular piece of hardware. When you use the driver domain option, the newly created virtual disks are mounted directly from ODA_BASE to a guest virtual machine.



The option improves I/O performance by enabling guest virtual machines to use ODA_BASE instead of Dom0 to access virtual disks.

The driver domain functionality applies to non-system disks. Once a virtual machine is created in driver domain mode, any new vDisks are added in driver domain mode. Newly created virtual disks are mounted directly from <code>ODA_BASE</code> to a guest virtual machine. To determine if a virtual machine is configured in driver domain mode, use the <code>oakcli</code> show <code>vm vmname</code> command. When the virtual machine is in driver mode, the output for the <code>DriverDomain</code> attribute is <code>TRUE</code>.

The virtual disk and vm.cfg files are stored in the following directories:

- Dom0: /Repositories/vm_repo_name/.ACFS/snaps/vm_name/ VirtualMachines/vm_name
- ODA_BASE: /app/sharedrepo/vm_repo_name/.ACFS/snaps/vm_name/ VirtualMachines/vm_name

The driver domain only works when you add virtual disks to a guest virtual machine. When a virtual machine is in driver domain mode, the corresponding virtual machine configuration file, vm.cfg, has the following disk entries:

When -driverdomain is specified, the cloned virtual machine is configured with the driver domain. The corresponding virtual machine configuration file, vm.cfg, has the following disk entries:

```
disk = [u'file:/OVS/Repositories/repo5/.ACFS/snaps/vm10/
VirtualMachines/
vm10/System.img,xvda,w',
u'file:/u01/app/sharedrepo/repo5/.ACFS/snaps/
vm10/VirtualMachines/vm10/u01.img,xvdb,w,oakDom1']
```

All disks, with the exception of the xvda boot disk, have the path from oakDom1, that is odabase.

The following guest operating systems are supported for driver domain virtual machines:

- Oracle Linux with the latest Unbreakable Enterprise Kernel 2 (UEK2) or Unbreakable Enterprise Kernel 3 (UEK3).
- Microsoft Windows with Oracle VM Windows PV Driver 3.4.2. Oracle VM Windows PV Driver 3.4.2 release is available for download on My Oracle Support as patch number 23346086.
- Oracle Solaris 11.3 or higher x86.

Creating a Driver Domain Virtual Machine from a Template

Create a driver domain virtual machine from a virtual machine template.

Several options are available to create, or import, a template that you will use to create the clone. Determine the virtual machine template you want, the method to import the template, and the naming convention for the template.

This example imports a virtual machine template from <code>Dom0</code> and uses the template to create a driver domain virtual machine. The virtual machine image is named



 $\label{thm:continuous} $$ myo16u_test myo16u_o15u7_vm_alpha from the virtual machine template named myo16u_15gb1 (OL5U7), which is stored in the shared repository named repo2 (odarepo1)on Node 0 in driver domain mode.$

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

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

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

Use the oakcli clone vm command to create a clone that uses the driver domain.

For example, create a virtual machine image named $vm1_o15u7$ from the virtual machine template named ol5u7, which is stored in the shared repository named odarepo1 on Node 0:

clone virtual machine

```
# oakcli clone vm vm1_ol5u7 -vmtemplate OL5U7 -repo odarepol -node
0 -driverdomain
```

3. Run the oakcli show vm command to confirm that the virtual machine is configured in driver domain mode.

When the virtual machine is in driver mode, the output for the DriverDomain attribute is TRUE.

```
oakcli show vm vm1_ol5u7
```

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

For example, start the virtual machine named vml ol5u7 on Node 0.

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

Converting a Virtual Machine to a Driver Domain Virtual Machine

Convert a guest virtual machine to a driver domain virtual machine to improve performance.

You can clone an existing virtual machine that uses <code>Dom0</code> to create a clone virtual machine that uses the driver domain <code>ODA_BASE</code> instead of <code>Dom0</code>.

In this example, virtual machine $vm-dom0_o15u7$ is on Dom0 and is not a driver domain virtual machine. The example creates a clone virtual machine named $vm-dd1_o15u7$ that uses the driver domain ODA_BASE.

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



For example, stop the virtual machine named <code>vm-dom0_o15u7</code>. Shutting down the virtual machine ensures that there is consistent data from the virtual machine (vm) and virtual disks (vdisks)

```
# oakcli stop vm vm2_ol5u7 -force
```

- 2. Detach the virtual disk (vdisk) from vm-dom0 o15u7
- 3. Use the oakcli clone vm command to clone a new virtual machine from the original.

Create a new virtual machine named $vm-dd1_o15u7$ from the original virtual machine named $vm-dom0_o15u7$. Use the -snap option to create a snapshot of the source virtual machine. Because the original virtual machine is not a driver domain machine, use the -force and -driverdomain options to create a clone virtual machine that does use the driver domain.

```
oakcli clone vm vm-dd1_o15u7 -vm vm-dom0_o15u7 -snap -force -driverdomain
```

4. Attach the virtual disk (vdisk) that you detached from the source virtual machine in Step 2 to the new driver domain virtual machine.

Attaching the vdisk ensures that the vm.cfg has the disk information with the driver domain feature.

- 5. Verify that oakDom1is the vdisk in the new vm.cfg.
- 6. Run the oakcli show vm to confirm that the newly created virtual machine is configured in driver domain mode.

When the virtual machine, $vm-dd1_o15u7$, is in driver domain mode, the output for the DriverDomain attribute is TRUE .

oakcli show vm vm-dd1_ol5u7

7. Use the oakcli start vm command to start the virtual machine.

For example, start the virtual machine named vm-dd1_o15u7 on Node 0.

```
# oakcli start vm vm-dd1 ol5u7 -node 0
```

Converting a Root Disk to a Driver Domain Disk

Set up your guest virtual machine (guest VM) root disk as a driver domain and create a new disk as the boot driver.

This example clones an existing guest virtual machine as a driver domain guest VM and then uses the $OL6U7_x86_64_PVHVM$ template to create a guest VM and create a new disk for the boot driver.

Using the driver domain improves the guest VM disk IO performance; however, the driver domain is not applicable for a guest VM virtual disk that is a boot disk. Because the boot disk is generally the root disk, you must create a new disk to be the boot driver.

You can create a guest virtual machine by cloning an existing guest, or use one of the templates, such as $OL6U7_x86_64_PVHVM$ or $OVM_OL5U7_x86_64_PVM_10GB.tgz$, that are available in the /OVS directory in Dom0.



Using driver domains requires at least Oracle Database Appliance version 12.1.2.7.0. In this example, the following is the layout of disks in the original <code>OL6U7</code> virtual machine:

```
- boot/root disk '/dev/xvda' (echo -e "p" | fdisk /dev/xvda):
Device Boot Start End Blocks Id System
/dev/xvda1 * 2 503 514048 83 Linux
/dev/xvda2 504 11264 11019264 83 Linux
/dev/xvda3 11265 15360 4194304 82 Linux swap / Solaris
- u01 disk '/dev/xvdb' (echo -e "p" | fdisk /dev/xvdb):
Device Boot Start End Blocks Id System
/dev/xvdb1 1 13054 104856223+ 83 Linux
```

The /etc/fstab is as follows:

```
# cat /etc/fstab
UUID=b072e1e9-05a9-4544-a4dd-b15ba49cea2f / ext4 defaults 1 1
UUID=301e09e2-78e4-47d6-b501-d4f1098b419d /boot ext4 defaults 1 2
UUID=39e5a125-a1d8-48f4-9e81-f9e89b4dd51b swap swap defaults 0 0
tmpfs /dev/shm tmpfs defaults 0 0
devpts /dev/pts devpts gid=5,mode=620 0 0
sysfs /sys sysfs defaults 0 0
proc /proc proc defaults 0 0
UUID=770078eb-c083-4d52-81bf-e026ab3f3fa7 /u01 ext4 defaults 1 2
```

The df -h is as follows:

```
# df -h
Filesystem Size Used Avail Use% Mounted on
/dev/xvda2 11G 814M 8.9G 9%
/tmpfs 3.9G 0 3.9G 0% /dev/shm
/dev/xvda1 479M 51M 399M 12% /boot
/dev/xvdb1 92G 55G 33G 63% /u01
```

1. Clone a guest VM as a driver domain guest VM.

You can use one of the following commands to clone a virtual machine:

- oakcli clone vm vm_name -vmtemplate template_name -repo repo_name [-node 0|1] [-driverdomain]
- oakcli clone vm vm_name -vmtemplate src_vmtempl_name -snap [-driverdomain]
- oakcli clone vm vm_name -vm src_vm_name -snap [-force] [-driverdomain]



You must stop the virtual machine before taking a snapshot.

For example, create a driver domain guest VM named $\tt OL6U7$ from the $\tt OL6U7_x86_64_PVHVM$ source VM template. Use the $\tt -snap$ option to designate

that you want to create a snapshot of the source virtual machine and the – driverdomain option to indicate that the new virtual machine will use the driver domain.

oakcli clone vm OL6U7 -vm OL6U7_x86_64_PVHVM -snap -driverdomain

2. Create a new boot virtual disk.

```
dd if=/dev/zero of=/u01/app/sharedrepo/repo name/.ACFS/snaps/
vm_name/VirtualMachines/vm_name/virtual diskfile name.img
oflag=direct count=0 bs=1M seek=new size in MB
```

For example, create a 500 MB boot virtual disk named newboot for the OL6U7 virtual machine that is in the odarepo1 repository:

dd if=/dev/zero of=/u01/app/sharedrepo/odarepo1/.ACFS/snaps/OL6U7/VirtualMachines/OL6U7/newboot.img oflag=direct count=0 bs=1M seek=500

- 3. Edit the vm.cfg file to attach the new boot disk to your guest VM.
 - a. Navigate to the vm.cfg file.

```
/u01/app/sharedrepo/vm repo/.ACFS/snaps/vm name/
VirtualMachines/vm name/vm.cfg
```

For example, the OL6U7 virtual machine is in the odarepol repository:

```
/u01/app/sharedrepo/odarepo1/. ACFS/snaps/OL6U7/Virtual Machines/OL6U7/vm.cfg
```

b. Add the new disk entry on the disk parameter.

```
disk = ['file:virtual disk file path,virtual device,r/w option']
```

For example, add the newboot virtual disk for the <code>OL6U7</code> virtual machine, which is in the <code>odarepo1</code> repository.

```
disk =
[u'file:/OVS/Repositories/odarepo1/.ACFS/
snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvda,w',
u'file:/u01/app/sharedrepo/odarepo1/.ACFS/snaps/oakvdk_ol6u7_u01/
VirtualDisks/oakvdk_ol6u7_u01,xvdb,w,oakDom1',
u'file:/u01/app/sharedrepo/odarepo1/.ACFS/
snaps/oakvdk_ol6u7_bootdsk/VirtualDisks/
oakvdk_ol6u7_bootdsk,xvdc,w,oakDom1']
(...)
```



The following example shows the newboot virtual disk:

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

4. Stop and restart your guest VM.

```
oakcli stop vm vm_name oakcli start vm vm_name
```

For example, stop and restart the OL6U7 guest.

```
oakcli stop vm OL6U7oakcli start vm OL6U7
```

The new disks are available to the guest VM after the restart.

5. Create a disk partition on the new boot driver.

A new empty virtual disk appears as an /dev/xvdc device.

```
# dmesg | grep xvdc
blkfront: xvdc: flush diskcache: enabled; persistent grants:
enabled; indirect descriptors: enabled;
xvdc: unknown partition table
```

Use the fdisk command to partition the disk and make the partition bootable.

6. Format the new boot disk partition /dev/xvdc1.

```
mkfs.ext4 /dev/xvdc1
```

7. Setup and mount the new boot disk partition and get the single blockID.

```
mkdir /virtual diskfile namemount /dev/xvdc1 /virtual diskfile name
```

a. Setup and mount the new boot disk.

mkdir /virtual diskfile namemount /dev/xvdcl /virtual diskfile name



For example, make a directory and mount the newboot boot disk:

```
mkdir /newbootmount /dev/xvdc1 /newboot
```

b. Get the single blockID.

```
# blkid /dev/xvdc1/dev/xvdc1: UUID="3d7a177b-0fa0-4212-9c0c-
c5554bb1817a" TYPE="ext4"
```

8. Copy the original boot content to the new boot disk.

```
cp -dpR /boot/* /virtual diskfile name
```

For example, for the disk named newboot:

```
cp -dpR /boot/* /newboot
```

9. Make the new boot partition the active boot partition

```
umount /virtual diskfile nameumount /bootmount /dev/xvdc1 /boot
umount /newbootumount /bootmount /dev/xvdc1 /boot
```

10. Setup Grub in the new boot disk.

Use the grub or grub2 command, where /dev/xvdc is the new boot disk device.

• If you are using Oracle Linux 6U7, use grub:

```
# grub
grub> device (hd0) /dev/xvdc
grub> root (hd0,0)
grub> setup (hd0)
```

If you are using Oracle Linux 7u2, use grub2:

```
# grub2-mkconfig -o /boot/grub2/grub.cfg
# grub2-install /dev/xvdc
```

The following example uses grub:

```
# grub
Probing devices to guess BIOS drives. This may take a long time.
GNU GRUB version 0.97 (640K lower / 3072K upper memory)
[ Minimal BASH-like line editing is supported. For the first word,
TAB
lists possible command completions. Anywhere else TAB lists the
possible
completions of a device/filename.]
grub> device (hd0) /dev/xvdc
device (hd0) /dev/xvdc
grub> root (hd0,0)
root (hd0,0)
```



```
Filesystem type is ext2fs, partition type 0x83 grub> setup (hd0) setup (hd0)
Checking if "/boot/grub/stage1" exists... no
Checking if "/grub/stage1" exists... yes
Checking if "/grub/stage2" exists... yes
Checking if "/grub/e2fs_stage1_5" exists... yes
Running "embed /grub/e2fs_stage1_5 (hd0)"... 27 sectors are embedded.
succeeded
Running "install /grub/stage1 (hd0) (hd0)1+27 p (hd0,0)/grub/stage2 /grub/grub.conf"... succeeded
Done.
grub> quit
quit
```

The following example uses grub2:

```
# grub2-mkconfig -o /boot/grub2/grub.cfg
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-3.10.0-327.3.1.el7.x86_64
Found initrd image: /boot/initramfs-3.10.0-327.3.1.el7.x86 64.img
Found linux image: /boot/vmlinuz-3.8.13-118.2.1.el7uek.x86 64
Found initrd image: /boot/
initramfs-3.8.13-118.2.1.el7uek.x86 64.img
Found linux image: /boot/vmlinuz-0-
rescue-8f9df86c6d4c4640a01315a3aa93790e
Found initrd image: /boot/initramfs-0-
rescue-8f9df86c6d4c4640a01315a3aa93790e.img
done
# grub2-install /dev/xvdc
Installing for i386-pc platform.
Installation finished.
No error reported.
```

11. Edit /etc/fstab with the new boot device.

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

UUID=39e5a125-a1d8-48f4-9e81-f9e89b4dd51b swap swap defaults 0 0
tmpfs /dev/shm tmpfs defaults 0 0
devpts /dev/pts devpts gid=5,mode=620 0 0
sysfs /sys sysfs defaults 0 0
proc /proc proc defaults 0 0

UUID=770078eb-c083-4d52-81bf-e026ab3f3fa7 /u01 ext4 defaults 1 2
```

12. Edit the vm.cfg file and make the new boot virtual disk the first disk on the list.





The driver domain device use the following root path /u01/app/sharedrepo. The boot disk root path is /OVS/Repositories.

The entries in the disk section of the vm.cfg file will look something like the following:

```
u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvda,w',
<<-- original boot/root disk
u'file:/u01/app/sharedrepo/rcrepo/.ACFS/snaps/oakvdk_ol6u7_u01/
VirtualDisks/oakvdk_ol6u7_u01,xvdb,w,oakDoml',
<<-- original u01 disku'file:/OVS/Repositories/rcrepo/.ACFS/
snaps/OL6U7/VirtualMachines/OL6U7/newboot.img,xvdc,w'
<<-- new boot disk</pre>
```

Move the new boot virtual disk, newboot, to the first disk on the list.

```
u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/newboot.img,xvda,w'
<<-- new boot disk
u'file:/u01/app/sharedrepo/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvdb,w,oakDom1
<<-- original boot/root disku'file:/u01/app/sharedrepo/rcrepo/.ACFS/
snaps/oakvdk_ol6u7_u01/VirtualDisks/oakvdk_ol6u7_u01,xvdc,w,oakDom1'
<<-original u01 disk</pre>
```

The new boot device (xvdc) becomes the first device (not driver domain) and xvda is the second domain driver device.

The following is an example of the vm.cfg before the edit:

```
# cat vm.cfg
vif = ['type=netfront,bridge=net1']
name = 'OL6U7'
extra = 'NODENAME=OL6U7'
builder = 'hvm'
cpus =
'24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 4
6,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,6
vcpus = 2
memory = 8192
cpu_cap = 0
vnc = 1
serial = 'pty'
disk =
[u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/15f96d92a66c4b808035116ab6348d0d.img,xvda,w',
u'file:/u01/app/sharedrepo/rcrepo/.ACFS/snaps/oakvdk_ol6u7_u01/
VirtualDisks/oakvdk_ol6u7_u01,xvdb,w,oakDom1',
u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
```



```
OL6U7/newboot.img,xvdc,w']
maxvcpus = 2
maxmem = 8192
```

The following is an example of the vm.cfg after the edit, where the new boot device (xvdc) is the first device and xvda is the driver domain device:

```
# cat vm.cfg
vif = ['type=netfront,bridge=net1']
name = 'OL6U7'
extra = 'NODENAME=OL6U7'
builder = 'hvm'
cpus =
'24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,4
6,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,6
vcpus = 2
memory = 8192
cpu\_cap = 0
vnc = 1
serial = 'pty'
disk =[
[u'file:/OVS/Repositories/rcrepo/.ACFS/snaps/OL6U7/VirtualMachines/
OL6U7/newboot.img,xvda,w',
u'file:/u01/app/sharedrepo/u'file:/u01/app/sharedrepo/rcrepo/.ACFS/
snaps/oakvdk_ol6u7_u01/VirtualDisks/
oakvdk_ol6u7_u01,xvdc,w,oakDom1']
maxvcpus = 2
maxmem = 8192
```

13. Stop and restart the guest VM

```
oakcli stop vm vm_name
oakcli start vm vm_name
oakcli stop vm OL6U7
oakcli start vm OL6U7
```

14. Check the layout of the new disks.

The layout should be similar to the following:

```
# df -h
Filesystem Size Used Avail Use% Mounted on/dev/xvdb2 11G 814M 8.9G
9% /
tmpfs 3.9G 0 3.9G 0% /dev/shm
/dev/xvda1 471M 51M 391M 12% /boot
/dev/xvdc1 92G 55G 33G 63% /u01
```



The swap device is now under the driver domain: /dev/xvdb

```
# swapon -s
Filename Type Size Used Priority
/dev/xvdb3 partition 4194300 0 -1
```

15. (Optional) Synchronize the oakcli virtual machine inventory with the vm.cfg file.

When you edit the vm.cfg file, the oakcli show vm vm name output displays incorrect information about the disk. You can create a temporary duplicate (snapshot) of the virtual machine to fix the output.

```
oakcli stop vm vm_name
oakcli clone vm tmp_vm_name -vm vm_name -snap -driverdomain
oakcli delete vm vm_name
oakcli clone vm vm_name -vm tmp_vm_name -snap -driverdomain
oakcli delete vm tmp_vm_name
```



Stop the virtual machine before taking a snapshot.

For example, create a temporary clone called tmp_0L6U7 of the virtual machine OL6U7 using the -snap and -driverdomain options. Delete the virtual machine OL6U7, and then use the temporary clone to create a new clone. Delete the temporary virtual machine.

```
oakcli stop vm OL6U7
oakcli clone vm tmp_OL6U7 -vm OL6U7 -snap -driverdomain
oakcli delete vm OL6U7
oakcli clone vm OL6U7 -vm tmp_OL6U7 -snap -driverdomain
oakcli delete vm tmp_OL6U7
```

Note:

The oakcli clone vm command creates a duplicate (snapshot) of the VDisks that are attached to the guest VM. Use the oakcli delete vdisk command to remove the orphan VDisks.

Run the oakcli show vm vm_name command to verify that the oakcli virtual machine inventory is in sync with the vm.cfg file.

```
# oakcli show vm OL6U7
The Resource is : OL6U7
AutoStart : restore
CPUPriority : 100
Disks : |file:/OVS/Repositories/rcrepo/.ACF
S/snaps/OL6U7/VirtualMachines/OL6U7
/newboot.img,xvda,w||file:/u01/app/
sharedrepo/rcrepo/.ACFS/snaps/OL6U7
```



```
/VirtualMachines/OL6U7/15f96d92a66c
4b808035116ab6348d0d.img,xvdb,w,oak
Dom1
Domain : XEN_PVM
DriverDomain : True
ExpectedState : offline
FailOver : false
IsSharedRepo : true
Keyboard : en-us
MaxMemory: 8192M
MaxVcpu: 2
Memory: 8192M
Mouse : OS_DEFAULT
Name: OL6U7
Networks : |type=netfront,bridge=net1|
NodeNumStart: 0
OS : OL_5
PrefNodeNum : 0
PrivateIP : None
ProcessorCap: 0
RepoName : rcrepo
State : Offline
TemplateName : tmp_OL6U7
VDisks: |oakvdk_snap_3_ol6u7_u01_rcrepo|
Vcpu: 2
cpupool : default-unpinned-pool
```

How to Manage High Availability on Oracle Database Appliance Virtualized Platform

Use the <code>oakcli configure vm</code> command to configure high availability services for your virtual machines.

A system that is highly available is designed to provide uninterrupted computing services during essential time periods, during most hours of the day, and during most days of the week throughout the year. Reliability, recoverability, timely error detection, and continuous operations are primary characteristics of a highly available solution. Two essential parts of high availability are automatic restart and failover.

Unless you are using local repositories, you can set high availability options for your virtual machines. High availability options identify the node where the virtual machine should be started by default and whether the virtual machine should be failed over to the other node. Failover can occur if the node where the virtual machine is already running fails or if the preferred node is not available when the virtual machines attempt to start.

Configuring Automatic Restart for High Availability

A virtual machine automatically restarts after a hardware or software failure or whenever your database host computer restarts. Use the <code>oakcli configure vm</code> command to start a virtual machine on a preferred node by using the-prefnode option.



Configuring Failover for High Availability

Configuring failover provides high availability by enabling a virtual machine to restart on the other node after an unplanned failure, without requiring manual intervention. Use the command <code>oakcli configure vm</code> with the <code>-failover</code> option to configure fail over from one node to another.

How to Manage CPU Pools on Oracle Database Appliance Virtualized Platform

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

- About Managing CPU Pools for Resource Allocation
 Use CPU pools to cage and manage resource allocations to workloads for virtual
 machines on Oracle Database Appliance Virtualized Platforms.
- About Over-Subscribed CPU Pools
 Configure virtual machines so that they do not subscribe to more CPU resources than the resources available in CPU pools.
- Creating a New CPU Pool on Oracle Database Appliance Virtualized Platform Nodes
 - Use the command oakcli create cpupool to create a CPU pool.
- Showing the CPU Pools Configured on Oracle Database Appliance Virtualized Platform Nodes
 - Use the command oakcli show cpupool command to display the CPUs assigned to each defined CPU pool.
- Changing the Number of CPUs Assigned to a CPU Pool on Oracle Database Appliance Virtualized Platform Nodes
 Use the oakcli configure cpupool command to change the number of CPUs assigned to a CPU pool.
- Assigning a Virtual Machine to a CPU Pool on Oracle Database Appliance Virtualized Platform

 Use the command oakcli configure vm to assign a virtual machine to a CPU pool

About Managing CPU Pools for Resource Allocation

Use CPU pools to cage and manage resource allocations to workloads for virtual machines on Oracle Database Appliance Virtualized Platforms.

Workloads are isolated by creating CPU pools and assigning (pinning) virtual machines to a specific CPU pool. When you pin a virtual machine to a CPU pool, you ensure that the virtual machine uses CPUs in only that CPU pool.

When you initially configure Oracle Database Appliance Virtualized Platform, a default-unpinned-pool is created on each node. The size of this pool depends on the hardware model.

When you create the ODA_BASE domain, a new CPU pool is created on both nodes. The pool is named odaBaseCpuPool. The CPUs required for this pool are removed from the default-unpinned-pool. ODA_BASE is the only domain allowed to use the



CPUs in the odaBaseCpuPool. When you start other virtual machines, the virtual machines run on CPUs that are left in the default-unpinned-pool, effectively removing ODA_BASE from the work being done by other virtual machines.

You can also cage groups of virtual machines by creating additional CPU pools. These additional pools enable you to pin a virtual machine, or a set of virtual machines, to its own CPU pool. Virtual machines running in a specific CPU pool do not share CPU cycles with virtual machines running in other CPU pools. Define as many CPU pools as you want, up to the number of available CPUs on your system.

If your application requirements change over time, then Oracle recommends that you resize, add, or drop CPU pools as needed to make the best use of your resources. You may also want to resize ODA_BASE. However, if you want to resize ODA_BASE, then you must use a special command that also updates your Oracle Database Appliance Virtualized Platform license.

Example 13-21 Example of Showing CPU Pools on a Node

A CPU pool can have a different size on each node (except for the odaBaseCpuPool), as shown by the following oakcli show cpupool commands, one for each node:

About Over-Subscribed CPU Pools

Configure virtual machines so that they do not subscribe to more CPU resources than the resources available in CPU pools.

A CPU resource can belong to one, and only one, CPU pool. You can assign multiple virtual machines to a CPU pool. A CPU pool becomes oversubscribed when the virtual machines that are active in the pool require more CPUs than you configured for the pool. For example, if a CPU pool has four CPUs, then you can start two virtual machines that are defined to use four CPUs each. In this case, the CPU pool is oversubscribed, because each of the four CPUs is supporting two virtual machines.

If you stop one of those virtual machines, but start another one that requires two CPUs, then the CPU pool is still oversubscribed. This is because two of the CPUs are supporting both virtual machines. When oversubscribing a CPU pool, assess the performance of the virtual machines in that pool. Reassign one or more virtual machines to a different CPU pool if sharing an oversubscribed pool degrades performance to unacceptable levels.



Creating a New CPU Pool on Oracle Database Appliance Virtualized Platform Nodes

Use the command oakcli create cpupool to create a CPU pool.

Manage resource use by creating CPU pools, and then assign these resources to virtual machines.

Example 13-22 Example of Creating a New CPU Pool on Oracle Database Appliance Virtualized Platform Nodes

This example creates a CPU pool named winpool that is allocated 4 CPUs on Node 0:

oakcli create cpupool winpool -numcpu 4 -node 0

Showing the CPU Pools Configured on Oracle Database Appliance Virtualized Platform Nodes

Use the command oakcli show cpupool command to display the CPUs assigned to each defined CPU pool.

You can use oakcli show cpupool to display any virtual machines assigned to each CPU pool.

Example 13-23 Example of Showing CPUs Assigned to Defined CPU Pools on Oracle Database Appliance Virtualized Platform Nodes

This oakcli show cpupool example shows the CPUs assigned to each defined CPU pool on Node 0:

oakcli show cpupool -node 0

Changing the Number of CPUs Assigned to a CPU Pool on Oracle Database Appliance Virtualized Platform Nodes

Use the oakcli configure cpupool command to change the number of CPUs assigned to a CPU pool.

An Oracle VM Server can belong to only one virtual pool. However, you can change the resources allocated to a virtual pool to increase the CPU resources available to the virtual machine.

Example 13-24 Example of Changing the Number of CPUs Assigned to a CPU Pool on Oracle Database Appliance Virtualized Platform Nodes

This oakcli configure cpupool example changes the number of CPUs assigned to the CPU pool named linpool on Node 1. After the command runs, the new number of CPU resources assigned to the CPU are six.

oakcli configure cpupool linpool -numcpu 6 -node 1



Assigning a Virtual Machine to a CPU Pool on Oracle Database Appliance Virtualized Platform

Use the command oakcli configure vm to assign a virtual machine to a CPU pool.

Review the availability of CPU pools on nodes as part of your placement policy for virtual machines on Oracle Database Appliance Virtualized Platforms.

If your virtual machine is assigned to a specific CPU pool, and the virtual machine is allowed to fail over, then the virtual machine attempts to use the same CPU pool on the secondary node. If the CPU pool exists on the other node, but the CPU pool is a different size, then the performance of your virtual machine can be affected when it runs on the secondary node. If the assigned CPU pool does not exist on the secondary node, then the virtual machine cannot fail over.

Note:

Do not manage <code>odaBaseCpuPool</code> by using <code>oakcli cpupool</code> commands. Instead, use commands that configure ODA_BASE, as discussed in "How to Resize ODA BASE."

Example 13-25 Example of Assigning a Virtual Machine to a CPU Pool on Oracle Database Appliance Virtualized Platform

This oakcli configure vm example pins the virtual machine named wintest to the CPU pool named winpool:

oakcli configure vm wintest -cpupool winpool



Oracle Database Appliance Command-Line Interface

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

About Oracle Database Appliance Command-Line Interface

Three classes of tools are available to perform deployment, lifecycle management, and system administration on Oracle Database Appliance.

Managing ODACLI Privileges and Security with SUDO

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.

odacli Network Commands

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

odacli Apply Patch and Update Commands

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

odacli Appliance Commands

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

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.

Oracle Data Guard odacli Commands

Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle Database Appliance deployment.

odacli CPU Core Commands

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

odacli Database Commands

Use the odacli database commands to perform database lifecycle operations.

• odacli DBHome Commands

Use the odacli DBHome commands to manage database Home operations.

odacli Database Storage Commands

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

odacli Job Commands

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

Log Commands

Use the odacli log commands to specify the options to collect and delete logs.

- 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 OS Commands
 Use the odacli OS commands to list and update operating system (OS) parameters.
- odaadmcli Hardware Monitoring Commands
 Use the hardware monitoring commands to display hardware configurations.
- Storage Commands
 Understand the commands to perform storage operations and diagnostics.

About Oracle Database Appliance Command-Line Interface

Three classes of tools are available to perform deployment, lifecycle management, and system administration on Oracle Database Appliance.

The command-line interface (CLI) is an alternative to Oracle Database Appliance Browser User Interface for some appliance configuration and patching tasks, database management, and job activity.

Oracle Database Appliance uses a role-based command-line interface. Use the odacli commands to perform lifecycle management tasks and the odaadmcli commands to perform storage and hardware monitoring maintenance. Many tasks related to managing Oracle Databases are also required with databases on Oracle Database Appliance. Tasks common to Oracle Database generally are described in the Oracle Database documentation library. However, to simplify tasks, use the Oracle Database Appliance command-line interface. The odacli and odaadmcliutilities combine the capabilities of the SYS database administrator role and the operating system Superuser (root user). Always perform administrative tasks using the Oracle Database Appliance Browser User Interface or CLI utilities.

The following classes of commands are available:

- Deployment and Configuration: Use the deployment and configuration commands as part of the initial deployment of the appliance and to configure CPU cores.
- Lifecycle management: Use odacli commands to perform database and system administration tasks for the appliance. The odacli commands are the primary interface to perform life cycle activities for the appliance.
- Administration: Use odaadmcli commands to perform hardware administration tasks for the appliance. The odaadmcli commands are the interface for infrequent administration activities needed to manage appliance hardware components, storage, and VLAN.

You can perform the following deployment and configuration tasks:

- Configure the first network in the appliance
- Unzip and copy the Oracle Database Appliance software to the correct locations
- Set the number of CPU Cores for the system

You can perform the following appliance lifecycle tasks with odacli commands:

- Create and describe the appliance
- Create, list, describe, and delete databases



- Create, list, describe, and delete Oracle Database Homes
- Create, list, and describe the networks
- List and describe the jobs

You can perform the following appliance administration tasks with odaadmcli commands:

- Show storage, disks, diskgroups, and controllers
- Display storage diagnostics for disks and NVM Express (NVMes)
- Show server, memory, processor, power, cooling, and network details

Depending on your version of Oracle Appliance Manager and your hardware, some of the odacli commands may not be available to you. To see which commands are supported on your version of Oracle Appliance Manager and your hardware, run the odacli help command: odacli -h.

Command-Line Interface Syntax

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

An odacli or odaadmclicommand uses the following command syntax:

```
odacli command [options]
```

- *command* is an action you want to perform on the appliance. For example: odacli list-networks Of odacli describe-jobs.
- options are optional parts of the odacli command. Options can consist of one or more options that extend the use of the odacli command carried out on an object. Options include additional information about the action that you want to perform on the object. Option names are preceded with a dash. Some options require the name of an object for the command to perform the action that you want to carry out. If an option is preceded with an * (asterisk), this information is required to submit the command. When appending -j to the odacli command, the output is returned in JSON format. The help option (-h) is an option that is available with almost all commands. When you include the -h option, you can obtain additional information about the command that you want to perform.

Example 14-1 Command-Line Interface Syntax



```
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 described bhome command, use the following:

```
odacli describe-dbhome -h
```



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.

Example 14-2 SUDO Example 1: Allow a User to Perform Any ODACLI Operation

This example shows how to configure SUDO to enable a user to perform any ODACLI operation. You do this by adding lines to the commands section in the /etc/sudoers file:

```
## The commands section may have other options added to it.
##
Cmnd_Alias ODACLI_CMDS=/opt/oracle/dcs/bin/odacli *
jdoe ALL = ODACLI_CMDS
```

In this example, the user name is jdoe. The file parameter setting ALL= ODACLI_CMDS grants the user jdoe permission to run all odacli commands that are defined by the command alias ODACLI_CMDS. After configuration, you can copy one sudoers file to multiple hosts. You can also create different rules on each host.





Before database creation, you must set up user equivalency with SSH for the root user on each server. If you do not set up user equivalency and configure SSH on each server, then you are prompted to provide the root password for each server during database creation.

After you configure the sudoer file with the user, the user jdoe can run the set of odacli commands configured with the command alias <code>ODACLI_CMDS</code>. For example:

```
odacli create-database --dbname newdb -m
Password for SYS,SYSTEM and PDB Admin:

Job details

ID: 1bc31577-f910-4d3f-b6ff-8e3fccd30141

Description: Database service creation with db name: newdb
Status: Created
Created: November 30, 2018 9:23:57 AM PST
Message:

Task Name Start Time End Time Status
```

Example 14-3 SUDO Example 2: Allow a User to Perform Only Selected ODACLI Operations

To configure SUDO to allow a user to perform only selected ODACLI operations, add lines to the commands section in the /etc/sudoers file as follows:

```
## DCS commands for oracle user
Cmnd_Alias DCSCMDS = /opt/oracle/dcs/bin/odacli describe-appliance
oracle ALL=
                 DCSCMDS
$ sudo /opt/oracle/dcs/bin/odacli describe-appliance
Appliance Information
                     ID: a977bb04-6cf0-4c07-8e0c-91a8c7e7ebb8
              Platform: OdaliteL
        Data Disk Count: 6
         CPU Core Count: 20
                Created: October 24, 2017 6:51:52 AM HDT
System Information
                  Name: rwsodal001
            Domain Name: example.com
             Time Zone: America/Adak
             DB Edition: EE
            DNS Servers: 10.200.76.198 10.200.76.199 192.0.2.254
```



NTP Servers: 10.200.0.1 10.200.0.2

Disk Group Information

DG Name	Redundancy	Percentage		
Data	Normal	90		
Reco	Normal	10		

In this example, the user <code>jdoe2</code> tries to run the <code>sudo odacli list-databases</code> command, which is not part of the set of commands that is configured for that user. SUDO prevents <code>jdoe2</code> from running the command.

[jdoe2@servernode1 ~]\$ sudo /opt/oracle/dcs/bin/odacli list-databases

Sorry, user jdoe2 is not allowed to execute '/opt/oracle/dcs/bin/odacli list-databases' as root on servernodel.

odacli Network Commands

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

odacli configure-firstnet

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

odacli create-network

Use the odacli create-network command to create a network.

odacli delete-network

Use the command odacli delete-network to delete a network.

odacli delete-networkinterface

Use the command odacli delete-networkinterface to delete a network interface on Oracle Database Appliance X8-2 hardware models.

odacli describe-network

Use the ${\tt odacli}$ ${\tt describe-network}$ command to display the details of a specific network.

odacli describe-networkinterface

Use the ${\tt odacli}$ ${\tt describe-networkinterface}$ command to display the details of any network interface.

odacli list-networks

Use the odacli list-networks command to display networks.

odacli list-networkinterfaces

Use the odacli list-networkinterfaces command to display network interfaces.

odacli update-network

Use the odacli update-network command to update an existing network configuration.



odacli configure-firstnet

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

File Path

/opt/oracle/dcs/bin/odacli

Syntax

/opt/oracle/dcs/bin/odacli configure-firstnet

Usage Notes

This command ensures that the system is available in the network, enabling you to manage the deployment through the Oracle Appliance Manager Browser User Interface.

- Bonded network configuration: Bonded dual-ported interface. With the bonded configuration, you can only enable one of the interfaces. The bonded configuration supports VLANs. The bonded network configuration uses btbond1 on Oracle Database Appliance hardware models other than X8-2. On Oracle Database Appliance X8-2, the bonded network configuration uses btbond1 to btbond6. This is the default setting.
- Non-bonded network configuration (on Oracle Database Appliance hardware models other than X8-2): Two separate physical network interfaces, this configuration does not support VLANs. The non-bonded network configuration uses em2 and em3 as public interfaces. Note that Oracle Database Appliance X8-2 does not support non-bonded network configuration.
- To change a non-bonded network configuration to a bonded configuration, run the Oracle Database Appliance Cleanup Script and redeploy the appliance.

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

Configure the first network to use a btbond1 interface without configuring DHCP. Complete the IP address, netmask address, and gateway address.

Values that you need to provide are shown in *italic font*, with the exception of the net1 gateway address; the program obtains the gateway IP address. The program derives this gateway address using the network information you provided for the other IP addresses. Accept this value, unless your network administrator provides an alternative gateway address that is different from the default that the appliance command-line interface detects.

The following is an example of the command on a single node platform:

/opt/oracle/dcs/bin/odacli configure-firstnet

```
Select the Interface to configure the network on (btbond1): btbond1 Configure DHCP on btbond1 (yes/no): no
INFO: You have chosen Static configuration
Enter the IP address to configure: 10.1.10.2
Enter the Netmask address to configure: 255.255.255.0
```



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

The following is an example of a non-bonded configuration. For a non-bonded configuration, answer no to using a bonding public interface. Note that Oracle Database Appliance X8-2 does not support non-bonded network configuration.

```
# /opt/oracle/dcs/bin/odacli configure-firstnet
Using bonding public interface (yes/no) [yes]: no
INFO: Breaking the bonding on btbond1
INFO: remove bonding module: rmmod bonding
INFO: remove slave setup in /etc/sysconfig/network-scripts/ifcfg-em2
INFO: remove slave setup in /etc/sysconfig/network-scripts/ifcfg-em3
INFO: Restarting the network
Shutting down interface em1: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface em1: [ OK ]
Bringing up interface em2: [ OK ]
Bringing up interface em3: [ OK ]
INFO: Restarting the DCS agent
initdcsagent stop/waiting
initdcsagent start/running, process 57629
Select the Interface to configure the network on (em2 em3) [em2]:
Configure DHCP on em2 (yes/no) [no]:
INFO: You have chosen Static configuration
Enter the IP address to configure : 10.31.102.101
Enter the Netmask address to configure : 255.255.240.0
Enter the Gateway address to configure[10.31.96.1] :
INFO: Plumbing the IPs now
INFO: Restarting the network
Shutting down interface eml: [ OK ]
Shutting down interface em2: [ OK ]
Shutting down interface em3: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface em1: [ OK ]
Bringing up interface em2: Determining if ip address 10.31.102.101 is
already in use for device em2...
[ OK ]
Bringing up interface em3: [ OK ]
```



odacli create-network

Use the odacli create-network command to create a network.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli create-network [-d|-no-d] -n interface -p ipaddress -w {Public| Dataguard|Database|Management|Backup|Other} -s subnetmask -g gateway[-h] [-sip] [-sn] [-vs] [-j]

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.
interfacetype, -t	Defines the network interface type {BOND PHYSICAL VLAN INTERNAL} (non case-sensitive).
ipaddress, -p	Defines the network IP address. This can be specified in the format IPAddress or nodeNumber0:IPAddress0,nodeNumber1:IPAddress1,
json, -j	(Optional) Displays JSON output.
networktype, -w	Defines the type of network. Options are: {Public Dataguard Database Management Backup Other}. The default is Other.
name, -m	Name of the network.
no-defaultnetwork, no-d	Identifies a network as not the default network. Usedefaultnetwork -d to identify a default network.
subnetmask, -s	Defines the Network Subnet Mask.
scanips, -sip	Defines the SCAN IP addresses (in the format scanip0,scanip1,)
scanname, -sn	Defines the SCAN name.
nodeNumber, -u	Defines the node number for High-Availability deployments. Note: This option is deprecated and will be desupported in a future release.
vips,-vs	List of virtual IP addresses. They can be specified in the format vipname0:nodeNumber0:vip0,vipname1:nodenumber1: vip1,
vlanid, -v	Add VLAN as a new network. This option is available for for High-Availability deployments.



- Network of public type can only be defined when deploying the appliance or when running odacli configure-firstnet during initial provisioning.
- 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.
- On Oracle Database Appliance non-High Availability systems, you cannot specify Virtual IP addresses. The Virtual IP address is set to the same value as the IP address.
- Single Client Access Name (SCAN) cannot be set up on Oracle Database Appliance non-High Availability systems.

Example 14-6 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
```

Example 14-7 Creating a VLAN Network

```
odacli create-network -g 10.31.131.129 -n btbond1 -t VLAN -p 0:10.31.131.132,1:10.31.131.133 -m vlan150 -w Database -no-d -sip 10.31.131.134,10.31.131.135 -sn scaoda702c1-vlan150-scan -s 255.255.255.128 -vs scaoda702c1n1-vlan150-vip:0:10.31.131.136,scaoda702c1n2-vlan150-vip:1:10.31.131.137 -v 150
```

odacli delete-network

Use the command odacli delete-network to delete a network.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To delete a network:

```
odacli delete-network -i id [-m] [-h] [-j]
```

Parameter	Description
id, -i	Defines the network identity.
name, -m	Specifies the network name.
json,-j	(Optional) Displays JSON output.



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

You cannot delete the Public-network or Private-network after the system is deployed.

On High-Availability systems, if the node number is not specified in the odaclidelete-network command, then the network on both nodes is deleted.

Example 14-8 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" : "May 18, 2020 23:14:32 PM EDT",
    "endTime" : "May 18, 2020 23:14:32 PM EDT",
    "status" : "Running",
    "taskDescription" : null,
    "parentTaskId" : "TaskSequential_135",
    "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
    "tags" : [ ],
    "reportLevel" : "Info",
    "updatedTime" : "May 18, 2020 23:14:32 PM EDT"
  },{
   "taskId" : "TaskZJsonRpcExt_142",
    "taskName" : "Setting up Network",
    "taskResult" : "Network setup success",
    "startTime" : "May 18, 2020 23:14:32 PM EDT",
    "endTime" : "May 18, 2020 23:14:32 PM EDT",
    "status" : "Success",
    "taskDescription" : null,
    "parentTaskId" : "TaskParallel_141",
    "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
    "tags" : [ ],
    "reportLevel" : "Info",
    "updatedTime" : "May 18, 2020 23:14:32 PM EDT"
                                                      } ],
   "createTimestamp" : "May 18, 2020 23:14:32 PM EDT",
  "description" : "Network service delete",
   "updatedTime" : "May 18, 2020 23:14:32 PM EDT"
```



odacli delete-networkinterface

Use the command odacli delete-networkinterface to delete a network interface on Oracle Database Appliance X8-2 hardware models.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To delete a network interface:

odacli delete-networkinterface id [-h]

Parameters

Parameter	Description
-id	Defines the network interface name.
help, -h	(Optional) Displays help for using the command.

Usage Notes

You cannot delete the network interface card in slot 7.

Example 14-9 Deleting a Network Interface

```
[root@oak ~]/opt/oracle/dcs/bin/odacli delete-networkinterface -m
btbond4
{
  "jobId" : "a81066e2-417e-4df6-b810-08df24c646c1",
  "status" : "Running",
  "message" : null,
  "reports" : ,
  "createTimestamp" : "May 18, 2020 00:01:09 AM UTC",
  "resourceList" : ,
  "description" : "Network Interface Deletion with name btbond4",
  "updatedTime" : "May 18, 2020 00:01:09 AM UTC"
}
```

Example 14-10 Deleting btbond1 Network Interface is Not Allowed

[root@oak ~]# /opt/oracle/dcs/bin/odacli delete-networkinterface -m
btbond1
DCS-10001:Internal error encountered: Delete operation is not allowed
on network interface : btbond1.

Example 14-11 Deleting Network Interface When Network Exists is Not Allowed

[root@oak ~]# opt/oracle/dcs/bin/odacli delete-networkinterface -m
btbond3



DCS-10001:Internal error encountered: Delete operation is not allowed - networks {[Public-network]} found on interface btbond3. Pleae delete the network first.

odacli describe-network

Use the odacli describe-network command to display the details of a specific network.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To display the details of a specific network:

odacli describe-network -i id [-j][-u][-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.	
name, -m	Specifies the network name.	
nodeNumber, -u	(Optional) Displays the network interface information for the specified node. Note: This option is deprecated and will be desupported in a future release.	

Example 14-12 Displaying Network Details

Enter the following command to display the details of the public network:

odacli describe-network -m Public-network

Network details

ID: a11573f1-cad4-41fc-9dd0-3ba958b605f8

Name: Public-network

NIC: btbond1

Interface Type: BOND

Subnet Mask: 255.255.255.0 Gateway: 10.31.116.1

VLAN ID:

Type: Public Default: true

Created: March 30, 2020 8:37:00 AM PDT Updated: March 30, 2020 10:25:27 AM PDT

Status: Configured

Node Networks: [IP Address on node0: 10.31.117.60, IP



Address on node1: 10.31.117.62]

Scan Name: scaodal-scan

Scan Ips: 10.31.117.64 10.31.117.65

Vips: [scaodal-vip on node0: 10.31.116.61, scaoda2-

vip on node1: 10.31.116.63]

Associated Databases: odacn db122a db122b db122c db122d

Example 14-13 Displaying Network Details

Enter the following command to display the details of network ID 93c07043-3002-494a-8fa0-f3ae932fb4c5:

odacli describe-network -i 93c07043-3002-494a-8fa0-f3ae932fb4c5 -u 1

Network details

ID: 93c07043-3002-494a-8fa0-f3ae932fb4c5

Name: Private-network

NIC: ibbond0

InterfaceType: BOND

IP Address: 192.168.16.25 Subnet Mask: 255.255.255.0

Gateway:
VlanId:

Type: Private Default: false

Created: November 18, 2018 10:54:16 PM PST

odacli describe-networkinterface

Use the odacli describe-networkinterface command to display the details of any network interface.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To display the details of a specific network interface:

odacli describe-networkinterface -i id [-j][-h][-u]

Parameter	Description
id, -i	Identifies the network interface ID. Use the odacli listnetworks command to obtain the id.
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.



Parameter	Description
nodeNumber, -u	(Optional) Displays the network interface information for the specified node. Note: This option is deprecated and will be desupported in a future release.

By default, this command always displays the network interface description of the local node. To display the description of another node, specify the node number option (-u).

Example 14-14 Displaying Network Details

Enter the following command to display the details of network interface with ID fe1bf0a7-f56e-44cd-9a84-f374c0aa4b61:

```
# /opt/oracle/dcs/bin/odacli describe-networkinterface
-i felbf0a7-f56e-44cd-9a84-f374c0aa4b61 -u 1
```

Network Interface details

ID: fe1bf0a7-f56e-44cd-9a84-f374c0aa4b61

Name: eth2
NIC: eth2
Type: PHYSICAL
Members: eth2

Slave Interface: true

Created: October 16, 2018 1:16:59 PM PDT

odacli list-networks

Use the odacli list-networks command to display networks.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-networks [-j] [-h]

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.
nodeNumber, -u	(Optional) Displays the network interface information for the specified node. Note: This option is deprecated and will be desupported in a future release.



Example 14-15 Displaying a List of Networks

Use the odacli list-networks command to display a list of networks:

odacli list-networkinterfaces

Use the odacli list-networkinterfaces command to display network interfaces.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-networkinterfaces [-j] [-h] [-u]

Parameters

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.
nodeNumber, -u	(Optional) Displays the network interface information for the specified node. Note: This option is deprecated and will be desupported in a future release.

Example 14-16 Displaying a List of Network Interfaces

Use the odacli list-networkinterfaces command to display a list of network interfaces:

	-networkinterfaces -u 1	Nama
ID		Name
NIC	Type	
d5907a23-1c5d-	-48c7-8d47-2c188ed43ddd	bond0
bond0	BOND	
4f7ea558-9a43	-42a9-8e08-6bfdf3a33229	bond1
bond1	BOND	
743ced8d-bbe5-	-4987-b316-5fdf95d5e60b	eth0
eth0	PHYSICAL	
a4121f9e-e694	-4852-a521-44efc6ef3fde	eth1



eth1	PHYSICAL	
c62c5f04-aa93	-4783-a3a7-275bf9fab2d9	eth2
eth2	PHYSICAL	
bda21dad-5c1c-	-4073-89e5-798b8fce8533	eth3
eth3	PHYSICAL	
0141f1ac-5c34	-4393-8b99-76094b6f795c	ib0
ib0	PHYSICAL	
e8cb138a-087f	-4739-bb8d-90b1d903aeb6	ib1
ib1	PHYSICAL	
a31cfd63-fb90-	-4cbb-a2fb-382c5e33983b	ibbond0
ibbond0	BOND	

odacli update-network

Use the ${\tt odacli}$ 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] [-sip]
[-sn] [-vs]
[-j] [-h]
```

Parameter	Description
id, -i	Defines the network identity.
gateway, -g	(Optional) Defines the network gateway.
ipaddress,-p	(Optional) Defines the network IP address. This can be specified in the format IPAddress or nodeNumber0:IPAddress0,nodeNumber1:IPAddress1,
json, -j	(Optional) Displays JSON output.
networktype, -w [Public Dataguard Backup Other]	(Optional) Defines the type of network.
scanips, -sip	Defines the SCAN IP addresses (in the format scanip0,scanip1,)
scanname, -sn	Defines the SCAN name.
subnetmask, -s	(Optional) Defines the Network Subnet Mask.
vips, -vs	List of virtual IP addresses. They can be specified in the format vipname0:nodeNumber0:vip0,vipname1:nodenumber1:vip1
help,-h	(Optional) Displays help for using the command.



- You cannot modify the Public and Private-interfaces after the system is deployed.
- On Oracle Database Appliance non-High Availability systems, you cannot update Virtual IP addresses. The Virtual IP address is set to the same value as the IP address.
- Single Client Access Name (SCAN) cannot be set up on Oracle Database Appliance non-High Availability systems.
- On Oracle Database Appliance High Availability systems, you cannot update
 network of type Database to other types of network (such as backup, management
 and so on). You can, however, update IP address, Virtual IP address, Gateway,
 and Subnet mask for all network types.
- The system has both SFP+ and 10GBaseT bonded pairs, which means that one
 of them is used for the public, and you can configure the other after deployment if
 you want additional connectivity. For example, if you want a backup network.

Example 14-17 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

odacli Apply Patch and Update Commands

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

- odacli cleanup-patchrepo
 - Use the odacli cleanup-patchrepo command to delete obsolete or old patches from the repository.
- odacli create-prepatchreport
 - Use the odacli create-prepatchreport command to run pre-checks for patching.
- odacli delete-agentconfig-parameters
 - Use the odacli delete-agentconfig-parameters command to delete configuration variables used by the appliance.
- odacli delete-prepatchreport
 - Use the odacli delete-prepatchreport command to delete any pre-check report.
- odacli describe-component
 - Use the odacli describe-component command to display the installed version and the latest available version for each component.
- odacli describe-latestpatch
 - Use the odacli describe-latestpatch command to display a list of the latest supported patch versions for each component.
- · odacli describe-prepatchreport
 - Use the odacli describe-prepatchreport command to display the precheck report, with a list of pre-checks run with status and comments.



odacli list-agentconfig-parameters

Use the odacli list-agentconfig-parameters command to list configuration variables used by the appliance.

odacli list-availablepatches

Use the odacli list-available patches command to display all available patches for Oracle Database Appliance.

odacli list-prepatchreports

Use the odacli list-prepatchreports command to display all pre-check reports, with a list of pre-checks run with status and comments.

• odacli update-agentconfig-parameters

Use the odacli update-agentconfig-parameters command to modify configuration variables used by the appliance.

odacli update-dbhome

Use the odacli update-dbhome command to update a specific RDBMS Home to the latest patch bundle version.

odacli update-dcsadmin

Use the odacli update-dcsadmin command to update the DCS admin components for Zookeeper upgrade.

odacli update-dcsagent

Use the odacli update-dcsagent command to update the agent.

odacli update-dcscomponents

Use the odacli update-dcscomponents command to update the DCS components such as the DCS agent and Zookeeper.

odacli update-registry

Use the odacli update-registry command to update the registry of components when you apply patches manually.

odacli update-repository

Use the odacli update-repository command to update the repository with the new Oracle Database Appliance software.

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.

odacli update-storage

Use the odacli update-storage command to update the storage.

odaadmcli orachk

Use the odaadmcli orachk command to check configuration settings for Oracle Database Appliance components.

odacli cleanup-patchrepo

Use the odacli cleanup-patchrepo command to delete obsolete or old patches from the repository.

File Path

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



Syntax

```
odacli cleanup-patchrepo [-cl clones] | [-v version [-comp component]]|
[-l local|-n NodeID]
```

Parameters

Parameter	Description
clones, -cl	Specifies the option to clean up clone files (DB and GI) from the repository /opt/oracle/oak/pkgrepos/orapkgs/clones/.
version, -v	Defines the Oracle Database Appliance release you want to delete.
	For example, 12.2.1.4.0.
component, -comp	A comma-separated list of components as {DB,GI} to cleanup for a specific Oracle Database Appliance patch version. The default is both {DB,GI}.
local, -l	(Optional) Cleans up the repository on the local node.
node, -n	(Optional) Cleans up the repository on the specified nodes.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.

Usage Notes

- Use the command to free up space in the patch repository.
- This command does not delete the current patches or latest installed patch repository.

Example 14-18 Deleting RDBMS and GI components for a specific release

```
# odacli cleanup-patchrepo -cl -comp db,gi -v 12.2.1.4.0
{
"jobId" : "d915ffc0-c7f6-49cf-8ddd-ab5d2ad9072f",
"status" : "Created",
"message" : null,
"reports" : ,
"createTimestamp" : "April 17, 2019 06:44:28 AM UTC",
"resourceList" : ,
"description" : "Cleanup patchrepos",
"updatedTime" : "April 17, 2019 06:44:28 AM UTC"
```

Example 14-19 Deleting Clone Files

```
# odacli cleanup-patchrepo -cl
{
"jobId" : "5d8549a2-1a5e-4b4f-9867-c1f671c659c4",
"status" : "Created",
"message" : null,
"reports" : ,
"createTimestamp" : "April 17, 2019 06:43:45 AM UTC",
```



```
"resourceList" : ,
"description" : "Cleanup patchrepos",
"updatedTime" : "April 17, 2019 06:43:45 AM UTC"
}
```

odacli create-prepatchreport

Use the $odacli\ create-prepatch$ $report\ command\ to\ run\ pre-checks\ for\ patching.$

Patching pre-checks help identify and remedy any problems before patching is attempted, and ensure all components are ready for updates.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli create-prepatchreport [-d] [-i] [-f] [-h] [-w] [-h] [-s] [-r] [-st] [-sko] [-c os [-local]
```

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.
files, -f	(Optional) Specifies files required to update repository, comma-separated if multiple files are required.
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.
operating-system, -os	(Optional) Specifies the operating system components. Use this option to run operating system upgrade. If you specify -c, then the only option is os. If you specify -c os, then you can also specify -local (optional).
node, -n	(Optional) Runs patch pre-checks on specified nodes.
repo, -r	(Optional) Specify this option to run the patch pre-checks for the repository components.
server, -s	(Optional) Specify this option to run the patch pre-checks for the server components.
storage, -st	(Optional) Specify this option to run the patch pre-checks for the storage components.
version, -v	(Optional) Specifies the version for running the pre-checks.
skip-orachk,-sko	(Optional) Specifies whether you want to skip ORAchk validations.



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 14-20 Creating Pre-Check Report

```
# odacli create-prepatchreport -v 19.8.0.0.0 -s

Job details

ID: e07993d5-0a06-44e7-819a-36d708c52bb6

Description: Patch pre-checks for [OS, ILOM, GI,

ORACHKSERVER]

Status: Created

Created: April 20, 2020 1:01:59 AM PDT

Message: Use 'odacli describe-prepatchreport -i
e07993d5-0a06-44e7-819a-36d708c52bb6' to check details of results

Task Name Start Time End Time Status
```

odacli delete-agentconfig-parameters

Use the odacli delete-agentconfig-parameters command to delete configuration variables used by the appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli delete-agentconfig-parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.
name, -n	Specifies the name of the parameter.
type, -t	(Optional) Deletes the configuration value for the given type. The default value is PUBLIC.



Use the odacli delete-agentconfig-parameters command to delete configuration values. For High-Availability models, the command deletes the parameter values on both nodes in the cluster.

Example 14-21 Deleting configuration parameters

odacli delete-agentconfig-parameters -n HttpProxyHost

Job details

ID: c6e123c6-1b76-48f8-973d-63c8dab65545

Description: delete configuration parameter HttpProxyHost

Status: Running

Created: May 18, 2020 9:45:39 AM PDT

Message:

Task Name Start

Time End Time

Status

odacli delete-prepatchreport

Use the odacli delete-prepatchreport command to delete any pre-check report.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli delete-prepatchreport -i Report ID

Parameters

Parameter	Description
Report ID	Describes the ID of the report to be deleted.
help, -h	(Optional) Displays help for using the command.

Usage Notes

Use the odacli delete-prepatchreport command to delete pre-check reports.

Example 14-22 Deleting A Patch Pre-Checks Report

odacli delete-prepatchreport -i 741f635b-7c75-4832-8813-782367f1e6fd



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 displays 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

/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-component [-d][-j][-h][-s][-v][-l][-n]

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, -l	(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, -n	(Optional) Describes the components for a specific node on 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.
systemversion, -v	(Optional) Displays only the system version. This option is available only on high-availability systems.

Usage Notes

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

Example 14-23 Displaying Patch Details for Components for High-Availability Oracle Database Appliance Systems for a Release

```
# /opt/oracle/dcs/bin/odacli describe-component -v
System Version
-----
18.8.0.0.0
System node Name
```



node1

Local System Version		
18.8.0.0.0		
Component Version	Installed Version	Available
		-
OAK date	18.8.0.0.0	up-to-
GI date	18.8.0.0.191015	up-to-
DB date	18.8.0.0.191015	up-to-
DCSAGENT date	18.8.0.0.0	up-to-
ILOM date	4.0.4.41.r130359	up-to-
BIOS date	25080100	up-to-
OS date	6.10	up-to-
FIRMWARECONTROLLER date	11.05.03.00	up-to-
FIRMWAREEXPANDER	0018	001e
FIRMWAREDISK { [c0d0,c0d1]	A7E0	up-to-
date [c1d0,c1d1,c1d2,c1d3,c1d4,c1d5,c1d6, c1d7,c1d8,c1d9,c1d10,c1d11,c1d12,c1d13, c1d14,c1d15,c1d16,c1d17,c1d18,c1d19, c2d0,c2d1,c2d2,c2d3,c2d4,c2d5,c2d6,c2d7, c2d8,c2d9,c2d10,c2d11,c2d12,c2d13,c2d14, c2d15,c2d16,c2d17,c2d18,c2d19]	A72A	a7e0
[c1d20,c1d21,c1d22,c2d20,c2d21,c2d22] date }	944A	up-to-
System node Name		
node2		
Local System Version		



18.8.0.0.0

Component Version	Installed Version	
OAK date	18.8.0.0.0	up-to-
GI date	18.8.0.0.191015	up-to-
DB date	18.8.0.0.191015	up-to-
DCSAGENT date	18.8.0.0.0	up-to-
ILOM 4.0.4.41.r130359	4.0.2.27.b.r125869	
BIOS	25060400	25080100
OS date	6.10	up-to-
FIRMWARECONTROLLER date	11.05.03.00	up-to-
FIRMWAREEXPANDER	0018	001e
<pre>FIRMWAREDISK { [c0d0,c0d1] date</pre>	A7E0	up-to-
[c1d0,c1d1,c1d2,c1d3,c1d4,c1d5,c1d6, c1d7,c1d8,c1d9,c1d10,c1d11,c1d12,c1d13, c1d14,c1d15,c1d16,c1d17,c1d18,c1d19, c2d0,c2d1,c2d2,c2d3,c2d4,c2d5,c2d6,c2d7, c2d8,c2d9,c2d10,c2d11,c2d12,c2d13,c2d14, c2d15,c2d16,c2d17,c2d18,c2d19]		a7e0
<pre>[c1d20,c1d21,c1d22,c2d20,c2d21,c2d22] date }</pre>	944A	up-to-

Example 14-24 List DB Home Details

odacli describe-component -d

System Version
----18.7.0.0.0

System node Name



node1

Local System Version

18.7.0.0.0

Component Installed Version Available

Version

DB 12.2.0.1.190716 up-to-

date

System node Name

node2

Local System Version

18.7.0.0.0

Component Installed Version Available

Version

DB 12.2.0.1.190716 up-to-

date

Example 14-25 List the Server Components and Versions

odacli describe-component -s

System Version

18.7.0.0.0

System node Name

node1

Local System Version

18.7.0.0.0

Component Installed Version Available Version

OAK 18.7.0.0.0 up-to-

date

GI 18.7.0.0.190716 up-to-

date

ILOM 4.0.4.38.r130206 up-to-



date		
BIOS date	52010400	up-to-
OS date	6.10	up-to-
System node Name		
node2		
Local System Version		
18.7.0.0.0		
Component Version	Installed Version	Available
OAK date	18.7.0.0.0	up-to-
GI date	18.7.0.0.190716	up-to-
ILOM date	4.0.4.38.r130206	up-to-
BIOS date	52010400	up-to-
OS date	6.10	up-to-

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]

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



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

Example 14-26 Listing the Latest Supported Versions

odacli describe-latestpatch

omponentType a	availableVersion
gi	18.7.0.0.190716
db	18.7.0.0.190716
db	12.2.0.1.190716
db	12.1.0.2.190716
db	11.2.0.4.190716
oak	18.7.0.0.0
asr	18.3.1
ilom	3.0.16.22.f.r100119
ilom	4.0.2.31.r126282
ilom	4.0.4.41.r130359
ilom	4.0.4.37.r130617
ilom	4.0.0.24.r121140
ilom	4.0.4.40.r130348
ilom	4.0.4.38.r130206
os	6.10
bios	17140300
bios bios	30150300 25080100
	41060300
	38130200
bios	39090000
bios	52010400
firmwareexpander	
firmwareexpander	
firmwareexpander	
firmwaredisk	
firmwaredisk	
firmwaredisk	
firmwarecontrol:	
firmwarecontrol:	
firmwarecontrol	
firmwarecontrol	
firmwarecontrol	
firmwarecontrol	
	ler 4.650.00-7176
firmwarecontrol	
dcsagent	18.7.0.0.0
firmwaredisk firmwaredisk	a7e0
firmwaredisk	a4c0 a72a
firmwaredisk	a/2a a880
firmwaredisk	a122
firmwaredisk	a38k
firmwaredisk	c122
	- · -



```
firmwaredisk
              944a
firmwaredisk
              9440
firmwaredisk
             e12b
firmwaredisk 5g08
firmwaredisk
             a902
firmwaredisk
              a140
firmwaredisk sa03
firmwaredisk
              0b25
firmwaredisk
              sf04
firmwaredisk
             c38k
firmwaredisk a3a0
firmwaredisk pd51
firmwaredisk
             m554
firmwaredisk
              0121
firmwaredisk
              xc311102
```

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 14-27 Displaying the Patch Pre-Checks Report

odacli describe-prepatchreport -i e07993d5-0a06-44e7-819a-36d708c52bb6

Patch pre-check report

Job ID: e07993d5-0a06-44e7-819a-36d708c52bb6

Description: Patch pre-checks for [OS, ILOM, GI,



ORACHKSERVER]

Status: FAILED

Created: April 20, 2020 1:01:59 AM PDT

Result: One or more pre-checks failed for [OS, ORACHK]

Node Name

node1

Pre-Check Status

Comments

__OS__

Validate supported versions Success Validated minimum supported

versions.

Validate patching tag Success Validated patching tag:

19.6.0.0.0.

Is patch location available Success Patch location is

available.

Validate if ODABR is installed Failed ODABR utility is not

installed on

node:

scaoda8m004.

Space checks for OS upgrade Success Validated space

checks.

Install OS upgrade software Success Extracted OS upgrade patches

into

/root/oda-upgrade. Do not

remove this

directory untill OS upgrade

 ${\tt completes.}$

Verify OS upgrade by running Success Results stored

in:

preupgrade checks '/root/preupgrade-

results/

preupg_results-200420010731.tar.gz' .

Read complete report

file

'/root/preupgrade/

result.html' before

attempting OS

upgrade.

Validate custom rpms installed Success No additional RPMs found

installed on

node:scaoda8m004.

Scheduled jobs check Failed Scheduled jobs found.

Disable

scheduled jobs before

attempting OS

upgrade.

__ILOM___

Validate supported versions Success Validated minimum supported

versions. Validate patching tag Validated patching tag: Success 19.6.0.0.0. Is patch location available Success Patch location is available. Checking Ilom patch Version Success Successfully verified the versions Patch location validation Success Successfully validated location ___GI___ Validate supported GI versions Success Validated minimum supported versions. Validate available space Success Validated free space under /u01 Verify DB Home versions Success Verified DB Home versions Validate patching locks Validated patching Success Validate clones location exist Success Validated clones Validate ODABR snapshots exist Success No ODABR snaps found on the node. __ORACHK__ Running orachk Failed Orachk validation failed: . Verify diagsnap configuration Failed diagsnap or pstack are configured to collect first failure diagnostic Software home Failed Software home check failed

Example 14-28 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

nodel
Pre-Check Status

Comments

___DB___

Validate patching tag Success Validated patching tag:

12.2.1.2.0



Validate available space required	Success	Validated free space
under /u01		** '6' 1
Is system provisioned provisioned	Success	Verified system is
Is patch location available available	Success	Patch location is
Validate minimum agent version version	Success	Validated minimum agent
Verify DBHome patch tag tag	Success	Verified DB Home patch
Is GI upgraded upgraded	Success	Validated GI is
Patch location validation location	Success	Successfully validated
Patch verification on DB	Success	Patch 26710464 not applied
home		
Is patch rollback required rollback	Success	No DB patch is required to
Opatch updation opatch in	Success	Successfully updated the
DbHome		
Patch conflict check DBHome	Success	No patch conflicts found on

odacli list-agentconfig-parameters

Use the odacli list-agentconfig-parameters command to list configuration variables used by the appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-agentconfig-parameters [-h] [-j] [-n] [-t]

Parameter	Description
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.
name, -n	Specifies the name of the parameter.



Parameter	Description
type, -t	(Optional) Specifies the configuration value for the given type. The default value is PUBLIC.

Use the odacli list-agentconfig-parameters command to list configuration variables used by the appliance.

Example 14-29 Displaying the HttpProxyPort

./odacli list-agentconfig-parameters -n HttpProxyPort

Name Updated	Value	2	Desci	ription						
HttpProxyF	ort	Http	proxy	server	port	May	18,	2020	4:14:10	AM

Example 14-30 Displaying the agent configuration

odacli list-agentconfig-parameters

HttpsProxyPort Https proxy server port May 18, 2020 4:14:10 AM

Related Topics

Configuring Agent Proxy Settings for Object Store Access
 If the Object Store IP address is accessible only through proxy setup by the Oracle
 Database Appliance server, then define the proxy setting for the agent, so that the
 agent can access the Object Store.

odacli list-availablepatches

UTC

Use the odacli list-available patches command to display all available patches for Oracle Database Appliance.

File Path

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

Syntax

odacli list-availablepatches [-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

Use the odacli list-available patches command to display all available patches for Oracle Database Appliance.

Example 14-31 Displaying All Patch Pre-Checks Reports

odacli list-prepatchreports

Use the <code>odacli list-prepatchreports</code> command to display all pre-check reports, 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

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-prepatchreports [-h] [-j]

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



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

Use the odacli list-prepatchreports command to display all pre-check reports.

Example 14-32 Displaying All Patch Pre-Checks Reports

```
# odacli list-prepatchreports
ID Description Created
                                                    Status
8a8a14b5-1b5e-4eeb-8ba9-c8136fb4eea1
                                      Patch pre-checks for [DB]:
DbHome is OraDB12102 home1
May 16, 2018 7:00:56 PM PDT Running
                                       Patch pre-checks for
2c9a747d-a452-4e48-bcab-9c7cd9f5f35b
[STORAGE]
May 16, 2018 6:53:23 PM PDT
                                  Success
f3b9c7c1-3061-4577-848d-645669d71f72
                                       Patch pre-checks for [OS,
ILOM, GI]
May 16, 2018 7:00:56 PM PDT
                                  Running
```

odacli update-agentconfig-parameters

Use the odacli update-agentconfig-parameters command to modify configuration variables used by the appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli update-agentconfig-parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
append, -a	(Optional) Appends the parameter values. For example, -n p1 -v v1 -n p2 -v v2 -a.
comment, -c	(Optional) Specifies the comment for the parameter.



Parameter	Description
description, -d	(Optional) Specifies the description of the parameter.
json, -j	(Optional) Displays JSON output. The default is false.
name, -n	Specifies the name of the parameter. Provide multiple parameter values in the format -n p1 -v v1 -n p2 -v v2.
reset, -r	Resets the parameter to the default value. For example: -n p1 -n p2 -r.
update, -u	Replaces the parameter with the specified value. For example: -n p1 -v v1 -n p2 -v v2 -u.
value, -v	Specifies the value of the parameter. Provide multiple parameter values in the format -n p1 -v v1 -n p2 -v v2.
type, -t	(Optiona) Specifies the type of the parameter. The default is PUBLIC.

Use the odacli update-agentconfig-parameters command to modify configuration variables used by the appliance. The supported configuration parameters are HttpsProxyHost and HttpsProxyPort.

Multiple values can be specified. For High-Availability models, the command sets the parameter values on both nodes in the cluster.

Example 14-33 Setting Multiple Parameters

```
# odacli update-agentconfig-parameters -n HttpsProxyPort -v 80 -d "Http
proxy port"
-n HttpsProxyPort -v 80 -d "Https proxy port" -u

update-agentconfig-parameters -n HttpsProxyPort -n HttpProxyPort -r

update-agentconfig-parameters -n HttpsProxyHost -v 90 -a

update-agentconfig-parameters -n OSPatchRepos -v
```

Related Topics

Configuring Agent Proxy Settings for Object Store Access
 If the Object Store IP address is accessible only through proxy setup by the Oracle
 Database Appliance server, then define the proxy setting for the agent, so that the
 agent can access the Object Store.



odacli update-dbhome

Use the odacli update-dbhome command to update a specific RDBMS Home to the latest patch bundle version.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli update-dbhome -i dbhomeid -v version [-j] [-h] [-v]

Parameters

Parameter	Description
dbhomeid, -i	Defines the Oracle Database Home to update.
help-h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.
precheck, -p	Analyzes the patch.
version, -v	Defines the Oracle Database Appliance version to update. For example, 12.2.1.1.

Usage Notes

- The update-dbhome command applies the latest release update (RU) for Oracle Database home.
- To be updated with the latest patches, the database must be running.
- Only databases in the Configured status are updated. Use the odacli list-database command to see a list of configured databases. Databases in any other status are skipped during the update.

Example 14-34 Updating an Oracle Database Home

To apply the latest patch bundle to update an Oracle Database:

odacli update-dbhome -i ad6c7326-e460-411e-94df-230dedbef743 -v
19.8.0.0.0

odacli update-dcsadmin

Use the ${\tt odacli}$ update-dcsadmin command to update the DCS admin components for Zookeeper upgrade.

File Path

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



Syntax

```
odacli update-dcsadmin -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.
json, -j	(Optional) Displays JSON output.

Usage Notes

The update-dcsadmin command sets up the dcsadmin and other components. Run the update-dcsadmin command only after you update the DCS agent.

Example 14-35 Updating DCS Admin

```
# odacli update-dcsadmin -v 18.7.0.0.0
{
  "jobId" : "4c238b93-e641-4f9d-9f86-93d0574dd234",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "July 12, 2019 03:11:53 AM UTC",
  "resourceList" : [ ],
  "description" : "DcsAdmin patching",
  "updatedTime" : "July 12, 2019 03:11:53 AM UTC"
}
```

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]
```

Parameter	Description
version, -v	Defines the Oracle Database Appliance version after update.
help, -h	(Optional) Displays help for using the command.



Parameter	Description
json, -j	(Optional) Displays JSON output.

The update dcsagent command updates the dcs-agent to the RPM package that is located in the *location* and restarts the dcs-agent. After the update is applied, the agent automatically restarts. It will take a few minutes to reconnect to the dcs-agent. Wait until the agent shuts down and completes restarting before performing any tasks.



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

Example 14-36 Updating the Agent

To update the dcs-agent to version 19.8:

```
# odacli update-dcsagent -v 19.8
{
    "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "May 18, 2020 14:09:24 PM CST",
    "description" : "DcsAgent patching",
    "updatedTime" : "May 18, 2020 14:09:24 PM CST"
}
```

odacli update-dcscomponents

Use the odacli update-dcscomponents command to update the DCS components such as the DCS agent and Zookeeper.

File Path

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

Syntax

```
odacli update-dcscomponents -v version [-j] [-h]
```

Parameter	Description
version, -v	Defines the Oracle Database Appliance version after update.



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

The update-dcscomponents command sets up the dcscomponents such as Zookeeper.

Example 14-37 Updating DCS Components

```
# odacli update-dcscomponents -v 18.7.0.0.0
{
   "jobId" : "4c238b93-e641-4f9d-9f86-93d0574dd234",
   "status" : "Created",
   "message" : null,
   "reports" : [ ],
   "createTimestamp" : "July 12, 2019 03:11:53 AM UTC",
   "resourceList" : [ ],
   "description" : "DcsComponents patching",
   "updatedTime" : "July 12, 2019 03:11:53 AM UTC"
}
```

odacli update-registry

Use the odacli update-registry command to update the registry of components when you apply patches manually.

File Path

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

Syntax

```
odacli update-registry -n component [-f] [-j] [-h]
```

Parameter	Description
component, -n	Defines the Oracle Database Appliance component for the registry update. The values can be system {gihome, dbnode, sysinstance} or all {dbhome, db, dbstorage, asr}. You can also specify the individual component to be refreshed.
	Note: Refresh system components before you refresh all components.
-f	(Optional) Forces the refresh of the specified component even if it already exists in the appliance registry metadata.
help, -h	(Optional) Displays help for using the command.



Parameter	Description
json, -j	(Optional) Displays JSON output.

The update-registry command updates the registry of components when you apply patches manually.

Example 14-38 Updating the Registry with the -force option

```
# odacli update-registry -n system
DCS-10112: Specified components are already discovered.
Using force flag option to rediscover and update the sytem components
though it already exists in appliance registry
# odacli update-registry -n system -f
Job details
                    ID: 752b56d8-2bcd-4a29-ab96-196925fc5c13
           Description: Discover System Components : system
                Status: Created
               Created: July 31, 2019 1:02:51 PM UTC
               Message:
Task Name Start Time End Time Status
# odacli describe-job -i 752b56d8-2bcd-4a29-ab96-196925fc5c13
Job details
                    ID: 752b56d8-2bcd-4a29-ab96-196925fc5c13
           Description: Discover System Components : system
                Status: Success
               Created: July 31, 2019 1:02:51 PM UTC
               Message:
Task Name Start Time End Time Status
_____
Rediscover SysInstance July 31, 2019 1:02:51 PM UTC July 31, 2019
1:03:24 PM UTC Success
Rediscover DBNode July 31, 2019 1:03:24 PM UTC July 31, 2019 1:03:24 PM
Rediscover GiHome July 31, 2019 1:03:24 PM UTC July 31, 2019 1:03:26 PM
UTC Success
```



odacli update-repository

Use the odacli update-repository command to update the repository with the new Oracle Database Appliance software.

Prerequisites

Before updating the repository, you must upload the Oracle Database Appliance software to the appliance. If the patch contains more than one zip file, then extract and concatenate the zip files before updating the repository.

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

- Before updating the repository, ensure that you do not have any jobs running or pending during the update window.
- Upload the patches to dom0 on Node0. On multi-node systems, the DCS-Agent copies the patch to Node1 and updates the patch repository on both nodes.

Example 14-39 Updating the Repository

The server patch zip file is located in the /u01/tmpdir directory. The following example updates the repository with the latest server patch and then lists the job to verify that the update is successful:

```
# /opt/oracle/dcs/bin/odacli update-
repository -f /tmp/oda-sm-19.8.0.0.0-200718-serverlof2.zip,/tmp/oda-
sm-19.8.0.0.0-200718-server2of2.zip
{
    "jobId" : "d3510276-da05-447b-990e-6d30964f8f79",
    "status" : "Created",
```



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
precheck, -p	Analyzes the patch.
version, -v	Defines the version to update.
local,-l	Updates the server on the local node of multi-node high availability (HA) systems. This option is not needed for single-node systems.
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.

After the update is applied, the agent automatically restarts. It will take a few minutes to reconnect to the server. Wait until the agent shuts down and completes restarting before performing any tasks. Allow at least two (2) minutes before running the next command.





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

Example 14-40 Updating the Server

Run the odacli update-server command to update the server to 19.8.0.0.0. On a multi-node HA system, you must run the command on both nodes to update the server version.

```
# odacli update-server -v 19.8.0.0.0
{
    "jobId" : "6f27a29a-959f-44el-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" : "May 18, 2020 14:13:45 PM CST",
    "resourceList" : [ ],
    "description" : "Server Patching",
    "updatedTime" : "May 18, 2020 14:13:45 PM CST"
}
```

odacli update-storage

Use the odacli update-storage command to update the storage.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli update-storage -v version [-h] [-j] [-r]
```

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.
rolling, -r	(Optional) Enables to patch shared disks in rolling fashion without stopping Oracle Clusterware. The shared disks must be online.



Usage Notes

• If the FIRMWAREEXPANDER Installed Version is lower than or equal to the Available Version, then you cannot use rolling mode to update the storage.

Example 14-41 Updating the Storage

odacli update-storage -v 19.8.0.0.0

odaadmcli orachk

Use the odaadmcli orachk command to check configuration settings for Oracle Database Appliance components.

File Path

/opt/oracle/dcs/bin/odaadmcli

Syntax

To perform diagnostic checks of components:

odaadmcli orachk [-h]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
Components such as -a, -acchk, - applypatch, -autostop	(Optional) Specifies the comma-separated list of components for which you want to collect data. Specify the component to be checked in the command. For example:
	# odaadmcli orachk -a
verbose	Displays detailed message.

Usage Notes

The odaadmcli orachk command invokes orachk from the directory opt/oracle.SupportTools/orachk.

Example 14-42 Running odaadmcli orachk

[root@oak bin] # ./odaadmcli orachk
INFO: 2019-09-04 16:41:26: Running orachk under /opt/
oracle.SupportTools/orachk



Example 14-43 Running odaadmcli orachk for a component

[root@oak bin] # ./odaadmcli orachk -a
INFO: 2019-09-19 10:45:16: Running orachk under /usr/bin/orachk
Checking ssh user equivalency settings on all nodes in cluster for root

odacli Appliance Commands

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

odacli-adm set-credential

Use the odacli-adm set-credential command to change the oda-admin user credentials.

odacli create-appliance

Use the odacli create-appliance command in a JSON file format to provision Oracle Database Appliance.

odacli describe-system

Use the odacli describe-system command to display details about components installed on the system.

odacli list-featuretracking

Use the odacli list-featuretracking command to display the latest feature tracking report.

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 Browser User Interface.
username, -u	User name required to access the Oracle Appliance Manager Browser User Interface. 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 14-44 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

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 <code>/opt/oracle/dcs/sample</code> 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.

odacli describe-system

Use the $odacli\ describe-system$ command to display details about components installed on the system.

File Path

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



Syntax

To list jobs and view job details and status:

```
odacli describe-system [-h] [-b] [-d] [-j]
```

Parameters

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.
bom, -b	(Optional) Displays the bill of materials for the installed components on the appliance.
details, -d	(Optional) Display on the command-line, the details of all installed components on the appliance.

Usage Notes

Do not provide both options $\mbox{-b}$ and $\mbox{-d}$ at the same time, in the command.

Example 14-45 Example Command to View the Bill of Materials from the Command Line for Bare Metal Deployments

```
# odacli describe-system -b
ODA Components Information
______
Component Name
                         Component
Details
______
NODE
                         Name : oda1
                         Domain Name :
                         Time Stamp : April 29, 2020 7:00:12 PM
UTC
                         Installed RPMS :
RPMS
acl-2.2.49-7.el6_9.1.x86_64,
                                        aide-0.14-11.el6.x86_64,
                                        alsa-
lib-1.1.0-4.el6.x86_64,
                                        at-3.1.10-49.el6.x86_64,
                                        atk-1.30.0-1.el6.x86_64,
                                        attr-2.4.44-7.el6.x86_64,
                                        audit-2.4.5-6.el6.x86_64,
                                        audit-
libs-2.4.5-6.el6.x86_64,
                                        audit-libs-
python-2.4.5-6.el6.x86_64,
```



augeaslibs-1.0.0-10.el6.x86_64, authconfig-6.1.12-23.el6.x86_64, avahilibs-0.6.25-17.el6.x86_64, b43openfwwf-5.2-10.el6.noarch, basesystem-10.0-4.0.1.el6.noarch, bash-4.1.2-48.el6.x86_64, bc-1.06.95-1.el6.x86_64, bindlibs-9.8.2-0.62.rc1.el6_9.5.x86_64, bindutils-9.8.2-0.62.rc1.el6_9.5.x86_64, binutils-2.20.51.0.2-5.47.el6_9.1.x86_64, biosdevname-0.7.2-1.el6.x86_64, bridgeutils-1.2-10.el6.x86_64, busybox-1.15.1-21.el6_6.x86_64, bzip2-1.0.5-7.el6_0.x86_64, bzip2libs-1.0.5-7.el6_0.x86_64, cacertificates-2017.2.14-65.0.1.el6_9.noarch, cairo-1.8.8-6.el6_6.x86_64, celt051-0.5.1.3-0.el6.x86_64, checkpolicy-2.0.22-1.el6.x86_64, chkconfig-1.3.49.5-1.el6.x86_64, cloogppl-0.15.7-1.2.el6.x86_64, compatlibcap1-1.10-1.x86_64, compat-libstdc+ +-33-3.2.3-69.el6.x86_64, compatreadline5-5.2-17.1.el6.x86_64, compat-sap-c+ +-4.8.2-16.el6.x86_64, ConsoleKit-0.4.1-6.el6.x86_64, ConsoleKitlibs-0.4.1-6.el6.x86_64, ConsoleKitx11-0.4.1-6.el6.x86_64,



```
coreutils-8.4-46.0.1.el6.x86_64,
                                                coreutils-
libs-8.4-46.0.1.el6.x86_64,
                                                cpio-2.10-13.el6.x86_64,
                                                cpp-4.4.7-18.el6.x86_64,
cpupowerutils-1.3-2.el6.x86_64,
cpuspeed-1.5-22.0.1.el6.x86_64,
cracklib-2.8.16-4.el6.x86_64,
                                                cracklib-
dicts-2.8.16-4.el6.x86_64,
crash-7.1.4-1.0.1.el6_7.x86_64,
crda-3.13_2015.10.22-3.el6.x86_64,
createrepo-0.9.9-27.el6_9.noarch,
cronie-1.4.4-16.el6_8.2.x86_64,
                                                cronie-
anacron-1.4.4-16.el6_8.2.x86_64,
crontabs-1.10-33.el6.noarch,
                                                cryptsetup-
luks-1.2.0-11.el6.x86_64,
                                                cryptsetup-luks-
libs-1.2.0-11.el6.x86_64,
                                                cups-
libs-1.4.2-78.el6_9.x86_64,
. . . .
```

odacli list-featuretracking

Use the odacli list-featuretracking command to display the latest feature tracking report.

File Path

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

Syntax

Use the ${\tt odacli\ list-featuretracking\ command\ to\ display}$ the latest feature tracking report.

odacli list-featuretracking [-h] [-j]

Parameters

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

Example 14-46 Example Command to View the Features Report from the Command Line

odacli list-featuretracking

DCS Feature Tracking Report

Last collection date: 10/26/18 15:35

Report version: 1.0

DCS Feature Usage Summary

Currently

Detected Total Last Usage

Feature Name Used

Usages Samples Time

Object Store

TRUE 12 12 10/26/18 15:35

Automatic Service Request (ASR)
FALSE 0 12
Storage Expansion Shelf
FALSE 0 12

DCS High Water Mark Statistics

Measured Feature Name High Water

Mark Category

Maximum usage of CPU 8.12

% DCS Agent

Maximum usage of Memory 437.12

MB DCS Agent Maximum number of threads

150 DCS Agent

Maximum number of open file descriptors

257 DCS Agent Maximum number of Databases

Database

Maximum number of EE Databases

Database

Maximum number of SE Databases



Maximum number of CDBs Database Maximum number of non-CDBs Database Maximum number of RAC Databases Database Maximum number of RAC One Databases Database Maximum number of Single Instance Databases Database Maximum number of PDBs Database Maximum number of Datafiles Database Maximum number of Database Homes Database Maximum number of Flashback Databases Database Maximum size of a Database 6.40 Database Minimum Database version 18.0.0.0.0 Database Maximum Database version 18.0.0.0.0 Database Maximum number of Backups Database Maximum number of NFS Backups Database Maximum number of Object Store Backups Database Maximum number of Disk Backups Database Maximum number of Regular-LO Backups Database Maximum number of Regular-L1 Backups Database Maximum number of ArchiveLog Backups Database Maximum number of Longterm Backups Database Maximum interval between Database Backups 0 Day(s), 01:01:06 Database Maximum number of Object Store tenants Object Store Maximum number of enabled CPU cores Server Maximum number of disks Storage Maximum number of ASM Disks Groups Storage Maximum size of ASM Disk Groups 11.46 Storage Maximum usage of ASM Disk Groups 1.70 Storage Maximum number of ASM Disks Groups with redundancy 'NORMAL'

0 S	torage	
Maximum number of ASM D	isks Groups with redundancy 'HIGH'	
3 S	torage	
Maximum number of ASM D	isks Groups with redundancy 'EXTERN'	
0 S	torage	
Maximum number of ASM D	isks Groups with redundancy 'FLEX'	
0 S	torage	
Maximum ASM Disk Groups	compatibility	
18.0.0.0.0 S	torage	
Minimum ASM Disk Groups	compatibility	
18.0.0.0.0 S	torage	
Maximum number of non-A	CFS file systems	
4 S	torage	
Maximum size of non-ACF	S file systems	98.31
GB Storage		
Maximum usage of non-AC	FS file systems	82.71
% Storage		
Maximum number of ACFS	file systems	
1 S	torage	
Maximum size of ACFS fi	le systems	5.00
GB Storag	e	
Maximum usage of ACFS f	ile systems	12.19
% Storage		

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

Use the command ${\tt odacli}$ create-backup to create a Level 0, Level 1, archivelog, or Longterm backup.

odacli create-backupconfig

Use the command odacli create-backupconfig to create a backup configuration.

odacli create-objectstoreswift

Use the command odacli create-objectstoreswift to create and store the Oracle credential details required to backup to Oracle Object Store.

odacli delete-backup

Use the command ${\tt odacli}$ ${\tt delete-backup}$ to delete backups.

odacli delete-backupconfig

Use the command ${\tt odacli}$ ${\tt delete-backupconfig}$ to delete a backup configuration.

odacli describe-backupreport

Use the command odacli describe-backupreport to display details of a specific backup report.

odacli delete-objectstoreswift

Use the command odacli delete-objectstoreswift to delete the credentials for the ObjectStore account.

odacli describe-schedule

Use the command odacli describe-schedule to display details for a specific schedule.

odacli irestore-database

Use the command odacli irestore-database to restore a database from one system to other system from an external FRA (NFS) or Object Store location based on a BackupReport.

odacli list-backupconfigs

Use the command odacli list-backupconfigs to list all backup configurations.

odacli list-backupreports

Use the command odacli list-backupreports to display a list of all backup reports.

odacli list-objectstoreswifts

Use the command odacli list-objectstoreswifts to display a list of credentials for the ObjectStore account.

odacli list-schedules

Use the command odacli list-schedules to display all of the schedules in the system, including database backup schedules and some internal maintenance schedules.

odacli recover-database

Use the odacli recover-database command to recover or restore a database from backup.

odacli update-backupconfig

Use the command odacli update-backupconfig to update a backup configuration.

odacli update-objectstoreswift

Use the command odacli update-objectstoreswift to change the credentials for the ObjectStore account.

odacli update-schedule

Use the command odacli update-schedule to update the schedule for a database, or to disable the database backup schedule.

odacli create-backup

Use the command odacli create-backup to create a Level 0, Level 1, archivelog, or Longterm backup.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli create-backup -i Database Resource ID [-bt] [-c] [-h] [-j] [-k] [-t] [-ka]



Parameters

Parameter	Description
backupType, -bt {Regular-L0 Regular-L1 Longterm archivelog}	Defines the type of backup. The options are not case sensitive.
component, -c {Database}	(Optional) Defines the component. The supported option is Database. The option is not case-sensitive.
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.
keep-archivelog, -ka	(Optional) Keep archive logs. The default is false.

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).
 - Archivelog: This option is used to perform backup of all archivelogs not yet backed up to the backup destination, such as Internal FRA, External FRA (NFS location), or Object Store.
- This command creates a Backup Report with a Resource ID. To get the ID, use
 the command odacli describe-job -i job_id -j and look for the resourceId
 attribute in resourceList.

Example 14-47 Create a Manual Database Backup

Create a long term backup that is kept for 90 days and named q12018HR.

odacli create-backup -i *Database Resource ID* -bt Longterm -c database -k 90 -t q12018HR



Example 14-48 Create a Level 0 Database Backup

Create a Level 0 backup named 2017Dec22ProductionLevel0 for resource ID 20576eb1-bc32-4e34-bf97-fda0b60ca15b

odacli create-backup -i 20576eb1-bc32-4e34-bf97-fda0b60ca15b -bt
Regular-L0 -t 2017Dec22ProductionLevel0

odacli create-backupconfig

Use the command ${\tt odacli}$ ${\tt create-backupconfig}$ to create a backup configuration.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli create-backupconfig -n backup configuration name [-bct] [-ca] -d backup destination{Disk|ObjectStore|NFS|None} [-c] [-cr] [-h] [-j] [-no-cr] [-o] [-w]

Parameters

Parameter	Description
backupconfigtype, -bct	Defines the Backup Config type. The values can be System or Database. The options are not case sensitive. The default is Database.
<pre>backupdestination, -d {Disk ObjectStore NFS None}</pre>	Defines the backup destination. The options are not case sensitive.
compression-algo, -ca{BASIC LOW MEDIUM HIGH}	Defines the Compression Algorithm that RMAN must use. The default is BASIC for Disk and NFS backup and MEDIUM for ObjectStore backup.
container,-c	(Optional) Defines the object store container. This is the object store container name or absolute path to the parent directory for NFS destination for backups.
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. The length must not exceed 30 characters. The name must be wrapped in single quotes when it starts with a special character.
no-crosscheck, -no-cr	(Optional) Disable crosscheck.
objectstoreswiftId,-o	(Optional) Defines the swift object store credential ID.



Parameter	Description
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. Applicable to Database type backup config.

Usage Notes

- The recovery window that is defined in the backup configuration determines when backups are considered obsolete. The following are guidelines:
 - Disk: 1-14 days
 - Object Storage: 1-31 days

Example 14-49 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

Example 14-50 Create a Backup Configuration for NFS location

Create a backup configuration that backs up to NFS with a 2 day recovery window.

odacli create-backupconfig -d NFS -n NfsPolicy1 -c /tmp/Nfsbackps -w 2

Example 14-51 Create a Backup Configuration with single backup location for database backup

odacli create-backupconfig -n bcfg2 -d Objectstore -w 1 -c testb2 -on oss2

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

/opt/oracle/dcs/bin/odacli

Syntax

odacli create-objectstoreswift -e swift end point URL [-h] [-j] -n Object Store Swift name -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.
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.

odacli delete-backup

Use the command odacli delete-backup to delete backups.

File Path

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

Syntax

odacli delete-backup -iDatabase Resource ID [-br] [-h] [-j]

Parameters

Parameter	Description
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 Browser User Interface or use the command odacli list-databases.

Example 14-52 Delete a Level 0 or Level 1 Backup

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

Example 14-53 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

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.
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 14-54 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
```

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 14-55 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/scaoda702cln1/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/
scaoda702cln1/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"
```

odacli delete-objectstoreswift

Use the command ${\tt odacli}$ ${\tt delete-objectstoreswift}$ 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 14-56 Deleting the Oracle Object Store Credentials

odacli delete-objectstoreswift -i Object Store Swift id

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 14-57 Display Schedule Details

odacli describe-schedule -i scheduleid

odacli irestore-database

Use the command odacli irestore-database to restore a database from one system to other system from an external FRA (NFS) or Object Store location based on a BackupReport.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli irestore-database [-bp] [-r] [-cl] [-nn] [-co] [-s] [-ro] [-dr] [-y] [-h] [-j] [-cl] [-oid] [-tf] [-bl] [-rDBID] [-sh|-no-sh]



Parameters

Description
(Optional) Defines the RMAN password for recovery. You can provide more than one password, but the passwords must be separated by a comma(,).
JSON input for a backup report.
) (Optional) Defines the Database class.
(Optional) Enables the Database Console.
(Optional) Defines the database shape.
(Optional) Defines the database storage. Database Storage {ACFS ASM} (non case-sensitive). The default is ASM.
(Optional) Defines the type of database. The default is single instance (SI).
(Optional) Defines the Oracle Database Edition.
(Optional) Defines the database home.
(Optional) Defines the database name.
(Optional) Defines the database unique name.
Defines the database domain name.
Defines the database role for Oracle Data Guard operations. The options are PRIMARY STANDBY.
(Optional) Displays help for using the command.
(Optional) Displays JSON output. The default is false.
(Optional) Defines the number of RMAN channels (parallelism) Default: SE Edition: 1, Other Enterprise Editions: 5
Defines the Swift Object Store credential ID.
Defines the Swift Object Store resource name.
(Optional) Specifies the NFS or local directory path where backups are available.
Specifies the database redundancy value, that is, {HIGH MIRROR}. To specify the dbRedundancy option for an Oracle ASM or ACFS storage-based database, at least one disk group of FLEX redundancy must exist. To specify the dbRedundancy option for an Oracle ASM storage database, the dbVersion or dbHomeVersion
must be 12.2 or later.
must be 12.2 or later. The precedence logic for setting the dbRedundancy is:
The precedence logic for setting the dbRedundancy is: 1. dbRedundancy that is specified in the irestore-
 The precedence logic for setting the dbRedundancy is: dbRedundancy that is specified in the irestoredatabase command.



Parameter	Description
associated-networks, -nn	Specifies the associated network names (in the format networkName1,networkName2,).
disable-seha, -no-sh	Specifies whether you want to disable Standard Edition High-Availability for Oracle Database Standard Edition 19c and later single-instance databases.
enable-seha, -sh	Specifies whether you want to enable Standard Edition High-Availability for Oracle Database Standard Edition 19c and later single-instance databases.
db0nFlashStorage, -f	(Optional) Specifies whether to enable data on Flash storage.
no-db0nFlashStorage, -no-f	(Optional) Specifies whether to disable data on Flash storage.

Usage Notes

- The command odacli irestore-database restores a database to a system
 using the Backup Report that is in the Oracle Object Store or External FRA (NFS)
 location. You can restore a database from one appliance to another appliance, or
 to the same appliance after the source database is deleted.
- An Oracle wallet (ObjectStoreSwift credentials) must be created to access the backups in Oracle Object Store. This command performs the environment checks, validation checks, and tasks needed to restore a database to an Oracle Database Appliance system.

Example 14-58 Restoring a Database to the Same System

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

Example 14-59 Restoring a Database to a Different System

To restore to a different system, copy the backup report to the other machine's \bin folder (or provide the complete path to the backup report), 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

Example 14-60 Restoring to a standby database when Oracle Data Guard is configured

odacli irestore-database -r backup_report.json -u dbUniqueName -ro
STANDBY -ro STANDBY



odacli list-backupconfigs

Use the command odacli list-backupconfigs to list all backup configurations.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-backupconfigs [-h] [-j]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

Example 14-61 Displaying a List of Backup Configuration

Display a list of backup configurations.

odacli list-backupconfigs -d Disk -n production -w 14

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 14-62 Display a List of all Backup Reports

odacli list-backupreports

odacli list-objectstoreswifts

Use the command $odacli\ list-objectstoreswifts$ to display a list of credentials for the ObjectStore account.

File Path

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

Syntax

odacli list-objectstoreswifts [-h] [-j]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

Example 14-63 Displaying a List of ObjectStore Swift Credentials

odacli list-objectstoreswifts

odacli list-schedules

Use the command odacli list-schedules to display all of the schedules in the system, including database backup schedules and some internal maintenance schedules.

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 14-64 Display a List of Scheduled Database Backups

Display a list of all scheduled database backups and details.

```
odacli list-schedules
                                         Name
ID
Description
CronExpression
                               Disabled
201672f6-c80c-4ff9-99be-2bc8be480e66
                                         metastore maintenance
internal metastore maintenance
                                                   0 0 0 1/1 * ?
                 true
e86ff1e9-8607-41f8-8d0a-cf59dc1e52a9
                                         AgentState metastore cleanup
internal agentstateentry metastore maintenance
                                                   0 0 0 1/1 * ?
                 true
17640773-aa8b-4b4f-b170-3a68d5329cbb
                                         bom maintenance
                                                                   bom
                                               0 0 1 ? * SUN
reports generation
                 true
cae98cb1-e8ab-48c6-aaf9-22d9ab4097b1
                                         Big File Upload Cleanup
clean up expired big file uploads.
                                                   0 0 1 ? * SUN
745333ad-8845-4444-b591-7ca7d19a4d91
                                         feature_tracking_job
Feature tracking job
                                                   0 0 20 ? * WED
                true
42b6894f-f680-4316-9958-f4ecf501d781
                                         Log files Cleanup
                                                                   Auto
                                              0 0 3 1/1 * ?
log file purge bases on policy
                 true
```

odacli recover-database

Use the odacli recover-database command to recover or restore a database from backup.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli recover-database -iDatabase Resource ID [-br] [-i] [-h] [-j] [-r] [-t] [-p] [-s] [-in]
```



Parameters

Parameter	Description
backupReport, -br{Regular-L0 Regular-L1 Longterm}	(Optional) JSON input for a backup report.
dbName, -in	Defines the Database Name.
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 data file loss or control file loss.

Example 14-65 Recovering a Database to a Point-in-Time

```
# odacli recover-database -i b5fc646e-01a6-4c8b-8286-7633346c4 -t PITR
-r 11/08/2017 12:57:33 -p
```

Example 14-66 Recovering a Database to the latest

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



Example 14-67 Recovering a Database to an SCN

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

odacli update-backupconfig

Use the command odacli update-backupconfig to update a backup configuration.

File Path

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

Syntax

odacli update-backupconfig -n backup configuration name [-i] [-in]
[-ca] -d backup destination{Disk|ObjectStore|None} [-c] [-cr] [-h] [-j]
[-no-cr] [-o][-w]

Parameters

Parameter	Description
backupconfigid, -i	Defines the Backup Config ID.
backupconfigname, -in	Defines the Backup Config name.
backupdestination, $-d\{Disk ObjectStore None\}$	Defines the backup destination. The options are not case sensitive. Applicable to System type backup config.
compression-algo, -ca{BASIC LOW MEDIUM HIGH}	Defines the Compression Algorithm that RMAN must use. The default is BASIC for Disk and NFS backup and MEDIUM for ObjectStore backup.
container, -c	(Optional) Defines the object store container or absolute path to the parent directory of NFS destination for backups.
crosscheck, -cr	(Optional) Enable Crosscheck. Applicable to Database type backup config.
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. Applicable to Database type backup config.



Usage Notes

• The recovery window that is defined in the backup configuration determines when backups are considered obsolete. The following are guidelines:

Disk: 1-14 days

ObjectStore in Casper: 1-30 days

Example 14-68 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

odacli update-objectstoreswift

Use the command ${\tt odacli}$ 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 14-69 Changing the Oracle Casper ObjectStore Password

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

Example 14-70 Changing the Oracle ObjectStore User Name

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

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 14-71 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 * ? *" -e

Example 14-72 Disable Scheduled Database Backups

odacli update-schedule -i scheduleid -d

Oracle Data Guard odacli Commands

Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle Database Appliance deployment.

odacli configure-dataguard

Use the command odacli configure-dataguard to configure Oracle Data Guard on Oracle Database Appliance.

odacli deconfigure-dataguard

Use the command odacli deconfigure-dataguard to deconfigure Oracle Data Guard on Oracle Database Appliance.

odacli describe-dataguardstatus

Use the command odacli describe-dataguardstatus to view Oracle Data Guard status on Oracle Database Appliance.

odacli failover-dataguard

Use the command odacli failover-dataguard on the standby system to failover the Oracle Data Guard primary database to the standby database.

odacli list-dataguardstatus

Use the command odacli list-dataguardstatus to verify Oracle Data Guard status on both primary and standby databases.

odacli reinstate-dataguard

Use the command odacli reinstate-dataguard on the new primary system to reinstate a failed primary database after a failover and convert it to a new standby database.

odacli switchover-dataguard

Use the command odacli switchover-dataguard on the primary system to reverse the Oracle Data Guard primary and standby database roles on Oracle Database Appliance.

odacli configure-dataguard

Use the command odacli configure-dataguard to configure Oracle Data Guard on Oracle Database Appliance.

File Path

/opt/oracle/dcs/bin/odacli



Syntax

odacli configure-dataguard [-h] [-j] [-i] [-r] [-s]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.
requestjson, -r	(Optional) Specifies the JSON file for creating the appliance.
skip-password-copy, -s	(Optional) Specifies that step to copy the password from primary database to standby database can be skipped.

Usage Notes

If the database orapwd file is not in the typical location, then an error may occur in the configuration process. In such a case, manually copy the orapwd file from the primary database to the standby database in advance, and configure Oracle Data Guard with the --skip-password-copy option.

Example 14-73 Configuring Oracle Data Guard interactively on the commad line

```
# odacli configure-dataguard
Standby site address: test_domain
BUI username for Standby site (default: oda-admin):
BUI password for Standby site:
TrustStore path for Standby DCS server (copy from /opt/oracle/dcs/
dcscli/cacerts on Standby site to this machine and set file permissions
to 400): /cacerts.a
TrustStore password for Standby DCS server:
Database name for Data Guard configuration: test1
Primary site network for Data Guard configuration [vlan162, Public-
network] (default: vlan162):
Standby site network for Data Guard configuration [Public-network]
(default: Public-network):
Transport type [ASYNC, FASTSYNC, SYNC] (default: ASYNC):
Primary machine listener port (default: 1521):
Primary database syspassword:
Standby machine listener port (default: 1521):
Standby database syspassword:
Data Guard configuration name (default: test1_test2):
Data Guard protection mode [MAX_PROTECTION, MAX_PERFORMANCE,
MAX_AVAILABILITY] (default: MAX_PERFORMANCE):
Enable Active Data Guard? (Y/N, default:N): N
The TrustStore of the Standby site should be removed unless it is
necessary for some other purpose. Do you want to delete it? (Y/N,
default:Y): n
```



```
As a requirement, Standby database's SYS password will be set to
Primary database's after Data Guard configuration. Are you sure you
want to proceed? (Y/N): y
Data Guard configuration for database 'test' started
******
Step 1: Validate Data Guard configuration request (Primary site)
Description: Validate DG Config Creation
Job ID: a7053469-1bbe-4fb9-b559-5a3a0d976d7c
Started
Validate create Data Guard configuration request
*******************
Step 2: Validate Data Guard configuration request (Standby site)
Description: Validate DG Config Creation
Job ID: e240ec9a-c9bb-472a-9b26-2549c0b1d0b9
Started
Validate create Data Guard configuration request
Finished
***********************
Step 3: Download password file from Primary database (Primary site)
Description: Download orapwd file from Primary database
Started
Prepare orapwd file for Primary database test1
Finished
********************
*******
Step 4: Upload password file to Standby database (Standby site)
Description: Upload orapwd file to Standby database
Started
Write orapwd file to Standby database test1
Finished
**********************
*******
Step 5: Configure Primary database (Primary site)
Description: DG Config service creation - ConfigurePrimary
Job ID: 8e3ccee3-4ee0-4c78-be9f-7c5a991ca680
Started
Configure host DNS on primary env
Configure Data Guard Tns on primary env
Enable Data Guard related Db parameters for primary env
Enable force logging and archivelog mode in primary env
Enable FlashBack
Configure network parameters for local listener on primary env
Restart listener on primary env
Create services for primary db
Finished
********************
Step 6: Configure Standby database (Standby site)
Description: DG Config service creation - ConfigureStandby
Job ID: 55520496-24d8-4c6f-8b67-3ff59a86a79a
Started
```



```
Configure Data Guard Tns on standby env
Configure host DNS on standby env
Clear Data Guard related Db parameters for standby env
Enable Data Guard related Db parameters for standby env
Enable force logging and archivelog mode in standby env
Populate standby database metadata
Configure network parameters for local listener on standby env
Reset Db sizing and hidden parameters for ODA best practice
Create services for standby db
Finished
Step 7: Configure and enable Data Guard (Primary site)
Description: DG Config service creation - ConfigureDg
Job ID: c79dea2d-3d2f-4179-bbe2-aee254d5ec32
Started
Config and enable Data Guard
Post check Data Guard configuration
************************
******
Step 8: Enable Flashback (Standby machine)
Description: DG Config service creation - EnableFlashback
Job ID: 8220286f-e6d6-4a37-a886-ae9af7c29a6e
Started
Enable FlashBack
Finished
******************
******
Step 9: Enable Active Data Guard (Standby machine)
Description: DG Config service creation - EnableActivedg
Job ID: 3117c046-2d71-453d-9950-c85bed19f5f2
Started
Open standby db
Restart standby db
Finished
************************
******
Step 10: Create Data Guard status (Primary site)
Description: DG Status service creation - NewDgconfig
Job ID: 6fb707c5-5f9f-41ab-bc89-7da5e3f3996c
Started
Create Data Guard status
Finished
*******************
******
Step 11: Create Data Guard status (Standby site)
Description: DG Status service creation - NewDgconfig
Job ID: d47aad99-0e64-40aa-bffd-6f76ec00555d
Started
Create Data Guard status
************************
******
Configure Data Guard test1_test2 completed
```



Example 14-74 Configuring Oracle Data Guard using JSON file

```
# odacli configure-dataguard -r configdg ODA HA.json
Standby machine address: 192.214.108.19
BUI username for Standby machine (default: oda-admin):
BUI password for Standby machine:
TrustStore path for Standby DCS server (copy from /opt/oracle/dcs/
dcscli/cacerts on Standby machine to this machine and set file
permissions to 400): /cacerts.a
TrustStore password for Standby DCS server: (can be found in /opt/
oracle/dcs/dcscli/dcscli.conf)
Primary database syspassword:
Standby database syspassword (default: same as primary):
The TrustStore of the Standby machine should be removed unless it is
necessary for some other purpose. Do you want to delete it? (Y/N,
default:Y): n
As a requirement, Standby database's SYS password will be set to
Primary database's after Data Guard configuration. Are you sure you
want to proceed? (Y/N): y
Data Guard configuration for database 'test' started
********************
Step 1: Validate Data Guard configuration request (Primary machine)
```

Example 14-75 Sample JSON for configuring Oracle Data Guard on Oracle Database Appliance High-Availability Deployments

```
"name": "pink1_pink7",
"protectionMode": "MAX_PERFORMANCE",
"enableFlashback": true,
"enableActiveDq": false,
"replicationGroups": [
    "sourceEndPoints": [
        "endpointType": "PRIMARY",
        "hostName": "test domain1",
        "listenerPort": 1521,
        "databaseUniqueName": "pink1",
        "ipAddress": "192.214.96.214"
      },
    "endpointType": "PRIMARY",
    "hostName": "test_domain2",
    "listenerPort": 1521,
    "databaseUniqueName": "pink1",
    "ipAddress": "192.214.96.215"
    ],
```



odacli deconfigure-dataguard

Use the command odacli deconfigure-dataguard to deconfigure Oracle Data Guard on Oracle Database Appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli deconfigure-dataguard [-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.
dgconfigid, -i	Specifies the Oracle Data Guard Configuration ID.

Usage Notes

For deconfiguring Oracle Data Guard, you must specify the Oracle Data Guard Configuration ID. Run the odacli list-dataguardstatus command to find the Oracle Data Guard Configuration ID.



Example 14-76 Deconfiguring Oracle Data Guard on the Primary Machine

```
# odacli deconfigure-dataquard -i 8396aac4-f7e7-42e4-a2e8-0cbbc89ce31b
Standby site address: test_domain
BUI username for Standby site (default: oda-admin):
BUI password for Standby site:
TrustStore path for Standby DCS server (copy from /opt/oracle/dcs/
dcscli/cacerts on Standby site to this site and set file permissions to
400): /cacerts.a
TrustStore password for Standby DCS server:
The TrustStore of the Standby site should be removed unless it is
necessary for some other purpose. Do you want to delete it? (Y/N,
default:Y): n
Standby database will be deleted after Data Guard configuration is
removed. Are you sure you want to proceed? (Y/N): y
Deconfigure Dataguard Started
***********************
******
Step 1: Deconfigure Data Guard (Primary site)
Description: Deconfigure DG service
Job ID: 8deb3e4c-09cd-4593-8184-f7706dd2ec8a
Started
Deconfigure Data Guard service
Cleanup broker resources
Finished
************************
******
Step 2: Delete Data Guard status (Primary site)
Description: DG Status service creation - UpdateDqconfiq
Job ID: 59c61629-6c7d-474c-8c29-c0a9565d91a3
Started
Update Data Guard status
Finished
**********************
******
Step 3: Delete Data Guard status (Standby site)
Description: DG Status service creation - UpdateDgconfig
Job ID: 93dcf4cd-1019-4bcd-984a-d3efeb3fae6e
Started
Update Data Guard status
Finished
***********************
******
Step 4: Delete Standby database (Standby site)
Description: Database service deletion with db name: panda with id:
30dd49da-a54f-4a9a-abbf-d3a4e39abee5
Job ID: 0b1cb921-fd41-4e01-86df-beff3adb6de0
Started
Validate db 30dd49da-a54f-4a9a-abbf-d3a4e39abee5 for deletion
Database Deletion
Unregister Db From Cluster
Kill Pmon Process
Database Files Deletion
Deleting Volume
Delete File Groups of Database panda
```





odacli describe-dataguardstatus

Use the command odacli describe-dataguardstatus to view Oracle Data Guard status on Oracle Database Appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-dataguardstatus [-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.
dgid, -i	Specifies the Oracle Data Guard Status ID.

Usage Notes

Example 14-77 Viewing Oracle Data Guard configuration status

odacli describe-dataguardstatus -i 5f0ed48a-366d-454c-a389-fe367772dbb7

odacli failover-dataguard

Use the command odacli failover-dataguard on the standby system to failover the Oracle Data Guard primary database to the standby database.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli failover-dataguard [-h] [-j] [-i] [-u]



Parameter	Description
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.
dgid, -i	Specifies the Oracle Data Guard Status ID.
databaseUniqueName, -u	Specifies the unique name of the database to failover to.

Usage Notes

After performing the failover, view the status with the <code>odacli list-dataguardstatus</code> command.

Example 14-78 Performing Failover Oracle Data Guard

#odacli failover-dataguard -i 75f23ce0-006a-4aeb-ba6d-b4b60275c19 -u houdg02

odacli list-dataguardstatus

Use the command odacli list-dataguardstatus to verify Oracle Data Guard status on both primary and standby databases.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-dataguardstatus [-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

Example 14-79 Viewing Oracle Data Guard status on primary and standby databases

odacli list-dataguardstatus



odacli reinstate-dataguard

Use the command odacli reinstate-dataguard on the new primary system to reinstate a failed primary database after a failover and convert it to a new standby database.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli reinstate-dataguard [-h] [-j] [-i] [-u]

Parameters

Parameter	Description		
help, -h	(Optional) Displays help for using the command.		
json, -j	(Optional) Displays JSON output. The default is false.		
dgid, -i	Specifies the Oracle Data Guard Status ID.		
databaseUniqueName, -u	(Optional) Specifies the unique name of the database to reinstate.		

Usage Notes

After completing the reinstate operation, view the status with the odacli list-dataguardstatus command.

Example 14-80 Performing reinstate operation on Oracle Data Guard

odacli reinstate-dataguard -i 75f23ce0-006a-4aeb-ba6d-b4b60275c19 -u
houdg02

odacli switchover-dataguard

Use the command odacli switchover-dataguard on the primary system to reverse the Oracle Data Guard primary and standby database roles on Oracle Database Appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli switchover-dataguard [-h] [-j] [-i] [-u]



Parameter	Description		
help, -h	(Optional) Displays help for using the command.		
json, -j	(Optional) Displays JSON output. The default is false.		
dgid, -i	Specifies the Oracle Data Guard Status ID.		
databaseUniqueName, -u	(Optional) Specifies the unique name of the database to switchover to.		

Usage Notes

After performing the switchover, view the status with the odacli list-dataguardstatus command.

Example 14-81 Switching over Oracle Data Guard

#odacli switchover-dataguard -i 75f23ce0-006a-4aeb-ba6d-b4b60275c19 -u houdg02

odacli CPU Core Commands

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

odacli list-cpucores

Use the odacli list-cpucores command lists the history of core configuration changes in the system.

odacli describe-cpucore

Use the odacli describe-cpucore command to display the current core configuration and the modification date and time.

update-cpucore

Use the ${\tt odacli}\ {\tt update-cpucore}\ command$ to enable the number of CPU cores in the system.

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]



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

Example 14-82 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

odacli describe-cpucore

Use the odacli describe-cpucore command to display the current core configuration and the modification date and time.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-cpucore [-h]

Parameters

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

Example 14-83 Displaying the Current Core Configuration

odacli describe-cpucore

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

update-cpucore

Use the ${\tt odacli}$ update-cpucore command to enable the number of CPU cores in the system.

File Path

/opt/oracle/dcs/bin/odacli



Syntax

```
odacli update-cpucore -c cores [-h]
```

Parameters

Parameter	Description
cores, -c	Defines the number of cores to be enabled in the system.
help,-h	(Optional) Displays help for using the command.

Usage Notes

- The number of cores you enable must be a multiple of 2.
- After the initial configuration, you cannot reduce the number of cores. You can only increase the number of cores.

Example 14-84 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
}
```

odacli Database Commands

Use the odacli database commands to perform database lifecycle operations.

odacli clone-database

Use the odacli clone-database command to clone a new database from a source database.

odacli create-database

Use the odacli create-database command to create a new database.

odacli delete-database

Use the odacli delete-database command to delete a database.

odacli describe-database

Use the odacli describe-database command to display database details.



odacli list-databases

Use the odacli list-databases command to list all databases on the appliance.

· odacli modify-database

Use the odacli modify-database command to modify the configuration of a database, such as backup configuration, database class, and database type.

odacli move-database

Use the command odacli move-database to move a database from one Oracle home to another home of the same database version.

odacli register-database

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

· odacli upgrade-database

You can the odacli upgrade-database command to upgrade a database from a supported release. This command is deprecated and will be desupported in a future release. Instead, use the command odacli move-database to move databases from one Oracle Database home to another.

odacli clone-database

Use the odacli clone-database command to clone a new database from a source database.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli clone-database [-u] [-n] [-s] [-t] [-j] [-f] [-nn] [-h] [-sh|-no-sh] [-m]

Parameters

Parameter	Description
databaseUniqueName, -u	(Optional) Defines a unique name for the database. If thedatabaseUniqueName option is not provided, then the name of the database is set to thedbname value.
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.
dbtype, -t [SI]	Defines the database type. The default database type is the source database type, if the option is not specified.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.



Parameter	Description		
sourcedbname, -f	Specifies the name of the source database		
syspassword, -m	Specifies the password for SYS user.		
associated-networks,-nn	Specifies the associated network names (in the format networkName1,networkName2,).		
disable-seha, -no-sh	Specifies whether you want to disable Standard Edition High-Availability for Oracle Database Standard Edition 19c and later single-instance databases.		
enable-seha, -sh	Specifies whether you want to enable Standard Edition High-Availability for Oracle Database Standard Edition 19c and later single-instance databases.		

Usage Notes

- The source database must be up and running.
- The source database must use Oracle ACFS storage.
- The source database must not be a multitenant container database (CDB)

Example 14-85 Cloning a Database

The following example creates a clone database snap1 from source database acfsdb1.

/opt/oracle/dcs/bin/odacli clone-database -n snap1 -u snap1u -f acfsdb1 -m password

Related Topics

Cloning an Oracle ACFS Database Using Command Line Interface
 Create a database from an existing Oracle ACFS database using CLI commands.

odacli create-database

Use the odacli create-database command to create a new database.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli create-database -n database_name -cs characterset -cl {OLTP|DSS| IMDB} -l dblanguage -s dbshape -r {ACFS|ASM} -dt dbterritory

-1 dblanguage -s dbsnape -r {ACFS|ASM} -dt dbterritory
-y dbtype -ns nationalscharacterset -d pdbadmin -p pdbname -v version
[-u databaseUniqueName] [-dh Database Home ID] [-c|-no-c] [-co|-no-co]

[-bi backupconfigid] [-io] [-dn] [-j] [-nn] [-h] [-rd] [-sh|-no-sh]



Parameter	Description
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.
dbdomainname, -dn	Defines the database domain name.
dbEdition, -de	Defines the Database Edition.
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. You cannot specify the database shape when you create a instance-only database.
dbstorage, -r{ACFS ASM}	Defines the Database Storage, either Oracle ACFS or Oracle ASM. The default value is Oracle ASM.
dbterritory, -dt	Defines the database territory. The default territory is AMERICA.
dbtype, -y [SI]	Defines the database type. The default database type is SI.
help, -h	(Optional) Displays help for using the command.
instanceonly, -io	(Optional) Creates a database instance, password file and also the underlying Oracle ACFS mount point. You can use the instance as an auxiliary instance for RMAN duplicate.
json, -j	(Optional) Displays JSON output.
nationalscharacterset, -	Defines the NLS National Character Set. The default is AL16UTF16.
no-cdb, -no-c	(Optional) Creates a database that is <i>not</i> a container database. Use this flag when you want to create a non-CDB database. Use the -c flag to create a container database.
no-dbconsole, -no-co	(Optional) Disables Database Console. Use the -co flag to enable Database Console.



Parameter	Description
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 the release version.
	To specify a specific supported bundle, use the 5 digit format. For example, 12.1.0.2.170814 or 11.2.0.4.170814.
dbRedundancy, -rd	Specifies the database redundancy value, that is, {HIGH MIRROR}. To specify the dbRedundancy option for an Oracle ASM or ACFS storage-based database, at least one disk group of FLEX redundancy must exist. To specify the dbRedundancy option for an Oracle ASM storage database, the dbVersion or dbHomeVersion must be 12.2 or later.
associated-networks,-nn	Specifies the associated network names (in the format networkName1,networkName2,).
disable-seha, -no-sh	Specifies whether you want to disable Standard Edition High-Availability for Oracle Database Standard Edition 19c and later single-instance databases.
enable-seha, -sh	Specifies whether you want to enable Standard Edition High-Availability for Oracle Database Standard Edition 19c and later single-instance databases.
targethost, -th	(Optional) Specifies the target host name (applicable only for Oracle RAC One Node Database and Standard Edition High Availability single-instance Oracle Database 19c and later).
targetnode, -g	(Optional) Specifies the target node number (applicable only for Oracle RAC One Node database and Standard Edition High Availability single-instance Oracle Database 19c and later). The values are 0 or 1.
levelzerobackupday, -lb	(Optional) Specifies the level zero backup day. The values can be Monday Tuesday Wednesday Sunday. The default is Sunday.
backupconfigname, -bn	(Optional) Specifies the name of the backup configuration.
bkuppassword, -bp	(Optional) Specifies the RMAN backup encryption password.
enableFlashCache, -fc	(Optional) Specifies whether to enable Flash Cache.
no-enableFlashCache, -no-fc	(Optional) Specifies whether to disable Flash Cache.
db0nFlashStorage,-f	(Optional) Specifies whether to enable data on Flash storage.
no-db0nFlashStorage, -no-f	(Optional) Specifies whether to disable data on Flash storage.

Usage Notes

If the disk group redundancy is FLEX, then the default dbRedundancy value is MIRROR.



- Flash cache is disabled by default.
- You cannot mix Oracle Database Standard Edition and Enterprise Edition databases on the same appliance.
- For Standard Edition Oracle Database 19c or later, you cannot create Oracle RAC
 Or Oracle RAC One Node Database. For Standard Edition, you can only deploy
 single-instance Oracle Database with or without high-availability enabled.
- The dbname and databaseUniqueName can contain underscores (-), lowercase and uppercase alphabet (a-zA-Z, and numeric characters (0-9), must start with an alphabet, and must not exceed 8 characters in length. The dbname and databaseUniqueName must not also be an Oracle reserved key word.
- 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 use the command to create an instance-only database, then you cannot specify the database shape (template).
- 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 or later 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, such as 18.8.0.0, 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.





Oracle Database 11.2.0.4.160419 is not supported. Attempts to create an Oracle Database 11.2 against an 11.2.0.4.160419 database home will fail.

Example 14-86 Creating a Database in Interactive Mode

This example creates a 19.8.0.0.0 OLTP container database named hrdb with shape odb2 and enables you to provide the password interactively.



To provide a password interactively, use the -m option, but do not provide the password until prompted.

```
# odacli create-database -n hrdb -c -m -cl OLTP -s odb2 -p pdbl
Password for SYS,SYSTEM and PDB Admin:
{
    "jobId" : "f12485f2-dcbe-4ddf-aeel-de24d37037b6",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "May 18, 2020 03:54:03 AM EDT",
    "description" : "Database service creation with db name: hrdb",
    "updatedTime" : "May 18, 2020 03:54:03 AM EDT"
}
```

Example 14-87 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 19.8.0.0.0
# odacli create-database -m -n hrmsdb2 -v 19.8.0.0.200714
```

The following statement creates a new database against a home with a specific Oracle Database Bundle:

```
# odacli create-database -m -n hrmsdb3 -v 19.8.0.0.200714
```

odacli delete-database

Use the odacli delete-database command to delete a database.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To delete a database:

```
odacli delete-database -i dbid [-h] [-j] [-fd]
```

Parameters

Parameter	Description
dbid, -i	Identifies the database home identifier (ID) to display.
	Use the odacli list-databases command to obtain the dbid.
force, -fd	(Optional) Forces the delete operation.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.

Usage



The delete-database command deletes the database, the file system, and the underlying advm volumes assigned to the database. For example, deleting a database named hrdb also deletes the file system /u02/app/oracle/oradata/hrdb. Do not keep any other files on this database file location.

Example 14-88 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 Class	DB Name	DB Version	CDB	
a3f4a6c0-a0c9-4c79-bad7-898afcf9de46 7e28bf52-1a09-49fd-9391-841838d2c42f	111 1110 010	12.1.0.2 12.1.0.2	true false	OLTP OLTP

(continued)

Shape	Storage	Status
odb1	ACFS	Configured
odb1	ACFS	Configured

odacli delete-database -i a3f4a6c0-a0c9-4c79-bad7-898afcf9de46



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 14-89

Display information for a database.

```
# odacli describe-database -i odacn
```

Database details

ID: 896238139 Description: odacn DB Name: odacn

DB Version: 19.6.0.0.200114

DB Type: Si DB Role: PRIMARY

DB Target Node Name: node1 DB Edition: EE

DBID: 896238139

Instance Only Database: false

CDB: false PDB Name:

PDB Admin User Name:

SEHA Enabled: false Class: Oltp Shape: Odb1 Storage: Asm

DB Redundancy: MIRROR CharacterSet: AL32UTF8

National CharacterSet: AL16UTF16

Language: AMERICAN
Territory: AMERICA

Home ID: bcc3991a-0ffc-4d29-86ae-40f2b8721dc4

Console Enabled: false Level O Backup Day: Sunday AutoBackup Enabled: true

Created: March 30, 2020 9:33:09 AM PDT

DB Domain Name: domain.com
Associated Networks: Public-network

Example 14-90 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: 19.8.0.0.0

DBID: 1339792271

CDB: true

PDB Name: rlpdb1

PDB Admin User Name: pdbadmin

Class: OLTP Shape: odb2 Storage: ASM

CharacterSet: DbCharacterSet(characterSet=AL32UTF8,

nlsCharacterset=AL16UTF16, dbTerritory=AMERICA, dbLanguage=AMERICAN)

Home ID: fe87f30c-b810-45d1-8b96-13996ad7a255

Console Enabled: true

Created: May 18, 2020, 2016 6:21:14 PM

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]

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

Example 14-91 Displaying a List of Databases

Display a list of databases:

odacli list-databases

odb1

odb1

ACFS

ASM

ID				DB Name	DB Version	CDB
			230dedbef743 a768e23ec2e7	rdb121a ee12db	19.8.0.0.0 19.8.0.0.0	true false
(Continue	/	Storage	Status			

odacli modify-database

OLTP

IMDB

Use the odacli modify-database command to modify the configuration of a database, such as backup configuration, database class, and database type.

Configured Configured

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli modify-database [-i] [-dn] [-no-sh] [-sh] [-lb] [-nobkp] [-th]
[-g] [-cl] [-rd] [-s] [-an] [-bi] [-bin] [noab] [-bp] [-id] [-in] [-y]
[-h] [-j]

Parameters

Parameter	Description
databaseid, -id	Defines the database identifier.
dbName, -in	Defines the database name to be updated. Specify eitherdbName ordbid.
dbid, -i	Defines the database ID to be updated. Specify eitherdbName ordbid.



Parameter	Description
dbRedundancy, -rd	(Optional) Specifies the database redundancy value, that is, {HIGH MIRROR}. To specify the dbRedundancy option for an Oracle ASM or ACFS storage-based database, at least one disk group of FLEX redundancy must exist. To specify the dbRedundancy option for an Oracle ASM storage database, the dbVersion or dbHomeVersion must be 12.2 or later.
levelzerobackupday, -lb	(Optional) Specifies the Level zero Backup Day. For example, Monday Tuesday Wednesday Sunday
backupconfigid, -bi	(Optional) Defines the backup configuration identifier for future use.
backupconfigname, -bin	(Optional) Specifies the name of the backup configuration.
bkuppassword, -bp	(Optional) Specifies the RMAN backup encryption password.
no-autobackup, -noab	(Optional) Disables automatic database backups.
no-backup, -nobkp	(Optional) Disables database backups. Specify this option to also remove the database backup and archivelog backup schedulers.
	To enable database backups again, you must update the database with a backupconfig object.
dbclass, -cl	(Optional) Defines the database class. The default is OLTP. The options are OLTP, DSS, or IMDB.
dbshape, -s	(Optional) Identifies the database shape (template) and determines the total memory allocated to the database. For example, odb1 and odb2. The default is odb1. You cannot specify the database shape for an instance-only database.
attachnetworks, -an	(Optional) Specifies the name of the networks to be attached. Specify the networks in the format network_name1, network_name1.
detachnetworks, -dn	(Optional) Specifies the name of the networks to be detached. Specify the networks in the format network_name1, network_name1, network_name1.
dbtype, -y	Defines new database type. The only option is SI.
disable-seha, -no-sh	Disables Standard Edition High Availability for single-instance Oracle Database 19c and later.
enable-seha, -sh	Enables Standard Edition High Availability for single-instance Oracle Database 19c and later.
targethost, -th	(Optional) Specifies the target host name (applicable only for Oracle RAC One Node Database and Standard Edition High Availability single-instance Oracle Database 19c and later).
targetnode, -g	(Optional) Specifies the target node number (applicable only for Oracle RAC One Node database and Standard Edition High Availability single-instance Oracle Database 19c and later). The values are 0 or 1.



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

Example 14-92 Modifying the Database Shape (Template) and Database Class

```
# odacli modify-database -s database_shape -cl database_class -i dbid
odacli modify-database -i 1941d594-c777-4eca-9fce-18b778d5c153 -s odb2
-cl DSS
{
    "jobId" : "833d43a7-bcc6-48a7-9f98-b42ffdab3fel",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "August 26, 2019 06:48:58 AM UTC",
    "resourceList" : [ ],
    "description" : "modify-database service with db ids: 1941d594-
c777-4eca-9fce-18b778d5c153",
    "updatedTime" : "August 26, 2019 06:48:58 AM UTC"
}
```

Example 14-93 Converting Oracle RAC or Oracle RAC One Node Database to Single-instance Oracle Database

```
# odacli modify-database -in db18 -y SI
For moving a database between homes please use the command 'move-
database'.
  "jobId" : "4b548365-dac5-4557-a6a8-2f65c2b725e7",
  "status" : "Created",
  "message" : "Modify database",
  "reports" : [ ],
  "createTimestamp" : "April 21, 2020 00:32:55 AM UTC",
  "resourceList" : [ {
    "resourceId": "de2a7959-e31b-4dee-b600-6b16dfb78c34",
    "resourceType" : "DB",
    "resourceNewType" : null,
    "jobId" : "4b548365-dac5-4557-a6a8-2f65c2b725e7",
    "updatedTime" : "April 21, 2020 00:32:55 AM UTC"
  "description" : "Modify database : db18",
  "updatedTime" : "April 21, 2020 00:32:55 AM UTC"
}
```

Example 14-94 Specifying the target node when converting database

```
# odacli modify-database -in db18 -y SI -g node_number
# odacli modify-database -in db18 -y SI -th node_name
```



odacli move-database

Use the command odacli move-database to move a database from one Oracle home to another home of the same database version.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli move-database [-i dbid] [-in dbname] [-dh dest-dbhome-id][-dhn dest-dbhome-name][-j] [-h]

Parameters

Parameter	Description
dbid, -i	(Optional) Defines the database ID.
dbName, -in	(Optional) Defines the database name.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.
dest-db-home-id, -dh	(Optional) Defines the destination database home ID.
dest-dbhome-name, -dhn	(Optional) Defines the destination database home name.

Usage Notes

Example 14-95 Moving a Database from one Oracle home to another

./odacli move-database -i database_ID -dh destination_database_home_ID

odacli register-database

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

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli register-database -c $\{OLTP|DSS|IMDB\}$ -s dbshape -t dbtypeSI -o hostname -sn servicename [-bi backupconfigid] [-co|-no-co] [-nn] [-h] [-j] [-sh|-no-sh]



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. Only single-instance databases can be registered.
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.
associated-networks, -nn	Specifies the associated network names (in the format networkName1,networkName2,).
disable-seha, -no-sh	Specifies whether you want to disable Standard Edition High-Availability for Oracle Database Standard Edition 19c and later single-instance databases.
enable-seha, -sh	Specifies whether you want to enable Standard Edition High-Availability for Oracle Database Standard Edition 19c and later single-instance databases.



Usage Notes



It is a good practice to use Easy Connect (EZCONNECT) to test the database connectivity before registering the database. Log in as the sys user and enter the following command:

sqlplus sys/password@//hostname:1521/service name

- The odacli register-database command is supported only on the primary database.
- The migrated database is registered with the listener configured during the provisioning of the appliance. The migrated database must be in read-write or read-only mode for the registration to succeed.
- The register-database command validates the datafile and log file locations and moves the controlfile and spfile to the correct locations.
- The following are the minimum compatible parameters set, based on the database version:

Oracle Database 18c: 18.3.0.0Oracle Database 12c: 12.1.0.2

Oracle Database 11 g: 11.2.0.4

• Some init.ora parameters are set, or reset, as part of the registration. Review the parameter changes before and after registration.

The following are examples of changes implemented as part of registration:

- The memory target is reset.
- The sga_target/pga_aggregate_target/log_buffer/inmemory_size is configured based on the database class and database shape settings used during registration.
- The registration process sets, or resets, the recommended appliance-specific parameters.
- The database being registered must use Oracle Managed Files and the file location must match the DATA Location, REDO Location and RECO Location of the odacli describe-dbstorage command.
- As part of the registration process, the database is registered with Oracle Clusterware. Only the primary database is registered with Oracle Clusterware.

Example 14-96 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" : "May 18, 2020 05:55:49 AM EDT",
  "description": "Database service registration with db service name:
crmdb.example.com",
  "updatedTime" : "May 18, 2020 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: May 18, 2020 5:55:49 AM EDT
              Message:
Task Name
                           Start Time
______
restore control file
                         May 18, 2020 5:55:49 AM EDT
move spfile to right location May 18, 2020 5:56:08 AM EDT
register DB with clusterware May 18, 2020 5:56:13 AM EDT
reset db parameters
                          May 18, 2020 5:57:05 AM EDT
                       May 18, 2020 5:57:36 AM EDT
Running DataPatch
(Continued)
 End Time
                           Status
______
May 18, 2020 5:56:08 AM EDT
                          Success
May 18, 2020 5:56:13 AM EDT
                          Success
May 18, 2020 5:57:05 AM EDT
                          Success
May 18, 2020 5:57:36 AM EDT
                          Success
May 18, 2020 5:57:49 AM EDT
                          Success
```

odacli upgrade-database

You can the odacli upgrade-database command to upgrade a database from a supported release. This command is deprecated and will be desupported in a future release. Instead, use the command odacli move-database to move databases from one Oracle Database home to another.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To upgrade an Oracle Database:

odacli upgrade-database -i Comma separated list of database ids -from source dbhome id -to destination dbhome id [-j] [-h] [-sh|-no-sh]

Parameters

Parameter	Description
databaseids, -i	(Optional) Defines the Database IDs to upgrade. You can use a comma separated list of database IDs.
destDbHomeId, -to	The DB HOME ID of the destination database home.
sourceDbHomeId, -from	The DB HOME ID of the source database home.
json, -j	(Optional) Displays JSON output. The default is false.
disable-seha, -no-sh	Specifies whether you want to disable Standard Edition High- Availability for Oracle Database Standard Edition 19c and later single-instance databases.
enable-seha, -sh	Specifies whether you want to enable Standard Edition High- Availability for Oracle Database Standard Edition 19c and later single-instance databases.
help, -h	(Optional) Displays help for using the command.

Usage Notes

You cannot upgrade Oracle RAC or Oracle RAC One Node Database to a destination database home of Standard Edition 19c or later. You must first convert Oracle RAC or Oracle RAC One Node Database to single-instance Oracle Database using the odacli modify-database command and then upgrade the single-instance Oracle Database to a destination database home of Standard Edition 19c or later.

You have the following options for defining the databases to upgrade:

- When you define a single database ID, only the database of the source database home is upgraded.
- When you define more than one database ID, only those databases of the source database home are upgraded.
- When you do not define a database ID, all of the databases under the source database home are upgraded.

You can upgrade databases of the following releases:

- Oracle Database 18c to 19c
- Oracle Database 12.2 to 19c
- Oracle Database 12.1 to 19c
- Oracle Database 11.2.0.4 to 19c
- Oracle Database 12.2 to 18c
- Oracle Database 12.1 to 18c
- Oracle Database 11.2.0.4 to 18c



- Oracle Database 12.1 to 12.2
- Oracle Database 11.2.0.4 to 12.2
- Oracle Database 11.2.0.4 to 12.1

Example 14-97 Upgrading an Oracle Database

In this example, a single database is upgraded. Use the command odacli list-databases to display the database ID, then use the command odacli upgrade-databases to upgrade the 11.2.0.4 database. After the upgrade is complete, you can run the command odacli list-databases again to verify the upgrade.

```
# odacli list-databases
                                   DB Name DB Version CDB
-----
                                   ad6c7326-e460-411e-94df-230dedbef743 rdb121a 11.2.0.4 true fb4d02f3-2413-47ca-8584-a768e23ec2e7 ee12db 12.1.0.2 false
(Continued)
Class Shape Storage Status
        odb1
               ACFS
                        Configured
        odb1 ASM Configured
IMDB
# odacli upgrade-database -i ad6c7326-e460-411e-94df-230dedbef743 -from
fa4321f5-0543-477d-bb54-a429dcc8ee8d -to d752df28-ecdd-4af4-9454-38085ea17f8b
   "jobId" : "1bbe8boe-acb0-4296--9c8b-473b69da0c18",
  "status" : "Created",
  "message" : null,
   "reports" : [ ],
   "createTimestamp" : "October 24, 2017 03:54:03 AM EDT",
   "description" : "Database service upgrade with db ids: [ad6c7326-
e460-411e-94df-230dedbef743]",
   "updatedTime" : "October 24, 2017 03:54:03 AM EDT"
# odacli list-databases
                                  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
```

odacli DBHome Commands

Use the odacli DBHome commands to manage database Home operations.

odacli create-dbhome
 Use the odacli create-dbhome command to create an Oracle Database
 Home.

odacli delete-dbhome

Use the odacli delete-dbhome command to delete database home that is not associated with a database.

odacli describe-dbhome

Use the odacli describe-dbhome command to display Oracle Database Home details.

odacli list-dbhomes

Use the odacli list-dbhomes command to display a list of Oracle Home directories

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, such as 18.7.0.0, 18.5.0.0, 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, 19.8.0.0.200714. If you use the database version without specifying the bundle patch number, then the latest bundle patch is used.



Oracle Database 11.2.0.4.160419 is not supported. Attempts to create an Oracle Database 11.2 against an 11.2.0.4.160419 database home will fail.

Example 14-98 Creating an Oracle Database Home

The following example creates an Oracle Database Home version 19.8.0.0.200714.

odacli create-dbhome -v 19.8.0.0.200714



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 14-99 Deleting an Empty Database Home

odacli delete-dbhome -i 0ce547ca-3df2-4178-a7e6-eefa613aeab4

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]



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.
-vdbversion	(Optional) Identifies the Database Home Version. Use the odacli list-dbhomes -v command to get the <i>dbversion</i> .

Example 14-100 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

odacli list-dbhomes

Use the odacli list-dbhomes command to display a list of Oracle Home directories.

File Path

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

Syntax

To display a list of Oracle Home directories:

odacli list-dbhomes [-h] [-j]

Parameters

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



Example 14-101 Displaying a List of Oracle Home Directories

Run the following command to display a list of Oracle Home directories:

odacli list-dbhomes

odacli Database Storage Commands

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

odacli create-dbstorage

Use the odacli create-dbstorage command to create the file system for database migrations.

odacli delete-dbstorage

Use the odacli delete-dbstorage command to delete database storage that is not associated with a database.

odacli describe-dbstorage

Use the odacli describe-dbstorage command to display storage configuration details.

odacli describe-dgstorage

Use the odacli describe-dgstorages command to display the disk group information.

odacli list-dbstorages

Use the odacli list-dbstorages command to display a list of all of the database storage configured in the appliance.

odacli list-dgstorages

Use the odacli list-dgstorages command to display the disk group information.

odacli update-dgstorage

Use the odacli update-dgstorage command to release disks.

odacli create-dbstorage

Use the odacli create-dbstorage command to create the file system for database migrations.

File Path

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



Syntax

odacli create-dbstorage -n dbname -s dataSize -u databaseUniqueName -r [ASM|ACFS] [-h]

Parameters

Parameter	Description			
dbname, -n	Defines the name of the database.			
dataSize,-s	(Optional) Defines the size, in gigabytes (GB), of the filesystem for storing database files and temp files. The default is: 100 GB The minimum size is 10 GB. When entering the size, do not include GB. For example, for 50 GB, use 50.			
databaseUniqueName, -u	(Optional) Defines a unique name for the database. Specify only if the database unique name is different than the database name. The command creates the following mount point: /u02/app/oracle/oradata/dbunique 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 14-102 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"
}
```

odacli delete-dbstorage

Use the odacli delete-dbstorage command to delete database storage that is not associated with a database.

File Path

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

Syntax

```
odacli delete-dbstorage -i [-h]
```

Parameters

Parameter	Description
id, -i	Identifies the database storage using a database identifier (ID).
help, -h	(Optional) Displays help for using the command.

Usage Notes

- You can only use the delete-dbstorage when the storage is not associated with any databases.
- Use the delete-database command to delete an existing database.
- Use the list-dbstorages command to locate the identifier.

Example 14-103 Deleting Empty Database Storage

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

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 14-104 Displaying Database Oracle ACFS Storage Details

The following example displays Oracle ASM Cluster file system (ACFS) storage details:

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

DBStorage details

ID: 9fe39332-cc1a-4b4b-8393-165524a6ef6b

DB Name: rdb121a DBUnique Name: rdb121a

DB Resource ID: ad6c7326-e460-411e-94df-230dedbef743

Storage Type: Acfs

DATA Location: /u02/app/oracle/oradata/rdb121a RECO Location: /u03/app/oracle/fast_recovery_area/

REDO Location: /u03/app/oracle/redo/ State: ResourceState(status=Configured) Created: July 22, 2016 12:07:12 PM SGT UpdatedTime: July 22, 2016 12:26:39 PM SGT



Example 14-105 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

odacli describe-dgstorage

Use the ${\tt odacli}$ ${\tt describe-dgstorages}$ command to display the disk group information.

File Path

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

Syntax

odacli describe-dgstorage -d diskgroup -h

Parameters

Parameter	Description
diskgroup, -d	Specifies the disk group for which information is displayed.
help, -h	(Optional) Displays help for using the command.

Usage Notes

This command displays the storage information for all the databases backed by a disk group, for each disk group present in the system.

Example 14-106 Displaying Disk Group Storage

odacli list-dgstorages -r redundancy
Diskgroup storage details



Diskgroup: DATA

Redundancy: extern|normal|high|flex

Physical Free Space: wGB

Physical Total Space: xGB

Database Unique Name: rdbx

Location: /u02/app/test/test1/rdbx

Used Space: dGB (acfsutil.total -

acfsutil.freespace)

Free Space: dGB

(acfsutil.freespace)

Database Unique Name: rdby

Location: +DATA/rdby

Used Space: zGB (v\$asm_file.bytes)

Free Space: xGB (PhyFree/

redundancy)

Physical Space:

 $v \texttt{GB}(v \$ asm_diskgroup.total_mb)$

Physical Used : wGB

(v\$asm_file.space)

Physical Free :

uGB(v\$asm_diskgroup.free_mb)

Physical Reserved : uGB(Lookup

Table)

Diskgroup: RECO

Redundancy: normal|high|flex

Physical Free Space: wGB

Physical Total Space: xGB

Database Unique Name: rdbx

Location: /u02/app/test/

fast_recovery_area

Used Space: dGB (acfsutil.total -

acfsutil.freespace)

Free Space: dGB

(acfsutil.freespace)

Database Unique Name: rdby

Location: +DATA/rdby

Used Space: zGB (v\$asm_file.bytes)

Free Space: xGB (PhyFree/

redundancy)

Physical Space:

vGB(v\$asm_diskgroup.total_mb)

Physical Used : wGB

(v\$asm_file.space)

Physical Free :

uGB(v\$asm_diskgroup.free_mb)

Physical Reserved : uGB(Lookup

Table)

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

/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 14-107 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

odacli list-dgstorages

Use the odacli list-dgstorages command to display the disk group information.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-dgstorages -r redundancy -h

Parameters

Parameter	Description
redundancy, -r	Specifies the disk group redundancy for FLEX disk group.
help, -h	(Optional) Displays help for using the command.

Usage Notes

- The command displays the storage-related information for all the disk groups present in the system.
- The redundancy option is valid only for FLEX disk groups. For all disk groups that
 are not FLEX, logical free space is calculated using the redundancy obtained from
 v\$asm diskgroup rather than the CLI option.
- Redundancy option can take the values MIRROR | HIGH. Use one of these options to specify the database redundancy for FLEX disk groups.
- In the example below, Physical Total Space is the total space in the disk group. (V\$ASM_DISKGROUP.total_mb) Physical Reserved Space is the reserved space required to handle disk failures. Physical Free Space is the free space in the disk group. (V\$ASM_DISKGROUP.free_mb) Logical Free Space is the logical free space in the diskgroup. (V\$ASM_DISKGROUP.free mb / redundancy)



This command displays the storage information for all the databases backed by a disk group, for each disk group present in the system.

Example 14-108 Displaying Disk Group Storage

odacli list-dgstorages -r redundancy

Diskgroup Redundancy Physical Total Space Physical Reserved Space Physical Free Space Logical Free Space

DATA FLEX xGB уGВ zGB uGB REDO HIGH xGB уGВ zGB uGB RECO NORMAL xGB уGВ zGB uGB

odacli update-dgstorage

Use the odacli update-dgstorage command to release disks.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To release disks:

odacli update-dgstorage [-h] [-f] [-rd] [-j]

Parameter	Description
json, -j	(Optional) Displays JSON output.
help,-h	(Optional) Displays help for using the command.
force, -f	(Optional) Forces release of specified disks. When this option is specified, the check to verify that all disk groups are mounted on the current node is skipped.
release-disk,-rd	Specifies the disks to release. Generally, this specifies a single storage device with partitions on different disk groups. You can also specify a comma-separated list of disks to release.



Usage Notes

- Run the odacli list-dgdisks to view details of the disk, before running the odacli update-dgstorage command.
- The odacli update-dgstorage command runs a precheck to ensure all disk groups are mounted on the node. You can use the -f option to override the precheck.

Example 14-109 Releasing a physical disk HDD_E0_S10_577135552 which has two logical partitions on two different disk groups

```
# odacli update-dgstorage -rd HDD_E0_S10_577135552
Job details
```

ID: 46bc736c-417b-4ac2-826e-aa857db50e29
Description: Release disks: [HDD_E0_S10_577135552]

Status: Running

Created: July 7, 2020 6:24:27 PM PDT

Message: Release ASM disks

Verifying the result of the Release Disks operation: # odacli describe-job -i 46bc736c-417b-4ac2-826e-aa857db50e29 Job details

ID: 46bc736c-417b-4ac2-826e-aa857db50e29
Description: Release disks: [HDD_E0_S10_577135552]

Status: Success

Created: July 7, 2020 6:24:27 PM PDT

Message: Release ASM disks

odacli Job Commands

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

odacli create-jobdata-retention-policy

Use the odacli create-jobdata-retention-policy command to create job data retention policy for default DCS jobs and specific auto scheduled jobs.

odacli create-purge-jobdata-job

Use the odacli create-purge-jobdata-job command to create a job to delete data for default DCS jobs and specific auto scheduled jobs.

odacli delete-jobdata-retention-policy

Use the odacli delete-jobdata-retention-policy command to delete job data retention for default DCS jobs and specific auto scheduled jobs.

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.

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.



- odacli list-jobdata-retention-policy
 - Use the odacli list-jobdata-retention-policy command to list job data retention policy for default DCS jobs and specific auto scheduled jobs.
- odacli list-purge-jobdata-job
 Use the odacli list-purge-jobdata-job command to list purge job data for default DCS jobs and specific auto scheduled jobs.
- odacli list-scheduled-executions

odacli create-jobdata-retention-policy

Use the odacli create-jobdata-retention-policy command to create job data retention policy for default DCS jobs and specific auto scheduled jobs.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To create job data retention policy:

odacli create-jobdata-retention-policy [-j] [-h] [-w] [-s]

Parameters

Parameter	Description
json, -j	(Optional) Displays JSON output.
help,-h	(Optional) Displays help for using the command.
retentionWindow, -w	(Optional) Describes the time interval to retain the job data. Default is 30 days if not specified.
retentionWindowUnit, -u	(Optional) Describes the unit for the retentionWindow. Possible values are Day Hour Minute. Default is Day if no value is specified.
scheduleIds, -s	(Optional) Specifies the IDs, delimited by commas, of the scheduled jobs similar to the odacli list-schedules result. Use Default for all DCS jobs.

Usage Notes

 Once a policy is created, an auto scheduled job is created to start purging DCS job records regularly, for example, every day at 4 AM, based on the retention policies you define.

Example 14-110 Creating a default policy to purge all the jobs and scheduled executions older than 30 days

odacli create-jobdata-retention-policy



Job details ID: 36d00489-39b1-425f-81bf-6d6e3bfede8b Description: set job data retention policy Status: Created Created: April 23, 2020 3:32:09 PM PDT Message: Task Name Start Time End Time Status ______ [root@oda1]# ./odacli describe-job -i c40c17f0-4185-40fea126-30fe1f0e5cdd Job details ______ ID: c40c17f0-4185-40fe-a126-30fe1f0e5cdd Description: set job data retention policy Status: Success Created: April 23, 2020 5:42:28 PM PDT Message: Task Name Start Time End Time Status _____ set job data retention policy April 23, 2020 5:42:28 PM PDT 23, 2020 5:42:28 PM PDT Success create auto job data schedule April 23, 2020 5:42:28 PM PDT April 23, 2020 5:42:28 PM PDT Success Example 14-111 Set up a retention policy of 10 days for the schedule 'archive log backup' # odacli create-jobdata-retention-policy -s 284a22b5-41e6-4be1a916-048eac74e076 -w 10 -u Day Job details ID: ea68a90e-a8e2-4fc4-a4f1-75461e12c387 Description: set job data retention policy Status: Created Created: April 23, 2020 6:22:14 PM PDT Message: Task Name Start Time End Time Status _____ [root@oda1]# ./odacli list-jobdata-retention-policy Schedule Id Retention Window Unit Modified



Default 20 Day April 23, 2020 6:16:59 PM PDT 284a22b5-41e6-4bel-a916-048eac74e076 10 Day April 23, 2020 6:22:14 PM PDT

odacli create-purge-jobdata-job

Use the odacli create-purge-jobdata-job command to create a job to delete data for default DCS jobs and specific auto scheduled jobs.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To create job data purge:

odacli create-purge-jobdata-job [-j] [-h] [-i] [-o] [-u] [-s]

Parameters

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.
jobIds, -i	(Optional) Purges data for given DCS job IDs, delimited by commas.
olderThan, -o	(Optional) Purges job data older than the specified time. If not specified, use the existing retentionWindow value.
olderThanUnit, -u	(Optional) Describes the unit for the OlderThan option. Possible values are Day Hour Minute. If not specified, use the existing retentionWindow value.
scheduleIds, -s	(Optional) Specifies the IDs, delimited by commas, of the scheduled jobs similar to the odacli list-schedules result.

Example 14-112 Creating a job to purge job data

odacli create-purge-jobdata-job

Job details

ID: e43dbd56-dc7c-4812-b653-0fc3208e0929

Description: purge job data

Status: Created

Created: April 23, 2020 6:27:40 PM PDT

Message:

Task Name Start Time End Time Status



[root@oda1]# odacli describe-job -i e43dbd56-dc7c-4812b653-0fc3208e0929 Job details ID: e43dbd56-dc7c-4812-b653-0fc3208e0929 Description: purge job data Status: Success Created: April 23, 2020 6:27:40 PM PDT Message: Purged 21 metadata records and 10 files. Purge policies are: Purge all jobs and scheduled executions older than 30 Days Purge scheduled executions for ID:284a22b5-41e6-4be1-a916-048eac74e076 older than 10 Day Task Name Start Time End Time Status ----purge job data April 23, 2020 6:27:40 PM PDT April 23, 2020 6:27:40 PM PDT Success Example 14-113 Purging job data older than 5 hours, including all jobs and scheduled executions related records # odacli create-purge-jobdata-job -o 5 -u Hour Job details ______ ID: 4d065c96-a8eb-4974-a446-573b5ad3cb95 Description: purge job data Status: Created

Job details

ID: 4d065c96-a8eb-4974-a446-573b5ad3cb95

Description: purge job data

Status: Success

Created: April 23, 2020 1:55:59 PM PDT

Message: Purged 242 metadata records and 0 files. Purge policies are:

Purge all jobs and scheduled executions older than 5 Hour

Task Name Start Time End Time Status



April 23, 2020 1:55:59 PM PDT April 23, 2020 purge job data 1:55:59 PM PDT Success Example 14-114 Purging job data for multiple jobs # odacli create-purge-jobdata-job -i 87a926cd-a243-49e0ba02-9d8968e1de1e,0e2a38c0-041a-41d8-91ad-7f9f7c646f12 Job details ID: 217cbdbf-15a5-47d3-9582-3f26d6b5eebf Description: purge job data Status: Created Created: April 23, 2020 2:01:25 PM PDT Message: Task Name Start Time End Time Status _____ [root@odal]# odacli describe-job -i 217cbdbf-15a5-47d3-9582-3f26d6b5eebf Job details ID: 217cbdbf-15a5-47d3-9582-3f26d6b5eebf Description: purge job data Status: Success Created: April 23, 2020 2:01:25 PM PDT Message: Purged 11 metadata records and 0 files. Purge policies are: Purge job with ID:87a926cd-a243-49e0-ba02-9d8968eldele Purge job with ID:0e2a38c0-041a-41d8-91ad-7f9f7c646f12 Task Name Start Time End Time Status _____ April 23, 2020 2:01:25 PM PDT April 23, 2020 purge job data 2:01:25 PM PDT Success Example 14-115 Purging job data for specific job data schedules older than 5 days # odacli create-purge-jobdata-job -s 39cc86d6-30c2-4744-bfbce62535e2aa67,31b3a83b-76ca-44d3-9268-b4dac948e217 -o 5 -u Day Job details ______ ID: be839a81-a79b-43ce-bf70-c8aba1a9cc91 Description: purge job data



Status: Created

Message:

Created: April 23, 2020 2:44:54 PM PDT

Task Name Start Time End Time Status _____ [root@oda1]# ./odacli describe-job -i be839a81-a79b-43ce-bf70c8aba1a9cc91 Job details ID: be839a81-a79b-43ce-bf70-c8aba1a9cc91 Description: purge job data Status: Success Created: April 23, 2020 2:44:54 PM PDT Message: Purged 0 metadata records and 0 files. Purge policies are: Purge scheduled executions for ID:39cc86d6-30c2-4744-bfbc-e62535e2aa67 older than 5 Day Purge scheduled executions for ID:31b3a83b-76ca-44d3-9268-b4dac948e217 older than 5 Day Task Name Start Time End Time Status purge job data April 23, 2020 2:44:54 PM PDT April 23, 2020 2:44:54 PM

odacli delete-jobdata-retention-policy

PDT Success

Use the odacli delete-jobdata-retention-policy command to delete job data retention for default DCS jobs and specific auto scheduled jobs.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To delete job data retention:

odacli delete-jobdata-retention-policy [-j] [-h][-s]

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.
scheduleIds, -s	(Optional) Specifies the IDs applied by the job data retention policy. If not supplied, delete all the existing policies.



Example 14-116 Deleting the job data retention policies

odacli delete-jobdata-retention-policy

Job details

ID: ab819d57-9e35-4f55-bd5e-d26fc6372448

Description: delete job data retention policy

Status: Running

Created: April 23, 2020 7:34:05 PM PDT

Message:

Task Name Start Time End Time Status

remove job data retention policy entries April 23, 2020 7:34:05

PM PDT April 23, 2020 7:34:05 PM PDT Running

[root@oda1]# odacli describe-job -i ab819d57-9e35-4f55-bd5ed26fc6372448

Job details

ID: ab819d57-9e35-4f55-bd5e-d26fc6372448
Description: delete job data retention policy

Status: Success

Created: April 23, 2020 7:34:05 PM PDT

Message:

Task Name Start Time End Time Status

remove job data retention policy entries April 23, 2020 7:34:05 PM PDT April 23, 2020 7:34:05 PM PDT Success

PM PDI APILI 25, 2020 7.54.05 PM PDI SUCCESS

remove auto job data schedule April 23, 2020 7:34:05

PM PDT April 23, 2020 7:34:05 PM PDT Success

[root@oda1]# odacli list-jobdata-retention-policy

DCS-10032:Resource JobDataRetentionPolicy is not found.

odacli describe-job

Use the odacli describe-job command to display details about a specific job, including the job ID, status, tasks, and the job created date and time stamp.

File Path

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



Syntax

To view a specific job, status, and tasks:

```
odacli describe-job -i jobid [-j] [-h]
```

Parameters

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

Example 14-117 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

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:

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.
for, -o	(Optional) Describes a job created on a specific date. In the format YYYY-MM-DD, such as 2018-01-01.
	Example:
	# odacli list-jobs -o 2018-08-09



Parameter	Description
from, -f	(Optional) Describes a job created since a specific date. In the format YYYY-MM-DD or YYYY-MM-DD HH:mm:ss, such as 2018-01-01 or 2018-01-01 01:00:00.
	Examples:
	<pre># odacli list-jobs -f 2018-08-27 # odacli list-jobs -f "2018-08-27 03:00:00"</pre>
head, -hd	(Optional) Describes the maximum number of older jobs to be displayed, values can be 1 to 200. Example:
	odacli list-jobs -hd 10
to, -t	(Optional) Describes a job created ahead of a specific date. In the format YYYY-MM-DD or YYYY-MM-DD HH:mm:ss, such as 2018-01-01 or 2018-01-01 01:00:00. Example:
	# odacli list-jobs -t 2018-08-07
tail,-tl	(Optional) Describes the maximum number of latest jobs to be displayed, values can be 1 to 200.
	Example:
	# odacli list-jobs -tl 10
keyword, -k	(Optional) Specifies the keyword that the job description contains.
	Example:
	# odacli list-jobs -k OraDB
status, -s	(Optional) Specifies the status of the job, such as Created, Scheduled, Running, Failure, Success, InternalError.
	Example:
	# odacli list-jobs -s Failure



Example 14-118 Displaying a List of Jobs

To display a list of jobs:

Example 14-119 Displaying Specified Number of Older Jobs

To display a specified number of older jobs:

```
# odacli list-jobs -hd 5
ID Description Created Status
--- ---
643c6186-a667-43d7-847f-d756a96fa072 Create detailed Backup Report
August 5, 2018 12:36:26 AM UTC Success
f29cb82c-6150-487d-aaff-52d65f6ab972 Create recovery-pitr : time
'08/05/2018 07:16:12'
for db : igIyoz August 5, 2018 1:01:39 AM UTC Success
cfe19337-ab2f-4ef3-85b5-24601ba31be2 Create detailed Backup Report
August 5, 2018 1:17:46 AM UTC Success
3749b5e2-240e-4df5-b3c1-32d345243b25 Create detailed Backup Report
August 5, 2018 2:01:07 AM UTC Success
64828852-bb16-4f06-aca9-4bdf9fe7b6f2 Create regular-5 Backup with TAG-iD5UNjBZ8HN2FYL
for Db:igIyoz August 5, 2018 2:14:19 AM UTC Success
```

Example 14-120 Displaying Jobs in a Date Range

To display jobs created within a time frame:

```
# ./odacli list-jobs -f 2018-08-07 -t 2018-08-08

ID Description Created Status
--- ---

1fc5ef97-a9db-49b2-9664-7c551bd005f4 Authentication key update for test_user August 7, 2018 12:56:58 AM UTC Success e24f86cf-bb2e-4ebe-84e0-da5cedb27ad4 Provisioning service creation August 7, 2018 1:00:54 AM UTC Success 7f67efd6-cce5-47b4-8dc4-fdb732491f99 CPU cores service update August 7, 2018 1:41:05 AM UTC Success 0ae9a312-bac8-43be-8a64-5a12c24c2a02 SSH keys update August 7, 2018 1:42:59 AM UTC Success af41fdc1-87ff-46cd-bc41-26615e115ae7 SSH key delete August 7, 2018 1:44:56 AM UTC Success 79e4cbb0-b474-48ab-9e04-d3d602bc0ed2 DcsCli patching August 7, 2018
```



1:50:18 AM UTC Success edd55e7d-f81f-4a10-942d-1121aef0bff3 DcsCli patching August 7, 2018 1:50:32 AM UTC Success acc22c60-3476-4566-8faa-4d36b116eded create backup Success d89efedf-9110-429a-a3b2-ccd6a53f8564 Database Home OraDB12201_home2 creation with version :12.2.0.1 August 7, 2018 2:36:05 AM UTC Success 2a5532ae-41fa-47c2-bc90-010a5f26d6b2 Database service creation with db name: my122 August 7, 2018 3:52:38 AM UTC Success c4e533e9-c596-478f-92db-2f11f1384075 Discover Components : all August 7, 2018 4:07:09 AM UTC Success 149e89b5-27d3-4c7c-9c03-f029ca3dd495 Discover Components : all August 7, 2018 4:08:45 AM UTC Success 21d4c37b-49ad-48dd-a1db-1f25d9288312 Database Home OraDB11204_home1 creation with version :11.2.0.4 August 7, 2018 4:19:32 AM UTC Success b61dbbca-edc1-4a4a-9db2-82b0bdcb64e6 Database service deletion with db name: myTestDb with id : 6400c81d-5837-480c-b4a1-7c01591ee144 August 7, 2018 4:24:50 AM UTC Success d4a104df-5796-4e37-9173-82f0e263d642 create backup config:bkfgd August 7, 2018 4:28:54 AM UTC Success a121d40b-f33b-47a4-8fc6-4e3b84173f44 Database service creation with db name: my112 August 7, 2018 6:51:13 PM UTC Success 42dd661f-9ba0-4877-ace9-39d3f212c071 Discover Components : all August 7, 2018 7:12:56 PM UTC Success 2f648f5a-c9c5-42ec-adb0-98cf6497c89e Discover System Components: system August 8, 2018 3:28:12 AM UTC Success a5755f43-509d-4d4c-b7ef-9f99660c4de7 DB Home Patching: Home Id is 97df26b3-42f2-4189-805b-82d1b38737d0 August 8, 2018 3:52:08 AM UTC 79b0e697-065f-4630-a524-8d072a4e139a Database Home OraDB12102_home1 creation with version :12.1.0.2 August 8, 2018 4:34:30 AM UTC Success 112b75bc-3512-4c28-a479-3e0317eb0dc4 Database service creation with db name: mynew121 August 8, 2018 8:02:51 AM UTC Failure 09f56fb0-le91-4b02-a9b8-5add11a8da32 Database service creation with db name: my121a August 8, 2018 9:13:01 AM UTC Success 5633ded9-07ea-4bf9-9533-31eb65789fe7 Database service deletion with db name: mynew121 with id: 24be4362-16c8-476f-903a-f6f2ef59f5e4 August 8, 2018 9:24:31 AM UTC Success 458dlc45-02dc-456c-ae88-5da613faaa66 Database service creation with db name: mynew121 August 8, 2018 9:27:31 AM UTC Success f178f378-a9d7-4d5c-b6f5-6f62ea4e05bb Database service deletion with db name: myTestDb with id: ef50387b-0c62-4446-b210-f8d070e2a043 August 8, 2018 9:40:43 AM UTC Success 7fab740f-a711-466a-ba6d-dd5643374c28 Database service deletion with db name: myTestDb with id: 6632a083-558a-4eb4-8c2b-af0710179980 August 8, 2018 9:41:04 AM UTC Success 3121529d-2b9d-4bbe-bf58-996c2cf46996 Database service creation with db name: mydss August 8, 2018 9:42:06 AM UTC Success 3d0a9261-19d7-42bb-8b92-00fcc4f8c4le Discover Components : db August 8, 2018 10:17:22 AM UTC Success

odacli list-jobdata-retention-policy

Use the odacli list-jobdata-retention-policy command to list job data retention policy for default DCS jobs and specific auto scheduled jobs.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To list jobs and view job details and status:

odacli list-jobdata-retention-policy [-j] [-h]

Parameters

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

Example 14-121 Listing all job retention policies

odacli list-purge-jobdata-job

Use the odacli list-purge-jobdata-job command to list purge job data for default DCS jobs and specific auto scheduled jobs.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To list job data purge policy:

odacli list-purge-jobdata-job [-j] [-h]



Parameters

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

Usage Notes

The command describes the files that are purged, the purged count, the purged file size, and the time of purge.

Example 14-122 Listing history, statistics, and rules for job data purge jobs

odacli list-purge-jobdata-jobs

Purge By	Job			Purg	ed Ob	ject		
Count	Size	Type	Pur	ged '	Time			
4d065c96-	-a8eb-4974-	-a446-573b5ad3	cb95	Т	askRej	port		
102		Metadata	April	23,	2020	1:55:59	PM	PDT
4d065c96-	-a8eb-4974-	-a446-573b5ad3	cb95	S	ervic	eJobRepo:	rt	
24		Metadata	April	23,	2020	1:55:59	PM	PDT
4d065c96-	-a8eb-4974-	-a446-573b5ad3	cb95	L	ogClea	anupSumma	ary	
2		Metadata	April	23,	2020	1:55:59	ΡM	PDT
4d065c96-	-a8eb-4974-	-a446-573b5ad3	cb95	J	obExe	cutionRe	sour	cce
93		Metadata	April	23,	2020	1:55:59	ΡM	PDT
4d065c96-	-a8eb-4974-	-a446-573b5ad3	cb95	J	obData	aPurgeRe	sult	
21		Metadata	April	23,	2020	1:55:59	PM	PDT

odacli list-scheduled-executions

Use the command odacli list-scheduled-executions to display a list of jobs that were executed.

File Path

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

Syntax

odacli list-scheduled-executions [-e] [-1] [-j] [-h]

Parameter	Description
executionid, -e	(Optional) Displays the execution ID.
scheduleid, -i	(Optional) Displays the Schedule ID.



Parameter	Description
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

Example 14-123 Displaying a List of Scheduled and Executed Jobs

Display a list of scheduled tasks, the status, and the date and time that the task was executed. In the following example, three (3) scheduled tasks were executed. One task, Schedule ID 04b5750c-0d13-42cf-aba3-85416e8edafb, was executed twice.

To learn more about a scheduled backup, run the command odacli list-schedules. The output displays the ID, name, description, and schedule for each task.

```
# odacli list-schedules
ID
                                     Name
Description
_____
d136cc72-4a80-4ab8-9f1e-120b995b2794 metastore maintenance
internal metastore maintenance
04b5750c-0d13-42cf-aba3-85416e8edafb
                                    AgentState metastore cleanup
internal agentstateentry metastore maintenance
7ee1e2aa-80a8-4297-97f7-365b84bcce4d
                                    backupreport maintenance
backup reports deletion
(Continued)
CronExpression
                            Disabled
0 0 0 1/1 * ? *
                           true
0 0 0 1/1 * ? *
                           false
0 0 0 1/3 * ? *
                           false
```



Log Commands

Use the odacli log commands to specify the options to collect and delete logs.

odaadmcli manage diagcollect

Use the odaadmcli manage diagcollect command to collect diagnostic logs for Oracle Database Appliance components.

odacli create-auto-logclean-policy

Use the odacli create-auto-logclean-policy command to create a policy for a job to automatically purge log files for a specified time period when certain criteria are met.

odacli create-logcleanjob

Use the odacli create-logcleanjob command to create a job to purge log files for a specified time period.

odacli describe-logcleanjob

Use the odacli describe-logcleanjobcommandto describe a log cleanup job.

odacli list-auto-logclean-policy

Use the odacli list-auto-logclean-policy command to list the jobs to purge log files.

odacli list-logcleanjobs

Use the odacli list-logcleanjobs command to list the jobs to purge log files

odacli list-logspaceusage

Use the odacli list-logspaceusage command to display the log file usage.

odaadmcli manage diagcollect

Use the odaadmcli manage diagcollect command to collect diagnostic logs for Oracle Database Appliance components.

File Path

\$ORACLE HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To collect diagnostic logs for components:

```
odaadmcli manage diagcollect [-h] [--dataMask] [--dataSanitize] [--
fromTime] [--toTime] [--Components]
```

Parameter	Description
help, -h	(Optional) Displays help for using the command.
dataMask	(Optional) Masks sensitive data. The default is No.



Parameter	Description
dataSanitize	(Optional) Sanitizes (redacts) sensitive data. The default is No.
fromTime	(Optional) Specifies the time from when you want to collect data. The timestamp formats can be of the type: mon/dd/yyyy hh:mm:ss, or yyyy-mm-dd hh:mm:ss, or yyyy-mm-ddThh:mm:ss, or yyyy-mm-dd.
toTime	(Optional) Specifies the time till when you want to collect data. The timestamp formats can be of the type: mon/dd/yyyy hh:mm:ss, or yyyy-mm-dd hh:mm:ss, or yyyy-mm-ddThh:mm:ss, or yyyy-mm-dd.
Components	(Optional) Specifies the comma-separated list of components for which you want to collect data. The supported values are:
	all, ips, oda, odalite, dcs, odabackup, odapatching, odadataguard, odaprovisioning, odaconfg, odasystem, odastorage, database, asm, crsclient, dbclient, dbwlm, tns, rhp, procinfo, afd, crs, cha, wls, emagent, oms, ocm, emplugins, em, acfs, install, cfgtools, os, ashhtml, ashtext, awrhtml, awrtext
verbose	Displays detailed message.

Usage Notes

The following types of sensitive information can be redacted using the --dataMask or the --dataSanitize option:

- Host names
- IP addresses
- Database names
- Tablespace names
- Service names
- Ports
- Operating System user names

For example, when the --dataMask option is used, all instances of a sensitive name such as a database name called "payrolldb" are replaced with "********" in the TFA collection.

For example, when the --dataSanitize option is used, all instances of a sensitive name such as a database name called "payrolldb" are replaced with another string, such as "oCjlN7F8P", in the TFA collection.

Example 14-124 Masking Sensitive Data in Log Collection

/opt/oracle/oak/bin/odaadmcli manage diagcollect --dataMask
DataMask is set as true



TFACTL command is: /opt/oracle/tfa/tfa_home/bin/tfactl
Data mask is set.
Collect data within last 12 hours as default
Please wait for several minutes for the collection to complete.

odacli create-auto-logclean-policy

Use the odacli create-auto-logclean-policy command to create a policy for a job to automatically purge log files for a specified time period when certain criteria are met.

File Path

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

Syntax

To list jobs and view job details and status:

odacli create-auto-logclean-policy [-h] [-c] [-u] [-uMB] [-f] [-uPer]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
components, -c	(Optional) Specifies the list of components, separated by comma. The values are gi database dcs For example, gi dcs.
olderthan, -o	(Optional) Cleans logs older than specified time interval. Default is 30 if it is not specified.
olderThanUnit, -u	(Optional) Unit for theolderthan parameter. Default is Day if it is not specified.
freeSpaceBelowPercentage, -f	Starts purge when free disk space is below the specified number of percentage of the total partition size. Valid range is 20-50. Default is 20.
usageOverMB, -uMB	Starts purge when log usage is over the specified number of MB. Valid range is 10%-50% of partition size.
usageOverPercentage, -uPer	Starts purge when log usage is over the specified number of percentage of total partition space. Valid range is 10-50.

Example 14-125 Creating Automatic Jobs to Purge Logs

To create a policy for automatic jobs to purge logs:

odacli create-auto-logclean-policy -c 'dcs' -o 30 -uPer 30
Component UsageOverPercentage freeSpaceBelowPercentage UsageOverMB



OlderThan	OlderTh	anUnit			
dcs		30		20	
0	30		Day		

odacli create-logcleanjob

Use the odacli create-logcleanjob command to create a job to purge log files for a specified time period.

File Path

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

Syntax

To list jobs and view job details and status:

odacli create-logcleanjob [-h] [-c] [-o] [-u]

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
components, -c	(Optional) Specifies the list of components, separated by comma. The values are gi database dcs For example, gi, dcs.
olderthan, -o	(Optional) Cleans logs older than specified time interval. Default is 30 if it is not specified.
unit, -u	(Optional) Unit for theolderthan parameter. Default is Day if it is not specified.

Example 14-126 Creating Jobs to Purge Logs

To create jobs to purge logs:

odacli create-logcleanjob
Job details

ID: e03d90b5-41dd-45e0-8b7a-1480d6d7f86f

Description: log file cleanup

Status: Created

Created: July 25, 2018 8:06:56 PM UTC



Message:

Task Name Start Time End Time Status

-----# ./odacli describe-job -i e03d90b5-41dd-45e0-8b7a-1480d6d7f86f

Job details

ID: e03d90b5-41dd-45e0-8b7a-1480d6d7f86f

Description: log file cleanup

Status: Success

Created: July 25, 2018 8:06:56 PM UTC

Message:

odacli describe-logcleanjob

Use the odacli describe-logcleanjobcommandto describe a log cleanup job.

File Path

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

Syntax

To list jobs and view job details and status:

odacli describe-logcleanjob [-h]



Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
jobid, -i	Displays the summary of the log cleanup with the specified job ID.

Example 14-127 Displaying Log Cleanup Jobs

To display log cleanup jobs:

odacli describe-logcleanjob -i e03d90b5-41dd-45e0-8b7a-1480d6d7f86f
JobId Files Deleted Size Freed Component Top Path
TimeStamp

e03d90b5-41dd-45e0-8b7a-1480d6d7f86f 0 0 bytes dcs /opt/oracle/dcs/log July 25, 2018 8:06:56 PM UTC

e03d90b5-41dd-45e0-8b7a-1480d6d7f86f 0 0 bytes gi /u01/app/12.2.0.1/grid July 25, 2018 8:06:59 PM UTC

odacli list-auto-logclean-policy

Use the odacli list-auto-logclean-policy command to list the jobs to purge log files.

File Path

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

Syntax

To list jobs and view job details and status:

odacli list-auto-logclean-policy [-h] [-c]

Parameter	Description
help, -h	(Optional) Displays help for using the command.
components, -c	(Optional) Specifies the list of components, separated by comma. The values are gi database dcs For example, gi, dcs.



Example 14-128 Listing Jobs to Purge Logs

To list jobs to purge logs:

odacli list-auto-logclean-policy
Component UsageOverPercentage freeSpaceBelowPercentage UsageOverMB
OlderThan OlderThanUnit

gi	40		20
0	60	Day	
database 0	40 60	Day	20
dcs 0	30 30	Day	20

odacli list-logcleanjobs

Use the odacli list-logcleanjobs command to list the jobs to purge log files.

File Path

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

Syntax

To list jobs and view job details and status:

odacli list-logcleanjobs [-h]

Parameters

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

Example 14-129 Listing Jobs to Purge Logs

grid July 25, 2018 8:06:59 PM UTC

To list jobs to purge logs:



```
e03d90b5-41dd-45e0-8b7a-1480d6d7f86f 0 0 bytes dcs /opt/oracle/dcs/log July 25, 2018 8:06:56 PM UTC
```

odacli list-logspaceusage

Use the odacli list-logspaceusage command to display the log file usage.

File Path

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

Syntax

To list jobs and view job details and status:

```
odacli list-logspaceusage [-c] [-h]
```

Parameters

Parameter	Description	
components, -c	Describes the list of components delimited by comma. The values can be gi database dcs. For example,gi,dcs.	
help, -h	(Optional) Displays help for using the command.	

Example 14-130 Displaying a List of Logs

To display log file space usage for a list of components:

```
odacli list-logspaceusage
Timestamp: July 25, 2018 7:31:39 PM UTC

Component Size(MB) Partition LogUsagePercentage
PartitionFreePercentage

dcs 477.00 /dev/mapper/VolGroupSys-LogVolOpt
0.79 81.00

gi 1863.68 /dev/mapper/VolGroupSys-LogVolU01 1.85
86.00
```



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
- odacli delete-asr
- odacli describe-asr
- odacli test-asr
- · odacli update-asr

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]
```

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.



Parameter	Description
snmpversion, -s [V3]	(Optional) Defines Simple Network Management Protocol (SNMP) Version 3.
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 14-131 Configuring Oracle ASR with a Proxy Server

This example configures Oracle ASR for user name scott.tiger@example.com. A proxy server, www-proxy.example.com, and port 80 are defined.

Example 14-132 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.

odacli delete-asr

Use the odacli delete-asr command to remove the Oracle Auto Service Request (Oracle ASR) configuration from the system.

File Path

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

Syntax

```
# odacli delete-asr [-h]
```

Parameters

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

Example 14-133 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
}
```

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 14-134 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

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 <code>/SP/alertmgmt/rules/1</code> testrule=true.

Example 14-135 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

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]

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 [v3]	(Optional) Defines Simple Network Management Protocol (SNMP) Version 3.	



Parameter	Description
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 14-136 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 OS Commands

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

- 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.
- odacli update-osconfigurations

 Use the command odacli update-osconfigurations to update the HugePage and memlock values.

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.conffiles. Based on the total available space, suggested values are calculated for the parameters.

Example 14-137 Displaying a List of Configured and Suggested Memlock and HugePage Configurations

odacli list-osconfigurations

Parameter SuggestedValue	User	ConfiguredValue	
Memlock 289034355KB	grid	295971180KB	
Memlock 289034355KB	oracle	295971180КВ	
HugeSpace	default	101430MB	101161MB



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 is false.	
memlock, -m	(Optional) Updates the memlock value.

Usage Notes

The command updates memlock in the /etc/security/limits.conffile and HugePage in the/etc/sysctl.conf file with the suggested values.

You can update memlock or hugepage. If no option is provided, then both parameters are updated to the suggested values.

Example 14-138 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
```

odaadmcli Hardware Monitoring Commands

Use the hardware monitoring commands to display hardware configurations.

odaadmcli show cooling

Use the odaadmcli show cooling command to show cooling details.

odaadmcli show env hw

Use the odaadmcli show env_hw command to display information about the environment and hardware.

odaadmcli show fs

Use the odaadmcli show fs command to display filesystem details.

odaadmcli show memory

Use the odaadmcli show memory command to display memory details.

· odaadmcli show network

Use the odaadmcli show network command to show network details.

odaadmcli show power

Use the odaadmcli show power command to display power supply details.

· odaadmcli show processor

Use the odaadmcli show processor command to display processor details.

odaadmcli show server

Use the odaadmcli show server command to display server details.

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]

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



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 14-139 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
```

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]

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



Example 14-140 Displaying Filesystem Details

odaadmcli show fs

Type	Total Space	Free Space	Total DC Space	Free DG Space
	-	-	TOTAL DG SPACE	riee be bpace
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

odaadmcli show memory

Use the odaadmcli show memory command to display memory details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show memory details:

odaadmcli show memory [-h]

Parameters

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

Example 14-141 Display Memory Details

odaadmcli show memory

NAME	HEALTH	HEALTH DETAILS	PART NO.	SERIAL NO.
		_		_
DIMM_0	OK	-	3A4K40BB1-CRC	
00CE01154	16005777	16		
00000113	1002LADAS	70		
DIMM 11	OK	_	3A4K40BB1-CRC	
D 1111 1 1	OIL		SITIR TODDE CITE	



00CE01154602EADADA					
DIMM_3	OK -	3A4K40BB1-CRC			
00CE01154602EADBC7					
DIMM_8	OK -	3	A4K40BB1-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	
PO/D3	Samsung	32 GB	2400 MHz	0	
P0/D8	Samsung	32 GB	2400 MHz	0	

odaadmcli show network

Use the odaadmcli show network command to show network details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show network details:

odaadmcli show network [-h]

Parameters

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

Example 14-142 Showing Network Details

# odaadmcli show network		
NAME HEALTH HEALTH DETAILS	LOCATION	PART NO MANUFACTURER
MAC ADDRESS LINK DETECTED DIE TEMP		
Ethernet_NIC_0 OK -	NET0	i210 INTEL
00:10:E0:DD:9D:14 no (em1) N/A		
Ethernet_NIC_1 OK -	NET1	X710/X557-AT Intel
3C:FD:FE:78:93:92 no (p2p3) N/A		
Ethernet_NIC_2 OK -	NET2	X710/X557-AT Intel
3C:FD:FE:78:93:91 yes (p2p2) N/A		
Ethernet_NIC_3 OK -	NET3	X710/X557-AT Intel
3C:FD:FE:78:93:90 yes (p2p1) N/A		
Ethernet_NIC_4 OK -	NET4	BCM57414 Broadcom
B0:26:28:3F:D8:B8 yes (p7p2) N/A		
Ethernet_NIC_5 OK -	NET5	X710/X557-AT Intel
3C:FD:FE:78:93:93 no (p2p4) N/A		
Ethernet_NIC_6 OK -	NET6	BCM57414 Broadcom
B0:26:28:3F:D8:B0 yes (p7p1) N/A		



odaadmcli show power

Use the odaadmcli show power command to display power supply details.

File Path

/opt/oracle/dcs/bin/odaadmcli

Syntax

Run this command on the first node, to display power supply details on Oracle Database Appliance High-Availability (HA) models:

```
odaadmcli show power [-h]
```

Parameters

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

Example 14-143 Displaying Power Supply Details

odaadmcli show power

NAME Power_Supply	HEALTH y_0 OK	HEALTH_DETAILS -	PART_NO. 7079395		AL_NO. Z+1514CE056G
(Continued)	INPUT_POWER	OUTPUT_POWER	INLET_TEMP		EXHAUST_TEMP
PS0 degree C	Present	112 watts	28.000 degr	ee C	34.938

odaadmcli show processor

Use the odaadmcli show processor command to display processor details.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To show processor details:

odaadmcli show processor [-h]

Parameters

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



Example 14-144 Displaying Processor Details

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 14-145 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



Storage Commands

Understand the commands to perform storage operations and diagnostics.

odaadmcli expand storage

Use the odaadmcli expand storage command to expand storage.

odacli list-dgdisks

Use the odacli list-dgdisks command to display details about the available disks.

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).

odaadmcli power disk

Use the odaadmcli power disk command to power a disk on or off for NVMe drives only.

odaadmcli show controller

Use the odaadmcli show controller command to display details of the controller.

odaadmcli show disk

Use the odaadmcli show disk command to display the status of a single disk or of all disks on the system.

odaadmcli show diskgroup

Use the odaadmcli show diskgroup command to list configured diskgroups or display a specific diskgroup configuration.

odaadmcli show raidsyncstatus

Use the odaadmcli show raidsyncstatus command to display the RAID SYNC status.

odaadmcli show storage

Use the odaadmcli show storage command to show the storage controllers, expanders, and disks.

odaadmcli stordiag

Use the odaadmcli stordiag command to collect detailed information for each disk or NVMe.

odaadmcli expand storage

Use the odaadmcli expand storage command to expand storage.

File Path

/opt/oracle/dcs/bin/odaadmcli

Syntax

odaadmcli expand storage -ndisk number of disks to be added - enclosure $\{0/1\}$ [-h]



Parameters

Parameter	Description
enclosure {0 1}	Defines the JBOD or shelf number. The base storage shelf is 0. The storage expansion shelf is 1.
	This option is only available for multi-node platforms. It is not supported on Oracle Database Appliance single node platforms.
help, -h	(Optional) Displays help for using the command.
-ndisk	Defines the number of disks to be added in the enclosure.

Usage Notes

On high-availability (HA) Oracle Database Appliance hardware models, run the command only on the first node.

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



In addition to reviewing the expand storage command, it is important to follow the procedures for adding storage. Cabling validation and disk placement is important. In some cases, you must move disks to different slots to successfully expand storage.

odacli list-dgdisks

Use the odacli list-dgdisks command to display details about the available disks.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To list available disk details:

odacli list-dgdisks [-h] [-dg] [-dp] [-j]



Parameters

Parameter	Description
json, -j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.
diskgroup, -dg	(Optional) Displays all disks in the specified disk group. The possible values are: ALL, DATA, RECO, REDO, FLASH. If no value is specified, then ALL disks are displayed.
diskpath, -dp	(Optional) Displays all disks that contains the specified value in the path. If no value is specified, then all disks are displayed.

Usage Notes

Example 14-146 Listing All Available Disks on the System

odacli list-dgdisks -dg ALL

Name Redundancy Health Inc	Fail Grp	-	Pa	t Group Nur		
	_576667504P1					
UNKNOWN	HDD_E0_S19_576	667504	P1 AF	D:HDD_E0_S	19_576667	504P1
0 0						
	_577087696P1					
	HDD_E0_S08_577	087696	P1 AF	D:HDD_E0_S	08_577087	696P1
0 0						
	_576021940P1					
	HDD_E0_S11_576	021940	P1 AF	D:HDD_E0_S	11_576021	940P1
0 0						
	_576660012P1					
	HDD_E0_S13_576	660012	P1 AF	D:HDD_E0_S	13_576660	012P1
0 0						
	_577131668P1					
	HDD_E0_S15_577	131668	P1 AF	D:HDD_E0_S	15_577131	668P1
0 0						
	_576662448P1					
	HDD_E0_S09_576	6624481	P1 AF	D:HDD_E0_S	09_576662	448P1
0 0						
	_577136300P1					
	HDD_E0_S18_577	136300	Pl AF	D:HDD_E0_S	18_577136	300P1
0 0						

Example 14-147 Listing Disks with the Specified Disk Path on the System

odacli list-dgdisks -dp HDD_E0_S10_577135552

Name		Group	Mount	St	Group	Num	Mode	St	State		
Redundancy I	Fail Grp		1	Path						Health	Inc
HDD_E0_S10_5	577135552P1	DATA	CACHE	D .	1		ONLIN	ΙE	NORMA:	L	
UNKNOWN I	HDD_E0_S10_	577135	552P1 2	AFD:	HDD_E(_s10	5771	.355	552P1	0	0
HDD_E0_S10_5	577135552P2	RECO	CACHE	D	2		ONLIN	ΙE	NORMA:	L	
UNKNOWN I	HDD E0 S10	577135	552P2	AFD:	HDD E() S10	5771	.355	552P2	0	0

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 <code>odacli validate-storagetopology</code> command before deploying the system to ensure that the cabling is correct. This will avoid and prevent problems during deployment due to incorrect or missing cable connections. If the cabling is not correct, you will see errors in your output.

File Path

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

Syntax

odacli validate-storagetopology [-h]

Parameters

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

odaadmcli power disk

Use the odaadmcli power disk command to power a disk on or off for NVMe drives only.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To power an NVMe disk on or off:

odaadmcli power disk {on|off|status} disk_name [-h]



Parameters

Parameter	Description
disk_name	Defines the disk resource name. The resource name format is pd_[03].
{on off status}	Power on a disk, power off a disk, display status.
help, -h	(Optional) Displays help for using the command.

Example 14-148 Powering a Disk Off

This example shows how to power off a disk.

```
# odaadmcli power disk off pd_00
Disk 'pd_00' is already part of ASM
Are you sure you want to power OFF the disk?: 'pd_00'?
[yes/no]:
yes
Powered OFF pd_00
```

Example 14-149 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
```

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 14-150 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
```

odaadmcli show disk

Use the odaadmcli show disk command to display the status of a single disk or of all disks on the system.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display the status of all disks on the system:

```
odaadmcli show disk [-h]
```

To display the status of a single disk:

```
odaadmcli show disk disk_name [-h]
```

Parameters

Parameter	Description
disk_name	(Optional) Define the disk resource name. The resource name format is pd_{03} .
help, -h	(Optional) Displays help for using the command.



Example 14-151 Displaying the Status of All Disks

To display the status of all the disks on the system:

Example 14-152 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

odaadmcli show diskgroup

Use the odaadmcli show diskgroup command to list configured diskgroups or display a specific diskgroup configuration.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To list configured diskgroups:

```
odaadmcli show diskgroup [-h]
```

To display DATA configurations:

```
odaadmcli show diskgroup [DATA] [-h]
```

To display RECO configurations:

```
odaadmcli show diskgroup [RECO] [-h]
```

Parameters

Parameter	Description
DATA	(Optional) Displays the DATA diskgroup configurations.
RECO	(Optional) Displays the RECO diskgroup configurations.
help, -h	(Optional) Displays help for using the command.

Example 14-153 Listing All Diskgroups

```
# odaadmcli show diskgroup
DiskGroups
-----
DATA
RECO
```

Example 14-154 Displaying DATA Configurations

```
# odaadmcli show diskgroup DATA

ASM_DISK PATH DISK STATE_DETAILS
```



odaadmcli show raidsyncstatus

Use the odaadmcli show raidsyncstatus command to display the RAID SYNC status.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display the status of RAID SYNC:

odaadmcli show raidsyncstatus [-h]

Parameters

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

Example 14-155 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%

odaadmcli show storage

Use the odaadmcli show storage command to show the storage controllers, expanders, and disks.

File Path

\$ORACLE_HOME/opt/oracle/dcs/bin/odaadmcli

Syntax

To display the storage controllers, expanders, and disks:

odaadmcli show storage [-h]

To show storage errors:

odaadmcli show storage -errors [-h]



Parameters

Parameter	Description
errors	(Optional) Shows storage errors.
help, -h	(Optional) Displays help for using the command.

Example 14-156 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 =======
```

odaadmcli stordiag

Use the odaadmcli stordiag command to collect detailed information for each disk or NVMe.

File Path

/opt/oracle/dcs/bin/odaadmcli



Syntax

To collect storage diagnostics for disks and NVM Express (NVMe):

odaadmcli stordiag [-n] [-h]

Parameters

Parameter	Description
-ndisk_name	Defines the disk resource name. The resource name format is pd_{03} .
help, -h	(Optional) Displays help for using the command.

Example 14-157 Displaying NVMe Details

To display detailed information for NVMe pd_00:

odaadmcli stordiag pd_00



Oracle Appliance Manager Command-Line Interface for Virtualization

Oracle Appliance Manager Command-Line Interface (OAKCLI) is a command-line interface (CLI) for Oracle VM Server (Xen hypervisor technology virtualization) on Oracle Database Appliance virtualized platform. Only use the <code>oakcli</code> commands on an Oracle Database Appliance virtualized platform.

About the Oracle Appliance Manager Command-line Interface (OAKCLI) The oakcli commands are the primary method for performing database and system administration on Oracle Database Appliance, and on Oracle Database Appliance Virtualized Platform.

Managing OAKCLI Privileges and Security with SUDO

Oracle Appliance Manager command-line utility requires root system privileges for most administration actions. You may want to use SUDO as part of your system auditing and security policy.

oakcli add disk -local

Use the oakcli add disk -local command to add a local disk to the system after physically replacing a failed disk.

oakcli configure commands

Use the oakcli configure commands to configure components on Oracle Database Appliance.

oakcli copy

Use the <code>oakcli copy</code> command to prepare a copy of the configuration file for use during the configuration of Oracle Database Appliance.

oakcli create commands

Use the ${\tt oakcli}$ create commands to create components on Oracle Database Appliance.

· oakcli delete commands

Use the oakcli delete commands to delete components from Oracle Database Appliance.

oakcli deplov

Use the command <code>oakcli deploy</code> to deploy Oracle Grid Infrastructure for a cluster on Oracle Database Appliance.

oakcli expand storage

Use the <code>oakcli</code> expand storage command to configure the solid-state drives (SSDs) for data storage into the existing base configuration to fully populate the base storage shelf.

oakcli diskwritecache

Use the oakcli diskwritecache command to locate disks with write cache enabled and to disable disk write cache for those disks.

oakcli locate disk

Use the <code>oakcli locate disk</code> command to locate the physical disk that is associated with a named Oracle ASM disk by turning the disk's LED light on or off.

oakcli manage diagcollect

Use the <code>oakcli manage diagcollect</code> command to collect diagnostic information about Oracle Database Appliance for troubleshooting purposes, and for working with Oracle Support Services.

oakcli describe-system

Use the oakcli describe-system command to display details about components installed on the system.

oakcli modify database

Use the oakcli modify database command to modify the database type or size class for a named database.

oakcli orachk

Use the <code>oakcli</code> orachk command to audit configuration settings with the ORAchk utility.

oakcli reconfigure osparams

Use the oakcli reconfigure osparams command to adjust the kernel parameters based on the available RAM after you upgrade memory or DIMM.

oakcli resize dbstorage

Use the <code>oakcli resize</code> dbstorage command to resize the space used for a storage structure that was created for the purpose of migrating databases from Oracle ASM to Oracle ACFS.

oakcli restart oda_base

Use the oakcli restart oda_base command to stop and restart ODA_BASE on the local node.

oakcli show commands

Use the oakcli show commands to display the status of Oracle Database Appliance components.

oakcli start commands

Use the oakcli start commands to start a virtual machine, to start a shared repository on a node, or to start ODA_BASE on the local node.

oakcli stop command

Use the oakcli stop command to stop a virtual machine, to stop a shared repository on a node, or to stop ODA_BASE on the local node.

oakcli stordiag

Use the <code>oakcli stordiag</code> command to run diagnostic tests on a disk in the storage shelf or storage expansion shelf.

oakcli test asr

Use the <code>oakcli test asr</code> command to send a test trap to determine if Oracle Auto Service Request (Oracle ASR) is configured and working correctly.

oakcli unpack

Use the oakcli unpack command to unpack packages into the Oracle Appliance Manager repository.

oakcli update

Use the oakcli update command to apply Oracle Database Appliance patches.

oakcli update-cpucore

Use the <code>oakcli</code> update-cpucore command to enable a specified number of licensed CPU cores for Oracle Database Appliance.

oakcli upgrade

Use the <code>oakcli upgrade</code> command to upgrade the Oracle Database software on Oracle Database Appliance.

oakcli validate

Validates the state of an Oracle Database Appliance or the viability of an operating system patch.

oakcli Virtual Disk Commands

Use the oakcli virtual disk (vdisk) commands to manage virtual disks on Oracle Database Appliance virtualized platform.

oakcli Virtual Machine Commands

Use the oakcli virtual machine commands to list and manage virtual machines (VMs).

oakcli Virtual Machine Template Commands

Use the oakcli Virtual Machine template commands to list and manage virtual machine (VM) templates.

oakcli VLAN Management Commands for Virtual Platform
 Use the oakcli VLAN commands to list and manage virtual local area networks
 (VLANs) on an Oracle Database Appliance virtualized platform.

About the Oracle Appliance Manager Command-line Interface (OAKCLI)

The oakcli commands are the primary method for performing database and system administration on Oracle Database Appliance, and on Oracle Database Appliance Virtualized Platform.

You can perform the following tasks with OAKCLI commands:

- List the hardware components
- Validate and diagnose the hardware components
- Install and upgrade software
- Apply software patches
- Create and drop databases
- Install and uninstall Oracle Homes
- Deploy and manage virtual machines
- Test Oracle Auto Service Request (Oracle ASR)
- Enable CPU cores

Depending on your version of Oracle Appliance Manager and your hardware, some of the OAKCLI commands may not be available to you. To see which OAKCLI commands are supported on your version of Oracle Appliance Manager and your hardware, run the help command for OAKCLI: oakcli -h



OAKCLI Command Location and Path Configuration

The Oracle Appliance Manager command-line interface is in the following directory:

/opt/oracle/oak/bin/oakcli

Configure the root user account on your Oracle Database Appliance servers to have the PATH variable defined to search for oakcli commands in the path /opt/oracle/oak/bin/oakcli.

OAKCLI Syntax

Oracle Appliance Manager command-line interface commands and parameters are case-insensitive.

An oakcli command uses the following command syntax:

oakcli command object [options]

- *command* is an action you want to perform on the appliance. For example: show, locate, apply.
- object is the target or object on which the oakcli command performs the
 operation. For example, you issue a command to create or configure a disk, or
 a controller, or perform other system or software administration. You can also use
 object abbreviations.
- options are optional parts of the oakcli command. Options can consist of one or more options that extend the use of the oakcli command carried out on an object. Options include additional information about the action that you want to perform on the object. Option names are preceded with a dash. Many options require the name of an object for the command to perform the action that you want to carry out. The help option (-h) is an option that is available with every command. When you include the -h option, you can obtain additional information about the command that you want to perform.

Oracle Appliance Manager Command-Line Interface Help

Run the following command to see the usage information for all oakcli commands available for your Oracle Database Appliance:

oakcli -h

Run the following command to see detailed help about a specific oakcli command:

oakcli command -h

Run the following command to see detailed help about a specific oakcli command carried out on an object, and the options that are available for you to use with that object.

oakcli command object -h



Managing OAKCLI Privileges and Security with SUDO

Oracle Appliance Manager command-line utility requires root system privileges for most administration actions. You may want to use SUDO as part of your system auditing and security policy.

For most tasks, Oracle recommends that you log in as root to use the Oracle Appliance Manager command-line interface on Oracle Database Appliance. If you are not logged in as root, then you cannot carry out most actions on the appliance. For example, if you are not logged in as root, then you can view storage information, but you cannot modify the storage.

Allowing Root User Access Using SUDO

In environments where system administration is handled by a different group than database administration, or where security is a significant concern, you may want to limit access to the \mathtt{root} user account and password. SUDO enables system administrators to grant certain users (or groups of users) the ability to run commands as \mathtt{root} , while logging all commands and arguments as part of your security and compliance protocol.

A SUDO security policy is configured by using the file /etc/sudoers. Within the sudoers file, you can configure groups of users and sets of commands to simplify and audit server administration with SUDO commands.



Caution:

Configuring SUDO to allow a user to perform any operation is equivalent to giving that user root privileges. Consider carefully if this is appropriate for your security needs.

SUDO Example 1: Allow a User to Perform Any OAKCLI Operation

This example shows how to configure SUDO to enable a user to perform any OAKCLI operation. You do this by adding lines to the commands section in the <code>/etc/sudoers</code> file:

```
## The commands section may have other options added to it.
##
Cmnd_Alias OAKCLI_CMDS=/opt/oracle/oak/bin/oakcli *
jdoe ALL = OAKCLI_CMDS
```

In this example, the user name is <code>jdoe</code>. The file parameter setting <code>ALL= OAKCLI_CMDS</code> grants the user <code>jdoe</code> permission to run all <code>oakcli</code> commands that are defined by the command alias <code>OAKCLI_CMDS</code>. After configuration, you can copy one <code>sudoers</code> file to multiple hosts. You can also create different rules on each host.





Before database creation, you must set up user equivalency with SSH for the root user on each server. If you do not set up user equivalency and configure SSH on each server, then you are prompted to provide the root password for each server during database creation.

After you configure the sudoer file with the user, the user jdoe can run the set of oakcli commands configured with the command alias OAKCLI_CMDS. For example:

SUDO Example 2: Allow a User to Perform Only Selected OAKCLI Operations

To configure SUDO to allow a user to perform only selected OAKCLI operations, add lines to the commands section in the /etc/sudoers file as follows:

```
## oakcli commands
Cmnd_Alias OAKENV = /opt/oracle/oak/bin/oakcli show env_hw
Cmnd_Alias OAKVER = /opt/oracle/oak/bin/oakcli show version
oracle ALL= OAKENV,OAKVER
```

The following are sample outputs for the commands:

```
$ sudo /opt/oracle/oak/bin/oakcli show env_hw
VM-ODA_BASE ODA X6-2-HA
$ sudo /opt/oracle/oak/bin/oakcli show version
Version
-----
12.2.1.2.0
```



In this example, the user jdoe2 tries to run the oakcli show databases command, which is not part of the set of commands that is configured for that user. Sudo prevents jdoe2 from running the command.

\$ sudo /opt/oracle/oak/bin/oakcli show databases
Sorry, user oracle is not allowed to execute '/opt/oracle/oak/bin/
oakcli show databases' as root on servernodel.



The SUDO man pages for more information about configuring and using SUDO:

http://www.sudo.ws/sudo.html

oakcli add disk -local

Use the oakcli add disk -local command to add a local disk to the system after physically replacing a failed disk.

Syntax

oakcli add disk -local

Usage Notes

- You cannot add more than two disks per node.
- You must remove the failed drive and replace it with a new drive before running the oakcli add disk -local command.
- The new disk must be inserted into the slot before you run this command.
- The oakcli add disk -local command is supported only on bare metal deployments. It is not supported on virtualized configurations.

oakcli configure commands

Use the oakcli configure commands to configure components on Oracle Database Appliance.

- oakcli configure additionalnet
 Use the oakcli configure additionalnet command to configure any unconfigured public networks in bare metal, Domain 0, and ODA BASE.
- oakcli configure asr
 Use the oakcli configure asr command to configure Oracle Auto Service
 Request (Oracle ASR) on Oracle Database Appliance.
- oakcli configure cpupool
 Use the oakcli configure cpupool command to configure a CPU pool on one
 Oracle Database Appliance Virtualized Platform node.



oakcli configure firstnet

Use the oakcli configure firstnet command to configure an initial network on Oracle Database Appliance that enables you to download deployment software.

oakcli configure network

Use the <code>oakcli configure network</code> command to configure the network after either replacing a network card or swapping the public network from copper to fiber and vice versa. The meaning of the command changes depending on which parameter you use.

oakcli configure oda base

Use the <code>oakcli</code> <code>configure oda_base</code> command to change the CPU core count assigned to ODA_BASE, add or remove virtual local area networks assigned to ODA_BASE, and adjust resource allocation among user domains and between ODA BASE and other user domains.

oakcli configure repo

Use the oakcli configure repo command to increase the size of a shared repository.

oakcli configure additionalnet

Use the oakcli configure additionalnet command to configure any unconfigured public networks in bare metal, Domain O, and ODA BASE.

Syntax

oakcli configure additionalnet [-h]

Parameter

-h displays online help for using the command.

Usage Notes

The oakcli configure additionalnet command automatically detects any unconfigured networks and runs an interactive script that guides you through how to configure the network. The script requires the following input:

- Interface name
- DHCP [Y/N]
- IP
- Netmask

Note:

If you are running the command on a bare metal deployment, then the interface name expects a bond name. If you are running the command on Dom0, then the interface name expects a net name. If you are running the command on Dom1, then the interface name expects an eth name.



Related Topics

Configuring Additional Networks on Virtualized Platform
 Use the oakcli configure additionalnet command to create additional networks.

oakcli configure asr

Use the <code>oakcli configure asr</code> command to configure Oracle Auto Service Request (Oracle ASR) on Oracle Database Appliance.

Syntax

oakcli configure asr [-h]

Parameter

-h displays help for using the command.

Usage Notes

- The oakcli configure as command initiates an interactive script that requests the following information to implement Oracle ASR on Oracle Database Appliance:
 - Action to be performed (setup internal, setup external, deinstall, or reconfigure Oracle ASR Manager)
 - PROXY server name, port, user ID, and password
 - Oracle ASR user ID and password
 - Oracle ASR Manager IP and port
- You can configure Oracle ASR on Oracle Database Appliance to use its own ASR Manager (internal Oracle ASR) or use Oracle ASR Manager configured on another server in the same network as your appliance (external Oracle ASR). If you already have Oracle ASR Manager configured in your environment, you can register Oracle Database Appliance with your existing Oracle ASR Manager.



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

Configuring Oracle ASR

oakcli configure asr

INFO : Logging all actions in /opt/oracle/oak/onecmd/tmp/
scaoda1011-20150805153300.log and traces in /opt/oracle/oak/onecmd/tmp/
scaoda1011-20150805153300.trc

Please enter
1 to setup Internal ASR



```
2 to setup External ASR
3 to Deinstall ASR
0 to Exit

[1]:INFO : Logging all actions in /opt/oracle/oak/onecmd/tmp/
scaodal011-20150805153300.log and traces in /opt/oracle/oak/onecmd/tmp/
scaodal011-20150805153300.trc
```

oakcli configure cpupool

Use the oakcli configure cpupool command to configure a CPU pool on one Oracle Database Appliance Virtualized Platform node.

Syntax

oakcli configure cpupool poolname -numcpu cpu_count -node nodenum [-h]

Parameters

Parameter	Description
poolname	Unique name for the CPU pool
-numcpu cpu_count	Number of CPUs for the CPU pool
-node nodenum	Node where the CPU pool will be created (0 or 1)
-h	(Optional) Display help for using the command.

Configuring a CPU Pool

Configure a CPU pool named twonode with two cores on Node 1 of Oracle Database Appliance Virtualized Platform:

```
oakcli configure cpupool twonode -numcpu 2 -node 1
```

oakcli configure firstnet

Use the oakcli configure firstnet command to configure an initial network on Oracle Database Appliance that enables you to download deployment software.

Syntax

oakcli configure firstnet

Example

The oakcli configure firstnet command creates an initial network on a new Oracle Database Appliance using an interactive script. The following example shows how to configure the initial network on a bare metal Oracle Database Appliance:





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

oakcli configure network

Use the <code>oakcli configure network</code> command to configure the network after either replacing a network card or swapping the public network from copper to fiber and vice versa. The meaning of the command changes depending on which parameter you use.

Syntax

oakcli configure network [-changeNetCard | -publicNet][-h]

Parameters

Parameter	Description
-changeNetCard	Configures the network card after it has been replaced. You must run the oakcli configure network -changeNetCard command on each node if the network card was replaced. This parameter is supported on all Oracle Database Appliance hardware models. This command must be executed from DomO on virtualized platforms.
-publicNet	Configures the network after you have swapped the public network from copper to fiber and vice versa. The option can be copper or fiber. You must run the oakcli configure network -publicNet command on each node, and this requires the stack to be down. The stack includes GI and RDBMS. If you are using Oracle Database Appliance Virtualized Platform, the virtual machines must be down. The virtual machines may need some configuration changes, especially if they are using VLANs. This parameter is supported on Oracle Database Appliance X4-2-HA, X5-2-HA non-InfiniBand network, and X6-2-HA non-InfiniBand network.
-h	(Optional) Display help for using the command.

oakcli configure oda_base

Use the <code>oakcli</code> <code>configure</code> <code>oda_base</code> command to change the CPU core count assigned to ODA_BASE, add or remove virtual local area networks assigned to

ODA_BASE, and adjust resource allocation among user domains and between ODA_BASE and other user domains.

You must restart the domain for the resource allocation change to take effect.

Syntax

```
oakcli configure oda_base
```

Examples

Here are examples of how to use the oakcli configure oda_basecommand.

Changing the CPU Core Count in ODA_BASE

Change the CPU core count from six to eight in ODA_BASE:

```
# oakcli configure oda_base
Core Licensing Options:
        1. 2 CPU Cores
        2. 4 CPU Cores
        3. 6 CPU Cores
        4. 8 CPU Cores
        5. 10 CPU Cores
        6. 12 CPU Cores
        Current CPU Cores
                                :6
        Selection[1 : 6](default 12 CPU Cores) : 4
        ODA base domain memory in GB(min 8, max 88)(Current Memory 64G)[default
INFO: Using default memory size i.e. 32 GB
Additional vlan networks to be assigned to oda_base? (y/n) [n]:
Vlan network to be removed from oda_base (y/n) [n]
INFO: Node 0:Configured oda base pool
INFO: Node 1:Configured oda base pool
INFO: Node 0:ODA Base configured with new memory
INFO: Node 0:ODA Base configured with new vcpus
INFO: Changes will be incorporated after the domain is restarted on Node 0
INFO: Node 1:ODA Base configured with new memory
INFO: Node 1:ODA Base configured with new vcpus
INFO: Changes will be incorporated after the domain is restarted on Node 1
```

Changing the Amount of Memory Allocated to ODA_BASE

- 1. Log in to Dom0.
- 2. Execute the oakcli configure oda_base command and change the configuration.
- 3. Restart ODA_BASE.

Assigning VLANs to ODA_BASE

- 1. Log in to Dom0.
- 2. Execute the oakcli configure oda_base command.
- 3. Change the setting for Additional vlan networks to be assigned to oda_base? (y/n) to y.
- 4. Follow the prompts to assign additional VLANs to ODA BASE.
- 5. Restart ODA BASE.



oakcli configure repo

Use the oakcli configure repo command to increase the size of a shared repository.

Syntax

oakcli configure repo reponame -incsize size [M|G] [-h]

Parameter	Description
reponame	Name of the shared repository
size	Number that can be followed by M to define the size as megabytes or by G to define as size as gigabytes
-h	(Optional) Display help for using the command.

Increasing the Size of a Shared Repo

Increase the size of the repol shared repository by 2 gigabytes:

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

oakcli copy

Use the oakcli copy command to prepare a copy of the configuration file for use during the configuration of Oracle Database Appliance.

Syntax

oakcli copy -conf absolute_conf_file [-h]

Parameters

Parameter	Description
-conf absolute_conf_file	Specifies the full path name of the configuration file
-h	(Optional) Display help for using the command.

Example 15-1 Preparing a Copy of the Configuration File

If you created a configuration file previously and copied this file to Oracle Database Appliance, then prepare the configuration file to be used during the configuration process. For example, if you copied the file ${\tt myserver1.conf}$ to ${\tt /tmp}$, then enter the following command:

oakcli copy -conf /tmp/myserver1.conf



oakcli create commands

Use the oakcli create commands to create components on Oracle Database Appliance.

oakcli create cpupool

Use the command oakcli create cpupool to create a CPU pool on one Oracle Database Appliance Virtualized Platform node.

oakcli create database

Use the <code>oakcli</code> create database command to create additional databases on Oracle Database Appliance.

· oakcli create dbhome

Use the <code>oakcli</code> <code>create</code> <code>dbhome</code> command to create a new database home on Oracle Database Appliance.

oakcli create dbstorage

Use the oakcli create dbstorage command to create a storage structure for migrating databases from Oracle ASM to Oracle ACFS.

oakcli create db_config_params

Use the <code>oakcli</code> <code>create</code> <code>db_config_params</code> command to generate a database configuration file.

oakcli create repo

Use the <code>oakcli</code> <code>create repo</code> command to create a new shared repository on Oracle Database Appliance Virtualized Platform.

oakcli create snapshotdb

Use the oakcli create snapshotdb command to create a snapshot database from an existing database.

oakcli create cpupool

Use the command oakcli create cpupool to create a CPU pool on one Oracle Database Appliance Virtualized Platform node.

Syntax

oakcli create cpupool poolname -numcpu cpu_count -node nodenum [-h]

Parameters

Parameter	Description
poolname	Uniquely names the CPU pool
-numcpu cpu_count	Defines the number of CPUs for the CPU pool
-node nodenum	Defines the node where the CPU pool will be created (0 or 1)
-h	(Optional) Display help for using the command.

Example

Create a CPU pool with two CPUs on Node 1 of Oracle Database Appliance Virtualized Platform:



oakcli create cpupool twonode -numcpu 2 -node 1

oakcli create database

Use the <code>oakcli</code> <code>create</code> database command to create additional databases on Oracle Database Appliance.

When you run the commandoakcli create database, the command prompts you for further inputs.



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

File Path

\$ORACLE_HOME/directory_name

Syntax

oakcli create database -db db_name [[[-oh home] | [-version version]]
[-params params_file] [-storage asm] [-cdb]][h]

Parameters

Parameter	Description
-cdb	(Optional) Creates the database as a container database.
-db db_name	Name of the database that you want to create.
-oh home	(Optional) Name of an existing Oracle home to use when creating the database. By default, the command creates a new database home.
-params params_file	(Optional) Name of the configuration file. By default, Oracle Database Appliance uses the default configuration file.
-storage [ASM ACFS]	(Optional) Creates an Oracle 12c database with the specified storage, either Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage Management Cluster File System (Oracle ACFS). Oracle ASM storage is the default storage.
-version version	(Optional) Version of the database that you want to create. By default, Oracle Database Appliance uses the highest version that you have downloaded.
-h	(Optional) Display help for using the command.



Usage Notes

- Flash cache is disabled and cannot be enabled.
- The -oh and the -version parameters are mutually exclusive. Attempting to use both in the same command will generate an error.
- When a database is created without identifying an Oracle home, a new
 Oracle home is created using a standard naming convention (for example,
 OraDb11204_home3). The number at the end of the name is incremented by one
 for each new home created with the same version number.
- On Oracle Database Appliance hardware models, the minimum supported Oracle Database release is 11.2.0.4. Oracle Database 11.2.0.3.x is not supported.
- When you upgrade the database, infrastructure, and Oracle Grid Infrastructure, you must specify an existing home to create a new database.
- If you try to create a database using the option -version version before downloading and unpacking the specific version database clone files, then the command will fail.
- You can create configuration files with the oakcli create db_config_params command.
- The prompt "Do you want to keep the data files on FLASH storage: [Y | N] " is
 only shown if you choose the OLTP database type and if there is some free space
 available on flash storage.
- Beginning with Oracle Database 12c release 1 (12.1.0.2), you can create an Oracle Database in Oracle ASM. Oracle ASM is the default storage.

Examples

This section shows different scenarios for using the command oakcli create database.

Example 15-2 Creating a New Database Showing Prompts

When you run the command oakcli create database, you are prompted for several inputs.

The following command creates a database named mydb using an existing Oracle home named OraDb12102_home1:

```
# oakcli create database -db DBPROD
INFO: 2017-07-25 19:21:16: Please check the logfile
   '/opt/oracle/oak/log/ODADBI1/tools/12.2.1.1.0/
   createdb_DBPROD_29285.log' for more details
INFO: 2017-07-25 19:21:24: Database parameter file is not provided.
Will be using default parameters for DB creation

Please enter the 'SYSASM' password:
Please re-enter the 'SYSASM' password:
INFO: 2017-07-25 19:21:35: Installing a new Home : OraDb12102_home2 at
   /u01/app/oracle/product/12.1.0.2/dbhome_2
```



```
Please select one of the following for Database type [1 .. 3]:
    => OLTP
2
    => DSS
3
    => In-Memory
The selected value is : OLTP
1 => EE : Enterprise Edition
2 => RACONE
3 => RAC1
Selected value is : RAC
Specify the Database Class (1. odb-01 '1 core, 8 GB memory'
2.Others) [1]
: 2
Please select one of the following for Database Class
                                                   [1 .. 10]:
    => odb-01s ( 1 cores , 4 GB memory)
2
    => odb-01 (
                               8 GB memory)
                   1 cores ,
    => odb-02 (
                  2 cores , 16 GB memory)
                             32 GB memory)
    \Rightarrow odb-04 ( 4 cores,
  => odb-06 ( 6 cores ,
                               48 GB memory)
    => odb-08 (
                               64 GB memory)
6
                  8 cores ,
    => odb-10 ( 10 cores , 80 GB memory)
```

Example 15-3 Creating a New Database in an Existing Oracle Home

Create a database called sales1 in OraDb11204_home2:

```
oakcli create database -db sales1 -oh OraDb11204_home2
```

Example 15-4 Creating a New Database from a Template

Create a database called sales2 from the salesdbtemplate.bconf file (by appending the default file extension to the file name provided). This example also creates a new Oracle home:

```
oakcli create database -db sales2 -params salesdbtemplate
```

oakcli create dbhome

Use the oakcli create dbhome command to create a new database home on Oracle Database Appliance.

Syntax

```
oakcli create dbhome [-version version] [-h]
```



Parameters

Parameter	Description
-version version	(Optional) Version that you want to install. If this is not provided, then Oracle Database Appliance uses the latest available version.
-h	(Optional) Display help for using the command.

Creating a Database Home

Create a database home called sales1 using Oracle Database version 12.1.0.2.4.

```
oakcli create dbhome -version 12.1.0.2.4
```

oakcli create dbstorage

Use the <code>oakcli</code> <code>create</code> <code>dbstorage</code> command to create a storage structure for migrating databases from Oracle ASM to Oracle ACFS.

Syntax

```
oakcli create dbstorage -db db_name [-cdb][-h]
```

Parameters

Parameter	Description
-db db_name	Sets up the required Oracle ACFS storage structure for the database to be created called <i>db_name</i>
-cdb	Must be passed if you are creating a multitenant container database
-h	(Optional) Display help for using the command.

Example

The oakcli create dbstorage command requests user input to determine the size of the storage structure to create, as shown in this example:

```
# oakcli create dbstorage -db sales
Please enter the 'root' password:
Please re-enter the 'root' password:
Please enter the 'oracle' password:
Please re-enter the 'oracle' password:
Please enter the 'SYSASM' password:
Please re-enter the 'SYSASM' password:
Specify the Database Class (1. odb-01 '1 core, 8 GB memory' 2. Others) [1]:2
Please select one of the following for Database Class [1 .. 8]:
1 => odb-01s (1 cores , 4 GB memory)
2 => odb-01 (1 cores , 8 GB memory)
```



```
3 => odb-02 ( 2 cores , 16 GB memory)
4 => odb-04 ( 4 cores , 32 GB memory)
5 => odb-06 ( 6 cores , 48 GB memory)
6 => odb-12 ( 12 cores , 96 GB memory)
7 => odb-16 ( 16 cores , 128 GB memory)
8 => odb-24 ( 24 cores , 192 GB memory)
Selected value is: odb-01s ( 1 cores , 4 GB memory)
```

oakcli create db_config_params

Use the oakcli create db_config_params command to generate a database configuration file.

The configuration file is created in /opt/oracle/oak/install/dbconf and is given the default extension .dbconf.

Syntax

```
oakcli create db_config_params -conf filename [-h]
```

Parameters

Parameter	Description
-conf filename	Name you want to give to the configuration file, without its path name.
-h	(Optional) Display help for using the command

Example

```
Create the database parameter file: /opt/oracle/oak/install/dbconf/newconf.dbconf:
```

```
# oakcli create db_config_params -conf newconf
Please select one of the following for Database Block Size [1 .. 4]:
1 ==> 4096
2 ==> 8192
3 ==> 16384
4 ==> 32768
Selected value is: 8192
Specify the Database Language (1. AMERICAN 2. Others) [1]:
Selected value is: AMERICAN
Specify the Database Characterset (1. AL32UTF8 2. Others) [1]:2
Please select one of the following for Database Characterset [0 .. 10] :
0 => Others
1 => AL32UTF8
2 => AR8ADOS710
3 => AR8ADOS710T
4 => AR8ADOS720
5 => AR8ADOS720T
6 => AR8APTEC715
```



```
7 => AR8APTEC715T
8 => AR8ARABICMACS
9 => AR8ASMO708PLUS
10 => AR8ASMO8X
Selected value is: AL32UTF8
Specify the Database Territory (1. AMERICA 2. Others) [1]:2
Please select one of the following for Database Territory [0 .. 10]:
0 => Others
1 => ALBANIA
2 => ALGERIA
3 => AMERICA
4 => ARGENTINA
5 => AUSTRALIA
6 => AUSTRIA
7 => AZERBAIJAN
8 => BAHRAIN
9 => BANGLADESH
10 => BELARUS
Selected value is: AMERICA
Specify the Component Language (1. en 2. Others) [1]:2
Please select one of the following for Component Language [0 .. 10] :
0 => Others
1 => en : English
2 => fr : French
3 => ar : Arabic
4 => bn : Bengali
5 => pt_BR : Brazilian Portuguese
6 => bg : Bulgarian
7 => fr_CA : Canadian French
8 => ca : Catalan
9 => hr : Croatian
10 => cs : Czech
Selected value is: en
Successfully generated the Database parameter file 'newconf'
```

oakcli create repo

Use the <code>oakcli</code> <code>create repo</code> command to create a new shared repository on Oracle Database Appliance Virtualized Platform.

Syntax

oakcli create repo $repo_name$ -size size [M|G] -dg DATA|RECO [-h]

Parameters

Parameter	Description
repo_name	Name assigned to the shared repository
-size <i>size</i> [M G]	Amount of storage to be assigned to the shared repository. It can be defined in megabytes with the M option or in gigabytes with the G option.



Parameter	Description
-dg DATA RECO	Oracle ASM disk group in which the shared repository is to be stored, either the DATA+ disk group or the RECO+ disk group, selected by using the DATA or RECO option respectively
-h	(Optional) Display help for using the command.

Usage Notes

- The -size parameter requires a whole number for size.
- The minimum value for size is 500 when M is used or 1 when G is used for the sizing unit.
- The default unit for size is G (gigabytes).
- A shared repository should only be used for the virtual machine and not as a file staging area. Avoid copying or moving files into a shared repository.

Example

Create a 25-gigabyte shared repository named repoprod1 in the DATA+ disk group:

oakcli create repo repoprod1 -dg DATA -size 25

oakcli create snapshotdb

Use the <code>oakcli</code> <code>create</code> <code>snapshotdb</code> command to create a snapshot database from an existing database.

Syntax

oakcli create snapshotdb [-db snap_dbname -from dbname] | [-h]

Parameters

Parameter	Description
-db snap_dbname	Name of the snapshot database to be created
-from source_dbname	Name of the source database
-h	(Optional) Display help for using the command

Example

Create a new snapshot database, name snapprod, from the database named prod:

oakcli create snapshotdb -db snapprod -from prod

oakcli delete commands

Use the oakcli delete commands to delete components from Oracle Database Appliance.



oakcli delete network

Use the <code>oakcli</code> delete <code>network</code> command to delete a network on Oracle Database Appliance X8-2 hardware models.

• oakcli delete cpupool

Use the oakcli delete cpupool command to delete a CPU pool from one Oracle Database Appliance Virtualized Platform node.

oakcli delete database

Use the oakcli delete database command to delete a database from Oracle Database Appliance.

· oakcli delete db config params

Use the oakcli delete db_config_params command to delete a database configuration file.

oakcli delete dbhome

Use the oakcli delete dbhome command to delete a database home from Oracle Database Appliance.

oakcli delete dbstorage

Use the <code>oakcli</code> <code>delete</code> <code>dbstorage</code> command to delete a storage structure that was created for the purpose of migrating databases from Oracle ASM to Oracle ACFS.

oakcli delete repo

Use the oakcli delete repo command to delete a shared repository.

oakcli delete network

Use the oakcli delete network command to delete a network on Oracle Database Appliance X8-2 hardware models.

Syntax

oakcli delete network network_name [-h]

Parameters

Parameter	Description
network_name	Name of the network to be deleted
-h	(Optional) Display help for using the command.

Usage Notes

The <code>network_name</code> can be a VLAN or a network such as <code>bond3</code>, for example. The VLAN name must not start with an alphabet, must not be more than 15 characters, and must contain only letters, numbers, '_' or '-'.

Example 15-5 Deleting a Network

[root@oak ~]# oakcli delete network bond3
Network bond3 has been deleted successfully



oakcli delete cpupool

Use the oakcli delete cpupool command to delete a CPU pool from one Oracle Database Appliance Virtualized Platform node.

Syntax

oakcli delete cpupool poolname -node nodenum [-h]

Parameters

Parameter	Description
poolname	Name of the CPU pool to be deleted
-node nodenum	Node from which the CPU pool will be deleted (0 or 1)
-h	(Optional) Display help for using the command.

Example

Delete the CPU pool named twonode from Node 1 of Oracle Database Appliance Virtualized Platform:

oakcli delete cpupool twonode -node 1

oakcli delete database

Use the ${\tt oakcli}$ delete database command to delete a database from Oracle Database Appliance.

Syntax

oakcli delete database -db db_name [-h]

Parameters

Parameter	Description
db_name	Name of the database that you want to delete
-h	(Optional) Display help for using the command

Example

Delete the database named sales1:

oakcli delete database -db sales1

oakcli delete db_config_params

Use the <code>oakcli</code> <code>delete db_config_params</code> command to delete a database configuration file.

Syntax

oakcli delete db_config_params -conf filename [-h]



Parameters

Parameter	Description
-conffilename	Name of the configuration file that you want to remove, without its path name
-h	(Optional) Display help for using the command

oakcli delete dbhome

Use the <code>oakcli</code> delete dbhome command to delete a database home from Oracle Database Appliance.

Syntax

oakcli delete dbhome -oh oracle_home [-h]

Parameters

Parameter	Description
-oh oracle_home	The database home to be uninstalled
-h	(Optional) Display help for using the command.

Example

Delete a database home called ora11_1:

oakcli delete dbhome -oh orall_1

oakcli delete dbstorage

Use the oakcli delete dbstorage command to delete a storage structure that was created for the purpose of migrating databases from Oracle ASM to Oracle ACFS.

For example, run this command if you created a storage structure using create dbstorage that is no longer required.

Syntax

oakcli delete dbstorage -db \(db_name [-cdb] [-h]

Parameter	Description
db db_name	Name of the database structure to be deleted
-cdb	Must be passed if you are deleting a multitenant container database
-h	(Optional) Display help for using the command



Example

Delete the sales storage structure:

oakcli delete dbstorage -db sales

oakcli delete repo

Use the oakcli delete repo command to delete a shared repository.

Syntax

oakcli delete repo repository_name [-h]

Parameter

Parameter	Description
repository_name	The name of the shared repository to be deleted
-h	(Optional) Display help for using the command.

Example

Delete the testrepo01 shared repository:

oakcli delete repo testrepo01

The command will not succeed if testrepo01 is active on one or both nodes.

oakcli deploy

Use the command oakcli deploy to deploy Oracle Grid Infrastructure for a cluster on Oracle Database Appliance.

Syntax

oakcli deploy [-config] [-conf config_file] [-advance][-h]

Parameter	Description
-config	(Optional) Run the Oracle Appliance Manager Configurator.
-conf config_file	(Optional) Preload the configuration stored in the named configuration file, <code>config_file</code> .
-advance	(Optional) Perform the deployment, or run the Oracle Appliance Manager Configurator, in advance mode. Use this option to launch Oracle Appliance Manager and change the default user ID or group user ID.
-h	(Optional) Display help for using the command.



Usage Notes

When defining the user ID and the group ID, it is a best practice to use different values.

Examples

Use these examples to understand how to use the command oakcli deploy.

Example 15-6 Deploying the Complete Oracle Database Appliance

oakcli deploy

Example 15-7 Running the Configurator

oakcli deploy -config

Example 15-8 Running the Offline Configurator with Advance Mode

To run the offline Configurator with advance mode, update the config.sh file and add -advance.

```
# cat config.sh
#!/bin/sh
java
-Djava.util.logging.config.file=onecommand.properties
-jar onecommand.jar config -advance
# sh ./config.sh
```

Example 15-9 Preloading an Existing Configuration File

Preload the configuration stored in the configuration file MYCONFIG-VM:

```
oakcli deploy -conf myconfig -vm_file
```

Example 15-10 Changing a User Group Name or ID

You can change the following group user names or IDs on the User Group Information page: GI User, DB User, Install Group, DBA Group, DBA Oper Group, ASM DBA Group, ASM Oper Group, and ASM Admin Group.

- 1. Run the Configurator or Offline Configurator in -advance mode.
- 2. Select **Custom** to display the User Group Information page.
- 3. Change the group name or ID, then click **Next**.
- 4. Click Finish.

Example 15-11 Viewing the Log File

The command <code>oakcli deploy</code> creates a log file that is prepended with the character string <code>STEP*</code>. The log file is stored in the following location:

/opt/oracle/oak/onecmd/tmp/



oakcli expand storage

Use the <code>oakcli</code> expand storage command to configure the solid-state drives (SSDs) for data storage into the existing base configuration to fully populate the base storage shelf.

File Path

/opt/oracle/oak/bin/oakcli

Syntax

oakcli expand storage [-h]

Parameters

Parameter	Description
-h	(Optional) Display help for using the command.

Usage Notes

After all disks are inserted into the slots, execute the oakcli expand storage command on both nodes. First on the first node and then wait for 30 seconds and execute from the slave nodes. It takes about 10 to 12 minutes to add all of the disks.

Review the procedure for how to add the storage shelf for detailed steps on how to add the disks, the timing needed to avoid flooding disk events, and the steps to validate that all disks are online and are in a good state.

Example 15-12 Expanding Storage

```
# oakcli expand storage
```

Precheck passed.

Successfully formatted 1.6TB SSD disks...

Check the progress of expansion of storage by executing 'oakcli show disk'

Waiting for expansion to finish ...

oakcli diskwritecache

Use the <code>oakcli diskwritecache</code> command to locate disks with write cache enabled and to disable disk write cache for those disks.

Enabled write caches should be disabled as soon as downtime for Oracle Database Appliance can be scheduled. During the downtime, use this command with the disable option for each disk, in turn, that has an enabled write cache.

Syntax

oakcli diskwritecache [disable disk_name | enable disk_name | status] [-h]



Parameters

Parameter	Description
disable disk_name	(Optional) Disable disk write cache for named disk.
enable disk_name	(Optional) Enable disk write cache for named disk.
status	(Optional) Show the write cache status of all disks.
-h	(Optional) Display help for using the command.

Example 15-13 Displaying the Write Cache Status of Disks

Show the write cache status of all disks:

oakcli diskwritecache status

oakcli locate disk

Use the <code>oakcli locate disk</code> command to locate the physical disk that is associated with a named Oracle ASM disk by turning the disk's LED light on or off.

Syntax

oakcli locate disk diskname [on|off][-h]

Parameters

Parameter	Description
diskname	Name of the Oracle ASM disk to locate
on	(Optional) Turns on the LED of the named disk
off	(Optional) Turns off the LED of the named disk
-h	(Optional) Display help for using the command.

Example 15-14 Locating an Oracle ASM Disk by Turning on the Disk's LED

Turn on the LED of the Oracle ASM disk named disk pd_23:

oakcli locate disk pd_23 on

oakcli manage diagcollect

Use the <code>oakcli manage diagcollect</code> command to collect diagnostic information about Oracle Database Appliance for troubleshooting purposes, and for working with Oracle Support Services.

Syntax

oakcli manage diagcollect [--all | --crs [--crshome crs_home_dir]



```
(continued)
[--core] | --install | --chmos [--incidenttime time] [--incidentduration time]
(continued)
|--adr adr_location [--afterdate date]
(continued)
[--aftertime time] [--beforetime time] ]
[excl comp1,comp2,...] [--clean] [--storage][-h]
```

Parameter	Description
all	Collect all of the diagnostic information excluding Automatic Diagnostic Repository (ADR) and Cluster Health Monitor. This is the default option.
crs	Collect Oracle Clusterware diagnostic information.
crshome crs_home_dir	Specifies the location of the Oracle Clusterware home directory
core	Package core files with the Oracle Clusterware diagnostic data.
install	Collect the installation logs when the installation failed before running the script root.sh.
adr adr_location	Collect diagnostic information for ADR, where adr_location specifies the location of the ADR information.
afterdate date	Collect archives from the specified date. Specify the date in the $\mathfrak{mm}/dd/yyyy$ format.
aftertime time	Collect the archives after the specified time. Enter the time using the format YYYYMMDDHHMMSS24. Supported only with the -adr parameter.
beforetime time	Collect the archives before the specified time. Enter the time using the format: YYYYMMDDHHMMSS24. Supported only the with the -adr parameter.
chmos	Collect Cluster Health Monitor data.
incidenttime time	Collect Cluster Health Monitor data from the specified time. Enter the time using the format: YYYYMMDDHHMMSS24.
	If you do not use theincidenttime parameter, then the command collects data for the past 24 hours.
incidentduration time	Collect Cluster Health Monitor data for the duration after the specified time. Enter the time using the format: HH:MM. If you do not specify a duration, then the command collects all Cluster Health Monitor data after the specified incident time.
excl[comp1,comp2]	Exclude the specified component logs. Valid components are: acfs, invt, sys, ocr, crs, home, and base.
clean	Remove the diagnosability information gathered by this command.
storage	Collect all of the logs for any storage issues. The logs can be used when you are experiencing any problems with storage and need support to diagnose the logs.
h	(Optional) Display help for using the command.



oakcli describe-system

Use the oakcli describe-system command to display details about components installed on the system.

File Path

/opt/oracle/oak/bin/oakcli

Syntax

oakcli describe-system

Usage Notes

The command describes the system components such as node information, installed RPMs, Oracle Grid Infrastructure version and patches, Database home details and stores the information in a file.

Example 15-15 Example Command to View the Bill of Materials from the Command Line for Virtualized Platforms Deployments

```
# oakcli describe-system
Output : ./oakcli describe-system
Generating a list of BOM component...
Output file is : /opt/oracle/oak/Inventory/
oda_bom_20180821022110.log
```

oakcli modify database

Use the oakcli modify database command to modify the database type or size class for a named database.

Syntax

oakcli modify database -db db name [-dbtypeOLTP/DSS/in-Memory] [-to dbSizeclass]

Parameter	Description
-db db-name	Identifies the database being modified.
-dbtype OLTP/DSS/in- Memory	(Optional) Changes the database type. The parameter dbtype takes one of the following three options:
	 OLTP: Online transaction processing DSS: Decision support system in-Memory: Oracle Database In-Memory



Parameter	Description
-to dbclass	(Optional) Changes the database size class.
-h	(Optional) Displays help for using the command.

Usage Notes



When you resize the database, the redo log file size is not modified automatically. Change the size of the redo log manually to the size that you require for your applications.

Example 15-16 Modifying the Database Type

Here are examples of how to use the oakcli modify database command.

Change the database type assigned to the database dbhome_1 to a DSS database:

oakcli modify database DB dbhome_1 -dbtype DSS

Example 15-17 Modifying the Database Size

Change the database size for the database named <code>dbhome_1</code> to a 6-core CPU Oracle Database Appliance DSS database template:

oakcli modify database dbhome_1 -to odb-06

oakcli orachk

Use the $oakcli\ orachk\ command\ to\ audit\ configuration\ settings\ with\ the\ ORAchk\ utility.$

Syntax

oakcli orachk [-a|-b|-v|-h|-p|-f|-m[-u-o][o]-c-t][-clusternodes |-localonly][-debug][-dbnames |-dbnone|-dball][upgrade] list list

Parameter	Description
-a	Perform a best practice check and recommended patch check.
-b	Perform a best practice check only without the recommended patch check.
-Λ	Display version.
-h	Display command usage (help).
-p	Perform patch check only.
-f	Run the command offline.
-m	Exclude checks for Maximum Availability scorecards.



Parameter	Description
-u -0	Perform check on pre-upgrade best practices (-u -o pre) or on post-upgrade best practices (-u -o post).
-0	As an argument to an option, if $-\circ$ is followed by v, V, Verbose, or VERBOSE, output will display checks that pass on the display. Without the $-\circ$ option, only failures will display on the screen.
-c	Determines granularity of information displayed on the screen. For use only when working with Oracle Support Services.
-clusternodes list	list is a comma-delimited list containing the names of the nodes where the command should run.
-localonly	Run the command only on the local node.
-debug	Creates a debug log.
-dbnames list	list is a comma-delimited list containing the names of the subset of databases on which the command should run.
-dbnone	Skip all database-related checks on all databases without prompting to select which database to skip.
-dball	Run all database-related checks on all databases without prompting to select which databases to check.
-upgrade	Force upgrade of the version of the ORAchk utility being run.

Usage Notes

- The command offers multiple options that are generic to the ORAchk command when run on servers other than the Oracle Database Appliance server. You can find details about these options by running the command oakcli orachk -h. The options are grouped into the following categories, but this document does not list the options for each category:
 - Report Options
 - Auto Restart Options
 - Daemon Options
 - Profile Run Options
- For more information about ORAchk, see My Oracle Support note 1268927.2, "ORAchk Health Checks for the Oracle Stack" at https://support.oracle.com/rs? type=doc&id=1268927.2

oakcli reconfigure osparams

Use the oakcli reconfigure osparams command to adjust the kernel parameters based on the available RAM after you upgrade memory or DIMM.

After you change or expand memory on Oracle Database Appliance, use the oakcli reconfigure osparams command to display the current configuration and suggested values for memlock and vm.nr_hugepages. When prompted, answer yes or no to change the value to the suggested value.



Syntax

oakcli reconfigure osparams [-h]

Parameters

Parameter	Description
-h	(Optional) Displays help for using the command.

Usage Notes

After you change or expand memory on Oracle Database Appliance, use this command to update the kernel parameters.



When adjusting the settings, ensure that you make the changes on both nodes.

Example 15-18 Viewing the Current and Suggested Kernel Parameters

In this example, the output displays the configured and suggested values for memlock and $vm.nr_hugepages$. When prompted, enter no for both parameters to view, but not implement the suggested values.

```
# oakcli reconfigure osparams
Configured value for memlock is: 11000000
Suggested value for memlock is: 11000000
Do you want to use suggested value of memlock?: yes/no
no
User entered no, not updating kernel.memlock
Configured value for vm.nr_hugepages is: 2048
Suggested value for vm.nr_hugepages parameter is: 4150
Do you want to update to suggested value?: yes/no
no
User entered no, not updating kernel.vm.nr_hugepages
```

Example 15-19 Reconfiguring the Kernel Based on Available RAM

In this example, the output displays the configured and suggested values for memlock and $vm.nr_hugepages$. The memlock value does not require changing. A new value is suggested for $vm.nr_hugepages$. When prompted, enter yes to update to the suggested value.





You must adjust the value on both nodes.

oakcli reconfigure osparams
Configured value for memlock is: 193000000
Suggested value for memlock is: 193000000
Configured and suggested values are same
Configured value for vm.nr_hugepages is: 67815
Suggested value for vm.nr_hugepages parameter is: 67748
Do you want to update to suggested value?: yes/no
yes

oakcli resize dbstorage

Use the <code>oakcli resize</code> dbstorage command to resize the space used for a storage structure that was created for the purpose of migrating databases from Oracle ASM to Oracle ACFS.

You can check the current space usage using oakcli show fs and then add space using oakcli resize dbstorage.



You cannot decrease the size of the space used for Oracle ACFS.

Syntax

oakcli resize dbstorage -data size -reco size -redo size -db db_name [-h]

Parameters

Parameter	Description
-data size	Extendable size in GB for the DATA volume.
-reco <i>size</i>	Extendable size in GB for the REDO volume.
-redo <i>size</i>	Extendable size in GB for the RECO volume.
-db db_name	Database for which these volumes must be resized.
-h	(Optional) Display help for using the command.

Example 15-20 Increasing the Size of the DATA Volume

Increase the size of the volume by 10 GB on the DATA volume:

oakcli resize dbstorage -data 10



oakcli restart oda base

Use the oakcli restart oda_base command to stop and restart ODA_BASE on the local node.

Use this command only when you are not concerned about the current status of ODA_BASE, because it performs a forced shutdown. You must run this command from Dom0. Typically, if ODA_BASE needs to be restarted, then you must restart it on both nodes.

Syntax

```
oakcli restart oda_base [-h]
```

The ODA_BASE that you want to restart is on the same node as the Dom0 from which you run this command.

Parameter

(Optional) -h displays help for using the command.

oakcli show commands

Use the oakcli show commands to display the status of Oracle Database Appliance components.

The oakcli show commands display status information for the node where you run the command. To see the list of components available on the current node, use the help option: oakcli show -h:

Note:

Depending on your model and version of Oracle Database Appliance software, the <code>oakcli show</code> command options may differ from the ones shown in this section and explained in the following sections. To obtain an annotated list of components available on your system, run the command <code>oakcli show -h</code>.

· oakcli show asr

Use the <code>oakcli show asr</code> command to display your Oracle Auto Service Request configuration details.

oakcli show cooling

Use the oakcli show cooling command to display the status of the cooling units.

· oakcli show controller

Use the oakcli show controller command to display information about the disk controllers.

oakcli show cpupool

Use the <code>oakcli</code> show <code>cpupool</code> command to display core allocations to virtual machine mappings.



oakcli show databases

Use the <code>oakcli</code> show databases command to display information about each existing database, including database name, database type, database home name and location, and database version.

oakcli show db config params

Use the <code>oakcli show db_config_params</code> command to display configuration file names and parameters.

oakcli show dbhomes

Use the <code>oakcli</code> show dbhomes command to display information about each existing Oracle database home, including home name, home location, and database version.

· oakcli show dbstorage

Use the <code>oakcli</code> show dbstorage command to display database storage information for databases created on Oracle Automatic Storage Management Cluster File System (Oracle ACFS).

oakcli show disk

Use the oakcli show disk command to display disk information.

oakcli show diskgroup

Use the oakcli show diskgroup command to display Oracle Automatic Storage Management (Oracle ASM) disk group information.

· oakcli show enclosure

Use the oakcli show enclosure command to display information about the storage enclosure subsystem on the node where the command is executed.

oakcli show env hw

Use the oakcli show env_hw command to display the environment type and hardware version of the current node.

oakcli show expander

Use the oakcli show expander command to display information about a SAS expander.

oakcli show ismaster

Use the oakcli show ismaster command to determine which node is the first node.

oakcli show fs

Use the <code>oakcli show fs</code> command to display all database and cloudfs file systems created on ASM Cluster File System (ACFS) in addition to the local file systems on the Oracle Database Appliance node.

oakcli show memory

Use the oakcli show memory command to display information about memory modules.

oakcli show network

Use the <code>oakcli</code> show <code>network</code> command to display information about the network subsystem.

oakcli show power

Use the <code>oakcli</code> show power command to display information about the power supply subsystem.

· oakcli show processor

Use the <code>oakcli</code> show processor command to display information about CPU processors.

oakcli show raidsyncstatus

Use the oakcli show raidsyncstatus command to display the status of the RAID rebuild after a failed local disk is replaced.

oakcli show repo

Use the <code>oakcli</code> show repo command to display information about virtual machine repositories.

oakcli show server

Use the oakcli show server command to display information about the server subsystem.

oakcli show storage

Use the oakcli show storage command to display information about the storage for controllers, expanders, and disks.

oakcli show validation storage

Use the oakcli show validation storage command to show whether validation storage is enabled or disabled.

oakcli show validation storage errors

Use the oakcli show validation storage errors command to show hard storage errors.

oakcli show validation storage failures

Use the oakcli show validation storage failures command to show soft validation errors. A typical soft disk error would be an invalid version of the disk firmware.

oakcli show version

Use the <code>oakcli</code> show version command to display the applied patch versions for Oracle Database Appliance software and firmware.

oakcli show asr

Use the oakcli show asr command to display your Oracle Auto Service Request configuration details.

Syntax

oakcli show asr [-h]

Parameters

(Optional) -h displays the help for using this command.

oakcli show cooling

Use the oakcli show cooling command to display the status of the cooling units.

Syntax

oakcli show cooling [-h]

Parameters

(Optional) -h displays the help for using this command.



Example

Display the cooling unit information for the node where the command is executed:

# oakcl	li show	cooling			
NAME	${\tt HEALTH}$	HEALTH_DETAILS	LOCATION	FAN %	FAN SPEED
Fan_0	OK	-	FM0	30 %	6300 RPM
Fan_1	OK	-	FM0	19 %	3800 RPM
Fan_10	OK	-	FM2	34 %	6600 RPM
Fan_11	OK	-	FM2	23 %	4100 RPM
Fan_12	OK	-	FM3	32 %	6300 RPM
Fan_13	OK	-	FM3	22 %	3900 RPM
Fan_14	OK	-	FM3	24 %	4700 RPM
Fan_15	OK	-	FM3	14 %	2500 RPM
Fan_2	OK	-	FM0	29 %	6400 RPM
Fan_3	OK	-	FM0	18 %	3700 RPM
Fan_4	OK	-	FM1	32 %	6400 RPM
Fan_5	OK	-	FM1	20 %	3700 RPM
Fan_6	OK	-	FM1	33 %	6400 RPM
Fan_7	OK	-	FM1	22 %	3800 RPM
Fan_8	OK	-	FM2	33 %	6400 RPM
Fan 9	OK	_	FM2	22 %	3900 RPM

oakcli show controller

Use the ${\tt oakcli}\ {\tt show}\ {\tt controller}$ command to display information about the disk controllers.

Syntax

oakcli show controller controller_id [-h]

Parameters

Parameter	Description
controller_id	Specifies the controller for which to display information
-h	(Optional) Display help for using the command.

Displaying Disk Controller Details

Display details of controller 0:

oakcli show controller 0

oakcli show cpupool

Use the oakcli show cpupool command to display core allocations to virtual machine mappings.

Syntax

```
oakcli show cpupool -node nodenum
```

nodenum is the number of the Oracle Database Appliance node that you want to examine, either 0 or 1.

Displaying Core Mapping for Node 0

Display the core mapping information for Node 0:

oakcli show databases

Use the <code>oakcli</code> show databases command to display information about each existing database, including database name, database type, database home name and location, and database version.

Syntax

```
oakcli show databases [-h]
```

Parameters

Parameter	Description
-h	(Optional) Displays help for using the command.

Usage Notes

On Oracle Database Appliance, the minimum supported Oracle Database release is 11.2.0.4. Oracle Database 11.2.0.3.x is not supported.



Example 15-21 Displaying Database Details

# oakc	li show	databases		
Name	Type	Storage	HomeName	HomeLocation
Versio	n			
omydb	RAC	ACFS	OraDb12102_home1	/u01/app/oracle/product/12.1.0.2/dbhome_1
12.1.0	.2.16071	L9(2305424	5,23054327)	
orcl	RAC	ACFS	OraDb12102_home1	/u01/app/oracle/product/12.1.0.2/dbhome_1
12.1.0	.2.16071	19(2305424	5,23054327)	

Example 15-22 Displaying Database Details for Four Databases

#oakcli show databases

Name Type	Storage	HomeName	HomeLocation	Version
db1 RAC	ACFS	OraDb12102_home1	/u01/app/oracle/product/12.1.0.2/dbhome_1	
12.1.0.2.5(21	359755,21	359758)		
db2 SINGLE	ACFS	OraDb12102_home2	/u01/app/oracle/product/12.1.0.2/dbhome_2	
12.1.0.2.5(21	359755,21	359758)		
db3 RACOneNod	e ACFS	OraDb12102_home3	/u01/app/oracle/product/12.1.0.2/dbhome_3	
12.1.0.2.5(21359755,21359758)				
db4 RAC	ACFS	OraDb12102_home4	/u01/app/oracle/product/12.1.0.2/dbhome_4	
12.1.0.2.5(21	359755,21	359758)		

oakcli show db_config_params

Use the $oakcli show db_config_params$ command to display configuration file names and parameters.

The command searches for files with the extension .dbconf located in the /opt/oracle/oak/install/dbconf directory.

Syntax

oakcli show db_config_params [-conf filename] [-detail] [-h]

Parameters

Parameter	Description
-conf filename	(Optional) Name of configuration file to be displayed. If not included, then the command displays all configuration files.
-detail	(Optional) Display the parameter values stored in the configuration file or files.
-h	(Optional) Display help for using the command.

Displaying the Default Database Configuration Parameters

Display the default database configuration parameter values stored in the configuration file or files:



DATABASE_BLOCK_SIZE	=>	8192
DATABASE_LANGUAGE	=>	AMERICAN
DATABASE_CHARACTERSET	=>	AL32UTF8
DATABASE_TERRITORY	=>	AMERICA
COMPONENT LANGUAGES	=>	en

oakcli show dbhomes

Use the <code>oakcli show dbhomes</code> command to display information about each existing Oracle database home, including home name, home location, and database version.

Syntax

```
oakcli show dbhomes [-detail] [-h]
```

Parameters

Parameter	Description
-detail	(Optional) Include a list of databases associated with each home.
-h	(Optional) Display help for using the command.

Usage Notes

On Oracle Database Appliance, the minimum supported Oracle Database release is 11.2.0.4. Oracle Database 11.2.0.3.*x* is not supported.

Example 15-23 Displaying DB Home Details

oakcli show dbhomes

Oracle Home Name Location	Oracle Home version	Home		
OraDb12102_home1	12.1.0.2.160719(23054246,23054327)	/u01/app/		
oracle/product/12.1.0.2/dbhome 1				

Example 15-24 Displaying DB Home Details

oakcli show dbhomes -detail

Oracle HomeName	Oracle Home Version	Oracle HomeLocation	Databa	se Name	Database
_	11.2.0.4.8(21352635,21352649)	/u01/app/oracle/product/11.2.0.4/dk	ohome_1	no DB	
available					
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dk	ohome_1	one43	
RACOneNode					
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dk	ohome_1	ee120	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dk	ohome_1	one311	
RACOneNode					
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dk	ohome_1	ee311	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dk	ohome_1	rac311	RAC
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dk	ohome_1	ee43	SINGLE
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dk	ohome_1	one120	



RACOneNode

OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	odacn	RAC
OraDb12102_home1	12.1.0.2.5(21359755,21359758)	/u01/app/oracle/product/12.1.0.2/dbhome_1	rac43	RAC
OraDb12102 home1	12.1.0.2.5(21359755.21359758)	/u01/app/oracle/product/12.1.0.2/dbhome 1	rac120	RAC

oakcli show dbstorage

Use the <code>oakcli</code> show <code>dbstorage</code> command to display database storage information for databases created on Oracle Automatic Storage Management Cluster File System (Oracle ACFS).

All non-cdb databases are listed together, because they share a common set of volumes. Each CDB database is listed separately.

Syntax

oakcli show dbstorage [-db] db_name[-h]

Parameters

Parameter	Description
-db <i>dbname</i>	(Optional) Display the name of the database for the storage information.
-h	(Optional) Display help for using the command.

Usage Notes

Example 15-25 Oracle Database Appliance with Non-CDB Databases

Here is an example of the <code>oakcli</code> show <code>dbstorage</code> command output for an Oracle Database Appliance. The output includes only non-CDB databases. Half of the available disk group storage is allocated to Oracle ACFS, except for the FLASH disk group. In the FLASH disk group, all storage is allocated to Oracle ACFS.

oakcli show dbstorage

All the DBs with DB TYPE as non-CDB share the same volumes $% \left(1\right) =\left(1\right) +\left(1\right)$

DB_NAMES	DB_TYPE	Filesystem	Size	Used	Available	AutoExtend S	Size DiskGroup
db1, db2, db3, db4	non-CDB	/u01/app/oracle/oradata/datastore	62G	27.26G	34.74G	6G	REDO
		/u02/app/oracle/oradata/datastore	3730G	7.86G	3722.14G	373G	DATA
		$/{\tt u02/app/oracle/oradata/flashdata}$	558G	205.25G	352.75G	55G	FLASH
		/u01/app/oracle/fast_recovery_area	a/datas	store			
			4958G	21.05G	4936.95G	495G	RECO

oakcli show disk

Use the oakcli show disk command to display disk information.

Syntax

oakcli show disk [-shared | -local | -shared_disk_name | -asm [-all]
[-h]



Parameters

Parameter	Description
-local	(Optional) Display information for all of the local disks.
-shared	(Optional) Display information for all of the shared disks.
-shared_disk_name	(Optional) Display information for only the specified shared disk.
-asm	(Optional) Displays information for an assembly.
-all	(Optional) Display complete details of the selected disk or disks.
-h	(Optional) Display help for using the command.

Usage Notes

- Running the command with no parameters is identical to running the oakcli show disk -shared command.
- The -all parameter produces valid output only when used with the shared_disk_name parameter. All other parameters are optional and cannot be combined with other parameters.

Example 15-26 Displaying Information About the Local Disks

oakcli show disk -local

Example 15-27 Displaying Information About the Shared Disks

oakcli show disk -shared

Example 15-28 Displaying Information About a Specific Shared Disk

Display information about the shared disk named pd_01:

oakcli show disk -shared pd_01

oakcli show diskgroup

Use the oakcli show diskgroup command to display Oracle Automatic Storage Management (Oracle ASM) disk group information.

Syntax

oakcli show diskgroup [disk_group_name][-h]



Parameters

Parameter	Description
disk_group_name	(Optional) The name of an Oracle ASM disk group for which complete details should be displayed. If you do not specify this parameter, then information for all of the Oracle ASM disk groups is displayed.
-h	(Optional) Display help for using the command.

oakcli show enclosure

Use the oakcli show enclosure command to display information about the storage enclosure subsystem on the node where the command is executed.

Syntax

oakcli show enclosure [-h]

Parameter

-h displays help for using the command.

oakcli show env_hw

Use the <code>oakcli show env_hw</code> command to display the environment type and hardware version of the current node.

Syntax

oakcli show env_hw [-h]

Parameter

(Optional) -h displays help for using the command.

Displaying the Environment and Hardware for a Virtualized Platform

Show the environment type and hardware model when logged in to ODA_BASE on Oracle Database Appliance Virtualized Platform:

```
oakcli show env_hw VM-ODA_BASE ODA X7-2
```

oakcli show expander

Use the $oakcli\ show\ expander\ command\ to\ display\ information\ about\ a\ SAS\ expander.$

Syntax

oakcli show expander [expander_id] [-h]



Parameter

Parameter	Description
expander_id	(Optional) Identifies the specific SAS expander
-h	(Optional) Display help for using the command.

oakcli show ismaster

Use the oakcli show ismaster command to determine which node is the first node.

File Path

/opt/oracle/oak/bin/oakcli

Syntax

oakcli show ismaster [-h]

Parameters

Parameter	Description
-h	(Optional) Display help for using the command.

Example 15-29 Determining Which Node is the First Node

oakcli show ismaster

oakcli show fs

Use the <code>oakcli show fs</code> command to display all database and cloudfs file systems created on ASM Cluster File System (ACFS) in addition to the local file systems on the Oracle Database Appliance node.

Syntax

oakcli show fs [-h]

Parameter

(Optional) -h displays help for using the command.



oakcli show memory

Use the oakcli show memory command to display information about memory modules.

Syntax

```
oakcli show memory [-h]
```

Parameter

(Optional) -h displays help for using the command.

oakcli show network

Use the <code>oakcli show network</code> command to display information about the network subsystem.

Syntax

oakcli show network

Parameter

(Optional) -h displays help for using the command.

oakcli show power

Use the oakcli show power command to display information about the power supply subsystem.

Syntax

```
oakcli show power [-h]
```

Parameter

(Optional) -h displays help for using the command.

Example 15-30 Displaying Power Supply Information

Display the power supply information of the node where the command is executed:

```
# oakcli show power
```

```
NAME HEALTH HEALTH_DETAILS PART_NO. SERIAL_NO.

LOCATION INPUT_POWER OUTPUT_POWER INLET_TEMP EXHAUST_TEMP

Power_Supply_0 OK - 7047410 476856F+1242CE0020

PS0 Present 113 watts 33.250 degree C 36.688 degree C

Power_Supply_1 OK - 7047410 476856F+1242CE004J
```



PS1 Present 89 watts 37.000 degree C 39.438 degree C

oakcli show processor

Use the oakcli show processor command to display information about CPU processors.

Syntax

```
oakcli show processor [-h]
```

Parameter

(Optional) -h displays help for using the command.

Displaying CPU Processor Information

Display the CPU processor information of the node where the command is executed:

oakcli show raidsyncstatus

Use the oakcli show raidsyncstatus command to display the status of the RAID rebuild after a failed local disk is replaced.



The show raidsyncstatus command is only supported on a bare metal platform; it is not supported on the virtualized platform. For general RAID information, use the oakcli show iraid command.

Syntax

oakcli show raidsyncstatus [-h]

Parameter

(Optional) -h displays help for using the command.



oakcli show repo

Use the <code>oakcli</code> show repo command to display information about virtual machine repositories.

Syntax

```
oakcli show repo [reponame -node 0|1] [-h]
```

Parameters

Parameter	Description
reponame	[Optional] Identifies a specific repository name
-node	[Optional] Identifies the node number 0 or 1
-h	[Optional] Display help for using the command.

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

Examples

Here are examples of how to use the oakcli show repo command.

Example 15-31 Displaying the Available Virtual Machine Repositories

Display the virtual machine repositories on Oracle Database Appliance Virtualized Platform nodes:

```
# oakcli show repo

NAME REPOTYPE NODENUM

odarepol local 0

odarepo2 local 1

repo1 shared 0

repo1 shared 1
```

Example 15-32 Displaying Details About a Specific Shared Repository

Display information about the repository named repo1 on Node 1:

```
# oakcli show repo repol -node 1

Resource: repol_1
    AutoStart : restore
    DG : DATA
    Device : /dev/asm/repol-286
    ExpectedState : Online
    MountPoint : /u01/app/repol
    Name : repol_0
    Node : all
    RepoType : shared
    Size : 102400
    State : Online
```



oakcli show server

Use the oakcli show server command to display information about the server subsystem.

Syntax

oakcli show server [-h]

Parameter

(Optional) -h displays help for using the command.

oakcli show storage

Use the <code>oakcli</code> show storage command to display information about the storage for controllers, expanders, and disks.

Syntax

oakcli show storage -errors [-h]

Parameters

Parameter	Description
-errors	Display detailed information about reported errors.
-h	(Optional) Display help for using the command.

oakcli show validation storage

Use the oakcli show validation storage command to show whether validation storage is enabled or disabled.

Syntax

oakcli show validation storage [-h]

Parameter

(Optional) -h displays help for using the command.

Example 15-33 Determining if Storage Validation is Enabled

oakcli show validation storage
Enabled



oakcli show validation storage errors

Use the oakcli show validation storage errors command to show hard storage errors.

Hard errors include having the wrong type of disk inserted into a particular slot, an invalid disk model, or an incorrect disk size.

Syntax

oakcli show validation storage errors [-h]

Parameter

(Optional) -h displays help for using the command.

oakcli show validation storage failures

Use the oakcli show validation storage failures command to show soft validation errors. A typical soft disk error would be an invalid version of the disk firmware.

Syntax

oakcli show validation storage failures [-h]

Parameter

(Optional) -h displays help for using the command.

oakcli show version

Use the <code>oakcli show version</code> command to display the applied patch versions for Oracle Database Appliance software and firmware.

Syntax

oakcli show version [-detail] [-h]

Parameter	Description
-detail	(Optional) Display detailed version information.
-h	(Optional) Display help for using the command.

Usage Notes

When you apply the patch and then run the command <code>oakcli</code> show <code>version</code> -detail, the output shows the installed version and that the supported versions are <code>Up-to-date</code> for each component. If you unpack the patch bundle (<code>oakcli</code> unpack -pack) and then run the command <code>oakcli</code> show <code>version</code> -detail before applying the patch, the output shows <code>No-update</code> in the Supported Version column.





After unpacking the patch bundle, but before applying the patch, use the oakcli update -patch version --verify command to verify the contents of the patch instead of issuing oakcli show version -detail.

Displaying the Oracle Database Appliance Version

This is an example of how to determine if all of the components are successfully updated after applying the 12.1.2.10.0 patch. You can also view the applied patch version information for the software and firmware on Oracle Database Appliance. All components are successfully updated when $\tt Up-to-date$ appears in the Supported Version column.

# oakcli show version -detail					
	adata. It takes a while Component Name	Installed Version	Supported Version		
12.1.2.10.0					
	Controller_INT	4.230.40-3739	Up-to-date		
	Controller_EXT	09.00.00.00	Up-to-date		
	Expander	0291	Up-to-date		
	SSD_SHARED {				
	[c2d20,c2d21,c2d22,	A29A	Up-to-date		
	c2d23]				
	[c2d0,c2d1,c2d2,c2d	A29A	Up-to-date		
	3,c2d4,c2d5,c2d6,c2d				
	7,c2d8,c2d9,c2d10,c2				
	d11,c2d12,c2d13,c2d1				
	4,c2d15,c2d16,c2d17,				
	c2d18,c2d19]				
	}				
	SSD_LOCAL	OR3Q	Up-to-date		
	ILOM	3.2.8.24 r114611	Up-to-date		
	BIOS	38070000	Up-to-date		
	IPMI	1.8.12.4	Up-to-date		
	HMP	2.3.5.2.8	Up-to-date		
	OAK	12.1.2.10.0	Up-to-date		
	OL	6.8	Up-to-date		
	GI_HOME	12.1.0.2.170117(2473	Up-to-date		
		2082,24828633)			
	DB_HOME	12.1.0.2.170117(2473	Up-to-date		
		2082,24828633)			



Related Topics

oakcli update
 Use the oakcli update command to apply Oracle Database Appliance patches.

oakcli start commands

Use the oakcli start commands to start a virtual machine, to start a shared repository on a node, or to start ODA_BASE on the local node.

- oakcli start oda_base
 Use the oakcli start oda_base command to start ODA_BASE on the local node.
- oakcli start repo
 Use the oakcli start repo command to start a shared repository on a node.

oakcli start oda_base

Use the oakcli start oda_base command to start ODA BASE on the local node.

Syntax

oakcli start oda_base [-h]

Parameter

(Optional) -h displays help for using the command.

Example 15-34 Starting ODA_BASE on the Local Node

Connect to Dom0 on the desired node and enter the following command to start ODA_BASE on that node:

oakcli start oda_base

oakcli start repo

Use the oakcli start repo command to start a shared repository on a node.

Syntax

oakcli start repo repo_name [-node node_number] [-h]

Parameter	Description
repo_name	repo_name is the name of the shared repository to be started.
-node <i>node_number</i>	Specifies the node on which to start the shared repository. node_number is the number of the node where it is to be started, either 0 or 1. If -node is not specified, the shared repository is started on both nodes.
-h	(Optional) Displays help for using the command.



Example 15-35 Starting a Shared Repository on Node 0

Start the shared repository named repo1 on Node 0:

oakcli start repo repol -node 0

oakcli stop command

Use the <code>oakcli stop</code> command to stop a virtual machine, to stop a shared repository on a node, or to stop ODA_BASE on the local node.

Syntax

oakcli stop [vm vm_name [-force] | repo repo_name [-node node_number] |
oda_base] [-h]

Parameters

Parameter	Description
vm vm_name	vm_name is the name of the virtual machine to be stopped.
-force	(Optional) forces the virtual machine to stop.
repo repo_name	repo_name is the name of the shared repository to be stopped.
-node node_number	node_number is the number of the node where the shared repository is to be stopped, either 0 or 1. The -node parameter is only valid when stopping a virtual machine on a shared repository. If -node is not specified, the shared repository is stopped on both nodes.
oda_base	Stops ODA_BASE on the local node
-h	(Optional) Displays help for using the command.

Examples

Here are examples of how to use the oakcli stop command.

Example 15-36 Forcing a Virtual Machine to Stop

Force the virtual machine named vml_odarepol to stop:

oakcli stop vm vm_odarepo1 -force

Example 15-37 Stopping a Shared Repository

Stop the shared repository named repo1 on Node 0:

oakcli stop repo repol -node 0



Example 15-38 Stopping the Local ODA_Base

Connect to Dom0 on the desired node and enter the following command to stop ODA BASE on that node:

oakcli stop oda base

oakcli stordiag

Use the <code>oakcli stordiag</code> command to run diagnostic tests on a disk in the storage shelf or storage expansion shelf.

The tool produces a list of 14 disk checks for each node.

Syntax

oakcli stordiag resource_type [n| [-h]

Parameters

Parameter	Description
resource_type	Prefix that depends on the configuration. See "Usage Notes."
n	(Optional) Disk number (starting with 0 and increasing to one less than the number of disks)
-h	(Optional) Display help for using the command.

Usage Notes

Select the value for resource_type based from one of the following options:

- On Oracle Database Appliance Version 1, use d.
- On Oracle Database Appliance with a single storage shelf, use pd_.
- On Oracle Database Appliance with an expansion storage shelf, use e0_pd_ for a disk in the storage shelf and use e1_pd_ for a disk in the expansion storage shelf.

For Oracle Database Appliance systems that have internal storage, use the format d_[..] to identify the disk to be diagnosed. For Oracle Database Appliance systems that have connected a storage shelf (and optional storage expansion shelf), use the format e[0..1] pd_[0..23] to identify the disk to be diagnosed.

Example 15-39 Running Diagnostic Tests on a Disk in the Expansion Storage Shelf

Runs the diagnostic tests on disk 3 in the expansion storage shelf:



oakcli test asr

Use the <code>oakcli test asr</code> command to send a test trap to determine if Oracle Auto Service Request (Oracle ASR) is configured and working correctly.

The command returns a success message if Oracle ASR is functioning properly.

Syntax

oakcli test asr [-h]

Parameter

(Optional) -h displays help for using the command.

Usage Notes

Run the command on both nodes. The Oracle ASR logs are always on the node where the ASR Manager is installed, which is the first node.

oakcli unpack

Use the ${\tt oakcli}$ unpack command to unpack packages into the Oracle Appliance Manager repository.

Syntax

oakcli unpack -package absolute_package_name

Parameters

Parameters	Description
absolute_package_name	Identifies the package to be unpacked using the package's full absolute path and file name
-h	(Optional) Display help for using the command.

Example 15-40 Unpacking Packages into the Oracle Appliance Manager Repository

Unpack the p13982331_23000_Linux-86-62.zip package, which was previously copied to /tmp on the current node, into the node's Oracle Appliance Manager command-line interface repository:

oakcli unpack -package /tmp/p13982331_23000_Linux-86-62.zip



oakcli update

Use the oakcli update command to apply Oracle Database Appliance patches.

You can apply patches using the patch bundle and use the --local patching option to patch components one node at a time without impacting the other node. This reduces the downtime when applying the patch.



If you want to update only the Oracle Database software, use the <code>oakcliupgrade</code> command.

Syntax

```
oakcli update -patch version [--server | --storage | --database] [--
local] [--noreboot] | [--clean] | [--verify][-h]
```

Parameters

Parameter	Description
- patch version	Patch version that you want to install. For example: 19.8.
server	Contains the patches previously obtained in earlier releases from the Infrastructure (infra) and Grid Infrastructure (gi) patch updates.
storage	Contains only patches for shared storage components.
database	(Optional) Patches Oracle database homes.
local	Patches the component only on the local node. By default, this is set to false.
noreboot	(Optional) Node is not rebooted after patching.
clean	(Optional) Cleans up all temporary files on the local node.
verify	(Optional) Lists the patchable components on the node.
-h	(Optional) Display help for using the command.

Usage Notes

After unpacking the patch bundle, but before applying the patch, verify the contents of the patch for the release.

When patching a virtualized platform, the --local option is supported, when Oracle Grid Infrastructure upgrade is not required. For example, after applying the patch for Oracle Database Appliance 19.8, Oracle Grid Infrastructure is upgraded to 18.0.0.0. The --local option then works.



INFO: *************

INFO: DB, ASM, Clusterware may be stopped during the patch if required INFO: Local Node may get rebooted automatically during the patch if necessary

Example 15-41 Verify the Contents of a Patch Bundle

Display the installed version and the version available in the 19.8 release patch bundle for each of the components on the node. When the latest supported version is installed, Up-to-date appears in the Proposed column.

Patch Version	Component Name	Installed Version	Proposed
	Controller_INT Controller_EXT Expander	4.230.40-3739 09.00.00.00 0291	Up-to-date 10.00.00.00 Up-to-date
	SSD_SHARED {		
	[c2d20,c2d21,c2d22, c2d23]	A29A	Up-to-date
	[c2d0,c2d1,c2d2,c2d 3,c2d4,c2d5,c2d6,c2d	A29A	Up-to-date
	7,c2d8,c2d9,c2d10,c2		
	d11,c2d12,c2d13,c2d1		
	4,c2d15,c2d16,c2d17,		
	c2d18,c2d19]		
	}		
	SSD_LOCAL ILOM BIOS	0R3Q 3.2.7.26.a r112632 38050100	Up-to-date 3.2.8.24 r114611 38070000
	IPMI HMP	1.8.12.4 2.3.5.2.5	Up-to-date 2.3.5.2.8
	OAK OL GI_HOME DB_HOME	12.2.1.4 6.8 12.1.0.2.161018(2400 6101,23854735) 12.1.0.2.160719(2305	19.8 Up-to-date 12.1.0.2.170117(2473 2082,24828633) 12.1.0.2.170117(2473
	ASR	4246,23054327) 5.5.1	2082,24828633) Up-to-date

oakcli update -patch Command Examples

Update the appliance with the 19.8 patch: oakcli update -patch 19.8.0.0.0

Patch the Oracle Database homes on both nodes: oakcli update -patch 19.8.0.0.0 --database



oakcli update-cpucore

Use the <code>oakcli</code> update-cpucore command to enable a specified number of licensed CPU cores for Oracle Database Appliance.

Prerequisites

If all cores are not enabled, you can enable multiples of 2 licensed CPU cores up to the maximum number of cores.

File Path

/opt/oracle/oak/bin/oakcli

Syntax

oakcli update-cpucore -cores number of cores per server [-h]

Parameters

Parameter	Description
-cores	Defines the number of cores to enable per server, in multiples of 2. To enable all available cores, specify All instead of the number of cores.
-h	(Optional) Display help for using the command.

Usage Notes

- This command applies only to bare metal deployments. It is not available on an Oracle Database Appliance Virtualized Platform.
- The number of licensed cores you enable must be a multiple of 2, up to the maximum number of cores.
- After the initial configuration, you cannot reduce the number of cores. You can
 purchase additional cores and increase the number of cores, up to the maximum
 number of cores for the hardware model.

Example 15-42 Enabling 12 CPU Cores for Oracle Database Appliance

The following command enables 12 CPU cores on an Oracle Database Appliance system.

```
# oakcli update-cpucore -cores 12

Please enter the 'root' password:
Please re-enter the 'root' password:
Setting up SSH .............Completed
INFO : Running as root: /usr/bin/ssh -l root 192.0.2.1 /etc/rc.d/rc3.d/S90cpu-core
```



INFO : Running as root: /usr/bin/ssh -l root 192.0.2.1 /etc/rc.d/
rc3.d/S90cpu-core

Example 15-43 Enabling All CPU Cores for Oracle Database Appliance

The following command enables all cores on an Oracle Database Appliance system.

```
# oakcli update-cpucore -cores All

Please enter the 'root' password:
Please re-enter the 'root' password:
Setting up SSH ..................Completed
INFO : Running as root: /usr/bin/ssh -l root 192.0.2.1 /etc/rc.d/rc3.d/S90cpu-core
INFO : Running as root: /usr/bin/ssh -l root 192.0.2.1 /etc/rc.d/rc3.d/S90cpu-core
```

oakcli upgrade

Use the <code>oakcli upgrade</code> command to upgrade the Oracle Database software on Oracle Database Appliance.

For patching Oracle Database Appliance itself, use the oakcli update command.

Syntax

oakcli upgrade database [-db db_names | -from source_home] -to destination_home

Parameters

Parameter	Description
-db db_names	Specifies the name or names (in a comma-delimited list) of the database or databases you want to upgrade
-from source_home	Specifies the current Oracle Database home of the databases you are upgrading
-to destination_home	Specifies the Oracle Database home containing the version to which you want to upgrade the databases
-h	(Optional) Display help for using the command.

Usage Notes

- You must include either a -db parameter or a -from parameter.
- Running the command with a -db parameter upgrades only the named databases, regardless of their current Oracle Database homes. If you include a -from parameter in addition to a -db parameter, then the command ignores the -from parameter. That is, the command upgrades named databases from other homes and ignores the databases in the named home if they are not listed in the -db parameter.
- Running the command without a -db parameter will upgrade all of the databases in the named Oracle Database home.



 You must always provide a -to parameter that names an existing Oracle Database home.

Example

Upgrade an Oracle 11.2.0.3.1 database named tpcc from Oracle Database 11.2.0.3.1 to Oracle Database 12.1.0.2 using the Oracle Database home directory $OraDb12102_home1$:

oakcli upgrade database -db tpcc -to OraDb12102_home1

oakcli validate

Validates the state of an Oracle Database Appliance or the viability of an operating system patch.

Syntax

oakcli validate [[-V | -l | -h]] | [[-v][-f output_file] [-a | -d | -c checklist] [-ver patch_version]]

Parameters

Parameter	Description
-V	Display the version of oakValidation.
-1	List the items that can be checked (and their descriptions).
-h	(Optional) Display help for using the command.
-v	Show verbose output (must be used with a parameter that generates a validation report).
-f output_file	Send output to a file with a fully qualified file name, $output_file$, instead of to the screen (stdout).
-a	Run all system checks, including DiskCalibration. Oracle recommends that you use this command to validate system readiness before deployment. Do not run oakcli validate with this option on a busy production system, because the DiskCalibration system check can cause performance issues.
-d	Run only the default checks. The default checks are NetworkComponents, OSDiskStorage, SharedStorage, and SystemComponents.
	The NetworkComponents validation check is not available on Oracle Database Appliance V1.
-c checklist	Run the validation checks for the items identified in <i>checklist</i> , a comma-delimited list. Use this parameter to check either a single item or subset of items.
-c ospatch	Run the validation checks for the patch version identified in -ver patch_version.
-ver patch_version	Report any reasons for not being able to patch Oracle Database Appliance with the patch named in patch_version.



Listing All Checks and Their Descriptions

 * -- These checks are also performed as part of default checks

Running All Checks

Enter the following command to run all checks:

```
# oakcli validate -a
```

Validating Storage Cable Connections

Check the cable connections between the system controllers and the storage shelf, as well as the cable connection to the storage expansion shelf (if one is installed):

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

Oracle recommends that you run the oakcli validate -c StorageTopology command before deploying the system. This will avoid and prevent problems during deployment due to wrong or missing cable connections. The output shown in the following example reports a successful configuration. If the cabling is not correct, you will see errors in your output.

```
# oakcli validate -c storagetopology
It may take a while. Please wait...
INFO : ODA Topology Verification
INFO: Running on Node0
INFO: Check hardware type
SUCCESS: Type of hardware found: X4-2
INFO : Check for Environment(Bare Metal or Virtual Machine)
SUCCESS: Type of environment found: Virtual Machine (ODA BASE)
SUCCESS: Number of External LSI SAS controller found: 2
INFO: Check for Controllers correct PCIe slot address
SUCCESS: External LSI SAS controller 0: 00:15.0
SUCCESS: External LSI SAS controller 1: 00:16.0
INFO : Check if powered on
SUCCESS: 1: Powered-on
INFO : Check for correct number of EBODS(2 or 4)
SUCCESS : EBOD found : 2
INFO: Check for External Controller 0
SUCCESS: Controller connected to correct ebod number
SUCCESS: Controller port connected to correct ebod port
SUCCESS: Overall Cable check for controller 0
INFO: Check for External Controller 1
SUCCESS: Controller connected to correct ebod number
```



```
SUCCESS: Controller port connected to correct ebod port
SUCCESS: Overall Cable check for controller 1
INFO: Check for overall status of cable validation on Node0
SUCCESS: Overall Cable Validation on Node0
INFO: Check Node Identification status
SUCCESS: Node Identification
SUCCESS: Node name based on cable configuration found: NODE0
INFO: Check Nickname
SUCCESS: Nickname set correctly: Oracle Database Appliance - E0
INFO: The details for Storage Topology Validation can
also be found in log file=/opt/oracle/oak/log/<hostname>/storagetopology/StorageTopology-2014-07-03-08:57:31_7661_15914.log
```

Validating Oracle ASR

Enter the following syntax to validate your Oracle ASR configuration:

```
# oakcli validate -c asr
INFO: oak Asr information and Validations
RESULT: /opt/oracle/oak/conf/asr.conf exist
RESULT: ASR Manager ip:10.139.154.17
RESULT: ASR Manager port:1162
SUCCESS: ASR configuration file validation successfully completed
RESULT: /etc/hosts has entry 141.146.156.46 transport.oracle.com
RESULT: ilom alertmgmt level is set to minor
RESULT: ilom alertmgmt type is set to snmptrap
RESULT: alertmgmt snmp_version is set to 2c
RESULT: alertmgmt community_or_username is set to public
RESULT: alertmgmt destination is set to 10.139.154.17
RESULT: alertmgmt destination_port is set to 1162
SUCCESS: Ilom snmp configuration for asr set correctly
RESULT: notification trap configured to ip:10.139.154.17
RESULT: notification trap configured to port:1162
SUCCESS: Asr notification trap set correctly
INFO: IP_ADDRESS HOST NAME SERIAL NUMBER ASR PROTOCOL SOURCE PRODUCT NAME
INFO: -----
___________
10.170.79.98 oda-02-c 1130FMW00D Enabled SNMP ILOM SUN FIRE X4370 M2 SERVER
10.170.79.97 oda-01-c 1130FMW00D Enabled SNMP ILOM SUN FIRE X4370 M2 SERVER
INFO: Please use My Oracle Support 'http://support.oracle.com' to view the
activation status.
SUCCESS: asr log level is already set to Fine.
RESULT: Registered with ASR backend.
RESULT: test connection successfully completed.
RESULT: submitted test event for asset:10.139.154.17
RESULT: bundle com.sun.svc.asr.sw is in active state
RESULT: bundle com.sun.svc.asr.sw-frag is in resolved state
RESULT: bundle com.sun.svc.asr.sw-rulesdefinitions is in resolved state
RESULT: bundle com.sun.svc.ServiceActivation is in active state
SUCCESS: ASR diag successfully completed
```

Checking the Viability of a Patch

Use the <code>oakcli</code> validate <code>ospatch</code> -ver <code>patch_version</code> command to report any reasons for not being able to patch Oracle Database Appliance with the patch named in <code>patch_version</code>. Run this command before you attempt to patch Oracle Database Appliance to determine if it will succeed or if you need to make changes before applying the patch.



```
# oakcli validate -c ospatch -ver 12.1.2.5.0
INFO: Validating the OS patch for the version 12.1.2.5.0
WARNING: 2015-10-10 06:30:32: Patching sub directory /opt/oracle/oak/pkgrepos/
orapkgs/OEL/5.10/Patches/5.10.1 is not existing
INFO: 2015-10-10 06:30:32: May need to unpack the Infra patch bundle for the
version: 12.1.2.5.0
ERROR: 2015-10-10 06:30:32: No OS patch directory found in the repository
```

Validating Hardware System and Network Components

The following command runs system checks to validate hardware system components and Oracle Database Appliance network components:

oakcli validate -c SystemComponents, NetworkComponents

oakcli Virtual Disk Commands

Use the oakcli virtual disk (vdisk) commands to manage virtual disks on Oracle Database Appliance virtualized platform.

oakcli create vdisk

Use the <code>oakcli create vdisk</code> command to create a new virtual disk in a shared repository on Oracle Database Appliance Virtualized Platform.

oakcli clone vdisk

Use the oakcli clone vdisk command to create clones of virtual disks.

oakcli delete vdisk

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

oakcli show vdisk

Use the <code>oakcli show vdisk</code> command to display information about virtual disks on Oracle Database Appliance Virtualized Platform.

oakcli create vdisk

Use the <code>oakcli create vdisk</code> command to create a new virtual disk in a shared repository on Oracle Database Appliance Virtualized Platform.

Syntax

oakcli create vdisk vdisk_name -repo repository_name -size size -type shared|
local -sparse [-h]

Parameters

Parameter	Description
vdisk_name	Name assigned to the virtual disk that is unique within the name repository
-repo repository_name	Name of the shared repository where the virtual disk will be created and from which it will acquire its storage
-size <i>size</i>	Amount of storage to be assigned from the shared repository to the shared disk. The default unit is G (for gigabytes) and the minimum size is 500 M (for megabytes)



Parameter	Description
-type shared local	Sets the option of allowing the virtual disk to be shared by more than one virtual machine (shared) or used by only one virtual machine (local)
-sparse	Creates a sparse vdisk
-h	(Optional) Display help for using the command.

Example

Create a virtual disk named t2g in the shared repository named repoprod1 for use by only one virtual machine at a time in that repository. Assign the t2g virtual disk 2 GB in the repoprod1 shared repository.

oakcli create vdisk t2g -repo repoprod1 -type local -size 2G

oakcli clone vdisk

Use the oakcli clone vdisk command to create clones of virtual disks.

Syntax

oakcli clone vdisk new_vdisk_name -repo repo_name -src source_vdisk_name [-h]

Parameters

Parameter	Description
new_vdisk_name	Name given to the clone virtual disk
repo_name	Name of the repository source for the virtual disk being cloned
source_vdisk_name	Name of the virtual disk being cloned
-h	(Optional) Display help for using the command.

Usage

The virtual disk and vm.cfg files are stored in the following directories:

- Dom0: /Repositories/vm_repo_name/.ACFS/snaps/vm_name/
 VirtualMachines/vm_name
- ODA_BASE: /app/sharedrepo/vm_repo_name/.ACFS/snaps/vm_name/ VirtualMachines/vm_name

Example 15-44 Cloning a Virtual Disk

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

oakcli clone vdisk my_vdisk2 -repo vrepo1 -src vdisk1



oakcli delete vdisk

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

Syntax

oakcli delete vdisk vdisk_name -repo repository_name [-h]

Parameters

Parameter	Description
vdisk_name	Name assigned to the virtual disk
-repo repository_name	Name of the shared repository where the virtual disk was created
-h	(Optional) Display help for using the command.

Example

Remove a virtual disk named t2g from the shared repository named repoprod1:

oakcli delete vdisk t2g -repo repoprod1

oakcli show vdisk

Use the <code>oakcli show vdisk</code> command to display information about virtual disks on Oracle Database Appliance Virtualized Platform.

Syntax

oakcli show vdisk [vdisk_name -repo repository_name] [-h]

Parameters

Parameter	Description
vdisk_name	(Optional) Display information for just one virtual disk.
-repo repository_name	Required parameter if a virtual disk is specified in the command
-h	(Optional) Display help for using the command.

Examples

Here are examples of how to use the oakcli show vdisk command.

Example 15-45 Displaying Information for All Virtual Disks

Display information about all virtual disks on Oracle Database Appliance Virtualized Platform:

oakcli show vdisk

NAME SIZE TYPE REPOSITORY



myvdisk	10G	local	vdiskrepo
newv	1G	local	vdiskrepo

Example 15-46 Displaying Information for a Single Virtual Disk

Display information for the virtual disk named myvdisk1:

Size : 10G
Type : local
VmAttached : 0

oakcli Virtual Machine Commands

Use the oakcli virtual machine commands to list and manage virtual machines (VMs).

oakcli clone vm

Use the oakcli clone vm command to create clones and snap clones of virtual machines.

oakcli configure vm

Use the <code>oakcli configure vm</code> command to configure a virtual machine on Oracle Database Appliance Virtualized Platform and to increase or decrease resource allocation to user domains.

oakcli delete vm

Use the oakcli delete vm command to delete a virtual machine.

oakcli migrate vm

Use the $oakcli\ migrate\ vm$ command to migrate a currently running virtual machine to another node.

oakcli modify vm

Use the oakcli modify vm command to modify an existing virtual machine.

oakcli show vm

Use the oakcli show vm command to display information about virtual machines.

oakcli show vmconsole

Use the <code>oakcli show vmconsole</code> command to open a GUI virtual machine console to manage a specific virtual machine.

oakcli start vm

Use the oakcli start vm command to start a virtual machine on a node.

oakcli clone vm

Use the $oakcli\ clone\ vm$ command to create clones and snap clones of virtual machines.

Syntax

To create a virtual machine from a template:

oakcli clone vm vm_name -vmtemplate template_name -repo repo_name [-node 0/1] [-driverdomain]

To create a snapshot clone of an existing virtual machine:

oakcli clone vm vm_name -vm src_vm_name -snap [-force] [-driverdomain]

To create a virtual machine snapshot from a template:

oakcli clone vm <vm_name> -vmtemplate src_vmtempl_name -snap [driverdomain]

Parameters

Parameter	Description
-vm <i>vm_name</i>	Identifies the name given to the new cloned virtual machine.
-vmtemplate template_name	Identifies the name of the template containing the virtual machine that you want to clone.
-repo <i>repo_name</i>	Identifies the name of the repository that contains the template being cloned.
-node 0 1	Identifies the Oracle Database Appliance node that contains the shared repository from which the virtual machine is to be cloned.
-vm src_name	Identifies the name of the virtual machine that is to be cloned.
-snap	(Optional) Creates a snapshot of the source virtual machine or virtual machine template.
-driverdomain	(Optional) Creates the virtual machine with the driver domain option.
	The driver domain option improves performance by enabling guest virtual machines to use ODA_BASE instead of Dom0 to access virtual disks. Newly created virtual disks are mounted directly from ODA_BASE to a guest virtual machine.
-force	(Optional) When cloning a source virtual machine, the -force option enables you to make a change from the source virtual machine. For example, if the source file does not use a driver domain, you can use -force -driverdomain to create a clone virtual machine that does use the driver domain.
-h	(Optional) Displays help for using the command.



Usage Notes

- The -node parameter must be used when you clone from a shared repository. The -node parameter is invalid for non-shared repositories.
- The virtual disk and vm.cfg files are stored in the following directories:
 - Dom0: /Repositories/vm_repo_name/.ACFS/snaps/vm_name/
 VirtualMachines/vm_name
 - ODA_BASE: /app/sharedrepo/vm_repo_name/.ACFS/snaps/vm_name/
 VirtualMachines/vm_name
- Live migration of driver domain virtual machines is not supported.
- The driver domain option is supported with the following guest operating systems:
 - Oracle Linux with the latest Unbreakable Enterprise Kernel 2 (UEK2),
 Unbreakable Enterprise Kernel 3 (UEK3), or Unbreakable Enterprise Kernel
 Release 4 (UEK R4).
 - Microsoft Windows with Oracle VM Windows PV Driver 3.4.1. Oracle VM Windows PV Driver 3.4.1 release is available for download on My Oracle Support as patch number 23346086.
 - Oracle Solaris 11.3 or higher x86.
- The driver domain only works when you add virtual disks to a guest virtual machine. When -driverdomain is specified, the cloned virtual machine is in driver domain mode. The corresponding virtual machine configuration file, vm.cfg, has the following disk entries:

When -driverdomain is specified, the cloned virtual machine is in driver domain mode. The corresponding virtual machine configuration file, vm.cfg, has the following disk entries:

```
disk = [u'file:/OVS/Repositories/repo5/.ACFS/snaps/vm10/
VirtualMachines/
vm10/System.img,xvda,w',
u'file:/u01/app/sharedrepo/repo5/.ACFS/snaps/
vm10/VirtualMachines/vm10/u01.img,xvdb,w,oakDom1']
```

All disks, with the exception of the xvda boot disk, have the path from oakDom1, that is odabase.

- The driver domain functionality applies to non-system disks. Once a virtual machine is created in driver domain mode, any new vDisks are added in driver domain mode.
- To determine if a virtual machine is configured in driver domain mode, use the oakcli show vm vmname command. When the virtual machine is in driver mode, the output for the DriverDomain attribute is TRUE.



Example 15-47 Creating a Virtual Machine Image

Create a virtual machine image named myol6u_test from the virtual machine template named myol6u_15gbl, which is stored in the shared repository named repo2 on Node 0:

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

Example 15-48 Creating a Virtual Machine Image in Driver Domain Mode

Create a virtual machine image named myol6u_test from the virtual machine template named myol6u_15gb1, which is stored in the shared repository named repo2 on Node 0 in driver domain mode:

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

oakcli configure vm

Use the <code>oakcli configure vm</code> command to configure a virtual machine on Oracle Database Appliance Virtualized Platform and to increase or decrease resource allocation to user domains.

You must restart the domain for the resource allocation change to take effect.

Syntax

oakcli configure vm name [-vcpu cpucount -maxvcpu maxcpu -cpuprio priority -cpucap cap -memory memsize -maxmemory max_memsize -os sys -keyboard lang -mouse mouse_type -domain dom -network netlist -autostart astart -disk disks -bootoption bootstrap -cpupool pool -prefnode 0|1 -failover true|false][-h]

Parameters

Parameter	Description
name	The name assigned to the virtual machine.
-vcpu cpucount	Number of nodes assigned to the virtual machine. The range is 1 to 72. This number depends on your Oracle Database Appliance configuration
-maxvcpu <i>maxcpu</i>	Maximum number of CPUs that the virtual machine can consume. The range is 1 to 72. This number depends on your Oracle Database Appliance configuration.
-cpuprio priority	Priority for CPU usage, where larger values have higher priority. The range is 1 to 65535.
-cpucap <i>cap</i>	Percentage of a CPU the virtual machine can receive. The range is 10 to 100.
-memory memsize	Amount of memory given to the virtual machine: (1 to 248)G to (1to 760G) or (1 to 253952)M to (1 to 778240)M, based on RAM. The default is M.
-maxmemory max_memsize	Maximum amount of memory allowed for the virtual machine: (1 to 248)G to (1 to 760)G or (1-253952)M to (1-778240)M, based on RAM. The default is M.



Parameter	Description
-os sys	Operating system used by the virtual machine (WIN_2003, WIN_2008, WIN_7, WIN_VISTA, OTHER_WIN, OL_4, OL_5, OL_6, RHL_4, RHL_5, RHL_6, LINUX_RECOVERY, OTHER_LINUX, SOLARIS_10, SOLARIS_11, OTHER_SOLARIS, or NONE)
-keyboard lang	Keyboard used by virtual machine (en-us, ar, da, de, de-ch, en-gb, es, et, fi, fo, fr, fr-be, fr-ca, hr, hu, is, it, ja, lt, lv, mk, nl, nbe, no, pl, pt, pt-br, ru, sl, sv, th, or tr)
-mouse mouse_type	Mouse type used by the virtual machine (OS_DEFAULT, PS2_MOUSE, USB_MOUSE, or USB_TABLET)
-domain <i>dom</i>	 Domain type from the following options: Hardware virtualized guest (XEN_HVM) The kernel or operating system is not virtualization-aware and can run unmodified. Device drivers are emulated. Para virtualized guest (XEN_PVM) The guest is virtualization-aware and is optimized for a virtualized environment. PV guests use generic, idealized device drivers. Hardware virtualized guest (XEN_HVM_PV_DRIVERS) The PV drivers are hypervisor-aware and significantly reduce the overhead of emulated device input/output. Hardware virtualized guest (UNKNOWN)
-network netlist	MAC address and list of networks used by the virtual machine
-autostart astart	Startup option for virtual machine (always, restore, or never)
-disk <i>disks</i>	List of disks (slot, disktype, and content) used by virtual machine
-bootoption bootstrap	Boot option used to bootstrap the virtual machine (DISK or CDROM)
-cpupool pool	Named CPU pool assigned to the virtual machine
-prefnode 0 1	Preferred node on which the virtual machine will attempt to start (Node 0 or Node 1). This parameter is only valid for virtual machines created in shared repositories.
-failover true false	Allow (use the keyword "true") or disallow (use the keyword "false") the virtual machine to start or restart on a node other than the node defined by the <code>-prefnode</code> parameter. This parameter is only valid for virtual machines created in shared repositories.
-h	(Optional) Display help for using the command.

Usage Notes

- All of the parameters, except for name, are optional.
- You must include at least one optional parameter for the command to work.
- When you create a virtual machine, select the Processor Cap as a percentage, between 10 and 100%. The default is 100%. This value is then converted to a CPU utilization limit in the vm.cfg file for the virtual machine. The value set in the vm.cfg file limits the amount of CPU a guest is allowed to consume. If the Processor Cap is set at 100% in Oracle VM, then the value set in vm.cfg is 0, which means there is no limit to CPU utilization.



See Also:

Oracle VM release 3.1 documentation contains more information about the options in the preceding table. Access the library at the following URL:

http://docs.oracle.com/cd/E27300_01

For example, refer to 2.8. Virtual Machines for information about the the -domain *dom* options:

http://docs.oracle.com/cd/E27300_01/E27309/html/vmusg-ovm-vms.html

Changing the Number of Virtual CPUs

This command example changes the number of virtual CPUs to 3, and changes the virtual memory size to 4 GB in a virtual machine named odarep01:

oakcli configure vm odarep01 -vcpu 3 -memory 4196

oakcli delete vm

Use the oakcli delete vm command to delete a virtual machine.

Syntax

oakcli delete vm vm_name [-server node_number] [-h]

Parameters

Parameter	Description
vm vm_name	(Optional) Name of the virtual machine to be deleted
-server node_number	(Optional) Oracle Database Appliance node from which you want to remove the virtual machine. If this optional parameter is not included, then the virtual machine is removed from both nodes.
-h	(Optional) Display help for using the command.

Example

Delete the ovu22 virtual machine from Node 1:

oakcli delete vm ovu22 -server 1

oakcli migrate vm

Use the oakcli migrate vm command to migrate a currently running virtual machine to another node.

Syntax

oakcli migrate vm vmname [-h]



Parameters

Parameter	Description
vmname	Name of the virtual machine to be migrated
-h	(Optional) Display help for using the command.

oakcli modify vm

Use the oakcli modify vm command to modify an existing virtual machine.

Syntax

oakcli modify vm vmname [-attachvdisk|-deletenetworknetwork_name] [-s
key1:value1;key2:value2;...] [-addnetwork|-deletenetworknetwork_name] [-h]

Parameters

Parameter	Description
-attachvdisk <i>vdisk_name</i>	(Optional) Attaches the named VDisk (virtual disk) to the named virtual machine.
-detachvdisk <i>vdisk_name</i>	(Optional) Detaches the named VDisk disk from the named virtual machine.
-s key1:value1;key2:value 2;	(Optional) Identifies a message consisting of one or more semicolon separated key:value pairs to send to the ovmd utility. Each key and value is separated by a colon (:) and each key/value pair is separated from the next key/value pair by quotation marks.
- addnetwork <i>network_name</i>	(Optional) Adds a network to the named virtual machine.
- deletenetwork <i>network_n</i> ame	(Optional) Removes a network from the named virtual machine. This option is enabled only on Oracle Database Appliance X8-2 hardware models.
-h	(Optional) Displays help for using the command.

Usage Notes

- Do not use the -attachvdisk or the -detachvdisk option with the -addnetwork, -deletenetwork, or -s parameters.
- Include only one of the -addnetwork, -deletenetwork, or -s parameters when you use this command.

Example 15-49 Sending a Message to a Running Virtual Machine

Update the root user password for the gc_11g virtual machine:

oakcli modify vm gc_11g -s "com.oracle.linux.root-password:password"



oakcli show vm

Use the oakcli show vm command to display information about virtual machines.

Syntax

```
oakcli show vm [vm_name | -h]
```

Parameters

Parameter	Description
vm_name	(Optional) The name of the virtual machine for which details should be displayed. If you do not specify this parameter, then information for all the virtual machines is displayed.
-h	(Optional) Display help for using the command.

Usage Notes

When a virtual machine is configured in driver domain mode, the output of the oakcli show vm vmname command displays TRUE for the DriverDomain attribute.

Examples

Here are examples of how to use the oakcli show vm command.

Example 15-50 Displaying Details for All Virtual Machines

Display the virtual machine names, memory and vCPU allocations, status, virtual disks, and repository name for all virtual machines:

```
# oakcli show vm
```

NAME	NODENUM	${\tt MEMORY}$	VCPU	STATE REPOSITORY
<pre>sample5_odarepo1</pre>	0	2048	2	OFFLINE odarepol
<pre>sample6_odarepo1</pre>	0	2048	2	OFFLINE odarepo2
test1_odarepo1	0	2048	2	OFFLINE odarepol
test2_odarepo2	1	2048	2	OFFLINE odarepo2
vm1_odarepo1	0	4096	4	ONLINE odarepol
vm2_odarepo2	1	2048	2	OFFLINE odarepo2
win_vm1	0	1500	1	ONLINE odarepol

Example 15-51 Displaying Information for a Single Virtual Machine

Display information about the *vm1_odarepo1* virtual machine:

oakcli show vm vm1_odarepo1
Resource: vm1_odarepo1

AutoStart : restore CPUPriority : 100

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

rtualMachines/vml_odarepo1/System.i
mg,xvda,w||file:/OVS/Repositories/o

darepo1/VirtualMachines/vm1_odarepo

1/u01.img,xvdb,w

Domain : XEN_PVM ExpectedState : online FailOver : false IsSharedRepo false Keyboard : en-us 3000 MaxMemory : : 4 MaxVcpu Memory 4096 : OS_DEFAULT Mouse Name vml_odarepol

Networks : |mac=00:21:F6:00:00:E4|

NodeNum : 0

NodeNumStart :

OS : OL_5
PrivateIP : None
ProcessorCap : 100
RepoName : odarepo1
State : Online

TemplateName : otml_sample1_odarepo1

Vcpu : 4
cpupool : twocpu
vncport : 5901

oakcli show vmconsole

Use the $oakcli\ show\ vmconsole\ command$ to open a GUI virtual machine console to manage a specific virtual machine.

Syntax

oakcli show vmconsole vm_name [-h]

Parameters

Parameter	Description
vm_name	Name of the virtual machine for which you want to open a console.
-h	(Optional) Display help for using the command.

Example 15-52 Opening a Virtual Machine Console

Open a console for the virtual machine named vml_odarepol:

oakcli show vmconsole vm1_odarepo1



oakcli start vm

Use the oakcli start vm command to start a virtual machine on a node.

Syntax

oakcli start vm vm_name [-node node_number] [-d] [-h]

Parameters

Parameter	Description
vm_name	vm_name is the name of the virtual machine to be started.
-node node_number	Specifies the node on which to start the virtual machine. node_number is the number of the node where it is to be started, either 0 or 1. If -node is not specified, a virtual machine is started on both nodes.
-d	Provides details about the virtual machine starting procedure
-h	(Optional) Display help for using the command.

Example 15-53 Starting a Virtual Machine on Node 0

Start the virtual machine named vml_odarepol on Node 0.

oakcli start vm vm_odarepo1 -node 0

oakcli Virtual Machine Template Commands

Use the oakcli Virtual Machine template commands to list and manage virtual machine (VM) templates.

oakcli configure vmtemplate

Use the oakcli configure vmtemplate command to configure a virtual machine template on Oracle Database Appliance Virtualized Platform.

oakcli delete vmtemplate

Use the \mbox{oakcli} delete $\mbox{vmtemplate}$ command to delete a virtual machine template.

oakcli import vmtemplate

Use the ${\tt oakcli}$ import ${\tt vmtemplate}$ command to import virtual machine templates.

oakcli modify vmtemplate

Use the oakcli modify vmtemplate command to add networks to or delete networks from an existing virtual machine template.

oakcli show vmtemplate

Use the ${\tt oakcli\ show\ vmtemplate}$ command to display information about virtual machine templates.



oakcli configure vmtemplate

Use the oakcli configure vmtemplate command to configure a virtual machine template on Oracle Database Appliance Virtualized Platform.

Syntax

oakcli configure vmtemplate name [-vcpu cpucount -maxvcpu maxcpu - cpuprio priority -cpucap cap -memory memsize -maxmemory max_memsize -os sys -keyboard

lang -mouse mouse_type -domain dom -network netlist -disk disks][h]

Parameters

Parameter	Description
name	Name assigned to the virtual machine template
-vcpu cpucount	Number of nodes assigned to virtual machines cloned from the template.
-maxvcpu <i>maxcpu</i>	Maximum number of CPUs that virtual machines cloned from the template can consume.
-cpuprio priority	Priority for CPU usage, where larger values have higher priority (1 to 256).
-cpucap <i>cap</i>	Percentage of a CPU that virtual machines cloned from the template can receive (1 to 100).
-memory memsize	Amount of memory given to virtual machines cloned from the template (1G to 88 G or 1M to 90112M)
-maxmemory max_memsize	Maximum amount of memory allowed for virtual machines cloned from the template
-os sys	Operating system used by virtual machines cloned from the template (WIN_2003, WIN_2008, WIN_7, WIN_VISTA, OTHER_WIN, OL_4, OL_5, OL_6, RHL_4, RHL_5, RHL_6, LINUX_RECOVERY, OTHER_LINUX, SOLARIS_10, SOLARIS_11, OTHER_SOLARIS, or NONE)
-keyboard <i>lang</i>	Keyboard used by virtual machines cloned from the template (en-us, ar, da, de, de-ch, en-gb, es, et, fi, fo, fr, fr-be, fr-ca, hr, hu, is, it, ja, lt, lv, mk, nl, nbe, no, pl, pt, pt-br, ru, sl, sv, th, or tr)
-mouse mouse_type	Mouse type used by virtual machines cloned from the template (OS_DEFAULT, PS2_MOUSE, USB_MOUSE, or USB_TABLET)



Parameter	Description
-domain dom	Domain type from the following options:
	 Hardware virtualized guest (XEN_HVM)
	 The kernel or operating system is not virtualization-aware and can run unmodified.
	- Device drivers are emulated.
	 Para virtualized guest (XEN_PVM)
	 The guest is virtualization-aware and is optimized for a virtualized environment.
	- PV guests use generic, idealized device drivers.
	 Hardware virtualized guest (XEN_HVM_PV_DRIVERS)
	The PV drivers are hypervisor-aware and significantly reduce the overhead of emulated device input/output.
-network netlist	MAC address and list of networks used by virtual machines cloned from the template
-disk disks	List of disks (slot, disktype, and content) used by virtual machines cloned from the template
-h	(Optional) Display help for using the command.

Usage Notes

- All of the parameters, except for name, are optional.
- You must include at least one optional parameter for the command to work.

See Also::

Oracle VM Release 3.1 documentation, which is available at the following URL:

http://docs.oracle.com/cd/E27300_01 for more information about the options in the preceding table.

For example, see 2.8. Virtual Machines for details about the option -domain

http://docs.oracle.com/cd/E27300_01/E27309/html/vmusg-ovm-vms.html

Setting Values for a Virtual Machine

Set values for the following configuration values in the virtual machine template named $myo15u7_10gb$:

```
oakcli configure vmtemplate myol5u7_10gb
-vcpu 2 -maxvcpu 4 -cpucap 40 -memory 1536M -maxmemory 2G
-network "['type=netfront,bridge=net1']" -os OTHER_LINUX
```

- -vcpu 2 = Two CPUs will assigned when the virtual machine starts up
- -maxvcpu 4 = The maximum number of CPUs that can be assigned to the virtual machine is 4.



- -cucap 40 = The maximum percentage of a CPU's capacity that will be assigned to the virtual machine is 40%.
- -memory 1536M = The amount of memory assigned when the virtual machine starts up is 1536 MB.
- -maxmemory 2G = The maximum amount of memory that can be assigned to the virtual machine is 2 GB.
- -network type=netfront, bridge=net1 = This is the list of networks used by virtual machines cloned from the template.
- -os = The operating system used by the virtual machine is OTHER_LINUX.

oakcli delete vmtemplate

Use the oakcli delete vmtemplate command to delete a virtual machine template.

Syntax

oakcli delete vmtemplate template_name [-server=node_number][-h]

Parameters

Parameter	Description
template_name	Name of the virtual machine template to be removed
-server node_number	(Optional) Oracle Database Appliancenode from which you want to remove the virtual machine template. If this optional parameter is not included, then the virtual machine template is removed from both nodes.
-h	(Optional) Display help for using the command.

Example

Delete the ovu22 virtual machine template from both nodes:

oakcli delete vmtemplate ovu22

oakcli import vmtemplate

Use the oakcli import vmtemplate command to import virtual machine templates.

Syntax

oakcli import vmtemplate vmtemplatename -files $image_files$ | -assembly $assembly_file$ -repo $repo_name$ [- node 0 | 1][-h]

Parameters

Parameter	Description
vmtemplatename	Name that you want to assign to the template



Parameter	Description
-files	Use the -files option when importing one or more files that comprise a template.
image_files	<pre>image_files is one of the following:</pre>
	A single template file name
	 A comma-separated list of files that comprise a single template
	 A URL enclosed in single quotation marks that links to a template file
-assembly	Use the -assembly option when importing an assembly file.
assembly_file	An assembly file, or a URL enclosed in single quotation marks, that links to an assembly file
repo_name	Name of the repository to store the template or templates that you are importing
-node	When you are importing to a shared repository, use the -node option with a value of 0 or 1 to identify the node.
-h	(Optional) Display help for using the command.

Usage Notes

- Include only one of the options, -files or -assembly, each time you run this command. You cannot include both of these options in the same statement.
- If the command imports more than one template from an assembly, then each template will automatically be given a unique name. These template names will include the name given in the vmtemplate vmtemplatename clause followed by a sequence number, such as vmtemplatename1, vmtemplatename2, and vmtemplatename3.
- When importing into a shared repository, you must include the -node option with a valid node number, 0 or 1. Using the -node option for imports into non-shared repositories will cause the command to fail.

Examples

Here are examples of how to use the oakcli import vmtemplate command.

Example 15-54 Importing a Virtual Machine Template from Dom0

Import the required template (OVM_OL5U7_X86_64_PVM_10GB.tgz) from the /OVS directory in Dom0 into the odarepol repository and name the template file OL5U7:

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

Example 15-55 Importing a Virtual Machine Template from a Remote Server

Import a template from a remote server using a URL to identify the server and the template file:

oakcli import vmtemplate OL5U6 -files 'http://example.com/vm-template/OEL-5/OVM_OL5U6_X86_64_PVM_10GB.tgz' -repo odarepo2



Example 15-56 Importing Virtual Machine Templates from an Assembly on a Remote Server

Import the templates contained in the assembly file stored on a remote server at the URL provided into the odarepol repository:

oakcli import vmtemplate OL6U1 -assembly 'http://example.com/assemblies/ OEL6/OVM_OL6U1_x86_PVHVM.ova' -repo odarepo1

Example 15-57 Importing Virtual Machine Templates Into a Shared Repository From an Assembly on a Remote Server

Import the templates contained in the assembly file stored on a remote server at the URL provided into a shared repository named repo4 on Node 1:

oakcli import vmtemplate OL6U1 -assembly 'http://example.com/assemblies/ OEL6/OVM OL6U1 x86 PVHVM.ova' -repo repo4 -node 1

oakcli modify vmtemplate

Use the oakcli modify vmtemplate command to add networks to or delete networks from an existing virtual machine template.

Syntax

oakcli modify vmtemplate vmtemplatename [-addnetwork|deletenetworknetwork_name] [-h]

Parameters

Parameter	Description
- addnetworknetwork_name	(Optional) Adds a network to the named virtual machine template
- deletenetwork <i>network_n</i> ame	(Optional) Deletes a network from the named virtual machine template. This option is enabled only on Oracle Database Appliance X8-2 hardware models.
-h	(Optional) Displays help for using the command.

Example 15-58 Modifying the Network Defined in a Virtual Machine Template

Replace the network assigned to the gc_18c virtual machine template with the net1 network:

oakcli modify vmtemplate gc_18c -addnetwork net1



oakcli show vmtemplate

Use the <code>oakcli</code> show <code>vmtemplate</code> command to display information about virtual machine templates.

Syntax

```
oakcli show vmtemplate [vmtemplate_name | -h]
```

Parameters

Parameter	Description
vmtemplate_name	(Optional) The name of the virtual template for which details should be displayed. If you do not specify this parameter, then information for all of the virtual templates is displayed.
-h	(Optional) Display help for using the command.

Example 15-59 Display Information About a Virtual Template

Display information about the sample1_odarepo1 virtual template:

```
# oakcli show vmtemplate sample_odarepo1
Resource: sample1_odarepo1
      CPUPriority :
      Disks
                            file:/OVS/Repositories/odarepo1/Te
                            mplates/otml_sample1_odarepo1/Syste
                            m.img,xvda,w||file:/OVS/Repositorie
                            s/odarepo1/Templates/otml_sample1_o
                            darepo1/u01.img,xvdb,w
       Domain
                            XEN PVM
      Keyboard
                            en-us
      MaxMemory
                           2048
      MaxVcpu
                          2048
      Memory
                           OS_DEFAULT
      Mouse
                          sample1_odarepo1
      Name
       Networks
                           |bridge=priv1||bridge=net1||bridge=
                           net2
      NodeNum
                           OL 5
                          100
      ProcessorCap :
       RepoName :
                          odarepo1
       Vcpu
```

oakcli VLAN Management Commands for Virtual Platform

Use the oakcli VLAN commands to list and manage virtual local area networks (VLANs) on an Oracle Database Appliance virtualized platform.

oakcli create vlan

Use the oakcli create vlan command to create a new virtual local area network (VLAN) on an Oracle Database Appliance Virtualized Platform node.

oakcli delete vlan

Use the oakcli delete vlan command to delete a virtual local area network.



oakcli show vlan

Use the oakcli show vlan command to display information about virtual local area networks (VLANs) configured on Oracle Database Appliance.

oakcli create vlan

Use the <code>oakcli create vlan</code> command to create a new virtual local area network (VLAN) on an Oracle Database Appliance Virtualized Platform node.

Syntax

oakcli create vlan $vlan_name - vlanid tag_id - if interface_name - node 0 | 1 [-h]$

Parameters

Parameter	Description	
vlan_name	Name assigned to the VLAN.	
-vlanid tag_id	Tag number, used for packet routing, from 2 to 4096 inclusive. It uniquely identifies the VLAN on a node. You assign the ID and you can use the same tag number on both nodes.	
-if interface_name	Name of the interface on which the VLAN network is created	
-node 0 1	Node on which the VLAN is created, either Node0 or Node1.	
-h	(Optional) Display help for using the command.	

Usage Notes

- You can assign VLANs to ODA_BASE during the deployment.
- The VLAN for the ODA_BASE is created from DOM-0.
- Only execute the VLAN created in Dom-0 from Node0.
- VLAN creation in dom0 should be executed only from Node 0.

Examples

Here are examples of how to use the oakcli create vlan command.

Creating a New VLAN

Create a VLAN named sample10 on Node 1 using the bond1 interface and a tag with the number 10:

oakcli create vlan sample10 -vlanid 10 -if bond1 -node 1

Duplicating a VLAN on the Second Node

Create a VLAN named sample10 on Node 0:

oakcli create vlan sample10 -vlanid 10 -if bond1 -node 0



oakcli delete vlan

Use the oakcli delete vlan command to delete a virtual local area network.

Syntax

oakcli delete vlan vlan_name -node node_number [-h]

Parameters

Parameter	Description	
vlan vlan_name	Name of the virtual local area network to be deleted	
-node node_number	Oracle Database Appliance node from which you want to remove the virtual local area network	
-h	(Optional) Display help for using the command.	

Example

Delete the sample1 virtual local area network from Node 1:

oakcli delete vlan sample1 -node 1

oakcli show vlan

Use the <code>oakcli show vlan</code> command to display information about virtual local area networks (VLANs) configured on Oracle Database Appliance.

Syntax

oakcli show vlan [-h]

Parameter

(Optional) -h displays help for using the command.

Example 15-60 Displaying Details of Available Virtual Area Networks (VLANs)

Display the names, tag ID numbers, networks, and node assignments for the available virtual local area networks:

ŧ	oakcli show vlan			
	NAME	ID	INTERFACE	NODENUM
	net1	1	bond1	0
	net1	1	bond1	1
	net2	1	bond2	0
	net2	1	bond2	1
	net3	1	bond3	0
	net3	1	bond3	1
	net4	1	xbond0	0
	net4	1	xbond0	1



0 priv1 1 bond0 priv1 1 1 bond0



Troubleshooting Oracle Database Appliance

Understand tools you can use to validate changes and troubleshoot Oracle Database Appliance problems.

- Viewing Component Information on the Appliance
 View details of all the components installed on the appliance, and the RPM drift information.
- Errors When Logging into the Browser User Interface
 If you have problems logging into the Browser User Interface, then it may be due to your browser or credentials.
- Errors when re-imaging Oracle Database Appliance
 Understand how to troubleshoot errors that occur when re-imaging Oracle Database Appliance.
- Backup and Recovery for Oracle Database Appliance Upgrades on Virtualized Platform
 Perfect patching your deployment to Oracle Database Appliance release 10.9 a
 - Before patching your deployment to Oracle Database Appliance release 19.8 on virtualized platform, understand how you can take a backup before the upgrade and then restore from the backup, if necessary.
- Analyzing the Pre-Checks Report for Operating System Upgrades on Virtualized Platform
 - Understand the patching pre-checks report and the components checked during the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.
- Analyzing the Preupgrade Checks Report for Operating System Upgrades on Virtualized Platform
 - Understand the patching preupgrade checks report before performing the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.
- Analyzing the Post Upgrade Checks Report for Operating System Upgrades on Virtualized Platform
 - Understand the patching post upgrade checks report after performing the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.
- Using Oracle Autonomous Health Framework for Running Diagnostics
 Oracle Autonomous Health Framework collects and analyzes diagnostic data
 collected, and proactively identifies issues before they affect the health of your
 system.
- Running the Disk Diagnostic Tool
 Use the Disk Diagnostic Tool to help identify the cause of disk problems.
- Running the 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.

- Configuring a Trusted SSL Certificate for Oracle Database Appliance
 The Browser User Interface and DCS Controller use SSL-based HTTPS protocol
 for secure communication. Understand the implications of this added security and
 the options to configure SSL certificates.
- Disabling the Browser User Interface
 You can also disable the Browser User Interface. Disabling the Browser User
 Interface means you can only manage your appliance through the command-line
 interface.
- Preparing Log Files for 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.

Viewing Component Information on the Appliance

View details of all the components installed on the appliance, and the RPM drift information.

Viewing the Bill of Materials in the Browser User Interface

Use the Appliance tab in the Browser User Interface to view information about your deployment and the installed components. The Advanced Information tab displays information about the following components:

- Grid Infrastructure Version, and the home directory
- Database Version, Home location, and Edition
- Location and details about the databases configured
- All patches applied to the appliance
- · Firmware Controller and Disks
- ILOM information
- BIOS version
- List of RPMs

In the List of RPMs section, click **Show** and then click **RPM Drift** to view the differences between the RPMs installed on the appliance, and the RPMs shipped in the latest Oracle Database Appliance Patch Bundle Update release.

Click **Download** to save the components report. You can use this report to help diagnose any deployment issues.

Viewing the Bill of Materials from the Command Line

The bill of materials is also available through the command line for bare metal and virtualized platforms deployments. The information about the installed components is collected according to a set schedule, and stored in the location <code>/opt/oracle/dcs/Inventory/</code> for bare metal deployments and in the <code>/opt/oracle/oak/Inventory/</code> directory for virtualized platforms. The file is stored in the format <code>oda_bom_TimeStamp.json</code>. Use the command <code>describe-system</code> to view the bill of materials on the command line. See the <code>Oracle Database Command-Line Interface</code> chapter for command options and usage notes.



Example 16-1 Example Command to View the Bill of Materials from the Command Line for Bare Metal Deployments

odacli describe-system -b ODA Components Information _____ Component Name Component Details NODE Name : odal Domain Name : testdomain.com Time Stamp : April 21, 2020 6:21:15 AM UTC Installed RPMS : abrt-2.1.11-55.0.1.el7.x86_64, abrt-addonccpp-2.1.11-55.0.1.el7.x86_64, abrt-addonkerneloops-2.1.11-55.0.1.el7.x86_64, abrt-addonpstoreoops-2.1.11-55.0.1.el7.x86_64, abrt-addonpython-2.1.11-55.0.1.el7.x86_64, abrt-addonvmcore-2.1.11-55.0.1.el7.x86_64, abrt-addonxorg-2.1.11-55.0.1.el7.x86_64, abrtcli-2.1.11-55.0.1.el7.x86 64, abrt-consolenotification-2.1.11-55.0.1.el7.x86_64, abrtdbus-2.1.11-55.0.1.el7.x86_64, abrtlibs-2.1.11-55.0.1.el7.x86 64, abrtpython-2.1.11-55.0.1.el7.x86_64, abrttui-2.1.11-55.0.1.el7.x86_64, acl-2.2.51-14.el7.x86_64, adwaita-cursortheme-3.28.0-1.el7.noarch, adwaita-icontheme-3.28.0-1.el7.noarch, aic94xxfirmware-30-6.el7.noarch, aide-0.15.1-13.0.1.el7.x86_64, alsafirmware-1.0.28-2.el7.noarch, alsa-



lib-1.1.8-1.el7.x86_64, alsa-toolsfirmware-1.1.0-1.el7.x86_64, at-3.1.13-24.el7.x86_64, at-spi2atk-2.26.2-1.el7.x86_64, at-spi2core-2.28.0-1.el7.x86_64, atk-2.28.1-1.el7.x86_64, attr-2.4.46-13.el7.x86_64, audit-2.8.5-4.el7.x86_64, auditlibs-2.8.5-4.el7.x86_64, audit-libspython-2.8.5-4.el7.x86_64, augeaslibs-1.4.0-9.el7.x86_64, authconfig-6.2.8-30.el7.x86_64, autogenlibopts-5.18-5.el7.x86_64, avahilibs-0.6.31-19.el7.x86_64, basesystem-10.0-7.0.1.el7.noarch, bash-4.2.46-33.el7.x86_64, bashcompletion-2.1-6.el7.noarch, bc-1.06.95-13.el7.x86_64, bind-exportlibs-9.11.4-9.P2.el7.x86_64, bindlibs-9.11.4-9.P2.el7.x86_64, bind-libslite-9.11.4-9.P2.el7.x86_64, bindlicense-9.11.4-9.P2.el7.noarch, bindutils-9.11.4-9.P2.el7.x86_64, binutils-2.27-41.base.0.7.el7_7.2.x86_64, biosdevname-0.7.3-2.el7.x86_64, blktrace-1.0.5-9.el7.x86_64, bnxtnvm-1.40.10-1.x86_64, boost-datetime-1.53.0-27.el7.x86_64, boostfilesystem-1.53.0-27.el7.x86_64, boostiostreams-1.53.0-27.el7.x86_64,

. . . .

Example 16-2 Example Command to View the Bill of Materials from the Command Line for Virtualized Platforms

```
# oakcli describe-system -b
```

Example 16-3 Example Command to View the Bill of Materials Report from the Stored Location

```
# ls -la /opt/oracle/dcs/Inventory/
total 264
-rw-r--r-- 1 root root 83550 Apr 26 05:41
oda bom 2018-04-26 05-41-36.json
```

Errors When Logging into the Browser User Interface

If you have problems logging into the Browser User Interface, then it may be due to your browser or credentials.



Oracle Database Appliance uses self-signed certificates. Your browser determines how you log into the Browser User Interface. Depending on the browser and browser version, you may 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. Ensure that you accept the self-signed certificate for the agent and Browser User Interface.

Follow these steps to log into the Browser User Interface:

- 1. Open a browser window.
- 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 have not already set the <code>oda-admin</code> password, then a message is displayed, advising you to change the default password to comply with your system security requirements.
- 5. If you have not added an exception for the agent security certificate, then a message about accepting agent certificate is displayed.
- **6.** Using a different tab in your browser, go to the following URL: https://ODA-host-ip-address:7070/login
- Get the security certificate (or certificate), confirm the security exception, and add an exception.



8. Refresh the Browser User Interface URL: https://ODA-host-ip-address:7093/mgmt/index.html



If you have any issues logging into the Oracle Database Appliance Browser User Interface on browsers such as macOS Catalina and Google Chrome, then you may need to use any workaround as described on the official site for the product.

Related Topics

http://www.oracle.com/technetwork/indexes/products/browser-policy-2859268.html

Errors when re-imaging Oracle Database Appliance

Understand how to troubleshoot errors that occur when re-imaging Oracle Database Appliance.

If re-imaging Oracle Database Appliance fails, with old header issues such as errors in storage discovery, or in running GI root scripts, or disk group RECO creation, then use the force mode with cleanup.pl.

```
# cleanup.pl -f
```

To ensure that re-imaging is successful, remove the old headers from the storage disks by running the secure erase tool. Verify that the OAK/ASM headers are removed.

```
# cleanup.pl -erasedata
# cleanup.pl -checkHeader
```

Retry the re-imaging operation.

Related Topics

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



Backup and Recovery for Oracle Database Appliance Upgrades on Virtualized Platform

Before patching your deployment to Oracle Database Appliance release 19.8 on virtualized platform, understand how you can take a backup before the upgrade and then restore from the backup, if necessary.

Backing Up the ODA_BASE Domain

Follow these steps to take a backup of ODA_BASE, before applying the Oracle Database Appliance server patch on virtualized platform for this release of Oracle Database Appliance.

- 1. Login into domain0 as root user.
- 2. Stop the ODA_BASE domain.
 - \$ oakcli stop oda_base
- 3. Run the rsync command to take a backup of the ODA_BASE domain.

```
$ /usr/bin/rsync -test --delete --progress --exclude 'exclude
files' Source location: ODA_BASE location Target location: External
NFS storage to move the backup
```

For example:

```
$ /usr/bin/rsync -test --delete --progress --exclude *zip --exclude
*gz ' /OVS/Repositories/odabaseRepo /external
```

The above command backs up the /OVS/Repositories/odabaseRepo/ VirtualMachines/oakDoml directory to the external NFS directory, for example, /external.

You can also compress the /OVS/Repositories/odabaseRepo file to reduce the size, and then perform the rsync operation on the backup.tar.gz file. For example:

```
$ /bin/tar -zcvf backup.tar.gz /OVS/Repositories/odabaseRepo --
exclude=*.gz --exclude=*.zip
```

4. Start the ODA_BASE domain.

```
$ oakcli start oda_base
```

5. Repeat steps 1-4 on the ODA_BASE domain on the other node.

Restoring the ODA_BASE Domain

Follow these steps to restore the ODA_BASE domain from a backup.

1. Login into domain0 as root user.



2. Stop the ODA_BASE domain.

```
$ oakcli stop oda_base
```

3. Create directory, if it does not already exist.

```
$ mkdir -p /OVS/Repositories
```

4. Run the rsync command to copy the ODA BASE domain from the backup.

```
$ /usr/bin/rsync -vaz --delete --progress --exclude 'exclude files'
Backup location restore location
```

For example:

```
$ /usr/bin/rsync -vaz --delete --progress --exclude *zip --exclude
*gz /external/OVS/Repositories/
```

If the backup is a backup.tar.gz file, then transfer the file using the same method, and then uncompress the backup.tar.gz file. For example:

```
$ tar -zxvf backup.tar.gz -C /OVS/Repositories/odabaseRepo
```

The above command restores the backup of /OVS/Repositories/odabaseRepo/ VirtualMachines/oakDom1 directory to /OVS/Repositories/ from /external directory.

5. Start the ODA BASE domain.

```
$ oakcli start oda_base
```

6. Validate the environment using the oakcli validate command and ensure that ODA_BASE is functioning normally.

```
$ oakcli validate -d
```

Related Topics

 Analyzing the Pre-Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching pre-checks report and the components checked during the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.

 Analyzing the Preupgrade Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching preupgrade checks report before performing the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.



 Analyzing the Post Upgrade Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching post upgrade checks report after performing the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.

Analyzing the Pre-Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching pre-checks report and the components checked during the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.

When you patch your Oracle Database Appliance Virtualized Platform deployment to release 19.8, your operating system is upgraded to Oracle Linux 7. The patching pre-checks report contains a section on the operating system upgrade checks run, similar to the following:

```
# oakcli update -patch 19.8.0.0.0 --pre-patchreport --local
INFO: Running OS prepatch checks ...
INFO: Validate supported versions
SUCCESS: Validated minimum supported versions.
INFO: Validate patching tag
SUCCESS: Validated patching tag: 19.8.0.0.0
INFO: Is patch location available
SUCCESS: Patch location is available.
INFO: Space checks for OS upgrade
SUCCESS: Validated space checks.
INFO: Install OS upgrade software
INFO: This action migth take a while if packages need to be uncompressed
SUCCESS: Extracted OS upgrade patches into /root/oda-upgrade.
Do not remove this directory until OS upgrade completes.
INFO: Verify OS upgrade by running preupgrade checks
INFO: This operation will take long, please wait
SUCCESS: Results stored in: '/root/preupgrade-results/
preupg_results-200626121721.tar.gz' .
Read complete report file '/root/preupgrade/result.html' before
attempting OS upgrade.
INFO: Validate custom rpms installed
SUCCESS: No additional RPMs found installed
SUCCESS: All OS prepatch tasks ran correctly
INFO: Running Storage prepatch checks ...
INFO: Validate patching tag
SUCCESS: Validated patching tag: 19.8.0.0.0
INFO: Patch location validation
SUCCESS: Verified patch location.
INFO: Patch tag validation
SUCCESS: Verified patching tag.
INFO: Verify ASM disks status
SUCCESS: ASM disk are online.
SUCCESS: All Storage prepatch tasks ran correctly
```



SUCCESS: Pre patch report ended successfully

Following is a description of the pre-checks for the operating system upgrade. Note that you can override these pre-check failures with the --force flag, but it is is recommended that you fix these failures before proceeding with the operating system upgrade.

Operating System Checks

Validate supported versions: Validates that the current OAK version can be upgraded to the patch version.

Success message:

Validated minimum supported versions.

Error message:

Unable to get RPM version

Reason: RPM command failed or formatting is wrong.

Error message:

Current system is not up-to-date

Reason: -patch should be greater than current version and metadata file is used to confirm that upgrade is feasible.

Error message:

Could not get minimum compatible version

Reason: Could not determine the compatible version to upgrade from. Error message:

Current version current_oak_version is incompatible

Reason: The current *oak* version cannot be upgraded to -patch version. **Validate patching tag:** Validates that the -patch parameter has the correct format and that the metadata file exists.

Success message:

Validated patching tag: 19.8.0.0.0

Error message:

Supplied version patch is invalid.

Reason: Either the -patch format is invalid, or the metadata file does not exist.



Is patch location available: Make sure that the patching OS tools are available. The directory that contains oda-upgrade.tar and the OS upgrade resources must exist.

Success message:

Patch location is available.

Error message:

Unavailable location: /opt/oracle/oak/pkgrepos/oda-os-upgrade/

Reason: The location of the OS upgrade tools is not available. Error message:

Unavailable location: patch location

Reason: The location of the OS patch data is not available (OEL). **Validated space checks:** Checks the next space requirements. On ODA_BASE, checks for 7 GB of free space on /root, 150 MB of free space on /boot. On dom0, checks for 3 GB of free space on /root and 150 MB of free space on /boot.

Success message:

Validated space checks. Current node OS is up to date

Error message:

Minimum 7 GB free space required under "/root"

Reason: There is less than 7 GB free space on /root. Error message:

Minimum 150 MB free space required under "/boot"

Reason: There is less than 150 MB free space on /boot. Error message:

Dom 0 space checks failed

Reason: There is either less than 3 GB free space in the /root directory, or less than 150 MB free space in the /boot directory on dom0.

Install OS upgrade software: Prepares upgrade tools by extracting oda-upgrade.tar to /root.

Success message:

Extracted OS upgrade patches into /root/oda-upgrade.



Error message:

Minimum 5 Gb free space required under "/root" to extract the oda-upgrade.tar

Reason:There is not enough space to extract and run the oda-upgrade tools. Error message:

Component Metadata file or related is not accessible

Reason:The oda-upgrade metadata file is not available. Error message:

Could not extract file: oda-upgrade.tar

Reason: Error on tar command.

Error message:

Tar file extracted but oda-upgrade.sh does not exist

Reason: Tar file was extracted but the oda-upgrade.sh script is missing. **Verify operating system upgrade by running preupgrade checks:** This precheck runs the RHEL upgrade tool. Check the <code>/root/preupgrade/result.html</code> file and fix any critical failures before performing the operating system upgrade. Results are stored in <code>/root/preupgrade-results/preupg_results-200626121721.tar.gz</code>. Read the complete report file <code>/root/preupgrade/result.html</code> before attempting the operating system upgrade.

Success message:

Current node OS is up to date

Error message:

Not enough space on /root. At least 1 GB is required.

Reason: Not enough space to run the oda-upgrade script.

Error message:

Upgrade script is not available

Reason: oda-upgrade script not found.

Error message:

Could not store the name logFilename into our internal flat file

Reason: For some reason, the /root/oda-upgrade/.upgrade_log_file could not be written.



Error message:

Error executing upgradeos.exp: cmdResult

Reason: Expect command finished unsuccessfully. Error message:

User action is required, results are not successful.

Reason: The result.html file suggests that there are failed rules.

Validate custom RPMs installed: ODACLI handles upgrade of only those RPMs that are part of the Oracle Database Appliance operating system image, as listed in the versionlock file, or those included as part of the Oracle Database Appliance software, such as DCS and HMP RPMs, or those required to perform the operating system upgrade itself. As part of prechecks, any other Oracle supplied RPMs are listed in /root/oda-upgrade/rpms-added-from-Oracle and other third-party RPMs in /root/oda-upgrade/rpms-added-from-Thirdparty files respectively. For custom RPMs, you must separately upgrade these RPMs on each node after the operating system is successfully upgraded to Oracle Linux 7. These files are preserved in the same location after the operating system upgrade completes.

Success message:

No additional RPMs found installed Skip check for custom RPMs, as OS is OL7 Found additional RPMs installed warning: user is responsible for updating custom RPM files

Error message:

The custom rpm checks may not have run

Reason: The evidence that the rpm checks were performed could not be found.

Storage Checks

Validate patching tag: Validates that the -patch parameter has the correct format and that the metadata file exists.

Success message:

Validated patching tag: 19.8.0.0.0

Error message:

Supplied version patch is invalid.

Reason: Either the -patch format is invalid, or the metadata file does not exist.

patch location validation: Verifies that the metadata file exists.



Success message:

Verified patch location.

Error message:

System patch metadata does not exist.

Reason: Patch metadata file could not be found.

patch tag validation: Builds disk, expander, and controller patching tags from the metadata file.

Success message:

Verified patching tag.

Error message:

Firmware patches for storage components are not present.

Reason: Disk, expander or controller patching tag could not be generated using the available metadata.

Verify ASM disks status: If CRS is running, check that disks are online. If CRS is not running, this check is skipped.

Success message:

ASM disks are online. CRS is not running, skipping ASM check.

Error message:

One or more ASM disk are not online. Rolling storage update cannot proceed.

Reason: One or more Oracle ASM disks were not online at this stage. Error message:

Failed to get ASM disk status.

Reason: Oracle ASM check script failed.

Analyzing the Preupgrade Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching preupgrade checks report before performing the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.



The patching preupgrade checks report on Virtualized Platform checks that the virtual machines and shared repositories are stopped before the upgrade.

Update DOM0

If the DOM0 agent is updated, then the following message is displayed:

```
SUCCESS: dom0 agent updated
```

Action Required: If there is an error in the dom0 update, then review the logs to find out the reason, and re-run the pre-osupgrade step.

Stopping Vms and Repos on both nodes

If virtual machines and shared repositories are stopped on both nodes, then the following message is displayed:

```
SUCCESS: Repos and vms stopped
```

Action Required: If there is an error in stopping virtual machines and shared repositories, use <code>oakcli</code> commands to stop them manually, and then re-run the pre-osupgrade step.

Stopping CRS in local node

If Oracle Clusterware is stopped successfully on the local node, then the following message is displayed:

```
SUCCESS: CRS stopped in local node
```

Action Required: If a message Could not stop CRS is displayed, then check the log files and stop Oracle Clusterware manually, and re-run the pre-osupgrade step.

Check loop devices

If the operation to check loop devices on dom0 completed successfully, then the following message is displayed:

```
SUCCESS: Loop devices check passed
```

Action Required: If any error is encountered in this step, then run the command loseup -a on dom0 and verify there are extra loop devices besides the ODA BASE.

Sample Preupgrade Checks Report

Sample output from a system before the upgrade.

```
# oakcli update -patch 19.8.0.0.0 --pre-osupgrade --local
INFO: Trying to ping dom0 agent
INFO: dom0 agent is live
INFO: dom0 agent is not updated.
INFO: Updating dom0 agent, this will take a while...
SUCCESS: dom0 agent updated
INFO: Stopping Vms and Repos on both nodes. This may take a while...
```



```
SUCCESS: Repos and vms stopped
INFO: Disabling start repo
Start repo operation is now DISABLED on node 0
Start repo operation is now DISABLED on node 1
SUCCESS: Start repo disabled
INFO: Stopping CRS in local node
INFO: 2020-06-26 12:22:53: Clusterware is running on local node
INFO: 2020-06-26 12:22:53: Attempting to stop clusterware and its resources locally
SUCCESS: 2020-06-26 12:24:01: Successfully stopped the clusterware on local node
SUCCESS: CRS stopped in local node
SUCCESS: Loop devices check passed
SUCCESS: Pre-OSupgrade finished successfully
```

Analyzing the Post Upgrade Checks Report for Operating System Upgrades on Virtualized Platform

Understand the patching post upgrade checks report after performing the operating system upgrade when patching Oracle Database Appliance Virtualized Platform.

The patching post upgrade checks report on Virtualized Platform validates operating system upgrade, OAK upgrade, Oracle Grid Infrastructure upgrade, RPMs, and enabling of NFS service after upgrade.

Operating System Upgrade (OS upgrade check)

If the operating system is upgraded, then the following message is displayed:

```
SUCCESS: OS has been upgraded to 4.14.35-1902.303.4.1.el7uek successfully.
```

OAK Upgrade

If OAK is upgraded successfully, then the following message is displayed:

```
SUCCESS: ODA software has been upgraded to 19.8.0.0.0 successfully.
```

Oracle Grid Infrastructure (GI Upgrade Check)

If Oracle Grid Infrastructure version is current, then the following message is displayed:

```
SUCCESS: GI software is running at correct version: 18.8.0.0.191015(30112122,30581079).
```



RPM (Extra RPM Check)

If extra RPMS were discovered during the upgrade, then the following message is displayed:

```
WARNING: There are additional RPMs installed on the system WARNING: Please upgrade these RPMs.
```

Action Required: Check the directory /root/oda-upgrade/rpms-added-from-ThirdParty and /root/oda-upgrade/rpms-added-from-Oracle. Download and install the equivalent Oracle Linux 7 RPMs for all the RPMs listed in these directories.

Enable NFS Service

If NFS service is enabled successfully after upgrade, then the following message is displayed:

```
SUCCESS: NFS service has been started successfully
```

Action Required: If the error message ERROR: Cannot start NFS service is shown in the ouput, then check the NFS status using the command systemctl status nfs -1.

Sample Post Upgrade Checks Report

Sample output from a system after all upgrading all components.

```
# oakcli update -patch 19.8.0.0.0 --post-osupgrade --local
INFO: Validating OS version
SUCCESS: OS has been upgraded to 4.14.35-1902.303.4.1.el7uek
successfully.
INFO: Validating OAK version
SUCCESS: ODA software has been upgraded to 19.8.0.0.0 successfully.
INFO: Validating GI version
SUCCESS: GI software is running at correct version:
18.8.0.0.191015(30112122,30581079).
INFO: Starting CRS
CRS-4638: Oracle High Availability Services is online
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
INFO: Starting NFS service
SUCCESS: NFS service has been started successfully.
INFO: Removing ODA OS patching software
SUCCESS: ODA OS patching software has been removed
SUCCESS: Patching post-osupgrade command finished successfully
```



Using Oracle Autonomous Health Framework for Running Diagnostics

Oracle Autonomous Health Framework collects and analyzes diagnostic data collected, and proactively identifies issues before they affect the health of your system.

- About Installing Oracle Autonomous Health Framework
 Oracle Autonomous Health Framework is installed automatically when you
 provision or patch to Oracle Database Appliance release 19.8.
- Using the Oracle ORAchk Health Check Tool
 Run Oracle ORAchk to audit configuration settings and check system health.
- Generating and Viewing Oracle ORAchk Health Check Tool Reports in the Browser User Interface
 Generate Oracle ORAchk Health Check Tool reports using the Browser User Interface.
- Running Oracle Trace File Analyzer (TFA) Collector Commands
 Understand the installed location of tfactl and the options for the command.
- Sanitizing Sensitive Information in Diagnostic Collections
 Oracle Autonomous Health Framework uses Adaptive Classification and Redaction (ACR) to sanitize sensitive data.
- Sanitizing Sensitive Information in Oracle Trace File Analyzer Collections You can redact (sanitize or mask) Oracle Trace File Analyzer diagnostic collections.
- Sanitizing Sensitive Information in Oracle ORAchk Output You can sanitize Oracle ORAchk output.

About Installing Oracle Autonomous Health Framework

Oracle Autonomous Health Framework is installed automatically when you provision or patch to Oracle Database Appliance release 19.8.

When you provision or patch your appliance to Oracle Database Appliance release 19.8, Oracle Autonomous Health Framework is installed in the path /opt/oracle/dcs/oracle.ahf.

You can verify that Oracle Autonomous Health Framework is installed by running the following command:

```
[root@oak ~]# rpm -q oracle-ahf
oracle-ahf-193000-########.x86_64
```



When you provision or patch to Oracle Database Appliance release 19.8, Oracle Autonomous Health Framework automatically provides Oracle ORAchk Health Check Tool and Oracle Trace File Analyzer Collector.



Oracle ORAchk Health Check Tool performs proactive health checks for the Oracle software stack and scans for known problems. Oracle ORAchk Health Check Tool audits important configuration settings for Oracle RAC deployments in the following categories:

- Operating system kernel parameters and packages
- Oracle Database Database parameters, and other database configuration settings
- Oracle Grid Infrastructure, which includes Oracle Clusterware and Oracle Automatic Storage Management

Oracle ORAchk is aware of the entire system. It checks the configuration to indicate if best practices are being followed.

Oracle Trace File Collector 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, Oracle Database, 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)

Using the Oracle ORAchk Health Check Tool

Run Oracle ORAchk to audit configuration settings and check system health.



Before running ORAchk, check for the latest version of Oracle Autonomous Health Framework, and download and install it. See My Oracle Support Note 2550798.1 for more information about downloading and installing the latest verion of Oracle Autonomous Health Framework.

Running ORAchk on Oracle Database Appliance 19.8 Baremetal Systems for New Installation

When you provision or upgrade to Oracle Database Appliance 19.8, ORAchk is installed using Oracle Autonomous Framework in the directory /opt/oracle/dcs/oracle.ahf.

To run orachk, use the following command:

[root@oak bin]# 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. 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.

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.

Running ORAchk on Oracle Database Appliance 19.8 Virtualized Platform

When you provision or upgrade to Oracle Database Appliance 19.8, ORAchk is installed using Oracle Autonomous Framework in the directory /opt/oracle.ahf.

To run orachk, use the following command:

[root@oak bin]# oakcli orachk

Related Topics

https://support.oracle.com/rs?type=doc&id=2550798.1

Generating and Viewing Oracle ORAchk Health Check Tool Reports in the Browser User Interface

Generate Oracle ORAchk Health Check Tool reports using the Browser User Interface.

1. Log into the Browser User Interface with the oda-admin username and password.

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

- 2. Click the Monitoring tab.
- In the Monitoring page, on the left navigation pane, click ORAchk Report.On the ORAchk Reports page, a list of all the generated ORAchk reports is displayed.
- 4. In the Actions menu for the ORAchk report you want to view, click **View**.
 - The Oracle Database Appliance Assessment Report is displayed. It contains details of the health of your deployment, and lists current risks, recommendations for action, and links for additional information.
- To create an on-demand ORAchk report: On the ORAchk Reports page, click Create and then click Yes in the confirmation box.
 - The job to create an ORAchk report is submitted.
- Click the link to view the status of the job. Once the job completes successfully, you can view the Oracle Database Appliance Assessment Report on the ORAchk Reports page.
- To delete an ORAchk report: In the Actions menu for the ORAchk report you want to delete, click Delete.



Running Oracle Trace File Analyzer (TFA) Collector Commands

Understand the installed location of tfact1 and the options for the command.

About Using tfactl to Collect Diagnostic Information

When you provision or upgrade to Oracle Database Appliance 19.8, Oracle Trace File Analyzer (TFA) Collector is installed in the directory /opt/oracle.ahf/bin/tfactl. You can invoke the command line utility for TFA, tfactl from the directory /opt/oracle.ahf/bin/tfactl, or simply type tfactl.

You can use the following command options to run tfactl:

```
/opt/oracle.ahf/bin/tfactl diagcollect -ips|-oda|-odalite|-dcs|-
odabackup|
-odapatching|-odadataguard|-odaprovisioning|-odaconfig|-odasystem|-
odastorage|-database|
-asm|-crsclient|-dbclient|-dbwlm|-tns|-rhp|-procinfo|-afd|-crs|-cha|-
wls|
-emagent|-oms|-ocm|-emplugins|-em|-acfs|-install|-cfgtools|-os|-
ashhtml|-ashtext|
-awrhtml|-awrtext -mask -sanitize
```

Table 16-1 Command Options for tfactl Tool

Option	Description
-h	(Optional) Describes all the options for this command.
-ips	(Optional) Use this option to view the diagnostic logs for the specified component.
-oda	(Optional) Use this option to view the logs for the entire Appliance.
-odalite	(Optional) Use this option to view the diagnostic logs for the odalite component.
-dcs	(Optional) Use this option to view the DCS log files.
-odabackup	(Optional) Use this option to view the diagnostic logs for the backup components for the Appliance.
-odapatching	(Optional) Use this option to view the diagnostic logs for patching components of the Appliance.
-odadataguard	(Optional) Use this option to view the diagnostic logs for Oracle Data Guard component of the Appliance.
-odaprovisioning	(Optional) Use this option to view provisioning logs for the Appliance.
-odaconfig	(Optional) Use this option to view configuration-related diagnostic logs.



Table 16-1 (Cont.) Command Options for tfactl Tool

Option	Description
-odasystem	(Optional) Use this option to view system information.
-odastorage	(Optional) Use this option to view the diagnostic logs for the Appliance storage.
-database	(Optional) Use this option to view database- related log files.
-asm	(Optional) Use this option to view the diagnostic logs for the Appliance.
-crsclient	(Optional) Use this option to view the diagnostic logs for the Appliance.
-dbclient	(Optional) Use this option to view the diagnostic logs for the Appliance.
-dbwlm	(Optional) Use this option to view the diagnostic logs for the specified component.
-tns	(Optional) Use this option to view the diagnostic logs for TNS.
-rhp	(Optional) Use this option to view the diagnostic logs for Rapid Home Provisioning.
-afd	(Optional) Use this option to view the diagnostic logs for Oracle ASM Filter Driver.
-crs	(Optional) Use this option to view the diagnostic logs for Oracle Clusterware.
-cha	(Optional) Use this option to view the diagnostic logs for the Cluster Health Monitor.
-wls	(Optional) Use this option to view the diagnostic logs for Oracle WebLogic Server.
-emagent	(Optional) Use this option to view the diagnostic logs for the Oracle Enterprise Manager agent.
-oms	(Optional) Use this option to view the diagnostic logs for the Oracle Enterprise Manager Management Service.
-ocm	(Optional) Use this option to view the diagnostic logs for the specified component.
-emplugins	(Optional) Use this option to view the diagnostic logs for Oracle Enterprise Manager plug-ins.
-em	(Optional) Use this option to view the diagnostic logs for Oracle Enterprise Manager deployment.
-acfs	(Optional) Use this option to view the diagnostic logs for Oracle ACFS storage.
-install	(Optional) Use this option to view the diagnostic logs for installation.
-cfgtools	(Optional) Use this option to view the diagnostic logs for the configuration tools.



Table 16-1 (Cont.) Command Options for tfactl Tool

Option	Description
-os	(Optional) Use this option to view the diagnostic logs for the operating system.
-ashhtml	(Optional) Use this option to view the diagnostic logs for the specified component.
-ashtext	(Optional) Use this option to view the diagnostic logs for the Appliance.
-awrhtml	(Optional) Use this option to view the diagnostic logs for the Appliance.
-awrtext	(Optional) Use this option to view the diagnostic logs for the specified component.
-mask	(Optional) Use this option to choose to mask sensitive data in the log collection.
-sanitize	(Optional) Use this option to choose to sanitize (redact) sensitive data in the log collection.

Usage Notes

You can use Trace File Collector (the tfactl command) to collect all log files for the Oracle Database Appliance components.

You can also use the command odaadmcli manage diagcollect, with similar command options, to collect the same diagnostic information.

For more information about using the -mask and -sanitize options, see the next topic.

Sanitizing Sensitive Information in Diagnostic Collections

Oracle Autonomous Health Framework uses Adaptive Classification and Redaction (ACR) to sanitize sensitive data.

After collecting copies of diagnostic data, Oracle Trace File Analyzer and Oracle ORAchk use Adaptive Classification and Redaction (ACR) to sanitize sensitive data in the collections. ACR uses a Machine Learning based engine to redact a pre-defined set of entity types in a given set of files. ACR also sanitizes or masks entities that occur in path names. Sanitization replaces a sensitive value with random characters. Masking replaces a sensitive value with a series of asterisks ("**").

ACR currently sanitizes the following entity types:

- Host names
- IP addresses
- MAC addresses
- · Oracle Database names
- Tablespace names
- Service names
- Ports
- Operating system user names



ACR also masks user data from the database appearing in block and redo dumps.

Example 16-4 Block dumps before redaction

```
14A533F40 00000000 00000000 00000000 002C00000 [...............]
14A533F50 35360C02 30352E30 31322E37 380C3938 [..650.507.2189.8]
14A533F60 31203433 37203332 2C303133 360C0200 [34 123 7310,...6]
```

Example 16-5 Block dumps after redaction

Example 16-6 Redo dumps before redaction

```
col 74: [ 1] 80
col 75: [ 5] c4 0b 19 01 1f
col 76: [ 7] 78 77 06 16 0c 2f 26
```

Example 16-7 Redo dumps after redaction

```
col 74: [ 1] **
col 75: [ 5] ** ** ** **
col 76: [ 7] ** ** ** ** **
```

Redaction of Literal Values in SQL Statements in AWR, ASH and ADDM Reports

Automatic Workload Repository (AWR), Active Session History (ASH), and Automatic Database Diagnostic Monitor (ADDM) reports are HTML files, which contain sensitive entities such as hostnames, database names, and service names in the form of HTML tables. In addition to these sensitive entities, they also contain SQL statements, that can contain bind variables or literal values from tables. These literal values can be sensitive personal information (PI) stored in databases. ACR processes such reports to identify and redact both usual sensitive entities and literal values present in the SQL statements.

Sanitizing Sensitive Information Using odaadmcli Command

Use the odaadmcli manage diagcollect command to collect diagnostic logs for Oracle Database Appliance components. During collection, ACR can be used to redact (sanitize or mask) the diagnostic logs.

```
odaadmcli manage diagcollect [--dataMask|--dataSanitize]
```

In the command, the --dataMask option blocks out the sensitive data in all collections, for example, replaces myhost1 with *******. The default is None. The --dataSanitize option replaces the sensitive data in all collections with random characters, for example, replaces myhost1 with orzhmv1. The default is None.



Sanitizing Sensitive Information in Oracle Trace File Analyzer Collections

You can redact (sanitize or mask) Oracle Trace File Analyzer diagnostic collections.

Enabling Automatic Redaction

To enable automatic redaction, use the command:

```
tfactl set redact=[mask|sanitize|none]
```

In the command, the <code>-mask</code> option blocks out the sensitive data in all collections, for example, replaces <code>myhost1</code> with <code>*******</code>. The <code>-sanitize</code> option replaces the sensitive data in all collections with random characters, for example, replaces <code>myhost1</code> with <code>orzhmv1</code>. The <code>none</code> option does not mask or sanitize sensitive data in collections. The default is <code>none</code>.

Enabling On-Demand Redaction

You can redact collections on-demand, for example, tfact1 diagcollect -srdc ORA-00600 -mask or tfact1 diagcollect -srdc ORA-00600 -sanitize.

1. To mask sensitive data in all collections:

```
tfactl set redact=mask
```

2. To sanitize sensitive data in all collections:

```
tfactl set redact=sanitize
```

Example 16-8 Masking or Sanitizing Sensitive Data in a Specific Collection

```
tfactl diagcollect -srdc ORA-00600 -mask tfactl diagcollect -srdc ORA-00600 -sanitize
```

Sanitizing Sensitive Information in Oracle ORAchk Output

You can sanitize Oracle ORAchk output.

To sanitize Oracle ORAchk output, include the -sanitize option, for example, orachk -profile asm -sanitize. You can also sanitize post process by passing in an existing log, HTML report, or a zip file, for example, orachk -sanitize file_name.

Example 16-9 Sanitizing Sensitive Information in Specific Collection IDs

```
orachk -sanitize comma_delimited_list_of_collection_IDs
```

Example 16-10 Sanitizing a File with Relative Path

```
orachk -sanitize new/orachk_node061919_053119_001343.zip orachk is sanitizing
```



```
/scratch/testuser/may31/new/orachk_node061919_053119_001343.zip. Please
wait...

Sanitized collection is:
/scratch/testuser/may31/orachk_aydv061919_053119_001343.zip
orachk -sanitize ../orachk_node061919_053119_001343.zip
orachk is sanitizing
/scratch/testuser/may31/../orachk_node061919_053119_001343.zip. Please
wait...

Sanitized collection is:
/scratch/testuser/may31/orachk_aydv061919_053119_001343.zip
```

Example 16-11 Sanitizing Oracle Autonomous Health Framework Debug Log

```
orachk -sanitize new/orachk_debug_053119_023653.log orachk is sanitizing /scratch/testuser/may31/new/orachk_debug_053119_023653.log.
Please wait...

Sanitized collection is: /scratch/testuser/may31/orachk debug 053119 023653.log
```

Example 16-12 Running Full Sanity Check

```
orachk -localonly -profile asm -sanitize -silentforce

Detailed report (html) -
/scratch/testuser/may31/orachk_node061919_053119_04448/
orachk_node061919_053119_04448.html

orachk is sanitizing /scratch/testuser/may31/
orachk_node061919_053119_04448.
Please wait...

Sanitized collection is: /scratch/testuser/may31/
orachk_aydv061919_053119_04448

UPLOAD [if required] - /scratch/testuser/may31/
orachk_node061919_053119_04448.zip
```

To reverse lookup a sanitized value, use the command:

```
orachk -rmap all|comma_delimited_list_of_element_IDs
```

You can also use <code>orachk -rmap</code> to lookup a value sanitized by Oracle Trace File Analyzer.

Example 16-13 Printing the Reverse Map of Sanitized Elements

```
orachk -rmap MF_NK1,fcb63u2
```



Entity Type	Substituted Enti	ty Name Original E	ntity Name
dbname dbname	MF_NK1 fcb63u2	HR_DB1 rac12c2	
	1CD63U2	racizcz	

orachk -rmap all

Running the 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
```

Running the Oracle Database Appliance Hardware Monitoring Tool

The Oracle Database Appliance Hardware Monitoring Tool displays the status of different hardware components in Oracle Database Appliance server.

The tool is implemented with the Trace File Analyzer collector. Use the tool both on bare-metal and on virtualized systems. The Oracle Database Appliance Hardware Monitoring Tool reports information only for the node on which you run the command. The information it displays in the output depend on the component that you select to review.

Bare Metal Platform

You can see the list of monitored components by running the command odaadmclishow -h

To see information about specific components, use the command syntax odaadmcli show component, where component is the hardware component that you want to query. For example, the command odaadmcli show power shows information specifically about the Oracle Database Appliance power supply:



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 ${\tt oakcli}$ show ${\tt -h}$

To see information about specific components, use the command syntax <code>oakcli</code> show <code>component</code>, where <code>component</code> is the hardware component that you want to query. For example, the command <code>oakcli</code> show <code>power</code> shows information specifically about the Oracle Database Appliance power supply:

```
# oakcli show power
```

```
NAME HEALTH HEALTH_DETAILS PART_NO. SERIAL_NO.
Power Supply_0 OK - 7047410 476856F+1242CE0020
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.

Configuring a Trusted SSL Certificate for Oracle Database Appliance

The Browser User Interface and DCS Controller use SSL-based HTTPS protocol for secure communication. Understand the implications of this added security and the options to configure SSL certificates.

The Browser User Interface provides an added layer of security using certificates and encryption, when an administrator interacts with the appliance. Encryption of data ensures that:

- Data is sent to the intended recipient, and not to any malicious third-party.
- When data is exchanged between the server and the browser, data interception cannot occur nor can the data be edited.

When you connect to the Browser User Interface through HTTPS, the DCS Controller presents your browser with a certificate to verify the identity of appliance. If the



web browser finds that the certificate is not from a trusted Certificate Authority (CA), then the browser assumes it has encountered an untrusted source, and generates a security alert message. The security alert dialog boxes display because Browser User Interface security is enabled through HTTPS and SSL, but you have not secured your Web tier properly with a trusted matching certificate from a Certificate Authority. It is possible to purchase commercial certificates from a Certificate Authority or create your own and register them with a Certificate Authority. However, the server and browser certificates must use the same public certificate key and trusted certificate to avoid the error message produced by the browser.

There are three options to configure your certificates:

- Create your own key and Java keystore, ensure it is signed by a Certificate Authority (CA) and then import it for use.
- Package an existing Privacy Enhanced Mail (PEM) format key and certificates in a new Java keystore.
- Convert an existing PKCS or PFX keystore to a Java keystore and configure it for the Browser User Interface.



For Oracle Database Appliance High-Availability hardware models, run the configuration steps on **both** nodes.

The following topics explain how to configure these options:

- Option 1: Creating a Key and Java Keystore and Importing a Trusted Certificate
 Use keytool, a key and certificate management utility, to create a keystore and a
 signing request.
- Option 2: Packaging an Existing PEM-format Key and Certificates in a New Java Keystore
 Use the OpenSSL tool to package Privacy Enhanced Mail (PEM) files in a PKCS keystore.
- Option 3: Converting an Existing PKCS or PFX Keystore to a Java Keystore
 If you have an existing PKCS or PFX keystore for your server's domain, convert it
 to a Java keystore.
- Configuring the DCS Server to Use Custom Keystore
 After packaging or converting your keystore into Java keystore, configure the DCS server to use your keystore.
- Configuring the DCS Agent for Custom Certificate
 After you import the certificate into the keystore, configure the DCS agent to use
 the same certificate.

Option 1: Creating a Key and Java Keystore and Importing a Trusted Certificate

Use keytool, a key and certificate management utility, to create a keystore and a signing request.



1. Create the keystore:

keytool -genkeypair -alias your.domain.com -storetype jks -keystore your.domain.com.jks -validity 366 -keyalg RSA -keysize 4096

2. The command prompts you for identifying data:

- 1. What is your first and last name? your.domain.com
- 2. What is the name of your organizational unit? yourunit
- 3. What is the name of your organization? yourorg
- 4. What is the name of your City or Locality? yourcity
- 5. What is the name of your State or Province? yourstate
- 6. What is the two-letter country code for this unit? US

3. Create the certificate signing request (CSR):

```
keytool -certreq -alias your.domain.com -file your.domain.com.csr -keystore your.domain.com.jks -ext san=dns:your.domain.com
```

4. Request a Certificate Authority (CA) signed certificate:

- a. In the directory where you ran Step 1 above, locate the file your.domain.com.csr.
- **b.** Submit the file to your Certificate Authority (CA).

Details vary from one CA to another. Typically, you submit your request through a website; then the CA contacts you to verify your identity. CAs can send signed reply files in a variety of formats, and CAs use a variety of names for those formats. The CA's reply must be in PEM or PKCS#7 format.

- c. There may be a waiting period for the CA's reply.
- Import the CA's reply. The CA's reply will provide one PKCS file or multiple PEM files.
 - a. Copy the CA's files into the directory where you created the keystore in Step 1 above.
 - **b.** Use keytool to export the certificate from the keystore:

```
keytool -exportcert -alias your.domain.com -file /opt/oracle/dcs/
conf/keystore-cert.crt
-keystore your.domain.name.jks
```

6. Use keytool to import the keystore certificate and the CA reply files:

```
keytool -importcert -trustcacerts -alias your.domain.com
-file /opt/oracle/dcs/conf/keystore-cert.crt -keystore /opt/
oracle/dcs/conf/dcs-ca-certs
```

To import PKCS file, run the command:

```
keytool -importcert -trustcacerts -alias your.domain.com -file
CAreply.pkcs -keystore /opt/oracle/dcs/conf/dcs-ca-certs
```



CAreply.pkcs is the name of the PKCS file provided by the CA and your.domain.com is the complete domain name of your server.

If the CA sent PEM files, then there may be one file, but most often there are two or three. Import the files to your keystore with commands in the order shown below, after substituting your values:

```
keytool -importcert -alias root -file root.cert.pem -keystore /opt/
oracle/dcs/conf/dcs-ca-certs -trustcacerts
keytool -importcert -alias intermediate -file intermediate.cert.pem
/opt/oracle/dcs/conf/dcs-ca-certs -trustcacerts
keytool -importcert -alias intermediat2 -file intermediat2.cert.pem
/opt/oracle/dcs/conf/dcs-ca-certs -trustcacerts
keytool -importcert -alias your.domain.com -file server.cert.pem
/opt/oracle/dcs/conf/dcs-ca-certs -trustcacerts
```

root.cert.pem is the name of the root certificate file and intermediate.cert.pem is the name of the intermediate certificate file. The root and intermediate files link the CA's signature to a widely trusted root certificate that is known to web browsers. Most, but not all, CA replies include roots and intermediates.

server.cert.pem is the name of the server certificate file. The file links your domain name with your public key and the CA's signature.

Option 2: Packaging an Existing PEM-format Key and Certificates in a New Java Keystore

Use the OpenSSL tool to package Privacy Enhanced Mail (PEM) files in a PKCS keystore.

If you have an existing private key and certificates for your server's domain in PEM format, importing them into a Java keystore requires the OpenSSL tool. OpenSSL can package the PEM files in a PKCS keystore. Java keytool can then convert the PKCS keystore to a Java keystore.

- Install OpenSSL.
- 2. Copy your private key, server certificate, and intermediate certificate into one directory.
- 3. Package the key and certificates into a PKCS keystore as follows:

```
openssl pkcs12 -export -in server.cert.pem -inkey private.key.pem -certfile intermediate.cert.pem -name "your.domain.com" -out your.domain.com.p12
```

server.cert.pem is the name of the server certificate file, your.domain.com is the complete domain name of your server, private.key.pem is the private counterpart to the public key in server.cert.pem, and intermediate.cert.pem is the name of the intermediate certificate file.

Convert the resulting PKCS keystore file, your.domain.com.p12 into a Java keystore.



Option 3: Converting an Existing PKCS or PFX Keystore to a Java Keystore

If you have an existing PKCS or PFX keystore for your server's domain, convert it to a Java keystore.

1. Run the command:

```
keytool -importkeystore -srckeystore your.domain.com.p12 -srcstoretype PKCS12 -destkeystore /opt/oracle/dcs/conf/dcs-ca-certs -deststoretype jks
```

your.domain.com.p12 is the existing keystore file and your.domain.com is the complete domain name of your server.

2. Configure the DCS server as explained in the topic *Configuring the DCS Server to Use Custom Keystore*.

Configuring the DCS Server to Use Custom Keystore

After packaging or converting your keystore into Java keystore, configure the DCS server to use your keystore.

1. Login to the appliance.

```
ssh -l root oda-host-name
```

2. Generate the obfuscated keystore password:

```
java -cp /opt/oracle/dcs/bin/dcs-controller-n.n.n.-SNAPSHOT.jar
org.eclipse.jetty.util.security.Password keystore-password
```

For example:

```
[root@oda]# java -cp /opt/oracle/dcs/bin/dcs-controller-2.4.18-
SNAPSHOT.jar
org.eclipse.jetty.util.security.Password test
12:46:33.858 [main] DEBUG org.eclipse.jetty.util.log
- Logging to Logger[org.eclipse.jetty.util.log] via
org.eclipse.jetty.util.log.Slf4jLog
12:46:33.867 [main] INFO org.eclipse.jetty.util.log
- Logging initialized @239ms to org.eclipse.jetty.util.log.Slf4jLog
test
OBF:1z0f1vu91vv11z0f
MD5:098f6bcd4621d373cade4e832627b4f6
[root@scaoda7s001 conf]#
```

Copy the password that starts with OBF:.



3. Update the DCS controller configuration file.

```
cd /opt/oracle/dcs/conf
```

Update the following parameters in dcs-controller.json:

```
"keyStorePath": "keystore-directory-path/your.domain.com.jks"
"trustStorePath": /opt/oracle/dcs/conf/dcs-ca-certs
"keyStorePassword": "obfuscated keystorepassword"
"certAlias": "your.domain.com"
```

4. Restart the DCS Controller.

```
systemctl stop initdcscontroller
systemctl start initdcscontroller
```

Access the Browser User Interface at https://oda-host-name:7093/mgmt/index.html.

Configuring the DCS Agent for Custom Certificate

After you import the certificate into the keystore, configure the DCS agent to use the same certificate.

1. Update the DCS agent configuration file:

```
cd /opt/oracle/dcs/conf
```

Update the following parameters in the dcs-agent.json file:

```
"keyStorePath": "keystore-directory-path/your.domain.com.jks"
"trustStorePath": /opt/oracle/dcs/conf/dcs-ca-certs
"keyStorePassword": "obfuscated keystorepassword"
"certAlias": "your.domain.com"
```

Restart the DCS agent:

```
systemctl stop initdcsagent
systemctl start initdcsagent
```

- **3.** Access the agent at https://oda-host-name:7070.
- Update the CLI certificates.

```
cp -f /opt/oracle/dcs/conf/dcs-ca-certs
/opt/oracle/dcs/dcscli/dcs-ca-certs
```

5. Update the DCS command-line configuration files:

```
[root@]# cd /opt/oracle/dcs/dcscli
```



Update the following parameters in dcscli-adm.conf and dcscli.conf:

TrustStorePath=/opt/oracle/dcs/conf/dcs-ca-certs
TrustStorePassword=keystore_password

Disabling the Browser User Interface

You can also disable the Browser User Interface. Disabling the Browser User Interface means you can only manage your appliance through the command-line interface.

1. Log in to the appliance:

```
ssh -l root oda-host-name
```

Stop the DCS controller. For High-Availability systems, run the command on both nodes.

systemctl stop initdcscontroller

Preparing Log Files for 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.

You can collect diagnostic information for your appliance in the following ways:

- Use the Bill Of Materials report saved in the /opt/oracle/dcs/Inventory/ directory, to enable Oracle Support to help troubleshoot errors, if necessary.
- You can use Trace File Collector (the tfact1 command) to collect all log files for the Oracle Database Appliance components.
- Use the command odaadmcli manage diagcollect to collect diagnostic files to send to Oracle Support Services.

The odaadmcli manage diagcollect 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.

Example 16-14 Collecting log file information for a time period, masking sensitive data

```
# odaadmcli manage diagcollect --dataMask --fromTime 2019-08-12 --
toTime 2019-08-25
DataMask is set as true
FromTime is set as: 2019-08-12
ToTime is set as: 2019-08-25
TFACTL command is: /opt/oracle/tfa/tfa_home/bin/tfactl
Data mask is set.
Collect data from 2019-08-12
Collect data to 2019-08-25
```



A

Oracle Database Appliance Software Configuration Defaults

Oracle Database Appliance software configuration defaults.

- Directory Paths for Oracle Database Appliance
 Locate the storage and mount configuration file paths for Oracle Database
 Appliance.
- Location of Log Files
 Log files are available for actions performed in the command-line interface and
 Browser User Interface and are useful when you need to track and debug jobs.
- Oracle Groups and User Configurations for Oracle Database Appliance
 Review the groups and default users when you use the Browser User Interface to
 deploy the appliance. All passwords are set to the password that you define during
 deployment.

Directory Paths for Oracle Database Appliance

Locate the storage and mount configuration file paths for Oracle Database Appliance.

Oracle homes on Oracle Database Appliance follow Optimal Flexible Architecture guidelines.

Directory Paths for Oracle Database Appliance

Item	Directory Path
Grid home	/u01/app/release-specific_name/gi owner
Grid base	/u01/app/gi owner
Oracle home	/u01/app/rdbms owner/product/rdbms_version/ dbhome_home_sequence_number
Oracle base	/u01/app/rdbms owner
Oracle Inventory	/u01/app/oraInventory
Java Runtime Environment (JRE)	<pre>/opt/oracle/dcs/java/ release_specific_JRE_version/</pre>
Java SDK	/opt/oracle/dcs/odajavasdk/



Location of Log Files

Log files are available for actions performed in the command-line interface and Browser User Interface and are useful when you need to track and debug jobs.

You can also use the Oracle Appliance Manager Browser User Interface to view job activity, including the tasks that make up the job. The status of each task appears in the Browser User Interface and you can drill down to get greater details.

If you log a Service Request, upload all of the logs in the $\protect\operatorname{\mathsf{Nopt/oracle/dcs/log}}$ directory.

Patching Log Files

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

DCS Agent Log Directories

Agent-specific activities are logged in the dcs-agent log.

The DCS Agent, controller, and command-line interface output appear in the directory /opt/oracle/dcs/log/.

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.

Database alert logs are stored in the location <code>\$ORACLE_BASE/diag/rdbms/database_unique_name</code>.



Oracle Auto Service Request (Oracle ASR) Log Files

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

Oracle Groups and User Configurations for Oracle Database Appliance

Review the groups and default users when you use the Browser User Interface to deploy the appliance. All passwords are set to the password that you define during deployment.

Default Operating System Groups and User Configurations

Table A-1 Default Operating System Groups and Users Configuration for Oracle Database Appliance

Groups and Users	Default Value
Oracle Grid Infrastructure installation owner	grid, UID 1001
Oracle Database installation owner	oracle, UID 1000
Oracle Database system administrator	sys
Oracle Database generic administrator	system
Oracle Inventory system privileges group	oinstall, GID 1001
Oracle ASM Administrators system privileges	asmadmin, GID 1004
Oracle ASM Users system privileges	asmdba, GID 1006
Oracle ASM Operator system privileges	asmoper, GID 1005
Oracle Database Administrators system privileges	dba, GID 1003
Oracle Database Operator system privileges	dbaoper, GID 1002

Oracle Groups and User Configurations

You can use the Browser User Interface or the odacli create-appliance command and a JSON file to deploy the appliance. The following configurations are supported:

- 2 Users with 6 groups (operating system role separation)
- Single User with 6 groups (no operating system role separation)
- Single user with 2 groups (no operating system role separation)

You can customize groupname, username, and UID.



B

Oracle Database Appliance Storage Defaults

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

- Database Disk Group Sizes for Oracle Database Appliance
 The table in this section shows the sizes for DATA, RECO, REDO, and FLASH disk groups on various configurations of Oracle Database Appliance.
- Usable Storage on Oracle Database Appliance X5-2
 The table shows the usage storage available for various configurations of Oracle Database Appliance X5-2.
- 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.
- Oracle ACFS Mount Points and Storage Space
 Review Oracle ASM Cluster file system (ACFS) mount points for Oracle Database
 Appliance.
- Oracle ACFS Space Management
 The Oracle ACFS file systems are automatically created when you create a database on Oracle Database Appliance.

Database Disk Group Sizes for Oracle Database Appliance

The table in this section shows the sizes for DATA, RECO, REDO, and FLASH disk groups on various configurations of Oracle Database Appliance.

Each table row has values for either normal or for high redundancy levels. The disk capacities shown in the tables vary, because they are derived by converting disk hardware terabytes (based on 1 kilobyte equals 1,000 bytes) into data storage terabytes (based on 1 kilobyte equals 1,024 bytes).

The space calculated with a storage expansion shelf approximately doubles the space mentioned in these tables.

Table B-1 Approximate Database Disk Group Sizes for Oracle Database Appliance X5-2 and X6-2-HA

Sizing	X5-2 (GB), 4 TB	X5-2 (GB), 8 TB	X6-2-HA (GB), 8 TB
HDD Size	3,816	7,631	7,631
Total HDD	61,056	122,096	122,096
Total SSD (REDO Disk Group)	744	744	744

Table B-1 (Cont.) Approximate Database Disk Group Sizes for Oracle Database Appliance X5-2 and X6-2-HA

Sizing	X5-2 (GB), 4 TB	X5-2 (GB), 8 TB	X6-2-HA (GB), 8 TB
Total SSD (FLASH Disk Group)	1,492	1,492	1,492
Total HDD with High Redundancy	20,352	40,699	40,699
Total HDD with Normal Redundancy	30,528	61,048	61,048
DATA Disk Group with High Redundancy - External Backup	15,315	30,626	30,626
RECO Disk Group with High Redundancy - External Backup	2,493	4,986	
DATA Disk Group with High Redundancy - Local Backup	7,473	16,407	 16,407
RECO Disk Group with High Redundancy - Local Backup	9,906	21,748	 21,748
DATA Disk Group with Normal Redundancy - External Backup	24,513	49,220	49,220
RECO Disk Group with Normal Redundancy - External Backup	4,007	8,013	8,013
DATA Disk Group with Normal Redundancy - Local Backup	12,307	24,610	 24,610
RECO Disk Group with Normal Redundancy - Local Backup	15,920	32,623	32,623
REDO Disk Group	248	248	 248
FLASH Disk Group	746	746	

Note:

- 1. For non-CDB databases, the REDO disk group has 50% free disk space.
- 2. For CDB databases, an Oracle ACFS mount point is created per CDB database, based on the template log file size. If this is a Single Instance (SI) database, then multiply by 3. If the is an Oracle RAC database, then multiply by 4.
- **3.** Accelerator volume size is 0.4% of the database DATA Oracle ACFS file system size and shared REPO Oracle ACFS file system size.

Note:

High Redundancy is triple-mirroring and Normal Redundancy is double-mirroring. The REDO Disk Group is always High Redundancy. The FLASH Disk Group is always Normal Redundancy.



See Also:

Oracle Automatic Storage Management Administrator's Guide, "Managing Capacity in Disk Groups" for more information about determining the amount of free space in your Oracle Database Appliance disk groups for Oracle ASM. The tables in this topic only provide the raw disk information.

Usable Storage on Oracle Database Appliance X5-2

The table shows the usage storage available for various configurations of Oracle Database Appliance X5-2.

The reserved storage is the amount of 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 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. Refer to *Oracle Automatic Storage Management Administrator's Guide* for more information about ASM disk group capacity.

Table B-2 Usable Storage on Oracle Database Appliance X5-2

Sizing	Raw Value (GB)	Reserve (GB)	Usable (GB)
Total SSD (REDO Disk Group)	764	191	191
(based on an estimated 190,780 GB)			
See the Note.			
Total SSD (FLASH Disk Group)	1,528	382	573
(based on an estimated 3,816 GB)			
HDD Size: 8 TB	7,631		
External Backup/Normal Redundancy (86%/14% split)			
DATA Disk Group with Normal Redundancy - External Backup	105,003	6,563	49,220
RECO Disk Group with Normal Redundancy - External Backup	17,093	1,068	8,013
External Backup/ High Redundancy			
DATA Disk Group with High Redundancy - External Backup	105,003	13,125	30,626
RECO Disk Group with High Redundancy - External Backup	17,093	2,137	4,986
Internal Backup/Normal Redundancy (43%/57% split)			
DATA Disk Group with Normal Redundancy - Internal Backup	52,501	3,281	24,610
RECO Disk Group with Normal Redundancy - Internal Backup	69,595	4,350	32,623
Internal Backup/ High Redundancy			
DATA Disk Group with High Redundancy - Internal Backup	52,501	3,281	16,407
RECO Disk Group with High Redundancy - Internal Backup	69,595	4,350	21,748



Table B-2 (Cont.) Usable Storage on Oracle Database Appliance X5-2

Sizing	Raw Value (GB)	Reserve (GB)	Usable (GB)
HDD Size: 4 TB	3,816		
(Total: HDD Raw: 59,584 GB)			
External Backup/Normal Redundancy (86%/14% split)			
DATA Disk Group with Normal Redundancy - External Backup	52,508	3,282	24,613
RECO Disk Group with Normal Redundancy - External Backup	8,548	534	4,007
External Backup/ High Redundancy			
DATA Disk Group with High Redundancy - External Backup	52,508	6564	15,315
RECO Disk Group with High Redundancy - External Backup	8,548	1,068	2,493
Internal Backup/Normal Redundancy (43%/57% split)			
DATA Disk Group with Normal Redundancy - Internal Backup	26,254	1,641	12,307
RECO Disk Group with Normal Redundancy - Internal Backup	33,963	2,123	15,920
Internal Backup/High Redundancy			
DATA Disk Group with High Redundancy - Internal Backup	25,621	3,203	7,473
RECO Disk Group with High Redundancy - Internal Backup	33,963	4,245	9,906

Related Topics

Administering Oracle ASM Disk Groups

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

With Oracle ASM, database data files are stored in DATA diskgroup. Redo and archive files are in RECO diskgroup.

About Oracle ACFS Database Storage

With Oracle ACFS, an Oracle ACFS file system is created from DATA diskgroup for each database to store data files, and an Oracle ACFS file system is created from RECO diskgroup for redo and fast recovery area for all databases.



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-3 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/datdbname-nnn For example: /dev/asm/	/u02/app/oracleuser/oradata/ dbname
		datodacn-123	For example: /u02/app/example/ oradata/odacn
RECO	+RECO	/dev/asm/reco-nn	/u03/app/ <i>oracleuser</i>
			This mount point is shared by all databases for fast_recovery_area and redo logs.
			For fast_recovery_area, the path is: /u03/app/oracleuser/fast_recovery_area/db_name
			For redo logs, the path is: /u03/app/ oracleuser/redo/db_name

Example B-1 Oracle ACFS Storage Space

When the Oracle ACFS file systems are created, they do not initially consume all of the storage in the appliance. Space is preserved for additional repositories, or in some cases, database files stored directly in Oracle ASM. You can check for available storage space in your file systems by running the operating system command $\tt df - \tt k$ 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	L		
/dev/asm/datndb12-268	104857600	247160	104610440
1% /u02/app/oracle/oradata/ndb12	2		

Oracle ACFS Space Management

The Oracle ACFS file systems are automatically created when you create a database on Oracle Database Appliance.

When you use Oracle ACFS for database storage, the following is 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.

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 $\tt df - \tt k$ 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 1% /u02/app/oracle/oradata/ndb12

104857600

247160

104610440



C

Creating an Appliance Using JSON File

Understand the process to create an appliance using the command odacli create-appliance and view an example JSON file.

- Loading and Saving Appliance Configurations
 You can load a saved JSON file and use it to configure your appliance, and save
 an existing configuration as a JSON file from the Browser User Interface.
- Readme for the Command odacli create-appliance
 If you want to create the appliance outside of the Browser User Interface, then review the readme file for details on how to create a JSON file to use with the command-line interface.
- Example JSON Files to Create a Single Node Appliance with the CLI Follow these JSON file examples to create a JSON file to deploy a single node appliance with the command odacli create-appliance.
- Example JSON File to Create a Multi-Node Appliance with the CLI Follow the JSON file example to create a JSON file to deploy a multi-node appliance with the command odacli create-appliance.

Loading and Saving Appliance Configurations

You can load a saved JSON file and use it to configure your appliance, and save an existing configuration as a JSON file from the Browser User Interface.

Using a Saved Configuration to Create a New Appliance in the Browser User Interface

You can load a saved configuration from your client machine, and create a new appliance.

- 1. Log into the Browser User Interface.
- 2. In the Create Appliance page, click **Browse** next to Load Configuration.
- Select the JSON file from the local machine, being used to access the Browser User Interface.
- **4.** The appliance configuration values from the JSON file are populated in the fields on the Create Appliance page.
- Make any changes required, and submit the request to create the appliance Note that for security requirements, you must enter passwords manually.

Saving an Appliance Configuration from the Browser User Interface

You can save an appliance configuration and use it to create another appliance.

- 1. Log into the Browser User Interface.
- 2. If you have already configured your appliance, then in the Create Appliance page, click **Save Configuration**.

The configuration is saved as a JSON file on the local machine, being used to access the Browser User Interface.

Readme for the Command odacli create-appliance

If you want to create the appliance outside of the Browser User Interface, then review the readme file for details on how to create a JSON file to use with the command-line interface.

You can use the command odacli create-appliance and a JSON file that includes your appliance configuration settings to deploy the appliance instead of using the Browser User Interface.



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

Readme

The readme is located in the <code>/opt/oracle/dcs/sample</code> directory. Review the readme carefully along with the provided JSON example files. Create a JSON file with the necessary changes based on your environment and requirements.

Example JSON Files to Create a Single Node Appliance with the CLI

Follow these JSON file examples to create a JSON file to deploy a single node appliance with the command odacli create-appliance.

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



If you do not enter your network and Oracle ILOM information correctly based on your setup, then network access is lost to both the host and Oracle ILOM.

When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.



Example C-1 JSON File to Create a Single Node Oracle Database Appliance with Role Separation

The following is an example of a JSON file that creates a single node appliance on Oracle Database Appliance. The example uses role separation.

```
"instance" : {
 "name" : "odambox",
  "instanceBaseName" : "odambox-c",
  "dbEdition" : "EE",
  "timeZone" : "UTC",
  "ntpServers" : ["10.0.3.14"],
  "dnsServers" : ["10.0.4.10","10.0.4.11","10.0.4.12"],
  "domainName" : "example.com",
  "isRoleSeparated" : true,
  "osUserGroup" : {
    "groups" : [ {
      "groupId" : 1001,
      "groupName" : "oinstall",
      "groupRole" : "oinstall"
    }, {
      "groupId" : 1002,
      "groupName" : "dbaoper",
      "groupRole" : "dbaoper"
    }, {
      "groupId" : 1003,
      "groupName" : "dba",
      "groupRole" : "dba"
    }, {
      "groupId" : 1004,
      "groupName" : "asmadmin",
      "groupRole" : "asmadmin"
    }, {
      "groupId" : 1005,
      "groupName" : "asmoper",
      "groupRole" : "asmoper"
    }, {
      "groupId" : 1006,
      "groupName" : "asmdba",
      "groupRole" : "asmdba"
    } ],
    "users" : [ {
      "userId" : 1000,
      "userName" : "oracle",
      "userRole" : "oracleUser"
    }, {
      "userId" : 1001,
      "userName" : "grid",
      "userRole" : "gridUser"
    } ]
  }
},
"nodes" : [ {
  "nodeNumber" : "0",
```



```
"nodeName" : "odambox",
  "network" : [ {
     "nicName" : "btbond1",
     "ipAddress" : "10.0.1.11",
     "subNetMask" : "255.255.240.0",
     "gateway" : "10.0.0.1",
     "networkType" : [ "Public" ],
     "isDefaultNetwork" : true
    },
 ],
  "ilom" : {
    "ilomName": "odambox-c",
    "ipAddress": "10.0.2.10",
    "subNetMask": "255.255.240.0",
    "gateway":"10.0.0.1"
  }
} ],
"grid" : {
  "diskGroup" : [ {
    "diskGroupName" : "DATA",
    "redundancy" : "NORMAL",
    "diskPercentage" :80
 }, {
    "diskGroupName" : "RECO",
    "redundancy" : "NORMAL",
    "diskPercentage" :20
 } ],
"scan" : {
   "scanName": "odambox-scan",
   "ipAddresses":[
  "10.0.1.11"
  ]
 },
"vip":[
  {
  "nodeNumber": "0",
  "vipName": "odambox-vip",
  "ipAddress":"10.0.1.11"
  }
 ],
  "language" : "en",
  "enableAFD":"TRUE"
},
"database" : {
  "dbName" : "myTestDb",
  "databaseUniqueName": "myTestDb_sealkj",
  "dbEdition" : "EE",
  "dbVersion" : "12.2.0.1",
  "dbHomeId":null,
  "instanceOnly" : false,
  "isCdb" : true,
  "pdBName" : "pdb1",
  "pdbAdminuserName" : "pdbuser",
  "enableTDE":true,
  "adminPassword" : "password",
```

```
"dbType" : "SI",
    "dbTargetNodeNumber" : null,
    "dbClass" : "OLTP",
    "dbShape" : "odb1",
    "dbStorage" : "ACFS",
    "dbCharacterSet" : {
      "characterSet" : "AL32UTF8",
      "nlsCharacterset" : "AL16UTF16",
      "dbTerritory" : "AMERICA",
      "dbLanguage" : "AMERICAN"
    },
    "dbConsoleEnable" : false,
    "backupConfigId":null,
    "rmanBkupPassword": null
  },
  "asr" :{
    "asrType": "INTERNAL",
    "userName": "john.smith@example.com",
    "password": "password",
    "proxyServerName": "www-proxy.example.com",
    "proxyPort": "80",
    "proxyUserName": "proxy-user",
    "proxyPassword": "proxy-password",
    "snmpVersion":"v2"
}
```

Example C-2 JSON File to Create a Single Node Oracle Database Appliance without Role Separation

The following is an example of a JSON file that creates an Oracle Database Appliance without using role separation. This example creates two groups (oinstall and dba) and one user ("oracle").

```
"instance" : {
 "name" : "odambox",
 "instanceBaseName" : "odambox-c",
  "dbEdition" : "EE",
  "timeZone" : "UTC",
  "ntpServers" : ["10.0.3.14"],
  "dnsServers" : ["10.0.4.10","10.0.4.11","10.0.4.12"],
  "domainName" : "example.com",
  "isRoleSeparated" : false,
  "osUserGroup" : {
    "groups" : [ {
      "groupId" : 1001,
      "groupName" : "oinstall",
      "groupRole" : "oinstall"
    }, {
      "groupId" : 1002,
      "groupName" : "dba",
      "groupRole" : "dba"
   } ],
   "users" : [ {
```



```
"userId" : 1000,
      "userName" : "oracle",
      "userRole" : "oracleUser"
    } ]
},
"nodes" : [ {
  "nodeNumber" : "0",
  "nodeName" : "odambox",
  "network" : [ {
     "nicName" : "btbond1",
     "ipAddress" : "10.0.1.11",
     "subNetMask" : "255.255.240.0",
     "gateway" : "10.0.0.1",
     "networkType" : [ "Public" ],
     "isDefaultNetwork" : true
    },
 ],
  "ilom" : {
    "ilomName": "odambox-c",
    "ipAddress":"10.0.2.10",
    "subNetMask": "255.255.240.0",
    "gateway":"10.0.0.1"
  }
} ],
"grid" : {
  "diskGroup" : [ {
    "diskGroupName" : "DATA",
    "redundancy" : "NORMAL",
    "diskPercentage" :80
    "diskGroupName" : "RECO",
    "redundancy" : "NORMAL",
    "diskPercentage" :20
 } ],
"scan" : {
   "scanName": "odambox-scan",
   "ipAddresses":[
  "10.0.1.11"
  ]
 },
"vip":[
  "nodeNumber":"0",
  "vipName": "odambox-vip",
  "ipAddress":"10.0.1.11"
 ],
  "language" : "en",
  "enableAFD": "TRUE"
"database" : {
  "dbName" : "myTestDb",
  "databaseUniqueName": "myTestDb_sea1kj",
  "dbEdition" : "EE",
```

```
"dbVersion" : "12.2.0.1",
    "dbHomeId":null,
    "instanceOnly" : false,
    "isCdb" : true,
    "pdBName" : "pdb1",
    "pdbAdminuserName" : "pdbuser",
    "enableTDE":true,
    "adminPassword" : "password",
    "dbType" : "SI",
    "dbTargetNodeNumber" : null,
    "dbClass" : "OLTP",
    "dbShape" : "odb1",
    "dbStorage" : "ACFS",
    "dbCharacterSet" : {
      "characterSet" : "AL32UTF8",
      "nlsCharacterset" : "AL16UTF16",
      "dbTerritory" : "AMERICA",
      "dbLanguage" : "AMERICAN"
    },
    "dbConsoleEnable" : false,
    "backupConfigId":null,
    "rmanBkupPassword": null
  },
  "asr" :{
    "asrType": "INTERNAL",
    "userName": "john.smith@example.com",
    "password": "password",
    "proxyServerName": "www-proxy.example.com",
    "proxyPort":"80",
    "proxyUserName": "proxy-user",
    "proxyPassword": "proxy-password",
    "snmpVersion": "v2"
}
```

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

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

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

Note:

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



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

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

```
"instance":{
  "name": "odahabox",
  "instanceBaseName": "odahabox",
  "dbEdition": "EE",
  "timeZone": "UTC",
  "ntpServers" : ["10.0.3.14"],
  "dnsServers" : ["10.0.4.10","10.0.4.11","10.0.4.12"],
  "domainName":"example.com",
  "isRoleSeparated":true,
  "osUserGroup":{
      "groups":[
            "groupId":1001,
            "groupName":"oinstall",
            "groupRole":"oinstall"
            "groupId":1002,
            "groupName": "dbaoper",
            "groupRole": "dbaoper"
         },
            "groupId":1003,
            "groupName": "dba",
            "groupRole": "dba"
            "groupId":1004,
            "groupName": "asmadmin",
            "groupRole":"asmadmin"
            "groupId":1005,
            "groupName": "asmoper",
            "groupRole": "asmoper"
            "groupId":1006,
            "groupName": "asmdba",
            "groupRole": "asmdba"
      ],
      "users":[
            "userId":101,
            "userName": "grid",
```



```
"userRole": "gridUser"
             "userId":102,
             "userName": "oracle",
             "userRole": "oracleUser"
      ]
   "objectStoreCredentials":null
},
"nodes":[
      "nodeNumber": "0",
      "nodeName": "odahaboxc1n2",
      "network":[
         {
             "nicName": "btbond1",
             "ipAddress": "10.31.98.133",
             "subNetMask": "255.255.240.0",
             "gateway": "10.31.96.1",
             "networkType":[
                "Public"
            ],
             "isDefaultNetwork":true
      ],
      "ilom":{
         "ilomName": "odahabox2-c",
         "ipAddress": "10.31.16.140",
         "subNetMask": "255.255.240.0",
         "gateway":"10.31.16.1"
   },
      "nodeNumber": "1",
      "nodeName": "odahaboxc1n1",
      "network":[
             "nicName": "btbond1",
             "ipAddress": "10.31.98.132",
             "subNetMask": "255.255.240.0",
             "gateway": "10.31.96.1",
             "networkType":[
                "Public"
             "isDefaultNetwork":true
      ],
      "ilom":{
         "ilomName": "odahabox1-c",
         "ipAddress": "10.31.16.139",
         "subNetMask": "255.255.240.0",
          "gateway":"10.31.16.1"
      }
```

```
],
"grid":{
   "diskGroup":[
         "diskGroupName": "DATA",
         "redundancy": "HIGH",
         "diskPercentage":80
         "diskGroupName": "RECO",
         "redundancy": "HIGH",
         "diskPercentage":20
         "diskGroupName": "REDO",
         "redundancy": "HIGH",
         "diskPercentage":null
   ],
   "scan":{
      "scanName": "odahaboxc1-scan",
      "ipAddresses":[
         "10.31.98.182",
         "10.31.98.183"
      ]
   },
   "vip":[
         "nodeNumber": "0",
         "vipName": "odahaboxc1n2-vip",
         "ipAddress":"10.31.98.159"
         "nodeNumber": "1",
         "vipName": "odahaboxcln1-vip",
         "ipAddress": "10.31.98.158"
   ],
   "language": "en",
   "enableAFD":"TRUE"
},
"database":{
   "dbName": "myTestDb",
   "databaseUniqueName": "myTestDb_sea1kj",
   "dbVersion": "12.2.0.1",
   "dbHomeId":null,
   "instanceOnly":false,
   "isCdb":true,
   "pdBName": "pdb1",
   "pdbAdminuserName": "pdbuser",
   "enableTDE":true,
   "adminPassword":"password",
   "dbType": "RAC",
   "dbTargetNodeNumber":null,
```

```
"dbClass":"OLTP",
  "dbShape":"odb1",
  "dbStorage":"ACFS",
  "dbCharacterSet":{
        "characterSet":"AL32UTF8",
        "nlsCharacterset":"AL16UTF16",
        "dbTerritory":"AMERICA",
        "dbLanguage":"AMERICAN"
    },
    "dbConsoleEnable":false,
    "backupConfigId":null
},
  "asr":null
}
```



D

Database Templates for Oracle Database Appliance

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

Topics:

Types of Database Templates for Oracle Database Appliance
 Choose a database template that best meets your database workload and hardware.

Types of Database Templates for Oracle Database Appliance

Choose a database template that best meets your database workload and hardware.

About Database Templates for Oracle Database Appliance

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 templates 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 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, 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 templates as *classes* of databases.



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

Use the following tables to help select the best templates 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.
- Container databases are created on Oracle ACFS.
- I/O per second (IOps) values are derived from an 8-kilobyte random read-write response time of 10 to 12 milliseconds for Hard Disk Drives (HDDs), and less than 1 millisecond for Flash, for Oracle Database Appliance X5-2; 5 to 7 milliseconds for Oracle Database Appliance X4-2 and X3-2; and 5 milliseconds for Oracle Database Appliance Version 1 to service an online transaction processing (OLTP) I/O request. The rates are not based on the number of CPUs and assume that the system is running at capacity.
- Throughput, in megabytes per second (MBps) is based on a 1 MB sequential read/write for a data warehousing system. As with IOps, the MBps is a measure of throughput when the system is at capacity. With just a single small database running, the MBps would be the maximum available on the system for a large database.
- The log file size assumes four redo log groups for each instance with a log switch every 15 minutes when the system is running at full capacity.
- Storage is shared between the servers on Oracle Database Appliance.

About Improved Oracle Database Appliance Template Options

Oracle Appliance Manager provides improved database templates that are configured specifically for the type of database workload that you want to carry out on your databases on Oracle Database Appliance. Choose the template that best matches the common workload your databases perform (OLTP, DSS, In-Memory).

The improved Oracle Database templates replace the generic database templates from previous releases that only provided sizing parameters for OLTP workloads. The database sizing tables provide updated template names and sizing based on the number of CPUs and memory attributes for each type of database workload. The table "Oracle Database Appliance Database Template Name Conversions" provides a reference between the generic database template names and the database template names based on CPU cores.

Identify the template type that is appropriate to your database workload and hardware:

- Use Oracle Database Appliance OLTP Database Templates if your database workload is primarily online transaction processing (OLTP).
- Use Oracle Database Appliance DSS database templates if your database workload is primarily decision support services (DSS) or data warehousing.
- Use Oracle Database Appliance In-Memory (IMDB) database templates if your database workload can fit in memory, and can benefit from in-memory performance capabilities.
- Use Oracle Database Appliance X5-2 generic database templates if your database is on Oracle Database Appliance X5-2.
- Use Oracle Database Appliance X4-2 generic database templates if your database is on Oracle Database Appliance X4-2.



- Use Oracle Database Appliance X3-2 generic database templates if your database is on Oracle Database Appliance X3-2.
- Use Oracle Database Appliance Version 1 generic database templates if your appliance is the original model of Oracle Database Appliance.

The templates provide general guidelines about the maximum number of databases on a fully deployed Oracle Database Appliance. Base the memory and CPU sizing on the number of instances per server, not the number of databases. Memory and CPUs are shared by all databases and the number of databases impacts performance. For example, when you have one database, the database receives full I/O throughput. If you have 9 databases, then each database has only 1/9th of the available I/O throughput for all disks.

When you have multiple databases, they share and compete over available CPU resources. When choosing a template, do not have more CPU_COUNTs distributed than available threads in the system. Oracle recommends partitioning, where every database has exclusive CPUs. If you choose to exceed the recommended maximum number of databases on Oracle Database Appliance (over-provision), be aware of your I/O results and performance degradation. With the over-provisioned approach, the sum of the CPU_COUNT across all instances can exceed the number of CPUs. Better resource utilization is provided with over-provisioning; however, it is possible for contention to occur when multiple databases are heavily loaded at the same time. Over-provisioning is best used for systems running non-critical applications. Avoid using over-provisioning for databases with high I/O requirements or those with high transaction rates. If you choose to over-provision, then do not exceed twice the number of total CPUs. Twice the allocation of total CPUs is based on hyper-threading of 2 CPU threads per core.

Table D-1 Oracle Database Appliance Database Generic Template Name Conversions

CPU Core-Based Database Template Names	odb-01s	odb-01	odb-02	odb-04	odb-06	odb-12	odb-16	odb-24
Generic Database Template Names	Very, very small	Very Small	Small	Medium	Large	Extra Large	Extra Extra Large	Extra Extra Extra Large



Extra Extra Large is applicable to Oracle Database Appliance X3-2 and Oracle Database Appliance X4-2. Extra Extra Extra Large is applicable to Oracle Database Appliance X4-2 only.

Table D-2 Oracle Database Appliance OLTP Database Template Sizes

Template	CPU Cores	SGA	PGA	Flash	Processes	LOG buffer, Redo Log
odb-01s (X5-2, X4-2, X3-2, and V1)	1	2 GB	1 GB	6 GB	200	16 MB, 1 GB
odb-01 (X5-2, X4-2, X3-2, and V1)	1	4 GB	2 GB	12 GB	200	16 MB, 1 GB



Table D-2 (Cont.) Oracle Database Appliance OLTP Database Template Sizes

Template	CPU Cores	SGA	PGA	Flash	Processes	LOG buffer, Redo Log
odb-02 (X5-2, X4-2, X3-2, and V1)	2	8 GB	4 GB	24 GB	400	16 MB, 1 GB
odb-04 (X5-2, X4-2, X3-2, and V1)	4	16 GB	8 GB	48 GB	800	32 MB, 1 GB
odb-06 (X5-2, X4-2, X3-2, and V1)	6	24 GB	12 GB	72 GB	1200	64 MB, 2 GB
odb-12 (X5-2, X4-2, X3-2, and V1)	12	48 GB	24 GB	144 GB	2400	64 MB, 4 GB
odb-16 (X5-2, X4-2, X3-2 Only)	16	64 GB	32 GB	192 GB	3200	64 MB, 4 GB
odb-24 (X5-2, X4-2 Only)	24	96 GB	48 GB	192 GB	4800	64 MB, 4 GB
odb-32 (X5-2 Only)	32	128 GB	64 GB	256 GB	6400	64 MB, 4 GB
odb-36 (X5-2 Only)	36	128 GB	64 GB	256 GB	7200	64 MB, 4 GB

Note:

Flash is applicable to Oracle Database Appliance X5-2 only.

Table D-3 Oracle Database Appliance DSS Database Template Sizes

_				_		
Template	CPU Cores	SGA (GB)	PGA (GB)	Processe s	Redo log file size (GB)	Log buffer (MB)
odb-01s (X5-2, X4-2, X3-2, and V1)	1	1	2	200	1	16
odb-01 (X5-2, X4-2, X3-2, and V1)	1	2	4	200	1	16
odb-02 (X5-2, X4-2, X3-2, and V1)	2	4	8	400	1	16
odb-04 (X5-2, X4-2, X3-2, and V1)	4	8	16	800	1	32
odb-06 (X5-2, X4-2, X3-2, and V1)	6	12	24	1200	2	64
odb-12 (X5-2, X4-2, X3-2, and V1)	12	24	48	2400	4	64
odb-16 (X5-2, X4-2, X3-2 Only)	16	32	64	3200	4	64
odb-24 (X5-2, X4-2 Only)	24	48	96	4800	4	64
odb-32 (X5-2 Only)	32	64	128	6400	4	64
odb-36 (X5-2 Only)	36	64	128	7200	4	64



Table D-4 Oracle Database Appliance In-Memory Database Template Size

Template	CPU Cores	SGA (GB)	PGA (GB)	In- Memory (GB)	Processe s	Redo log file size (GB)	Log buffer (MB)
odb-01s (X5-2, X4-2, X3-2, and V1)	1	2	1	1	200	1	16
odb-01 (X5-2, X4-2, X3-2, and V1)	1	4	2	2	200	1	16
odb-02 (X5-2, X4-2, X3-2, and V1)	2	8	4	4	400	1	16
odb-04 (X5-2, X4-2, X3-2, and V1)	4	16	8	8	800	1	32
odb-06 (X5-2, X4-2, X3-2, and V1)	6	24	12	12	1200	2	64
odb-12 (X5-2, X4-2, X3-2, and V1)	12	48	24	24	2400	4	64
odb-16 (X5-2, X4-2, X3-2 Only)	16	64	32	32	3200	4	64
odb-24 (X5-2, X4-2 Only)	24	96	48	48	4800	4	64
odb-32 (X5-2 Only)	32	128	64	64	6400	4	64
odb-36 (X5-2 Only)	36	128	64	64	7200	4	64

Table D-5 Oracle Database Appliance X5-2 Database Template Size Storage Performance

Template	Number of databases that you can deploy using this template	Container Database ACFS Size on DATA Disk Group (GB)	I/Ops with single storage shelf (HDD/ FLASH)	Throughput (MBps) with single storage shelf (HDD/ FLASH)	I/Ops with storage shelf plus storage expansion shelf (HDD/ FLASH)	Throughput (MBps) with storage shelf plus storage expansion shelf (HDD/ FLASH)	Log generation (MBps)
odb-01s	36	100	42/4167	83/83	83/8333	167/167	6.83
odb-01	36	100	42/4167	83/83	83/8333	167/167	6.83
odb-02	18	200	83/8.3K	167/167	167/16.7K	333/333	6.83
odb-04	9	400	167/16.7K	333/333	333/33.3K	667/667	13.65
odb-06	6	800	250/25K	500/500	500/50K	1000/1000	27.3
odb-12	3	1600	500/50K	1000/1000	1000/100K	2000/2000	27.3
odb-16	2	1600	750/75K	1500/1500	1500/150K	3000/3000	27.3
odb-24	1	1600	1500/150K	3000/3000	3000/300K	6000/6000	27.3
odb-32	1	1600	1500/150K	3000/3000	3000/300K	6000/6000	27.3
odb-36	1	1600	1500/150K	3000/3000	3000/300K	6000/6000	27.3



Note:

The number of databases that you can deploy using this template is for the entire Oracle Database Appliance.

Actual I/O per second (I/Ops) and throughput for a database depends on the percentage of I/O operations that are serviced through the FLASH, compared with the operations serviced through the hard disk drives (HDDs). The I/Ops weighting in these tables assumes an OLTP workload calculated as a mixed workload (80 percent reads, serviced through the FLASH cache, and 20 percent writes serviced through the HDDs).

 Table D-6
 Oracle Database Appliance X4-2 Database Template Size Storage Performance

Template	Number of databases that you can deploy using this template	Container Database ACFS Size on DATA Disk Group (GB)	I/Ops with single storage shelf	Throughput (MBps) with single storage shelf	•	Throughput (MBps) with storage shelf plus storage expansion shelf	•
odb-01s	24	100	138	146	275	229	6.83
odb-01	24	100	138	146	275	230	6.83
odb-02	12	200	275	292	550	458	6.83
odb-04	6	400	550	583	1100	917	13.65
odb-06	4	800	825	875	1650	1375	27.3
odb-12	2	1600	1650	1750	3300	2750	27.3
odb-16	1	1600	3300	3500	6600	5500	27.3
odb-24	1	1600	3300	3500	6600	5500	27.3

Table D-7 Oracle Database Appliance X3-2 Database Template Size Storage Performance

Template	Number of databases that you can deploy using this template	Container Database ACFS Size on DATA Disk Group (GB)	I/Ops with single storage shelf	Throughput (MBps) with single storage shelf	I/Ops with storage shelf plus storage expansion shelf	Throughput (MBps) with storage shelf plus storage expansion shelf	•
odb-01s	16	100	206	219	413	344	6.83
odb-01	16	100	206	219	413	344	6.83
odb-02	8	200	413	438	825	688	6.83
odb-04	4	400	825	875	1650	1375	13.65
odb-06	2	800	1650	1750	3300	2750	27.3
odb-12	1	1600	3300	3500	6600	5500	27.3
odb-16	1	1600	3300	3500	6600	5500	27.3



Table D-8 Oracle Database Appliance Version 1 Database Template Size Storage Performance

Template	Number of databases that you can deploy using this template	Container Database ACFS Size on DATA Disk Group (GB)	I/Ops	Throughput (MBps)	Log generation (Mps)
odb-01s	12	100	333	250	6.83
odb-01	12	100	333	250	6.83
odb-02	6	200	667	500	6.83
odb-04	3	400	1333	1000	13.65
odb-06	2	800	2000	1500	27.3
odb-12	1	1600	4000	3000	27.3

Note:

For a single database, select a template that best fits your expected workload (the CPU and I/Ops capabilities you require) on the hardware that you are using. When creating multiple databases, calculate the overall workload; available system resources for any new database are affected by the CPU and I/Ops consumed by the existing databases that are already on the system.



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