Oracle® Database Appliance X11 Deployment and User's Guide



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Oracle Database Appliance X11 Deployment and User's Guide, Release 19.27 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 customer access to and use of Oracle support services will be pursuant to the terms and conditions specified in their Oracle order for the applicable services.

Related Documents

For more information about Oracle Database Appliance, go to http://www.oracle.com/goto/oda/docs and click the appropriate release.



For more information about using Oracle Database, go to http://docs.oracle.com/database/ and select the database release from the menu.

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

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

Conventions

The following text conventions are used in this document:

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



1 Oracle Database Appliance Checklists

Use these checklists to ensure you have completed the tasks required for setting up, deploying, and patching Oracle Database Appliance.

- Checklist for System Requirements
 Before you begin the deployment, ensure that you have the system information described
 in this checklist ready. This checklist applies to baremetal and virtualized platform
 deployments.
- Deployment Checklist for Oracle Database Appliance Bare Metal Systems This checklist provides an overview of the tasks to setup and deploy Oracle Database Appliance bare metal systems for the first time.
- Checklist for Custom Network Address Configuration Use the checklist to identify the IP addresses required for Oracle Database Appliance.

Checklist for System Requirements

Before you begin the deployment, ensure that you have the system information described in this checklist ready. This checklist applies to baremetal and virtualized platform deployments.

Component	Information Required	Comments
Host Name	The name for the Oracle Database Appliance System. The name must conform with the RFC 952 standard, which allows alphanumeric characters and hyphens (-), but does not allow underscores (_). The name should not begin with a numeral or hyphen and should not end in a hyphen. Oracle recommends that you use all lowercase characters for the host name.	Use this space to note the values for your appliance. Host Name:
Domain Name	Your domain name. For example: example.com	Domain Name:
Region	The region where you plan to operate the Oracle Database Appliance system.	Region:
Timezone	The time zone where you plan to operate the Oracle Database Appliance system.	Timezone:

Table 1-1Checklist for System Configuration Information for Oracle DatabaseAppliance



Component	Information Required	Comments
Diskgroup Redundancy	Determine the redundancy level for DATA, RECO, and FLASH:	Use this space to note the values for your appliance.
	If there are up to two disks, then you can select the disk group redundancy as Normal or Flex. If there are more than two disk drives, then you can select the redundancy as Normal (two way mirror), High (three way mirror), or Flex. If you select High redundancy, then DATA, RECO, and FLASH are all High Redundancy.	
Number of Enabled CPU Cores	Based on your capacity-on- demand (CoD) license, this value specifies the number of enabled CPU cores	Use this space to note the values for your appliance.
Backup	Determine the backup location. For external backup, you need an NFS device.	Backup location:
Percentage of Storage Reserved for Data	Determine the amount of reserves for DATA storage. The percentage must be a whole number between 10 and 90, and determines how the disks are partitioned between DATA and RECO. For example, if you specify 80, then 80% of storage is reserved for DATA and the remaining 20% is for RECO.	Use this space to note the values for your appliance.
System Password	The password set for the root user of the system, operating system users, database users, and pdbadmin. The password is also used to set the database SYS and SYSTEM passwords. Ensure that the password you provide is in compliance with common security practices.	You must provide a system password when you deploy your appliance.
DNS Server	(Optional) DNS server details. If configuring DNS, a minimum of one DNS Server IP is required.	DNS Server details:
NTP Server	(Optional) Network Time Protocol (NTP) server details.	NTP Server details:

Table 1-1 (Cont.) Checklist for System Configuration Information for Oracle DatabaseAppliance



Component	Information Required	Comments
Network Information for the client access network	Obtain the following network information:	Use this space to note the value for your appliance.
	• Node 0 Name: such as example0	
	Node 0 Public IP Address	
	• Node 1 Name (For HA Models): such as example1	
	Node 1 Public IP Address (For HA Models)	
	 Node 0 Virtual IP Name (For HA Models): for example, example0-vip 	
	Node 0 Public Virtual IP Address (For HA Models)	
	 Node 1 Virtual IP Name (For HA Models): for example, example1-vip 	
	Node 1 Public Virtual IP Address (For HA Models)	
	• SCAN Name (For HA Models): for example, example-scan	
	 SCAN IP Addresses: Two SCAN IP addresses are required 	
	Netmask	
	Gateway IP	
	The Public and private network must not be in same subnet, they must be in non-related separate subnet.	
Network Information for the Oracle Integrated Lights Out	Obtain the following ILOM network information:	Use this space to note the value for your appliance.
Manager (ILOM) network	ILOM host nameILOM IP address	
	Subnet mask	
	 Gateway IP ILOM Password: default is changeme. 	
	For HA systems, ensure that you have the information to configure two ILOM networks.	

Table 1-1 (Cont.) Checklist for System Configuration Information for Oracle DatabaseAppliance

ORACLE

Component	Information Required	Comments
User and group information	Determine how you want to configure your users and groups and whether or not you want to allow operating system role separation. The default is two users with six groups. Operating System Role Separation: Yes/No	Use this space to note the values for your appliance.
	Customization of Users and Groups: Yes/No	
	 Groups and IDs: Grid Infrastructure User Grid Infrastructure User ID Database User Database User ID Install Group Install Group ID DBA Operating System Group DBA Operating System Group ID ASM Admin Group ID ASM Operating System Group ASM Operating System Group ASM Operating System Group ASM Operating System Group ASM Operating System 	
	Group ID ASM DBA Group ASM DBA Group ID 	

Table 1-1 (Cont.) Checklist for System Configuration Information for Oracle DatabaseAppliance



Component	Information Required	Comments
Initial Database Details (if you want to create one during deployment)	(Optional) If you choose to create an initial database during deployment, determine the following configuration details:	Use this space to note the value for your appliance.
	Database name	
	 Database unique name Database version (based on the database clones that are registered with the Oracle Database Appliance) 	
	Determine the Oracle Database edition licensing that you have, either Enterprise Edition or Standard Edition. You cannot mix editions.	
	 Database deployment, whether Oracle RAC or single-instance database 	
	CDB (Container Database): Yes or No	
	PDB name	
	 Shape (for example, odb1, odb2, and so on) 	
	 Database Class: Enterprise Edition, OLTP, DSS, or IMDB. Standard Edition OLTP only. 	
	 Data files on Flash storage: Yes/No 	
	Database file size	
	 Database characterset 	
	National characterset	
	 Database language Storage (Oracle ASM or 	
	Oracle ACFS).Database redundancy	
	Configure Oracle Enterprise Manager console. If you are using Enterprise Manager Cloud Control with this appliance, do not choose this	
	option.Password for the database	
	The DB Name and DB Unique	
	name can contain alphanumeric characters and must start with an	
	alphabet. It can contain	
	underscores (_), but cannot contain characters such as "!	
	underscores (_), but cannot	

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

Component	Information Required	Comments
Oracle Auto Service Request (Oracle ASR) information	 (Optional) Do you want to configure and enable Oracle ASR at deployment or later? If required, then ensure that you have the following information. ASR Type ASR User Name ASR Password SNMP Version Proxy Server Name Proxy Port Proxy User Name Proxy Password 	Oracle Auto Service Request (Oracle ASR) information for your appliance

Table 1-1 (Cont.) Checklist for System Configuration Information for Oracle DatabaseAppliance

Deployment Checklist for Oracle Database Appliance Bare Metal Systems

This checklist provides an overview of the tasks to setup and deploy Oracle Database Appliance bare metal systems for the first time.

Component	Tasks
Register your hardware Support Identifier (SI)	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.
Plug in the Appliance	 Plug in all the cables including the power cords, and then wait for the SP OK light to become solid green. Do not power up yet. If there is no video port available on your Oracle Database Appliance hardware model, then use the Server Management Serial Port to connect to a laptop, or determine the DHCP address assigned to it. Note: Serial port must be set to 115200, so make sure the baud rate speed matches.
Configure Oracle Integrated	Before you configure Oracle ILOM:
Lights Out Manager (Oracle ILOM) on Node0 and Node1	 Connect an Ethernet cable from the NET MGT port to your site's management network. The NET MGT port is a 1 GbE port for Oracle ILOM and by default, is configured for DHCP. Obtain the Oracle ILOM host name and IP address, the netmask, and the gateway addresses from the DHCP server. Have a new password ready to replace the default Oracle ILOM password Log into the Oracle ILOM console and follow the procedure in the topic <i>Configuring Oracle Integrated Lights Out Manager</i>.

Table 1-2 Deployment Checklist for Bare Metal Systems

Component	Tasks
Power ON	 Power on each node and log in as root user with welcome1 password. Verify cabling: # /opt/oracle/dcs/bin/odacli validate-storagetopology Verify interconnect networking. Run the commands # ethtool p1p1 and # ethtool p1p2. Follow the steps described in the topic Verifying Cabling and Network
Plumb the network	Connections.
	Ensure that you have recorded the IP address and netmask address. Set up a temporary network connection to Oracle Database Appliance. Use the command odacli configure-firstnet on NodeO, for both single- and multi-node systems.
	Log into the Oracle ILOM console and follow the procedure in the topic <i>Plumbing the Network</i> .
Download Oracle Database Appliance Software	Log into My Oracle Support and download the software files for deployment. Refer to the <i>Oracle Database Appliance Release Notes</i> for the latest software.
Install Oracle Database Appliance	Upload the zip files to a temporary location on Oracle Database Appliance and then update the repository and install the software. Follow the steps and run the commands described in the topic <i>Installing</i>
	Oracle Database Appliance Software.
Create Appliance	 Set the Browser User Interface password for the oda-admin user. Log into the Browser User Interface and configure system, network, and users and groups.
	Ensure that you have the information mentioned in <i>Checklist for</i> <i>System Requirements</i> available to you. Follow the steps described in the topic <i>Creating an Appliance</i> .
Perform postinstallation tasks	Configure CPU core count.
· ····· - ·····	Change the passwords for Browser User Interface, Oracle users and groups, and Oracle ILOM.
	Follow the steps described in the chapter Oracle Database Appliance Postinstallation Tasks.
Cleanup Deployments	If your deployment failed for some reason, then run the cleanup script and redeploy the appliance.
	For steps to run the cleanup script, see the topic Uninstalling Oracle Database Appliance Components.

Table 1-2 (Cont.) Deployment Checklist for Bare Metal Systems

Related Topics

- Verifying Cabling and Network Connections After powering on Oracle Database Appliance, verify that the network connections are set up correctly.
- Configuring Oracle Integrated Lights Out Manager
 Configure Oracle Integrated Lights Out Manager (Oracle ILOM) to manage Oracle
 Database Appliance independent of the operating system.
- 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 or ODACLI commands.
- Oracle Database Appliance Postinstallation Tasks
 Complete these administrative tasks after you have deployed software, but before the system is operational.
- 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.

Checklist for Custom Network Address Configuration

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

Note:

Oracle does not recommend changing the default Host Private Address. You cannot change the private network after deploying the appliance.

Table 1-3	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 subnets 192.168.16.0/24 and 192.168.17.0/24 are configured.	-



2 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, jobs, CPU pools, compute instances, and database
 systems.

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 X11-S, X11-L, X11-HA	 Oracle Database Appliance X11-S is a small configuration designed for smaller or entry- level deployments.
	 Oracle Database Appliance X11-L is a large configuration designed for larger databases.
	 Oracle Database Appliance X11-HA is a large configuration designed for larger databases and high-availability.
Oracle Database Appliance X10-S, X10-L, X10-HA	 Oracle Database Appliance X10-S is a small configuration designed for smaller or entry- level deployments.
	• Oracle Database Appliance X10-L is a large configuration designed for larger databases.
	• Oracle Database Appliance X10-HA is a large configuration designed for larger databases and high-availability.



Oracle Database Appliance Hardware Model	Deployment Use Case	
Oracle Database Appliance X9-2S, X9-2L, X9-2- HA	 Oracle Database Appliance X9-2S is a small configuration designed for smaller or entry-level deployments. Oracle Database Appliance X9-2L is a large configuration designed for larger databases. Oracle Database Appliance X9-2-HA is a large configuration designed for larger databases and high-availability. 	
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 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, and 12.1.0.2
Oracle Database Standard Edition 2	Oracle Database release 19c, 18c, 12.2.0.1, and 12.1.0.2

Note:

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

Note:

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

Table 2-1	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.

Table 2-1 (Cont.) Software for Oracle Database Appliance

Patch	Description	
Oracle Database Appliance Grid Infrastructure/Database Clone	Use to perform an initial deployment of Oracle Database Appliance and also to patch your deployment to the latest release.	
	The bundle contains the latest Grid Infrastructure and Database 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 Grid Infrastructure/Database Clone patch to deploy Oracle Database Appliance.	
Oracle Database Clone	Use the Database Software Clone files to get the latest Database clone binaries for Oracle Database releases 19c, 12.2.0.1, and 12.1.0.2. 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 configura	

Note:

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, jobs, CPU pools, compute instances, and database systems.

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
 - Oracle ASM port
- Network
 - View network details
 - Create, update, and delete networks
 - View interface details
- Oracle ASR
 - View Oracle Auto Service Request (Oracle ASR) configuration details
 - Configure, modify, test, and delete Oracle ASR

Repository 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
- Compute Instances
 - Create KVM deployment on Oracle Database Appliance
 - Create view, modify, and, delete virtual storage, virtul network, and virtual disks
 - Create view, modify, and, delete, start, and stop virtual machines
- DB Systems
 - Create DB System
 - List and describe DB System
 - Modify, delete, start, and stop DB System
- CPU Pools
 - Create view, modify, and, delete CPU pool for bare metal and KVM deployments

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
- Credential Store
 - Create Object Store Credentials for backup and recovery
 - View the details for Object Store Credentials, including the endpoint URL, user name, and tenant
 - Update and delete Object Store Credentials
 - Configure Oracle Key Vault Server
- 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
- Security
 - View audit records and create and view database security assessment reports
- Activity
 - View a list of jobs, details, and status
 - Click a job description to view job details

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

- There are links to access the Oracle Database Appliance blogs, FAQs, and Documentation.
- Click About to view the Oracle Database Appliance release that is installed on the appliance.

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



- Click 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 Change Password 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.

Doc Search

You can access the Oracle Database Appliance documentation set from the Browser User Interface. There is a search box at the top right hand corner on the BUI. Search results are links to documentation pages shown as a new window in the BUI. When you click the **Help** button, links from the documentation relevant to the context of the tab are displayed.

Along with the search results from the Oracle Database Appliance documentation pages, BUI also provides relevant Frequently Asked Questions (FAQs) for the search query. Additionally, you can also search on DCS error codes such as DCS-10001, DCS-10032, and so on in the search box and get the links to documentation pages contains these error codes. When you specify the search query, relevant documentation links, FAQs and DCS error codes links are displayed under separate sections in a new window in the BUI.

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.



Readying Oracle Database Appliance for Deployment

Before deploying Oracle Database Appliance, perform these setup tasks.

- Attaching Storage Cables to Oracle Database Appliance X11-HA Connect the storage cables for Oracle Database Appliance X11-HA.
- Attaching Network Cables to Oracle Database Appliance X11-HA Connect Oracle Database Appliance X11-HA to either a 10GBase-T (copper) or 25GbE SFP28 (fiber) network.
- Attaching Network Cables to Oracle Database Appliance X11-S or X11-L Connect Oracle Database Appliance X11-S or X11-L to either a 10GBase-T (copper) or 25GbE SFP28 (fiber) network.
- Attaching Power Cords and Initializing Components Attach power cords for Oracle Database 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.
- Powering On Oracle Database Appliance the First Time Use this procedure the first time you power on Oracle Database Appliance.

Attaching Storage Cables to Oracle Database Appliance X11-HA

Connect the storage cables for Oracle Database Appliance X11-HA.

Cabling the Storage for Oracle Database Appliance X11-HA

Connect the storage cables for Oracle Database Appliance 11-HA.



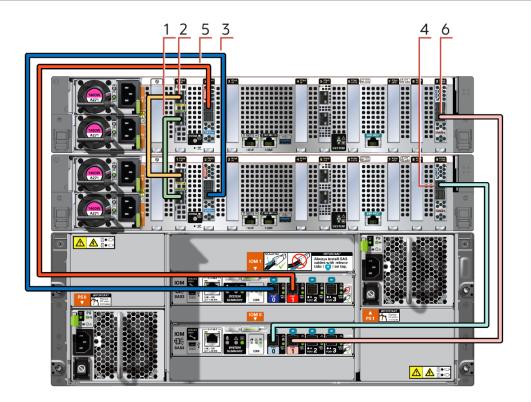
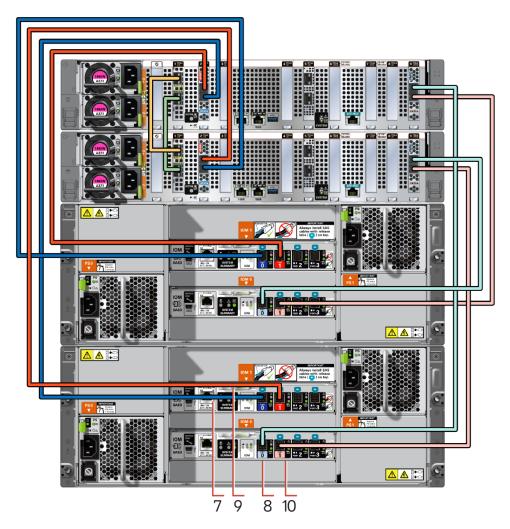


Table 3-1 Storage Cabling for Oracle Database Appliance X11-HA

Callout Numbe r	Purpose	Start - Compute Node0	End - Compute Node1
1	Connect green SFP28 cable (Interconnect Port 25GbE)	Connect into green port (PORT 2) in PCIe slot 1	Connect into green port (PORT 2) in PCIe slot 1
2	Connect yellow SFP28 cable (Interconnect Port 25GbE)	Connect into yellow port (PORT 1) in PCIe slot 1	Connect into yellow port (PORT 1) in PCIe slot 1
3	Connect dark blue SAS cable	Connect into dark blue port (SAS0) in PCIe slot 2 in Node0	Connect into dark blue port in top IO Module (PORT 0)
4	Connect light blue SAS cable	Connect into light blue port (SAS1) in PCIe slot 9 in Node0	Connect into light blue port in bottom IO Module (PORT 0)
5	Connect dark red SAS cable	Connect into dark red port (SAS1) in PCIe slot 2 in Node1	Connect into dark red port in top IO Module (PORT 1)
6	Connect light red SAS cable	Connect into light red port (SAS0) in PCIe slot 9 in Node1	Connect into light red port in bottom IO Module (PORT 1)





Cabling the Storage Expansion Shelf

Table 3-2	Cabling the Storage Expansion Shelf for Oracle Database Appliance X11-HA
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Callout Number	Purpose	Start - Compute Nodes	End - Expansion Shelf
7	Connect dark blue SAS cable	Connect into dark blue port (SAS0) in PCIe slot 2 in Node1	Connect into dark blue port in top IO Module (PORT 0)
8	Connect light blue SAS cable	Connect into light blue port (SAS1) in PCIe slot 9 in Node1	Connect into light blue port in bottom IO Module (PORT 0)
9	Connect dark red SAS cable	Connect into dark red port (SAS1) in PCIe slot 2 in Node0	Connect into dark red port in top IO Module (PORT 1)
10	Connect light red SAS cable	Connect into light red port (SAS0) in PCIe slot 9 in Node0	Connect into light red port in bottom IO Module (PORT 1)



Attaching Network Cables to Oracle Database Appliance X11-HA

Connect Oracle Database Appliance X11-HA to either a 10GBase-T (copper) or 25GbE SFP28 (fiber) network.

The SFP28 ports support 10Gb and 25Gb fibre and twinaxial cable (twinax), depending on the SFP modules used in these ports. For 10GBase-T public networking, use the Cat-6 network cables. To use the SFP28 ports, use the correct transceivers and cables to meet your switch bandwidth. The following sections show the cabling options for 10GBase and 25GbE SFP28 (fiber) network ports.

Connecting the Fiber and Copper Network Cables for Oracle Database Appliance X11-HA

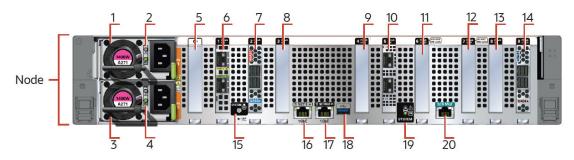


Table 3-3	Network	Ports and	Power	Cabling
-----------	---------	-----------	-------	---------

Callout	Description
1	Power Supply (PS) 1 with fan module
2	Power Supply (PS) 1 status indicators: Service Required LED: amber, AC OK LED: green
3	Power Supply (PS) 0 with fan module
4	Power Supply (PS) 0 status indicators: Service Required LED: amber, AC OK LED: green
5	Not used
6	PCIe card slot 1: Oracle Dual Port 25Gb Ethernet Adapter which provides two ports for a private cluster interconnect between server nodes
7	PCIe card slot 2: provides two SAS3 connectors used to connect the servers to the storage shelf and the storage expansion shelf
8	PCIe card slot 3: filler panel
9	PCIe card slot 4: filler panel, or 2nd optional Oracle Dual Port 25Gb Ethernet Adapter or Oracle Quad Port 10GBase-T Adapter
10	PCIe card slot 5: 1st Oracle Dual Port 25Gb Ethernet Adapter or Oracle Quad Port 10GBase-T Adapter
11	PCIe card slot 6: filler panel
12	PCIe card slot 7: filler panel
13	PCIe card slot 8: filler panel, or 3rd optional Oracle Dual Port 25Gb Ethernet Adapter or Oracle Quad Port 10GBase-T Adapter



Callout	Description
14	PCIe card slot 9: provides two SAS3 connectors used to connect the servers to the storage shelf and the storage expansion shelf
15	Locate LED (white)
16	100/1000Base-T network interface port with RJ-45 connector: NET 0
17	NET MGT port: 10/100/1000Base-T network interface port with RJ-45 connector used to connect to the Oracle ILOM service processor
18	USB 3.1 connector
19	System status indicators: Service Required LED (amber), Power/OK LED (green)
20	SER MGT port: RJ-45 serial port used to connect to the Oracle ILOM service processor

Table 3-3 (Cont.) Network Ports and Power Cabling

Fiber Cables

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

Table 3-4 Transceivers for the SFP Ports - 10Gb/1Gb

Name	ATO Part Number	x-option Part Number
SFP+ 10GBase-SR (Short Range Transceiver)	2129a	X2129A-N
SFP+ 10GBase-LR (Long Range Transceiver)	5562a-z	X5562A-Z

Table 3-5 Transceivers for the SFP Ports - 25Gb

NameATO Part Numberx-option Part NumberOracle 10/25 GbE Dual Rate SFP28 Short Range (SR) Transceiver76042697604270SFP28 25GBase-LR (Short Range Transceiver)71180177118019SFP28 25GBase-LR (Long Range Transceiver)71180207118021			
SFP28 Short Range (SR) Transceiver71180177118019SFP28 25GBase-LR (Short Range Transceiver)71180207118021	Name	ATO Part Number	x-option Part Number
Range Transceiver)SFP28 25GBase-LR (Long71180207118021	SFP28 Short Range (SR)	7604269	7604270
	,	7118017	7118019
		7118020	7118021

Copper Cables

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



Name	Length	ATO Part Number	x-option Part Number
TwinAx passive copper cable: 1 meter	1m	7105137	X2130A-1M-N
TwinAx passive copper cable: 2 meter	2m	7105139	7105148
TwinAx passive copper cable: 3 meter	3m	7105140	X2130A-3M-N
TwinAx passive copper cable: 5 meter	5m	7105141	X2130A-5M-N

Table 3-6 Networking Cables for the SFP Ports - 10Gb/1Gb

Table 3-7 Networking Cables for the SFP Ports - 25Gb

Name	Length	ATO Part Number	x-option Part Number
TwinAx passive copper cable: 1 meter	1m	7118359	7118367
TwinAx passive copper cable: 2 meter	2m	7118360	7118368
TwinAx passive copper cable: 3 meter	3m	7118361	7118369
TwinAx passive copper cable: 5 meter	5m	7118362	7118370

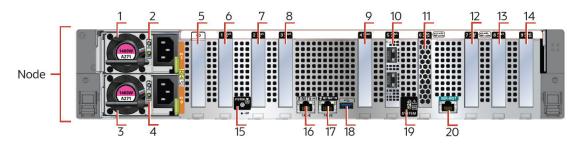
Attaching Network Cables to Oracle Database Appliance X11-S or X11-L

Connect Oracle Database Appliance X11-S or X11-L to either a 10GBase-T (copper) or 25GbE SFP28 (fiber) network.

The SFP28 ports support 10Gb and 25Gb fibre and twinaxial cable (twinax), depending on the SFP modules used in these ports. For 10GBase-T public networking ports that have RJ-45 connectors, use Cat-6 network cables. To use the SFP28 ports, use the correct transceivers and cables to meet your switch bandwidth. The following sections show the cabling options for 10GBase and 25GbE SFP28 (fiber) network ports.

Connecting Network Cables for Oracle Database Appliance X11-S or X11-L

Connect the Fiber and Copper Network Cables for Oracle Database Appliance X11-S or X11-L





Callout	Description
1	Power Supply (PS) 1 with fan module
2	Power Supply (PS) 1 status indicators: Service Required LED: amber, AC OK LED: green
3	Power Supply (PS) 0 with fan module
4	Power Supply (PS) 0 status indicators: Service Required LED: amber, AC OK LED: green
5	Not used
6	 PCIe card slot 1: Oracle Database Appliance X11-S: filler panel Oracle Database Appliance X11-L: filler panel, or 4th optional Oracle Flash Accelerator 680 PCIe Card
7	 PCIe card slot 2: Oracle Database Appliance X11-S: filler panel Oracle Database Appliance X11-L: filler panel, or 1st optional Oracle Flash Accelerator 680 PCIe Card
8	 PCIe card slot 3: Oracle Database Appliance X11-S: filler panel Oracle Database Appliance X11-L: filler panel, or 2nd optional Oracle Flash Accelerator 680 PCIe Card
9	 PCIe card slot 4: Oracle Database Appliance X11-S: filler panel Oracle Database Appliance X11-L: filler panel, or 2nd optional Oracle Flash Accelerator 680 PCIe Card
10	PCIe card slot 5: 1st Oracle Dual Port 25Gb Ethernet Adapter or Oracle Quad Port 10GBase-T Adapter
11	PCIe card slot 6: Oracle Retimer PCIe Card
12	PCIe card slot 7: filler panel
13	PCIe card slot 8: filler panel, or 3rd optional Oracle Dual Port 25Gb Ethernet Adapter or Oracle Quad Port 10GBase-T Adapter
14	 PCIe card slot 9: Oracle Database Appliance X11-S: filler panel, or 2nd optional Oracle Dual Port 25Gb Ethernet Adapter or Oracle Quad Port 10GBase-T Adapter Oracle Database Appliance X11-L: filler panel, or 3rd optional Oracle Flash Accelerator 680 PCIe Card
15	Locate LED (white)
16	100/1000Base-T network interface port with RJ-45 connector: NET 0
17	NET MGT port: 10/100/1000Base-T network interface port with RJ-45 connector used to connect to the Oracle ILOM service processor
18	USB 3.1 connector

Table 3-8 Network Ports and Power Cabling



Table 3-8	(Cont.) Network Ports and Power Cabling	
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Callout	Description
19	System status indicators: Service Required LED (amber), Power/OK LED (green)
	SER MGT port: RJ-45 serial port used to connect to the Oracle ILOM service processor

Fiber Cables

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

Table 3-9 Transceivers for the SFP Ports - 10Gb/1Gb

Name	ATO Part Number	x-option Part Number
SFP+ 10GBase-SR (Short Range Transceiver)	2129a	X2129A-N
SFP+ 10GBase-LR (Long Range Transceiver)	5562a-z	X5562A-Z

Table 3-10 Transceivers for the SFP Ports - 25Gb

Name	ATO Part Number	x-option Part Number
Oracle 10/25 GbE Dual Rate SFP28 Short Range (SR) Transceiver	7604269	7604270
SFP28 25GBase-LR (Short Range Transceiver)	7118017	7118019
SFP28 25GBase-LR (Long Range Transceiver)	7118020	7118021

Copper Cables

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

Table 3-11 Networking Cables for the SFP Ports - 10Gb/1Gb

Name	Length	ATO Part Number	x-option Part Number
TwinAx passive copper cable: 1 meter	1m	7105137	X2130A-1M-N
TwinAx passive copper cable: 2 meter	2m	7105139	7105148
TwinAx passive copper cable: 3 meter	3m	7105140	X2130A-3M-N



Name	Length	ATO Part Number	x-option Part Number
TwinAx passive copper cable: 5 meter	5m	7105141	X2130A-5M-N

Table 3-11 (Cont.) Networking Cables for the SFP Ports - 10Gb/1Gb

Table 3-12 Networking Cables for the SFP Ports - 25Gb

Name	Length	ATO Part Number	x-option Part Number
TwinAx passive copper cable: 1 meter	1m	7118359	7118367
TwinAx passive copper cable: 2 meter	2m	7118360	7118368
TwinAx passive copper cable: 3 meter	3m	7118361	7118369
TwinAx passive copper cable: 5 meter	5m	7118362	7118370

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.

Configuring Oracle Integrated Lights Out Manager

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

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

Configuring Oracle ILOM Using IP Address Assigned by DHCP

Ensure that the ILOM NIC is enabled and that ipv4 is enabled.



- Using a client system's browser, enter the IP address or host name assigned by DHCP into the browser address field and press Enter. For example, https://129.xxx.xx.
- 2. At the login page, enter the default user name, root and the default password, changeme.

The Oracle ILOM web interface is displayed.

Configuring Oracle ILOM Using Static IP Address

 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.

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

The Oracle ILOM CLI prompt appears. Change the default password to a secure password of your choice.

3. Set the working directory.

cd /SP/network

4. Specify a static Ethernet configuration as follows:

```
set pendingipaddress=xxx.xxx.xx
set pendingipnetmask=yyy.yyy.yy
set pendingipgateway=zzz.zzz.zzz
set commitpending=true
set state=enabled
```

xxx.xxx.xx, yyy.yyy.yyy.y and zzz.zzz.zzz are the IP address, netmask, and gateway (respectively) for your ILOM and network configuration.

5. Verify changes and then exit:

```
show /SP/network
exit
```

Configuring Oracle ILOM Using the IPMI tool

To assign IP addresses to Oracle ILOM manually, follow these steps:

1. Open the IPMI tool.

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

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

show /SP/network

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

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

Related Topics

Deployment Checklist for Oracle Database Appliance Bare Metal Systems
 This checklist provides an overview of the tasks to setup and deploy Oracle Database
 Appliance bare metal systems for the first time.

See Also:

My Oracle Support Note 1395445.1: "ODA (Oracle Database Appliance) : ILOM configuration via Serial port" at https://support.oracle.com/rs? type=doc&id=1395445.1

Powering On Oracle Database Appliance the First Time

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

When you power on Oracle Database Appliance for the first time, the system automatically defines your public network interface based on which of the public interface ports are connected. For Oracle Database Appliance X11-HA, the dual-port 10/25 GbE SFP28 PCIe adapter is used for the cluster interconnect.

Note:

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

- 1. (For Oracle Database Appliance X11-HA) Power on the attached storage shelf, or shelves, by plugging in their AC power cords. Do this before powering on the server nodes as it takes a few minutes for a storage shelf to come online.
- 2. Push the recessed power button to turn on the appliance.

Note:

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

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



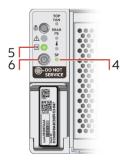


Figure 3-1 Front of Oracle Database Appliance Power Panel

 Table 3-13
 Description of Callouts for Powering On Oracle Database Appliance

Callout	Function
5	Green Power/OK LED, located on the front panel. The light must be in the steady ON position (Green light does not blink) before you log on to the system.
6	Recessed ON/OFF power button, which is located on the front panel of the appliance. Push this button only once. Do not repeatedly push the power button.
4	SP OK LED light, located on the front panel of the appliance.

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

3. Wait for Oracle Database Appliance to complete startup.

Note:

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

Oracle Database Appliance is ready for use when the green Power/OK LED (callout 1) on the front of the system remains steadily on.



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.

- Verifying Cabling and Network Connections
 After powering on Oracle Database Appliance, verify that the network connections are set up correctly.
- 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.

- 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 or ODACLI commands.
- Managing Local Volumes Understand how you can modify the size of logical volumes LOGVOLOPT and LOGVOLU01.

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 : X9-2
INFO : Check for Environment
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 : 31:00.0
SUCCESS : External LSI SAS controller 1 : 9d: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 : X9-2
INFO : Check for Environment
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 : 31:00.0
SUCCESS : External LSI SAS controller 1 : 9d: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 Node0
SUCCESS : Overall Cable Validation on Node0
```

```
SUCCESS : JBODO Nickname set correctly
   SUCCESS : JBOD1 Nickname set correctly
4. Verify the interconnect network:
   # ethtool p1p1
   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
   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: 0x0000000 (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: 0x0000000 (0)
   Link detected: yes
```

Related Topics

• Deployment Checklist for Oracle Database Appliance Bare Metal Systems This checklist provides an overview of the tasks to setup and deploy Oracle Database Appliance bare metal systems for the first time.



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.

Important:

On Oracle Database Appliance X9-2, X10, and X11, the odacli configurefirstnet command supports bonding of ports across two supported network PCI cards of the same type.

NOT_SUPPORTED:

To change the network bonding after the system is deployed, run the cleanup.pl - cleanDefNet command to ensure that no network setup exists in the bonding interface, and then run the odacli configure-firstnet command to configure the new bonding.

Note:

If you enable Link Aggregation Control Protocol (LACP) on the bonding interface when you run the odacli configure-firstnet command, then lacp_rate is set to 1 (fast). You must adjust the switch setting so that it can support this lacp_rate.

- 1. Connect to Oracle ILOM remote console, then log into Oracle Database Appliance as root.
- 2. Run the command configure-firstnet on **both** nodes. You can choose to enable Link Aggregation Control Protocol (LACP) on the bonding interface when you run odacli configure-firstnet.

```
# /opt/oracle/dcs/bin/odacli configure-firstnet
Use bonding on different network interfaces:
    bonding between ports on the same network card [0]
    bonding between Network Card 1 in slot 6 and Network Card 2 in slot 4
[1]
    bonding between Network Card 1 in slot 6 and Network Card 3 in slot 8
[2]
    bonding between Network Card 2 in slot 4 and Network Card 3 in slot 8
[3]
Please input your selection (0 - 3) [0]:
Select the Interface to configure the network on (btbond1 btbond3 btbond5)
[btbond1]:
Use LACP bonding on btbond1 (yes/no) [no]:
Configure DHCP on btbond1 (yes/no) [no]:
INFO: You have chosen Static configuration
Use VLAN on btbond1 (yes/no) [no]:
```



 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 btbond3 interface without configuring DHCP.

```
# /opt/oracle/dcs/bin/odacli configure-firstnet
Select the Interface to configure the network on (btbond1 btbond3 btbond4)
[btbond1]:btbond3
Use LCAP bonding on btbond3 (yes/no) [no]:yes
INFO: network interface [btbond3] in LACP mode
Configure DHCP on btbond3 (yes/no) [no]:
INFO: You have chosen Static configuration
Use VLAN on btbond3 (yes/no) [no]:yes
Configure VLAN on btbond3, input VLAN ID [2 - 4094] 119
INFO: using network interface btbond3.119
Enter the IP address to configure : 10.31.129.36
Enter the Netmask address to configure : 255.255.255.240
Enter the Gateway address to configure [10.31.129.33] :
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 btbond1: 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 Configuring VLAN

```
# /opt/oracle/dcs/bin/odacli configure-firstnet
Select the Interface to configure the network on (btbond1 btbond3 btbond4)
[btbond1]:btbond3
Use LCAP bonding on btbond3 (yes/no) [no]:yes
INFO: network interface [btbond3] in LACP mode
Configure DHCP on btbond3 (yes/no) [no]:
INFO: You have chosen Static configuration
Use VLAN on btbond3 (yes/no) [no]:yes
Configure VLAN on btbond3, input VLAN ID [2 - 4094] 119
INFO: using network interface btbond3.119
Enter the IP address to configure : 10.31.129.36
Enter the Netmask address to configure : 255.255.255.240
Enter the Gateway address to configure [10.31.129.33] :
INFO: Restarting the network
Shutting down interface btbond1:
                                                           [ OK ]
Shutting down interface eml:
                                                           [ OK ]
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 em1: [OK] Bringing up interface plp1: Determining if ip address 192.0.2.24 is already in use for device p1p1... OK] ſ 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

Configuring LACP after Deployment

Use the -o option with the odacli configure-firstnet command to enable or disable LACP on a bonding interface.

Enabling LACP on a bonding interface after deployment:

```
# odacli configure-firstnet -o
INFO: Configure network option
Select the Interface to configure the network on (btbond1 btbond3 btbond5)
[btbond1]:btbond3
Use LACP bonding on btbond3 (yes/no) [no]: yes
INFO: network interface [btbond3] setup in LACP mode
```

Disabling LACP on a bonding interface after deployment:

```
# odacli configure-firstnet -o
INFO: Configure network option
Select the Interface to configure the network on (btbond1 btbond3 btbond5)
[btbond1]:btbond3
Use LACP bonding on btbond3 (yes/no) [yes]: no
INFO: network interface [btbond3] setup in active-backup mode
```

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 19.27:

```
p30403673_1927000_Linux-x86-64.zip
p30403662 1927000 Linux-x86-64.zip
```

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

```
unzip p30403673_1927000_Linux-x86-64.zip
unzip p30403662 1927000 Linux-x86-64.zip
```

The GI and RDBMS Clone files for release 19.27 are extracted.

```
odacli-dcs-19.27.0.0.0-date-GI-19.27.0.0.zip
odacli-dcs-19.27.0.0.0-date-DB-19.27.0.0.zip
```

 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 19.27:

```
put odacli-dcs-19.27.0.0.0-date-GI-19.27.0.0.zip
put odacli-dcs-19.27.0.0.0-date-DB-19.27.0.0.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.

Related Topics

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*.

Starting with Oracle Database Appliance release 19.12, the sizes of volumes /u01 and /opt are smaller than the corresponding sizes in earlier releases. The size of /u01 is now 40GB and



the size of /opt is now 30GB. A new ACFS file system, mounted at /opt/oracle/oak/ pkgrepos/orapkgs/clones, is created during provisioning. The DATA disk group provides space of 150 GB for the file system. The Oracle Grid Infrastructure and Oracle Database clone files are stored on this file system.

Important:

If you want to install third-party software on your Oracle Database Appliance, then ensure that the software does not impact the Oracle Database Appliance software. The version lock on Oracle Database Appliance RPMs displays a warning if the thirdparty software tries to override Oracle Database Appliance RPMs. You must restore the affected RPMs before patching Oracle Database Appliance so that patching completes successfully.

Important:

To ensure that your deployment has the latest Oracle Database Appliance firmware, download the latest server patch and update the repository. Then, run the odacli describe-component command to check whether the firmware is current or out-ofdate. If the firmware is not current, then run the odacli update-server and odacli update-storage commands before you deploy the Oracle Database Appliance software. If the firmware is current, then you can deploy the Oracle Database Appliance software as described in this topic, without updating the server and storage. Before updating the server or storage, ensure that you run the odacli create-prepatchreport command to generate the prechecks report, otherwise an error is displayed.

Note:

Public network gateway must be responsive to ping requests. Oracle Clusterware uses the public network gateway as ping target to facilitate the VIP failover in Oracle Database Appliance high-availability environment.

Note:

Starting with Oracle Database Appliance release 19.27, Oracle ASM Filter Driver (ASMFD) is not automatically configured during provisioning of the appliance. Do not specify the enableAFD parameter in the provisioning JSON file.

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

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli describe-component -v

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

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli describe-component



Update the repository with Oracle Grid Infrastructure and Database software only. To
prevent space issues in /opt, it is recommended that you add other repositories after the
bare metal instance is provisioned.

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
GI_clone_file,/tmp/DB_clone_file
```

For example, for release 19.27:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
odacli-dcs-19.27.0.0.0-date-DB-19.27.0.0.zip,/tmp/odacli-dcs-19.27.0.0.0-
date-GI-19.27.0.0.zip
```

3. Confirm that the repository update is successful:

[root@oda1 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@oda1 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.

Related Topics

Deployment Checklist for Oracle Database Appliance Bare Metal Systems
 This checklist provides an overview of the tasks to setup and deploy Oracle Database
 Appliance bare metal systems for the first time.

Creating the Appliance

Create the appliance using the Browser User Interface or ODACLI commands.

Note:

If you plan to enable multi-user access, then refer to the chapter *Implementing Multi-User Access on Oracle Database Appliance* before you create your appliance.

Creating the Appliance using ODACLI Commands

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. Review the readme in the /opt/oracle/dcs/sample directory carefully along with the provided JSON example files. Create a JSON file with the necessary changes based on your environment and requirements.



See Also:

Creating an Appliance Using a JSON File in this guide for example JSON files and the procedure to create a JSON file.

Note:

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

Creating the Appliance using the Browser User Interface (BUI)

Follow these steps to create the appliance using the BUI:

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

1. Navigate to the Browser User Interface. You are prompted to set the password for the odaadmin 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.

Note:

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 tab, specify the values as follows.
 - a. System Name: Enter the host name.

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

- b. Domain Name: Enter the domain name.
- c. **Region**: Select the region of the world where the Oracle Database Appliance is located.
- d. **Time Zone**: Select the time zone where the Oracle Database Appliance is located.
- e. (Optional) DNS Servers: Enter addresses for one or more DNS servers.

- f. (Optional) NTP Servers: Enter addresses for one or more NTP servers.
- g. Diskgroup Redundancy: 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 40 and 90 to define the percentage of storage reserved for DATA, the remainder is reserved for RECO. For example, if you enter 80, then 80% of the storage for DATA and 20% for RECO.
- i. **Disk Group for Database Home Storage**: Select the disk group, whether DATA or RECO depending on your hardware model, and specify the size to be allocated. This chooses the disk group from which the ACFS storage required for database homes is allocated.
- j. 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.

k. Specify the DNS Servers and NTP Servers details.

Starting with Oracle Database Appliance release 19.16, if you specify DNS servers, then ensure that all host names (except SCAN) are resolvable to one and only one IP address through the given domain name and DNS servers. These include Client Access Network Host Name, VIP Name, and ILOM Host Name. This does not apply to SCAN names as they can resolve to multiple IP addresses. If any of the above host names does not resolve to an IP address or resolves to multiple IP addresses, then the the following error is displayed:

DCS-10045:Validation error encountered: Hostname 'hostname1' does not resolve to a unique IP address.

6. In the Network Information tab, 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:

 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.
- I. 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.
- n. SCAN Name: Specify the Single Client Access Name (SCAN).
- o. SCAN IP Address: Specify the SCAN IP address. You can specify up to three SCAN IP addresses.

Specify the VIP address and SCAN only for high-availability deployments.

- 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.
- 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:
 - **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. SYS and PDB Admin User 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.

For Standard Edition Oracle Database 19c or later, you can choose to enable high availability for single-instance databases. For Standard Edition Oracle Database 19.6 or later, if you choose to create a single-instance database, then the high availability feature is available by default. To disable high-availability, set the value in the **Enable High Availability** field to **No**.

For Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, you can choose to enable high availability for single-instance databases. For Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, if you choose to create a single-instance database, then the high availability feature is disabled by default. To enable high-availability, set the value in the **Enable High Availability** field to **Yes**.

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.
- I. In the **Storage** field, select **ACFS** or **ASM** from the drop-down list. The default is Oracle ASM.
- 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. Selecting Yes enables you to use the console to manage the database.

p. Character set: Select a character set.

- q. National Characterset: Select a national characterset.
- r. Language: Select the database language.
- s. Territory: Select a territory or location from the list.
- t. For Oracle Database Enterprise Edition 19c or later, you can choose to enable Transparent Database Encryption (TDE). Select Yes or No in the Enable TDE option. Specify and confirm the TDE Password. By default, the TDE option is disabled.
- **10.** In the Diagnostics Information tab, configure and enable Oracle ASR or choose to enable trace file redaction.

Enable Trace File Redaction: Select **Yes** if you want to redact sensitive information in diagnostics collections.

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. Select Internal or External in the ASR Type field.
- **b. ASR User Name**: Enter the e-mail address associated with the My Oracle Support account under which the server is registered.
- c. **Password**: Enter the password associated with the My Oracle Support account under which the server is registered.
- d. (Optional) Specify the **HTTPS Port Number** for the ASR manager. The default port number is 16162.
- e. HTTP Proxy used for Upload to ASR: Select Yes or No.
- f. **Proxy Server Name**: If you are using a proxy for upload, enter the proxy server name.
- g. Proxy Port: If you are using a proxy for upload, enter the proxy port.
- h. (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.
- i. **Proxy User Name**: If you are using a proxy for upload, enter the proxy user name.
- (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 high-availability 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.

Related Topics

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.

Related Topics

Deployment Checklist for Oracle Database Appliance Bare Metal Systems
 This checklist provides an overview of the tasks to setup and deploy Oracle Database
 Appliance bare metal systems for the first time.

Related Topics

Reimaging an Oracle Database Appliance Baremetal System
 Reimage Oracle Database Appliance to perform a bare metal restore of Oracle Database
 Appliance.

Related Topics

- Implementing Multi-User Access on Oracle Database Appliance
 Understand how multi-user access can be implemented on Oracle Database Appliance, its
 advantages and restrictions and the associated life cycle management changes for your
 appliance.
- odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Managing Local Volumes

Understand how you can modify the size of logical volumes LOGVOLOPT and LOGVOLU01.

About Local Volumes

During imaging, Oracle Database Appliance creates a RAID1 volume between the two operating system disk. On all systems with Oracle Linux 8 and later, two small partitions are created on this RAID1 volume to support Unified Extensible Firmware Interface (UEFI). The rest of the disk space is assigned to a third partition. A physical volume is initialized on this third partition which is fully assigned to a volume group VolGroupSys. Several logical volumes namely LogVolRoot, LogVolU01, LogVolOPT, and LogVolSwap are created in VolGroupSys. On single-node Oracle Database Appliance systems, two more logical volumes, LogVolReco and LogVolDATA, each of 1 GB in size are also created. Oracle Database Appliance formats LogVolRoot, LogVolU01, and LogVolOPT as ext4 (fourth extended file system), and mounts them at /, /u01, and /opt respectively. These logical volumes use only a part of the available storage, approximately 125 GB.

Note:

The term Local Volume refers to the logical volume and the physical volumes initialized on the operating system disk.



The local volumes LOGVOLOPT and LOGVOLU01 may not have sufficient space for creating Oracle Grid Infrastructure homes, installing additional software, creating Oracle Grid Infrastructure log files, and others. In such cases, extending the size of these local volumes is useful.

Note:

After extension, the size of local volumes cannot be reduced through Oracle Database Appliance tooling. Ensure that you carefully plan local volume extensions.

Viewing and Extending the Local Volume Size Using ODACLI Commands

Run the following command to view all the local volumes:

odacli list-localvolumes

The command displays the total size of the physical volume, the free space available in the volume group, and the space required to support ODABR backup during patching. It also displays the space available for extending the local volumes in a safe manner such that sufficient buffer is reserved for ODABR backup. In addition, it shows the details of all the local volumes in the system.

To modify the local volume size, run the following command:

```
odacli extend-localvolume --name volume_name --size increment_size_in_GB --
force
```

The command enables extension of LogVolU01 and LogVolOPT only. It allows extension up to the size showed by the Space for extension field in the odacli list-localvolumes output.

Viewing and Extending the Local Volume Size Using BUI

Follow these steps:

1. Navigate to the Browser User Interface. You are prompted to set the password for the odaadmin user.

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

- 2. In the Appliance home page, click the Local Volumes link on the left-hand pane.
- 3. In the Local Volumes Details page, you can view the physical volume and logical volume details. For high-availability system, you can view these details for both nodes.
- 4. To increase the local volumes LOGVOLOPT and LOGVOLU01 sizes, click Extend. Confirm your action in the popup window.
- In the Extend Local Volume page, select the Volume Name, and specify the Increment Size in GB. Click Force Run to override the ODABR backup space requirement. You can extend both LOGVOLOPT and LOGVOLU01 volumes.
- 6. Confirm the operation and submit the job. Track the status of the job completion and verify that it completes successfully.



Implementing Multi-User Access on Oracle Database Appliance

Understand how multi-user access can be implemented on Oracle Database Appliance, its advantages and restrictions and the associated life cycle management changes for your appliance.

Caution:

You can enable multi-user access **only** at the time of provisioning Oracle Database Appliance on bare metal systems and **cannot** rollback multi-user access after you provision and deploy your appliance. The Oracle Database Appliance administration model changes when you deploy the Multi-User Access feature. Evaluate your role separation requirements before using this feature. Deploying on a test system first can help with the evaluation and assessment of the new administration model.

Note:

You can enable multi-user access on Oracle Database Appliance DB systems when you create the DB system either using ODACLI commands or Browser User Interface (BUI).

- About Multi-User Access on Oracle Database Appliance
 Before provisioning your appliance, understand how multi-user access can enhance the security of the system and provide an efficient mechanism for role separation.
- About Users, Roles, Entitlements, and Operations on a Multi-User Access Enabled Oracle Database Appliance System Understand the users, roles, entitlements, and operations when you provision your appliance with multi-user access enabled.
- About Granting and Revoking Resource Access Muti-user access allows exclusive or shared access to resources. Review this example about shared resource access.
- Using Passwordless Multi-User Access on Oracle Database Appliance Understand how you can implement passwordless multi-user access on Oracle Database Appliance, its advantages and restrictions, and the associated life cycle management changes for your appliance.
- Provisioning Oracle Database Appliance with Multi-User Access You can enable multi-user access **only** when you provision Oracle Database Appliance, using CLI commands or the Browser User Interface.
- Creating, Viewing, and Deleting Users on Oracle Database Appliance with Multi-User Access

After provisioning the appliance with multi-user access enabled, you can create users with specific entitlements.



- Activating a New User on Oracle Database Appliance with Multi-User Access
 Understand how to activate a new user on multi-user access enabled Oracle Database
 Appliance.
- Granting and Revoking Resource Access on Oracle Database Appliance with Multi-User Access
 - You can grant and revoke resource access on the appliance.
- Viewing Roles, Operations, and Entitlements on Oracle Database Appliance with Multi-User Access

You can view roles and entitlements on the appliance.

 Managing Databases and Database Homes on Oracle Database Appliance with Multi-User Access

The custom user created on multi-user access Oracle Database Appliance can deploy and manage databases and database homes.

 Changing the Password for a User Account on Oracle Database Appliance with Multi-User Access

Understand how to manage passwords on multi-user access Oracle Database Appliance.

• Resetting the Password for a Locked User Account on Oracle Database Appliance with Multi-User Access

Understand how to reset the password on multi-user access Oracle Database Appliance.

About Multi-User Access on Oracle Database Appliance

Before provisioning your appliance, understand how multi-user access can enhance the security of the system and provide an efficient mechanism for role separation.

Currently, a single Oracle Database Appliance account with user name and password is used to securely connect to the appliance, run ODACLI commands, or log into BUI. The root user performs all administration on an Oracle Database Appliance. With multi-user access, you have the option of providing separate access to database administrators to manage databases. Display of resources within the Browser User Interface are also filtered as per user role. The root access is restricted to the Oracle Database Appliance system administrator to access system logs or debug issues that require root access.

When you enable multi-user access, you create multiple users with different roles that restrict them from accessing resources created by other users and also restrict the set of operations they can perform using ODACLI commands or Browser User Interface (BUI). The same user credentials that you set up, can be used for logging into the BUI and running ODACLI commands. The BUI also displays resources and information based on access to the set of resources. A separate **Multi-User Access Management** tab is available only to the odaadmin user to administer the users and resources in the system.

Note:

When you enable multi-user access, the Oracle Database Appliance administrator is odaadmin. This user has access to all the resources on the appliance and can run any operations using ODACLI or the BUI using the same set of credentials. When you do not enable multi-user access, the user name you use to log into BUI is oda-admin.



Note:

The authentication token support for ODACLI session management is linked to a multi-user access user account. Since root is an operating system administrative user and not a multi-user access user, auth token based session management system is not supported when a user logs in as root. Therefore, you must provide an Oracle Database Appliance account user name and password to run any ODACLI command.

Benefits of enabling multi-user access

- Multi-user access feature supports user lifecycle management such as creation, activation, updation, deactivation, deletion, and credential management.
- By using multi-user access, multiple departments such as finance and human resources within the same organization can use Oracle Database Appliance as a consolidation platform for hosting their databases in a secure manner as only the authorized users in the respective departments can access their departmental databases and perform lifecycle management operations on the databases.
- Organizations that have root access policy restrictions can use multi-user access and create separate users with restricted roles.
- Without multi-user access, all databases were created as the default database user chosen during provisioning. Hence, even in a sudo-based multi-user environment, the ODA administrator could not track usage of resources. Now such reporting is possible at the database level.
- Multi-user access feature supports token-based session management. A user enters the password only when they run the first odacli command. Subsequently, a token is generated and till it expires, the user is not required to enter the password again. Each time an odacli command is run, the existing token is refreshed with a new token that has the expiry of 120 mins or the value configured by the odaadmin user. This means if the odacli session is not idle for the expiry duration, the user does not need to enter the password again.
- Both Basic Auth and mTLS modes of authentication are supported. ODACLI and BUI uses Basic Auth. Users such as oracle and grid can also run certain operations on the DCS agent using mTLS-based authentication. Basic Auth is a password-based authentication scheme. mTLS is a certificate-based authentication scheme where both the client (user) and the server (DCS agent) mutually present and authenticate each other's certificate before the authentication is deemed complete.
- Multi-user access provides for user account locking on multiple failed login attempts and password expiration. You can also unlock and reset the account in case the password is forgotten.

Note:

You can enable multi-user access **only** at the time of provisioning Oracle Database Appliance and **cannot** rollback multi-user access after you provision and deploy your appliance. Provision the feature on your test system first, and then deploy this feature on your production system.

Related Topics

- odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.
- ODACLI Command Changes with Multi-User Access on Oracle Database Appliance Understand the ODACLI command changes when you enable multi-user access.

About Users, Roles, Entitlements, and Operations on a Multi-User Access Enabled Oracle Database Appliance System

Understand the users, roles, entitlements, and operations when you provision your appliance with multi-user access enabled.

Note:

Note that in a multi-user access enabled deployment, the oda-admin user is not present. The ODA admin user name is odaadmin. The first user with administrative privileges is called odaadmin. This user can log into the BUI and run ODACLI commands. This user can also create other user accounts with roles and entitlements as required.

About Roles, Entitlements, and Operations

Each user can be assigned one or more roles in a multi-user enabled Oracle Database Appliance system. Each role encompasses a set of entitlements that authorizes a user to perform only a specific set of operations using ODACLI or BUI. Each entitlement in turn, is a group of a similar set of operations. For example, PROVISIONDB-MGMT is an entitlement that encompasses provisioning-related operations such as create-database, clone-database, delete-database, register-database. Similarly, BACKUPDB-MGMT encompasses backup related operations such as create-backup, delete-backup, irestore-database, recover-database , and so on. The ODA-DB role has access to a collection of entitlements such as PROVISIONDB-MGMT, BACKUPDB-MGMT, and PATCHDB-MGMT. A user with the ODA-DB role can perform all the database lifecycle management operations on the databases that they own. Additionally, if a user with the role of ODA-DB is granted the ODA-GRID role as well, this user can now perform Oracle Grid Infrastructure-related operations.

Roles can be internal or external. Internal roles are assigned to system users and are used internally for the purpose of administration of the Oracle Database Appliance system. For example, the ODA-ADMINISTRATOR role is assigned to the Oracle Database Appliance system administrator to manage the appliance or associated entities. Another example is a DB system communicating with the bare metal using a system user with the role of ODA-DBVMINFRA.

External roles can be granted to the new users created by odaadmin, the Oracle Database Appliance system administrator. For example, the odaadmin creates a new user odadb1 with the role of ODA-DB. Now this user odadb1 is entitled to create databases and perform lifecycle management operations because of the role granted to them. A user can have one or more roles.

The topic ODACLI Command Changes with Multi-User Access on Oracle Database Appliance describes the ODACLI commands that have changes for multi-user access and the entitlements required to run the commands.



Multi-User Access User Roles

When you enable multi-user access on Oracle Database Appliance, the following user roles are available:

- ODA-ADMINISTRATOR: This is an internal role assigned to the first user (odaadmin) created during the provisioning of an Oracle Database Appliance. This role entitles odaadmin to run all ODACLI commands or perform all Browser User Interface (BUI) operations. This role cannot be assigned to the new users that odaadmin creates. The odaadmin account is an administrator role that can run any operation (command) on any resource. For example, user oda1 creates a database db1 and user oda2 creates a database db2. Each user can now perform lifecycle management operations on their respective database only. But, odaadmin can patch both databases by running odacli commands. This allows both DBAs (oda1 and oda2) and an overall administrator (odaadmin) to perform functions specific to their role.
- **ODA-DB:** This is an external role available to odaadmin to assign to newly-created users. This role entitles the user to perform database management operations such as create, modify, restore, recover, backup, patch, clone, move, register, and delete.
- ODA-OAKDROOT: This is an internal role that is assigned to system user oakdroot created during provisioning and is used by OAKD to run certain operations such as getdisks and release-disks on the DCS agent. OAKD communicates with DCS through mTLS certificates-based authentication. Hence, this user does not have any password associated with it. Do not use this role to connect by SSH to the appliance or log into the Browser User Intercae to run ODACLI commands. None of the password management commands such as change-password apply to this user.
- **ODA-GRID:** This is an internal role assigned to the grid user. This role entitles the user to run Oracle Grid Infrastructure-related operations.
- **ODA-DBVMINFRA:** This is an internal role assigned to the DBVM user created on the bare metal system when the DB system is provisioned. This role entitles the user to synchronize metadata between the DB system and the bare metal system.

Related Topics

- odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.
- ODACLI Command Changes with Multi-User Access on Oracle Database Appliance Understand the ODACLI command changes when you enable multi-user access.

About Granting and Revoking Resource Access

Muti-user access allows exclusive or shared access to resources. Review this example about shared resource access.

Muti-user access allows exclusive or shared access to resources. It is recommended that each user creates their own database home and then creates databases in the home. This provides for an efficient method of separation of duties where each user has exclusive access to their databases. However, in certain exceptional situations, such as lack of disk space, a user can request the administrator odaadmin to grant them shared access to a resource owned by another user.

For example, if user odal wants to create a database of version 19c and there is already a database home DBH2 of the same version created by another user oda2. With the consent of user oda2, user odal can now request the odaadmin user to grant them shared access to



database home DBH2. Once the shared access is granted, user oda1 can now create a database db1 on the shared database home DBH2 and manage it. Note that user oda1 can connect to the database db1 only through the SYS user password and not as a password-less connection based on operating system authentication, as the database home DBH2 is still owned by user oda2. Oracle Database Appliance resources such as database home, database storage, and databases can be shared accross users in a similar fashion on an on-demand basis. However, there are restrictions to the secondary owner managing the shared resource.

Using Passwordless Multi-User Access on Oracle Database Appliance

Understand how you can implement passwordless multi-user access on Oracle Database Appliance, its advantages and restrictions, and the associated life cycle management changes for your appliance.

Caution:

You can enable passwordless multi-user access **only** at the time of provisioning Oracle Database Appliance on bare metal and DB systems and **cannot** rollback multi-user access after you provision and deploy your appliance. The Oracle Database Appliance administration model changes when you deploy the passwordless multi-user access feature. Evaluate your role separation requirements before using this feature. Deploying on a test system first can help with the evaluation and assessment of the new administration model.

Existing bare metal and DB system deployments that do not have multi-user access enabled or have the earlier multi-user access feature which requires a password when you first run an odacli command, cannot be converted to a passwordless multiuser access deployment.

Note:

Starting with Oracle Database Appliance release 19.23, a passwordless flavor of the multi-user access feature is also available. You can provision a DB system with either flavor of multi-user access on a bare metal system that does not have multi-user access enabled. On such a bare metal system, you can still use role separation and resource ownership capabilities that multi-user access or multi-user access passwordless provides.

- About Passwordless Multi-User Access on Oracle Database Appliance Before provisioning your appliance, understand how passwordless multi-user access can enhance the security of the system and provide an efficient mechanism for role separation.
- Provisioning Oracle Database Appliance with Passwordless Multi-User Access
 You can enable passwordless multi-user access only when you provision Oracle Database
 Appliance using CLI commands. Passwordless multi-user access feature provisioning and
 management is not supported through the Browser User Interface (BUI).

Creating, Viewing, and Deleting Users on Oracle Database Appliance with Passwordless Multi-User Access After provisioning the appliance with passwordless multi-user access enabled, you can

After provisioning the appliance with passwordless multi-user access enabled, you can create users with specific entitlements.

- Changing the Password for a User Account on Oracle Database Appliance with Passwordless Multi-User Access Understand how to manage passwords on multi-user access Oracle Database Appliance.
- Example JSON Files to Create a Single-Node Passwordless Multi-User Enabled Appliance 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 High-Availability Passwordless Multi-User Enabled Appliance

Follow the JSON file example to create a JSON file to deploy a high-availability appliance with the command odacli create-appliance.

Example JSON Files to Create a Single-Node Passwordless Multi-User Enabled DB
 System

Follow the JSON file example to create a JSON file to deploy a single-node DB System, with role separation, with the command odacli create-dbsystem.

Example JSON File to Create a High-Availability Passwordless Multi-User Enabled DB
 System

Follow the JSON file example to create a JSON file to deploy a two-node DB System, with role separation, with the command odacli create-dbsystem.

About Passwordless Multi-User Access on Oracle Database Appliance

Before provisioning your appliance, understand how passwordless multi-user access can enhance the security of the system and provide an efficient mechanism for role separation.

Oracle Database Appliance supports enabling of passwordless multi-user access at the time of provisioning of Oracle Database Appliance, on bare metal systems and DB systems. You must specify the "isMultiUserAccessPLEnabled": true option in the JSON file used for provisioning bare metal systems and DB systems. For more information, see the example JSON file with this option in this chapter.

When you enable passwordless multi-user access, you create multiple users with different roles that restrict them from accessing resources created by other users and also restrict the set of operations they can perform using ODACLI commands.

Note:

You can enable passwordless multi-user access on Oracle Database Appliance bare metal and DB systems at the time of provisioning using ODACLI commands. You cannot use the Browser User Interface (BUI) to enable passwordless multi-user access on Oracle Database Appliance bare metal systems. However, you can use the BUI on the Oracle Database Appliance bare metal system to enable multi-user access on Oracle Database Appliance DB systems at the time of provisioning.

Benefits of enabling passwordless multi-user access

• If your corporate policies prevent direct usage of Oracle Database Appliance user account passwords by employing tools or software that allow access to Oracle Database Appliance through your corporate credentials, then you can configure passwordless multi-user



access and run commands on your appliance without the need for specifying your Oracle Database Appliance account password when you first run an ODACLI command or when your authentication token expires. This does not compromise the security of the system as all communication to the Oracle Database Appliance server is through a strong and secure system generated password, unique for every user.

- Passwordless multi-user access feature provides role separation and supports user lifecycle management such as creation, deletion, and credential management.
- By using passwordless multi-user access, multiple departments such as finance and human resources within the same organization can use Oracle Database Appliance as a consolidation platform for hosting their databases in a secure manner as only the authorized users in the respective departments can access their departmental databases and perform lifecycle management operations on the databases.
- Organizations that have root access policy restrictions can use passwordless multi-user access and create separate users with restricted roles.
- Without multi-user access, all databases were created as the default database user chosen during provisioning. Hence, even in a sudo-based multi-user environment, the ODA administrator could not track usage of resources. Now such reporting is possible at the database level.
- For passwordless multi-user access, you do not have to specify the Oracle Database Appliance account password when you first run an ODACLI command or when the authentication token expires. The Oracle Database Appliance system generates a strong and secure password for every user. This password is internally stored by the system and used when you run odacli commands.
- Both Basic Auth and mTLS modes of authentication are supported. ODACLI uses Basic Auth. Users such as oracle and grid can also run certain operations on the DCS agent using mTLS-based authentication. Basic Auth is a password-based authentication scheme. mTLS is a certificate-based authentication scheme where both the client (user) and the server (DCS agent) mutually present and authenticate each other's certificate before the authentication is deemed complete.

Note:

You can enable passwordless multi-user access **only** at the time of provisioning Oracle Database Appliance and **cannot** rollback passwordless multi-user access after you provision and deploy your appliance. Provision the feature on your test system first, and then deploy this feature on your production system.

Related Topics

- odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.
- ODACLI Command Changes with Multi-User Access on Oracle Database Appliance Understand the ODACLI command changes when you enable multi-user access.



Provisioning Oracle Database Appliance with Passwordless Multi-User Access

You can enable passwordless multi-user access **only** when you provision Oracle Database Appliance using CLI commands. Passwordless multi-user access feature provisioning and management is not supported through the Browser User Interface (BUI).

Provision your appliance as described in the chapter *Provisioning Oracle Database Appliance Bare Metal System*.

Caution:

You can enable passwordless multi-user access **only** at the time of provisioning Oracle Database Appliance on bare metal systems and **cannot** rollback multi-user access after you provision and deploy your appliance. The Oracle Database Appliance administration model changes when you deploy the passwordless multiuser access feature. Evaluate your role separation requirements before using this feature. Deploying on a test system first can help with the evaluation and assessment of the new administration model.

Overall Steps in Provisioning Oracle Database Appliance with Passwordless Multi-User Access Enabled

- 1. Enable passwordless multi-user access.
 - To provision your appliance using a JSON file, add the attribute "isMultiUserAccessPLEnabled": true in the prov_req.json file. If the attribute is set to false or does not exist in the prov_req.json file, then passwordless multi-user access is not enabled during provisioning of the appliance. Note that you can set either multi-user access or passwordless multi-user access in the JSON file, **not** both.

```
"isRoleSeparated": true,
    "isMultiUserAccessPLEnabled": true,
    "osUserGroup": {
        "groups": [{
            "groupId": 1001,
            "groupName": "oinstall",
            "groupRole": "oinstall"
        },
```

•••

- 2. Connect to the Oracle Database Appliance network and run the odacli configurefirstnet command using the Oracle ILOM console.
- 3. Log into Oracle Database Appliance as the root user and run the odacli createappliance -r prov.json command with "isMultiUserAccessPLEnabled": true in the prov.json file.
- 4. After the provisoning job is submitted, log out as root and log in as the odaadmin user using a PAM utility or passwordless SSH and check the status of the provisioning job and ensure that it is successful.



- 5. The system creates Oracle Database Appliance accounts for odaadmin, oracle, and grid users. These are Oracle Database Appliance system users and their accounts are activated during created. The user odaadmin is created with the role of ODA-ADMINISTRATOR while the oracle and grid users are created with the role of ODA_DB and ODA_GRID respectively.
- 6. The system configures the multi-user access repository with a list of roles and entitlements, used for assigning to the users in the system.
- 7. You can now log into the appliance using the PAM utility that is integrated with the appliance. The PAM utility prompts you for your corporate credentials and on successful authentication, logs you into the appliance as an Oracle Database Appliance user as per the mapping defined by the PAM utility administrator. Alternatively, you can set up passwordless SSH to log into the appliance.
- 8. After the bare metal system is provisioned, log in as the odaadmin user and run the odacli create-dbsystem -p prov.json command with "isMultiUserAccessPLEnabled": true in the prov.json file.
- 9. After the DB system is provisioned, log in as the odaadmin user through the PAM utility or passwordless SSH and create additional users, if required.
- **10.** Log into the DB system as the oracle user through the PAM utility or passwordless SSH and create databases for the oracle user.
- **11.** Log into DB system as a custom user through the PAM utility or passwordless SSH and create databases for the custom user.

Related Topics

- Provisioning Oracle Database Appliance Bare Metal System Understand the process to configure Oracle Database Appliance bare metal system.
- odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Creating, Viewing, and Deleting Users on Oracle Database Appliance with Passwordless Multi-User Access

After provisioning the appliance with passwordless multi-user access enabled, you can create users with specific entitlements.

After you provision your appliance with multi-user access enabled, do the following:

Creating, Viewing, and Deleting Users with ODACLI Commands

1. Connect to the appliance as the odaadmin user.

ssh odaadmin@oda-box hostname/IP

- 2. Run any ODACLI command and provide the odaadmin password when prompted.
- 3. On successful authentication, create a user with the following command:

odacli create-user -u username -r comma-separated role names



For example, create a user dbuser1 with lifecycle management privileges for dabatases:

odacli create-user -u dbuser1 -r ODA-DB

The odaadmin user creates dbuser1 and assigns a temporary password.

- 4. After the user is created successfully, the dbuser1 can log into the appliance with the temporary password.
- 5. The dbuser1 is in the Inactive state. Activate the user with the following command:

odacli activate-user

You are prompted to change the password. Enter the temporary password, the new password, and confirm the new password.

- Use the new password to connect by SSH into the appliance and run ODACLI commands or connect to the Browser User Interface.
- 7. The odaadmin user can view all the users in the system:
 - # odacli list-users
- 8. The odaadmin user can view details for a user in the system:
 - # odacli describe-user -u user id
- 9. Delete a user in the system. Note that only the odaadmin user can delete a user in the system.

odacli delete-user -u user id

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Changing the Password for a User Account on Oracle Database Appliance with Passwordless Multi-User Access

Understand how to manage passwords on multi-user access Oracle Database Appliance.

Note:

If your appliance is configured as passwordless multi-user enabled, then all user accounts are preactivated during creation and never get locked because the system internally generates the password for each user and provides it to the DCS agent for authentication when required for running ODACLI commands. For passwordless multi-user enabled systems, do **not** run any scripts for unlocking the odaadmin account or the odacli reset-password command to reset the password. Run the odacli change-password command to change the system generated password for your Oracle Database Appliance account.

Changing the Password on Passwordless Multi-User Access Enabled System Using ODACLI Commands

 You can change password for an Oracle Database Appliance user, whose account is active. This command resets the password of this user account to a new randomly generated password.

odacli change-password

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Example JSON Files to Create a Single-Node Passwordless Multi-User Enabled Appliance

Follow these JSON file examples to create a JSON file to deploy a single node appliance with the command odacli create-appliance.

Note:

If you do not enter your network and Oracle ILOM information correctly based on your setup, then network access is lost to both the host and Oracle ILOM.

When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

Note: To configure Oracle ASR during provisioning, always specify the asrType parameter in the JSON file.

Example 5-1 JSON File to Create a Single Node Oracle Database Appliance with Role Separation and Passwordless Multi-User Access

The following is an example of a JSON file that creates a single node appliance on Oracle Database Appliance. The example uses role separation and enables passwordless multi-user access.

```
{
"instance" : {
   "name" : "odambox",
   "instanceBaseName" : "odambox-c",
   "dbEdition" : "EE",
   "timeZone" : "UTC",
   "ntpServers" : ["xx.x.xx"],
   "dnsServers" : ["x.x.x.xx","xx.x.xx","xx.x.xx"],
   "domainName" : "example.com",
   "isRoleSeparated" : true,
   "isMultiUserAccessPLEnabled" : 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"
    } ]
  }
},
 "users": [
                  "id": 1000,
                  "name": "ugrid",
                  "role": "gridUser"
              },
              {
                  "id": 1001,
                  "name": "uoracle",
                  "role": "oracleUser"
              }
          ]
      },
      "multiUserAccess": {
          "isMultiUserAccessPLEnabled": true
      }
  },
"sysOraHomeStorage": {
      "volumeSize": "160",
      "diskgroup": "DATA"
  }
"nodes" : [ {
```

```
"nodeNumber" : "0",
  "nodeName" : "odambox",
  "network" : [ {
     "nicName" : "btbond1",
     "ipAddress" : "xx.x.x.xx",
     "subNetMask" : "xxx.xxx.xx",
     "gateway" : "xx.x.x.",
     "networkType" : [ "Public" ],
     "isDefaultNetwork" : true
   },
  ],
  "ilom" : {
   "ilomName": "odambox-c",
   "ipAddress":"xx.x.x.xx",
   "subNetMask":"xxx.xxx.xx",
   "gateway":"xx.x.x.x"
   }
}],
"grid" : {
  "diskGroup" : [ {
   "diskGroupName" : "DATA",
   "redundancy" : "NORMAL",
   "diskPercentage" :80
  }, {
    "diskGroupName" : "RECO",
   "redundancy" : "NORMAL",
    "diskPercentage" :20
 }],
"scan" : null,
"vip": null,
 "language" : "en"
},
"database" : {
  "dbName" : "myTestDb",
  "databaseUniqueName": "myTestDb sealkj",
  "dbEdition" : "EE",
  "dbVersion" : "19.26.0.0",
 "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",
    "proxyPort":"80",
    "proxyPort":"80",
    "proxyPort":"80",
    "proxyPort":"80",
    "proxyPort":"80",
    "proxyPassword":"proxy-user",
    "proxyPassword":"proxy-password",
    "httpsPortNumber":"16163"
}
```

Example 5-2 JSON File to Create a Single Node Oracle Database Appliance without Role Separation and with Passwordless Multi-User Access

The following is an example of a JSON file that creates an Oracle Database Appliance without using role separation and with passwordless multi-user access. This example creates two groups (oinstall and dba) and one user (oracle).

```
{
  "instance" : {
    "name" : "odambox",
    "instanceBaseName" : "odambox-c",
    "dbEdition" : "EE",
    "timeZone" : "UTC",
    "ntpServers" : ["xx.x.x.xx"],
    "dnsServers" : ["xx.x.xx","xx.x.xx","xx.x.xx"],
    "domainName" : "example.com",
    "isRoleSeparated" : false,
    "isMultiUserAccessPLEnabled" : true,
    "osUserGroup" : {
      "groups" : [ {
        "groupId" : 1001,
        "groupName" : "oinstall",
        "groupRole" : "oinstall"
      }, {
        "groupId" : 1002,
        "groupName" : "dba",
        "groupRole" : "dba"
      }],
        "multiUserAccess": {
            "isMultiUserAccessPLEnabled": true
        }
    },
  "nodes" : [ {
    "nodeNumber" : "0",
    "nodeName" : "odambox",
    "network" : [ {
       "nicName" : "btbond1",
       "ipAddress" : "xx.x.x.xx",
       "subNetMask" : "xxx.xxx.xx.x",
       "gateway" : "xx.x.x.x",
       "networkType" : [ "Public" ],
```

```
"isDefaultNetwork" : true
   },
  ],
  "ilom" : {
    "ilomName":"odambox-c",
    "ipAddress":"xx.x.x.xx",
    "subNetMask":"xxx.xxx.xxx.r",
    "gateway":"xx.x.x.x"
   }
}],
"grid" : {
  "diskGroup" : [ {
    "diskGroupName" : "DATA",
    "redundancy" : "NORMAL",
    "diskPercentage" :80
  }, {
    "diskGroupName" : "RECO",
    "redundancy" : "NORMAL",
    "diskPercentage" :20
  }],
"scan" : null,
"vip": null,
 "language" : "en"
},
"database" : {
  "dbName" : "myTestDb",
  "databaseUniqueName":"myTestDb sea1kj",
  "dbEdition" : "EE",
  "dbVersion" : "19.26.0.0",
  "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",
"httpsPortNumber":"16163"
}
```

Example JSON File to Create a High-Availability Passwordless Multi-User Enabled Appliance

Follow the JSON file example to create a JSON file to deploy a high-availability appliance with the command odacli create-appliance.

Note:

1

{

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 5-3 JSON File to Create a High-Availability Oracle Database Appliance with Role Separation and with Passwordless Multi-User Access

The following is an example of a JSON file that creates a high-availability appliance on Oracle Database Appliance bare metal platform. The example uses role separation and with passwordless multi-user access. 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,
   "isMultiUserAccessPLEnabled" : 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"
         }
      ]
   },
   "users": [
              {
                  "id": 1000,
                  "name": "ugrid",
                  "role": "gridUser"
             },
              {
                  "id": 1001,
                  "name": "uoracle",
                  "role": "oracleUser"
             }
         ]
     },
     "multiUserAccess": {
         "isMultiUserAccessPLEnabled": true
     }
},
   "objectStoreCredentials":null
},
"sysOraHomeStorage": {
     "volumeSize": "160",
     "diskgroup": "DATA"
 }
"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
```

```
},
   ],
   "scan":{
      "scanName":"odahaboxc1-scan",
      "ipAddresses":[
         "10.31.98.182",
         "10.31.98.183"
      ]
   },
   "vip":[
      {
         "nodeNumber":"0",
         "vipName":"odahaboxc1n2-vip",
         "ipAddress":"10.31.98.159"
      },
      {
         "nodeNumber":"1",
         "vipName": "odahaboxc1n1-vip",
         "ipAddress":"10.31.98.158"
   ],
   "language":"en"
},
"database":{
   "dbName": "myTestDb",
   "databaseUniqueName":"myTestDb sea1kj",
   "dbVersion":"19.26.0.0",
   "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
```



}

Example JSON Files to Create a Single-Node Passwordless Multi-User Enabled DB System

Follow the JSON file example to create a JSON file to deploy a single-node DB System, with role separation, with the command odacli create-dbsystem.

Use the example JSON file to create a file for your environment.

Note:

It is important to review the readme and the examples carefully before creating your JSON file.

Example 5-4 JSON File to Create a Single-Node Oracle KVM Database System with Role Separation and Passwordless Multi-User Access

The following is an example of a JSON file that creates a single-node Oracle KVM Database System on Oracle Database Appliance bare metal platform. The example uses role separation and passwordless multi-user access. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test example",
        "shape": "odb2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "enableRoleSeparation": true,
        "customRoleSeparation": {
            "groups": [
                 {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                 },
                 {
                     "name": "dbaoper",
                     "id": 1002,
                     "role": "dbaoper"
                 },
                 {
                     "name": "dba",
                     "id": 1003,
                     "role": "dba"
                 },
                 {
                     "name": "asmadmin",
                     "id": 1004,
                     "role": "asmadmin"
```

```
},
            {
                "name": "asmoper",
                "id": 1005,
                 "role": "asmoper"
            },
            {
                 "name": "asmdba",
                 "id": 1006,
                 "role": "asmdba"
            }
        ],
        "users": [
            {
                 "name": "grid",
                 "id": 1000,
                 "role": "gridUser"
            },
            {
                 "name": "oracle",
                 "id": 1001,
                 "role": "oracleUser"
            }
        1
    "users": [
            {
                 "id": 1000,
                 "name": "ugrid",
                 "role": "gridUser"
            },
            {
                "id": 1001,
                "name": "uoracle",
                 "role": "oracleUser"
            }
        ]
    },
    "multiUserAccess": {
        "isMultiUserAccessPLEnabled": true
    }
},
    }
},
"database": {
    "name": "db19",
    "uniqueName": "db19",
    "domainName": "example.com",
    "version": "19.27.0.0.250415",
    "edition": "EE",
    "type": "SI",
    "dbClass": "OLTP",
    "shape": "odb2",
    "role": "PRIMARY",
    "targetNodeNumber": null,
    "enableDbConsole": false,
    "enableFlashStorage": false,
```

```
"enableFlashCache": false,
        "enableUnifiedAuditing": true,
        "enableEEHA": true,
        "enableSEHA": false,
        "redundancy": null, <<< if diskgroup redundancy is FLEX, then database
redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can be null
        "characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "ENGLISH"
        },
        "enableTDE": false,
         "isCdb": true,
            "pdbName": "pdb1",
            "pdbAdminUser": "pdbadmin"
    },
    "network": {
        "domainName": "test domain",
        "ntpServers": [
            "xx.xxx.xx.xx"
        ],
        "dnsServers": [
            "xx.xxx.xx.xx"
        ],
        "nodes": [
            {
                "name": "node1",
                "ipAddress": "xx.xx.xx.xx",
                "netmask": "xxx.xxx.xxx.r",
                "gateway": "xx.xx.xx",
                "number": 0
            }
        ],
  "publicVNetwork": "vnet1"
    },
    "grid": {
        "language": "en"
    }
}
```

Example 5-5 JSON File to Create a Single-Node Oracle KVM Database System without Role Separation and with Passwordless Multi-User Access

The following is an example of a JSON file that creates a single-node Oracle KVM Database System on Oracle Database Appliance bare metal platform, without role separation and with passwordless multi-user access. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test_example",
        "shape": "odb2",
        "customMemorySize": "24G",
        "timeZone": "America/Los_Angeles",
        "diskGroup": "DATA",
```

```
"cpuPoolName": "shared dbsystem cpupool",
    "database": {
        "name": "db19",
        "uniqueName": "db19",
        "domainName": "example.com",
        "version": "19.27.0.0.250415",
        "edition": "EE",
        "type": "SI",
        "dbClass": "OLTP",
        "shape": "odb4",
        "role": "PRIMARY",
        "targetNodeNumber": null,
        "enableDbConsole": false,
        "enableUnifiedAuditing": true,
        "redundancy": "HIGH", <<< if diskgroup redundancy is FLEX, then
database redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can
be null
        "characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "ENGLISH"
        },
        "enableTDE": false,
        "isCdb": true,
            "pdbName": "pdb1",
            "pdbAdminUser": "pdbadmin"
    },
     "users": [
                {
                    "id": 1000,
                    "name": "ugrid",
                    "role": "gridUser"
                },
                {
                    "id": 1001,
                    "name": "uoracle",
                    "role": "oracleUser"
                }
            ]
        },
        "multiUserAccess": {
            "isMultiUserAccessPLEnabled": true
        }
    },
    "network": {
        "domainName": "test domain",
        "ntpServers": [],
        "dnsServers": [
            "xx.xxx.xx."
        ],
        "nodes": [
            {
                "name": "node1",
                "ipAddress": "xx.xx.xx.xx",
                "netmask": "xxx.xxx.xxx.r",
```

}

Example JSON File to Create a High-Availability Passwordless Multi-User Enabled DB System

Follow the JSON file example to create a JSON file to deploy a two-node DB System, with role separation, with the command odacli create-dbsystem.

Use the example JSON file to create a file for your environment.

Example 5-6 JSON File to Create Two-Node Oracle KVM Database System without Role Separation and with Passwordless Multi-User Access

The following is an example of a JSON file that creates two-node Oracle KVM Database System on Oracle Database Appliance bare metal platform, without role separation and with passwordless multi-user access. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test system",
        "shape": "odb2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
        "domainName": "test domain",
        "version": "19.27.0.0.250415",
        "edition": "EE",
        "type": "SI",
        "dbClass": "OLTP",
        "shape": "odb2",
        "role": "PRIMARY",
        "targetNodeNumber": "0",
        "enableDbConsole": false,version
        "enableUnifiedAuditing": true,
        "enableEEHA": true,
        "redundancy": "MIRROR", <<< if diskgroup redundancy is FLEX, then
database redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can
be null
        "characterSet": {
            "characterSet": "AL32UTF8",
```

```
"nlsCharacterset": "AL16UTF16",
        "dbTerritory": "AMERICA",
        "dbLanguage": "AMERICAN"
    },
     "enableTDE": false,
     "isCdb": true,
        "pdbName": "pdb1",
        "pdbAdminUser": "pdbadmin"
},
 "users": [
            {
                "id": 1000,
                "name": "ugrid",
                "role": "gridUser"
            },
            {
                "id": 1001,
                "name": "uoracle",
                "role": "oracleUser"
            }
        ]
   },
    "multiUserAccess": {
        "isMultiUserAccessPLEnabled": true
    }
},
"network": {
    "domainName": "test domain",
    "ntpServers": [],
    "dnsServers": [
        "xx.xxx.xx."
   ],
    "nodes": [
        {
            "name": "node1",
            "ipAddress": "xx.xx.xxx.xx",
            "netmask": "xxx.xxx.xx",
            "gateway": "xx.xx.xxx.x",
            "number": 0,
            "vipName": "nodel-vip",
            "vipAddress": "xx.xx.xxx"
        },
        {
            "name": "node2",
            "ipAddress": "xx.xx.xxx.xx",
            "netmask": "xxx.xxx.xxx.r",
            "gateway": "xx.xx.xx.x",
            "number": 1,
            "vipName": "node2-vip",
            "vipAddress": "xx.xx.xxx"
        }
   ],
    "publicVNetwork": "vnet1",
    "scanName": "test-scan",
    "scanIps": [
        "xx.xx.xxx.xx",
```

```
"xx.xx.xxx.xx"
]
},
"grid": {
    "language": "en"
}
}
```

Example 5-7 JSON File to Create Two-Node Oracle KVM Database System with Role Separation and with Passwordless Multi-User Access

The following is an example of a JSON file that creates two-node Oracle KVM Database System on Oracle Database Appliance bare metal platform. The example uses role separation and with passwordless multi-user access. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test system",
        "shape": "odb2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "enableRoleSeparation": true,
        "customRoleSeparation": {
            "groups": [
                 {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                 },
                 {
                     "name": "dbaoper",
                     "id": 1002,
                     "role": "dbaoper"
                 },
                 {
                     "name": "dba",
                     "id": 1003,
                     "role": "dba"
                 },
                 {
                     "name": "asmadmin",
                     "id": 1004,
                     "role": "asmadmin"
                 },
                 {
                     "name": "asmoper",
                     "id": 1005,
                     "role": "asmoper"
                 },
                 {
                     "name": "asmdba",
                     "id": 1006,
```

```
"role": "asmdba"
                }
            ],
            "users": [
                {
                    "name": "grid",
                    "id": 1000,
                    "role": "gridUser"
                },
                {
                    "name": "oracle",
                    "id": 1001,
                    "role": "oracleUser"
                }
            ]
        }
    },
     "users": [
                {
                    "id": 1000,
                    "name": "ugrid",
                    "role": "gridUser"
                },
                {
                    "id": 1001,
                    "name": "uoracle",
                    "role": "oracleUser"
                }
            1
        },
        "multiUserAccess": {
            "isMultiUserAccessPLEnabled": true
        }
    },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
        "domainName": "test domain",
        "version": "19.27.0.0.250415",
        "edition": "EE",
        "type": "SI",
        "dbClass": "OLTP",
        "shape": "odb2",
        "role": "PRIMARY",
        "targetNodeNumber": "0",
        "enableDbConsole": false,
        "enableUnifiedAuditing": true,
        "enableEEHA": true,
        "redundancy": null, <<< if diskgroup redundancy is FLEX, then
database redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can
be null
        "characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "AMERICAN"
```

```
},
    "enableTDE": false,
    "isCdb": true,
        "pdbName": "pdb1",
        "pdbAdminUser": "pdbadmin"
},
"network": {
    "domainName": "test domain",
    "ntpServers": [],
    "dnsServers": [
        "xx.xxx.xx.xx"
    ],
    "nodes": [
        {
            "name": "node1",
            "ipAddress": "xx.xx.xxx.xx",
            "netmask": "xxx.xxx.xxx.r",
            "gateway": "xx.xx.xx.x",
            "number": 0,
            "vipName": "node1-vip",
            "vipAddress": "xx.xx.xxx"
        },
        {
            "name": "node2",
            "ipAddress": "xx.xx.xxx.xx",
            "netmask": "xxx.xxx.xxx.r",
            "gateway": "xx.xx.xxx.x",
            "number": 1,
            "vipName": "node2-vip",
            "vipAddress": "xx.xx.xxx"
        }
    ],
    "publicVNetwork": "vnet1",
    "scanName": "test-scan",
    "scanIps": [
        "xx.xx.xxx.xx",
        "xx.xx.xx.xx"
    ]
},
"grid": {
    "language": "en"
}
```

Provisioning Oracle Database Appliance with Multi-User Access

You can enable multi-user access **only** when you provision Oracle Database Appliance, using CLI commands or the Browser User Interface.

Provision your appliance as described in the chapter *Provisioning Oracle Database Appliance Bare Metal System*.

}

Caution:

You can enable multi-user access **only** at the time of provisioning Oracle Database Appliance on bare metal systems and **cannot** rollback multi-user access after you provision and deploy your appliance. The Oracle Database Appliance administration model changes when you deploy the Multi-User Access feature. Evaluate your role separation requirements before using this feature. Deploying on a test system first can help with the evaluation and assessment of the new administration model.

Note:

You can specify the token expiration duration, password expiration duration, maximum failed login attempts, and other details when you provision multi-user access enabled Oracle Database Appliance with JSON file. You can also specify these values as a one-time activity from the Browser User Interface when you configure multi-user access and provision Oracle Database Appliance using the Browser User Interface.

Overall Steps in Provisioning Oracle Database Appliance with Multi-User Access Enabled

- 1. Enable multi-user access.
 - If you provision your appliance using a JSON file, then add the attribute "isMultiUserAccessEnabled": true in the prov_req.json file. If the attribute is set to false or does not exist in the prov_req.json file, then multi-user access is not enabled during provisioning of the appliance.

```
"isRoleSeparated": true,
    "isMultiUserAccessEnabled": true,
    "osUserGroup": {
        "groups": [{
            "groupId": 1001,
            "groupName": "oinstall",
            "groupRole": "oinstall"
        },
....
```

You can also set the multi-user access attributes by adding the following in the JSON file:

```
},
  "asr": null,
  "multiUserAccess": {
    "dcsUserPasswdExpDurationInDays": 90,
        "tokenExpirationInMins": 120,
        "maxNumFailedLoginAttempts": 3
   }
}
```

The values for these attributes are as follows:

- **Token expiration duration in minutes:** The minimum value you can specify is 10 minutes, the maximum value is 600 minutes, and the default is 120 minutes.
- Password expiration duration in days: The minimum value you can specify is 30 days, the maximum value is 180 days, and the default is 90 days.
- Maximum failed login attempts allowed: The minimum value you can specify is
 2, the maximum value is 5, and the default is 3.
- If you create the appliance using the Browser User Interface (BUI), then select the **Enable Multi-User Access (N/A for DB System)** checkbox in the BUI login page.
- 2. Provide passwords for odaadmin, oracle, and grid users. These are Oracle Database Appliance system users and their accounts are activated during created. The user odaadmin is created with the role of ODA-ADMINISTRATOR while the oracle and grid users are created with the role of ODA DB and ODA GRID respectively.
- 3. The system configures the multi-user access repository with a list of roles and entitlements, used for assigning to the users in the system.
- 4. You can now log into the appliance with the newly-created user credentials and deploy databases.

Provisioning Oracle Database Appliance Using the Browser User Interface with Multi-User Access Enabled

1. Access the Browser User Interface:

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

- 2. For the first login, since the odaadmin role is not configured, you are prompted to provide the ODA password and enable multi-user access.
- 3. Select Enable Multi-User Access (N/A for DB System) and provide a strong password for the ODA user.
- 4. Click Configure Multi-User Settings and then set the User Password Expiry Duration (In Days), Session Expiration for CLI (minutes), and Maximum Failed Login Attempts. Click Save to save these settings and return to the Login page on the BUI.
- 5. Click Submit. A confirmation message is displayed on successful creation of the user.
- 6. Click OK. You are redirected to the Login page.
- 7. Specify the User Name and ODA Password and click Login. Note that the ODA admin user name is odaadmin if multi-user access is enabled. If multi-user access is not enabled, then the ODA admin user name is oda-admin.
- 8. In the Create Appliance page, specify the details for creating the appliance. See the topic *Creating the Appliance* for detailed information about the information you need to provide.
- Select Assign same password for admin, oracle, grid users if you want to specify the same password for all users. Otherwise, specify different passwords for the system admin, oracle, and grid users.
- 10. Click Submit to create the appliance with multi-user access enabled.
- **11.** 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.



Related Topics

- Provisioning Oracle Database Appliance Bare Metal System
 Understand the process to configure Oracle Database Appliance bare metal system.
- odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Creating, Viewing, and Deleting Users on Oracle Database Appliance with Multi-User Access

After provisioning the appliance with multi-user access enabled, you can create users with specific entitlements.

After you provision your appliance with multi-user access enabled, do the following:

Creating, Viewing, and Deleting Users with ODACLI Commands

1. Connect to the appliance as the odaadmin user.

ssh odaadmin@oda-box hostname/IP

- 2. Run any ODACLI command and provide the odaadmin password when prompted.
- 3. On successful authentication, create a user with the following command:

odacli create-user -u username -r comma-separated role names

For example, create a user dbuser1 with lifecycle management privileges for dabatases:

odacli create-user -u dbuser1 -r ODA-DB

The odaadmin user creates dbuser1 and assigns a temporary password.

- 4. After the user is created successfully, the dbuser1 can log into the appliance with the temporary password.
- 5. The dbuser1 is in the Inactive state. Activate the user with the following command:

odacli activate-user

You are prompted to change the password. Enter the temporary password, the new password, and confirm the new password.

- Use the new password to connect by SSH into the appliance and run ODACLI commands or connect to the Browser User Interface.
- 7. The odaadmin user can view all the users in the system:

odacli list-users

8. The odaadmin user can view details for a user in the system:

```
# odacli describe-user -u user id
```



9. Delete a user in the system. Note that only the odaadmin user can delete a user in the system.

```
# odacli delete-user -u user id
```

Creating, Viewing, and Deleting Users with Browser User Interface

1. Log into the Browser User Interface as the odaadmin user:

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

- 2. Click the Multi-User Access tab.
- 3. Click the Users link on the left-hand pane.
- 4. Click Create User.
- In the Create User page, provide the User ID, specify the Role, and provide the ODA Password for this user. Note that the same user credentials work for login for BUI and ODACLI commands.
- 6. Optionally, click Generate mTLS Certificate to enable mTLS-based authentication.
- 7. Click Create.
- 8. 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.
- In the Multi-User Access tab, on the Users page, click on the link for the user whose details you want to view.
- 10. To delete a user, log in as the the odaadmin user. In the Actions drop-down list, select **Delete**. Note that only a user of type **Custom** can be deleted.

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Activating a New User on Oracle Database Appliance with Multi-User Access

Understand how to activate a new user on multi-user access enabled Oracle Database Appliance.

Activating the New User on Multi-User Access Enabled System Using ODACLI Commands

- 1. After a new user is created by odaadmin successfully, the new user, for example, dbuser1 can log into the appliance with the temporary password.
- 2. Activate the user with the following command:

```
odacli activate-user
```



You are prompted to change the password. Enter the temporary password, the new password, and confirm the new password.

Activating the New User on Multi-User Access Enabled System Using Browser User Interface

1. After a new user is created by odaadmin, log into the Browser User Interface as the new user:

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

- 2. Specify the User Name and the temporary password in the ODA Password field.
- 3. Since this is a new account, the Account Status is Inactive. You are prompted to specify and confirm a new password.
- 4. Specify and confirm the Password and click Submit.
- 5. On successful password change, log into the Browser User Interface with the new password.

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Granting and Revoking Resource Access on Oracle Database Appliance with Multi-User Access

You can grant and revoke resource access on the appliance.

Granting and Revoking Resource Access with ODACLI Commands

· Grant or revoke access to a resource in a multi-user access enabled system:

```
# odacli grant-resource-access -ri resource_ID -u user_name
# odacli revoke-resource-access -ri resource ID -u user name
```

View access to a DCS resource in a multi-user access system:

odacli describe-resource-access -ri resource ID

• View access to all DCS resources defined in a multi-user access system:

```
# odacli list-resources-access -ao -rn resource name -rt resource type
```

Granting and Revoking Resource Access with Browser User Interface

1. Log into the Browser User Interface as odaadmin:

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

- 2. Click the Multi-User Access tab.
- 3. Click the Resources link on the left-hand pane.
- 4. Click on a Resource to view more details.



- For a Resource, in the Actions drop down list, select Grant Resource Access to grant the user shared access to a resource. Select the User Name from the drop-down list and click Grant. Click Yes to confirm and submit the job.
- Select Revoke Resource Access to revoke access to a resource from a user. Select the User Name from the drop-down list and click Revoke. Click Yes to confirm and submit the job.

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Viewing Roles, Operations, and Entitlements on Oracle Database Appliance with Multi-User Access

You can view roles and entitlements on the appliance.

Viewing Roles, Operations, and Entitlements with ODACLI Commands

Note:

For Oracle Database Appliance release 19.13, the multi-user access feature is available for standalone Oracle Database Appliance systems. During provisioning, a single domain and tenancy is created by default and all users are created within the default domain and tenancy.

• View all the roles defined in the system:

```
# odacli list-user-roles
```

• View details for a user role in the system:

```
# odacli describe-user-role -n role name
```

View all the entitlements defined in the system:

odacli list-user-entitlements

- View details for an entitlement in the system:
 - # odacli describe-user-entitlement -n entitlement name
- View all the operations defined in the system:

odacli list-user-operations

- View details for an operation in the system:
 - # odacli describe-user-operation -n operation name

• View the domains defined in the system. In this release, this is the default domain.

odacli list-domains

• View details for a domain in the system:

odacli describe-domain -dn domain name

- View the tenants in a multi-user access enabled domain. In this release, this is the default tenancy.
 - # odacli list-tenants
- View details for a tenant in a multi-user access enabled domain:

odacli describe-tenant -tn tenant name

Viewing Roles, Operations, and Entitlements with Browser User Interface

1. Log into the Browser User Interface as odaadmin:

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

- 2. Click the Multi-User Access tab.
- 3. Click the Roles link on the left-hand pane. The roles defined in the system are displayed. These roles cannot be edited or updated.
- 4. Click on a Role to view more details.
- 5. Click the Entitlements link on the left-hand pane. The entitlements defined in the system are displayed. These entitlements cannot be edited or updated.
- 6. Click on an Entitlement to view more details.

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Managing Databases and Database Homes on Oracle Database Appliance with Multi-User Access

The custom user created on multi-user access Oracle Database Appliance can deploy and manage databases and database homes.

After you create a custom dbuser1 on an Oracle Database Appliance with multi-user access enabled, manage databases as follows:

Creating and Listing Databases and Database Homes Using ODACLI Commands

1. Connect to the appliance as dbuser1.

ssh dbuser1@oda-box hostname/IP



2. Create a database:

odacli create-database -n dbName -v dbVersion

3. Run the odacli list-databases to view the databases owned by dbuser1:

odacli list-databases

Another user with the ODA-DB role cannot use the resource owned by dbuser1 to create a database home, thus ensuring role separation.

4. Use the -all option on the appliance when multi-user access is enabled to view all the databases in the system.

```
odacli list-databases -all
```

5. Use the -all option on the appliance when multi-user access is enabled to view all the database homes in the system.

odacli list-dbhomes -all

Creating and Listing Databases and Database Homes Using Browser User Interface

1. Log into the Browser User Interface as dbuser1:

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

- 2. Click the **Database** tab.
- 3. Click Show All Databases. A list of all databases in the system is displayed.
 - View Details: View the details of the database.
 - Modify: Modify the database
 - Move: Move the database
 - Upgrade: Upgrade the database
 - **Delete:** Delete the database.
 - Grant Access: Grant access privilege to the database to a user.
 - Revoke Access: Revoke access privilege to the database from a user.
 - View Pre-patch reports: View prechecks report for patching.
- 4. Click the Database Home link on the left hand pane. A list of all database homes in the system is displayed.
- For a database home, you can click the Actions dropdown list, and select from the following options:
 - **View Database:** View the details of the database home.
 - **Delete:** Delete the database.
 - **Grant Access:** Grant access privilege to the database home to a user.
 - **Revoke Access:** Revoke access privilege to the database home from a user.
 - View Pre-patch reports: View prechecks report for patching.



Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Changing the Password for a User Account on Oracle Database Appliance with Multi-User Access

Understand how to manage passwords on multi-user access Oracle Database Appliance.

Changing the Password on Multi-User Access Enabled System Using ODACLI Commands

You can change password for an Oracle Database Appliance user, whose account is active:

odacli change-password

Changing the Password on Multi-User Access Enabled System Using Browser User Interface

1. Log into the Browser User Interface as the user whose password you want to change:

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

- 2. To change the Account password at any time: Click on the Account drop down list in the top right-hand side of Browser User Interface and select **Change Password**.
- 3. Specify the **Old Password** and also specify and confirm the new **Password** and click **Submit**.

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Resetting the Password for a Locked User Account on Oracle Database Appliance with Multi-User Access

Understand how to reset the password on multi-user access Oracle Database Appliance.



Resetting Password for a Locked User Account on Multi-User Access Enabled System Using ODACLI Commands

Note:

If your appliance is configured as passwordless multi-user enabled, then all user accounts are preactivated during creation and never get locked because the system internally generates the password for each user and provides it to the DCS agent for authentication when required for running ODACLI commands. For passwordless multi-user enabled systems, do **not** run any scripts for unlocking the odaadmin account or the odacli reset-password command to reset the password. Run the odacli change-password command to change the system generated password for your Oracle Database Appliance account.

- Unlock the odaadmin user account that is locked due to multiple failed login attempts or password expiry.
 - 1. Log in as root.
 - 2. Run the following:

/opt/oracle/dcs/bin/resetCredsForOdaAdmin.sh

A temporary password is assigned to the odaadmin user.

- 3. Log in as the odaadmin user with the temporary password.
- 4. Run the following command:

odacli reset-password

You are prompted to provide the temporary password and specify and confirm the new password. After the command runs successfully, the user account is unlocked.

- Unlock any non-admin user account that is locked due to multiple failed login attempts or password expiry.
 - 1. Log in as odaadmin.
 - 2. Run the following command:

odacli authorize-user

After you provide a temporary password, the account is unlocked.

- 3. Log in as the user whose account was locked, with the temporary password.
- 4. Run the following command:

odacli reset-password

You are prompted to provide the old password, the temporary password and specify and confirm the new password. After the command runs successfully, the user account is unlocked and reactivated.



Resetting Password for a Locked User Account on Multi-User Access Enabled System Using Browser User Interface

- Unlock the non-admin user account that is locked due to multiple failed login attempts or password expiry as follows:
 - 1. Log into the Browser User Interface as the odaadmin user:

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

- 2. In the **Multi-User Access** tab, on the Users page, click on the link for the user whose password you want to reset. Note that you can reset the password for users of type **Custom** only. The Account Status for the user is LockedFailedLogin.
- 3. In the Actions drop down list, select Authorize Password Reset.
- 4. In the Authorize Password Reset page, specify the **Old Password**, specify and confirm the **Temporary ODA Password**, and click **Authorize**.
- 5. Now, log into the Browser User Interface as the user whose account is being unlocked. Specify the **User Name** and the temporary password in the **ODA Password** field.
- 6. Since the account was locked, the Account Status is CredentialReset. You are prompted to specify and confirm a new password.
- 7. Specify and confirm the **Password** and click **Submit**.
- 8. On successful password change, log into the Browser User Interface with the new password.

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.



6

Oracle Database Appliance Postinstallation Tasks

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

- About Password Requirements on Oracle Database Appliance Understand password requirements for multi-user access and non-multi-user access enabled systems.
- 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.
- Modifying Oracle ASM Listener Port After Deployment Understand how you can modify Oracle ASM listener port on Oracle Database Appliance after deployment.
- 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.
- Changing the DNS Server Address on Oracle Database Appliance If the DNS server in the data center changes, understand how you can update the DNS entries on on Oracle Database Appliance server so that the network functions correctly.

Related Topics

• Deployment Checklist for Oracle Database Appliance Bare Metal Systems This checklist provides an overview of the tasks to setup and deploy Oracle Database Appliance bare metal systems for the first time.

About Password Requirements on Oracle Database Appliance

Understand password requirements for multi-user access and non-multi-user access enabled systems.

Following are the password requirements on Oracle Database Appliance for various deployments.



Component	Multi-user access enabled and passwordless multi-user access-enabled system	Non-multi-user access enabled system
Password Length	Minimum password length is 9 characters. Maximum password length is 30 characters.	Minimum password length is 9 characters. Maximum password length is 30 characters.
Password History	Yes. New password cannot be the same as any previous password.	Yes. New password cannot be the same as any previous password.
Password Complexity	The password must contain at least two characters each from: uppercase letters, lowercase letters, numbers (0-9), and allowed special characters #, - or The password must have a minimum of 9 characters and a maximum of 30 characters.	The password must contain at least two characters each from: uppercase letters, lowercase letters, numbers (0-9), and allowed special characters #, - or The password must have a minimum of 9 characters and a maximum of 30 characters.
Maximum Password Age	The default is 90 days. The permitted range is 30 to 180 days, which can be configured by the user.	The default is 90 days. This value is not configurable.
Account Lockout Threshold	default retry attempts 3 times , Allowed Range 2 times – 5 times, user configurable	None
Reset Account Lockout Counter	Account is locked out when you run an ODACLI command after password has expired or after maximum retrial attempts are exceeded in the case of wrong password. You must obtain authorization from the system administrator to unlock the account. You can then change the temporary password provided by the administrator as part of authorizing an unlock of their account. Till the account is re- activated, you cannot run any ODACLI command.	None
Reset Bad Attempts Counter	If you have not exceeded the maximum retrial attempts and enter correct password, then the counter is reset to 0. If the maximum retrial attempts are exceeded, then the account is immediately locked and you must request for unlocking the account. Till the account is re- activated, you cannot run any ODACLI command.	None

Table 6-1	Password Requirements on Oracle Database Appliance
Table 0-1	Passworu Requirements on Oracle Database Appliance



Component	Multi-user access enabled and passwordless multi-user access-enabled system	Non-multi-user access enabled system
Change on first use	Yes. The user account is created initially as Inactive. You must change the password on first login to make it active. Till the account is activated, you cannot run any ODACLI command.	Can be set by a single oda- admin user on the first login to the BUI.

Table 6-1 (Cont.) Password Requirements on Oracle Database Appliance

Related Topics

- odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.
- ODACLI Command Changes with Multi-User Access on Oracle Database Appliance Understand the ODACLI command changes when you enable multi-user access.

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.

1. 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 modify-cpucore --cores 12

When you run the command, the nodes are restarted to apply the changes.

2. Check if the job completed successfully:

[root@oak1 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
```

Modifying Oracle ASM Listener Port After Deployment

Understand how you can modify Oracle ASM listener port on Oracle Database Appliance after deployment.

Modifying Oracle ASM listener port using ODACLI commands

In earlier Oracle Database Appliance releases, you provisioned your bare metal system with Oracle ASM listener port 1525 as the default and as the Oracle ASM discovery address port from DB systems. Starting with Oracle Database Appliance release 19.24, you can customize Oracle ASM listener port number as a postinstallation task. All DB systems that you provision after changing the Oracle ASM listener port number use the new Oracle ASM port number.



Use the following command to modify the Oracle ASM listener port number:

```
odacli modify-asmport -p any unused port between 1024 and 65536
```

For example:

```
# odacli modify-asmport -p 1528
```

Note:

You can run the odacli modify-asmport command only on deployments where the bare metal system is on Oracle Database Appliance release 19.24 and the DB system is on release 19.24 and you use the DB 23ai clones available with Oracle Database Appliance release 19.24.

Modifying Oracle ASM listener port using BUI

Follow these steps:

- Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click Appliance.
- In the Basic Information page, Click Modify ASM Port to change the Oracle ASM listener port.
- 4. In the Modify ASM Port dialog box, specify the **ASM Port** and click **Modify**.
- Click Refresh ASM Port to view the update.

Related Topics

 Modifying Oracle ASM Listener Port After Deployment Understand how you can modify Oracle ASM listener port on Oracle Database Appliance after deployment.

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 set-credential command to reset the password. Enter the new password when prompted.

```
# odacli set-credential --username oda-admin
Enter 'user' password:
Retype 'user' 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.
- 2. 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.

Note:

The oda-admin password expiration period is 90 days.



Changing the DNS Server Address on Oracle Database Appliance

If the DNS server in the data center changes, understand how you can update the DNS entries on on Oracle Database Appliance server so that the network functions correctly.

Follow these steps to change the DNS server address on Oracle Database Appliance:

- **1.** Log in as the root user.
- 2. Open the /etc/resolv.conf file in a text editor.
- 3. Locate the name server setting for the DNS server and change it to the new value. For example:

search	example.com
nameserver	10.7.7.3

4. Save the file and close the editor.

7 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, provision the bare metal system.

- 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.
- Reimaging an Oracle Database Appliance Baremetal System Reimage 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.
- Redeployment of Oracle Database Appliance
 Understand the process to redeploy Oracle Database Appliance.

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.

Note:

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] [-omausers
dbuser1,dbuser2,dbuser3][-erasedata][-nodpr] [-nossh] [f]
```

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

For example:

cleanup.pl -griduser grid -dbuser oracle -omausers dbuser1, dbuser2, dbuser3

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 grid -dbuser oracle
groups	Describes the comma-separated list of groups. The default groups are oinstall, dba, dbaoper, asmadmin, asmoper, a smdba.
omausers	Describes the comma-separated list of custom users created on a multi-user access enabled Oracle Database Appliance environment. All custom users created after provisioning a multi- user access enabled environment must be removed completely before you reprovision the appliance.

Table 7-1 Command Options for Cleanup Utility



Option	Description		
erasedata	Completely erases all disks on the Oracle Database system. It is mandatory to run this option if intention of cleanup is to reuse or move these disks on other systems. This option needs to be run on the first node when running on high- availability systems.		
	Example of secure erase:		
	cleanup.pl -erasedata		
cleanDefNet	Cleans up the default public network.		
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		
nodpr	Forces regular cleanup even if Data Preserving Reprovisioning environment is detected.Wipes out all data on Oracle ASM disks. You cannot run the command odacli restore-node -g after this operation. On Data Preserving Reprovisioning environments, the default cleanup mode is Data Preserving Reprovisioning mode which cleans the appliance without erasing Oracle SM disks to allow the command odacli restore-node -g to be reattempted. Using the -nodpr option allows you to override this behaviour and force regular cleanup. Example:		
nossh	Does not attempt to set up SSH on high-availability deployments. Use this option in cases such as when the scripts using cleanup.pl are not updated to handle stopping DCS agent, or if you have forgotten the SSH password, or if SSH is not set up on the system. Example:		
	cleanup.pl -nossh		

Table 7-1 (Cont.) Command Options for Cleanup Utility

Option	Description
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

Table 7-1 (Cont.) Command Options for Cleanup Utility

Note:

The cleanup utility for bare metal deployments produces a log file. The utility tries to create the log file at /opt/oracle/oak/log/hostname/cleanup/ cleanup_timestamp.log. If the log cannot be created in that location, then the log is created at /tmp/cleanup_timestamp.log.

Related Topics

• Deployment Checklist for Oracle Database Appliance Bare Metal Systems This checklist provides an overview of the tasks to setup and deploy Oracle Database Appliance bare metal systems for the first time.

Reimaging an Oracle Database Appliance Baremetal System

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

Bare metal restore uses Oracle Integrated Lights Out Manager (Oracle ILOM) to reimage the Oracle Database Appliance node. The ILOM must be configured before performing a bare metal restore or reimage. 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 Oracle ILOM console.

Follow these steps to reimage 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 reimaging 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.

Related Topics

Creating the Appliance
 Create the appliance using the Browser User Interface or ODACLI commands.

Related Topics

• 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.



 Installing Oracle Database Appliance Software Install Oracle Database Appliance software, before creating the 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.

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.

Note:

The secure erase tool conforms to the NIST 800-88 standard, also called NIST Special Publication 800-88 (NIST SP 800-88), Guidelines for Media Sanitization. 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:

1. 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



Option	Description	
-a,all	Erases all disks. For example:	
	<pre># /opt/oracle/oak/bin/odaeraser.pyall</pre>	
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	

Example 7-1 Options for the Secure Erase Tool

Redeployment of Oracle Database Appliance

Understand the process to redeploy Oracle Database Appliance.

After cleaning up the system and erasing the header, you can continue deployment of Oracle Database Appliance as follows:

- 1. Download Oracle Database Appliance software.
- 2. Install Oracle Database Appliance software.
- 3. Create the appliance.

For the above steps, run the procedures as described in this guide.

Reprovisioning Oracle Database Appliance without reimaging

You can re-provision Oracle Database Appliance without re-imaging the appliance.

1. Run the following command from the Oracle ILOM console:

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

Or, run the following command to clean up Oracle ASM header on the storage:

/opt/oracle/oak/onecmd/cleanup.pl -f

2. To re-provision the appliance, confirm that the Oracle ASM header is UNKNOWN:

/opt/oracle/oak/onecmd/cleanup.pl -checkHeader

3. Continue with the provisioning steps such as configuring firstnet from the Oracle ILOM console as described in the topic *Provisioning Oracle Database Appliance Bare Metal System*.



Related Topics

- 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.
- Installing Oracle Database Appliance Software Install Oracle Database Appliance software, before creating the appliance.

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 Prechecks
 Patching prechecks are designed to detect and flag problems that might be encountered during patching.
- About Enabling NUMA on Oracle Database Appliance Understand how you can enable NUMA on bare metal, KVM, and DB Systems on Oracle Database Appliance.
- Minimizing Downtime When Patching Oracle Database Appliance Understand best practices to minimize downtime when you apply patches to your Oracle Database Appliance deployment.
- About Updating Databases and Database Homes Understand how to update a database and database home using either the Browser User Interface or odacli commands.
- Updating ESTES-EXT Firmware Before Patching Oracle Database Appliance Server Update TMT (Task Management Reset Type) for Estes-Ext before you patch the Oracle Database Appliance server.
- 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 DB Systems Using the Command-Line Follow these steps to apply patches to your Oracle Database Appliance DB system deployment and existing Oracle Database home in the DB system, 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 undate the DCS admin. DCS
 - patch bundle using the Browser User Interface, and then update the DCS admin, DCS components, and DCS agent using CLI commands.
- Patching Oracle Database Appliance DB 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 Databases Using ODACLI Commands or the BUI Use ODACLI commands or the Browser User Interface to patch databases to the latest release in your deployment.



- Patching Existing Database Homes Using ODACLI or the BUI Use ODACLI or BUI to patch database homes in your deployment to the latest release.
- Patching Non-Provisioned Oracle Database Appliance Systems
 Oracle Database Appliance supports patching of non-provisioned single-node or high availablity systems by running odacli update-server command.
- 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.
- Setting Dynamic Default Parameters You can set dynamic default parameters using the BUI.

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 Out of Place Patching

Starting with Oracle Database Appliance release 19.11, Oracle Database Appliance uses the out-of-place patching model. This means that a new software Oracle home is created when patching an Oracle Grid Infrastructure or Oracle Database home. Starting with Oracle Database Appliance release 19.11, the patches for Oracle Grid Infrastructure and Oracle Database are available as images. All procedures remain the same.

About MySQL Server and DCS Agent

Starting with Oracle Database Appliance release 19.10, DCS Agent uses MySQL server as its metadata store. MySQL server is automatically installed and configured, during provisioning, when creating the appliance. Similarly, during patching, the odacli update-dcscomponents command automatically installs and configures MySQL server. MySQL server processes do not run with root operating system user account. Instead, MySQL server processes run with a new operating system user account called odamysql. Note that the odamysql operating system user is created only for ownership purposes and the odamysql user account owns only the MySQL directories. The odamysql operating system user cannot log into the appliance. The odamysql operating system user account for MySQL ensures role separation between the user owning Oracle databases on the appliance and the metadata used for DCS operations.

About Oracle Database Appliance Patch Bundles

The Oracle Database Appliance Patch Bundle contains the latest patches for DCS Admin, DCS Components, OAK, Oracle ILOM, firmware, 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 generic 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 the metadata maintained by Oracle Database Appliance 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 also follow the recommendations described in the Readme for the RU.

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

- Oracle Database Appliance server
- BIOS
- Hardware drivers
- Hardware Management Pack (HMP) and firmware drivers for various components
- Oracle Appliance Manager
- Oracle Linux
- Java Runtime Environment (JRE)
- Oracle Integrated Lights Out Manager (Oracle ILOM)
- Oracle Auto Service Request (Oracle ASR)
- 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 Oracle Database Appliance. 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 Oracle Database Appliance, 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 Prechecks

Patching prechecks are designed to detect and flag problems that might be encountered during patching.

The prechecks 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 prechecks commands are available on Oracle Database Appliance release 12.2.1.2.0 or later. Update the DCS Agent to ensure that the latest updated prechecks are available when you run these commands.

Check	Component Verified		
System patching prechecks	Checks that the DCS 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		
Validate Nexus Reset Estes-Ext Failed	This server patching precheck is displayed for ORCL-EXT-SAS3 controller with model number 0x0097. This precheck verifies that controllers NVDATA is updated to 0e.01.00.0d version. If Estes-Ext is not updated to I_T Nexus Reset, then an error is displayed.		
	SAS3 controller requires Nexus		
	Reset.		
	DCS-10293: Current System has ORCL- EXT-SAS3 controller		
	which requires the firmware update to enable NEXUS RESET.		
	To perform the firmware update, run /opt/oracle/oak/pkgrepos/		
	firmwarecontroller/lsilogic/0x0097/ 16.00.08.00/it nexus reset.sh		
	on both nodes.		

Components Verified by Patching Prechecks

Check	Component Verified		
Check Server patching prechecks	Component Verified For operating system: Validates supported versions Validates minimum supported versions Validates patching tag Validates on the patch location is available Verifies OS patch Validates command execution For Oracle ILOM: Validates supported versions Validates patching tag Validates patching tag Validates patch location is available Checks for Oracle ILOM patch version Validates command execution Validates command execution Validates connectivity to Oracle ILOM For Oracle Grid Infrastructure: Validates supported Oracle Grid Infrastructure validates supported Oracle Clusterware is running Validates whether Oracle Clusterware is running Validates whether Oracle ASM is online Validates whether oracle ASM is online Validates whether oracle ASM is online Validates patching locks Validates patching locks Validates be central inventory Validates be command execution For Oracle ORAchk: Runs the ORAchk tool that performs operatin system level prechecks. Validates command ex		

Check	Component Verified	
Database home patching prechecks	Confirms that Oracle Grid Infrastructure is installe	
	Confirms that the DCS Agent is at the required version	
	Confirms that Oracle Clusterware is running on all nodes	
	Confirms that Oracle Grid Infrastructure is upgraded	
	Validates that there is sufficient disk space available	
	Checks if the disk group for database homes on Oracle ACFS is configured	
	Checks whether the clone file is present in the repository	
	Checks whether the /u01/app/odaorabase directory exists. If the directory exists, then the check confirms that there is a valid symbolic link.	
Database home patching with out-of-place patching prechecks	The check creates a database home and verifies that all databases can be moved from the source home to new home.	
	This check validates that thelocal option can be used for the database home.	
Storage prechecks	Validates storage patch location and tag	
	Validates patching location and tag	
	Validates command execution	
	Validates Oracle ASM disk groups status	
	Validates rolling patch (for high-availability deployment)	

About Enabling NUMA on Oracle Database Appliance

Understand how you can enable NUMA on bare metal, KVM, and DB Systems on Oracle Database Appliance.

NUMA (Non-Uniform Memory Access) can help facilitate efficient use of the underlying NUMA hardware. On Oracle Database Appliance, you can enable NUMA for databases on bare metal and DB systems, CPU pools, and for KVM applications.

About Enabling NUMA During Provisioning of Oracle Database Appliance

When you provision Oracle Database Appliance with release 19.27, NUMA is automatically enabled on the database, DB system and CPU pools. Hence, when you create a database, DB system, or CPU pool on an Oracle Database Appliance release 19.27 deployment, NUMA is automatically enabled and no additional configuration is required. NUMA is not enabled by default for application VMs.

About Enabling NUMA After Patching Oracle Database Appliance

NUMA is enabled by default starting with Oracle Database Appliance release 19.12. When you patch to Oracle Database Appliance release 19.27 from 19.11 or earlier, the odacli updateserver command sets NUMA at the system level. New databases created after patching are NUMA-enabled. For existing databases, enable NUMA by running the command alter system set "enable numa support"=true on the database. After patching the bare metal system to release 19.27 from 19.11 or earlier, as a one-time activity, you must run the command odacli remap-cpupools to enable NUMA on all existing CPU pools (BM, VM, dbsystem).

For existing DB systems, run the command odacli modify-dbsystem --enable-numa to enable NUMA for the dbsystem and the database of the DB system.

NUMA is not enabled by default for application VMs. For new and existing application VMs, run the command odacli modify-vm --enable-numa to enable NUMA for the VM configuration. You must also enable NUMA for the components inside the VM such as operating system and application running inside the VM. The command odacli modify-dbsystem --enable-numa is only supported on application VMs with even number of CPU cores so that CPU cores can be evenly distributed to NUMA nodes. In Oracle Database Appliance, one CPUcore is equal to 2 vCPU.

See the topic *Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line* for more details about the steps to patch your deployment and enable NUMA.

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.
- Patching Oracle Database Appliance DB Systems Using the Command-Line Follow these steps to apply patches to your Oracle Database Appliance DB system deployment and existing Oracle Database home in the DB system, using CLI commands.
- Remapping CPU Pools in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to remap CPU pools in a bare metal or KVM deployment.
- odacli modify-vm
 Use the odacli modify-vm command to modify a virtual machine on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

- odacli modify-dbsystem
 Use the odacli modify-dbsystem command to modify a DB system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Minimizing Downtime When Patching Oracle Database Appliance

Understand best practices to minimize downtime when you apply patches to your Oracle Database Appliance deployment.

Recommendations for Minimizing Downtime During Patching

• To minimize database patching downtime, it is recommended that you use Oracle RAC or Oracle RAC One Node on an Oracle Database Appliance high-availability system.



- If available, use Oracle Data Guard and patch the standby system first. After you patch the standby system, switch the workload to the standby system, patch the primary system, and then switch the workload back to the primary system. For more information, see *Patching Oracle Data Guard Databases on Oracle Database Appliance* in this guide.
- Always use Oracle Database Appliance Backup and Recovery (ODABR) to back up the system disks to ensure easy restore, if the patching operation fails. ODABR restores the system disk to pre-patching state.
- The odacli update-storage command has a --rolling option for storage devices (SSD and HDD) to minimize patching downtime. There could be other shared storage component firmware that require a system restart and do not support rolling. Oracle Database Appliance storage patching can be deferred, but it is not recommended. Note that the --rolling option cannot be used with the odacli update-storage command on single-node Oracle Database Appliance systems.

Minimizing Downtime using the --local Option During Patching

To minimize downtime, use the --local option with the odacli update-server and odacli update-dbhome commands. Update the DCS components and then run the odacli createprepatchreport command. There is no downtime during the prepatch process. After analyzing the prepatch report, use the --local option to continue patching Oracle Database Appliance.

Note:

Before patching databases, ensure that the server patching operation on both nodes has completed successfully. Do not run the odacli update-dbhome and odacli update-database commands before the odacli update-server operation completes successfully on both nodes.

See Also:

Oracle Database High Availability Overview and Best Practices Guide in the Oracle Database 19c Documentation Library

About Updating Databases and Database Homes

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

About Updating Databases and Database Homes

Oracle Database Appliance provides the following options to patch or update databases and database homes:

 Patch or update each database home. The database home is patched out-of-place. When patching database home, Oracle Database Appliance automatically provisions a destination database home if needed, records the source database home, target version, and destination database home mapping in the metadata repository, and then moves all databases running in the source database home to the destination database home. Use the odacli update-dbhome command or the BUI to patch all databases from a single source database home to a single destination database home. Use this option if there are no constraints on your system for space usage or for provisioning a new database home. • Patch or update selected databases in a database home to a specific database home. You must specify the target database and destination database home when patching. You can use the odacli update-database command or the BUI to patch a specific database to a specific database home or to control when and how many database homes are provisioned. Using the update-database workflow also provides an option to run the operation again, if the patching operation failed. The abort and revert options available with the update-database workflow are not supported when the target database is a singleinstance database.

Before patching the database or database home, upload the Oracle Database 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 Database clone files.

Important:

The odacli update-database command that enabled association of a backup configuration with database was deprecated in Oracle Database Appliance release 19.6. Starting with Oracle Database Appliance release 19.17, the odacli update-database command enables database patching and is similar to the patching functionality that the odacli update-dbhome command provides, with a few differences as described in the Oracle Database Appliance Deployment Guide for your hardware model.

Before you run the odacli update-dbhome command, you must create the prepatch report for the database home by running the command odacli create-prepatchreport -d. Similarly, before you run the odacli update-database command, you must create the prepatch report either for the source database home or target database by running the command odacli create-prepatchreport -d Or odacli create-prepatchreport -db respectively. The source and destination database homes must be consistent in the prepatch report and when specifying them in the odacli update-database command. If you do not create the prepatch report before the patch operation, then the odacli update-database and odacli update-database database and odacli update-database and odacli update

For more information about the options for the update-dbhome and odacli update-database commands, see the chapter Oracle Database Appliance Command-Line Interface.

Updating ESTES-EXT Firmware Before Patching Oracle Database Appliance Server

Update TMT (Task Management Reset Type) for Estes-Ext before you patch the Oracle Database Appliance server.

Before you patch your Oracle Database Appliance deployment and your existing database homes to the current release, you must update I_T Target Reset of Estes-Ext to I_T Nexus Reset. This update is not included in the regular firmware update. Run the /opt/oracle/oak/ pkgrepos/firmwarecontroller/lsilogic/0x0097/16.00.08.00/it_nexus_reset.sh Script to complete this update before you perform server patching. The patching precheck verifies that controllers NVDATA is updated to 0e.01.00.0d version. If Estes-Ext is not updated to I_T Nexus Reset, then an error is displayed.

Follow these steps:

- 1. Ensure that you update the repository with the server zip file for Oracle Database Appliance release 19.26.
- 2. Shut down Oracle Grid Infrastructure, Oracle Database, and all applications before you run the update. Ensure that Oracle Clusterware is not running.
- 3. Before you patch the Oracle Database Appliance server, run the following command:

```
# /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/0x0097/16.00.08.00/
sas3flash -listall
Avago Technologies SAS3 Flash Utility
Version 17.00.00.00 (2018.04.02)
Copyright 2008-2018 Avago Technologies. All rights reserved.
```

Adapter Selected is a Avago SAS: SAS3008(CO)

 Num
 Ctlr
 FW Ver
 NVDATA
 x86-BIOS
 PCI Addr

 <td

Finished Processing Commands Successfully. Exiting SAS3Flash.

4. If the system is already up-to-date, then the following message is displayed:

```
# /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/
0x0097/16.00.08.00/it_nexus_reset.sh
The I_T Nexus Reset is enabled for the SAS3 controller(s) in this system.
No action required.
```

5. Run the script.

```
# /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/0x0097/16.00.08.00/
it nexus reset.sh
```

Use the -force option to run the script without being prompted for answers.

6. If Oracle Clusterware is running, then the following error is displayed:

```
# /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/0x0097/16.00.08.00/
it_nexus_reset.sh
CRS status found as up and running in this node, please SHUTDOWN the CRS
and retry running this script
```

7. Shut down Oracle Clusterware and run the script again:

```
# /u01/app/19.26.0.0/grid/bin/crsctl check 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
```

/u01/app/19.26.0.0/grid/bin/crsctl stop crs



```
. . .
. . .
# /u01/app/19.26.0.0/grid/bin/crsctl check crs
CRS-4639: Could not contact Oracle High Availability Services
# /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/0x0097/16.00.08.00/
it nexus reset.sh
****
Running it nexus reset.sh script is going to perform nexus reset
  and does DEEP POWER CYCLE of iLOM
Please enter 'yes' to confirm the Nexus Reset operation,
  enter 'no' to cancel.
Do you wish to continue and rest nexus adapter? (yes/no): yes
Trying perform I T Nexus Reset
Updating Adapter with index: 0
running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/
0x0097/16.00.08.00/sas3flash -c 0 -f /opt/oracle/oak/pkgrepos/
firmwarecontroller/lsilogic/0x0097/16.00.08.00/
Oracle SAS9300-8e it p 000D ph16.04 nexus.bin
Avago Technologies SAS3 Flash Utility
Version 17.00.00.00 (2018.04.02)
Copyright 2008-2018 Avago Technologies. All rights reserved.
       Adapter Selected is a Avago SAS: SAS3008(CO)
       Executing Operation: Flash Firmware Image
               Firmware Image has a Valid Checksum.
               Firmware Version 16.00.08.00
               Firmware Image compatible with Controller.
              Valid NVDATA Image found.
               NVDATA Major Version 0e.01
               Checking for a compatible NVData image ...
               NVDATA Device ID and Chip Revision match verified.
              NVDATA SubSystem Vendor and SubSystem Device ID match
verified.
              NVDATA Versions Compatible.
              Valid Initialization Image verified.
               Valid BootLoader Image verified.
               Beginning Firmware Download...
               Firmware Download Successful.
               Verifying Download...
               Firmware Flash Successful.
               Resetting Adapter...
               Adapter Successfully Reset.
               NVDATA Version 0e.01.00.0d
```

Finished Processing Commands Successfully. Exiting SAS3Flash. running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 0 -o -e 3 Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved. Advanced Mode Set Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Erase Flash Erasing Persistent Configuration Pages Region... Erase Flash Operation Successful! Finished Processing Commands Successfully. Exiting SAS3Flash. running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 0 -b /opt/oracle/oak/pkgrepos/ firmwarecontroller/lsilogic/0x0097/16.00.08.00/mpt3x64.rom Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved. Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Flash BIOS Image Validating BIOS Image... BIOS Header Signature is Valid BIOS Image has a Valid Checksum. BIOS PCI Structure Signature Valid. BIOS Image Compatible with the SAS Controller. Attempting to Flash BIOS Image... Verifying Download... Flash BIOS Image Successful. Finished Processing Commands Successfully. Exiting SAS3Flash. running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 0 -b /opt/oracle/oak/pkgrepos/ firmwarecontroller/lsilogic/0x0097/16.00.08.00/mptsas3.rom Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved.

Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Flash BIOS Image Validating BIOS Image... BIOS Header Signature is Valid BIOS Image has a Valid Checksum. BIOS PCI Structure Signature Valid. BIOS Image Compatible with the SAS Controller. Attempting to Flash BIOS Image... Verifying Download... Flash BIOS Image Successful. Finished Processing Commands Successfully. Exiting SAS3Flash. running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 0 -b /opt/oracle/oak/pkgrepos/ firmwarecontroller/lsilogic/0x0097/16.00.08.00/lsisas3f.rom Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved. Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Flash BIOS Image Validating BIOS Image... BIOS Header Signature is Valid BIOS Image has a Valid Checksum. BIOS PCI Structure Signature Valid. BIOS Image Compatible with the SAS Controller. Attempting to Flash BIOS Image... Verifying Download... Flash BIOS Image Successful. Finished Processing Commands Successfully. Exiting SAS3Flash. Updating Adapter with index: 1 running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 1 -f /opt/oracle/oak/pkgrepos/ firmwarecontroller/lsilogic/0x0097/16.00.08.00/ Oracle SAS9300-8e it p 000D ph16.04 nexus.bin

Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved. Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Flash Firmware Image Firmware Image has a Valid Checksum. Firmware Version 16.00.08.00 Firmware Image compatible with Controller. Valid NVDATA Image found. NVDATA Major Version 0e.01 Checking for a compatible NVData image... NVDATA Device ID and Chip Revision match verified. NVDATA SubSystem Vendor and SubSystem Device ID match verified. NVDATA Versions Compatible. Valid Initialization Image verified. Valid BootLoader Image verified. Beginning Firmware Download... Firmware Download Successful. Verifying Download... Firmware Flash Successful. Resetting Adapter... Adapter Successfully Reset. NVDATA Version 0e.01.00.0d Finished Processing Commands Successfully. Exiting SAS3Flash. running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 1 -o -e 3 Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved. Advanced Mode Set Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Erase Flash Erasing Persistent Configuration Pages Region... Erase Flash Operation Successful! Finished Processing Commands Successfully. Exiting SAS3Flash. running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 1 -b /opt/oracle/oak/pkgrepos/

firmwarecontroller/lsilogic/0x0097/16.00.08.00/mpt3x64.rom Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved. Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Flash BIOS Image Validating BIOS Image... BIOS Header Signature is Valid BIOS Image has a Valid Checksum. BIOS PCI Structure Signature Valid. BIOS Image Compatible with the SAS Controller. Attempting to Flash BIOS Image... Verifying Download... Flash BIOS Image Successful. Finished Processing Commands Successfully. Exiting SAS3Flash. running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 1 -b /opt/oracle/oak/pkgrepos/ firmwarecontroller/lsilogic/0x0097/16.00.08.00/mptsas3.rom Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved. Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Flash BIOS Image Validating BIOS Image... BIOS Header Signature is Valid BIOS Image has a Valid Checksum. BIOS PCI Structure Signature Valid. BIOS Image Compatible with the SAS Controller. Attempting to Flash BIOS Image... Verifying Download... Flash BIOS Image Successful. Finished Processing Commands Successfully. Exiting SAS3Flash.

running /opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/ 0x0097/16.00.08.00/sas3flash -c 1 -b /opt/oracle/oak/pkgrepos/ firmwarecontroller/lsilogic/0x0097/16.00.08.00/lsisas3f.rom Avago Technologies SAS3 Flash Utility Version 17.00.00.00 (2018.04.02) Copyright 2008-2018 Avago Technologies. All rights reserved. Adapter Selected is a Avago SAS: SAS3008(CO) Executing Operation: Flash BIOS Image Validating BIOS Image ... BIOS Header Signature is Valid BIOS Image has a Valid Checksum. BIOS PCI Structure Signature Valid. BIOS Image Compatible with the SAS Controller. Attempting to Flash BIOS Image... Verifying Download... Flash BIOS Image Successful. Finished Processing Commands Successfully. Exiting SAS3Flash. create script for ILOM deep recycle chmod 777 /tmp/dcsfiles/ chmod 700 /tmp/dcsfiles//rebootIlom.sh prepare system for ILOM recyle Enabling HOST AUTO_POWER_ON on ILOM Connected. Use ^D to exit. -> set /SP/policy HOST AUTO POWER ON=enabled Set 'HOST_AUTO_POWER_ON' to 'enabled' -> Session closed Disconnected Setting set /System/ deep power cycle=true Connected. Use ^D to exit. -> set /System/ deep_power_cycle=true Set 'deep power cycle' to 'true' -> Session closed Disconnected

8. Continue patching your server and databases as described in the topic *Patching Oracle Database Appliance Bare Metal Systems Using the Command-Line.*

Trigger recycle script in background

9. Verify that the updates ran successfully. When the system comes up, verify the NVDATA versions and firmware version.

/opt/oracle/oak/pkgrepos/firmwarecontroller/lsilogic/0x0097/16.00.08.00/
sas3flash -listall
Avago Technologies SAS3 Flash Utility
Version 17.00.00.00 (2018.04.02)
Copyright 2008-2018 Avago Technologies. All rights reserved.

Adapter Selected is a Avago SAS: SAS3008(CO)

m Ctlr	FW Ver	NVDATA	x86-BIOS	PCI Addr
SAS3008(CO)	16.00.08.00	0e.01.00.0d	08.37.00.00	00:3b:00:00
SAS3008(C0)	16.00.08.00	0e.01.00.0d	08.37.00.00	00:e3:00:00
Finished Processing Commands Successfully.				
Exiting	g SAS3Flash.			
	SAS3008(CO) SAS3008(CO) Finishe	SAS3008(C0) 16.00.08.00 SAS3008(C0) 16.00.08.00	SAS3008(CO) 16.00.08.00 0e.01.00.0d SAS3008(CO) 16.00.08.00 0e.01.00.0d Finished Processing Commands Success	SAS3008(CO) 16.00.08.00 0e.01.00.0d 08.37.00.00 SAS3008(CO) 16.00.08.00 0e.01.00.0d 08.37.00.00 Finished Processing Commands Successfully.

Related Topics

- About Enabling NUMA on Oracle Database Appliance Understand how you can enable NUMA on bare metal, KVM, and DB Systems on Oracle Database Appliance.
- Patching Oracle Database Appliance DB Systems Using the Command-Line Follow these steps to apply patches to your Oracle Database Appliance DB system deployment and existing Oracle Database home in the DB system, using CLI commands.
- Managing Database Homes on Oracle ACFS Storage
 Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to manage database home storage in Oracle Database Appliance.
- About Creating Database Homes on Oracle ACFS Storage

When you create new Oracle Database homes, they are created on Oracle ACFS file system which are stored on Oracle Database Appliance storage disks. You can create new Oracle Database homes using the odacli create-database or odacli create-dbhome commands, or when you patch an existing database home.

- odacli modify-vm
 Use the odacli modify-vm command to modify a virtual machine on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

- odacli modify-dbsystem
 Use the odacli modify-dbsystem command to modify a DB system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

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, Oracle Grid Infrastructure clone files, and Oracle Database clone files and update the repository on the bare metal system.

NOT_SUPPORTED:

When you patch your Oracle Database Appliance deployment to the current release, for ORCL-EXT-SAS3 controller with model number 0x0097, the patching precheck verifies that controllers NVDATA is updated to 0e.01.00.0d version. You must update I_T Target Reset of Estes-Ext to I_T Nexus Reset by running the /opt/ oracle/oak/pkgrepos/firmwarecontroller/lsilogic/0x0097/16.00.08.00/ it_nexus_reset.sh script. For more information, see the topic Updating ESTES-EXT Firmware Before Patching Oracle Database Appliance Server.

Important:

Oracle recommends always patching from within the previous four Oracle Database Appliance releases because these patching paths are tested. If you patch from any earlier Oracle Database Appliance release, then you may encounter errors.

Note:

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

Important:

Ensure that there is sufficient space on your appliance to download the patches.



Important:

If you want to install third-party software on your Oracle Database Appliance, then ensure that the software does not impact the Oracle Database Appliance software. The version lock on Oracle Database Appliance RPMs displays a warning if the thirdparty software tries to override Oracle Database Appliance RPMs. You must restore the affected RPMs before patching Oracle Database Appliance so that patching completes successfully.

Important:

If you have configured Oracle ASR and are patching your appliance to Oracle Database Appliance release 19.27, then after updating the DCS agent, delete the existing Oracle ASR configuration and reconfigure it, before you run the odacli update-server command to patch your appliance.

Note:

Public network gateway must be responsive to ping requests. Oracle Clusterware uses the public network gateway as ping target to facilitate the VIP failover in Oracle Database Appliance high-availability environment.

💉 See Also:

Enabling Custom SSH Key Management on Oracle Database Appliance in this guide for information on how to manage SSH keys on bare metal systems and DB systems

The Oracle Database Appliance Backup Recovery (ODABR) tool helps recover a system to the pre-patch state, should any potential errors occur during the patching process that may render the system unusable. Download and install the latest version of the Oracle Database Appliance Backup Recovery (ODABR) tool to enable creation of snapshots before patching. See My Oracle Support Note 2466177.1 for the procedure to install ODABR. https://support.oracle.com/rs?type=doc&id=2466177.1

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

 Download the Oracle Database Appliance Server Patch for the ODACLI/DCS stack (patch 37817290), Oracle Grid Infrastructure clone files (patch 30403673), and Oracle Database clone files (patch 30403662) from My Oracle Support to a temporary location on an external client. Refer to the release notes for details about the patch numbers and software for the latest release.

For example, download the server patch for 19.27:

```
p37817290 1927000 Linux-x86-64.zip
```



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

```
unzip p37817290 1927000 Linux-x86-64.zip
```

The zip file contains the following software file:

oda-sm-19.27.0.0.0-date-server.zip

 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 file:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
software file
```

For example, for 19.27:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/oda-
sm-19.27.0.0.0-date-server.zip
```

5. Confirm that the repository update is successful:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli describe-job -i job ID

6. Update DCS admin:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcsadmin -v 19.27.0.0.0

7. Update the DCS components:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcscomponents -v
19.27.0.0.0

The odacli update-dcscomponents command updates Oracle HAMI, MySQL, and updates other DCS components such as the DCS agent, DCS CLI, and DCS controller on Oracle Database Appliance.



If the DCS components are updated, then the message "status" : "Success" is displayed on the command line. For failed updates, fix the error and then proceed with the update by re-running the odacli update-dcscomponents command. See the topic *Resolving Errors When Updating DCS Components During Patching* about more information about DCS components checks errors.

Note:

Note that for DCS agent update to be complete, the odacli updatedcscomponents command must be run. Ensure that both commands are run in the order specified in this procedure.

8. Update the repository with the Oracle Grid Infrastructure clone file and the Oracle Database clone file:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
software file
```

For example, for 19.27:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
odacli-dcs-19.27.0.0.0-date-GI-19.27.0.0.zip
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
odacli-dcs-19.27.0.0.0-date-DB-19.27.0.0.zip
```

9. Run patching pre-checks. You must run the odacli create-prepatchreport command before you patch your server; otherwise, the odacli update-server command fails with an error message prompting you to run the patching pre-checks. Note that odacli create-prepatchreport supports the -l option, which runs the prechecks on the local node only. However, to be able to patch the system by running the command odacli update-server, the command odacli create-prepatchreport must be run without the -l option, so that the prechecks can be performed on both nodes before patching is started on any of the two nodes.

Note that there is no downtime when the patching prechecks run.

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport -s -v
version

For example, for 19.27:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport -s -v
19.27.0.0.0

Note that running the odacli create-prepatchreport command creates the target Oracle Grid Infrastructure home, which the server patching operation uses.

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

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli describe-prepatchreport

For example:

```
[root@oda1 opt]# odacli describe-prepatchreport -i 677d73d2-5eed-46e5-a06f-
d5ca2649d36e
Patch pre-check report
_____
                Job ID: 677d73d2-5eed-46e5-a06f-d5ca2649d36e
           Description: Patch pre-checks for [OS, ILOM, GI, ORACHKSERVER,
SERVER]
                Status: SUCCESS
               Created: March 8, 2025 3:37:19 PM CST
               Result: All pre-checks succeeded
Node Name
_____
n1
Pre-Check Status Comments
_____ _
_____
 OS
Validate supported versions Success Validated minimum supported versions.
Validate patching tag Success Validated patching tag: 19.27.0.0.0
Is patch location available Success Patch location is available.
Verify OS patch Success Verified OS patch
Validate command execution Success Validated command execution
 ILOM
Validate ILOM server reachable Success Successfully connected with ILOM
                                       server using public IP and USB
                                       interconnect
Validate supported versions Success Validated minimum supported versions.
Validate patching tag Success Validated patching tag: 19.27.0.0.0.
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
Validate command execution Success Validated command execution
  GI
Validate GI metadata Success Successfully validated GI metadata
Validate supported GI versions Success Validated minimum supported
versions.
Validate available space Success Validated free space under /u01
Is clusterware running Success Clusterware is running
Validate patching tag Success Validated patching tag: 19.27.0.0.0.
Is system provisioned Success Verified system is provisioned
Validate ASM in online Success ASM is online
Validate kernel log level Success Successfully validated the OS log
                                       level
Validate minimum agent version Success GI patching enabled in current
                                       DCSAGENT version
Validate Central Inventory Success oraInventory validation passed
Validate patching locks Success Validated patching locks
Validate clones location exist Success Validated clones location
Validate DB start dependencies Success DBs START dependency check passed
Validate DB stop dependencies Success DBs STOP dependency check passed
Validate space for clones Success Clones volume is already created
```

volume Evaluate GI patching Success Successfully validated GI patching Validate command execution Success Validated command execution ORACHK Running orachk Success Successfully ran Orachk Validate command execution Success Validated command execution SERVER Validate local patching Success Successfully validated server local patching Validate command execution Success Validated command execution Node Name _____ n2 Pre-Check Status Comments ----- -----_____ OS Validate supported versions Success Validated minimum supported versions. Validate patching tag Success Validated patching tag: 19.27.0.0.0. Is patch location available Success Patch location is available. Verify OS patch Success Verified OS patch Validate command execution Success Validated command execution ILOM Validate ILOM server reachable Success Successfully connected with ILOM server using public IP and USB interconnect Validate supported versions Success Validated minimum supported versions. Validate patching tag Success Validated patching tag: 19.27.0.0.0. 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 Validate command execution Success Validated command execution GI Validate GI metadata Success Successfully validated GI metadata Validate supported GI versions Success Validated minimum supported versions. Validate available space Success Validated free space under /u01 Is clusterware running Success Clusterware is running Validate patching tag Success Validated patching tag: 19.27.0.0.0. Is system provisioned Success Verified system is provisioned Validate ASM in online Success ASM is online Validate kernel log level Success Successfully validated the OS log level Validate minimum agent version Success GI patching enabled in current DCSAGENT version Validate Central Inventory Success oraInventory validation passed Validate patching locks Success Validated patching locks Validate clones location exist Success Validated clones location Validate DB start dependencies Success DBs START dependency check passed Validate DB stop dependencies Success DBs STOP dependency check passed Validate space for clones Success Clones volume is already created volume Evaluate GI patching Success Successfully validated GI patching

Use the command odacli describe-prepatchreport to view details of the pre-patch report. Fix the warnings and errors mentioned in the report and proceed with the server patching.

11. Apply the server update. Note that you can use the --local option with the odacli update-server command to update the local node.

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-server -v version

For example, for 19.27:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-server -v 19.27.0.0.0

12. Confirm that the server update is successful:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli describe-job -i job ID

Note:

After successful server update, it is recommended that you delete any ODABR snapshot you created before starting the server update. If you want to retain any ODABR snapshot when you update the storage and other components, then consider that the presence of active ODABR snapshots may affect system performance. See My Oracle Support Note 2466177.1 for the procedure to create and delete ODABR snapshots: https://support.oracle.com/rs? type=doc&id=2466177.1

13. Before you update the storage components, run the odacli create-prepatchreport command with the -st option.

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport -st -v
version
```

For example, for 19.27:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport -st -v
19.27.0.0.0

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

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli describe-prepatchreport

For example:

```
[root@oda1 opt]# odacli describe-prepatchreport -i 95887f92-7be7-4865-
a311-54318ab385f2
Patch pre-check report
_____
             Job ID: 95887f92-7be7-4865-a311-54318ab385f2
         Description: Patch pre-checks for [STORAGE]
             Status: SUCCESS
            Created: March 8, 2025 12:52:37 PM HKT
             Result: All pre-checks succeeded
Node Name
_____
node1
Pre-Check
                        Status
Comments
_____
_____
 STORAGE
Validate patching tag Success Validated patching tag:
19.27.0.0.0.
Patch location validation Success Verified patch
location
Patch tag validation Success Verified patch
taq
Storage patch tag validation Success Verified storage patch
location
Verify ASM disks status Success ASM disks are
online
Validate rolling patch Success Rolling mode patching allowed
as
                                 there is no expander
upgrade.
Validate command execution Success Validated command
execution
Node Name
_____
node2
Pre-Check
                        Status
Comments
----- -----
_____
 STORAGE
Validate patching tag Success Validated patching tag:
19.27.0.0.0.
Patch location validation
                       Success Verified patch
location
Patch tag validation
                       Success Verified patch
taq
Storage patch tag validation Success Verified storage patch
location
```



Verify ASM disks status online	Success	ASM disks are
Validate rolling patch	Success	Rolling mode patching allowed
as		there is no expander
upgrade. Validate command execution execution	Success	Validated command

Use the command odacli describe-prepatchreport to view details of the pre-patch report. The pre-patch report also indicates whether storage patching can be rolling or not, based on whether an expander update is also required.

Fix the warnings and errors mentioned in the report and proceed with the storage components patching.

15. Update the storage components.

Specify the --rolling option to patch shared disks in a rolling fashion. Note that if you patch from an Oracle Database Appliance release that requires the expander to be patched, then you cannot use the --rolling option during storage patching.

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-storage -v version --
rolling
```

For example, for 19.27:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-storage -v 19.27.0.0.0
--rolling
```

16. Starting with Oracle Database Appliance release 19.11, Oracle Database homes are not created on the local disk. Oracle Database homes are created on an Oracle ACFS-managed file system. For a database user oracle, the new database homes are created under /u01/app/odaorahome/oracle/.

If the database home is not already configured on Oracle ACFS, then before patching the database home, configure the database home storage with the odacli configuredbhome-storage command. For example:

[root@oda1 opt]# odacli configure-dbhome-storage -dg DATA

The command does not cause storage allocation or creation of volumes or file systems. The command only sets the disk group location in the metadata.

For information about managing database homes on Oracle ACFS, see the topic *Managing Database Home Storage*.

 To patch existing Oracle Database Homes to release 19.27, ensure that the repository is updated with the Oracle Database clone files. If you have not updated the repository with



the Oracle Database clone files, then update the repository. Note that you must update the DCS agent before you update the repository with the Oracle Database clone files.

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
DB_software_file
```

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/ odacli-dcs-19.27.0.0.0-date-DB-19.27.0.0.zip

Note:

You have the option to patch each database home using the odacli updatedbhome command or patch selected databases in a database home to a specific database home using the odacli update-database command.

18. To patch all databases in a specified database home:

a. If you want to patch each database home by running the odacli update-dbhome command, then create the prepatch report first. Run the patching pre-checks and review the prepatch report. You must run the odacli create-prepatchreport command before you patch your Oracle Database homes; otherwise, the odacli update-dbhome command fails with an error message prompting you to run the patching pre-checks.

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport --
dbhome --dbhomeid DB Home ID -v release number
[root@oda1 opt]# odacli describe-prepatchreport -i Job ID
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport --
dbhome --dbhomeid d03d5187-1c20-470a-9d51-49a0d6f60772 -v 19.27.0.0.0
[root@oda1 opt]# odacli describe-prepatchreport -i 6f040374-d271-4711-
a7db-e6c04597ad69
Patch pre-check report
_____
              Job ID: 6f040374-d271-4711-a7db-e6c04597ad69
          Description: Patch pre-checks for [DB, ORACHKDB]: DbHome
is OraDB19000 home1
              Status: SUCCESS
             Created: March 8, 2025 8:59:48 AM HKT
              Result: All pre-checks succeeded
Node Name
_____
node1
Pre-Check
                          Status
Comments
_____
_____
 DB
Validate DB Home ID Success
                                   Validated DB Home
```

d03d5187-1c20-470a-9d51-49a0d6f60772 Validate patching tag Success Validated patching tag: 19.27.0.0.0. Is system provisioned Success Verified system is provisioned Validate minimum agent version Success Validated minimum agent version Is GI upgraded Validated GI is Success upgraded Validate available space for Success Validated free space required under db /u01/app/ odaorahome Validate dbHomesOnACFS Success User has configured diskgroup for Database homes on configured ACFS Validate Oracle base Success Successfully validated Oracle Base Is DB clone available Success Successfully validated clone file exists Successfully validated Evaluate DBHome patching with Success updating RHP dbhome with RHP. and local patching is possible Validate command execution Validated command Success execution ORACHK Successfully ran Running orachk Success Orachk Validate command execution Success Validated command execution Node Name _____ node2 Pre-Check Status Comments ----- -----_____ DB Validate DB Home ID Success Validated DB Home ID: d03d5187-1c20-470a-9d51-49a0d6f60772 Validate patching tag Success Validated patching tag: 19.27.0.0.0. Is system provisioned Success Verified system is

ID:

provisioned		
Validate minimum agent version version	Success	Validated minimum agent
Is GI upgraded upgraded	Success	Validated GI is
Validate available space for under	Success	Validated free space required
db odaorahome		/u01/app/
Validate dbHomesOnACFS for	Success	User has configured diskgroup
configured ACFS		Database homes on
Validate Oracle base Base	Success	Successfully validated Oracle
Is DB clone available file	Success	Successfully validated clone
exists		
Evaluate DBHome patching with updating	Success	Successfully validated
RHP RHP.		dbhome with
Validate command execution execution	Success	Validated command
ORACHK		
Running orachk Orachk	Success	Successfully ran
Validate command execution execution	Success	Validated command

If the disk group for database homes on Oracle ACFS is not set up as described in step 17, then the prepatch report lists the error The system is not set up to create database homes on ACFS. Run the odacli configure-dbhome-storage command to configure the disk group for database homes on Oracle ACFS.

Note that running the odacli create-prepatchreport command creates the target Oracle Grid Infrastructure home, which the database patching operation uses.

b. If the pre-patch report does not show any errors, then update the database home to the latest release. You need not use the -f option with the odacli update-dbhome command. Note that you can use the --local option with the odacli update-dbhome command to update the local node.

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dbhome --id
DB_Home_ID -v release_number

For example, for 19.27:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dbhome --id 7c67c5b4f585-4ba9-865f-c719c63c0a6e -v 19.27.0.0.0

19. To patch a specific database to a specific database home:

a. If you want patch selected databases in a database home to a specific database home using the odacli update-database command, then create the prepatch report first. Run the patching pre-checks and review the prepatch report. You must run the odacli create-prepatchreport command before you patch your Oracle database; otherwise, the odacli update-database command fails with an error message prompting you to run the patching pre-checks.

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport -db dbid DATABASE ID -to a68f9947-DB HOME ID

For example, for 19.27:

```
[root@oda1 ~]# odacli describe-prepatchreport -i efa93519-
a365-4e9a-9f25-ad3c653cccef
Patch pre-check report
_____
              Job ID: efa93519-a365-4e9a-9f25-ad3c653cccef
          Description: Patch pre-checks for [SINGLEDB,
ORACHKSINGLEDB]: Target DB is db10181, Destination DbHome is
OraDB19000 home8
              Status: SUCCESS
             Created: March 8, 2025 11:19:03 AM PDT
              Result: All pre-checks succeeded
Node Name
_____
node1
Pre-Check Status Comments
----- -----
_____
 SINGLEDB
Is system provisioned Success Verified system is provisioned
Validate dbHomesOnACFS Success User has configured disk group for
configured Database homes on ACFS
Validate Oracle base Success Successfully validated Oracle Base
Evaluate DB clone availability Success Successfully validated clone file
                                   exists
Evaluate DB patching with RHP Success Successfully validated patching DB
                                   with RHP.
Validate command execution Success Validated command execution
 ORACHK
Running orachk Success Successfully ran Orachk
Validate command execution Success Validated command execution
Node Name
_____
node2
Pre-Check Status Comments
----- -----
_____
SINGLEDB
```



Is system provisioned Success Verified system is provisioned Validate dbHomesOnACFS Success User has configured disk group for configured Database homes on ACFS Validate Oracle base Success Successfully validated Oracle Base Evaluate DB clone availability Success Successfully validated clone file exists Evaluate DB patching with RHP Success Successfully validated patching DB with RHP. Validate command execution Success Validated command execution

ORACHK

Running orachk Success Successfully ran Orachk Validate command execution Success Validated command execution

b. If the pre-patch report does not show any errors, then update the databases to the latest release.

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-database -i
database ID/-n database name -to destination dbhome ID

For example, for 19.27:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-database -i
c05458c7-0f1d-4260-8e62-003b3ec26d74/-n db10181 -to dc98eaa9-289c-4710-
a898-ca6287a07a9c
[root@oda1 ~]# odacli describe-job -i
d442a7d4-594f-48e2-8b02-9124811bb7b4
Job details
```

```
ID: d442a7d4-594f-48e2-8b02-9124811bb7b4
Description: DB Patching: database ID is
c05458c7-0f1d-4260-8e62-003b3ec26d74
Status: Success
Created: March 8, 2025 3:23:43 PM PDT
Message:
```

Task Name Node Name Start Time End Time Status _____ ____ _____ _____ Creating wallet for DB Client node1 March 8, 2025 3:24:42 PM PDT March 8, 2025 3:24:42 PM PDT Success Patch databases by RHP nodel March 8, 2025 3:24:42 PM PDT March 8, 2025 3:29:34 PM PDT Success Updating database metadata node2 March 8, 2025 3:29:34 PM PDT March 8, 2025 3:29:34 PM PDT Success Set log archive dest for Database nodel March 8, 2025 3:29:34 PM PDT March 8, 2025 3:29:37 PM PDT Success Generating and saving BOM nodel March 8, 2025 3:29:37 PM PDT March 8, 2025 3:31:44 PM PDT Success Generating and saving BOM node2 March 8, 2025 3:29:37 PM PDT March 8, 2025 3:31:44 PM PDT Success TDE parameter update node2 March 8, 2025 3:32:25 PM PDT March 8, 2025 3:32:25 PM PDT Success

20. Confirm that the patch jobs are successful:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli list-jobs

- 21. If you are patching your appliance from Oracle Database Appliance release 19.11 or earlier, then run the following steps. You must also run these steps if your appliance was previously patched to Oracle Database Appliance release 19.12 or later, but you did not run these steps when patching to release 19.12.
 - a. After patching the bare metal systems and database homes, enable NUMA (Non-Uniform Memory Access) on existing databases of release 19.12 or earlier, by running the following SQL*Plus command:

SQL> alter system set " enable numa support"=true scope=spfile sid='*';

Restart the database after running the command to ensure that the changes take effect.

For more information about enabling NUMA, see the topic *About Enabling NUMA on Oracle Database Appliance*.

- b. If you have deployed DB systems, VMs, or CPU pools, perform the following steps:
 - i. Run the odacli remap-cpupools command:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli remap-cpupools

If the odacli remap-cpupools command fails with the error DCS-10001:Internal error encountered: Not enough physical CPUs available for CPU Pool 'cpupool_name' on node 'node_name', run the odacli remap-cpupools command again with the --use_reserved-cores option. For information about the command options, see the chapter Oracle Database Appliance Command-Line Interface for KVM.

ii. If you have DB systems in your deployment, then run the odacli modifydbsystem command. If you have VMs in your KVM deployment and you want to enable NUMA for the VMs, then run the odacli modify-vm --enable-numa command for VMs. That is: For DB systems:

odacli modify-dbsystem --enable-numa

For VMs:

odacli modify-vm --enable-numa

Note:

For bare metal systems and DB systems on Oracle Database Appliance X7-2S and X8-2S, the database init.ora parameter _enable_numa_support is set to FALSE even when NUMA is enabled. This is expected because these hardware models are single socket systems.



Related Topics

 Patching Existing Database Homes Using ODACLI or the BUI Use ODACLI or BUI to patch database homes in your deployment to the latest release.

Related Topics

Oracle Database Appliance Release Notes

Related Topics

 Resolving Errors When Updating DCS Components During Patching Understand how to troubleshoot errors when updating DCS components during patching.

Related Topics

- About Enabling NUMA on Oracle Database Appliance Understand how you can enable NUMA on bare metal, KVM, and DB Systems on Oracle Database Appliance.
- Patching Oracle Database Appliance DB Systems Using the Command-Line Follow these steps to apply patches to your Oracle Database Appliance DB system deployment and existing Oracle Database home in the DB system, using CLI commands.
- Managing Database Homes on Oracle ACFS Storage
 Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to
 manage database home storage in Oracle Database Appliance.
- About Creating Database Homes on Oracle ACFS Storage

When you create new Oracle Database homes, they are created on Oracle ACFS file system which are stored on Oracle Database Appliance storage disks. You can create new Oracle Database homes using the odacli create-database or odacli create-dbhome commands, or when you patch an existing database home.

odacli modify-vm

Use the odacli modify-vm command to modify a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

• odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

- odacli modify-dbsystem
 Use the odacli modify-dbsystem command to modify a DB system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli create-cpupool
 Use the odacli create-cpupool command to create a new CPU pool on Oracle Database
 Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Patching Oracle Database Appliance DB Systems Using the Command-Line

Follow these steps to apply patches to your Oracle Database Appliance DB system deployment and existing Oracle Database home in the DB system, using CLI commands.

To patch your Oracle Database Appliance DB systems deployment and your existing database homes to the current release, you must download the Oracle Database Appliance Server Patch and update the bare metal system repository.



Note:

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.

Note:

Public network gateway must be responsive to ping requests. Oracle Clusterware uses the public network gateway as ping target to facilitate the VIP failover in Oracle Database Appliance high-availability environment.

Ensure that you have patched your Oracle Database Appliance bare metal deployment to release 19.27 before you patch your DB system.

Follow these steps to apply patches to your Oracle Database Appliance DB system deployment and update the existing database home in the DB system.

 Ensure that the Oracle Database Appliance Server Patch for the ODACLI/DCS stack, Oracle Grid Infrastructure clone files, and Oracle Database clone files are available in the repository. Run the odacli list-availablepatches command in the bare metal system to view whether the clone files are available in the system.

[root@oda1 opt]# odacli list-availablepatches

- 2. Connect to the DB system.
- 3. Update DCS admin:

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli update-dcsadmin -v
19.27.0.0.0
```

4. Update the DCS components:

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli update-dcscomponents -v
19.27.0.0.0
```

If the DCS components are updated, then the message "status" : "Success" is displayed on the command line. For failed updates, fix the error and then proceed with the update by re-running the odacli update-dcscomponents command. See the topic *Resolving Errors When Updating DCS Components During Patching* about more information about DCS components checks errors.

Note:

Note that for DCS agent update to be complete, the odacli updatedcscomponents command must also be run. Ensure that both commands are run in the order specified.



5. Run patching pre-checks. You must run the odacli create-prepatchreport command before you patch your server; otherwise, the odacli update-server command fails with an error message prompting you to run the patching pre-checks.

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport -s -
v version
```

For example, for 19.27:

[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport -s v 19.27.0.0.0

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

[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli describe-prepatchreport

For example:

```
[root@dbsystem1 ~]# odacli describe-prepatchreport -i
f7e6fb22-1fc0-4aa1-937c-9669dbbb8ae6
```

```
Patch pre-check report
```

Job ID: f7e6fb22-1fc0-4aa1-937c-9669dbbb8ae6 Description: Patch pre-checks for [OS, GI, ORACHKSERVER, SERVER] Status: SUCCESS Created: March 8, 2025 3:38:03 PM CET Result: All pre-checks succeeded

Node Name

```
node1
```

Pre-Check Status Comments

```
_____
```

OS		
Validate supported versions	Success	Validated minimum supported
versions.		
Validate patching tag	Success	Validated patching tag:
19.27.0.0.0.		
Is patch location available	Success	Patch location is
available.		
Verify OS patch	Success	Verified OS
patch		
Validate command execution	Success	Validated command
execution		
GI		
 Validate GI metadata	Success	Successfully validated GI
metadata		

Validate supported GI versions Success Validated minimum supported



versions.		
Validate available space under /u01	Success	Validated free space
Is clusterware running	Success	Clusterware is
running Validate patching tag 19.27.0.0.0.	Success	Validated patching tag:
Is system provisioned provisioned	Success	Verified system is
Validate BM versions components	Success	Validated BM server
versions Validate kernel log level log	Success	Successfully validated the OS
level Validate minimum agent version current	Success	GI patching enabled in
version		DCSAGENT
Validate Central Inventory passed	Success	oraInventory validation
Validate patching locks locks	Success	Validated patching
Validate clones location exist location	Success	Validated clones
Evaluate GI patching patching	Success	Successfully validated GI
Validate command execution execution	Success	Validated command
ORACHK	0	
Running orachk Orachk	Success	
Validate command execution execution	Success	Validated Command
SERVER Validate local patching local	Success	Successfully validated server
patching Validate command execution execution	Success	Validated command
Node Name		
node2		
Pre-Check Comments	Status	
OS Validate supported versions	Success	Validated minimum supported

versions.		
Validate patching tag 19.27.0.0.0.	Success	Validated patching tag:
Is patch location available available.	Success	Patch location is
Verify OS patch patch	Success	Verified OS
Validate command execution execution	Success	Validated command
GI Validate GI metadata	Success	Successfully validated GI
metadata		-
Validate supported GI versions versions.	Success	Validated minimum supported
Validate available space under /u01	Success	Validated free space
Is clusterware running running	Success	Clusterware is
Validate patching tag 19.27.0.0.0.	Success	Validated patching tag:
Is system provisioned	Success	Verified system is
provisioned Validate BM versions components	Success	Validated BM server
versions Validate kernel log level log	Success	Successfully validated the OS
level Validate minimum agent version	Success	GI patching enabled in
current	5400055	
version		DCSAGENT
Validate Central Inventory passed	Success	oraInventory validation
Validate patching locks locks	Success	Validated patching
Validate clones location exist	Success	Validated clones
location Evaluate GI patching	Success	Successfully validated GI
patching Validate command execution execution	Success	Validated command
ORACHK		
	Success	Successfully ran
Validate command execution execution	Success	Validated command
SERVER Validate local patching local	Success	Successfully validated server



patching Validate command execution Success Validated command execution

Use the command odacli describe-prepatchreport to view details of the pre-patch report. Fix the warnings and errors mentioned in the report and proceed with the server patching.

7. Apply the server update. Note that you can use the --local option with the odacli update-server command to update the local node.

[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli update-server -v version

For example, for 19.27:

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli update-server -v
19.27.0.0.0
```

You can use the -f option to override precheck failures and complete the server patching.

8. Confirm that the server update is successful:

[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli describe-job -i job ID

9. To patch existing Oracle Database Homes to release 19.27:

a. On the bare metal system, run the command odacli describe-dbsystem-image to check that the repository is updated with the required Oracle Database clone files. If the database clone file is not displayed in the command output, then run the command odacli update-repository on the bare metal system to update the repository with the database clone files:

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/ DB_software_file

[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/ odacli-dcs-19.27.0.0.0-date-DB-19.27.0.0.zip

b. Run the patching pre-checks and review the prepatch report. You must run the odacli create-prepatchreport command before you patch your Oracle Database homes; otherwise, the odacli update-dbhome command fails with the error message prompting you to run the patching pre-checks.

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport
--dbhome --dbhomeid DB_Home_ID -v release_number
[root@dbsystem1 opt]# odacli describe-prepatchreport -i Job ID
```

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli create-prepatchreport
--dbhome --dbhomeid 7c67c5b4-f585-4ba9-865f-c719c63c0a6e -v 19.27.0.0.0
[root@dbsystem1 opt]# odacli describe-prepatchreport -i
39efleeb-70d3-47ad-b3f5-48960ca0607b
```



Alternatively, you can use the odacli update-database to update the databases in your deployment:

```
[root@dbsystem1 opt]# odacli create-prepatchreport --database --
database-id database_ID --to-home dest_dbhome_ID
[root@dbsystem1 opt]# odacli update-database --id database_ID --to-home
dest_dbhome_ID
```

c. If there are no errors, then update the database home to the latest release. You need not use the -f option with the odacli update-dbhome command. Note that you can use the --local option with the odacli update-dbhome command to update the local node. You can also use the --node option to specify the node containing the database to update.

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli update-dbhome --id
DB Home ID -v release number
```

For example, for 19.27:

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli update-dbhome --id
7c67c5b4-f585-4ba9-865f-c719c63c0a6e -v 19.27.0.0.0
```

10. Confirm that the patch jobs are successful:

```
[root@dbsystem1 opt]# /opt/oracle/dcs/bin/odacli list-jobs
```

Related Topics

- About Enabling NUMA on Oracle Database Appliance Understand how you can enable NUMA on bare metal, KVM, and DB Systems on Oracle Database Appliance.
- odacli modify-vm

Use the odacli modify-vm command to modify a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

• odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli modify-dbsystem

Use the odacli modify-dbsystem command to modify a DB system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli describe-dbsystem-image

Use the odacli describe-dbsystem-image command to view the supported Oracle Grid Infrastructure and Oracle Database versions and the availability of the clone files and Database System KVM image in the Oracle Database Appliance system.

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 admin, DCS components, and DCS agent using CLI commands.

Updating the Patch Repository Using the Browser User Interface

- 1. 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.
- 2. Log into the Browser User Interface.

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

- 3. Click Repository 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.

Updating the DCS Admin, DCS Components, and DCS Agent After Updating the Repository and Before Patching

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

Follow these steps:

- 1. In the BUI, click **Appliance** and then click **Infrastructure Patching** on the lefthand pane.
- 2. Using ODACLI commands, update the DCS admin, DCS components, and DCS agent:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcsadmin -v 19.27.0.0.0
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcscomponents -v
19.27.0.0.0
```

If the DCS components are updated, then the message "status" : "Success" is displayed on the command line. For failed updates, fix the error and then proceed with the update.

Note:

You must log into the Browser User Interface again after running the odacli update-dcscomponents command.



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

- **1**. Do not have any jobs running or pending during the update window.
- 2. In the BUI, click the **Appliance** tab, and then click **Infrastructure Patching** on the lefthand pane.
- 3. In the SERVER section, view the Component Details. If you just updated the Patch Repository, click **Refresh**.

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. Click Precheck to run patching prechecks. You must run the patching prechecks before updating the server and other components. Click View Pre-check Reports to view the patching prechecks report. If there are no errors in the report, then click Apply Patch to begin the job to patch the server components. For high-availability systems, when updating the server on the bare metal system, you can select the Node to Update. You can choose the node that you want to update or you can choose to update both nodes.

When the job finishes, go to the next step. Click View Jobs for the job status.

5. In the STORAGE section, click **Refresh** to refresh the Component Details. Click **Precheck** to run patching prechecks. You must run the patching prechecks before updating the storage components. Click **View Pre-check Reports** to view the patching prechecks report. If there are no errors in the report, then click **Apply Patch** to begin the job to patch the storage components. Click **View Jobs** for the job status.

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

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

Patching Oracle Database Appliance DB 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

- 1. 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.
- 2. Log into the Browser User Interface within the bare metal system, with the oda-admin user name and password.

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

- 3. Click the **Appliance** tab, and then click **Infrastructure Patching** on the lefthand pane.
- 4. In the Update Repository tab, on 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.

Updating the DCS Admin, DCS Components, and DCS Agent After Updating the Repository and Before Patching

Before patching your DB system using the Browser User Interface, you must update the DCS admin, DCS agent, and DCS components manually, through CLI commands.

Follow these steps:

- 1. In the BUI, click **Appliance** and then click **Infrastructure Patching** on the lefthand pane.
- 2. Using ODACLI, update the DCS admin, DCS components, and DCS agent:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcsadmin -v 19.27.0.0.0
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-dcscomponents -v
19.27.0.0.0
```

If the DCS components are updated, then the message "status" : "Success" is displayed on the command line. For failed updates, fix the error and then proceed with the update.

Note:

You must log into the Browser User Interface again after running the odacli update-dcscomponents command.

Running Patching Prechecks and Patching Server and Storage Components Using the Browser User Interface

- **1.** Do not have any jobs running or pending during the update window.
- 2. Log into the Browser User Interface within the DB system with the oda-admin user name and password.

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

- 3. Click the **Appliance** tab, and then click **Infrastructure Patching** on the lefthand pane.
- In the SERVER section, view the Component Details. If you just updated the Patch Repository, click Refresh.

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.

5. Click Precheck to run patching prechecks. You must run the patching prechecks before updating the server and other components. Click View Pre-check Reports to view the patching prechecks report. If there are no errors in the report, then click Apply Patch to begin the job to patch the server components. For high-availability systems, when updating the server on the bare metal system, you can select the Node to Update. You can choose the node that you want to update or you can choose to update both nodes.

When the job finishes, go to the next step. Click View Jobs for the job status.

6. In the STORAGE section, click Refresh to refresh the Component Details. Click Precheck to run patching prechecks. You must run the patching prechecks before updating the storage components. Click View Pre-check Reports to view the patching prechecks



report. If there are no errors in the report, then click **Apply Patch** to begin the job to patch the storage components. Click **View Jobs** for the job status.

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

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

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 Oracle Database clone files for a release. Follow these steps to update the repository with Oracle Database clone files for the latest release.

1. Download the Oracle Database clone software file for a release, for example, p30403662_1927000_Linux-x86-64.zip, and extract the Oracle Database clone software:

For example, download the Oracle Database clone software patch for 19.27:

```
unzip /tmp/p30403662_1927000_Linux-x86-64.zip odacli-dcs-19.27.0.0.0-date-DB-19.27.0.0.zip
```

 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@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
odacli-dcs-db-clone-file.zip/
```

For example, for 19.27:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/
odacli-dcs-19.27.0.0.0-date-DB-19.27.0.0.zip
```



Follow the same steps to update the repository with the database clone software for other supported database versions.

4. Confirm that the repository update is successful:

```
[root@oda1 opt]# /opt/oracle/dcs/bin/odacli list-jobs
[root@oda1 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@oda1 opt]# rm software_file
rm: remove regular file software file? y
```

Patching Databases Using ODACLI Commands or the BUI

Use ODACLI commands or the Browser User Interface to patch databases to the latest release in your deployment.

Before patching the database home, upload the Oracle Database 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 Oracle Database clone files.

Important:

You must run the odacli create-prepatchreport command before you patch the Oracle databases; otherwise, the odacli update-database command fails with an error message prompting you to run the patching pre-checks.

Patching Databases on Oracle Database Appliance using ODACLI Commands

Run the following command to patch a database using the CLI:

```
odacli update-database [-a] [-dp] [-f] [-i db_id] [-imp] [-l] [-n db_name] [-
ni node] [-r] [-to db home id] [-j] [-h]
```

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

Patching Databases on Oracle Database Appliance using BUI

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

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

- 2. Navigate to the **Database** tab.
- 3. Select the database you want to patch.
- 4. Click Update.
- 5. If you select **Apply Data Patch**, then the Data Patch for the specified database is applied and you cannot select any other options.



- 6. On a high-availability system, you can also select the node in the **Select Node to Update** list.
- 7. Select **Ignore Missing Patches** to ignore missing patches.
- 8. Select Force Run to force the operation to run.
- 9. Select the destination database home.
- 10. In the Patching Options
 - **Abort**: To abort previously unfinished or failed patching operation.
 - **Revert**: To revert previously unfinished or failed patching operation.
 - None: To patch the database.
- 11. Click Update.
- **12.** If you have not run the pre-checks earlier, then an error is displayed when you submit the job to update the database.
- In the Database page, select the Database and then click Precheck to run pre-checks for patching the database.

Click Activity for job status.

- 14. In the Database page, for the database to be patched, click **Actions** and select **View Prepatch reports** to view the pre-check report. Fix any errors, and then select Action as **Apply** to patch the database.
- 15. Verify that the patching job completes successfully.

Patching Existing Database Homes Using ODACLI or the BUI

Use ODACLI or BUI to patch database homes in your deployment to the latest release.

Before patching the database, upload the Oracle Database 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 Oracle Database clone files.

Patching Database Homes on Oracle Database Appliance using ODACLI Commands

Run the following command to patch a database home using the CLI:

```
odacli update-dbhome -i dbhome_id -v version [-f] [-imp] [-p] [-l] [-u
node number] [-j] [-h]
```

For more information about the options for the update-dbhome command, see the chapter Oracle Database Appliance Command-Line Interface.

Patching Database Homes on Oracle Database Appliance using BUI

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

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

- 2. Navigate to the **Database Home** tab.
- 3. Select the database home you want to patch.
- 4. Select the **Patch Version** for the database home.



- 5. To patch multiple database homes, select each database home to be patched and the patch version for each database home.
- 6. Select the **Node to Update**. You can choose the node that you want to update or you can choose to update all nodes.
- 7. Click Patch. Select Precheck to run pre-checks before patching the database.

Click Activity for job status.

- 8. On the Patch page, for the database to be patched, click **Actions** and select **View Prepatch reports** to view the pre-check report. Fix any errors, and then select Action as **Apply** to patch the database.
- 9. Select **Ignore Precheck Failures** to ignore failures reported in the prechecks reported. It is recommended that you fix errors reported in the precheck results.
- 10. Select Ignore Missing Patches to ignore missing patches.
- **11**. 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

Patching Non-Provisioned Oracle Database Appliance Systems

Oracle Database Appliance supports patching of non-provisioned single-node or high availablity systems by running odacli update-server command.

A non-provisioned Oracle Database Appliance system does not have Oracle Grid Infrastructure or Oracle Database installed or running on it. You can upgrade Oracle ILOM and storage firmware on an unprovisioned system without running the odacli create-appliance command by reimaging the system using the bare metal ISO image of Oracle Database release 19.23 or later. Then patch the system with the server patches of the same release as the bare metal ISO image by running the odacli update-server command. When you reimage your system, the DCS infrastructure is updated automatically.

Follow these steps to update the firmware:

- 1. Reimage the Oracle Database Appliance using the bare metal ISO image for Oracle Database Appliance release 19.23 or later.
- 2. Update the repository with the server patch for the Oracle Database Appliance release you want to patch to, for example 19.23 or later.
- For running odacli update-server on Oracle Database Appliance imaged with ISO of release 19.23:

odacli update-server -v 19.23.0.0.0 -sko -f

For Oracle Database Appliance release 19.23, you can use the -sko option to skip ORAchk failures and proceed with the server patching, and the -f option to override precheck failures and complete the server patching.



- 4. For running odacli update-server on Oracle Database Appliance imaged with ISO of release 19.11 or later, follow these steps:
 - a. Create the pre-patch report for the odacli update-server command by specifying the -s option.

odacli create-prepatchreport -v 19.11.0.0.0 -s

Fix the warnings and errors mentioned in the report and proceed with the server patching.

b. Update the server:

odacli update-server -v 19.11.0.0.0 -f

For Oracle Database Appliance release 19.11 or later, you can use the -f option to override precheck failures and complete the server patching.

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:

- 1. 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.
- 2. Log in to Unbreakable Linux Network:

https://www.oracle.com/in/linux/

- 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



4. 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 uptrack-updates package for the current kernel.

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

You can also download the <code>uptrack-updates</code> 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:

at:

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

https://docs.oracle.com/en/operating-systems/oracle-linux/

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 baremetal and DB system deployments using this procedure.

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

1. 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 ORACLE HOME/OPatch 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

4. 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.

```
$ORACLE_HOME/OPatch/opatchauto apply directory_to_extract_patches -
oh $ORACLE HOME -inplace
```

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
```

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

```
# odacli cleanup-patchrepo [-cl clones] | [-v version [-comp component]]| [-l
local|-n NodeID]
```

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.
- 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.
- 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 12.2 to 19c
- Oracle Database 12.1 to 19c

Before upgrading to a different database home, upload the Oracle Database 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 Database 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.

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

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

- 2. 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.

Setting Dynamic Default Parameters

You can set dynamic default parameters using the BUI.

Setting Dynamic Default Parameters Using the Browser User Interface

Follow these steps:

- **1.** From the Appliance page, click **Parameter Repository**.
- 2. The Parameter Repository page lists all the parameters in the repository. Currently, parameters of type RDBMS are supported.
- 3. Select Update Parameter to create a new configuration property.
- 4. In the Update Parameter page, specify the **Parameter Name** and **Value**, and provide an optional **Description**. Specify whether you want to create the parameter for the **Bare**



Metal or DB System. You can also specify the whether the parameter applies to All DB Systems or you can select the DB system for which you want to create the parameter.

- 5. Click OK.
- 6. Confirm the action to submit the job. Monitor the job progress and check that it completes successfully.
- 7. To update a parameter, select the Update option from the Actions menu.
- You can edit the Value, Description, and select whether the parameter applies to Bare Metal or DB System. You can also select the DB system for which you want to update the parameter or choose to apply the parameter to All DB Systems.
- 9. Click Update.
- 10. To delete a parameter, select the Delete option from the Actions menu. You can delete the parameter from the Bare Metal or DB System. You can also select the DB system for which you want to delete the parameter or choose to delete the parameter from All DB Systems.
- 11. Click Delete.



9 Managing Oracle Databases

Manage the Oracle Databases on your Oracle Database Appliance.

Note:

A bigfile tablespace in Oracle database is a tablespace with a single, but very large, up to 4 GB blocks, datafile. Bigfile is the default file size when creating a new tablespace for Oracle Database. All Oracle database tablespaces are bigfile tablespaces.

- 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 Creating Database Homes on Oracle ACFS Storage
 - When you create new Oracle Database homes, they are created on Oracle ACFS file system which are stored on Oracle Database Appliance storage disks. You can create new Oracle Database homes using the odacli create-database or odacli create-dbhome commands, or when you patch an existing database home.
- 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 Enterprise Edition High Availability for Oracle Database Appliance
 Oracle Database Appliance supports Enterprise Edition High Availability solution with
 Oracle Grid Infrastructure that provides cluster-based failover for Oracle Database
 Enterprise 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 grid, with a user ID (UID) of 1001, and the user oracle, with a UID of 1000. The user grid is the Oracle Grid Infrastructure installation owner. The user oracle is the Oracle Database installation owner, and the owner of all Oracle Database homes (Oracle homes). By default, these users are members of operating system groups whose members are granted privileges to start up and administer Oracle Database and Oracle Automatic Storage Management.

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

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

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

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

Note:

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

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 Creating Database Homes on Oracle ACFS Storage

When you create new Oracle Database homes, they are created on Oracle ACFS file system which are stored on Oracle Database Appliance storage disks. You can create new Oracle Database homes using the odacli create-database or odacli create-dbhome commands, or when you patch an existing database home.

Oracle Database homes are created on an Oracle ACFS-managed file system. For a database user oracle, the new database homes are created under /u01/app/odaorahome/oracle/.

The mount /u01/app/odaorahome is a shared file system for a high-availability system. On a high-availability system, /u01/app/odaorahome/ is a shared ORACLE_HOME between the nodes. Existing database homes continue to remain on the local disks.

The ORACLE_BASE location has also changed to an Oracle ACFS-based file system. On high-availability system, the ORACLE_BASE is not shared between the nodes. Each node has its own Oracle ACFS file system for ORACLE_BASE. The new ORACLE_BASE for the database homes are created under the mount /u01/app/odaorabase/.

The disk space for the Oracle ACFS file system is located in the DATA or RECO disk group. You must specify the disk group for the Oracle ACFS file system. For Oracle Database Appliance X8-2 hardware model and single-node systems, the Oracle ACFS file system must be located in the DATA disk group. You can specify the initial size of the ORACLE_HOME volume. The default value is 80 GB. You can set a value from 25 GB to 1024 GB. The initial volume size for ORACLE_BASE is fixed at 10GB. Note that for these volumes, AUTOEXTEND is off. You can extend the volume size with the odacli modify-dbhome-storage command.

Changes When Provisioning Oracle Database Appliance Release 19.27

As part of the provisioning request, you must specify the disk group and size of the volume in the json file in the sysOraHomeStorage section.

```
"sysOraHomeStorage" : {
    "diskgroup" : "DATA",
```



```
"volumeSize" : "80"
},
```

If you do not specify the values in the json file, then the following error is displayed during provisioning:

DCS-10045:Validation error encountered: Missing argument : sysOraHomeStorage

If the values are invalid, then the following errors may be displayed during provisioning:

DCS-10024:Input parameter 'Disk Group' contains unacceptable value 'DATAL'. Allowed values are '[DATA, RECO]'. (case insensitive) DCS-10045:Validation error encountered: Required volumeSize value in sysOraHomeStorage should be in the range of 25GB to 1024GB.

Changes When Patching to Oracle Database Appliance Release 19.27

If you have patched your appliance from Oracle Database Appliance release 19.6 or later to 19.27, then run the odacli configure-dbhome-storage command **before** creating a new database home. Otherwise, the following error is displayed when creating a new database home:

```
# odacli create-dbhome -v 19.8.0.0.200714
DCS-10601:The system is not set up to create database homes on ACFS.
```

Once the disk group for the volumes are setup, new database homes are created on the Oracle ACFS file system.

Related Topics

- odacli configure-dbhome-storage
 Use the odacli configure-dbhome-storage command to configure the database home storage.
- odacli list-dbhome-storages
 Use the odacli list-dbhome-storages command to view the database home storage resources after the volumes for ORACLE_HOME and ORACLE_BASE are created.
- odacli describe-dbhome-storage
 Use the odacli describe-dbhome-storage command to view information such as how much space is available (at a volume or diskgroup level).
- odacli modify-dbhome-storage Use the odacli modify-dbhome-storage command to modify database home storage and add additional disk space.
- Managing Database Homes on Oracle ACFS Storage
 Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to manage database home storage in 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 19.27

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 or Oracle One Node 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 -ha

To relocate a Standard Edition High Availability Oracle Database from one node to another outside of a failover, use the following command, specifying either the target node or the target host in the command:

odacli modify-database -in db name -g target node

or:

odacli modify-database -in db name -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.

About Enterprise Edition High Availability for Oracle Database Appliance

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

About Enterprise Edition High Availability for Oracle Database

With Enterprise 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 Enterprise Edition databases.

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 Enterprise Edition High Availability for Oracle Database Appliance Release 19.27

Enterprise Edition High Availability for Oracle Database 19.27 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 19.27 Enterprise Edition single-instance databases. Both nodes have Oracle Homes for Enterprise Edition single-instance databases.

To enable Enterprise Edition High Availability for existing Enterprise Edition Oracle RAC databases of release 19.27, you must convert these Oracle RAC databases to single-instance databases, and then upgrade to single-instance Oracle Database 19.27 Enterprise Edition database with Enterprise Edition High Availability enabled by default.



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

To create a single-instance Oracle Database 19.27 with Enterprise 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 -ha
```

To upgrade an Enterprise Edition Oracle RAC Database to Oracle Database 19.27 Enterprise 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 19.27 with Enterprise Edition High Availability as follows:

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

To relocate an Enterprise Edition High Availability Oracle Database from one node to another outside of a failover, use the following command, specifying either the target node or the target host in the command:

```
odacli modify-database -in db name -g target node
```

or:

odacli modify-database -in db name -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.



Note:

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 Using the Browser User Interface
 Use the Oracle Appliance Manager Browser User Interface to create a database in Oracle
 Database Appliance.
- Managing Database Homes on Oracle ACFS Storage
 Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to
 manage database home storage in Oracle Database Appliance.
- Creating a Database Using ODACLI Commands Create a 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 Create a database from an existing Oracle ACFS database using ODACLI commands or BUI.

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.
- Upgrading a Database Manually Using AutoUpgrade Use AutoUpgrade to manually upgrade an earlier release of Oracle database on Oracle Database Appliance.
- 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.

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 Using the Browser User Interface

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. For Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, you can choose to enable high availability for single-instance databases.

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 19.27 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.
- 5. Enter the following information on the Database Information 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 releases later than 12.1, 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 Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, you can choose to enable high availability for single-instance databases.

- i. 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.
- I. 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.
- o. Select the CPU Pool Name to associate with the database.



p. 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 19.27. Selecting **Yes** enables you to use the console to manage the database.

q. In the SYS and PDB Admin User 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.

- r. In the **Confirm Password** field, enter the password again to confirm.
- s. In the **Characterset** field, select an option from the drop-down list. The default is AL32UTF8.
- t. In the **National Characterset** field, select an option from the drop-down list. The default is AL16UTF16.
- **u.** In the **Language** field, select a database language from the drop-down list. The default is American.
- v. In the **Territory** field, select a territory or location for the database from the drop-down list. The default is America.
- 6. Click Next.
- In the TDE Information page, for Oracle Database Enterprise Edition 19c or later, you can choose to enable Transparent Database Encryption (TDE). Select Yes or No in the Enable TDE option. Specify and confirm the TDE Password. By default, the TDE option is disabled.
- 8. 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.

Managing Database Homes on Oracle ACFS Storage

Use the Oracle Appliance Manager Browser User Interface or ODACLI commands to manage database home storage in Oracle Database Appliance.

Managing Database Home Storage 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.
- 3. Click Database Home Storage on the left pane.
- 4. If Database Home Storage is not configured, then click on the **Configure Database Home Storage** button.
- 5. Select the Disk Group Name and specify the Size in GB.
- 6. Click **Create**. When prompted, click **Yes** to confirm that you want to start the job to configure the database home storage.



- 7. You can also view a list of all Database Home storages from the Database tab and view details for each database.
- 8. To modify Database Home Storage, select Modify in the Actions drop down list.

Managing Database Home Storage Using ODACLI Commands

 Use the odacli configure-dbhome-storage command to configure the database home storage:

odacli configure-dbhome-storage -dg DATA

2. Use the odacli list-dbhome-storages command to list the database home storages:

odacli list-dbhome-storages

3. Use the odacli describe-dbhome-storages command to describe a database home storage:

odacli describe-dbhome-storage -i 67622ce6-0a00-4fec-b948-7a0ba7922311

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

Related Topics

- odacli configure-dbhome-storage
 Use the odacli configure-dbhome-storage command to configure the database home storage.
- odacli list-dbhome-storages
 Use the odacli list-dbhome-storages command to view the database home storage resources after the volumes for ORACLE_HOME and ORACLE_BASE are created.
- odacli describe-dbhome-storage Use the odacli describe-dbhome-storage command to view information such as how much space is available (at a volume or diskgroup level).
- odacli modify-dbhome-storage
 Use the odacli modify-dbhome-storage command to modify database home storage and add additional disk space.

Creating a Database Using ODACLI Commands

Create a database from the command-line interface.

Note:

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.



Caution:

When you enable Transparent Data Encryption (TDE) on databases, with software keystore or Oracle Key Vault keystore with endpoints in Oracle Key Vault, you are prompted to set a password for the TDE wallet. Provide a strong password for security compliance. Enter this password carefully when setting it for the first time, and ensure that this password is available to you at all times for database management operations. Failure to provide the TDE wallet password when prompted, will cause an error in accessing encrypted data.

This example creates a new database named PRODDB with database version 19.27, and a new database home, if a database home does not exist.

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 more details about a specific database home.

<pre># odacli list-dbhomes</pre>					
ID	Name	DB Version			
b727bf80-c99e-4846-ac1f-28a81a725df6	OraDB199_home1	19.27.0.0.0			
(continued)					
Home Location					
/u01/app/orauser/product/19.0.0.0/dbhome_1					

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

If you want to create a database home for specifically for the migrated database, you can use the odacli create-dbhome command, or you can create the database home when you create the database. The example creates a database home for database version 19.27.0.0.

odacli create-dbhome -v 19.27.0.0.0

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

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

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

To create a database named PRODDB with database version 19.27.0.0.0 and a database home:

```
# odacli create-database -n PRODDB -v 19.27.0.0.0 -io
```

To create a TDE-enabled database named PRODDB:

```
# odacli create-database -n PRODDB -t
```

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).
- 2. 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. If the source database does not have TDE enabled, then providing the Backup Encryption password is mandatory when attaching Objectstore backup policy. However, the Backup Encryption password is optional when attaching the NFS backup policy. If the source database has TDE enabled, then you need not specify the Backup Encryption password, irrespective of backup destination.
- 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:

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. 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 Object Store:
 - 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):

- a. Select Backup Destination as External FRA.
- b. Enter the password in the Backup Encryption Passwords field and the Confirm Backup Encryption Passwords field.
- 6. Click **Browse** and select the backup report from which you want to create the database.



When the backup report is loaded, Database Information and TDE Information steps are displayed on different pages and 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 a single-instance Oracle Database. For Standard Edition Oracle Database 19.6 or later, you can choose to enable highavailability for single-instance database. For Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, you can choose to enable high availability for singleinstance databases.

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 and PDB Admin User Password field and the Confirm Password field.
- 9. Specify the Networks.
- 10. If your source database has Transparent Database Encryption (TDE) enabled, then you can enable TDE on the cloned database. If the source database has TDE enabled, then the backup report has the TDE wallet backup location and the TDE Wallet Backup Location field in the BUI displays this value. Specify and confirm the TDE Password.
- 11. You can choose an Oracle Key Vault server configuration from the Select OKV Server Config drop-down list, and specify the OKV Wallet Location.
- 12. 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.

14. 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

Create a database from an existing Oracle ACFS database using ODACLI commands or BUI.

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.



- Create clone databases on a standby system. Since standby systems are not production systems, they are a better choice for seeding test or development environments.
- Run clone database from a database home that is different from that of the source database.
- Create clone database from a read-only source database.
- Create read-only clone 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 database (CDB).
- The source database must be opened in either read-write mode, or read-only mode if it is a primary database. A standby database can be in mounted or read-only open mode.
- The source database must not be in backup mode.
- The source database must be in archive mode.
- All data files of the source database must be in the same Oracle ACFS directory.

Note:

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

Cloning an Oracle ACFS Database Using Command Line Interface

1. Run the odacli clone-database command.

```
odacli clone-database --databaseUniqueName --dbname --dbshape --dbtype --
sourcedbname --associated-networks --cpupool --dbhomeid --disable-ha --
enable-ha --newhome --read-only --tdepassword--json
```

For cloning, you can create a new database home or select an existing database home. To create a new database home, specify the --newhome option. To use an existing database home, specify the --dbhomeid. 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 TDE-enabled database, also specify the --tdepassword option. The TDE password of the new database must be the same as the TDE password of the source database.

For information about all the command options, see the ODACLI Command Reference chapter.

Cloning an Oracle ACFS 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.



- 3. Click Create Database to display the Create Database page.
- Click Clone a Database, then click Next to display the Clone Database page.
- In the Clone Database page, you can create a new database home or select an existing database home.
- To create a new database home, select the Create New DB Home and then provide the values as described in this procedure.
- To specify an existing database home, select the Source Database Name from which you
 want to create the database and the DB Home Name.

For Oracle Database 19c Standard Edition, you can only create single-instance Oracle Database, with or without high-availability. For Standard Edition Oracle Database 19.6 or later, you can choose to enable high-availability for single-instance database. For Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, you can choose to enable high availability for single-instance database.

- 8. Select the **Database Shape** (template) for your new database. The database shape you select determines the total memory allocated to the database.
- 9. 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.

- 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.
- 11. Specify the Networks.
- Enter the password in the SYS and PDB Admin User Password field and the Confirm Password field. For Transparent Database Encryption (TDE) enabled database, specify the TDE wallet password. The TDE password is the same as the TDE password of the source database.
- 13. Click Create.
- 14. 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.

15. 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

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

 Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html



- 2. Click the **Database** tab.
- 3. For the database that you want to modify, select **Modify** in the Actions drop down list.
- 4. In the Modify Database page, you can attach or detach associated networks and backup policy, and modify database shape and class. You can also change TDE wallet management from EXTERNAL to ODA for Oracle Database 19c and later databases.
- 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.
- 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.
- You can choose to change the Backup Encryption Password. If the database has TDE enabled, then the RMAN Backup Encryption password is not used.
- Note that if the database uses Oracle Key Vault server configuration, then you cannot modify any TDE options.
- **11.** Select the **Specify TDE Option** to perform these operations:
 - Select Re-key TDE Master Encryption Key to re-key the TDE master encryption key
 of the database. Specify the Current TDE Wallet password.
 - Select Change Password for TDE Wallet and specify the Current TDE Password and the New TDE Password.
 - If the TDE wallet management is set to EXTERNAL, then you can view and select the Change TDE Wallet Management option, and set it to ODA.
- 12. For Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, you can choose to **Enable High Availability** for single-instance databases.
- 13. For Standard Edition Oracle Database 19.6 or later, you can choose to **Enable High** Availability for single-instance databases.
- 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, database type, TDE key, or to change the TDE wallet management from EXTERNAL to ODA.

```
# odacli modify-database -s database shape -cl database class -i dbid
```

For example:

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



For example, the following command re-keys the TDE master encryption key of the database after accepting the current TDE Wallet password.

```
# odacli modify-database -n testdb -rkt
Enter TDE wallet password:
```

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 database, such as backup configuration, database class, and database type, and to change TDE wallet management from EXTERNAL to ODA.

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.

Moving a Database Using the Browser User Interface

- Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 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. Select Ignore Missing Patches to ignore missing patches. For high-availability environment, you can select the Non-Rolling check box to perform non-rolling move of the database home.
- 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

1. 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.

Note:

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

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

When upgrading single-instance Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, you can also choose to enable or disable High Availability.

- You can also change the TDE wallet management option if TDE is enabled for the source database and the TDE Wallet Management is set to External. Select Change TDE Wallet Management to set the TDE Wallet Management to ODA.
- 6. Click Upgrade.

Upgrading a Database Manually Using AutoUpgrade

Use AutoUpgrade to manually upgrade an earlier release of Oracle database on Oracle Database Appliance.

Starting with Oracle Database Appliance release 19.17, you cannot manage releases of Oracle Database earlier than 19c using ODACLI or BUI. To upgrade Oracle databases of release 12.1, 12.2, and 18c on Oracle Database Appliance, use OPatch to patch the databases or use Oracle Database Upgrade Assistant (DBUA) or AutoUpgrade to upgrade these databases manually with Oracle Database Appliance 19.17 or later.

Ensure the following:

 The Oracle Database Appliance server must be on Oracle Database Appliance release 19.19 or later.



- The repository must be updated with the target database clone version on the source and target Oracle Database Appliance systems.
- 1. Create the destination DB home for the database:

```
#odacli create-dbhome -v 19.18.0.0.230117
[root@oda1 ~]# odacli list-dbhomes
ID
                               Name
                                                DB
                    DB Edition Home
Version
Location
                                      Status
_____ ____
----- ------
_____
f90adcc1-f64a-41ce-b72d-154db155b1fa OraDB19000_home1
19.18.0.0.230117 EE /u01/app/odaorahome/oracle/
product/19.0.0.0/dbhome 1 CONFIGURED
562a7428-9ea7-4878-9005-62c9d732a12b OraDB12102 home1
12.1.0.2.220719
                               /u01/app/odaorahome/oracle/
                      ΕE
product/12.1.0.2/dbhome 1 CONFIGURED
```

 Disable SSHCleanerJob and configure SSH user equivalence between both nodes in case of Oracle Database Appliance High-Availability systems.

```
[root@oda1 ~]# odacli list-schedules|grep "Name\|SSH"
ТD
                                       Name
Description
CronExpression
                             Disabled
44ad4fe2-4893-4c7d-a61c-15845cb74aa5 SSHCleanerJob
                                                                 SSH
cleaner job to clean up stale SSH keys 0 0/30 * 1/1 * ?
             false
[root@oda1 ~]# odacli modify-schedule -i 44ad4fe2-4893-4c7d-
a61c-15845cb74aa5 -d
Modify job schedule success
[root@oda1 ~]# odacli list-schedules|grep "Name\|SSH"
ΤD
                                       Name
Description
CronExpression
                              Disabled
44ad4fe2-4893-4c7d-a61c-15845cb74aa5 SSHCleanerJob
                                                                 SSH
cleaner job to clean up stale SSH keys 0 0/30 * 1/1 * ?
             true
[oracle@oda1 ~]$ /u01/app/odaorahome/oracle/product/19.0.0.0/dbhome 1/
deinstall/sshUserSetup.sh -user oracle -hosts "oda1 oda2" -
```

- noPromptPassphrase
- Create the AutoUpgrade configuration file as the oracle operating system user on the first node.

```
[oracle@oda1 ~]$ cat autoupgrade.conf
global.autoupg_log_dir=/u01/app/odaorabase/oracle/autoupgrade
upg1.dbname=italy
upg1.start_time=NOW
upg1.source_home=/u01/app/odaorahome/oracle/product/12.1.0.2/dbhome_1
```

```
upg1.target_home=/u01/app/odaorahome/oracle/product/19.0.0.0/dbhome_1
upg1.sid=italy11
upg1.log_dir=/u01/app/odaorabase/oracle/autoupgrade/italy
upg1.upgrade_node=localhost
upg1.target_version=19
upg1.run_utlrp=yes
upg1.timezone upg=no
```

- Change the Fast Recovery Area to Oracle ACFS if the database was created on Oracle ASM.
 - a. Verify whether the dbstorage of the database is ACFS or ASM.

odacli list-databases

DB Name DB Type DB ΤD CDB Class Shape Storage Status Version DbHomeID _____ __ ___ ----- -----------5c183783-a198-413e-b96e-2c941fe1a895 italy RAC 12.1.0.2.220719 true OLTP odb2 ACFS CONFIGURED 562a7428-9ea7-4878-9005-62c9d732a12b 8f90d26d-c17a-45e3-abbc-67c981c24a3f hun RAC EE odb1 ASM 19.18.0.0.230117 true OLTP CONFIGURED f90adcc1-f64a-41ce-b72d-154db155b1fa [root@oda1 ~]# odacli list-dbhomes ID DB Name Version DB Edition Home Location Status _____ ____ ----- -----_____ f90adcc1-f64a-41ce-b72d-154db155b1fa OraDB19000_home1 19.18.0.0.230117 EE /u01/app/odaorahome/oracle/ product/19.0.0.0/dbhome 1 CONFIGURED 562a7428-9ea7-4878-9005-62c9d732a12b OraDB12102_home1 /u01/app/odaorahome/oracle/ 12.1.0.2.220719 EE product/12.1.0.2/dbhome 1 CONFIGURED [oracle@oda1 ~]\$ export ORACLE HOME=/u01/app/odaorahome/oracle/product/ 12.1.0.2/dbhome 1 [oracle@oda1 ~]\$ export PATH=\$ORACLE HOME/bin:\$PATH [oracle@oda1 ~]\$ export ORACLE SID=italy1 [oracle@oda1 ~]\$ sqlplus / as sysdba SQL> show parameter db recovery file dest ACFS: TYPE VALUE NAME _____ ___ _____ db_recovery_file_dest string /u03/app/oracle/

```
fast_recovery_area/
db_recovery_file_dest_size big integer 53862M
```

<u>ASM:</u>

b. If the dbstorage is ASM, then create a vmstorage temporarily or use an existing one and create with a slightly larger size than db_recovery_file_dest_size.

```
[root@oda1 ~]# odacli create-vmstorage -n tempfra -r mirror -s 250G
[root@oda1 ~]# odacli list-vmstorages
                      Volume name Volume
Name
             Disk group
                      Used Used %
device
               Size
Available Mount Point
Created
               Updated
----- -----
----- -----
_____
-----
       DATA TEMPFRA /dev/asm/
250.00 GB 1.09 GB 0.44% 248.91
tempfra
tempfra-18
GB /u05/app/sharedrepo/tempfra 2023-04-18 19:05:55 CEST
2023-04-18 19:05:55 CEST
```

c. Create a folder on the vmstorage and change ownership of the folder to oracle:dba.

[root@oda1 ~]# mkdir /u05/app/sharedrepo/tempfra/italy
[root@oda1 ~]# chown oracle:dba /u05/app/sharedrepo/tempfra/italy

d. Change db recovery file dest to ACFS.

SQL> alter system set db_recovery_file_dest='/u05/app/sharedrepo/ tempfra/italy/' scope=both;

5. Run prechecks and review the findings.

```
[oracle@oda1 ~]$ /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1/jdk/bin/java -jar /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1/rdbms/admin/autoupgrade.jar -config ~/autoupgrade.conf -mode
analyze
AutoUpgrade 22.4.220712 launched with default internal options
Processing config file ...
+-----+
| Starting AutoUpgrade execution |
+-----+
1 CDB(s) plus 2 PDB(s) will be analyzed
Type 'help' to list console commands
upg> Job 100 completed
------ Final Summary ------
```

Number of databases [1] Jobs finished [1]

Jobs failed

```
Please check the summary report at:
/u01/app/odaorabase/oracle/autoupgrade/cfgtoollogs/upgrade/auto/status/
status.html
/u01/app/odaorabase/oracle/autoupgrade/cfgtoollogs/upgrade/auto/status/
status.log
```

[0]

 Run AutoUpgrade in fixup mode to fix issues that could prevent a successful upgrade (if any).

```
[oracle@oda1 ~]$ /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome 1/jdk/bin/java -jar /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome 1/rdbms/admin/autoupgrade.jar -config ~/autoupgrade.conf -mode
fixups
AutoUpgrade 22.4.220712 launched with default internal options
Processing config file ...
+----+
| Starting AutoUpgrade execution |
+----+
1 CDB(s) plus 2 PDB(s) will be processed
Type 'help' to list console commands
upg> Job 101 completed
----- Final Summary -----
Number of databases
                           [1]
Jobs finished
                           [1]
Jobs failed
                           [0]
```

```
Please check the summary report at:
/u01/app/odaorabase/oracle/autoupgrade/cfgtoollogs/upgrade/auto/status/
status.html
/u01/app/odaorabase/oracle/autoupgrade/cfgtoollogs/upgrade/auto/status/
status.log
```

7. Re-run prechecks and review the findings.

```
[oracle@oda1 ~]$ /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome 1/jdk/bin/java -jar /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome 1/rdbms/admin/autoupgrade.jar -config ~/autoupgrade.conf -mode
analyze
AutoUpgrade 22.4.220712 launched with default internal options
Processing config file ...
+----+
| Starting AutoUpgrade execution |
+----+
1 CDB(s) plus 2 PDB(s) will be analyzed
Type 'help' to list console commands
upg> Job 102 completed
----- Final Summary -----
Number of databases
                           [1]
Jobs finished
                           [1]
```

Jobs failed [0]

Please check the summary report at: /u01/app/odaorabase/oracle/autoupgrade/cfgtoollogs/upgrade/auto/status/ status.html /u01/app/odaorabase/oracle/autoupgrade/cfgtoollogs/upgrade/auto/status/ status.log

8. Upgrade the database.

```
[oracle@oda1 ~]$ /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1/jdk/bin/java -jar /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1/rdbms/admin/autoupgrade.jar -config ~/autoupgrade.conf -mode
deploy
```

```
AutoUpgrade 22.4.220712 launched with default internal options
Processing config file ...
+-----+
| Starting AutoUpgrade execution |
```

+----+ 1 CDB(s) plus 2 PDB(s) will be processed Type 'help' to list console commands

```
upg> Job 103 completed
```

		Final	Summary	
Number of	databases		[1]

Jobs	finished	[1]
Jobs	failed	[0]
Jobs	restored	[0]
Jobs	pending	[0]

---- Drop GRP at your convenience once you consider it is no longer needed ----Drop GRP from italy1: drop restore point AUTOUPGRADE 9212 ROME121020

```
Please check the summary report at:
/u01/app/odaorabase/oracle/autoupgrade/cfgtoollogs/upgrade/auto/status/
status.html
/u01/app/odaorabase/oracle/autoupgrade/cfgtoollogs/upgrade/auto/status/
status.log
```

Note: once you confirmed that database was running as expected from all perspective and downgrade surely would not be needed, drop the restore point which was created by AutoUpgrade tool as the output also instructed

```
---- Drop GRP at your convenience once you consider it is no longer needed
----
Drop GRP from italy1: drop restore point AUTOUPGRADE 9212 ROME121020
```

9. Enable SSHCleaner job and remove SSH user equivalence in case of Oracle Database Appliance high-availability system.

```
[root@oda1 ~]# odacli list-schedules|grep "Name\|SSH"
ID Name
Description
```



```
CronExpression
                              Disabled
44ad4fe2-4893-4c7d-a61c-15845cb74aa5 SSHCleanerJob
                                                                 SSH
cleaner job to clean up stale SSH keys
                                            0 0/30 * 1/1 * ?
*
             true
[root@oda1 ~]# odacli modify-schedule -i 44ad4fe2-4893-4c7d-
а61с-15845cb74аа5 -е
Modify job schedule success
[root@oda1 ~]# odacli list-schedules|grep "Name\|SSH"
ID
                                        Name
Description
CronExpression
                              Disabled
44ad4fe2-4893-4c7d-a61c-15845cb74aa5 SSHCleanerJob
                                                               SSH
cleaner job to clean up stale SSH keys
                                         0 0/30 * 1/1 * ?
             false
Remove local and remote node from /home/oracle/.ssh/authorized keys files
on both nodes as oracle OS user using "vi" command
[oracle@oda1 ~]$ vi /home/oracle/.ssh/authorized keys
[oracle@oda2 ~]$ vi /home/oracle/.ssh/authorized keys
Remove all id* files under /home/oracle/.ssh as oracle OS user on both
nodes
[oracle@oda1 ~]$ rm /home/oracle/.ssh/id*
```

```
[oracle@oda2 ~]$ rm /home/oracle/.ssh/id*
```

10. Sync up the DCS metadata of the database.

[root@oda1 ~]# odacli list ID	-dbhomes	Name	DB
Version	DB Edition H	Iome	
Location		Status	
		-	
f90adcc1-f64a-41ce-b72d-15	54db155b1fa	OraDB19000 home1	
19.18.0.0.230117	EE	/u01/app/odaoral	nome/oracle/
product/19.0.0.0/dbhome_1			
562a7428-9ea7-4878-9005-62	2c9d732a12b	—	
12.1.0.2.220719EE/u01/app/odaorahome/oracle			
product/12.1.0.2/dbhome_1	CONFIGURED		
[root@oda1 ~]# odacli list	-databases		
ID		DB Name DB Typ	be DB
Version CDB	Class Editi	on Shape Stora	age Status
DB Home ID			
222a1d47-24ea-4a00-82f0-20 12.1.0.2.220719 true		=	CFS
CONFIGURED 562a7428-9ea7			<u>, , , , , , , , , , , , , , , , , , , </u>



```
[root@oda1 ~]# odacli describe-dbstorage -n italy|grep DBUnique
       DBUnique Name: rome
[root@oda1 ~]# odacli update-registry -n db -u rome
Job details
_____
               ID: fc54b821-c407-4174-8a1a-c90ba66e6cd2
        Description: Discover Components : db
            Status: Created
           Created: April 18, 2023 12:04:55 PM CEST
           Message:
[root@oda1 ~]# odacli describe-job -i fc54b821-c407-4174-8a1a-c90ba66e6cd2
Job details
_____
              ID: fc54b821-c407-4174-8a1a-c90ba66e6cd2
        Description: Discover Components : db
            Status: Success
           Created: April 18, 2023 12:04:55 PM CEST
           Message:
Task Name
                            Node Name
                                                Start
Time
                    End Time
                                              Status
_____ ____
_____
Discover DBHome
                             oda1
                                           April 18,
2023 12:05:01 PM CEST April 18, 2023 12:05:04 PM CEST
                                           Success
Discover DBHome
                             oda1
                                          April 18,
2023 12:05:04 PM CEST April 18, 2023 12:05:07 PM CEST Success
                                         April 18, 2023
Discover DB: rome
                            oda1
12:05:09 PM CEST April 18, 2023 12:05:20 PM CEST Success
[root@oda1 ~]# odacli list-databases
ID
                            DB Name DB Type DB
         CDB Class Edition Shape Storage Status
Version
DB Home ID
_____ __ ____
_____
222a1d47-24ea-4a00-82f0-20d7fe17f59e italy RAC
19.18.0.0.230117 true OLTP EE odb2 ACFS
CONFIGURED f90adcc1-f64a-41ce-b72d-154db155b1fa
```

11. If you edited db_recovery_file_dest in step 4, then revert the change.

```
[oracle@oda1 ~]$ export ORACLE_HOME=/u01/app/odaorahome/oracle/product/
19.0.0.0/dbhome_1
[oracle@oda1 ~]$ export PATH=$ORACLE_HOME/bin:$PATH
[oracle@oda1 ~]$ export ORACLE_SID=italy1
[oracle@oda1 ~]$ sqlplus / as sysdba
```

```
SQL> alter system set
db_recovery_file_dest='+RECO(FG$FILEGROUP_TEMPLATE_MIRROR)' scope=both;
```

12. Take a full backup.

```
[oracle@oda1 ~] # odacli create-backup -n italy -bt Regular-L0
```

13. Remove the temporary vmstorage.

```
[oracle@oda1 ~] # odacli delete-vmstorage -n tempfra
```

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

- 2. Click the **Database** tab.
- 3. Click Actions next to the database that you want, then select Delete.
- 4. In the Confirmation dialog, select **Force Delete** to force the deletion and then click **OK** to 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 listdbhomes 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.

1. 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.
- 4. (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.
- 4. Select a database version from the list of available versions, then select the database edition, either Enterprise Edition or Standard Edition, per your licensing agreement.
- 5. Click Create. When prompted, click Yes to confirm that you want to start the job.

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 RMAN 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.

Note:

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 19.27.0.0.0 database named PRODDB in the example.com domain:

```
SID_LIST_LISTENER=
 (SID_LIST=
    (SID_DESC=
        (GLOBAL_DBNAME=PRODDB.example.com)
        (ORACLE_HOME=/u01/app/oracle/product/19.0.0.0/dbhome_2)
        (SID_NAME=PRODDB)
              (ENVS="TNS_ADMIN=/u01/app/oracle/product/19.0.0.0/
dbhome_2/network/admin"))
)
```

4. Save the file.

)

5. Restart the listener.

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

Migrating a Database

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

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

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

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

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
```

 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.

 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.

Follow these steps to register a database:

1. Ensure that the sqlpatches are in the Oracle Database Appliance environment. If the patches are not in the environment, copy the <code>\$OH/sqlpatch</code> directories from the source database home to the <code>\$OH</code> in Oracle Database Appliance before executing the <code>odacli</code> 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. Register the database with Oracle Database Appliance.

```
# odacli register-database -c OLTP -s odb1 -sn example service
Enter SYS, SYSTEM and PDB Admin user password:
Retype SYS, SYSTEM and PDB Admin user password:
  "jobId" : "317b430f-ad5f-42ae-bb07-13f053d266e2",
  "status" : "Created",
  "message" : null,
  "reports" : [],
  "createTimestamp" : "August 08, 2021 05:55:49 AM EDT",
  "description" : "Database service registration with
                 db service name: example service",
  "updatedTime" : "August 08, 2018 05:55:49 AM EDT"
}
# 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: example service
       Status: Success
      Created: August 08, 2018 5:55:49 AM EDT
      Message:
Task Name
                            Start Time
_____
restore control file
                           August 08, 2018 5:55:49 AM EDT
move spfile to right location August 08, 2018 5:56:08 AM EDT
register DB with clusterware August 08, 2018 5:56:13 AM EDT
reset db parametersAugust 08, 2018 5:57:05 AM EDTRunning DataPatchAugust 08, 2018 5:57:36 AM EDT
```



(Continued) End Time Status August 08, 2018 5:56:08 AM EDT Success August 08, 2018 5:56:13 AM EDT Success August 08, 2018 5:57:05 AM EDT Success August 08, 2018 5:57:36 AM EDT Success August 08, 2018 5:57:49 AM EDT Success

3. 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 supported releases of Oracle Database. The consoles are web-based tools for managing Oracle Databases.

The EM Express console provides the following features:

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

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



Managing TDE-Enabled Oracle Databases

Manage TDE-enabled Oracle databases on your Oracle Database Appliance.

- About Transparent Database Encryption (TDE) in Oracle Database Appliance Transparent Data Encryption (TDE) enables you to encrypt sensitive data that you store in tables and tablespaces.
- About Oracle Key Vault
 Oracle Key Vault is a fault-tolerant, highly available, and scalable, secure and standardscompliant key and secrets management appliance, where you can store, manage, and share your security objects.
- Creating TDE-Enabled Databases With User Credentials

Understand how you can create TDE-enabled databases on Oracle Database Appliance using the credentials of a user in Oracle Key Vault. This method supports creation of TDE-enabled databases on bare metal and DB systems.

Creating TDE-Enabled Databases Using Oracle Key Vault With Endpoints in Oracle Key Vault

Understand how you can create TDE-enabled databases on Oracle Database Appliance using endpoints and wallets already in Oracle Key Vault. This method supports creation of TDE-enabled databases on bare metal and DB systems.

- Managing Oracle Key Vault Server Configuration Operations Using ODACLI Commands Understand how you can manage Oracle Key Vault server configuration operations on Oracle Database Appliance on bare metal and DB systems.
- Managing Database Operations on TDE-enabled Databases with TDE keys stored on Oracle Key Vault Understand how you can manage TDE-enabled databases with TDE keys stored on Oracle Key Vault on Oracle Database Appliance on bare metal and DB systems.
- Creating a User in Oracle Key Vault Using BUI Create a user with Oracle Key Vault server configuration entitlement on a multi-user access enabled Oracle Database Appliance.
- Updating Oracle Key Vault Endpoints for Databases
 Understand how you can update the Oracle Key Vault client on Oracle Database Appliance
 when the Oracle Key Vault server is updated to the latest release or when certificates are
 regenerated on the Oracle Key Vault server.
- Registering TDE-enabled Databases Configured with Oracle Key Vault

You can now register TDE-enabled databases that use Oracle Key Vault keystore but were not created using Oracle Database Appliance tooling. After registering these databases with Oracle Database Appliance, you can use Oracle Database Appliance commands for managing the databases.

- Restoring an Oracle Key Vault TDE Database using RMAN and Registering the Database Understand how you can register a TDE-enabled database that uses Oracle Key Vault to store TDE keys.
- Restoring a Software Keystore TDE database using RMAN and Registering the Database Understand how you can register a TDE-enabled database that uses software wallet to store TDE keys.



- Creating Oracle Key Vault Server Configuration Object Using the BUI Understand how you can create TDE-enabled database on Oracle Database Appliance with TDE keys stored in Oracle Key Vault on bare metal and DB systems using the BUI.
- Granting and Revoking Access on Oracle Key Vault Server Configuration Using BUI Understand how you can grant and revoke access to Oracle Key Vault server configuration on Oracle Database Appliance on bare metal and DB systems using BUI.
- Managing Oracle Key Vault Server Configuration Operations Using BUI Understand how you can manage Oracle Key Vault server configuration operations on Oracle Database Appliance on bare metal and DB systems.
- Migrating Tablespaces from a TDE-enabled Oracle Database with Software Keystore to another TDE-enabled Database with Oracle Key Vault Keystore Understand how you can migrate tablespaces with the expdp/impdp transportable tablespaces feature from TDE-enabled database using software keystore to use Oracle Key Vault as keystore.
- Manually Migrating from Software Keystore to Oracle Key Vault Keystore on Oracle Database Appliance
 Understand how you can migrate tablespaces from software keystore to Oracle Key Vault keystore for databases created on Oracle Database Appliance
- Manual Migration and Encryption of Data into TDE-Enabled Database Understand how you can migrate transportable tablespaces to TDE-enabled database on Oracle Database Appliance.

About Transparent Database Encryption (TDE) in Oracle Database Appliance

Transparent Data Encryption (TDE) enables you to encrypt sensitive data that you store in tables and tablespaces.

After the data is encrypted, this data is transparently decrypted for authorized users or applications when they access this data. TDE helps protect data stored on media (also called data at rest) in the event that the storage media or data file is stolen.

Oracle Database uses authentication, authorization, and auditing mechanisms to secure data in the database, but not in the operating system data files where data is stored. To protect these data files, Oracle Database provides Transparent Data Encryption (TDE).

TDE encrypts sensitive data stored in data files. To prevent unauthorized decryption, TDE stores the encryption keys in a security module external to the database, called a keystore.

Oracle Database Appliance enables creation and lifecycle management of TDE-enabled databases with ODACLI commands or through the BUI. You can create TDE-enabled single-instance, Oracle RAC or Oracle RAC One Node databases with ODACLI commands or BUI. You can also change TDE passwords and re-key the database using ODACLI commands or BUI. When you use software keystore, you can also backup the TDE wallets along with the database. You can also recover the TDE software wallet and restore the database as a new copy with the odacli irestore-database command.

Based on the keystore used, TDE on Oracle Database Appliance can be configured as any of the following types:

• **TDE keys stored in software keystore:** In this type of TDE method, the TDE keys are stored in a wallet on Oracle Database Appliance.



- TDE keys stored in a wallet on Oracle Key Vault: In this type of TDE method, the TDE keys are stored in a wallet on Oracle Key Vault. Note that if you do not want to provide the credentials of users in Oracle Key Vault, you can use endpoints already created on Oracle Key Vault, and directly specify the endpoints when you create or restore the database on Oracle Database Appliance. Otherwise, you can create Oracle Key Vault user details and use these user credentials to create and restore the database on Oracle Database Appliance. You can configure TDE keys with Oracle Key Vault keystore in one of the following ways:
 - Using credentials of a user in Oracle Key Vault: In this configuration, the TDE keys are stored in a wallet on Oracle Key Vault and accessed through Oracle Key Vault user credentials.
 - Using endpoints and wallet already created on Oracle Key Vault: In this configuration, the TDE keys are stored in a wallet on Oracle Key Vault and accessed through Oracle Key Vault end points.

Note:

To enable Transparent Data Encryption (TDE), you must deploy Oracle Database Enterprise Edition with Oracle Database 19c or later. Transparent Data Encryption (TDE) is an Advanced Security Option (ASO) available with Oracle Database Enterprise Edition.

See Also:

Using Transparent Data Encryption in the Oracle Database Advanced Security Guide

Caution:

When you enable TDE on databases, either with software keystore or with Oracle Key Vault keystore using endpoints and wallet already created on Oracle Key Vault, you are prompted to set a password for the TDE wallet. Provide a strong password for security compliance. Set the password carefully, and ensure that this password is available to you at all times for database management operations. Failure to provide the TDE wallet password when prompted, results in not being able to access the database tables.

About Oracle Key Vault

Oracle Key Vault is a fault-tolerant, highly available, and scalable, secure and standardscompliant key and secrets management appliance, where you can store, manage, and share your security objects.

For detailed information about Oracle Key Vault, see the Oracle Key Vault documentation at https://docs.oracle.com/en/database/oracle/key-vault/21.10/okvag/ okv_intro.html#GUID-1C565FBE-BC21-4E76-B2A6-88A17F6649D7.

Terminology used when storing TDE keys on Oracle Key Vault for TDE-enabled databases on Oracle Database Appliance

Understand these concepts about using Oracle Key Vault server with databases on Oracle Database Appliance:

- Role separation: Oracle recommends that you assign different users for database administration and TDE key operations. You must not provide the user who has the database administration role with the credentials of the Oracle Key Vault server. This ensures the database user with data file access cannot open the database without knowing TDE wallet passwords. You can set up this role separation by enabling multi-user access feature on Oracle Database Appliance. For more information about configuring multi-user access, see the topic *Implementing Multi-User Access on Oracle Database Appliance*. On Oracle Database Appliance, the credentials of Oracle Key Vault user need not be shared with the ODA-DB user. The ODA-Administrator grants the resource, that is, the Oracle Key Vault server configuration, access to the intended DB user and the DB user can use the Oracle Key Vault server configuration when creating the TDE-enabled database to store the TDE keys on the Oracle Key Vault server.
- Oracle Key Vault server configuration: The term refers to an Oracle Database Appliance resource that stores the metadata of the Oracle Key Vault. The Oracle Key Vault server configuration has details such as the name of the user created to manage the TDE keys on the Oracle Key Vault server and the IP address or host name of the Oracle Key Vault server. The Oracle Key Vault server configuration on Oracle Database Appliance is identified by a name, to differentiate Oracle Key Vault server configurations. This name is unique within the Oracle Database Appliance system and the value is case-sensitive. When creating the Oracle Key Vault server configuration, you must provide the credentials of the user on Oracle Key Vault server. It is recommended that this user is a least privileged user with only Create Endpoint privilege. The user name and password you specify when you create the Oracle Key vault server configuration correspond to the user on the Oracle Key vault server. The password you provide during creation of this object is not stored on Oracle Database Appliance. The Oracle Key Vault client auto-login wallet is created using these credentials and all requests to the Oracle Key Vault server use this client auto-login wallet. The database automatically reads the auto-login wallet for the required ADMINISTER KEY MANAGEMENT SQL commands.
- A user with ODA-DB role: A user with ODA-DB role in a multi-user access-enabled or multi-user access-enabled passwordless environment can create and maintain the database. This user, is granted the ODA-DB role and is entitled to perform all database related operations such as creation, patching, modification, deletion, backup, and recovery. These operations are restricted to the database that belongs to the user. For more details, see the chapter *Implementing Multi-User Access on Oracle Database Appliance* in this guide.
- Oracle Key Vault user: The Oracle Key Vault user name and password that you provide when you create the Oracle Key Vault server configuration must correspond to an existing user and the password on the Oracle Key Vault server. Otherwise, there can be failures in accessing Oracle Key Vault. This user can also perform create, delete, describe, and list operations on the Oracle Key Vault server configuration objects that they create.
- Virtual Wallet: A virtual wallet, created on Oracle Key Vault, is a container for objects that must be stored securely. For TDE-enabled databases on Oracle Database Appliance that use Oracle Key Vault as the keystore, the TDE keys of the database are stored inside this virtual wallet.

Requirements for configuring TDE-enabled databases with keys stored in Oracle Key Vault

- The Oracle Key Vault server version must be 21.10.0 or later.
- It is recommended that you set up Network Time Protocol on Oracle Database Appliance. The database operations interacting with Oracle Key Vault fails if the clock on Oracle Database Appliance and Oracle Key Vault server are not synchronized. You must ensure that the time is consistent across the servers or use Network Time Protocol on Oracle Database Appliance.
- You cannot create a starter database with TDE configured using Oracle Key Vault when you provision Oracle Database Appliance on bare metal systems and select to create a starter database. This is because creation of TDE database that uses Oracle Key Vault to store TDE keys requires Oracle Key Vault server configuration to already exist. To create a database with TDE configured using Oracle Key Vault on DB system, first create a DB system without a starter database and then create the database with TDE configured using Oracle Key Vault as described in the topic Creating TDE-Enabled Database on Oracle Database Appliance Using Oracle Key Vault.
- For configuring TDE-enabled databases with keys stored in Oracle Key Vault with the credentials of a user in Oracle Key Vault, on multi-user access-enabled systems, you must create a new user with the ODA-OKVCONFIGADMIN role which has the entitlements ODA-OKVCONFIGVIEWMGMT and ODA-OKVCONFIGMODIFYMGMT. The ODA-OKVCONFIGVIEWMGMT entitlement enables you to perform operations such as Describe and List on the Oracle Key Vault server configuration object. The ODA-OKVCONFIGMODIFYMGMT entitlement enables you to perform operations such as Create and Delete on the Oracle Key Vault server configuration object. The ODA-OKVCONFIGMODIFYMGMT entitlement enables you to perform operations such as Create and Delete on the Oracle Key Vault server configuration object. The ODA-OKVCONFIGVIEWMGMT entitlement is included in the ODA-DB role, and any DB user with the ODA-DB role can list and describe the Oracle Key Vault server configuration object and select the required Oracle Key Vault server configuration object to create the database. For non-multi user access-enabled systems, there is no need to create a new user.

Related Topics

- Implementing Multi-User Access on Oracle Database Appliance Understand how multi-user access can be implemented on Oracle Database Appliance, its advantages and restrictions and the associated life cycle management changes for your appliance.
- odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.
- ODACLI Command Changes with Multi-User Access on Oracle Database Appliance Understand the ODACLI command changes when you enable multi-user access.

Creating TDE-Enabled Databases With User Credentials

Understand how you can create TDE-enabled databases on Oracle Database Appliance using the credentials of a user in Oracle Key Vault. This method supports creation of TDE-enabled databases on bare metal and DB systems.

Follow these steps to create a TDE-enabled database with TDE keys stored on Oracle Key Vault on Oracle Database Appliance bare metal and DB systems:



Step 1: Create the user on Oracle Database Appliance corresponding to the user on Oracle Key Vault. This step applies to multi-user access-enabled systems only.

If the user with the ODA-OKVCONFIGADMIN role does not exist, or if you want to assign a different user for the database you are creating, then create the user.

1. Create a new user with the ODA-OKVCONFIGADMIN role. For example:

odacli create-user -u okvuser1 -r ODA-OKVCONFIGADMIN

The user is created and assigned a temporary password.

- After the user is created successfully, the okvuser1 can log into the appliance with the temporary password.
- 3. The okvuser1 is in the Inactive state. If the appliance is configured with multi-user access enabled, then activate the user with the following command. Note that if the appliance is configured with passwordless multi-user access, then you do not need to activate the user. For more information about configuring multi-user access, the topic *Implementing Multi-User Access on Oracle Database Appliance*.

odacli activate-user

You are prompted to change the password. Enter the temporary password, the new password, and confirm the new password.

4. Use the new password to connect by SSH into the appliance and run ODACLI commands or connect to the Browser User Interface.

Step 2: Create an Oracle Key Vault server configuration

- 1. The Oracle Key Vault user that creates the Oracle Key Vault server configuration must be a user with the least privilege of Create Endpoint on the Oracle Key Vault server.
- 2. For multi-user access-enabled systems, log in as the user with the ODA-OKVCONFIGADMIN role, for example, the okvuser1. For non-multi user access enabled systems, log in as the root user.
- 3. The Oracle Key Vault password prompt displays twice, to accept and confirm the Oracle Key Vault password. Specify the password of the Oracle Key Vault user on the Oracle Key Vault server, which enables the user to log into the Oracle Key Vault server. Specify the user name with the -u option in the odacli create-okvserverconfig command. The name of the Oracle Key Vault server configuration is case-sensitive and no two Oracle Key Vault server configurations can have same name on Oracle Database Appliance. The length of the Oracle Key Vault server configuration cannot exceed 128 characters.

Task Name Start Time End Time Status _____ _____ odacli describe-job -i 730d2469-6efa-4ed1-8386-513e97c866ea Job details _____ ID: 730d2469-6efa-4ed1-8386-513e97c866ea Description: Create OKV Server Config: okvobj1 Status: Success Created: October 20, 2024 11:28:39 AM PDT Message: Create OKV Server Config. Task Name Node Name Start Time End Time Status _____ ____ _____ _____ OKV Password Store creation n1 October 20, 2024 11:28:39 AM PDT October 20, 2024 11:29:04 AM PDT Success Download of OKV REST package n1 20, 2024 11:28:42 AM PDT October 20, 2024 11:28:44 AM PDT October Success Edit of OKV REST package n1 October 20, 2024 11:28:44 AM PDT October 20, 2024 11:28:45 AM PDT Success Generate OKV client wallets October n1 20, 2024 11:28:45 AM PDT October 20, 2024 11:28:47 AM PDT Success

The command creates an Oracle Key Vault server configuration okvobj1 for the Oracle Key Vault server user epokvusr1 on the specified server.

Step 3: Share Oracle Key Vault server configuration for multi user access-enabled systems only

1. For multi-user access-enabled systems, the DB user who creates the database using the Oracle Key Vault server configuration must have shared access to the Oracle Key Vault server configuration created by the Oracle Key Vault user. The odaadmin user must share the Oracle Key Vault server configuration with the DB user using the odacli grant-resource-access command. The DB user can then create the database with the Oracle Key Vault server configuration. An example where the odaadmin user shares the okvobj1 resource with DB user dbusr1 is as follows:

su odaadmin

```
odacli grant-resource-access -ri d017d35a-0757-460a-98f0-9f8d0944c872 -u
```



```
dbusr1
Shared access of resource granted to user successfully...
```

To get the resource ID of the Oracle Key Vault server configuration, run the odacli listokvserverconfigs command. For example:

odacli list-okvserverconfigs

Step 4: Create the database

For multi-user access-enabled systems, log in as the DB user and use the <code>odacli create-database</code> command with the options <code>-t</code>, <code>-osc</code> and <code>-kt</code> to create a database with TDE configured using Oracle Key Vault server. For non-multi user access-enabled systems, you can run the same command as <code>root</code> user.

Determine the Oracle Key Vault server you want to store the TDE keys on and provide the value with the -osc option in the odacli create-database command. The DB user can select the required Oracle Key Vault server configuration from the list of Oracle Key Vault server configurations displayed with the odacli list-okvserverconfigs command. For non-multi user access enabled systems, run the odacli list-okvserverconfigs command as root user.

- The option -t indicates that the database must be configured with TDE, using the Oracle Key Vault credentials represented by the Oracle Key Vault server configuration specified using the -osc option.
- The option -kt specifies the type of kesytore used in TDE configuration. The value of the keystore can be either software or okv. The default is software. The values are caseinsensitive. The OKVServerConfigName attribute of the database is set to the name of the Oracle Key Vault server configuration specified in the create database request.
- The password for TDE wallet is randomly generated by the system, and you do not need to specify it.

WARNING:

The password is stored in a wallet on Oracle Key Vault. Loss of that wallet results in not being able to access the database tables. So, do not delete the wallet on Oracle Key Vault.

An example to create a database kokvdb2 which uses Oracle Key Vault credentials represented by Oracle Key Vault server configuration kovobj1 is as follows:

```
odacli create-database -n kokvdb2 -t -kt OKV -osc kovobj1
Enter SYS and SYSTEM user password:
Retype SYS and SYSTEM user password:
```



odacli describe-job -i 94a51f1a-2d4c-4eac-b0c2-7871d88c0df8

```
Job details
```

```
ID: 94a51f1a-2d4c-4eac-b0c2-7871d88c0df8
          Description: Database service creation with DB name: kokvdb2
              Status: Success
             Created: July 15, 2024 3:00:53 PM CST
             Message:
Task Name
                                  Start
Time
                             End Time
Status
 _____
_____
_____ ____
Validating dbHome available space July 15, 2024 3:01:19 PM
CST
             July 15, 2024 3:01:19 PM CST
                                               Success
. . .
TDE configuration using OKV
                                  July 15, 2024 3:17:37 PM
             July 15, 2024 3:20:36 PM CST
CST
                                               Success
TDE Wallet directory creation July 15, 2024 3:17:38 PM
             July 15, 2024 3:17:46 PM CST
                                              Success
CST
Setting Database parameter for OKV July 15, 2024 3:17:46 PM
CST
             July 15, 2024 3:19:07 PM CST
                                               Success
Auto login TDE Wallet creation
                            July 15, 2024 3:19:07 PM
             July 15, 2024 3:19:09 PM CST
CST
                                               Success
OKV TDE Wallet creation
                                  July 15, 2024 3:19:09 PM
             July 15, 2024 3:19:12 PM CST
CST
                                               Success
OKV Endpoint configuration
                                  July 15, 2024 3:19:12 PM
             July 15, 2024 3:19:43 PM CST
CST
                                               Success
Setting TDE Master Encryption Key July 15, 2024 3:19:43 PM
             July 15, 2024 3:20:13 PM CST
CST
                                               Success
Create Users tablespace
                                  July 15, 2024 3:20:36 PM
CST
             July 15, 2024 3:20:39 PM CST
                                               Success
Clear all listeners from Database July 15, 2024 3:20:39 PM
             July 15, 2024 3:20:40 PM CST
CST
                                               Success
```



Copy Pwfile to Shared StorageJuly 15, 2024 3:20:43 PMCSTJuly 15, 2024 3:20:47 PM CSTSuccess

On successful database creation, the Oracle Key Vault client software is installed in the /etc/OKV/db_unique_name/okv directory. The ownership of all the files is set to db_user:oinstall and the permission is set to 750. The autologin TDE wallets are created in the /etc/OKV/db_unique_name/tde and /etc/OKV/db_unique_name/tde_seps directories. The ownership of these directories is recursively set to db_user:oinstall and the permission to 750.

Related Topics

- Implementing Multi-User Access on Oracle Database Appliance
 Understand how multi-user access can be implemented on Oracle Database Appliance, its advantages and restrictions and the associated life cycle management changes for your appliance.
- odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Creating TDE-Enabled Databases Using Oracle Key Vault With Endpoints in Oracle Key Vault

Understand how you can create TDE-enabled databases on Oracle Database Appliance using endpoints and wallets already in Oracle Key Vault. This method supports creation of TDE-enabled databases on bare metal and DB systems.

Note:

In this Oracle Database Appliance release, this feature is supported on Oracle RAC and Oracle single-instance databases only. This feature is not available with Oracle RAC One Node databases and Oracle single-instance database with high-availability enabled.

To create a TDE-enabled database using Oracle Key Vault with endpoints in Oracle Key Vault, you must complete the following tasks:

- 1. Log into Oracle Key Vault and create virtual TDE wallet corresponding to a database.
- 2. Create endpoints corresponding to each instance. For a single instance database, you must create one endpoint and for Oracle RAC database, create two endpoints.
- 3. Set the default wallet for the created endpoint.
- 4. Download the okvclient.jar file corresponding to each endpoint. For single instance database, download one file, and for Oracle RAC database, there are two files available for download, one per instance..

Step 1: Obtain the okvclient.jar file using Oracle Key Vault REST commands

You can create the <code>okvclient.jar</code> file either through Oracle Key Vault REST commands or Oracle Key Vault server user interface.

To obtain the okvclient.jar file using Oracle Key Vault REST commands, log in as the oracle user, and then follow these steps:



 Create working directories, such as /tmp/work and /tmp/work/client_wallet. Navigate to the /tmp/work directory and download and unzip the RESTful Service utility from the Oracle Key Vault server. When you unzip the utility, you can observer three directories bin, lib, and conf.

 Unzip okvrestclipackage.zip. Edit conf/okvrestcli.ini and add the Oracle Key Vault server IP address, user name, and path to the directory where the client autologin wallets are created. In the following example, /tmp/work/client_wallet is the directory path where client autologin wallets are created.

```
#Provide absolute path for log_property, okv_client_config properties
    [Default]
    log_property=./conf/okvrestcli_logging.properties
    server=okv_server_ip
    okv_client_config=./conf/okvclient.ora
    user=okv_user
    client_wallet=/tmp/work/client_wallet
```

3. Edit the bin/okv file and uncomment the line export OKV_RESTCLI_CONFIG=\$OKV_RESTCLI_DIR/conf/okvrestcli.ini and also set the JAVA HOME variable:

```
#!/bin/bash
   export OKV RESTCLI DIR=$(dirname "${0}")/..
   export OKV RESTCLI CONFIG=$OKV RESTCLI DIR/conf/okvrestcli.ini
   export JAVA HOME=/opt/oracle/dcs/java/1.8.0 xxx
   if [ -z "$JAVA HOME" ]
   then
     echo "JAVA HOME environment variable is not set."
     exit 1
   fi
   if [ -z "$OKV_RESTCLI_CONFIG" ]
   then
     echo "OKV RESTCLI CONFIG environment variable is not set."
     exit 1
   fi
   export OKV_RESTCLI_JAR=$OKV_RESTCLI_DIR/lib/okvrestcli.jar
   $JAVA HOME/bin/java -jar $OKV RESTCLI JAR "$@"
```



4. Generate client auto login wallets. You are prompted to provide the Oracle Key Vault user password.

```
/tmp/work/bin/okv admin client-wallet add --client-wallet /tmp/work/
client_wallet --wallet-user okv_user
Password:
```

5. Create the TDE wallet corresponding to the database, if the TDE wallet is not already created using the Oracle Key Vault user interface.

```
/tmp/work/bin/okv manage-access wallet create --wallet wallet_name --
unique FALSE
```

6. Create the endpoint corresponding to the wallet. For Oracle RAC database, create two endpoints. Create the endpoint only if it is not already created using the Oracle Key Vault user interface.

/tmp/work/bin/okv admin endpoint create --endpoint endpoint_name --type
ORACLE_DB --platform LINUX64 --strict-ip-check TRUE

 Set the default wallet for the endpoint. For Oracle RAC database, the default wallet for both endpoints must be the same TDE wallet. Set the default wallet only if it is not already set using the Oracle Key Vault user interface.

/tmp/work/bin/okv manage-access wallet set-default --wallet wallet_name -endpoint endpoint name

8. Download the okvclient.jar command. For Oracle RAC database, you must download the okvclient.jar corresponding to both the endpoints. After the download is complete, copy the okvclient.jar corresponding to the remote instance to the remote node.

```
/tmp/work/bin/okv admin endpoint download --endpoint <endpoint_name> --
location <location>
```

9. While downloading the endpoint, if the Endpoint token is already consumed message is observed as below, then re-enroll the endpoint.

```
/tmp/work/bin/okv admin endpoint download --endpoint endpoint_name --
location location
/tmp/work/log/okv0.log.0 (Permission denied)
{
    "result" : "Failure",
    "message" : "Endpoint token is already consumed"
}
/tmp/work/bin/okv admin endpoint re-enroll --endpoint <endpoint_name>
/tmp/work/log/okv0.log.0 (Permission denied)
{
    "result" : "Success"
}
```



Step 2: Create the database

 For multi user access-enabled and multi user access passwordless systems, log in as the DB user and run the odacli create-database command. For non-multi user accessenabled systems, log in as the root user and run the odacli create-database command. The option --enable-tde/-t indicates that the database must be configured with TDE. The option --keystore-type/-kt specifies the the type of keystore to use in TDE configuration. The option --okvclient-path/-ocp specifies the absolute path to the okvclient.jar file corresponding to the endpoint.

For single-instance database, the option --okvclient-path/-ocp takes only one value. For Oracle RAC database, the option --okvclient-path/-ocp takes two values corresponding to each instance. The values must be comma-separated. The first path corresponds to the local instance whereas the second path corresponds to the remote instance. You are prompted to provide the TDE password.

On successful database creation, the Oracle Key Vault client software is installed in the $/etc/OKV/db_unique_name/okv$ directory. The local auto login TDE wallets are created in the $/etc/OKV/db_unique_name/tde$ directory. The okvclient.jar file in the source location is deleted.

An example to create a single-instance database named okvdb without using the Oracle Key Vault server configuration object, is as follows:

```
odacli create-database -n okvdb -y SI -t -kt OKV -ocp /tmp/okvclient.jar
Enter SYS and SYSTEM user password:
Retype SYS and SYSTEM user password:
Enter TDE wallet password:
Retype TDE wallet password:
Job details
                 ID: 94a51f1a-2d4c-4eac-b0c2-7871d88c0df8
          Description: Database service creation with DB name: okvdb
              Status: Created
             Created: July 15, 2024 3:00:53 PM CST
             Message:
Task Name
                                  Start
Time
                             End
Time
                               Status
_____
    _____
odacli describe-job -i 94a51f1a-2d4c-4eac-b0c2-7871d88c0df8
Job details
_____
                 ID: 94a51f1a-2d4c-4eac-b0c2-7871d88c0df8
          Description: Database service creation with DB name: okvdb
              Status: Success
             Created: July 15, 2024 3:00:53 PM CST
             Message:
```

Task Name Start Time End Time Status _____ _____ _____ Validating dbHome available space July 15, 2024 3:01:19 PM CST July 15, 2024 3:01:19 PM CST Success . . . TDE configuration using OKV July 15, 2024 3:17:37 PM July 15, 2024 3:20:36 PM CST CST Success TDE Wallet directory creation July 15, 2024 3:17:38 PM CST July 15, 2024 3:17:46 PM CST Success Setting Database parameter for OKV July 15, 2024 3:17:46 PM July 15, 2024 3:19:07 PM CST CST Success Auto login TDE Wallet creation July 15, 2024 3:19:07 PM CST July 15, 2024 3:19:09 PM CST Success Installing the OKV client software July 15, 2024 3:19:09 PM CST July 15, 2024 3:19:42 PM CST Success July 15, 2024 3:19:43 PM Setting TDE Master Encryption Key CST July 15, 2024 3:20:13 PM CST Success Create Users tablespace July 15, 2024 3:20:36 PM July 15, 2024 3:20:39 PM CST CST Success Clear all listeners from Database July 15, 2024 3:20:39 PM July 15, 2024 3:20:40 PM CST Success CST Copy Pwfile to Shared Storage July 15, 2024 3:20:43 PM CST July 15, 2024 3:20:47 PM CST Success

An example to create an Oracle RAC database named okvdbrac without using the Oracle Key Vault server configuration object, is as follows. Specify the path to the okvclient.jar file for the local database instance first, followed by the path to the okvclient.jar file for the remote database instance in the request.

```
odacli create-database -n okvdb -y RAC -t -kt OKV -ocp /tmp/dir1/
okvclient.jar,/tmp/dir2/okvclient.jar
Enter SYS and SYSTEM user password:
Retype SYS and SYSTEM user password:
Enter TDE wallet password:
Retype TDE wallet password:
Job details
             _____
                  ID: cb611ec2-ff87-44f9-a79b-3ab1a290644f
          Description: Database service creation with DB name: okvdbrac
              Status: Created
             Created: October 20, 2024 6:13:28 AM PDT
             Message:
Task Name
                                   Start
Time
                              End
Time
                               Status
_____
```



odacli describe-job -i cb611ec2-ff87-44f9-a79b-3ab1a290644f Job details _____ ID: cb611ec2-ff87-44f9-a79b-3ab1a290644f Description: Database service creation with DB name: okvdbrac Status: Success Created: October 20, 2024 6:13:28 AM PDT Message: Node Name Task Name Start Time End Time Status _____ ____ -----_____ Validating dbHome available space n1 October 20, 2024 6:13:49 AM PDT October 20, 2024 6:13:49 AM PDT Success Validating dbHome available space n2 October 20, 2024 6:13:49 AM PDT October 20, 2024 6:13:49 AM PDT Success Setting up SSH equivalence n1 October 20, 2024 6:13:51 AM PDT October 20, 2024 6:13:54 AM PDT Success Setting up SSH equivalence October n1 October 20, 2024 6:13:57 AM PDT 20, 2024 6:13:54 AM PDT Success Creating ACFS database home n1 October 20, 2024 6:13:58 AM PDT October 20, 2024 6:13:58 AM PDT Success Validating dbHome available space n1 October 20, 2024 6:13:59 AM PDT October 20, 2024 6:13:59 AM PDT Success Setting TDE Master Encryption Key n1 October 20, 2024 6:34:15 AM PDT October 20, 2024 6:34:56 AM PDT Success Create Users tablespace October n1 20, 2024 6:34:57 AM PDT October 20, 2024 6:34:59 AM PDT Success Clear all listeners from Database n1 October 20, 2024 6:35:00 AM PDT October 20, 2024 6:35:01 AM PDT Success Deleting OKV Client Software Jar n1 October 20, 2024 6:35:03 AM PDT October 20, 2024 6:35:04 AM PDT Success Deleting OKV Client Software Jar n2 October 20, 2024 6:35:04 AM PDT October 20, 2024 6:35:04 AM PDT Success Encrypt all Tablespaces October n1



20, 2024 6:35:04 AM PDT Success October 20, 2024 6:36:15 AM PDT

Related Topics

- Implementing Multi-User Access on Oracle Database Appliance
 Understand how multi-user access can be implemented on Oracle Database Appliance, its
 advantages and restrictions and the associated life cycle management changes for your
 appliance.
- odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Managing Oracle Key Vault Server Configuration Operations Using ODACLI Commands

Understand how you can manage Oracle Key Vault server configuration operations on Oracle Database Appliance on bare metal and DB systems.

You can create, list, delete, and describe Oracle Key Vault server configuration on Oracle Database Appliance bare metal and DB systems. Note that you run these operations only when you create TDE-enabled databases that allow Oracle Database Appliance to store the user credentials of the Oracle Key Vault user, described in the *Creating TDE-Enabled Databases With User Credentials* topic.

Listing Oracle Key Vault server configurations:

Use the odacli list-okvserverconfigs command to view all the Oracle Key Vault server configurations.

odacli list-okvserverconfigs

ID		1	Jame	Ŭ	Jser	
Name	IP address	Host Name	ž	Descriptio	on	
d017d35a-0757	-460a-98f0-9f8d	.0944c872 d	okvobj1			
epadmin	XXX.XX.XX.	xxx Null	L	OKV	server	for
Sales databas	se					
b6336173-666k	-4d81-88bd-5ae3	84419114 c	okvobj2			
epadmin2	XXX.XX.XX.	xxx Null	L	OKV	server	for
Sales databas	se					

Describing an Oracle Key Vault server configuration:

Use the odacli describe-okvserverconfig command to view a Oracle Key Vault server configuration.

For example:

```
odacli describe-okvserverconfig -n dokvobj1
OKV Server Config details
ID: c196bd0a-4a42-43a6-8578-9929ceb28525
Name: dokvobj1
```



```
UserName: user1
IP Address: xxx.xxx.xxx
Host Name:
Description: OKV server config for Sales
CreatedTime: October 4, 2024 9:41:43 AM HKT
UpdatedTime: October 4, 2024 9:42:10 AM HKT
State: CONFIGURED
```

Deleting Oracle Key Vault server configuration:

Use the odacli delete-okvserverconfig command to delete Oracle Key Vault server configuration. You can delete the Oracle Key Vault server configuration only if all databases that used the Oracle Key Vault server configuration are already deleted.

```
odacli delete-okvserverconfig -n okvobj1
Job details
_____
              ID: 7446c9b4-a927-431f-8e0b-099eec8116e7
        Description: Delete OKV Server Config: dokvobj1
           Status: Running
           Created: October 4, 2024 9:44:29 AM HKT
           Message: Delete OKV Server Config
Task Name
                            Start
Time
                        End Time
Status
_____
_____
_____
OKV Password Store deletion
                            October 4, 2024 9:44:29 AM
нкт
                                      Running
odacli describe-job -i 7446c9b4-a927-431f-8e0b-099eec8116e7
Job details
_____
              ID: 7446c9b4-a927-431f-8e0b-099eec8116e7
        Description: Delete OKV Server Config: dokvobj1
           Status: Success
           Created: October 4, 2024 9:44:29 AM HKT
           Message: Delete OKV Server Config
Task Name
                            Node Name
                                             Start
Time
                        End Time
Status
_____ ____
   -----
_____
OKV Password Store deletion
                                              October 4,
                            oda1
2024 9:44:29 AM HKT October 4, 2024 9:44:45 AM HKT
Success
OKV Server Config directory deletion oda1
                                             October 4,
2024 9:44:45 AM HKT October 4, 2024 9:44:45 AM HKT
Success
```



OKV Server Config deletion	odal	October 4,
2024 9:44:45 AM HKT	October 4, 2024 9:44:46 AM HKT	Success

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Managing Database Operations on TDE-enabled Databases with TDE keys stored on Oracle Key Vault

Understand how you can manage TDE-enabled databases with TDE keys stored on Oracle Key Vault on Oracle Database Appliance on bare metal and DB systems.

You can re-key TDE master encryption key or restore, delete, perform database backup and recovery, and configure Oracle Data Guard on TDE-enabled database on Oracle Key Vault on Oracle Database Appliance bare metal and DB systems.

- Changing the Password for TDE-enabled Databases
 Understand how you can change the password of TDE-enabled database on Oracle
 Database Appliance on bare metal and DB systems, that uses Oracle Key Vault to store
 TDE keys.
- Re-keying TDE Master Encryption Key for TDE-Enabled Databases Understand how you can re-key TDE master encryption key of TDE-enabled database on Oracle Database Appliance on bare metal and DB systems, that uses Oracle Key Vault to store TDE keys.
- Performing Backup and Recovery of TDE-enabled Databases Understand how you can back up and recover TDE-enabled database with TDE keys stored on Oracle Key Vault on Oracle Database Appliance on bare metal and DB systems.
- Restoring TDE-Enabled Databases Using Oracle Key Vault User Credentials Understand how you can restore TDE-enabled databases using database backups, on Oracle Database Appliance bare metal and DB systems, with credentials of a user on Oracle Key Vault.
- Restoring TDE-Enabled Databases With Endpoints and Wallet Manually Created in Oracle Key Vault
 Understand how you can restore TDE-enabled databases on Oracle Database Appliance using the endpoints and wallets created manually on Oracle Key Vault. This method

supports creation of TDE-enabled databases on bare metal and DB systems. Deleting TDE-enabled Databases

Understand how you can delete a TDE-enabled database on Oracle Database Appliance on bare metal and DB systems, that uses Oracle Key Vault to store TDE keys.

Changing the Password for TDE-enabled Databases

Understand how you can change the password of TDE-enabled database on Oracle Database Appliance on bare metal and DB systems, that uses Oracle Key Vault to store TDE keys.

Changing the password of TDE-enabled databases on Oracle Database Appliance that use the credentials of a user in Oracle Key Vault

Use the odacli modify-database command with the option --change-tde-password, -ctp for TDE-enabled databases on Oracle Database Appliance that use the credentials of a user in

Oracle Key Vault. The new password is randomly generated and stored securely on the Oracle Key Vault server replacing the old TDE password. For example:

odacli modify-database -n db3 -ctp Job details _____ ID: b6d0f4c2-976a-42b3-a32d-6cfc7848375d Description: Modify database: db3 Status: Success Created: February 24, 2025 08:50:08 UTC Message: Modify database Task Name Node Name Start Time End Time Status _____ ____ _____ _____ Re-enroll and Provision of Endpoint n1 February 24, 2025 February 24, 2025 08:50:30 UTC 08:50:14 UTC Success Save the new TDE password using a February 24, 2025 n1 08:50:30 UTC February 24, 2025 08:50:35 UTC Success temporary custom attribute on OKV TDE Wallet closure February 24, 2025 n1 08:50:35 UTC February 24, 2025 08:50:43 UTC Success TDE Wallet closure February 24, 2025 n2 08:50:43 UTC February 24, 2025 08:50:45 UTC Success Change the TDE password in local wallet n1 February 24, 2025 08:50:45 UTC February 24, 2025 08:51:06 UTC Success Auto login TDE Wallet creation n1 February 24, 2025 08:51:06 UTC February 24, 2025 08:51:12 UTC Success Re-enroll and Provision of Endpoint n2 February 24, 2025 08:51:12 UTC February 24, 2025 08:51:29 UTC Success Change the TDE password in local wallet n2 February 24, 2025 08:51:29 UTC February 24, 2025 08:51:49 UTC Success Auto login TDE Wallet creation n1 February 24, 2025 08:51:49 UTC February 24, 2025 08:51:54 UTC Success Save new TDE password on OKV February 24, 2025 n2 08:51:54 UTC February 24, 2025 08:52:04 UTC Success Delete the temporary custom attribute n2 February 24, 2025 08:52:04 UTC February 24, 2025 08:52:07 UTC Success on OKV



Deleting OKV Client Software Jar n2 February 24, 2025 08:52:08 UTC February 24, 2025 08:52:08 UTC Success Database stop (Srvctl) February 24, 2025 n1 08:52:08 UTC February 24, 2025 08:52:48 UTC Success Database start (Srvctl) February 24, 2025 n1 08:52:48 UTC February 24, 2025 08:53:56 UTC Success n1 Checking the TDE wallet status February 24, 2025 08:53:56 UTC February 24, 2025 08:53:59 UTC Success

Changing the password of TDE-enabled databases on Oracle Database Appliance that use endpoints and wallets already in Oracle Key Vault

Use the odacli modify-database command with the option --change-tde-password,-ctp. For TDE-enabled databases on Oracle Database Appliance that use endpoints and wallets already in Oracle Key Vault, you are prompted to specify the password during the password change operation. For example, for Oracle RAC database:

odacli modify-database -n db14 -ctp Enter the current TDE password: Enter the new TDE password: Re-enter the new TDE password: Job details _____ ID: aa2a90db-ab9d-4b10-b9cb-4e23fb38844a Description: Modify database: okvdb22 Status: Success Created: May 15, 2025 17:29:24 UTC Message: Modify database Task Name Node Name Start Time End Time Status _____ _ _____ _____ nl May 15, 2025 17:29:28 TDE Wallet closure UTC May 15, 2025 17:29:30 UTC Success May 15, 2025 17:29:30 Change the TDE password in local wallet n1 Success May 15, 2025 17:29:30 Success May 15, 2025 17:29:31 UTC May 15, 2025 17:29:31 UTC TDE Wallet closure n2 May 15, 2025 17:29:30 UTC UTC Auto login TDE Wallet creation n1 UTC May 15, 2025 17:29:31 UTC Success Change the TDE password in local wallet n2 May 15, 2025 17:29:31 May 15, 2025 17:29:32 UTC UTC Success Auto login TDE Wallet creation n1 May 15, 2025 17:29:32 UTC May 15, 2025 17:29:32 UTC Success Database stop (Srvctl) n1 May 15, 2025 17:29:32 UTC May 15, 2025 17:30:15 UTC Success nl May 15, 2025 17:30:15 Database start (Srvctl) UTC May 15, 2025 17:30:48 UTC Success



Checking the TDE walle	et status	n1	May 15, 2025 17:30:48
UTC May	y 15, 2025 17:30:4	8 UTC	Success

Related Topics

 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, and to change TDE

Re-keying TDE Master Encryption Key for TDE-Enabled Databases

wallet management from EXTERNAL to ODA.

Understand how you can re-key TDE master encryption key of TDE-enabled database on Oracle Database Appliance on bare metal and DB systems, that uses Oracle Key Vault to store TDE keys.

Use the odacli modify-database command to perform re-key of TDE master encryption key with the option -rkt. For TDE configured using Oracle Key Vault, you are prompted to specify the password during the re-key operation. For example:

```
odacli modify-database -n kokvdb2 -rkt
{
 "jobId" : "dbedf89d-b60f-4209-bbcf-0db61e4eb350",
 "status" : "Created",
 "message" : "Modify database",
 "reports" : [ ],
  "createTimestamp" : "July 15, 2024 15:56:01 PM CST",
  "resourceList" : [ {
   "resourceId" : "7alc996b-ee8d-49bc-8759-cbbfcee3bcce",
   "resourceType" : null,
   "resourceNewType" : "Db",
   "jobId" : "dbedf89d-b60f-4209-bbcf-0db61e4eb350",
   "updatedTime" : null
  }],
 "description" : "Modify database: kokvdb2",
  "updatedTime" : "July 15, 2024 15:56:01 PM CST",
  "jobType" : null
odacli describe-job -i dbedf89d-b60f-4209-bbcf-0db61e4eb350
Job details
                    ID: dbedf89d-b60f-4209-bbcf-0db61e4eb350
           Description: Modify database: kokvdb2
                Status: Success
               Created: July 15, 2024 3:56:01 PM CST
               Message: Modify database
Task Name
                                       Start
Time
                                 End Time
Status
```



TDE Wallet H	Re-Key				July	15,	2024	3:56:04 PM	
CST	July 15,	2024	3:56:12	ΡM	CST			Success	

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Performing Backup and Recovery of TDE-enabled Databases

Understand how you can back up and recover TDE-enabled database with TDE keys stored on Oracle Key Vault on Oracle Database Appliance on bare metal and DB systems.

Performing backup of TDE-enabled database with TDE keys stored on Oracle Key Vault

Use the odacli create-backup command to back up TDE-enabled database with TDE keys stored on Oracle Key Vault. The TDE wallet is not present on Oracle Database Appliance, but resides in Oracle Key Vault server, and hence it is not backed up with the database backup. As a result, the value of TDE wallet backup location attribute of the database backup report is set to null.

Task Name				Node Name	Start	
Time	-		ime			
					-	
Validate backup	config			odal	March 26, 2024 4:14:21	
AM PDT	March 26,	2024	4:14:21	AM PDT	Success	
NFS location ex:	istence vali	datior	1	oda1	March 26, 2024 4:14:21	
AM PDT	March 26,	2024	4:14:22	AM PDT	Success	
Recovery Window	validation			oda1	March 26, 2024 4:14:22	
AM PDT	March 26,	2024	4:14:24	AM PDT	Success	
Archivelog delet	tion policy	config	guration	oda1	March 26, 2024 4:14:24	
AM PDT	March 26,	2024	4:14:26	AM PDT	Success	
Database backup				oda1	March 26, 2024 4:14:26	
AM PDT	March 26,	2024	4:15:21	AM PDT	Success	
[odaadmin@oda1 }	oin]\$ odacli	descr	ibe-bacl	kupreport -i	d2326683-9766-4933-bee1-	

a2b59c9d7e9e
{
 "id" : "d2326683-9766-4933-bee1-a2b59c9d7e9e",
 "dbResId" : "96a98156-b657-403e-a87c-357c2069c285",
 "tag" : "auto",



```
"dbId" : "1851419729",
  "dbName" : "db15",
  "dbUniqueName" : "db15",
  "backupType" : "Regular-L0",
  "keepDays" : null,
  "backupLocation" : "/nfs backup/orabackups/dbsfb225975e/database/1851419729/
db15/db",
  "cfBackupHandle" : "/nfs backup/orabackups/dbsfb225975e/database/1851419729/
db15/db/c-1851419729-20240326-03",
  "spfBackupHandle" : "/nfs backup/orabackups/dbsfb225975e/database/
1851419729/db15/db/c-1851419729-20240326-03",
  "pitrTimeStamp" : "March 26, 2024 04:15:06 AM PDT",
  "pitrSCN" : "1675444",
  "resetLogsTimeStamp" : "March 26, 2024 03:01:39 AM PDT",
  "resetLogsSCN" : "1575481",
  "oraHomeVersion" : "19.23.0.0.240116",
  "sqlPatches" : "35926646,34774667,35943157",
  "backupLoqLoc" : "/nfs backup/orabackups/dbsfb225975e/database/1851419729/
db15/rmanlog/2024-03-26/rman backup auto 2024-03-26 04-14-29.0478.log",
  "tdeWalletLoc" : null,
  "dbConfigLoc" : "/nfs backup/orabackups/dbsfb225975e/database/1851419729/
db15/dbconfig/2024-03-26/DBCONFIG auto 2024-03-26 04-15-19.0472.tar.gz",
  "name" : "Backup Report db15",
  "createTime" : "March 26, 2024 04:14:26 AM PDT",
  "state" : {
    "status" : "CONFIGURED"
  },
  "updatedTime" : "March 26, 2024 04:14:26 AM PDT",
  "backupReportLogDetail" : "/nfs backup/orabackups/dbsfb225975e/database/
1851419729/db15/rmandetaillogreport/2024-03-26/
rman list backup detail auto 2024-03-26_04-15-16.0129.log",
  "dbInfo" : {
    "dbClass" : "OLTP",
    "dbType" : "RAC",
    "dbShape" : "odb2"
    "dbEdition" : "EE",
    "dbStorage" : "ASM",
    "dbRedundancy" : null,
    "pdbName" : null,
    "isCdb" : false
  },
  "dbDataSize" : "2441M",
  "dbRedoSize" : "16403M",
  "rmanBackupPieces" : "/nfs backup/orabackups/dbsfb225975e/database/
1851419729/db15/backuppieces/2024-03-26/backupPieces auto 96a98156-b657-403e-
a87c-357c2069c285 20240326041518.json",
  "compressionAlgo" : "BASIC",
  "cpuPool" : null,
  "numberOfCores" : null,
  "keystoreType" : "OKV",
}
```

Note that since TDE wallet backup is not supported, if the keystore type is OKV, if you specify the component as tdewallet in the odacli create-backup command, an error is encountered.

```
[odaadmin@oda1 bin]$ odacli create-backup -n db15 -c tdewallet
DCS-10144:TDE wallet backup operation is not supported for TDE databases with
OKV keystore type.
```

Performing recovery of database with TDE configured using Oracle Key Vault with credentials of Oracle Key Vault user

Use the odacli recover-database command to recover a database with TDE configured using Oracle Key Vault. For example, to recover a database kokvdb2, run the following command:

```
odacli recover-database -n kokvdb2 -t latest
{
 "jobId" : "8a50d65f-2269-41ff-b030-51fe4ecc82b5",
 "status" : "Created",
 "message" : null,
 "reports" : [],
 "createTimestamp" : "July 15, 2024 18:26:26 PM CST",
 "resourceList" : [ ],
 "description" : "Create recovery-latest for DB : kokvdb2",
 "updatedTime" : "July 15, 2024 18:26:26 PM CST",
 "jobType" : null
}
odacli describe-job -i 8a50d65f-2269-41ff-b030-51fe4ecc82b5
Job details
         _____
                 ID: 8a50d65f-2269-41ff-b030-51fe4ecc82b5
         Description: Create recovery-latest for DB : kokvdb2
             Status: Success
             Created: July 15, 2024 6:26:26 PM CST
             Message:
Task Name
                                  Start
Time
                            End Time
Status
     _____
-----
_____
Database recovery validation
                                 July 15, 2024 6:26:30 PM
CST
    July 15, 2024 6:27:50 PM CST
                                             Success
                                 July 15, 2024 6:27:50 PM
Database recovery
            July 15, 2024 6:30:07 PM CST
CST
                                              Success
                         July 15, 2024 6:30:07 PM
Enable block change tracking
            July 15, 2024 6:30:12 PM CST
CST
                                              Success
Database opening
                                 July 15, 2024 6:30:12 PM
CST
            July 15, 2024 6:30:15 PM CST
                                              Success
                                 July 15, 2024 6:30:15 PM
Database restart
CST
            July 15, 2024 6:31:31 PM CST
                                              Success
                         July 15, 2024 6:31:31 PM
Recovery metadata persistence
CST
           July 15, 2024 6:31:31 PM CST
                                             Success
```



The TDE wallets are stored on the Oracle Key Vault server and not on Oracle Database Appliance, and so, ODACLI commands cannot be used for restore and recovery operations. If the keystore type is OKV, and you specify the component as tdewallet in the odacli recoverdatabase command, an error is encountered.

```
[odaadmin@oda1 bin]$ odacli recover-database -n db15 -tl /nfs_backup/
ewallet.p12 -t latest
DCS-10045:Validation error encountered: Usage of TDE wallet related
parameters is not allowed for a TDE database with OKV keystore type.
```

[odaadmin@oda1 bin]\$ odacli restore-tdewallet -n db15 Enter TDE wallet password: DCS-10144:Restore TDE wallet operation is not supported for TDE databases with OKV keystore type.

Performing recovery of database with TDE configured using Oracle Key Vault with endpoints in Oracle Key Vault

The odacli recover-database command prompts for the TDE password. Before database recovery, the local auto-login wallet is regenerated using the Administer Key Management command. You must specify the TDE password for database recovery.

```
odacli recover-database -n kokvdb2 -t latest
Enter the TDE password:
odacli describe-job -i 8a50d65f-2269-41ff-b030-51fe4ecc82b5
Job details
                 ID: 8a50d65f-2269-41ff-b030-51fe4ecc82b5
          Description: Create recovery-latest for DB : kokvdb2
              Status: Success
             Created: July 15, 2024 6:26:26 PM CST
             Message:
Task Name
                                  Start
Time
                             End Time
Status
_____
    _____
_____
Auto login TDE Wallet creation July 15, 2024 6:26:30 PM
             July 15, 2024 6:27:50 PM CST
CST
Database recovery validation July 15, 2024 6:26:30 PM
    July 15, 2024 6:27:50 PM CST
CST
                                              Success
                                 July 15, 2024 6:27:50 PM
Database recovery
            July 15, 2024 6:30:07 PM CST
CST
                                              Success
                                 July 15, 2024 6:30:07 PM
Enable block change tracking
CST
            July 15, 2024 6:30:12 PM CST
                                              Success
Database opening
                                  July 15, 2024 6:30:12 PM
            July 15, 2024 6:30:15 PM CST
CST
                                              Success
Database restart
                                  July 15, 2024 6:30:15 PM
             July 15, 2024 6:31:31 PM CST
CST
                                              Success
```



Recovery metadata persistanceJuly 15, 2024 6:31:31 PMCSTJuly 15, 2024 6:31:31 PM CSTSuccess

Errors during database recovery

The TDE wallets are stored on the Oracle Key Vault server and not on Oracle Database Appliance, and so, ODACLI commands cannot be used for restore and recovery operations. If the keystore type is OKV, and you specify the component as tdewallet in the odacli recoverdatabase command, an error is encountered.

[odaadmin@oda1 bin]\$ odacli recover-database -n db15 -tl /nfs_backup/ ewallet.p12 -t latest DCS-10045:Validation error encountered: Usage of TDE wallet related parameters is not allowed for a TDE database with OKV keystore type.

[odaadmin@oda1 bin]\$ odacli restore-tdewallet -n db15 Enter TDE wallet password: DCS-10144:Restore TDE wallet operation is not supported for TDE databases with OKV keystore type.

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Restoring TDE-Enabled Databases Using Oracle Key Vault User Credentials

Understand how you can restore TDE-enabled databases using database backups, on Oracle Database Appliance bare metal and DB systems, with credentials of a user on Oracle Key Vault.

Prerequisites

- To restore a database with primary role in an Oracle Data Guard configuration, TDE wallet for the target database must be created on the Oracle Key Vault server before you run the restore command. This TDE wallet is a copy of the wallet of the source database.
- To restore a database with a standby role in an Oracle Data Guard configuration, the TDE wallet copy must **not** be created. The TDE wallet of the primary database must be used for the standby database.

Step 1: Create the Oracle Key Vault user. This step applies to multi-user access-enabled systems only.

If the user with the ODA-OKVCONFIGADMIN role does not exist, or if you want to assign a different user for the database you are restoring, then create the user.

1. Create a new user with the ODA-OKVCONFIGADMIN role. For example:

odacli create-user -u okvuser1 -r ODA-OKVCONFIGADMIN

The user is created and assigned a temporary password.



- 2. After the user is created successfully, the okvuser1 can log into the appliance with the temporary password.
- 3. The okvuser1 is in the Inactive state. If the appliance is configured with multi-user access enabled, then activate the user with the following command. Note that if the appliance is configured with passwordless multi-user access, then you do not need to activate the user. For more information about configuring multi-user access, the topic *Implementing Multi-User Access on Oracle Database Appliance*.

odacli activate-user

You are prompted to change the password. Enter the temporary password, the new password, and confirm the new password.

4. Use the new password to connect by SSH into the appliance and run ODACLI commands or connect to the Browser User Interface.

Step 2: Create an Oracle Key Vault server configuration

Create an Oracle Key Vault server configuration for the target database. Create a new Oracle Key Vault server configuration only if an Oracle Key Vault server configuration for the same Oracle Key Vault server does not already exist. If a configuration already exists, then use the existing configuration.

- 1. The Oracle Key Vault user that creates the Oracle Key Vault server configuration must be a user with atleast the privilege of Create Endpoint on the Oracle Key Vault server.
- 2. For multi-user access-enabled systems, log in as the user with the ODA-OKVCONFIGADMIN role, for example, the okvuser1. For non-multi user access enabled systems, log in as the root user.
- 3. Oracle Key Vault password prompt displays twice, to accept and confirm the Oracle Key Vault password. This is the password of the Oracle Key Vault user on the Oracle Key Vault server, which enables the user to log into the Oracle Key Vault server. Specify the user name with the -u option in the odacli create-okvserverconfig command. The name of the Oracle Key Vault server configuration is case-sensitive and no two Oracle Key Vault server configurations can have same name on Oracle Database Appliance. The length of the Oracle Key Vault server configuration cannot exceed 128 characters.

```
odacli create-okvserverconfig -n okvobj1 -u epokvusr1 -ip xxx.xxx.xxx
Enter OKV user password :
Retype OKV user password :
Job details
                ID: 8878fc02-3d64-4519-bf52-fcb50839f89f
         Description: Create OKV Server Config: okvcfg5
             Status: Success
            Created: October 14, 2024 14:04:29 UTC
            Message: Create OKV Server Config.
Task Name
                                Node Name
                                                     Start
Time
                           End
Time
                             Status
     _____ ____
   _____
  _____
                                          oda1
OKV Password Store creation
                                                     October
```



14, 2024 14:04:29 UTC Success	October 14, 2024 14:04:56 UTC	
Download of OKV REST package 14, 2024 14:04:31 UTC	oda1 October 14, 2024 14:04:32 UTC	October
Success Edit of OKV REST package 14, 2024 14:04:32 UTC	oda1 October 14, 2024 14:04:32 UTC	October
Success Generate OKV client wallets	odal	October
14, 2024 14:04:32 UTC Success	October 14, 2024 14:04:35 UTC	

The command creates an Oracle Key Vault server configuration <code>okvobj1</code> for the Oracle Key Vault server user <code>epokvusr1</code> on the specified server.

Step 3: Copy TDE keys from source wallet to target wallet on Oracle Key Vault server using ODACLI commands

Use the odacli copy-okvtdewallet command to copy the TDE wallet to the Oracle Key Vault server. Specify the source wallet name (--source-wallet-name | -swn), target wallet Oracle Key Vault server configuration object name (--target-okvserverconfig | -tosc), and the target wallet name (--target-wallet-name | -twn) in the command. A new wallet with the name specified for the target wallet name (--target-wallet-name | -twn) parameter is created in the target Oracle Key Vault server. This wallet contains the TDE keys copied from the source wallet.

If the source wallet is on a different Oracle Key Vault server than the target wallet, then specify the source wallet Oracle Key Vault server details such as the host name (--source-hostname | -shn) or the IP address (--source-ip | -sip) of the server and the name of the user that owns the wallet on the Oracle Key Vault server (--source-username | -su). You must provide a password when prompted in this case. This is the password of the Oracle Key Vault user that owns the source wallet on the Oracle Key Vault server. For multi-user access enabled systems, run this command as the Oracle Key Vault user on Oracle Database Appliance.

There are three scenarios when you copy the TDE wallet:

Scenario 1: Copy the TDE wallet on the same Oracle Key Vault server with the same Oracle Key Vault user

In this case, the source TDE wallet and the target TDE wallet are on the same Oracle Key Vault server, and both are owned by the same user on the OKV server. For example:

```
odacli copy-okvtdewallet -swn tdeokv_on_oda8m013-c -tosc okvobj1 -twn tdeokvss
Job details
ID: 50df7dcc-8e17-48db-9206-879c44e57c20
Description: Copy wallet in OKV server
Status: Success
Created: June 20, 2024 2:56:02 AM CST
Message:
Task Name Start
Time End Time
Status
```



Creating a TDE wallet copy in the OKV June 20, 2024 2:56:03 AM CST June 20, 2024 2:57:17 AM CST Success server

_____ ____

Scenario 2: Copy the TDE wallet on the same Oracle Key Vault server but using a different Oracle Key Vault user

In this case, the source and the target wallet are on the same Oracle Key Vault server but are owned by different users on the Oracle Key Vault server. The owner of the source wallet in the Oracle Key Vault must provide read and manage access permissions on the wallet to the owner of the target wallet on Oracle Key Vault before running the ODACLI command to copy the wallet.

Follow these steps to provide read and manage wallet permissions to the target wallet Oracle Key Vault user:

- 1. Log into the Oracle Key Vault server as the source wallet Oracle Key Vault user.
- Navigate to the Keys and Wallets tab. Select the source wallet checkbox and click the Edit icon.
- 3. Navigate to the Wallet Access Settings section and click Add.
- 4. In the dropdown list for **Type**, select **Users**, and then select the checkbox for the target wallet Oracle Key Vault user.
- 5. In the Access Level section, select Read Only and Manage Wallet.
- 6. Click Save.

After you provide the required permissions to the target wallet user, run the odacli copyokvtdewallet command.

```
odacli copy-okvtdewallet -swn tdeokv on oda8m013-c -tosc okvobj2 -twn tdeokvdu
Job details
 _____
              ID: 50df7dcc-8e17-48db-9206-879c44e57c20
        Description: Copy wallet in OKV server
           Status: Success
           Created: June 20, 2024 2:56:02 AM CST
          Message:
Task Name
                            Start
Time
                        End Time
Status
_____
_____ ____
Creating a TDE wallet copy in the OKV June 20, 2024 2:56:03 AM
   June 20, 2024 2:57:17 AM CST
CST
                                      Success
server
```

Scenario 3: Copy the TDE wallet to a different Oracle Key Vault server

In this case, the source wallet and the target wallet are on different Oracle Key Vault servers. Specify the source wallet Oracle Key Vault server details in the odacli copy-okvtdewallet



command. Specify the password of the source wallet Oracle Key Vault user when prompted. For example:

```
odacli copy-okvtdewallet -swn tdeokv on oda8m013-c -sip xxx.xx.x.xxx -su
epokvusr1 -tosc okvobj3 -twn tdeokvds
Enter OKV user password:
Retype OKV user password:
Job details
_____
               ID: 50df7dcc-8e17-48db-9206-879c44e57c20
        Description: Copy wallet in OKV server
           Status: Success
           Created: June 20, 2024 2:56:02 AM CST
           Message:
Task Name
                             Start
Time
                         End Time
Status
_____
  _____
_____ ____
Creating a TDE wallet copy in the OKV June 20, 2024 2:56:03 AM
CST
           June 20, 2024 2:57:17 AM CST
                                        Success
server
```

Alternate method for Step 3: Copying the TDE keys from the source database wallet to the target database wallet using the Oracle Key Vault user interface

Instead of using ODACLI commands, you can create a new wallet for the target database in the Oracle Key Vault server and copy the TDE keys of the source database to the wallet using the Oracle Key Vault user interface as follows:

- 1. Log into the Oracle Key Vault server.
- 2. Navigate to the Keys & Wallets tab.
- 3. The Oracle Key Vault user must be provided read, write, and manage wallet permissions from the **Access Settings** section of the source database wallet.
- 4. To create a new wallet, click **Create**.
- 5. Specify the new name for the wallet of the target database.
- 6. Copy the TDE keys of the source database when creating the new wallet. Search for the name of the source database in the Add Wallet Contents section. When the keys are displayed, select all TDE Master Encryption Key checkboxes for the database.
- 7. To save the wallet, click Save.
- 8. Run this step only if the Oracle Key Vault administrator has created the wallet for the Oracle Key Vault user. Ensure that the administrator provides read-write and manage-wallet access for the wallet to the user after creation.
 - a. Log into the Oracle Key Vault server as the Oracle Key Vault administrator.
 - b. In the Keys & Wallets tab, select the checkbox for the newly-created wallet and click on the Edit option for the wallet.
 - c. In the Wallet Access Settings, click Add.
 - d. In the Select Endpoint/User Group section, select Users from the dropdown list.

- e. Select the checkbox for the Oracle Key Vault user to be provided access to the wallet.
- f. In the Access Level section, select Read and Modify and Manage Wallet options.
- g. To save the access settings for the wallet, click Save.

Step 4: Restoring TDE-enabled databases with TDE keys stored on Oracle Key Vault

Use the odacli irestore-database command to restore a TDE-enabled database with TDE keys stored on Oracle Key Vault. Specify the options --enable-tde, --okv-server-config, -- okv-wallet-name, and keystore-type in the command.

The option --enable-tde, -t indicates that the restored database must be configured with TDE, using the Oracle Key Vault server configuration specified in the --okv-server-config option. The keystore of such irestored database is set to OKV. The okvServerConfigName attribute of the restored database object is set to the name of the Oracle Key Vault server configuration specified in the irestore request. Specify the wallet name for the target database with the --okv-wallet-name parameter. This wallet must be present in the Oracle Key Vault server and the TDE keys must be copied to the wallet before running the irestore operation.

Since the wallet is already created in the Oracle Key Vault server, specify the name of the wallet, the Oracle Key Vault server configuration where the wallet is created, and the keystore type as OKV in this case in the odacli irestore-database command:

```
odacli irestore-database -r /tmp/dblBackupreport.json -t -osc okvobj1 -kt OKV
-own db2 wallet -n okvdb15
Enter SYS and SYSTEM user password:
Enter SYS and SYSTEM user password:
Job details
_____
                ID: dc44f3f0-5af3-4402-ad23-e923e1446371
         Description: Database service recovery with DB name: okvdb15
             Status: Success
            Created: July 5, 2024 6:54:00 AM EDT
            Message:
Task Name
                               Node Name
                                                   Start
Time
                           End Time
Status
_____
_____
_____
Check if cluster ware is running
                                                   July 5,
                               oda1
2024 6:54:23 AM EDT July 5, 2024 6:54:23 AM EDT
Success
Check if cluster ware is running
                               oda2
                                                  July 5, 2024
6:54:23 AM EDT
                    July 5, 2024 6:54:24 AM EDT
Success
Creating DbStorage for DbRestore
                                                  July 5, 2024
                               oda1
6:54:25 AM EDT July 5, 2024 6:54:42 AM EDT
Success
Validating DiskSpace for DATA
                                oda1
                                                   July 5,
2024 6:54:25 AM EDT
                         July 5, 2024 6:54:27 AM EDT
Success
Setting up SSH equivalence
                                                   July 5,
                                oda1
                       July 5, 2024 6:54:34 AM EDT
2024 6:54:27 AM EDT
```



Success Configuring user access to ACFS oda1 Julv 5, 2024 6:54:38 AM EDT July 5, 2024 6:54:39 AM EDT Success filesystems for okvdb15 Audit directory creationoda16:54:40 AM EDTJuly 5, 2024 6:54:40 AM EDT July 5, 2024 Success Audit directory creation oda2 July 5, 2024 6:54:41 AM EDT July 5, 2024 6:54:41 AM EDT Success Configure TDE for RestoreDb TaskFlow oda1 July 5, 2024 July 5, 2024 6:56:07 AM EDT 6:54:46 AM EDT Success Auxiliary Instance Creation oda1 July 5, 2024 6:54:50 AM EDT July 5, 2024 6:55:30 AM EDT Success TDE Wallet directory creation oda1 July 5, 2024 6:55:30 AM EDT July 5, 2024 6:55:31 AM EDT Success OKV Endpoint configuration July 5, 2024 oda1 July 5, 2024 6:56:02 AM EDT 6:55:31 AM EDT Success Auto login TDE Wallet creation July 5, 2024 oda1 July 5, 2024 6:56:04 AM EDT 6:56:02 AM EDT Success Password based TDE Wallet open oda1 July 5, 2024 6:56:04 AM EDT July 5, 2024 6:56:07 AM EDT Success Create pfile for Auxiliary Instance oda1 July 5, 2024 6:56:07 AM EDT July 5, 2024 6:56:08 AM EDT Success Rman duplicate oda1 Julv 5, 2024 6:56:08 AM EDT July 5, 2024 7:01:22 AM EDT Success Creating pfile from spfile oda1 July 5, July 5, 2024 7:01:24 AM EDT 2024 7:01:23 AM EDT Success Set PFile Ownership oda1 July 5, July 5, 2024 7:01:24 AM EDT 2024 7:01:24 AM EDT Success Customize Db Parameters oda1 July 5, 2024 7:01:25 AM EDT July 5, 2024 7:01:36 AM EDT Success Shutdown And Start databaseoda12024 7:01:36 AM EDTJuly 5, 2024 7:06:51 AM EDT Shutdown And Start database July 5, Success Create spfile for restore db oda1 July 5, 2024 7:06:51 AM EDT July 5, 2024 7:06:53 AM EDT Success Set PFile Ownership oda1 July 5, 2024 7:06:53 AM EDT July 5, 2024 7:06:53 AM EDT Success Shutdown And Mount database July 5, oda1



2024 7:06:54 AM EDT	July	5,	2024 7:08:22	AM	EDT		
Success Re-Create control file			oda1			July	5
2024 7:08:23 AM EDT Success	July	5,	2024 7:09:21	AM	EDT	oury	5,
Removing Disabled Redo Threads 2024 7:09:21 AM EDT	July	5,	oda1 2024 7:09:23	AM	EDT	July	5,
Success Updating DB attributes 2024 7:09:23 AM EDT	July	5,	oda1 2024 7:09:25	AM	EDT	July	5,
Success Register Database taskflow 2024 7:09:30 AM EDT	July	5,	oda1 2024 7:14:51	AM	EDT	July	5,
Success Create SPFile in shared loc 2024 7:09:30 AM EDT	July	5,	odal 2024 7:09:40	AM	EDT	July	5,
Success Delete Local Spfile 2024 7:09:40 AM EDT	July	5,	oda1 2024 7:09:41	AM	EDT	July	5,
Success Register DB with clusterware 2024 7:09:41 AM EDT	July	5,	oda1 2024 7:11:19	AM	EDT	July	5,
Success Add Startup Trigger to Open all 2024 7:11:20 AM EDT			odal 2024 7:11:20	AM	EDT	July	5,
Success Set SysPassword and Create PwFil 2024 7:11:21 AM EDT			oda1 2024 7:11:24	AM	EDT	July	5,
Success Enable block change tracking 2024 7:11:25 AM EDT	July	5,	oda1 2024 7:11:37	AM	EDT	July	5,
Success Creating pfile 2024 7:11:37 AM EDT	July	5,	oda1 2024 7:11:39	AM	EDT	July	5,
Success	_						
Updating db env 2024 7:11:39 AM EDT Success	July	5,	oda1 2024 7:11:40	AM	EDT	July	5,
Enable DbSizing Template 2024 7:11:40 AM EDT	July	5,	oda1 2024 7:13:14	AM	EDT	July	5,
Success Update Database Global Name 2024 7:13:14 AM EDT Success	July	5,	oda1 2024 7:13:17	AM	EDT	July	5,
Create tns entry 2024 7:13:18 AM EDT Success	July	5,	oda1 2024 7:13:19	AM	EDT	July	5,
Create ths entry 2024 7:13:19 AM EDT Success	July	5,	oda2 2024 7:13:21	AM	EDT	July	5,
Running datapatch 2024 7:13:21 AM EDT	July	5,	oda1 2024 7:13:52	AM	EDT	July	5,
Success Set CPU pool 2024 7:13:52 AM EDT Success	July	5,	oda1 2024 7:13:52	AM	EDT	July	5,



Reset Associated Networks for Da 2024 7:14:54 AM EDT Success			July 5,
Reset Associated Networks 2024 7:15:00 AM EDT Success	oda2 2024 7:15:01		July 5,
Set log_archive_dest for Databas 2024 7:15:01 AM EDT Success			July 5,
Setting Database parameter for O 2024 7:15:07 AM EDT Success		AM EDT	July 5,
Enable New Tablespace Encryption	oda1 2024 7:16:47	AM EDT	July 5,
Copy Pwfile to Shared Storage 2024 7:16:47 AM EDT Success	oda1 2024 7:16:58	AM EDT	July 5,
	oda1 2024 7:17:01		July 5,

Restore the database by copying the wallet using ODACLI commands and providing the wallet name to the command. After copying the TDE keys of the wallet of the source database with the odacli copy-okvtdewallet command, specify the target Oracle Key Vault wallet name in the odacli irestore-database command.

```
odacli irestore-database -r /tmp/db1Backupreport.json -t -osc okvobj1 -kt OKV
-own db2_wallet
Enter SYS and SYSTEM user password:
Enter SYS and SYSTEM user password:
```

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Restoring TDE-Enabled Databases With Endpoints and Wallet Manually Created in Oracle Key Vault

Understand how you can restore TDE-enabled databases on Oracle Database Appliance using the endpoints and wallets created manually on Oracle Key Vault. This method supports creation of TDE-enabled databases on bare metal and DB systems.

Prerequisites

- To restore a database with primary role in an Oracle Data Guard configuration, TDE wallet for the target database must be created on the Oracle Key Vault server before you run the restore command. This TDE wallet is a copy of the wallet of the source database.
- To restore a database with a standby role in an Oracle Data Guard configuration, the TDE wallet copy must **not** be created. The TDE wallet of the primary database must be used for the standby database.
- The TDE wallet created must be set as the default wallet for the endpoints created.



• The okvclient.jar file corresponding to each endpoint must be downloaded and copied to the Oracle Database Appliance node on which you submit the database restore request.

Step 1: Copying the TDE keys from the source database wallet to the target database wallet using the Oracle Key Vault user interface

Create a new wallet for the target database in the Oracle Key Vault server and copy the TDE keys of the source database to the wallet as follows:

- **1.** Log into the Oracle Key Vault server.
- 2. Navigate to the Keys & Wallets tab.
- 3. The Oracle Key Vault user must be provided read, write, and manage wallet permissions from the **Access Settings** section of the source database wallet.
- 4. To create a new wallet, click **Create**.
- 5. Specify the new name for the wallet of the target database.
- 6. Copy the TDE keys of the source database when creating the new wallet. Search for the name of the source database in the Add Wallet Contents section. When the keys are displayed, select all TDE Master Encryption Key checkboxes for the database.
- 7. To save the wallet, click **Save**.
- 8. Run this step only if the Oracle Key Vault administrator has created the wallet for the Oracle Key Vault user. Ensure that the administrator provides read-write and manage-wallet access for the wallet to the user after creation.
 - a. Log into the Oracle Key Vault server as the Oracle Key Vault administrator.
 - b. In the Keys & Wallets tab, select the checkbox for the newly-created wallet and click on the Edit option for the wallet.
 - c. In the Wallet Access Settings, click Add.
 - d. In the Select Endpoint/User Group section, select Users from the dropdown list.
 - e. Select the checkbox for the Oracle Key Vault user to be provided access to the wallet.
 - f. In the Access Level section, select Read and Modify and Manage Wallet options.
 - g. To save the access settings for the wallet, click Save.

Step 2: Creating endpoints and setting the default wallet

Follow these steps:

- 1. Create endpoints corresponding to each instance. For Oracle RAC database, create two endpoints corresponding to two instances. For single-instance database, create one endpoint corresponding to one instance.
 - a. In the Oracle Key Vault home page, navigate to the **Endpoints** tab and click **Add**.
 - **b.** Specify the Endpoint Name. Select the Type as Oracle Database, Platform as Linux, and click Register.



Key Vault 21.7		1				Q DHARM ∽ ⑦ Help
☆ Home	🖵 Endp	oints	🔍 Keys &	Wallets	nh Reports	风 Users
Last Refreshed Time: 21-AUG-2024	4 08:10:19 [All times UTC +05:3	i0 hours]				
Endpoints	Register Endpoint					Cancel Register
Endpoints	_					
Endpoint Groups	Endpoint Name *	test1				
	Type *	Oracle Database	×			
	Platform *	Linux	~			
	Description					
				11.		
	Administrator Email					

2. In the Default Wallet page, click **Choose Wallet** and set the default wallet for the created endpoints.

Key Vault 21.7	4,05					久 DHARM 〜 ⑦ Help
☆ Home	🖵 Endp	oints	🔍 Keys & Wallets		🛍 Reports	🙉 Users
Last Refreshed Time: 21-AUG-2024 0		0 hours]				
Endpoints	Common Name of Cert	Add Default Wallet			\otimes	
Endpoints	Issuer			Cancel	Select	
Endpoint Groups	Last Active Time	Select Wallet				
	Default Wallet	Q~	Go	Actions ~		Save
		💌 🔽 Row to	ext contains 'test'	$\left[\times\right]$		Choose Wallet
	Default Wallet	Wallet Name	Description	Creation Time	Creat Node	
		est]	21-AUG-2024 08:15:01		
	Endpoint Group M	O dharmtest		30-JUL-2024 10:44:15		
	Qv		Go Actions ~	Qv		Go Actions ~
		\bigcirc				\bigcirc

Step 3: Downloading the TDE wallet to Oracle Key Vault server using Oracle Key Vault commands

For multi user access-enabled and multi user access passwordless systems, log in as the Oracle Key Vault server user. For non-multi user access-enabled systems, log in as the oracle user and then follow these steps:

 Create working directories such as /tmp/work and /tmp/work/client_wallet. Navigate to the /tmp/work directory. Download and extract the RESTful Service Utility from Oracle Key Vault server. You can view three directories bin, lib, and conf.

2. Extract the contents of okvrestclipackage.zip file. Edit the conf/okvrestcli.ini file and add the Oracle Key Vault server IP address, user name, and path to the directory where the client auto login wallets are created. In the following example, the client auto login wallets are created in the /tmp/work/client wallet directory.

```
#Provide absolute path for log_property, okv_client_config properties
    [Default]
```



```
log_property=./conf/okvrestcli_logging.properties
server=<okv_server_ip>
okv_client_config=./conf/okvclient.ora
user=<okv_user>
client wallet=/tmp/work/client wallet
```

3. Edit the bin/okv file and uncomment the line export

OKV_RESTCLI_CONFIG=\$OKV_RESTCLI_DIR/conf/okvrestcli.ini file. Set JAVA_HOME as follows:

```
#!/bin/bash
   export OKV RESTCLI DIR=$(dirname "${0}")/..
   export OKV RESTCLI CONFIG=$OKV RESTCLI DIR/conf/okvrestcli.ini
   export JAVA HOME=/opt/oracle/dcs/java/1.8.0 xxx
   if [ -z "$JAVA HOME" ]
   then
     echo "JAVA HOME environment variable is not set."
     exit 1
   fi
   if [ -z "$OKV RESTCLI CONFIG" ]
   then
     echo "OKV RESTCLI CONFIG environment variable is not set."
     exit 1
   fi
   export OKV RESTCLI JAR=$OKV RESTCLI DIR/lib/okvrestcli.jar
   $JAVA HOME/bin/java -jar $OKV RESTCLI JAR "$@"
```

 Generate the client auto login wallets. Specify the Oracle Key Vault password when prompted.

```
/tmp/work/bin/okv admin client-wallet add --client-wallet /tmp/work/
client_wallet --wallet-user okv_user
    Password:
```

5. Create the endpoint corresponding to the wallet. For Oracle RAC database, you must create two endpoints specific to each database instance. Run this step only if the endpoints are not already created using the Oracle Key Vault Server user interface.

/tmp/work/bin/okv admin endpoint create --endpoint endpoint_name --type
ORACLE DB --platform LINUX64 --strict-ip-check TRUE

6. Set the wallet created in Step 1 as the default wallet for the endpoints. For Oracle RAC database, the default wallet for both the endpoints must be same TDE wallet. Run this step only if the TDE wallet is not already set as the default wallet for the endpoints using the Oracle Key Vault Server user interface.

```
/tmp/work/bin/okv manage-access wallet set-default --wallet <wallet_name>
--endpoint <endpoint name>
```



7. Download the okvclient.jar file. For Oracle RAC database, download the okvclient.jar file corresponding to both endpoints. After downloading the files, copy the okvclient.jar corresponding to the remote instance to the remote node.

```
/tmp/work/bin/okv admin endpoint download --endpoint <endpoint_name> --
location <location>
```

When you download the endpoints, if you encounter a message such as Endpoint token is already consumed, then you must enroll the endpoint again as follows:

```
/tmp/work/bin/okv admin endpoint download --endpoint endpoint_name --
location location
/tmp/work/log/okv0.log.0 (Permission denied)
{
  "result" : "Failure",
  "message" : "Endpoint token is already consumed"
}
/tmp/work/bin/okv admin endpoint re-enroll --endpoint <endpoint_name>
/tmp/work/log/okv0.log.0 (Permission denied)
{
  "result" : "Success"
}
}
```

Step 4: Restoring TDE-enabled databases with TDE keys stored on Oracle Key Vault

For multi-user access-enabled systems, log in as database user. For non-multi user access enabled systems, log in as the root user. Use the odacli irestore-database command to restore a TDE-enabled database with TDE keys stored on Oracle Key Vault. Specify the options --enable-tde, --okvclient-path, and keystore-type in the command.

The option --enable-tde, -t indicates that the restored database must be configured with TDE. Use the option --keystore-type, -kt to specify the type of keystore for the TDE configuration. Use the option --okvclient-path, -ocp to specify the absolute path to the okvclient.jar file corresponding to the database endpoint. For single-instance database, you can specify one value in the --okvclient-path, -ocp option, whereas for Oracle RAC database, you can specify two values. Provide the TDE password when you are prompted. After the restore operation of the database is successful, the Oracle Key Vault endpoint software is installed in the /etc/OKV/db_unique_name/okv location. The local auto login TDE wallets are created in the /etc/OKV/db_unique_name/tde location.

To restore a single-instance database okvdb without using the Oracle Key Vault server configuration object, run the odacli irestore-database command as follows:



Status: Success Created: August 28, 2024 2:50:46 PM CST Message:

110000490.				
Task Name			Node Name	Start
Time	End			
Status				
Restore Database			scaoda10ha13c2n1	August 28,
2024 2:51:09 PM CST	August 2	8,	2024 2:58:11 PM CST	
Failure				
Restore Database 2024 2:51:10 PM CST		~	scaoda10ha13c2n1	August 28,
	August 2	8,	2024 2:58:10 PM CST	
Failure			1 101 10 0 1	
Check if cluster ware is runn	-			August 28,
2024 2:51:14 PM CST	August 2	8,	2024 2:51:14 PM CST	
Success				A
Check if cluster ware is runn	-			August 28,
2024 2:51:14 PM CST Success	August Z	ŏ,	2024 2:51:14 PM CST	
Creating DbStorage for DbRest	070		acada10ha12c2n1	August 20
				August 28,
2024 2:51:14 PM CST Success	August Z	۰,	2024 2:31:21 PM CS1	
Validating DiskSpace for DATA			scandal0hal3c2n1	August 28,
2024 2:51:14 PM CST				August 20,
Success	August 2	•,	2024 2.51.15 IM C51	
Setting up SSH equivalence			scaoda10ha13c2n1	August 28,
2024 2:51:15 PM CST				114945C 20 7
Success	nugube 2	•,		
Configuring user access to AC	FS		scaoda10ha13c2n1	August 28,
2024 2:51:20 PM CST				-) ,
Success	-)	- /		
filesystems for				
okvdb8st				
Audit directory creation			scaoda10ha13c2n1	August 28,
2024 2:51:20 PM CST	August 2	8,	2024 2:51:21 PM CST	
Success				
Audit directory creation			scaoda10ha13c2n2	August 28,
2024 2:51:21 PM CST	August 2	8,	2024 2:51:21 PM CST	
Success				
Configure TDE for RestoreDb T				August 28,
2024 2:51:22 PM CST	August 2	8,	2024 2:51:39 PM CST	
Success				
Auxiliary Instance Creation			scaoda10ha13c2n2	August 28,
2024 2:51:24 PM CST	August 2	8,	2024 2:51:36 PM CST	
Success				
TDE Wallet directory creation				August 28,
2024 2:51:36 PM CST	August 2	8 ,	2024 2:51:36 PM CST	
Success				
Installing OKV Client Softwar				August 28,
2024 2:51:36 PM CST	August 2	ŏ,	2024 2:51:37 PM CST	
Success	~		a a a d a 1 0 h a 1 2 a 2 a 1	Auguat 00
Auto login TDE Wallet creatio	11		Scaudalunal3C2N1	August 28,



2024 2:51:37 PM CST Success	August	28,	2024 2:51:38 PM CST	
Password based TDE Wallet ope 2024 2:51:38 PM CST Success				August 28,
Install Object Store Swift mo 2024 2:51:58 PM CST Success				August 28,
Restoring Spfile From Casper 2024 2:52:16 PM CST Success				August 28,
Customize Db Parameters 2024 2:52:38 PM CST Success	August	28,	scaoda10ha13c2n2 2024 2:52:47 PM CST	August 28,
Create spfile for restore db 2024 2:52:47 PM CST Success			scaoda10ha13c2n2 2024 2:52:48 PM CST	August 28,
Restoring control file	August	28,	scaoda10ha13c2n2 2024 2:53:11 PM CST	August 28,
Mounting db 2024 2:53:11 PM CST Success	August	28,	scaoda10ha13c2n2 2024 2:53:35 PM CST	August 28,
Validating backup for Restore 2024 2:53:35 PM CST Success				August 28,
Restoring DB for migration 2024 2:53:41 PM CST	August	28,	scaoda10ha13c2n2 2024 2:54:26 PM CST	August 28,
Success Change DBID and/or DBName 2024 2:54:27 PM CST	August	28,	scaoda10ha13c2n2 2024 2:54:28 PM CST	August 28,
Success Register Database taskflow 2024 2:54:31 PM CST	August	28,	scaoda10ha13c2n1 2024 2:57:08 PM CST	August 28,
Success Create SPFile in shared loc 2024 2:54:31 PM CST	August		scaoda10ha13c2n2 2024 2:54:37 PM CST	August 28,
Success Delete Local Spfile 2024 2:54:37 PM CST	August	28,	scaoda10ha13c2n2 2024 2:54:37 PM CST	August 28,
Success Register DB with clusterware 2024 2:54:37 PM CST	August	28,	scaoda10ha13c2n2 2024 2:55:23 PM CST	August 28,
Success Set SysPassword and Create Pw 2024 2:55:23 PM CST			scaoda10ha13c2n1 2024 2:55:25 PM CST	August 28,
	August	28,	scaoda10ha13c2n2 2024 2:55:28 PM CST	August 28,
	August	28,	scaoda10ha13c2n2 2024 2:55:29 PM CST	August 28,
Success Updating db env 2024 2:55:29 PM CST Success	August	28,	scaoda10ha13c2n2 2024 2:55:30 PM CST	August 28,



Enable DbSizing Template 2024 2:55:30 PM CST Success	August 28,	scaoda10ha13c2n2 2024 2:56:20 PM CST	August 28,
Create ths entry	August 28,	scaoda10ha13c2n1 2024 2:56:21 PM CST	August 28,
Create tns entry 2024 2:56:21 PM CST Success	August 28,	scaoda10ha13c2n2 2024 2:56:22 PM CST	August 28,
Running datapatch 2024 2:56:22 PM CST Success	August 28,	scaoda10ha13c2n2 2024 2:56:23 PM CST	August 28,
Set CPU pool 2024 2:56:23 PM CST Success	August 28,	scaoda10ha13c2n1 2024 2:56:23 PM CST	August 28,
Reset Associated Networks for 2024 2:57:10 PM CST Success			August 28,
Reset Associated Networks 2024 2:57:13 PM CST Success	August 28,	scaodal0hal3c2n1 2024 2:57:14 PM CST	August 28,
Set log_archive_dest for Data 2024 2:57:14 PM CST Success			August 28,
Setting Database parameter fo 2024 2:57:18 PM CST Success			August 28,
Enable New Tablespace Encrypt 2024 2:58:07 PM CST Success			August 28,
Deleting OKV Client Software 2024 2:58:09 PM CST Success			August 28,
Copy Pwfile to Shared Storage		scaodal0hal3c2n1 2024 2:58:10 PM CST	August 28, Success

To restore an Oracle RAC database, run the odacli irestore-database command as follows. Specify the okvclient.jar file for the local database instance first, followed by the path to the okvclient.jar file for the remote database instance in the request. In the following example, the okvclient.jar file in the /tmp/dir1 location belongs to the local node and the okvclient.jar file in the /tmp/dir2 location belongs to the remote node.

```
odacli irestore-database -r /tmp/bkpreport.json -n okvdb7 -y RAC -t -kt OKV -
ocp /tmp/dir1/okvclient.jar,/tmp/dir2/okvclient.jar
Enter SYS and SYSTEM user password:
Retype SYS and SYSTEM user password:
Enter TDE wallet password:
```

Job details

ID: 79b2d96c-0156-444b-b965-185b311f5110

```
Description: Database service recovery with DB name: okvdb7
Status: Success
Created: August 28, 2024 12:58:39 AM CST
Message:
```



Task Name Node Name Start Time End Time Status _____ ____ _____ _____ Check if cluster ware is running scaoda10ha13c2n1 August 28, 2024 12:59:07 AM CST August 28, 2024 12:59:07 AM CST Success Check if cluster ware is running scaoda10ha13c2n2 August 28, 2024 12:59:07 AM CST August 28, 2024 12:59:07 AM CST Success Creating DbStorage for DbRestore scaoda10ha13c2n1 August 28, 2024 12:59:07 AM CST August 28, 2024 12:59:14 AM CST Success Validating DiskSpace for DATA scaoda10ha13c2n1 August 28, 2024 12:59:08 AM CST August 28, 2024 12:59:08 AM CST Success Setting up SSH equivalence scaoda10ha13c2n1 August 28, 2024 12:59:09 AM CST August 28, 2024 12:59:12 AM CST Success Configuring user access to ACFS scaoda10ha13c2n1 August 28, August 28, 2024 12:59:13 AM CST 2024 12:59:13 AM CST Success filesystems for okvdb7 Audit directory creationscaoda10ha13c2n12024 12:59:14 AM CSTAugust 28, 2024 12:59:14 AM CST August 28, Success Audit directory creation scaoda10ha13c2n2 August 28, 2024 12:59:14 AM CST August 28, 2024 12:59:14 AM CST Success Configure TDE for RestoreDb TaskFlow scaoda10ha13c2n1 August 28, 2024 12:59:15 AM CST August 28, 2024 12:59:32 AM CST Success Auxiliary Instance Creation scaoda10ha13c2n1 August 28, 2024 12:59:17 AM CST August 28, 2024 12:59:28 AM CST Success TDE Wallet directory creation scaoda10ha13c2n1 August 28, 2024 12:59:28 AM CST August 28, 2024 12:59:28 AM CST Success Installing OKV Client Software scaoda10ha13c2n1 August 28, 2024 12:59:28 AM CST August 28, 2024 12:59:29 AM CST Success Installing OKV Client Software scaoda10ha13c2n2 August 28, 2024 12:59:30 AM CST August 28, 2024 12:59:31 AM CST Success Auto login TDE Wallet creation scaoda10ha13c2n1 August 28, 2024 12:59:31 AM CST August 28, 2024 12:59:32 AM CST Success Password based TDE Wallet open scaoda10ha13c2n1 August 28, 2024 12:59:32 AM CST August 28, 2024 12:59:32 AM CST Success Install Object Store Swift module scaoda10ha13c2n2 August 28,



2024 12:59:51 AM CST Success	August 2	28,	2024 1:00:09 AM CST		
Restoring Spfile From Casper 2024 1:00:09 AM CST Success			scaoda10ha13c2n1 2024 1:00:28 AM CST	August	28,
Customize Db Parameters 2024 1:00:28 AM CST Success	August 2		scaoda10ha13c2n1 2024 1:00:34 AM CST	August	28,
			scaoda10ha13c2n1 2024 1:00:35 AM CST	August	28,
Restoring control file	August 2		scaoda10ha13c2n1 2024 1:00:58 AM CST	August	28,
Mounting db	August 2		scaoda10ha13c2n1 2024 1:01:23 AM CST	August	28,
Validating backup for Restore 2024 1:01:23 AM CST Success				August	28,
Restoring DB for migration 2024 1:01:29 AM CST				August	28,
	August 2		scaoda10ha13c2n1 2024 1:11:36 AM CST	August	28,
Success Change DBID and/or DBName 2024 1:11:36 AM CST	August 2			August	28,
Success Removing Disabled Redo Thread: 2024 1:14:34 AM CST				August	28,
Success Updating DB attributes 2024 1:14:36 AM CST	August 2		scaoda10ha13c2n1 2024 1:14:37 AM CST	August	28,
Success Customize DB for Type RAC/Rac 2024 1:14:37 AM CST				August	28,
Success Enable cluster ware for rac/ra 2024 1:14:45 AM CST				August	28,
Success Building Cluster DB Views for 2024 1:14:45 AM CST Success RacOne				August	28,
Register Database taskflow			scaoda10ha13c2n1	August	28-
2024 1:14:58 AM CST Success				muyuot	201

2024 1:14:58 AM CST August 28, 2024 1:20:24 AM CST Success Create SPFile in shared loc scaodal0ha13c2n1 August 28, 2024 1:14:59 AM CST August 28, 2024 1:15:05 AM CST Success Delete Local Spfile scaodal0ha13c2n1 August 28, 2024 1:15:05 AM CST August 28, 2024 1:15:05 AM CST Success



Register DB with clusterware 2024 1:15:05 AM CST August 28,	scaoda10ha13c2n1 2024 1:16:33 AM CST	August 28,
Success Add Startup Trigger to Open all PDBS 2024 1:16:33 AM CST August 28,		August 28,
-	scaoda10ha13c2n1 2024 1:16:38 AM CST	August 28,
Success Enable block change tracking 2024 1:16:38 AM CST August 28,	scaoda10ha13c2n1 2024 1:16:54 AM CST	August 28,
Success Creating pfile 2024 1:16:55 AM CST August 28, Success	scaoda10ha13c2n1 2024 1:16:56 AM CST	August 28,
Updating db env	scaoda10ha13c2n1 2024 1:16:56 AM CST	August 28,
Enable DbSizing Template	scaoda10ha13c2n1 2024 1:18:38 AM CST	August 28,
Update Database Global Name	scaoda10ha13c2n1 2024 1:18:40 AM CST	August 28,
Create tns entry	scaoda10ha13c2n1 2024 1:18:42 AM CST	August 28,
Create tns entry	scaoda10ha13c2n2 2024 1:18:43 AM CST	August 28,
Running datapatch	scaoda10ha13c2n1 2024 1:19:19 AM CST	August 28,
Set CPU pool	scaoda10ha13c2n1 2024 1:19:19 AM CST	August 28,
Reset Associated Networks for Database 2024 1:20:26 AM CST August 28, Success		August 28,
Reset Associated Networks 2024 1:20:30 AM CST August 28, Success	scaoda10ha13c2n2 2024 1:20:31 AM CST	August 28,
Set log_archive_dest for Database 2024 1:20:31 AM CST August 28, Success		August 28,
Auto login TDE Wallet creation 2024 1:20:34 AM CST August 28, Success		August 28,
Setting Database parameter for OKV 2024 1:20:36 AM CST August 28, Success		August 28,
Enable New Tablespace Encryption 2024 1:22:19 AM CST August 28, Success		August 28,
Deleting OKV Client Software Jar 2024 1:22:20 AM CST August 28,		August 28,



```
SuccessDeleting OKV Client Software Jarscaoda10ha13c2n2August 28,2024 1:22:20 AM CSTAugust 28, 2024 1:22:20 AM CSTSuccess
```

Related Topics

```
    odacli Multi-User Access Commands
    Use odacli commands to enable multi-user access for the appliance.
```

Deleting TDE-enabled Databases

Understand how you can delete a TDE-enabled database on Oracle Database Appliance on bare metal and DB systems, that uses Oracle Key Vault to store TDE keys.

Use the odacli delete-database command to delete TDE-enabled database with TDE keys stored on Oracle Key Vault. Use the -n option to specify the name of the database to be deleted.

```
odacli delete-database -n kokvdb1
 "jobId" : "6f001840-5002-43ee-9067-e22930e36d58",
 "status" : "Running",
 "message" : null,
  "reports" : [ {
   "taskId" : "TaskDcsJsonRpcExt 2259",
   "taskName" : "Validate DB 9aeeeb5f-afc5-4051-8bd1-00c62048ca01 for
deletion",
   "nodeName" : "scaoda6m006",
   "taskResult" : "",
   "startTime" : "July 15, 2024 15:40:50 PM CST",
   "endTime" : "July 15, 2024 15:40:50 PM CST",
   "duration" : "00:00:00.13",
   "status" : "Success",
   "taskDescription" : null,
   "parentTaskId" : "TaskSequential 2257",
   "jobId" : "6f001840-5002-43ee-9067-e22930e36d58",
   "tags" : [ ],
   "reportLevel" : "Info",
   "updatedTime" : "July 15, 2024 15:40:50 PM CST"
 } ],
 "createTimestamp" : "July 15, 2024 15:40:49 PM CST",
 "resourceList" : [ ],
 "description" : "Database service deletion with DB name: kokvdb1 with ID :
9aeeeb5f-afc5-4051-8bd1-00c62048ca01",
  "updatedTime" : "July 15, 2024 15:40:50 PM CST",
  "jobType" : null
}
odacli describe-job -i 6f001840-5002-43ee-9067-e22930e36d58
Job details
          _____
                    ID: 6f001840-5002-43ee-9067-e22930e36d58
           Description: Database service deletion with DB name: kokvdb1
with ID : 9aeeeb5f-afc5-4051-8bd1-00c62048ca01
                Status: Success
```

Created: July 15, 2024 3:40:49 PM CST Message: Task Name Start Time End Time Status _____ _____ _____ July 15, 2024 3:40:50 PM Validate DB CST July 15, 2024 3:40:50 PM CST Success 9aeeeb5fafc5-4051-8bd1-00c62048ca01 for deletion Deleting the RMAN logs July 15, 2024 3:40:50 PM July 15, 2024 3:40:51 PM CST CST Success OKV Endpoint deletion July 15, 2024 3:40:51 PM July 15, 2024 3:40:56 PM CST CST Success OKV Wallet deletion July 15, 2024 3:40:56 PM July 15, 2024 3:41:05 PM CST CST Success OKV Files deletion July 15, 2024 3:41:05 PM July 15, 2024 3:41:05 PM CST CST Success July 15, 2024 3:41:05 PM Database Deletion By RHP CST July 15, 2024 3:42:37 PM CST Success Unregister DB From Cluster July 15, 2024 3:42:37 PM July 15, 2024 3:42:37 PM CST CST Success Kill PMON Process July 15, 2024 3:42:37 PM CST July 15, 2024 3:42:37 PM CST Success July 15, 2024 3:42:37 PM Database Files Deletion July 15, 2024 3:42:49 PM CST CST Success Delete File Groups of Database kokvdb1 July 15, 2024 3:42:49 PM July 15, 2024 3:42:58 PM CST CST Success

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Creating a User in Oracle Key Vault Using BUI

Create a user with Oracle Key Vault server configuration entitlement on a multi-user access enabled Oracle Database Appliance.

Creating an Oracle Key Vault User with Browser User Interface

1. Log into the Browser User Interface as the odaadmin user:

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

- 2. Click the Multi-User Access tab.
- 3. Click the Users link on the left-hand pane.



- 4. Click Create User.
- In the Create User page, provide the User ID, specify the Role as ODA-OKVCONFIGADMIN, and provide the ODA Password for this user. Note that the same user credentials work for login for BUI and ODACLI commands.
- 6. Click Create.
- 7. 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.
- 8. The account is created with Inactive state. Log into the BUI with the user credentials. You are prompted to change the password. Change the password and log into the BUI with the new password.

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Updating Oracle Key Vault Endpoints for Databases

Understand how you can update the Oracle Key Vault client on Oracle Database Appliance when the Oracle Key Vault server is updated to the latest release or when certificates are regenerated on the Oracle Key Vault server.

When you update the Oracle Key Vault endpoints software, all the features available on the updated Oracle Key Vault server are available to the Oracle Key Vault endpoints.

When you update Oracle Key Vault server to the latest release, you update the following:

- Oracle Key Vault endpoint software corresponding to each Oracle Key Vault TDE database instance, present in the /etc/OKV/db_unique_name/okv location.
- Oracle Key Vault PKCS library liborapkcs.so, common to all Oracle Key Vault TDE databases, present in the /opt/oracle/extapi/64/hsm/oracle/1.0.0/ location.
- Oracle Key Vault REST client jar okvrestcli.jar, corresponding to each Oracle Key Vault server configuration object, present in the /etc/OKV/okv_server_config_name/lib/ location.

When you update only the certificates corresponding to the endpoints, you update only the Oracle Key Vault endpoint software corresponding to each Oracle Key Vault TDE database instance, present in the /etc/OKV/db_unique_name/okv location.

Updating Oracle Key Vault endpoints software with the odacli update-okvendpoints command

Use the odacli update-okvendpoints command to update the Oracle Key Vault endpoint software.

• The --endpoint-software, -es option specifies that the odacli update-okvendpoints command must update the Oracle Key Vault endpoint software of databases that is specified in the Oracle Key Vault client JSON file.

This is a boolean option, to be used with the --okvclient-json, oj option. When specified, the Oracle Key Vault endpoint software corresponding to each database mentioned in the Oracle Key Vault client JSON is updated. You must specify the JSON file that contains the absolute path to the okvclient.jar file in the option. The default value is false.



To update the endpoint software of the database that did not use Oracle Key Vault user credentials, instead, used <code>okvclient.jar</code>, during its creation, the absolute path to <code>okvclient.jar</code> file, corresponding to each database instance of such database must be specified in the Oracle Key Vault client JSON file.

```
[
{
    "dbName" : "racdb1",
    "node1" : "/tmp/racdb11/okvclient.jar",
    "node2" : "/tmp/racdb12/okvclient.jar"
},
{
    "dbName" : "sidb1",
    "node1" : "/tmp/sidb1/okvclient.jar",
}
]
```

To update the endpoint software of the database that used Oracle Key Vault user credentials, that is, used Oracle Key Vault server configuration, during its creation, specifying its name in the Oracle Key Vault client JSON file is sufficient.

```
[
{
    "dbName" : "mydb"
}
]
```

In a multi-user access-enabled or multi-user access-enabled passwordless environment, the endpoint software of only the Oracle Key Vault TDE-enabled databases that belong to the DB user running this request are updated. In a non-multi-user access enabled environment, the endpoint software of all Oracle Key Vault TDE-enabled databases can be updated, as there is no separate DB user and all databases are created by a single user.

 Specify the --okvclient-path-json, -oj option with the --endpoint-software, -es option to update TDE-enabled databases using Oracle Key Vault with endpoints in Oracle Key Vault.

This option specifies the absolute path to the JSON file, which contains the database name and the absolute path to the <code>okvclient.jar</code> file corresponding to each instance of the database. The JSON file must be present on the appliance from which you run this command.

For Oracle RAC databases, the absolute path to the <code>okvclient.jar</code> file corresponding to both instances must be specified. For single-instance Oracle databases, the absolute path to the <code>okvclient.jar</code> file corresponding to the instance must be specified and must be present on the node where the instance is running.

 Specify the --library, -lib option to update the Oracle Key Vault PKCS library and Oracle Key Vault REST client jar file corresponding to each Oracle Key Vault server configuration object present in the system. The default value is false. Use this option only after updating the endpoints of all databases that uses Oracle Key Vault to store TDE keys. To update the endpoints, use the option --endpoint-software, -es and --okvclientpath-json, -oj. Then, use the option --library, -lib to update the Oracle Key Vault PKCS library and OKV REST client jar. Since the Oracle Key Vault PKCS library is common to all databases, it requires the endpoints of all database to be updated first. However, if only certificates are updated on the Oracle Key Vault server, then updating the endpoints of databases is enough and does not require the library to be updated. Do not use this option with the --endpoint-software, -es or --okvclient-path-json, -oj options.

In a multi-user access-enabled or multi-user access-enabled passwordless environment, the odaadmin user must specify this option.

When you update the Oracle Key Vault PKCS library, the database is restarted.

An example to update the endpoint software of databases that used Oracle Key Vault user credentials is as follows. In the following example, racdb1 is an Oracle RAC database and sidb1 is a single-instance database.

```
odacli update-okvendpoints -es -oj /tmp/okvclient.json
Enter TDE password of 'racdb1' database:
Enter TDE password of 'sidb1' database:
Job details
_____
               ID: 64ae75d4-6435-4842-b507-8adcd12bd4bd
        Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
            Status: Created
           Created: May 29, 2025 19:24:55 PDT
           Message:
Task Name Start Time End Time Status
_____
_____
_____ ____
odacli describe-job -i 64ae75d4-6435-4842-b507-8adcd12bd4bd
Job details
_____
               ID: 64ae75d4-6435-4842-b507-8adcd12bd4bd
        Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
            Status: Success
           Created: May 29, 2025 19:24:55 PDT
           Message:
Task Name Node Name Start Time End Time Status
_____ ____
_____
_____
Endpoint update : racdb1 n1 May 29, 2025 19:24:58 PDT May 29, 2025 19:24:59
PDT Success
Endpoint update : racdb1 scaoda806c1n2 May 29, 2025 19:24:59 PDT May 29, 2025
19:25:01 PDT Success
Endpoint update : sidb1 n1 May 29, 2025 19:25:05 PDT May 29, 2025 19:25:06
PDT Success
```

An example to update endpoint software of databases that had not used Oracle Key Vault user credential is as follows, where mydb is a single-instance database.

```
cat /tmp/okvclient 2.json
ſ
 {
  "dbName" : "mydb"
 }
1
odacli update-okvendpoints -es -oj /tmp/okvclient 2.json
Job details
_____
              ID: 245a2d23-4a6a-4fe8-943f-9a81e1059fe7
        Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
           Status: Created
           Created: May 29, 2025 19:26:57 PDT
           Message:
Task Name Start Time End Time Status
-----
_____
______ ____
odacli describe-job -i 245a2d23-4a6a-4fe8-943f-9a81e1059fe7
Job details
_____
              ID: 245a2d23-4a6a-4fe8-943f-9a81e1059fe7
        Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
           Status: Success
           Created: May 29, 2025 19:26:57 PDT
           Message:
Task Name Node Name Start Time End Time Status
_____ ____
_____
Endpoint update : mydb n1 May 29, 2025 19:27:53 PDT May 29, 2025 19:28:47 PDT
Success
```

Sample command to update the Oracle Key Vault PKCS library is as follows:

```
Status: Created
            Created: May 29, 2025 19:42:07 PDT
           Message:
Task Name Start Time End Time Status
-----
_____
_____
odacli describe-job -i f5f6a0f4-061b-4ab1-9656-51beaa381438
Job details
 _____
               ID: f5f6a0f4-061b-4ab1-9656-51beaa381438
        Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
            Status: Success
           Created: May 29, 2025 19:42:07 PDT
           Message:
Task Name
                              Node Name Start
Time
               End Time
                                     Status
_____
                                       _____
 _____
Okvobj1 : OKV client library update n1
                                       May 29, 2025 19:42:20
PDT May 29, 2025 19:42:22 PDT Success
dharm: Racdb1:Database stop (Srvctl) n1
                                      May 29, 2025 19:42:22
PDT May 29, 2025 19:42:55 PDT Success
Sidb1:Database stop (Srvctl)
                           nl
                                      May 29, 2025 19:42:55
PDT May 29, 2025 19:43:21 PDT Success
Mydb:Database stop (Srvctl)
                           n1
                                       May 29, 2025 19:43:21
PDT May 29, 2025 19:43:44 PDT Success
Database start (Srvctl) n1
                                        May 29, 2025 19:43:44
PDT May 29, 2025 19:44:21 PDT Success
                                        May 29, 2025 19:43:44
OKV PKCS library update
                           nl
   May 29, 2025 19:43:44 PDT Success
PDT
                           nl
                                       May 29, 2025 19:44:22
Database start (Srvctl)
   May 29, 2025 19:44:53 PDT Success
PDT
Database start (Srvctl)
                           n1
                                        May 29, 2025 19:44:53
   May 29, 2025 19:45:28 PDT Success
PDT
```

Related Topics

- Implementing Multi-User Access on Oracle Database Appliance Understand how multi-user access can be implemented on Oracle Database Appliance, its advantages and restrictions and the associated life cycle management changes for your appliance.
- odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Registering TDE-enabled Databases Configured with Oracle Key Vault

You can now register TDE-enabled databases that use Oracle Key Vault keystore but were not created using Oracle Database Appliance tooling. After registering these databases with

ORACLE

Oracle Database Appliance, you can use Oracle Database Appliance commands for managing the databases.

When you register TDE-enabled databases with Oracle Database Appliance, you can choose whether Oracle Database Appliance manages the TDE password or not. When you register the database, if Oracle Key Vault server configuration is used, then the current TDE password is set to a new random TDE password that Oracle Database Appliance manages, and is not known to you. When you register the database, if Oracle Key Vault server configuration is not used, then you manage the TDE password, not Oracle Database Appliance. When TDE password is not managed by Oracle Database Appliance tooling, TDE password must be provided explicitly to operations such as database recovery, re-key and change of TDE password.

Note:

Oracle Database Appliance release 19.27 does not support enabling of high availability for single-instance databases when registered in a high availability deployment.

WARNING:

The password is stored in a wallet on Oracle Key Vault. Loss of that wallet results in not being able to access the database tables. So, do not delete the wallet on Oracle Key Vault.

Following are the prerequisites to register a database that uses Oracle Key Vault to store the TDE master encryption keys:

- The wallet_root database initialization parameter must be used to configure TDE and must be set to the /etc/OKV/db unique name value.
- The TDE_CONFIGURATION initialization parameter must be used to configure TDE and must be set to the KEYSTORE CONFIGURATION=OKV|FILE value.
- The endpoint software must be installed in the /etc/OKV/db_unique_name/okv location.
 - For Oracle RAC and Oracle RAC One Node databases, the endpoint software corresponding to two instances must be installed on both nodes.
 - For single-instance databases. the endpoint software must be installed on the node where the database is running.
- Autologin TDE wallet cwallet.sso must be created in the /etc/OKV/db_unique_name/tde location. For Oracle RAC and Oracle RAC One Node databases, the autologin TDE wallet must be created on both nodes.
- The name of the endpoints on Oracle Key Vault server must be in following format:
 - Single-instance database: db_name_db_running_node_num_on_cluster_name. For example: myokvdb3_0_on_scaodaxxx-c
 - Oracle RAC database: Endpoint name corresponding to instance 1: db_name1_on_cluster_name. For example: myokvdb31 on scaodaxxx-c
 - Oracle RAC database: Endpoint name corresponding to instance 2: db_name2_on_cluster_name. For example: myokvdb32 on scaodaxxx-c



- Oracle RAC One Node database: Endpoint name corresponding to active instance: db_name_1_on_cluster_name. For example: myokvdb3 1 on scaodaxxx-c
- Oracle RAC One Node database: Endpoint name corresponding to inactive instance: db_name_2_on_cluster_name. For example: myokvdb3 2 on scaodaxxx-c
- The name of the wallet on Oracle Key Vault server must be in the format db_unique_name_on_cluster_name. For example: myokvdb3 on scaodaxx-c

Registering Oracle Key Vault TDE-enabled databases without using Oracle Key Vault server configuration

After registering the database, the KeystoreType attribute of database is set to OKV. The OKVServerConfigName attribute of the database is set to NONE.

```
odacli register-database -sn example.com --dbclass OLTP --dbshape odb2
Enter SYS, SYSTEM and PDB Admin user password:
Retype SYS, SYSTEM and PDB Admin user password:
 "jobId" : "f82172e2-c4c1-4a77-ba41-c3d241127325",
 "status" : "Created",
 "message" : "",
 "reports" : [ ],
 "createTimestamp" : "May 07, 2025 08:54:50 PDT",
 "resourceList" : [ ],
 "description" : "Database service registration with DB service name:
aokv1.us.oracle.com",
 "updatedTime" : "May 07, 2025 08:54:50 PDT",
 "jobType" : null,
 "cpsMetadata" : null
}
odacli describe-job -i f82172e2-c4c1-4a77-ba41-c3d241127325
Job details
 _____
                 ID: f82172e2-c4c1-4a77-ba41-c3d241127325
         Description: Database service registration with DB service name:
aokv1.us.oracle.com
              Status: Success
             Created: May 07, 2025 08:54:50 PDT
             Message:
Task Name
                                  Node Name
                                                        Start
Time
                             End Time
Status
_____ ____
_____
----- -----
Setting Database parameter for OKV n1
                                             May 07, 2025 08:54:53
              May 07, 2025 08:56:29 PDT
                                             Success
PDT
                             nl
                                             May 07, 2025 08:56:29
Validate Hugepages For Register DB
               May 07, 2025 08:56:29 PDT
                                                 Success
PDT
                                             May 07, 2025 08:56:33
Enable OMF parameters
                                 n1
               May 07, 2025 08:56:33 PDT
                                              Success
PDT
                                             May 07, 2025 08:56:33
Setting DB character set
                           n1
               May 07, 2025 08:56:34 PDT
PDT
                                                 Success
```



Move Spfile to right location				n1	May	07,	2025	08:56:34
PDT	May 07,	2025	08:56:42	PDT		Suc	cess	
Enable DbSizing Template				nl	May	07,	2025	08:58:23
PDT	May 07,	2025	09:00:41	PDT		Suc	cess	
Add Startup Trigg	ger to Ope	n all	PDBS	nl	May	07,	2025	09:00:42
PDT	May 07,	2025	09:00:43	PDT		Suc	cess	
Running DataPatch				nl	May	07,	2025	09:00:43
PDT	May 07,	2025	09:01:37	PDT		Suc	cess	
Reset Associated	Networks	for Da	atabase	nl	May	07,	2025	09:01:38
PDT	May 07,	2025	09:01:41	PDT		Suc	cess	
Reset Associated	Networks			n2	May	07,	2025	09:01:41
PDT	May 07,	2025	09:01:41	PDT		Suc	cess	

Registering Oracle Key Vault TDE-enabled databases using Oracle Key Vault server configuration

After registering the database, the KeystoreType attribute of database is set to OKV. The OKVServerConfigName attribute of the database is set to *okv_server_config_name*. In a multiuser access-enabled or multi-user access-enabled passwordless environment, the DB user who is registering the database must have access to the Oracle Key Vault server configuration resource. The current TDE password of the database is changed to a new random password by Oracle Database Appliance tooling. This new random password is stored on a wallet on the Oracle Key Vault server. The name of the wallet which stores the random password will be of the format *db_name_pass_on_cluster_name*. Ensure that this wallet is not deleted on the Oracle Key Vault server if the database exists.

Following is the example of a register-database job which uses Oracle Key Vault server configuration.

```
odacli register-database -sn example.com --dbclass OLTP --dbshape odb2 -osc
okvobj1
Enter SYS, SYSTEM and PDB Admin user password:
Retype SYS, SYSTEM and PDB Admin user password:
Enter TDE wallet password:
Retype TDE wallet password:
{
  "jobId" : "37cb49bb-6129-4c49-a44e-6ee4b5c97e98",
  "status" : "Created",
  "message" : "",
  "reports" : [ ],
  "createTimestamp" : "May 07, 2025 02:16:42 PDT",
  "resourceList" : [ ],
  "description" : "Database service registration with DB service name:
sokv10.us.oracle.com",
  "updatedTime" : "May 07, 2025 02:16:42 PDT",
  "jobType" : null,
  "cpsMetadata" : null
}
odacli describe-job -i 37cb49bb-6129-4c49-a44e-6ee4b5c97e98
Job details
                     ID: 37cb49bb-6129-4c49-a44e-6ee4b5c97e98
            Description: Database service registration with DB service name:
sokv10.us.oracle.com
```

Status: Success Created: May 07, 2025 02:16:42 PDT Message: Task Name Node Name Start Time End Time Status _____ ____ _____ _____ ____ Setting Database parameter for OKV nl May 07, 2025 02:16:51 May 07, 2025 02:17:59 PDT PDT Success External Store Autologin wallet creation n1 May 07, 2025 02:17:59 Success May 07, 2025 02:18:09 PDT PDT Shutdown database May 07, 2025 02:18:09 n1 May 07, 2025 02:19:19 PDT PDT Success May 07, 2025 02:19:19 Mount database using SQL n2 PDT May 07, 2025 02:19:46 PDT Success External Store Autologin wallet creation n1 May 07, 2025 02:19:46 PDT May 07, 2025 02:19:57 PDT Success May 07, 2025 02:19:57 Shutdown database n2 PDT May 07, 2025 02:20:18 PDT Success May 07, 2025 02:20:19 Startup database using SQL nl May 07, 2025 02:20:49 PDT PDT Success Re-enroll and Provision of Endpoint n1 May 07, 2025 02:20:50 May 07, 2025 02:21:31 PDT PDT Success May 07, 2025 02:21:31 Save the new TDE password using a n1 PDT May 07, 2025 02:21:39 PDT Success temporary custom attribute on OKV TDE Wallet closure May 07, 2025 02:21:39 n1 May 07, 2025 02:21:40 PDT PDT Success Change the TDE password in local wallet n1 May 07, 2025 02:21:41 PDT May 07, 2025 02:21:57 PDT Success Auto login TDE Wallet creation nl May 07, 2025 02:21:57 PDT May 07, 2025 02:22:01 PDT Success Shutdown database n1 May 07, 2025 02:22:01 May 07, 2025 02:22:35 PDT PDT Success May 07, 2025 02:22:35 Mount database using SQL n2 PDT May 07, 2025 02:23:01 PDT Success Re-enroll and Provision of Endpoint May 07, 2025 02:23:01 n2 PDT May 07, 2025 02:23:43 PDT Success Change the TDE password in local wallet n2 May 07, 2025 02:23:43 May 07, 2025 02:23:55 PDT PDT Success Auto login TDE Wallet creation May 07, 2025 02:23:56 nl May 07, 2025 02:24:00 PDT PDT Success Shutdown database n2 May 07, 2025 02:24:00 May 07, 2025 02:24:22 PDT PDT Success May 07, 2025 02:24:22 Startup database using SQL nl PDT May 07, 2025 02:24:53 PDT Success n2 Save new TDE password on OKV May 07, 2025 02:24:53 PDT May 07, 2025 02:24:59 PDT Success Delete the temporary custom attribute n2 May 07, 2025 02:24:59 May 07, 2025 02:25:03 PDT PDT Success on OKV



Database stop (Srv	ctl)			nl	May	07, 2025 0	2:25:04	
PDT	May 07,	2025	02:26:04	PDT		Success		
Deleting OKV Client Software Jar				n2	May	07, 2025 0	2:25:04	
PDT	May 07,	2025	02:25:04	PDT		Success		
Database start (Srvctl)				n1	May	07, 2025 0	2:26:04	
PDT	May 07,	2025	02:26:36	PDT		Success		
Checking the TDE w	allet st	atus		n1	May	07, 2025 0	2:26:36	
PDT	May 07,	2025	02:26:40	PDT		Success		
Validate Hugepages	For Reg	ister	DB	n1	May	07, 2025 0	2:26:41	
PDT	May 07,	2025	02:26:42	PDT		Success		
Enable OMF paramet	ers			nl	May	07, 2025 0	2:26:45	
PDT	May 07,	2025	02:26:46	PDT		Success		
Move Spfile to right location			n1	May	07, 2025 0	2:26:46		
PDT	May 07,	2025	02:26:54	PDT		Success		
Setting DB character set			n1	May	07, 2025 0	2:26:46		
PDT	May 07,	2025	02:26:46	PDT		Success		
Restart RACOne database				nl	May	07, 2025 0	2:26:54	
PDT	May 07,	2025	02:28:29	PDT		Success		
Enable DbSizing Template			nl	May	07, 2025 0	2:28:29		
PDT	May 07,	2025	02:30:04	PDT		Success		
Running DataPatch				nl	May	07, 2025 0	2:30:05	
PDT	May 07,	2025	02:30:41	PDT		Success		
Reset Associated Networks for Database				nl	May	07, 2025 0	2:30:42	
PDT	May 07,	2025	02:30:45	PDT		Success		
Reset Associated Networks				May	07, 2025 0	2:30:45		
PDT	May 07,	2025	02:30:45	PDT		Success		

Related Topics

- Implementing Multi-User Access on Oracle Database Appliance Understand how multi-user access can be implemented on Oracle Database Appliance, its advantages and restrictions and the associated life cycle management changes for your appliance.
- odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Restoring an Oracle Key Vault TDE Database using RMAN and Registering the Database

Understand how you can register a TDE-enabled database that uses Oracle Key Vault to store TDE keys.

Prerequisites:

- A Regular-L0 or Longterm backup of the database to a NFS location must be available.
- The SYS password and TDE password of the source database must be known.
- The okvclient.jar corresponding to each endpoint of the database must be known.
- The name of the endpoints on Oracle Key Vault server must be in following format:
 - Single-instance database: db_name_db_running_node_num_on_cluster_name. For example: myokvdb3_0_on_scaodaxxx-c



- Oracle RAC database: Endpoint name corresponding to instance 1: db_name1_on_cluster_name. For example: myokvdb31 on scaodaxxx-c
- Oracle RAC database: Endpoint name corresponding to instance 2: db_name2_on_cluster_name. For example: myokvdb32 on scaodaxxx-c
- Oracle RAC One Node database: Endpoint name corresponding to active instance: db_name_1_on_cluster_name. For example: myokvdb3 1 on scaodaxxx-c
- Oracle RAC One Node database: Endpoint name corresponding to inactive instance: db_name_2_on_cluster_name. For example: myokvdb3 2 on scaodaxxx-c
- The name of the wallet on Oracle Key Vault server must be in the format db_unique_name_on_cluster_name. For example: myokvdb3 on scaodaxx-c

WARNING:

The password is stored in a wallet on Oracle Key Vault. Loss of that wallet results in not being able to access the database tables. So, do not delete the wallet on Oracle Key Vault.

Follow these steps:

1. Create required directories as root user. For Oracle RAC and Oracle RAC One Node databases, create the following directories on both the nodes.

```
mkdir /etc/OKV/db_unique_name
mkdir /etc/OKV/db_unique_name/tde
mkdir /etc/OKV/db_unique_name/okv
chmod -R 700 /etc/OKV/db_unique_name/
chown -R db user:group /etc/OKV/db unique name/
```

In a multi-user access-enabled or multi-user access-enabled passwordless environment, db_user is the primary owner of the database and the group is dcsagent. For non-multi user access-enabled systems, the db_user is the oracle user and the group is oinstall.

- 2. The endpoints corresponding to the database instance must be re-enrolled with the Oracle Key Vault server. For Oracle RAC and Oracle RAC One Node databases, the endpoints corresponding to both the instances must be re-enrolled. After re-enrollment, download the okvclient.jar corresponding to the instance on the node where the instance is running.
- Install the okvclient.jar in the /etc/OKV/db_unique_name/okv location using the TDE password of the source database.

```
switch to db_user
$ORACLE HOME/jdk/jre/bin/java -jar okvclient.jar
```

4. Create a database instance and start it in nomount stage. For single-instance database:

```
Switch to db_user
. oraenv
ORACLE_SID = [dbusr1] ? myokvdb3
ORACLE HOME = [/home/oracle] ? /u01/app/odaorahome/oracle/product/19.0.0.0/
```

dbhome 1

```
cat $ORACLE_HOME/dbs/initmyokvdb3.ora
db_name=myokvdb3
db_unique_name=myokvdb3
wallet_root=/etc/OKV/myokvdb3
TDE_CONFIGURATION="KEYSTORE_CONFIGURATION=OKV|FILE"
orapwd file=$ORACLE_HOME/dbs/orapwmyokvdb3
password=<tde_password_used_during_db_create> entries=5
sqlplus / as sysdba
SQL> startup nomount
For Oracle RAC database, on node 1:
    . oraenv
ORACLE_SID = [dbusr1] ? myokvdb31
```

```
ORACLE_SID = [dbdsII] * myokvdb51
ORACLE_HOME = [/home/oracle] ? /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1
cat $ORACLE_HOME/dbs/initmyokvdb31.ora
```

```
db_name=myokvdb3
db_unique_name=myokvdb3
wallet_root=/etc/OKV/myokvdb3
TDE_CONFIGURATION="KEYSTORE_CONFIGURATION=OKV|FILE"
instance_number=1
instance_name=myokvdb31
```

```
sqlplus / as sysdba
SQL> startup nomount
```

 Create autologin TDE wallet using the same TDE password as the one used when creating the database.
 For single-instance database:

SQL> administer key management add secret '*tde_password*'for client 'OKV PASSWORD' to local auto login keystore '/etc/OKV/myokvdb3/tde';

For Oracle RAC database:

SQL> administer key management add secret '*tde_password*'for client 'OKV PASSWORD' to local auto login keystore '/etc/OKV/myokvdb3/tde';

6. Create the database storage corresponding to the database being restored.

odacli create-dbstorage -n db name -r asm

Restore the database using RMAN duplicate and specify the NFS backup location.

Switch to db user



For single-instance database:

```
. oraenv
ORACLE_SID = [dbusr1] ? myokvdb3
ORACLE_HOME = [/home/oracle] ? /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1
rman auxiliary /
run {
    allocate auxiliary channel ch1 type disk;
    duplicate target database to myokvdb3
        spfile
        set db_unique_name='myokvdb3'
        set db_name='myokvdb3'
        BACKUP LOCATION 'nfs_backup_location';
}
```

For Oracle RAC database:

```
. oraenv
ORACLE SID = [dbusr1] ? myokvdb31
ORACLE HOME = [/home/oracle] ? /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome 1
rman auxiliary /
run {
   allocate auxiliary channel ch1 type disk;
   duplicate target database to myokvdb3
        spfile
        set db unique name='myokvdb3'
        set db name='myokvdb3'
        set cluster database='false'
        set instance number='1'
        set instance name='myokvdb31'
   BACKUP LOCATION 'nfs backup location';
}
```

 For Oracle RAC databases, set the cluster_database parameter and move the spfile to shared location. For single-instance database, this step is not required. On Node 1:

SQL> alter system set cluster_database=TRUE scope=spfile ;

```
SQL> create pfile='/u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1/dbs/pfile_myokvdb3.ora' from spfile;
```

File created.

```
SQL> create spfile='+DATA' from pfile='/u01/app/odaorahome/oracle/product/
19.0.0.0/dbhome_1/dbs/pfile_myokvdb3.ora';
```

File created.



```
orapwd file='+DATA' password=<tde_password_used_during_db_create>
entries=5 dbuniquename='myokvdb3'
```

 Add the database service. For Oracle RAC database, find the spfile name using the SQL>show parameter spfile command and use it as follows: For single-instance database:

srvctl add database -db myokvdb3 -oraclehome /u01/app/odaorahome/oracle/ product/19.0.0.0/dbhome_1 -dbtype Single -spfile /u01/app/odaorahome/ oracle/product/19.0.0.0/dbhome_1/dbs/spfilesdokv3.ora -pwfile /u01/app/ odaorahome/oracle/product/19.0.0.0/dbhome_1/dbs/orapwsdokv3 -node node name

For Oracle RAC and Oracle RAC One Node databases:

srvctl add database -db myokvdb3 -oraclehome /u01/app/odaorahome/oracle/ product/19.0.0.0/dbhome_1 -dbtype RAC -spfile +DATA/myokvdb3/ PARAMETERFILE/spfile.xxxxxx

srvctl add instance -d myokvdb3 -i myokvdb31 -n node_1_name
srvctl add instance -d myokvdb3 -i myokvdb32 -n node 2 name

- 10. Run the shutdown abort command on the database using SQL*Plus.
- 11. For Oracle RAC database, create Autologin TDE wallet on Node 2.

```
Switch to db_user
. oraenv
ORACLE_SID = [dbusr1] ? myokvdb32
ORACLE_HOME = [/home/oracle] ? /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1
sqlplus / as sysdba
SQL> startup nomount
SQL> administer key management add secret 'tde_password' for client
'OKV PASSWORD' to local auto login keystore '/etc/OKV/myokvdb3/tde';
```

- 12. Start the database using the srvctl start database -db myokvdb3 command. After the database starts, on Oracle RAC database, verify that the pmon process corresponding to the instance is running on the respective node.
- 13. If the DB name and DB unique name of the source database are in upper case, then this step is not required. If the DB name and DB unique name of the source database are not in upper case, then restoring the database from RMAN backup will change the DB name and DB unique name to upper case. Hence after restoring the database, the case of the DB name and DB unique name must be restored to the same case as the source database.
 - a. Delete the initfile in *db_home/dbs/initoracle_sid.ora*, if it already exist.
 - b. Create the pfile from spfile.

SQL> create pfile='db home/dbs/initoracle sid.ora' from spfile;



- c. Edit the *db_home/dbs/initoracle_sid*.ora file and update the *db_name* and *db* unique name with the same case as the source database.
- d. Shut down the database.

SQL> shutdown immediate

e. Start up the database using the edited pfile.

SQL> startup pfile='<db home>/dbs/initoracle sid.ora'

f. Delete spfile, if it already exists and create spfile from pfile.

```
SQL> create spfile='db_home/dbs/spfileoracle_sid.ora' from
pfile='db home/dbs/initoracle sid.ora';
```

g. Restart the database.

```
SQL> shutdown immediate
SQL> startup
```

h. Confirm whether the DB name and DB unique name is updated with the same case as the source database.

SQL> show parameter db name; SQL> show parameter db unique name;

14. Register the database without using Oracle Key Vault server configuration:

```
odacli register-database -sn myokvdb3.us.oracle.com --dbclass OLTP --
dbshape odb2
Enter SYS, SYSTEM and PDB Admin user password:
Retype SYS, SYSTEM and PDB Admin user password:
```

To register the database with Oracle Key Vault server configuration:

odacli register-database -sn example.com --dbclass OLTP --dbshape odb2 osc okv_obj_name
Enter SYS, SYSTEM and PDB Admin user password:
Retype SYS, SYSTEM and PDB Admin user password:
Enter TDE wallet password:
Retype TDE wallet password:

Related Topics

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 appliance.
- odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.



Restoring a Software Keystore TDE database using RMAN and Registering the Database

Understand how you can register a TDE-enabled database that uses software wallet to store TDE keys.

Prerequisites:

- A Regular-L0 or Longterm backup of the database to a NFS location must be available.
- The SYS password and TDE password must be known.
- Backup of the password-protected TDE wallet (ewallet.p12) and autologin TDE wallet (cwallet.sso) must be available.

Follow these steps:

1. Create the database storage with the same storage type as the source database being restored.

odacli create-dbstorage -n db name -r asm|acfs

2. Create the init file corresponding to the database in the \$ORACLE HOME location.

```
cat $ORACLE_HOME/dbs/initoracle_sid.ora
db_name=db_name
db_unique_name=db_unique_name
wallet_root=source_database_location
TDE CONFIGURATION="KEYSTORE CONFIGURATION=FILE"
```

3. Generate the password file corresponding to the database.

```
orapwd file=$ORACLE_HOME/dbs/orapworacle_sid password=sys_password
entries=5
```

- 4. Copy the password-protected TDE wallet (ewallet.p12) to the wallet root/tde path.
- 5. Connect to the database and start the database with the nomount option.

```
export ORACLE_SID=oracle_sid
export ORACLE_UNQNAME=db_unique_name
export ORACLE_HOME=db_home_location
```

sqlplus / as sysdba SQL> startup nomount

6. Generate the local autologin wallet using the following command:

SQL> ADMINISTER KEY MANAGEMENT CREATE AUTO_LOGIN KEYSTORE FROM KEYSTORE 'wallet root/tde' IDENTIFIED BY "tde password";

7. Connect to RMAN auxiliary and run the RMAN duplicate command.



For single-instance Oracle Database:

```
rman auxiliary /
run {
    allocate auxiliary channel ch1 type disk;
    duplicate target database to db_name
        spfile
        set db_unique_name='db_unique_name'
        set db_name'
    BACKUP LOCATION 'nfs_location_pointing_to_backup_pieces;
}
```

For Oracle RAC and Oracle RAC One Node databases:

```
rman auxiliary /
run {
    allocate auxiliary channel ch1 type disk;
    duplicate target database to db_name
        spfile
        set db_unique_name='db_unique_name'
        set db_name='db_name'
        set cluster_database='false'
    BACKUP LOCATION 'nfs_location_pointing_to_backup_pieces;
}
```

8. Add the restored database to the database service. For single-instance Oracle Database:

```
srvctl add database -db db_unique_name -oraclehome $ORACLE_HOME -dbtype
Single -spfile $ORACLE_HOME/dbs/spfileoracle_sid.ora -
pwfile $ORACLE_HOME/dbs/orapworacle_sid_-node_name
```

For Oracle RAC databases:

```
srvctl add database -db db_unique_name -oraclehome $ORACLE_HOME -dbtype
RAC -spfile $ORACLE_HOME/dbs/spfileoracle_sid.ora -
pwfile $ORACLE_HOME/dbs/orapworacle_sid
srvctl add instance -d db_unique_name -i oracle_sid1 -n node_1_name
srvctl add instance -d db_unique_name -i oracle_sid2 -n node 2_name
```

For Oracle RAC One Node databases:

```
srvctl add database -db <db_unique_name>db_unique_name -
oraclehome $ORACLE_HOME -dbtype RACOne -spfile $ORACLE_HOME/dbs/
spfileoracle_sid.ora -pwfile $ORACLE_HOME/dbs/orapworacle_sid
srvctl add instance -d db_unique_name -i oracle_sid_1 -n node_1_name
srvctl add instance -d db_unique_name -i oracle_sid_2 -n node 2_name
```



9. Shut down tthe database and start the database as follows:

```
SQL> shutdown immediate
srvctl start database -db db_unique_name
```

For Oracle RAC database, run the following command:

SQL> alter system set cluster database=TRUE scope=spfile ;

- 10. If the DB name and DB unique name of the source database are in upper case, then this step can be skipped. If the DB name and DB unique name of the source database are not in upper case, then restoring the database from RMAN backup changes the DB name and DB unique name to upper case. Hence after restoring, the case of the DB name and DB unique name must be restored back same as the source database.
 - a. Delete the initfile in *db* home/dbs/initoracle sid.ora, if it already exists.
 - **b.** Create pfile from spfile.

SQL> create pfile='db home/dbs/initoracle sid.ora' from spfile;

- c. Edit the *db_home/dbs/initoracle_sid*.ora file and update the *db_name* and *db_unique_name* with the same case as the source database.
- d. Shut down the database.

SQL> shutdown immediate

e. Start the database using the edited pfile.

SQL> startup pfile='db home/dbs/initoracle sid.ora'

f. Delete spfile, if it already exists and create spfile from pfile.

```
SQL> create spfile='db_home/dbs/spfileoracle_sid.ora' from
pfile='db home/dbs/initoracle sid.ora';
```

g. Restart the database.

```
SQL> shutdown immediate
SQL> startup
```

 Confirm that the DB name and DB unique name are updated with same case as the source database.

```
SQL> show parameter db_name;
SQL> show parameter db unique name;
```

11. If the wallet_root parameter is not set to the DATA_LOCATION of the restored database, then create the /opt/oracle/dcs/commonstore/wallets/tde/dbunique_name directory as the db_user. Copy the password-protected TDE wallet ewallet.p12 to the /opt/oracle/dcs/commonstore/wallets/tde/dbunique_name location. For DB systems, set the wallet_root to the DATA LOCATION.



 Register the password of the database using the same SYS password and TDE password as the source database.

```
odacli register-database -sn service_name --dbclass db_class --dbshape
db shape -tp
```

Related Topics

- Implementing Multi-User Access on Oracle Database Appliance
 Understand how multi-user access can be implemented on Oracle Database Appliance, its
 advantages and restrictions and the associated life cycle management changes for your
 appliance.
- odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Creating Oracle Key Vault Server Configuration Object Using the BUI

Understand how you can create TDE-enabled database on Oracle Database Appliance with TDE keys stored in Oracle Key Vault on bare metal and DB systems using the BUI.

Follow these steps to create a TDE-enabled database with TDE keys stored on Oracle Key Vault on Oracle Database Appliance bare metal and DB systems:

- Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click Credential Store, then click Oracle Key Vault Server Config.
- 3. The existing Oracle Key Vault server configurations are displayed.
- 4. Click Create and create an Oracle Key Vault server configuration.
- 5. In the Create OKV Server Config page, specify the OKV Server Config Name, OKV Server Host, OKV Server IP address, OKV User Name, and Password.
- 6. Click Create.
- 7. Confirm the creation request job and verify that the job completed successfully.

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Granting and Revoking Access on Oracle Key Vault Server Configuration Using BUI

Understand how you can grant and revoke access to Oracle Key Vault server configuration on Oracle Database Appliance on bare metal and DB systems using BUI.

Granting and Revoking Access to Oracle Key Vault server configurations

Follow these steps:

 Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html



- 2. Click Credential Store, then click Oracle Key Vault Server Config.
- 3. You can view all existing Oracle Key Vault server configurations.
- 4. To grant access to an existing Oracle Key Vault server configuration, select the Oracle Key Vault server configuration, and from the **Actions** drop-down list, select **Grant Access**.
- In the Grant Resource Access page, select the User Name to whom you want to grant access to the resource.
- 6. Click Grant.
- 7. Click Yes to confirm the action.
- To revoke access to an existing Oracle Key Vault server configuration, select the Oracle Key Vault server configuration, and from the Actions drop-down list, select Revoke Access.
- In the Revoke Resource Access page, select the User Name from whom you want to revoke access to the resource.
- 10. Click Revoke.
- 11. Click **Yes** to confirm the action.

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Managing Oracle Key Vault Server Configuration Operations Using BUI

Understand how you can manage Oracle Key Vault server configuration operations on Oracle Database Appliance on bare metal and DB systems.

You can create, list, delete, and describe Oracle Key Vault server configuration on Oracle Database Appliance bare metal and DB systems using the Browser User Interface (BUI).

Listing and Deleting Oracle Key Vault server configurations:

Follow these steps:

- Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click Credential Store, then click Oracle Key Vault Tasks.
- 3. You can view all existing Oracle Key Vault server configurations.
- 4. To delete an existing Oracle Key Vault server configuration, select the Oracle Key Vault server configuration, and from the **Actions** drop-down list, select **Delete**.

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.



Migrating Tablespaces from a TDE-enabled Oracle Database with Software Keystore to another TDE-enabled Database with Oracle Key Vault Keystore

Understand how you can migrate tablespaces with the expdp/impdp transportable tablespaces feature from TDE-enabled database using software keystore to use Oracle Key Vault as keystore.

Following are the use cases for the migration:

- Migrating Tablespaces from a TDE-enabled Oracle ACFS Database with Software Keystore to another TDE-enabled Database with Oracle Key Vault Keystore Understand how you can migrate tablespaces from Oracle ACFS database software keystore to Oracle Key Vault on Oracle Database Appliance.
- Migrating Tablespaces from a TDE-enabled Oracle ASM Database with Software Keystore to another TDE-enabled Database with Oracle Key Vault Keystore Understand how you can migrate tablespaces from a TDE-enabled Oracle ASM database with software keystore to another TDE-enabled database with Oracle Key Vault keystore.
- Migrating Tablespaces from TDE-enabled Oracle ACFS Database with Software Keystore to another TDE-enabled Multitenant Database with Oracle Key Vault Keystore Understand how you can migrate tablespaces from TDE-enabled Oracle ACFS database with software keystore to another TDE-enabled multitenant database with Oracle Key Vault keystore.
- Migrating Tablespaces from TDE-enabled Oracle ASM Database with Software Keystore to another TDE-enabled Multitenant Database with Oracle Key Vault Keystore Understand how you can migrate tablespaces from TDE-enabled Oracle ASM database with software keystore to another TDE-enabled multitenant database with Oracle Key Vault keystore.

Migrating Tablespaces from a TDE-enabled Oracle ACFS Database with Software Keystore to another TDE-enabled Database with Oracle Key Vault Keystore

Understand how you can migrate tablespaces from Oracle ACFS database software keystore to Oracle Key Vault on Oracle Database Appliance.

Ensure that there is a source and destination database. The two databases must be on different Oracle Database Appliance servers. The source database must be a software keystore TDE-enabled database, either an Oracle Database Appliance database or any Oracle database with compatible Endian. The destination database must be on Oracle Database Appliance, must be a TDE enabled database using Oracle Key Vault, and must be created with ODACLI commands.

Step 1: Export the tablespace from the source database

1. Consider that the source database has a tablespace TBS01 to be migrated to the destination database. Provide information about the tablespace.

```
###
### login as Oracle user
```



Connect to database using SQLPLUS as sysdba user and run the following ### # su - oracle \$ sqlplus /nolog SQL> connect / as sysdba Connected. SQL> select TABLESPACE NAME, ENCRYPTED from dba tablespaces ; ENC TABLESPACE NAME ----- ---SYSTEM YES SYSAUX YES UNDOTBS1 YES USERS YES TEMP ENC YES TBS01 YES SQL> select FILE NAME from dba data files where TABLESPACE NAME='TBS01' ; FILE NAME _____ _____ /u02/app/oracle/oradata/dbtde/DBTDE/datafile/o1 mf tbs01 mz3gfyj0 .dbf ### ### Make sure the set of tablespaces are self-contained. The following PL/SQL command must execute successfully ### SQL> EXECUTE DBMS TTS.TRANSPORT SET CHECK('tbs01',true) ; PL/SQL procedure successfully completed. SQL> exit; Create the database directory in the source database DBTDE to be used for the export. ### ### login as Oracle user and run the following ### # su - oracle \$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps dir mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump'

mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump/ttsps_dir'
###
Connect to database using SQLPLUS as sysdba user and run the following

###

\$ sqlplus /nolog

SQL> connect / as sysdba Connected.

SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/ ttsps dir';

Directory created.

SQL> exit;

3. Export the TBS01 tablespace from source database DBTDE. First, set the tablespace to be copied in READ ONLY mode. Next, run expdp on the designated tablespace. Note that the warning ORA-39396 is displayed because expdp does not use ENCRYPTION_PASSWORD and impdp does not use this option as well. You can ignore this warning. Transfer the TDE software wallet to the destination Oracle Key Vault database server and upload to the corresponding Oracle Key Vault wallet before you run impdp on the destination database. Review the log files for expdp stored under the database directory ttsps dir.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the
following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
Connected.
SQL> ALTER TABLESPACE TBS01 READ ONLY;
Tablespace altered.
SQL> exit;
###
### Run expdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ expdp system TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES
DIRECTORY=ttsps dir DUMPFILE=expttps dbtde.dmp
Export: Release 19.0.0.0.0 - Production on Mon Apr 7 11:08:49 2025
Version 19.27.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
```



```
Production
Starting "SYSTEM"."SYS EXPORT TRANSPORTABLE 01": system/*******
TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES DIRECTORY=ttsps dir
DUMPFILE=expttps dbtde.dmp
ORA-39396: Warning: exporting encrypted data using transportable option
without password
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/STATISTICS/MARKER
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
Master table "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully loaded/
unloaded
***
Dump file set for SYSTEM.SYS EXPORT TRANSPORTABLE 01 is:
 /u01/app/odaorabase0/oracle/dpdump/ttsps dir/expttps dbtde.dmp
     ***
Datafiles required for transportable tablespace TBS01:
 /u02/app/oracle/oradata/dbtde/DBTDE/datafile/o1 mf tbs01 mz3gfyj0 .dbf
Job "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" completed with 1 error(s) at
Mon Apr 7 11:09:15 2025 elapsed 0 00:00:20
```

4. Copy datafiles, TDE wallet, expdp dmp files to the destination database server and alter the status of the data file in the source database DBTDE to READ WRITE. Copy the datafile /u02/app/oracle/oradata/dbtde/DBTDE/datafile/o1_mf_tbs01_mz3gfyj0_.dbf to the location where datafiles are stored in the destination database. In the following example, /u02/app/oracle/oradata/okvdb/OKVDB/datafile/ is the location of the target database OKVDB. Copy the export file from /u01/app/odaorabase0/oracle/dpdump/ ttsps_dir to the target database server in the /u01/app/odaorabase0/oracle/dpdump/ ttsps_dir directory. Also, copy the wallet to the temporary /tmp/dbtde/tde directory in the destination.

```
###
### login as Oracle user and run the following
###
# su - oracle
$ scp /u02/app/oracle/oradata/dbtde/DBTDE/datafile/
o1_mf_tbs01_mz3gfyj0_.dbf oracle@target_server:/u02/app/oracle/oradata/
okvdb/OKVDB/datafile/
### Copy the expdp dump file to the destination server location.
$ scp /u01/app/odaorabase0/oracle/dpdump/ttsps_dir/expttps_dbtde.dmp
oracle@target_server:/location
$ cp /u02/app/oracle/oradata/dbtde/tde/ewallet.p12
oracle@target_server:/tmp/dbtde/tde
###
### In source database, set the tablespace back to read write mode
### Connect to database using SQLPLUS as sysdba user and run the following
```



###
\$ sqlplus /nolog
SQL> connect / as sysdba
Connected.
SQL> ALTER TABLESPACE TBS01 READ WRITE;
SQL> exit;

Step 2: Import the tablespaces into an Oracle Key Vault-enabled database

1. Ensure that a TDE-enabled database with Oracle Key Vault, OKVDB as the destination database exists. For example:

```
# odacli create-database -n okvdb -t -kt okv -ocp /tmp/
okvdb on server name/okvclient.jar -dh 265412be-2b21-4cc4-adc7-
c845bf9e3e3a -r ACFS
Enter SYS and SYSTEM user password:
Retype SYS and SYSTEM user password:
Enter TDE wallet password:
Retype TDE wallet password:
# odacli describe-database -n okvdb
Database details
_____
                   ID: b0d137c0-31fa-453b-82e4-d6a364bca4df
           Description: okvdb
              DB Name: okvdb
              DB Type: SI
                  CDB: false
              Storage: ACFS
              Home ID: 265412be-2b21-4cc4-adc7-c845bf9e3e3a
 TDE Wallet Management: ODA
          TDE Enabled: true
         KeystoreType : OKV
  okvServerConfigName : NONE
```

2. Create the database directory in the Oracle Key Vault-enabled destination database for the import operation. The source database expdp dump file and output for impdp is stored in the database directory object. Copy the expdp dump file from the source database server to this server, and use the impdp dump file to add tablespace metadata to destination database.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> CREATE DIRECTORY ttsps dir AS '/u01/app/odaorabase0/oracle/dpdump/
```

```
ttsps_dir';
Directory created.
SQL> exit;
```

3. Upload the wallet keys from source database to OKVDB wallet in the destination database.

```
###
### login as Oracle user
### Upload the software keystore wallet entries to OKV server wallet.
Notice the directory name /etc/OKV/<db unique name>/okv/bin
###
$ cd /etc/OKV/okvdb/okv/bin
$ ./okvutil list
Enter Oracle Key Vault endpoint password:
Unique ID
                                                        Identifier
                                        Туре
3D433A6C-F7B0-433D-91B3-0ADABBDB7509
                                       Template Default template for
OKVDB ON <SERVER-NAME>
FC6AA1F6-C816-4771-A9B6-0D4EC3F4B015
                                        Symmetric Key TDE Master
Encryption Key: TAG okvdb
$ ./okvutil upload -t WALLET -l /tmp/dbtde/tde -g okvdb on <server name>-
c -v 4 -o
okvutil version 21.10.0.0.0
Endpoint type: Oracle Database
Configuration file: /etc/OKV/okvdb/okv/conf/okvclient.ora
Server: 100.70.126.204:5696
Standby Servers:
Uploading from /tmp/dbtde/tde
Enter source wallet password:
No auto-login wallet found, password needed
Enter Oracle Key Vault endpoint password:
ORACLE.SECURITY.ID.ENCRYPTION.
Trying to connect to 100.70.126.204:5696 ...
Connected to 100.70.126.204:5696.
ORACLE.SECURITY.KB.ENCRYPTION.
ORACLE.SECURITY.KT.ENCRYPTION.ASivkc8tgE9mv6RX0F9nyzsAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA
ORACLE.SECURITY.KM.ENCRYPTION.ASivkc8tgE9mv6RX0F9nyzsAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA
ORACLE.SECURITY.DB.ENCRYPTION.ASivkc8tgE9mv6RX0F9nYzsAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAA
ORACLE.SECURITY.DB.ENCRYPTION.MASTERKEY
Uploaded 1 TDE keys
Uploaded 0 SEPS entries
Uploaded 0 other secrets
Uploaded 3 opaque objects
Uploading private key
Uploading certificate request
Uploading trust points
```

```
Uploaded 1 private keys
Uploaded 1 certificate requests
Uploaded 0 user certificates
Uploaded 0 trust points
Upload succeeded
###
### Comparing the output of 'okvutil list' shows that TDE Wallet Keys were
uploaded to OKV wallet
###
$ ./okvutil list
Enter Oracle Key Vault endpoint password:
                                                      Identifier
Unique ID
                                       Type
                                       Opaque Object Certificate Request
17D6044D-F777-4E6F-9B0A-F08D653354F2
3D433A6C-F7B0-433D-91B3-0ADABBDB7509
                                       Template Default template for
OKVDB ON <SERVER-NAME>
54FA58D4-B429-4A38-911F-8F2245D3B90F
                                       Opaque Object TDE Wallet Metadata
9D509C97-231E-43E9-98C8-637DECF13ECD
                                       Opaque Object TDE Wallet Metadata
A7168F0B-2023-5141-B720-EC771F9B23A1
                                       Symmetric Key TDE Master
Encryption Key: TAG set master key
E63A4B3D-3B84-4BEF-96BF-18CC844EB041
                                       Opaque Object TDE Wallet Metadata
E727B9E3-8803-499B-8DAF-20C08ED587EA
                                       Private Key -
FC6AA1F6-C816-4771-A9B6-0D4EC3F4B015
                                       Symmetric Key TDE Master
Encryption Key: TAG okvdb
```

\$ rm -rf /tmp/dbtde

4. Import the TBS01 tablespace to the destination database OKVDB.

```
###
### Run impdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ impdp system TRANSPORT DATAFILES=\'/u02/app/oracle/oradata/okvdb/OKVDB/
datafile/o1 mf tbs01 mz3gfyj0 .dbf' DIRECTORY=ttsps dir
dumpfile=expttps.dmp
Import: Release 19.0.0.0.0 - Production on Mon Nov 6 12:53:37 2023
Version 19.25.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Master table "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully loaded/
unloaded
Starting "SYSTEM"."SYS IMPORT TRANSPORTABLE 01": system/*******
TRANSPORT DATAFILES='/u02/app/oracle/oradata/dbtde/DBTDE/datafile/
o1 mf tbs01 lnlgn65j .dbf' DIRECTORY=ttsps dir dumpfile=expttps.dmp
```



Processing object type TRANSPORTABLE_EXPORT/PLUGTS_BLK Processing object type TRANSPORTABLE_EXPORT/TABLE Processing object type TRANSPORTABLE_EXPORT/STATISTICS/TABLE_STATISTICS Processing object type TRANSPORTABLE_EXPORT/POST_INSTANCE/PLUGTS_BLK Job "SYSTEM"."SYS_IMPORT_TRANSPORTABLE_01" successfully completed at Mon Nov 6 12:53:46 2023 elapsed 0 00:00:03

 Change tablespace status and test encryption on the destination Oracle Key Vault-enabled database. Set the imported tablespace to READ WRITE.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
###
```

su - oracle

\$ sqlplus /nolog
SQL> connect / as sysdba

SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	STATUS	S ENC
SYSTEM	ONLINE	YES
SYSAUX	ONLINE	YES
UNDOTBS1	ONLINE	YES
USERS	ONLINE	YES
TEMP_ENC	ONLINE	YES
TBS01	READ ONLY	YES

SQL> alter tablespace TBS01 read write ;

Tablespace altered.

SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	STATUS	S ENC	
SYSTEM	ONLINE	YES	
SYSAUX	ONLINE	YES	
UNDOTBS1	ONLINE	YES	
USERS	ONLINE	YES	
TEMP_ENC	ONLINE	YES	
TBS01	ONLINE	YES	

###

Retrieve the data from TAB1. Consider that TAB1 was created using tablespace TBS01 and can now be queried.



```
SQL> select OWNER, table_name from tabl where rownum < 3;
OWNER
------
TABLE_NAME
------
SYS
TS$
SYS
ICOL$
```

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Migrating Tablespaces from a TDE-enabled Oracle ASM Database with Software Keystore to another TDE-enabled Database with Oracle Key Vault Keystore

Understand how you can migrate tablespaces from a TDE-enabled Oracle ASM database with software keystore to another TDE-enabled database with Oracle Key Vault keystore.

Ensure that there is a source and destination database. The two databases must be on different servers. The source database must be a software keystore TDE-enabled database, either an Oracle Database Appliance database or any Oracle database with compatible Endian. The destination database must be on Oracle Database Appliance, must be a TDE enabled database using Oracle Key Vault, and must be created with ODACLI commands.

Step 1: Export the tablespace from the source database

1. Consider that the source database has a tablespace TBS01 to be migrated to the destination database. Provide information about the tablespace.



```
SYSAUX YES
UNDOTBS1 YES
USERS YES
TEMP ENC YES
TBS01 YES
SQL> select FILE NAME from dba data files where TABLESPACE NAME='TBS01' ;
FILE NAME
_____
                                    _____
+DATA/DBASM/DATAFILE/tbs01.268.1197828959
###
### Make sure the set of tablespaces are self-contained. The following
PL/SQL command must execute successfully
###
SQL> EXECUTE DBMS_TTS.TRANSPORT_SET_CHECK('tbs01',true) ;
PL/SQL procedure successfully completed.
SQL> exit;
```

 Export the TBS01 tablespace from the source database DBASM. First, set the tablespace to be copied in READ ONLY mode. Next, run expdp for the tablespace that must be migrated. Review the dump files for expdp stored under the database directory ttsps dir.

```
###
### Set the tablespaces that you need to be exported in read-only mode
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> ALTER TABLESPACE TBS01 READ ONLY;
Tablespace altered.
SQL> exit;
###
### Run expdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ expdp system TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES
DIRECTORY=ttsps dir DUMPFILE=expttps dbasm.dmp
Export: Release 19.0.0.0.0 - Production on Mon Apr 7 18:19:28 2025
```

```
Version 19.27.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Starting "SYSTEM"."SYS EXPORT TRANSPORTABLE 01": system/*******
TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES DIRECTORY=ttsps dir
DUMPFILE=expttps dbasm.dmp
ORA-39396: Warning: exporting encrypted data using transportable option
without password
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
Master table "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully loaded/
unloaded
***
Dump file set for SYSTEM.SYS EXPORT TRANSPORTABLE 01 is:
 /u01/app/odaorabase0/oracle/dpdump/ttsps dir/expttps dbasm.dmp
***
Datafiles required for transportable tablespace TBS01:
 +DATA/DBASM/DATAFILE/tbs01.268.1197828959
Job "SYSTEM". "SYS EXPORT TRANSPORTABLE 01" completed with 1 error(s) at
Mon Apr 7 18:19:52 2025 elapsed 0 00:00:18
```

3. Copy the datafile from Oracle ASM to file system, then move the datafile to destination database server. Then, move the data file to the destination database server and and copy the file to Oracle ASM. Then, alter the status of the tablespace to READ WRITE.

```
###
### login to grid user
### Copy datafile from ASM to filesystem
###
# su - grid
$ asmcmd cp +DATA/DBASM/DATAFILE/tbs01.278.1197745689 /home/grid/tbs01.dbf
copying +DATA/DBASM/DATAFILE/tbs01.278.1197745689 -> /home/grid/tbs01.dbf
###
#### In source database, set the tablespace back to read write mode
#### login as Oracle user
#### Connect to database using SQLPLUS as sysdba user and run the following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
```



```
SQL> ALTER TABLESPACE TBS01 READ WRITE;
SQL> exit;
```

4. Copy the software keystore wallet of the source database to the file system on the target server.

```
$ mkdir -pv /tmp/DBASM/tde
mkdir: created directory '/tmp/DBASM'
mkdir: created directory '/tmp/DBASM/tde'
```

SQL> administer key management create keystore '/tmp/DBASM/tde' identified by "<password>";

keystore altered.

SQL> administer key management merge keystore '+DATA/DBASM/tde' identified by "<password>" into existing keystore '/tmp/DBASM/tde' identified by "<password>" with backup ;

keystore altered.

5. Copy the expdp dump files from /u01/app/odaorabase0/oracle/dpdump/ttsps_dir to the destination server, and copy the datafile from /home/grid/tbs01.dbf to the target database server.

The expdp and impdp directory is the same in this case, so, no copy is necessary, for remote copy dumpfile using similar this command \$ scp /u01/app/odaorabase0/oracle/dpdump/ttsps_dir/expttps_dbasm.dmp oracle@target server:/location

Step 2: Import the tablespaces into an Oracle Key Vault-enabled database

 Ensure there exists a TDE-enabled database with Oracle Key Vault, OKVASM as the destination database. Copy the datafile and tablespace of the source database to this database using expdp and impdp. Create the database on an Oracle Database Appliance using the Browser User Interface (BUI) or ODACLI commands. For example:

```
# odacli create-database -n okvasm -t -kt okv -ocp /tmp/
okvasm on <server name>/okvclient.jar -dh 265412be-2b21-4cc4-adc7-
c845bf9e3e3a -r ASM
Enter SYS and SYSTEM user password:
Retype SYS and SYSTEM user password:
Enter TDE wallet password:
Retype TDE wallet password:
# odacli describe-database -n okvasm
Database details
_____
                   ID: 19ce57f8-6f10-4e15-a403-4ded6ac0084b
           Description: okvasm
              DB Name: okvasm
              DB Type: SI
                 CDB: false
              Storage: ASM
              Home ID: 265412be-2b21-4cc4-adc7-c845bf9e3e3a
```



```
TDE Wallet Management: ODA
TDE Enabled: true
KeystoreType : OKV
okvServerConfigName : NONE
```

 Copy the datafiles from file system to the destination Oracle ASM location of OKVASM and change the datafiles permissions.

```
###
### login to grid user
### Copy datafile from from filesystem to ASM
###
# su - grid
$ asmcmd cp /home/grid/tbs01.dbf +DATA/OKVASM//DATAFILE/tbs01 --
dest dbname OKVASM
copying /home/grid/tbs01.dbf -> +DATA/OKVASM//DATAFILE/tbs01
ASMCMD> cd +DATA/OKVASM//DATAFILE
ASMCMD> ls --permission
User
                                        Group
                                                        Permission Name
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                        rw-----
SYSAUX.290.1197813993
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                         rw-----
SYSTEM.315.1197813987
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                         rw-----
UNDOTBS1.309.1197814001
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                         rw-----
USERS.313.1197813977
 grid@3fe6130d68b04fc6ffab5b96ff256f8e
                                                          rw-----
tbs01 => +DATA/OKVASM/DATAFILE/tbs01.318.1197830121
  grid@3fe6130d68b04fc6ffab5b96ff256f8e
                                                          rw-----
tbs01.318.1197830121
ASMCMD>
ASMCMD> chown oracle@3fe6130d68b04fc6ffab5b96ff256f8e:OKVASM CDB$ROOT tbs01
ASMCMD> ls --permission
                                        Group
User
                                                        Permission Name
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                        rw-----
SYSAUX.290.1197813993
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                          rw-----
SYSTEM.315.1197813987
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                         rw-----
UNDOTBS1.309.1197814001
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                         rw-----
USERS.313.1197813977
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                         rw-----
tbs01 => +DATA/OKVASM/DATAFILE/tbs01.318.1197830121
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASM CDB$ROOT
                                                        rw-----
tbs01.318.1197830121
ASMCMD>
```

3. Create the database directory in the OKVASM database for import.

###
login as Oracle user

Connect to database using SQLPLUS as sysdba user and run the following

su - oracle
\$ sqlplus /nolog
SQL> connect / as sysdba

SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/ ttsps_dir';

Directory created.

SQL> exit;

 Upload the wallet keys from the source wallet to the OKVASM OKV wallet in the destination.

```
###
### login as Oracle user
### Upload the software keystore wallet entries to OKV server wallet
###
```

\$ cd /etc/OKV/okvasm/okv/bin

```
$ ./okvutil list
Enter Oracle Key Vault endpoint password:
Unique ID Type Identifier
4E58C724-E704-4245-A131-D357E1A7762A Template Default template for
OKVASM_ON_<SERVER-NAME>
C839BE56-9688-48C6-8C16-F2E34A304847 Symmetric Key TDE Master
Encryption Key: TAG okvasm
```

```
$ ./okvutil upload -t WALLET -l /tmp/DBASM/tde -g
okvasm on <server name>-c -v 4 -o
okvutil version 21.10.0.0.0
Endpoint type: Oracle Database
Configuration file: /etc/OKV/okvasm/okv/conf/okvclient.ora
Server: 100.70.126.204:5696
Standby Servers:
Uploading from /tmp/DBASM/tde
Enter source wallet password:
No auto-login wallet found, password needed
Enter Oracle Key Vault endpoint password:
ORACLE.SECURITY.KB.ENCRYPTION.
Trying to connect to 100.70.126.204:5696 ...
Connected to 100.70.126.204:5696.
ORACLE.SECURITY.ID.ENCRYPTION.
ORACLE.SECURITY.KT.ENCRYPTION.Aeb4ZXoXJU9/
ORACLE.SECURITY.KM.ENCRYPTION.Aeb4ZXoXJU9/
ORACLE.SECURITY.DB.ENCRYPTION.Aeb4ZXoXJU9/
ORACLE.SECURITY.DB.ENCRYPTION.MASTERKEY
```



Uploaded 1 TDE keys Uploaded 0 SEPS entries Uploaded 0 other secrets Uploaded 3 opaque objects Uploading private key Uploading certificate request Uploading trust points Uploaded 1 private keys Uploaded 1 certificate requests Uploaded 0 user certificates Uploaded 0 trust points Upload succeeded ### ### Comparing the output of 'okvutil list' shows that TDE Wallet Keys were uploaded to OKV wallet ### \$./okvutil list Enter Oracle Key Vault endpoint password: Identifier Unique ID Туре Opaque Object TDE Wallet Metadata 2FF42EBA-AB07-456C-BBC1-5AFEC1CCB544 4E58C724-E704-4245-A131-D357E1A7762A Template Default template for OKVASM ON <SERVER-NAME> 6403E441-2624-4360-BB55-E0C35709CDA6 Opaque Object Certificate Request 949A121D-B76A-448C-91EF-856BFD54DC1F Private Key -A726D77A-09C1-5CD5-9650-3FDCB6BD0738 Symmetric Key TDE Master Encryption Key: TAG set master key C81832F9-E5E9-4050-8A52-160705EC71BF Opaque Object TDE Wallet Metadata C839BE56-9688-48C6-8C16-F2E34A304847 Symmetric Key TDE Master Encryption Key: TAG okvasm E860114F-A374-4534-8717-98DB92499E1A Opaque Object TDE Wallet Metadata

\$ rm -rf /tmp/DBASM/tde

 Import the TBS01 tablespace to the destination database OKVASM. TRANSPORT_DATAFILES references the location of the data file in the destination database.

```
###
### login as Oracle user
### Run impdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
# su - oracle
$ impdp system TRANSPORT DATAFILES=\'+DATA/OKVASM/DATAFILE/tbs01\'
```

DIRECTORY=ttsps dir dumpfile=expttps dbasm.dmp

Import: Release 19.0.0.0.0 - Production on Mon Apr 7 18:43:53 2025 Version 19.27.0.0.0 Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved. Password: Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -Production Master table "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully loaded/ unloaded Starting "SYSTEM"."SYS IMPORT TRANSPORTABLE 01": system/******* TRANSPORT DATAFILES='+DATA/OKVASM/DATAFILE/tbs01' DIRECTORY=ttsps dir dumpfile=expttps dbasm.dmp Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK Processing object type TRANSPORTABLE EXPORT/TABLE Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK Job "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully completed at Mon Apr 7 18:44:05 2025 elapsed 0 00:00:04

6. Change the tablespace status and test encryption on the destination OKVASM database.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;
TABLESPACE NAME
                      STATUS ENC
----- ----
SYSTEM
                   ONLINE YES
                    ONLINE
                             YES
SYSAUX
UNDOTBS1
                   ONLINE YES
USERS
                   ONLINE YES
TEMP ENC
                   ONLINE
                            YES
TBS01
                   READ ONLY YES
6 rows selected.
SQL> alter tablespace TBS01 read write ;
Tablespace altered.
SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;
TABLESPACE NAME
                        STATUS ENC
```

_____ ____ SYSTEM ONLINE YES SYSAUX ONLINE YES UNDOTBS1 ONLINE YES ONLINE USERS YES TEMP ENC ONLINE YES TBS01 ONLINE YES ### ### Retrieve the data from TAB1 ### SQL> select OWNER, table name from tab1 where rownum < 3; OWNER _____ ____ TABLE NAME _____ ____ SYS TS\$ SYS ICOL\$

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Migrating Tablespaces from TDE-enabled Oracle ACFS Database with Software Keystore to another TDE-enabled Multitenant Database with Oracle Key Vault Keystore

Understand how you can migrate tablespaces from TDE-enabled Oracle ACFS database with software keystore to another TDE-enabled multitenant database with Oracle Key Vault keystore.

Ensure that there is a source and destination database. The two databases can be on one Oracle Database Appliance server or on different servers. The source database must be a software keystore TDE-enabled database, either an Oracle Database Appliance database or any Oracle database with compatible Endian. The destination database must be an Oracle Database Appliance Oracle Key Vault enabled-database created with ODACLI commands.

Step 1: Export the tablespace from the source database

1. Consider that the source database has a tablespace TBS01 to be migrated to the destination database. Provide information about the tablespace.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the
```



following ###

su - oracle
\$ sqlplus /nolog
SQL> connect / as sysdba
Connected.

SQL> select TABLESPACE NAME, ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	ENC
SYSTEM	YES
SYSAUX	YES
UNDOTBS1	YES
USERS	YES
TEMP_ENC	YES
TBS01	YES

SQL> select FILE_NAME from dba_data_files where TABLESPACE_NAME='TBS01' ;

FILE NAME

/u02/app/oracle/oradata/dbtdec/DBTDEC/321537BF1BE47143E063E730850AA965/ datafile/o1_mf_tbs01_mz69cvrf_.dbf

###

Make sure the set of tablespaces are self-contained. The following
PL/SQL command must execute successfully
###

SQL> EXECUTE DBMS_TTS.TRANSPORT_SET_CHECK('tbs01',true) ;

PL/SQL procedure successfully completed.

SQL> exit;

2. Create the database directory in the source database DBTDEC to be used for the export. Create a database directory object in the destination database to be used by expdp.

```
###
### login as Oracle user and run the following
###
# su - oracle
$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps_dir
mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump'
mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump/ttsps_dir'
```

###



Connect to database using SQLPLUS as sysdba user and run the following
###
\$ sqlplus /nolog
SQL> connect / as sysdba
Connected.
SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps_dir';
Directory created.
SQL> exit;

3. Export the TBS01 tablespace from source database DBTDEC. First, set the tablespace to be copied in READ ONLY mode. Next, run expdp on the designated tablespace. Note that the warning ORA-39396 is displayed because expdp does not use ENCRYPTION_PASSWORD and impdp does not use this option as well. Transfer the TDE software wallet to the destination Oracle Key Vault database server and upload to the corresponding Oracle Key Vault wallet before you run impdp on the destination database. Review the log files for expdp stored under the database directory ttsps dir.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the
following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
Connected.
SQL> ALTER TABLESPACE TBS01 READ ONLY;
Tablespace altered.
SQL> exit;
###
### Run expdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ expdp system TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES
DIRECTORY=ttsps dir DUMPFILE=expttps dbtde.dmp
Export: Release 19.0.0.0.0 - Production on Mon Apr 7 11:08:49 2025
Version 19.27.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
```



```
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Starting "SYSTEM"."SYS EXPORT TRANSPORTABLE 01": system/*******
TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES DIRECTORY=ttsps dir
DUMPFILE=expttps dbtde.dmp
ORA-39396: Warning: exporting encrypted data using transportable option
without password
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/STATISTICS/MARKER
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
Master table "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully loaded/
unloaded
********
              +++
Dump file set for SYSTEM.SYS EXPORT TRANSPORTABLE 01 is:
 /u01/app/odaorabase0/oracle/dpdump/ttsps dir/expttps dbtde.dmp
* * *
Datafiles required for transportable tablespace TBS01:
 /u02/app/oracle/oradata/dbtdec/DBTDEC/321537BF1BE47143E063E730850AA965/
datafile/o1 mf tbs01 mz69cvrf .dbf
Job "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" completed with 1 error(s) at
Mon Apr 7 11:09:15 2025 elapsed 0 00:00:20
```

4. Copy datafiles, TDE wallet, and expdp dmp files to the destination database server and edit the status of the data file in the source database DBTDE to READ WRITE. Copy the datafile /u02/app/oracle/oradata/dbtdec/DBTDEC/321537BF1BE47143E063E730850AA965/ datafile/o1_mf_tbs01_mz69cvrf_.dbf to the Oracle Key Vault database server in the PDB location /u02/app/oracle/oradata/okvdbc/OKVDBC/ 323B892160327BC5E063E730850A8FEA/datafile/.

```
###
### login as Oracle user and run the following
###
# su - oracle
$ scp /u02/app/oracle/oradata/dbtdec/DETDEC/
321537BF1BE47143E063E730850AA965/datafile/o1_mf_tbs01_mz69cvrf_.dbf
oracle@target_server:/u02/app/oracle/oradata/okvdbc/OKVDBC/
323B892160327BC5E063E730850A8FEA/datafile/
#### Copy the expdp dump file to the destination server location.
$ scp /u01/app/odaorabase0/oracle/dpdump/ttsps_dir/expttps.dmp
oracle@<target_server>:/<location>
cp /u02/app/oracle/oradata/dbtdec/tde/ewallet.p12
oracle@target_server:/tmp/dbtdec/tde
####
```



###

```
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> alter session set container=pdb ;
Session altered.
SQL> ALTER TABLESPACE TBS01 READ WRITE;
SQL> exit;
```

Step 2: Import the tablespaces into an Oracle Key Vault-enabled database

1. Ensure there exists a TDE-enabled database with Oracle Key Vault, OKVDBC as the destination database. Copy the data file and tablespace of the source database to this database using expdp and impdp. Create the database on an Oracle Database Appliance using the Browser User Interface (BUI) or ODACLI commands. For example:

```
# odacli create-database -n okvdbc -t -kt okv -ocp /tmp/
okvdbc on <server name>/okvclient.jar -dh 265412be-2b21-4cc4-adc7-
c845bf9e3e3a -r ACFS --cdb -d pdbadmin -p pdb
# odacli describe-database -n okvdbc
Database details
_____
                  ID: 045c22d6-96ed-47d7-95b9-7c9923d94fd9
          Description: okvdbc
              DB Name: okvdbc
              DB Type: SI
                 CDB: true
             PDB Name: pdb
   PDB Admin User Name: pdbadmin
              Storage: ACFS
              Home ID: 265412be-2b21-4cc4-adc7-c845bf9e3e3a
 TDE Wallet Management: ODA
          TDE Enabled: true
        KeystoreType : OKV
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
### Take a note of PDB GUID which helps to determine the path of PDB
datafile
###
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> col PDB NAME for a20
SQL> select PDB NAME, GUID from dba pdbs ;
PDB NAME
             GUID
_____
    323B892160327BC5E063E730850A8FEA
PDB
PDB$SEED
             323B5ABA63C6340CE063E730850A4161
```

```
SQL> exit;
```

3.

2. Create the service and TNS name for the PDB.

```
###
### Create service for PDB database and add TNS alias for PDB
to $ORACLE_HOME/network/admin/tnsnames.ora
###
$ srvctl add service -db okvdbc -service okvdbc_pdb -pdb pdb -role
PRIMARY -policy AUTOMATIC
$ srvctl start service -db okvdbc -service okvdbc_pdb
OKVDBC_PDB =
  (DESCRIPTION =
   (ADDRESS = (PROTOCOL = TCP)(HOST = <server-name>)(PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
   (SERVICE NAME = okvdbcpdb.servicename)
```

Create the database directory in the PDB for the import.

```
###
### login as Oracle user and run the following
###
# su - oracle
$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps dir
mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump/ttsps dir'
###
### Connect to database using SQLPLUS as sysdba user and run the following
###
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> ALTER SESSION SET CONTAINER=PDB ;
SQL> CREATE DIRECTORY ttsps dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps dir';
Directory created.
SQL> exit;
```

4. Upload the wallet keys from the source to the OKVDBC wallet in the destination database. For impdp to recognize the tablespace, upload the software keystore wallet content to the destination database with Oracle Key Vault enabled. Copy the wallet to e destination



server, create a temporary endpoint for the wallet, upload the wallet content, and delete the temporary endpoint and the source database wallet.

```
###
### login as Oracle user
### Upload the software keystore wallet entries to OKV server wallet
###
```

\$ cd /etc/OKV/okvdbc/okv/bin/

```
$ ./okvutil list
Enter Oracle Key Vault endpoint password:
Unique ID
                                        Type
                                                       Identifier
2299AD61-915F-4568-82EA-2E07FDF8F129
                                       Symmetric Key TDE Master
Encryption Key: TAG okvdbc
51EA3595-433A-4FE8-BCAA-A2FBB768F88A
                                       Symmetric Key
                                                       TDE Master
Encryption Key: TAG okvdbc
A7A80EB2-899F-47B3-8050-3A8C76ED449B
                                       Symmetric Key
                                                      TDE Master
Encryption Key: TAG okvdbc pdb
A7C3463B-B8AD-45A3-A31C-E8BABAB1289F
                                                   Default template for
                                       Template
OKVDBC ON <SERVER-NAME>
```

```
$ ./okvutil upload -t WALLET -1 /tmp/dbtdec/tde -g
okvdbc on <server name>-c -v 4 -o
okvutil version 21.10.0.0.0
Endpoint type: Oracle Database
Configuration file: /etc/OKV/okvdbc/okv/conf/okvclient.ora
Server: 100.70.126.204:5696
Standby Servers:
Uploading from /tmp/dbtdec/tde
Enter source wallet password:
No auto-login wallet found, password needed
Enter Oracle Key Vault endpoint password:
ORACLE.SECURITY.ID.ENCRYPTION.
Trying to connect to 100.70.126.204:5696 ...
Connected to 100.70.126.204:5696.
ORACLE.SECURITY.KB.ENCRYPTION.
ORACLE.SECURITY.KT.ENCRYPTION.AecOmWLewk8dv1z3KsizxucAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAA
ORACLE.SECURITY.KM.ENCRYPTION.AecOmWLewk8dv1z3KsizxucAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAA
ORACLE.SECURITY.DB.ENCRYPTION.AecOmWLewk8dv1z3KsizxucAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA
ORACLE.SECURITY.KT.ENCRYPTION.AV351c5etE+Av4EsIkDeWjsAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAA
ORACLE.SECURITY.KM.ENCRYPTION.AV351c5etE+Av4EsIkDeWjsAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA
ORACLE.SECURITY.DB.ENCRYPTION.AV351c5etE+Av4EsIkDeWjsAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA
ORACLE.SECURITY.DB.ENCRYPTION.MASTERKEY.321537BF1BE47143E063E730850AA965
ORACLE.SECURITY.DB.ENCRYPTION.MASTERKEY
Uploaded 2 TDE keys
```

Uploaded 0 SEPS entries

Uploaded 0 other secrets Uploaded 4 opaque objects Uploading private key Uploading certificate request Uploading trust points Uploaded 1 private keys Uploaded 1 certificate requests Uploaded 0 user certificates Uploaded 0 trust points Upload succeeded ### ### Comparing the output of 'okvutil list' shows that TDE Wallet Keys were uploaded to OKV wallet ### \$./okvutil list Enter Oracle Key Vault endpoint password: Identifier Unique ID Type OCDCC93D-EEEA-4760-848F-2162D0074B20 Opaque Object TDE Wallet Metadata 2299AD61-915F-4568-82EA-2E07FDF8F129 Symmetric Key TDE Master Encryption Key: TAG okvdbc 3616D7C9-1025-4093-BEC4-1DD2BAC8047C Opaque Object TDE Wallet Metadata 3F716086-2740-4688-82C3-428B6DA55720 Private Key -5130AEF7-AA35-57B1-8EB7-88A297867B7F Symmetric Key TDE Master Encryption Key: TAG set master key 51EA3595-433A-4FE8-BCAA-A2FBB768F88A Symmetric Key TDE Master Encryption Key: TAG okvdbc 60769770-17A6-4D77-B5AF-80E870B3E95E Opaque Object TDE Wallet Metadata Opaque Object TDE Wallet Metadata 75E9B037-2FA4-45DD-A4D1-FA1A07102602 9B72895D-8551-5792-B3E5-90DC76BE1EBA Symmetric Key TDE Master Encryption Key: TAG set master key A7A80EB2-899F-47B3-8050-3A8C76ED449B Symmetric Key TDE Master Encryption Key: TAG okvdbc pdb A7C3463B-B8AD-45A3-A31C-E8BABAB1289F Template Default template for OKVDBC ON <SERVER-NAME> DDF529BA-348A-4FF3-8F31-73C170749956 Opaque Object Certificate Request

\$ rm -rf /tmp/dbtdec/tde

 Import TBS01 tablespace to the destination database PDB container on OKVDBC. impdp uses the dump file that was copied earlier to add tablespace metadata to the destination database. TRANSPORT_DATAFILES references the location of the datafile in the destination database.

```
###
#### login as Oracle user
### Run impdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
```



su - oracle

\$ impdp system@okvdbc pdb TRANSPORT DATAFILES=\'/u02/app/oracle/oradata/ okvdbc/OKVDBC/323B892160327BC5E063E730850A8FEA/datafile/ ol mf tbs01 mz69cvrf .dbf/' DIRECTORY=ttsps dir dumpfile=expttps dbtdec.dmp Import: Release 19.0.0.0.0 - Production on Mon Apr 7 20:49:35 2025 Version 19.27.0.0.0 Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved. Password: Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -Production Master table "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully loaded/ unloaded Starting "SYSTEM"."SYS IMPORT TRANSPORTABLE 01": system/ *******@okvdbc pdb TRANSPORT DATAFILES='/u02/app/oracle/oradata/okvdbc/ OKVDBC/323B892160327BC5E063E730850A8FEA/datafile/ ol mf tbs01 mz69cvrf .dbf' DIRECTORY=ttsps dir dumpfile=expttps dbtdec.dmp Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK Processing object type TRANSPORTABLE_EXPORT/TABLE Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS Processing object type TRANSPORTABLE EXPORT/STATISTICS/MARKER Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK Job "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully completed at Mon Apr 7 20:50:06 2025 elapsed 0 00:00:16

 Change tablespace status and test tablespace encryption on the destination OKVDBC database PDB.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> alter session set container=pdb ;
Session altered.
SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;
TABLESPACE NAME
                      STATUS ENC
----- ----
                   ONLINE YES
SYSTEM
SYSAUX
                   ONLINE YES
UNDOTBS1
                  ONLINE YES
                   ONLINE
USERS
                            YES
```



TEMP_ENC ONLINE YES TBS01 READ ONLY YES

SQL> alter tablespace TBS01 read write ;

Tablespace altered.

SQL> select TABLESPACE_NAME, STATUS , ENCRYPTED from dba_tablespaces ;

TABLESPACE_NAME	STATU	S	ENC	
SYSTEM	ONLINE	YES		
SYSAUX	ONLINE	YES		
UNDOTBS1	ONLINE	YES		
USERS	ONLINE	YES		
TEMP_ENC	ONLINE	YES		
TBS01	ONLINE	YES		

SQL> select FILE NAME from dba data files where TABLESPACE NAME='TBS01';

```
FILE NAME
```

/u02/app/oracle/oradata/okvdbc/OKVDBC/323B892160327BC5E063E730850A8FEA/
datafile/o1 mf tbs01 mz69cvrf .dbf

```
###
### Retrieve the data from TAB1
###
```

SQL> select OWNER, table_name from tab1 where rownum < 3

OWNER

TABLE NAME

------SYS TS\$ SYS

ICOL\$

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.



Migrating Tablespaces from TDE-enabled Oracle ASM Database with Software Keystore to another TDE-enabled Multitenant Database with Oracle Key Vault Keystore

Understand how you can migrate tablespaces from TDE-enabled Oracle ASM database with software keystore to another TDE-enabled multitenant database with Oracle Key Vault keystore.

Ensure that there is a source and destination database. The two databases can be on one Oracle Database Appliance server or on different servers. The source database must be a software keystore TDE-enabled database, either an Oracle Database Appliance database or any Oracle database with compatible Endian. The destination database must be an Oracle Database Appliance Oracle Key Vault enabled-database created with ODACLI commands.

Step 1: Export the tablespace from the source database

 Consider that the source database has a tablespace TBS01 to be migrated to the destination database. Provide information about the tablespace.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
Connected.
SQL> select TABLESPACE NAME, ENCRYPTED from dba tablespaces ;
TABLESPACE NAME ENC
----- ---
SYSTEM YES
SYSAUX YES
UNDOTBS1 YES
USERS YES
TEMP ENC YES
TBS01 YES
SQL> select FILE NAME from dba data files where TABLESPACE NAME='TBS01';
FILE NAME
         _____
+DATA/DBASMC/DATAFILE/tbs01.268.1197828959
###
### Make sure the set of tablespaces are self-contained. The following
PL/SQL command must execute successfully
###
```

SQL> EXECUTE DBMS_TTS.TRANSPORT_SET_CHECK('tbs01',true) ;

PL/SQL procedure successfully completed.

SQL> exit;

 Export the TBS01 tablespace from the source database DBASMC. First, set the tablespace to be copied in READ ONLY mode. Next, run expdp on the designated tablespace. Review the dump files for expdp stored under the database directory ttsps dir.

```
###
### Set the tablespaces that you need to be exported in read-only mode
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> ALTER TABLESPACE TBS01 READ ONLY;
Tablespace altered.
SQL> exit;
###
### Run expdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ expdp system TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES
DIRECTORY=ttsps dir DUMPFILE=expttps dbasm.dmp
Export: Release 19.0.0.0.0 - Production on Mon Apr 7 18:19:28 2025
Version 19.27.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0 -
Production
Starting "SYSTEM"."SYS EXPORT TRANSPORTABLE 01": system/*******
TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES DIRECTORY=ttsps dir
DUMPFILE=expttps dbasm.dmp
ORA-39396: Warning: exporting encrypted data using transportable option
without password
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
```



3. Copy the datafile from Oracle ASM to the file system on the source server. Then, alter the status of the tablespace to READ WRITE.

```
###
### login to grid user
### Copy datafile from ASM to filesystem
###
# su - grid
$ asmcmd cp DATA/DBASMC/DATAFILE/tbs01.268.1197828959
copying DATA/DBASMC/DATAFILE/tbs01.268.1197828959 -> /home/grid/tbs01.dbf
###
### In source database, set the tablespace back to read write mode
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> ALTER TABLESPACE TBS01 READ WRITE;
SQL> exit;
```

 Copy the software keystore wallet of the source database to the file system on the target server.

SQL> administer key management create keystore '/tmp/DBASMC/tde' identified by "<password>";

keystore altered.

SQL> administer key management merge keystore '+DATA/DBASMC/tde' identified by "<password>" into existing keystore '/tmp/DBASMC/tde' identified by "<password>" with backup ;

keystore altered.



5. Copy the expdp dump files to the destination database server. Copy the data file from /u01/app/odaorabase0/oracle/dpdump/ttsps_dir to the target database server.

The expdp and impdp directory is the same in this case, so, no copy is necessary, for remote copy dumpfile using similar this command \$ scp /u01/app/odaorabase0/oracle/dpdump/ttsps_dir/expttps_dbasm.dmp oracle@target_server:/location

Step 2: Import the tablespaces into an Oracle Key Vault-enabled database

 Ensure there exists a TDE-enabled database with Oracle Key Vault, OKVASMC as the destination database. Copy the data file and tablespace of the source database to this database using expdp and impdp. Create the database on an Oracle Database Appliance using the Browser User Interface (BUI) or ODACLI commands. For example:

```
# odacli create-database -n okvasmc -t -kt okv -ocp /tmp/
okvasmc on <server name>/okvclient.jar -dh 265412be-2b21-4cc4-adc7-
c845bf9e3e3a -r ASM --cdb -d pdbadmin -p pdb
# odacli describe-database -n okvasmc
Database details
_____
                  ID: dc9f9d7b-7e22-4997-bb20-4a3adcc764a4
          Description: okvasmc
              DB Name: okvasmc
              DB Type: SI
                 CDB: true
             PDB Name: pdb
   PDB Admin User Name: pdbadmin
              Storage: ASM
              Home ID: 265412be-2b21-4cc4-adc7-c845bf9e3e3a
 TDE Wallet Management: ODA
          TDE Enabled: true
        KeystoreType : OKV
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> col PDB NAME for a20
SQL> select PDB NAME, GUID from dba pdbs ;
PDB NAME
          GUID
-----
         3247726469554039E063E730850A5A00
PDB
PDB$SEED
            324743827B457329E063E730850A27E7
SQL> exit ;
```

 Copy the data files from file system to the destination Oracle ASM location of OKVASMC and set the permissions correctly after copying the data files.

```
###
### login to grid user
###
# su - grid
$ asmcmd cp /home/grid/tbs01.dbf +DATA/OKVASMC/
3247726469554039E063E730850A5A00/DATAFILE/tbs01 --dest dbname OKVASMC
copying /home/grid/tbs01.dbf -> +DATA/OKVASMC/
3247726469554039E063E730850A5A00/DATAFILE/tbs01
$ asmcmd
ASMCMD> pwd
+DATA/OKVASMC/3247726469554039E063E730850A5A00/DATAFILE
ASMCMD> ls --permission
                                                    Permission Name
User
                                        Group
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                     rw-----
SYSAUX.337.1197886103
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                      rw-----
SYSTEM.330.1197886099
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                      rw-----
UNDOTBS1.338.1197886107
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                      rw-----
USERS.336.1197886111
  grid@3fe6130d68b04fc6ffab5b96ff256f8e
                                                      rw----- tbs01 =>
+DATA/OKVASMC/DATAFILE/tbs01.339.1197886535
ASMCMD> chown oracle@3fe6130d68b04fc6ffab5b96ff256f8e:OKVASMC PDB tbs01
ASMCMD>
ASMCMD> 1s --permission
User
                                        Group
                                                     Permission Name
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                     rw-----
SYSAUX.337.1197886103
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                      rw-----
SYSTEM.330.1197886099
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                      rw-----
UNDOTBS1.338.1197886107
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                      rw-----
USERS.336.1197886111
oracle@3fe6130d68b04fc6ffab5b96ff256f8e OKVASMC PDB
                                                      rw----- tbs01 =>
+DATA/OKVASMC/DATAFILE/tbs01.339.1197886535
```

Create the service and TNS name for the PDB.

```
###
### Create service for PDB database and add TNS alias for PDB
to $ORACLE_HOME/network/admin/tnsnames.ora
###
```



```
$ srvctl add service -db okvasmc -service okvasmc_pdb -pdb pdb -role
PRIMARY -policy AUTOMATIC
$ srvctl start service -db okvasmc -service okvasmc_pdb
OKVASMC_PDB =
  (DESCRIPTION =
   (ADDRESS = (PROTOCOL = TCP)(HOST = <server-name>)(PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
   (SERVICE NAME = okvasmc pdb.service)
```

4. Create the database directory in the PDB for the import.

```
###
### login as Oracle user and run the following
###
# su - oracle
$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps dir
mkdir: created directory \/u01/app/odaorabase0/oracle/dpdump/ttsps dir'
###
### Connect to database using SQLPLUS as sysdba user and run the following
###
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> ALTER SESSION SET CONTAINER=PDB ;
SQL> CREATE DIRECTORY ttsps dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps dir';
Directory created.
SQL> exit;
```

 Upload the wallet keys from the source to the OKVASMC Oracle Key Vault wallet in the destination database. For impdp to recognize the tablespace, upload the software keystore wallet content to the destination database with Oracle Key Vault enabled.

```
###
### login as Oracle user
### Upload the software keystore wallet entries to OKV server wallet
###
$ cd /etc/OKV/okvasmc/okv/bin/
$ ./okvutil list
Enter Oracle Key Vault endpoint password:
Unique ID Type Identifier
20D37B20-78C2-4679-8B56-B50F184B5D61 Symmetric Key TDE Master
Encryption Key: TAG okvasmc
40A3C0F2-CED1-497F-8C70-13A6E69AC0F7 Symmetric Key TDE Master
```



```
Encryption Key: TAG okvasmc pdb
                                        Template
9E0B4E98-2249-4159-9B12-04A60980D25E
                                                    Default template for
OKVASMC ON <SERVER-NAME>
B4569785-465C-4906-8C82-3736A15ED3E7
                                        Symmetric Key TDE Master
Encryption Key: TAG okvasmc
$ ./okvutil upload -t WALLET -l /tmp/DBASMC/tde -g
okvasmc on <server name>-c -v 4 -o
okvutil version 21.10.0.0.0
Endpoint type: Oracle Database
Configuration file: /etc/OKV/okvasmc/okv/conf/okvclient.ora
Server: 100.70.126.204:5696
Standby Servers:
Uploading from /tmp/DBASMC/tde
Enter source wallet password:
No auto-login wallet found, password needed
Enter Oracle Key Vault endpoint password:
ORACLE.SECURITY.KB.ENCRYPTION.
Trying to connect to 100.70.126.204:5696 ...
Connected to 100.70.126.204:5696.
ORACLE.SECURITY.ID.ENCRYPTION.
ORACLE.SECURITY.KT.ENCRYPTION.AYGo9jtJAk+JvwRLClz4E7wAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA
ORACLE.SECURITY.KM.ENCRYPTION.AYGo9jtJAk+JvwRLClz4E7wAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA
ORACLE.SECURITY.DB.ENCRYPTION.AYGo9jtJAk+JvwRLClz4E7wAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAA
ORACLE.SECURITY.KT.ENCRYPTION.Afk3edvpTU8yv82U/
FM99Coaaaaaaaaaaaaaaaaaaaaaaaaaa
ORACLE.SECURITY.KM.ENCRYPTION.Afk3edvpTU8yv82U/
FM99Coaaaaaaaaaaaaaaaaaaaaaaaaaa
ORACLE.SECURITY.DB.ENCRYPTION.Afk3edvpTU8yv82U/
FM99CoAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
ORACLE.SECURITY.DB.ENCRYPTION.MASTERKEY.3215781D91701754E063E730850A04B1
ORACLE.SECURITY.DB.ENCRYPTION.MASTERKEY
Uploaded 2 TDE keys
Uploaded 0 SEPS entries
Uploaded 0 other secrets
Uploaded 4 opaque objects
Uploading private key
Uploading certificate request
Uploading trust points
Uploaded 1 private keys
Uploaded 1 certificate requests
Uploaded 0 user certificates
Uploaded 0 trust points
```

Upload succeeded

###

Comparing the output of 'okvutil list' shows that TDE Wallet Keys were
uploaded to OKV wallet
###

\$./okvutil list		
Enter Oracle Key Vault endpoint passwor	cd:	
Unique ID	Туре	Identifier
1D4F6104-FAFE-42C5-AE3E-F9B46BCA51CA	Opaque Object	Certificate Request
20D37B20-78C2-4679-8B56-B50F184B5D61	Symmetric Key	TDE Master
Encryption Key: TAG okvasmc		
2F4FCE20-A679-415A-B2E9-F4F80A28576A	Opaque Object	TDE Wallet Metadata
40A3C0F2-CED1-497F-8C70-13A6E69AC0F7	Symmetric Key	TDE Master
Encryption Key: TAG okvasmc_pdb		
41B0D244-BAC0-5311-A624-3BB0496C8BE9	Symmetric Key	TDE Master
Encryption Key: TAG set_master_key		
74A196AC-3C9E-49B5-A10B-19F2DFB3D27B	Opaque Object	TDE Wallet Metadata
87793E99-E79C-4855-8CF1-5C463DCFCE60	Opaque Object	TDE Wallet Metadata
9E0B4E98-2249-4159-9B12-04A60980D25E	Template Def	ault template for
OKVASMC_ON_ <server-name></server-name>		
B4569785-465C-4906-8C82-3736A15ED3E7	Symmetric Key	TDE Master
Encryption Key: TAG okvasmc		
E31121D2-5A43-4D1A-882B-26881FB1D3A2	Private Key -	
E885E79C-AF01-5856-A066-7292198BF650	Symmetric Key	TDE Master
Encryption Key: TAG set_master_key		
F0834140-19A5-4E2F-9AB6-CC4026A0FC62	Opaque Object	TDE Wallet Metadata

\$ rm -rf /tmp/DBASMC/tde

 Import the TBS01 tablespace to the destination database OKVASMC. TRANSPORT_DATAFILES references the location of the data file in the destination database.

```
###
### login as Oracle user
### Run impdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
# su - oracle
$ impdp system@okvasmc_pdb TRANSPORT_DATAFILES=\'+DATA/OKVASMC/
3247726469554039E063E730850A5A00/DATAFILE/tbs01\' DIRECTORY=ttsps_dir
dumpfile=expttps_dbasmc.dmp
Import: Release 19.0.0.0.0 - Production on Tue Apr 8 10:30:00 2025
Version 19.27.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
```

Production Master table "SYSTEM"."SYS_IMPORT_TRANSPORTABLE_01" successfully loaded/ unloaded Starting "SYSTEM"."SYS_IMPORT_TRANSPORTABLE_01": system/ *******@okvasmc_pdb TRANSPORT_DATAFILES='+DATA/OKVASMC/ 3247726469554039E063E730850A5A00/DATAFILE/tbs01' DIRECTORY=ttsps_dir dumpfile=expttps_dbasmc.dmp Processing object type TRANSPORTABLE_EXPORT/PLUGTS_BLK Processing object type TRANSPORTABLE_EXPORT/TABLE Processing object type TRANSPORTABLE_EXPORT/STATISTICS/TABLE_STATISTICS Processing object type TRANSPORTABLE_EXPORT/STATISTICS/MARKER Processing object type TRANSPORTABLE_EXPORT/POST_INSTANCE/PLUGTS_BLK Job "SYSTEM"."SYS_IMPORT_TRANSPORTABLE_01" successfully completed at Tue Apr 8 10:30:25 2025 elapsed 0 00:00:17

7. Change the tablespace status and test encryption on the destination Oracle Key Vault database.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user and run the following
###
# su - oracle
$ sqlplus /nolog
SQL> connect / as sysdba
SQL> alter session set container=pdb ;
Session altered.
SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;
TABLESPACE NAME
                      STATUS ENC
----- ----
                    ONLINE
SYSTEM
                            YES
SYSAUX
                   ONLINE YES
UNDOTBS1
                   ONLINE YES
USERS
                   ONLINE YES
                  ONLINE YES
READ ONLY YES
TEMP ENC
TBS01
SQL> alter tablespace TBS01 read write ;
```

Tablespace altered.

SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	STATUS	ENC	
SYSTEM	ONLINE	 YES	
SYSAUX	ONLINE	YES	
UNDOTBS1	ONLINE	YES	



```
USERS
                ONLINE
                       YES
TEMP ENC
                ONLINE
                       YES
TBS01
                ONLINE
                       YES
###
### Retrieve the data from TAB1
###
SQL> select OWNER, table name from tab1 where rownum < 3 ;
OWNER
         _____
TABLE NAME
          _____
____
SYS
IND$
SYS
CDEF$
```

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Manually Migrating from Software Keystore to Oracle Key Vault Keystore on Oracle Database Appliance

Understand how you can migrate tablespaces from software keystore to Oracle Key Vault keystore for databases created on Oracle Database Appliance

For the migration, a TDE wallet, set as the default wallet, and endpoints must exist on the Oracle Key Vault server. Ensure that the <code>okvclient.jar</code> file specific to the endpoints is available on Oracle Database Appliance.

- 1. Log into Oracle Key Vault and create the virtual TDE wallet corresponding to a database.
- Create endpoints corresponding to each instance. For a single instance database, you
 must create one endpoint and for Oracle RAC, Oracle RAC One, and single-instance
 databases with high-availability enabled, create two endpoints.
- 3. Set the default wallet for the created endpoint.
- Download the okvclient.jar file corresponding to each endpoint. For single instance database, download one file, and for Oracle RAC database, there are two files available for download, one per instance.

Before migration, the TDE keys are present in a file-based wallet on Oracle ASM storage in the database. After migration, all the current TDE keys are migrated to the Oracle Key Vault keystore.

1. As the database owner, for example, oracle, connect to SQL*Plus and configure the new WALLET ROOT initialization parameter for the database.

```
# su - oracle
$. oraenv
ORACLE_SID = [oracle] ? enter the database SID
ORACLE_HOME = [/home/oracle] ? enter the database home path
$ sqlplus / as sysdba
SQL> ALTER SYSTEM SET WALLET_ROOT='/etc/OKV/dbUniqueName' scope=spfile
sid='*';
```

System altered.

 Create the wallet root and TDE directories. Run this step on both nodes for Oracle RAC, Oracle RAC One Node, and Oracle Database Enterprise Edition High Availability databases.

\$ mkdir /etc/OKV/dbUniqueName/ \$ mkdir /etc/OKV/dbUniqueName/okv \$ mkdir /etc/OKV/dbUniqueName/tde

 Copy the software keystore (ewallet.p12) file from the +DATA/dbUniqueName/tde location to the /etc/OKV/dbname/tde location.
 For Oracle ASM databases, copy the file from the +DATA/dbUniqueName/tde Oracle ASM location.

```
$. oraenv
ORACLE_SID = [oracle] ? enter the database SID
ORACLE_HOME = [/home/oracle] ? enter the database home path
$ sqlplus / as sysdba
SQL> ADMINISTER KEY MANAGEMENT CREATE KEYSTORE '/etc/OKV/dbUniqueName/tde'
identified by "current TDE password";
```

keystore altered.

SQL> ADMINISTER KEY MANAGEMENT MERGE KEYSTORE '+DATA/dbUniqueName/tde' identified by "current TDE password" INTO EXISTING KEYSTORE '/etc/OKV/ <dbUniqueName>/tde' identified by "current TDE password" WITH BACKUP USING "delete";

keystore altered.

For Oracle ACFS databases, copy the file from the /u02/app/oracle/oradata/ *dbUniqueName*/tde location.

```
cp /u02/app/oracle/oradata/dbUniqueName/tde/ewallet.p12 /etc/OKV/
dbUniqueName/tde
```

4. Install the Oracle Key Vault endpoint software. Two endpoints must be created for Oracle RAC, Oracle RAC One Node, and Oracle Database Enterprise Edition High Availability databases specific to each instance and must be installed on each node, so run this step on both nodes for these databases. Use the Java binary from the database home location. On successful installation, the files listed in step 4c must be present in the /etc/OKV/ dbUniqueName/okv/ location.



a. Find the database home location with the odacli describe-database command and make a note of the Home ID.

b. List the database homes present in the environment and save the Home Location corresponding to the ID copied in step a.

# odacli list-db	homes		
ID		Name	DB
Version	DB Edition H	lome	
Location		St	tatus
		· _	
b5791c68-9a47-42	db-bedc-9c2213	7a8efd OraDB19000_hc	ome2
19.27.0.0.250415) EE	/u01/app/odaorahome/or	acle/product/
19.0.0.0/dbhome_	2 CONFIGUR	ED	

c. Install the okvclient.jar specific to the endpoint created for the database instance using the Java binary from the database home location saved from step 4b.

```
$ DatabaseHomeLocation/jdk/bin/java -jar okvclient.jar path -d /etc/OKV/
dbUniqueName/okv/
Detected JAVA_HOME: /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_2/jdk/jre
Enter new Key Vault endpoint password (enter for auto-login): current
TDE password
```

Confirm new Key Vault endpoint password: current TDE password

The endpoint software for Oracle Key Vault installed successfully. Deleted the file :<okvclient.jar path

d. Verify that the okvclient.jar is installed successfully by listing the files from the /etc/OKV/dbUniqueName/okv location.

```
$ 1s -1tR /etc/OKV/dbUniqueName/okv/
/etc/OKV/dbUniqueName/okv/:
total 28
drwxr-x--- 2 oracle oinstall 4096 Mar 28 12:18 log
drwxr-x--- 2 oracle oinstall 4096 Mar 28 12:18 conf
drwxr-x--- 2 oracle oinstall 4096 Mar 28 12:18 ssl
drwxr-x--- 2 oracle oinstall 4096 Mar 28 12:18 bin
```

```
drwxr-x--- 2 oracle oinstall 4096 Mar 28 12:18 lib
drwxr-x--- 3 oracle oinstall 4096 Mar 28 12:18 csdk
drwxr-x--- 2 oracle oinstall 4096 Mar 28 12:18 jlib
/etc/OKV/dbUniqueName/okv/log:
total 4
-rw-r---- 1 oracle oinstall 2162 Mar 28 12:18 okvutil.deploy.log
/etc/OKV/dbUniqueName/okv/conf:
total 12
-rw-r---- 1 oracle oinstall 450 Mar 28 12:18 logging.properties
-rw-r---- 1 oracle oinstall 882 Mar 28 12:18 okvclient.ora
-rw-r---- 1 oracle oinstall 0 Mar 28 12:18 okvclient.lck
-rwx----- 1 oracle oinstall 1009 Mar 28 12:09 okvsshendpoint.conf
/etc/OKV/dbUniqueName/okv/ssl:
total 8
-rw----- 1 oracle oinstall 4361 Mar 28 12:18 ewallet.p12
/etc/OKV/dbUniqueName/okv/bin:
total 8548
-rwxr-x--- 1 oracle oinstall 18108 Mar 28 12:09 ep healthcheck.sh
-rwxr-x--- 1 oracle oinstall 8682112 Mar 28 12:09 okveps.x64
-rwxr-x--- 1 oracle oinstall 29651 Mar 28 12:09
okv ssh ep lookup authorized keys
-rwxr-x--- 1 oracle oinstall 7721 Mar 28 12:09 okvutil
-rwxr-x--- 1 oracle oinstall 5030 Mar 28 12:09 root.sh
/etc/OKV/dbUniqueName/okv/lib:
total 8708
-rwxr-x--- 1 oracle oinstall 8913371 Mar 28 12:09 liborapkcs.so
/etc/OKV/dbUniqueName/okv/csdk:
total 4
drwxr-x--- 2 oracle oinstall 4096 Mar 28 12:18 lib
/etc/OKV/dbUniqueName/okv/csdk/lib:
total 8748
-rwxr-x--- 1 oracle oinstall 8954149 Mar 28 12:09 liborasdk.so
/etc/OKV/dbUniqueName/okv/jlib:
total 72
-rw-r---- 1 oracle oinstall 71387 Mar 14 2024 okvutil.jar
```

5. As the root user, run the root.sh script to install the PKCS library. For Oracle RAC, Oracle RAC One Node, and Oracle Database Enterprise Edition High Availability databases, run this step on both nodes.

```
# id -a
uid=0(root) gid=0(root) groups=0(root)
# /etc/OKV/dbUniqueName/okv/bin/root.sh
Creating directory: /opt/oracle/extapi/64/hsm/oracle/1.0.0/
Copying PKCS library to /opt/oracle/extapi/64/hsm/oracle/1.0.0/
Setting PKCS library file permissions
Installation successful.
```

After the command runs successfully, verify that the library is installed.

```
# id -a
uid=0(root) gid=0(root) groups=0(root)
# ls -ltr /opt/oracle/extapi/64/hsm/oracle/1.0.0/
total 8708
-rwxr-xr-x 1 root root 8913371 Mar 28 12:33 liborapkcs.so
```

6. Run steps 6 to 13 as the database owner, for example, oracle. Upload the software keystore ewallet.pl2 to the Oracle Key Vault server.

```
# su - oracle
$ /etc/OKV/dbUniqueName/okv/bin/okvutil upload -l /etc/OKV/
dbUniqueName/tde -t wallet -g wallet name
Enter source wallet password: current TDE password
Enter Oracle Key Vault endpoint password: current TDE password
Upload succeeded
```

Verify that the TDE keys are uploaded to the wallet on the Oracle Key Vault server with the okvutil list command:

<pre>\$ /etc/OKV/dbUniqueName/okv/bin/okvutil</pre>	list	
Enter Oracle Key Vault endpoint passwor	d:	
Unique ID	Туре	Identifier
8D938C3D-8434-45A4-B6F3-A9405C26B0C5	Opaque Object	TDE Wallet Metadata
A816E0FB-5CF2-48FF-A29F-5EC7282B4035	Opaque Object	TDE Wallet Metadata
121AC7F1-44AC-5537-A705-52BB7DAEDDAA	Symmetric Key	TDE Master
Encryption Key: TAG set_master_key		
3977568B-A800-5532-96DB-C196AEA75C2E	Symmetric Key	TDE Master
Encryption Key: TAG set_master_key		
3DC733BF-4977-42E0-92E6-D436BBFA206F	Opaque Object	TDE Wallet Metadata
0640B156-1D2A-4CE4-9608-CDDA004938E2	Opaque Object	TDE Wallet Metadata
051ED678-68D2-4DF5-8CE2-41DBAB000003	Private Key -	
2E7D00F6-9AC2-4543-B308-0697D9A401CF	Opaque Object	Certificate Request
4585DCAE-EDD1-4BAA-AD8F-E1FC8AD5E763	Template Def	ault template for
TDEDB 707EP1		

7. Create the local autologin wallet for the database on the local node.

```
$. oraenv
ORACLE_SID = [oracle] ? enter the SID of the local database instance
ORACLE_HOME = [/home/oracle] ? enter the database home path
$ sqlplus / as sysdba
SQL> ADMINISTER KEY MANAGEMENT ADD SECRET 'current TDE password' FOR
CLIENT 'OKV_PASSWORD' TO LOCAL AUTO_LOGIN KEYSTORE '/etc/OKV/dbUniqueName/
tde';
```

keystore altered.

For Oracle RAC databases, create the local and external store autologin wallet for the remote instance on the remote node.

\$. oraenv
ORACLE SID = [oracle] ? enter the SID of the remote database instance



```
ORACLE_HOME = [/home/oracle] ? enter the database home path
$ sqlplus / as sysdba
SQL> ADMINISTER KEY MANAGEMENT ADD SECRET 'current TDE password' FOR
CLIENT 'OKV_PASSWORD' TO LOCAL AUTO_LOGIN KEYSTORE '/etc/OKV/dbUniqueName/
tde';
```

keystore altered.

For Oracle RAC One Node and single-instance databases with high-availability enabled, follow these steps on the remote node:

a. Shut down the instance on the local node.

```
$. oraenv
ORACLE_SID = [oracle] ? <enter the SID of the local database instance>
ORACLE_HOME = [/home/oracle] ? <enter the database home path>
$ sqlplus / as sysdba
SQL> shutdown immediate;
```

b. Mount the instance on the remote node.

```
$. oraenv
ORACLE_SID = [oracle] ? enter the SID of the remote database instance
ORACLE_HOME = [/home/oracle] ? enter the database home path
$ sqlplus / as sysdba
SQL> startup nomount;
```

c. Create the local autologin wallet.

```
$. oraenv
ORACLE_SID = [oracle] ? enter the SID of the remote database instance
ORACLE_HOME = [/home/oracle] ? enter the database home path
$ sqlplus / as sysdba
SQL> ADMINISTER KEY MANAGEMENT ADD SECRET 'current TDE password' FOR
CLIENT 'OKV_PASSWORD' TO LOCAL AUTO_LOGIN KEYSTORE '/etc/OKV/
dbUniqueName/tde';
```

keystore altered.

d. Shut down the instance on the remote node.

```
$. oraenv
ORACLE_SID = [oracle] ? enter the SID of the remote database instance
ORACLE_HOME = [/home/oracle] ? enter the database home path
$ sqlplus / as sysdba
SQL> shutdown;
```

e. Mount the instance on the local node.

```
$. oraenv
ORACLE_SID = [oracle] ? enter the SID of the local database instance
ORACLE_HOME = [/home/oracle] ? enter the database home path
$ sqlplus / as sysdba
SQL> startup;
```



 Connect to SQL*Plus and set the tde_configuration initialization parameter for the database.

```
$ sqlplus / as sysdba
SQL> ALTER SYSTEM SET TDE_CONFIGURATION = "KEYSTORE_CONFIGURATION=OKV|
FILE" SCOPE = BOTH sid='*';
```

System altered.

9. Restart the database to apply the database initialization parameters set in step 8.

```
$ srvctl stop database -d dbUniqueName
$ srvctl start database -d dbUniqueName
```

10. Connect to SQL*Plus and run the command to migrate the TDE keys to OKV.

```
$ sqlplus / as sysdba
SQL> ADMINISTER KEY MANAGEMENT set key identified by "current TDE
password" force keystore migrate using "current TDE password";
keystore altered.
```

11. Delete the file based wallet ewallet.p12 files from the /etc/OKV/dbUniqueName/tde location.

```
$ rm -f /etc/OKV/dbUniqueName/tde/ewallet*
```

12. Restart the database again to apply the keystore migration performed in step 10.

\$ srvctl stop database -d dbUniqueName
\$ srvctl start database -d dbUniqueName

13. Connect to SQL*Plus and run the query to check the status of the wallet. It must be in the Open state. If it is not in the Open state, restart the database to verify that the communication with Oracle Key Vault is fine.

```
$ sqlplus / as sysdba
SQL> select * from v$encryption wallet;
WRL TYPE
_____
WRL PARAMETER
STATUS
        WALLET_TYPE WALLET_OR KEYSTORE FULLY_BAC
_____
_____
  CON ID
_____
FILE
/etc/OKV/dbUniqueName/tde/
OPEN NO MASTER KEY LOCAL_AUTOLOGIN SECONDARY NONE
UNDEFINED
   1
```



```
WRL TYPE
_____
WRL PARAMETER
_____
____
STATUS
          WALLET_TYPE WALLET_OR KEYSTORE FULLY_BAC
_____
_____
 CON_ID
_____
OKV
OPEN
           OKV
             PRIMARY NONE UNDEFINED
 1
WRL TYPE
_____
WRL PARAMETER
_____
STATUS
          WALLET_TYPE WALLET_OR KEYSTORE FULLY_BAC
______ _____
_____
 CON ID
_____
FILE
OPEN_NO_MASTER_KEY LOCAL_AUTOLOGIN SINGLE UNITED
UNDEFINED
  2
WRL TYPE
_____
WRL PARAMETER
_____
____
STATUS
          WALLET_TYPE WALLET_OR KEYSTORE FULLY_BAC
_____
_____
 CON_ID
_____
OKV
OPEN
           OKV
             SINGLE UNITED UNDEFINED
  2
WRL TYPE
_____
WRL PARAMETER
_____
____
       WALLET_TYPE WALLET_OR KEYSTORE FULLY_BAC
STATUS
   ------ ------
```

```
_____
 CON ID
_____
FILE
OPEN NO MASTER KEY LOCAL AUTOLOGIN SECONDARY UNITED
UNDEFINED
  3
WRL TYPE
_____
WRL PARAMETER
_____
____
STATUS
           WALLET_TYPE WALLET_OR KEYSTORE FULLY_BAC
_____
_____
 CON ID
_____
OKV
            OKV PRIMARY UNITED UNDEFINED
OPEN
  3
```

14. As the grid user, delete the software keystore and the autologin wallet. Connect to ASMCMD and delete the +DATA/dbUniqueName/tde folder.

```
# su - grid
$ asmcmd
ASMCMD> cd +DATA/dbUniqueName
ASMCMD> rm -rf tde/
```

15. Update the KeystoreType parameter in the DCS metadata for the database. For Oracle Database Appliance release 19.27, use the odacli register-database command to update the MySQL metadata for the database.

 $\$ odacli register-database -sn database service name -c database class -s database shape

To register the database using Oracle Key Vault server configuration, run the following command:

\$ odacli register-database -sn database service name -c database class -s
database shape -osc OKVServerConfigName

16. Verify that the keystoreType parameter for the database is set to OKV. Run the odacli describe-database -n dbName -j command and check the keystoreType parameter in the command output. For the databases registered using Oracle Key Vault server configuration, the okvServerConfigName parameter in the odacli describe-database



command output displays the Oracle Key Vault server configuration name used by the database.

```
$ odacli describe-database -n dbName -j
$ odacli describe-database -n tdedb -j
  "name" : "tdedb",
  "dbName" : "tdedb",
  "databaseUniqueName" : "tdedb",
  "enableTDE" : true,
  "tdePassword" : "*******"
  "tdeWalletManagement" : "ODA",
  "dbType" : "RAC",
  "dbRole" : "PRIMARY",
  "dbTargetNodeNumber" : null,
  "dbClass" : "OLTP",
  "dbShape" : "odb1",
  "dbStorage" : "ASM",
  "keystoreType" : "OKV",
  "okvServerConfigName" : "NONE"
}
```

Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.

Manual Migration and Encryption of Data into TDE-Enabled Database

Understand how you can migrate transportable tablespaces to TDE-enabled database on Oracle Database Appliance.

- Migrating Tablespaces from Non-TDE Oracle ACFS Database to Oracle ACFS Database on Oracle Database Appliance
 Understand how you can migrate tablespaces from non-TDE Oracle ACFS database to Oracle ACFS database with Oracle Key Vault enabled on Oracle Database Appliance.
- Migrating Tablespaces from Non-TDE Oracle ASM Database to Oracle ASM Database on Oracle Database Appliance
 Understand how you can migrate tablespaces from non-TDE Oracle ASM database to Oracle ASM database with Oracle Key Vault enabled on Oracle Database Appliance.
- Migrating Tablespaces from Non-TDE Oracle ACFS Database to Oracle ACFS CDB Database on Oracle Database Appliance Understand how you can migrate tablespaces from non-TDE Oracle ACFS database to Oracle ACFS CDB database with Oracle Key Vault enabled on Oracle Database Appliance.

Migrating Tablespaces from Non-TDE Oracle ASM Database to Oracle ASM CDB
 Database on Oracle Database Appliance
 Understand how you can migrate tablespaces from non TDE Oracle ASM database to

Understand how you can migrate tablespaces from non-TDE Oracle ASM database to Oracle ASM CDB database with Oracle Key Vault enabled on Oracle Database Appliance.

Migrating Tablespaces from Non-TDE Oracle ACFS Database to Oracle ACFS Database on Oracle Database Appliance

Understand how you can migrate tablespaces from non-TDE Oracle ACFS database to Oracle ACFS database with Oracle Key Vault enabled on Oracle Database Appliance.

Ensure that there is a source and destination database. The two databases can be on one Oracle Database Appliance server or on different servers. The source database must be an non TDE-enabled database, either an Oracle Database Appliance database or any Oracle database with compatible Endian. The destination database must be an Oracle Database Appliance database created with ODACLI commands.

Step 1: Export the tablespace from the source database

1. Consider that the source database has a tablespace TBS01 to be migrated to the destination database. Provide information about the tablespace.

SQL> select TABLESPACE NAME, ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	STATUS	ENC
SYSTEM	ONLINE	NO
SYSAUX	ONLINE	NO
UNDOTBS1	ONLINE	NO
TEMP	ONLINE	NO
USERS	ONLINE	NO
TBS01	ONLINE	NO

```
SQL> select FILE_NAME from dba_data_files where TABLESPACE_NAME='TBS01' ;
```

```
FILE NAME
```

```
/u02/app/oracle/oradata/dbnotde/DBNOTDE/datafile/o1 mf tbs01 lnlgn65j .dbf
```

SQL>

###

Make sure the set of tablespaces are self-contained. The following
PL/SQL command must run successfully
###

```
SQL> EXECUTE DBMS_TTS.TRANSPORT_SET_CHECK('tbs01',true) ;
PL/SQL procedure successfully completed.
SQL> exit;
```



2. Create the database directory in the source database DBNOTDE to be used for the export. Create a database directory object in the destination database to be used by expdp.

```
###
### login as oracle user
###
$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps_dir
mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump/ttsps_dir'
###
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps_dir';
Directory created.
SQL>
```

3. Export the TBS01 tablespace from souce database DBNOTDE. First, set the tablespace to be copied in READ ONLY mode. Next, run expdp on the designated tablespace. Review the log files for expdp stored under the database directory ttsps dir.

```
###
### login as oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> ALTER TABLESPACE TBS01 READ ONLY;
Tablespace altered.
###
### Run expdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ expdp system TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES
DIRECTORY=ttsps dir DUMPFILE=expttps.dmp
Export: Release 19.0.0.0.0 - Production on Mon Nov 6 12:47:00 2023
Version 19.25.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Starting "SYSTEM"."SYS EXPORT TRANSPORTABLE 01": system/*******
```



```
TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES DIRECTORY=ttsps dir
DUMPFILE=expttps.dmp
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
Master table "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully loaded/
unloaded
***
Dump file set for SYSTEM.SYS EXPORT TRANSPORTABLE 01 is:
 /u01/app/odaorabase0/oracle/dpdump/ttsps dir/expttps.dmp
***
Datafiles required for transportable tablespace TBS01:
 /u02/app/oracle/oradata/dbnotde/DBNOTDE/datafile/
ol mf tbs01 lnlqn65j .dbf
Job "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully completed at Mon
Nov 6 12:47:19 2023 elapsed 0 00:00:14
```

4. Move data files to the destination database server and edit the status of the data file in the source database DBNOTDE to READ WRITE. Move the data file to the TDE-enabled database server in the location /u02/app/oracle/oradata/dbtde/DBTDE/datafile.

```
###
### login as oracle user
###
$ cp /u02/app/oracle/oradata/dbnotde/DBNOTDE/datafile/
o1_mf_tbs01_lnlgn65j_.dbf /u02/app/oracle/oradata/dbtde/DBTDE/datafile/
o1_mf_tbs01_lnlgn65j_.dbf
####
#### In source database, set the tablespace back to read write mode
#### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
####
SQL> ALTER TABLESPACE TBS01 READ WRITE;
```

Step 2: Import the tablespaces into a TDE-enabled database

 Create a TDE-enabled database with Oracle Key Vault, DBTDE as the destination database, as described in the earlier procedure. Copy the data file and tablespace of the source database to this database using expdp and impdp. Create the database on an Oracle Database Appliance using the Browser User Interface (BUI) or ODACLI commands. For example:

```
# odacli create-database -n dbtde -t -kt okv -osc adminobj1 -dh
e2a65596-6435-4410-9e8d-6b21a6005779 -r ACFS
# odacli describe-database -n dbtde
Database details
```



```
ID: e261b9f8-8212-499b-840e-eb6ea3e09447

Description: dbtde

DB Name: dbtde

DB Type: SI

CDB: false

Storage: ACFS

Home ID: e2a65596-6435-4410-9e8d-6b21a6005779

TDE Wallet Management: ODA

TDE Enabled: true

KeystoreType : OKV
```

 Create the database directory in the Oracle Key Vault-enabled destination database for the import operation. The source database expdp dump file and output for impdp is stored in the database directory object. Copy the expdp dump file from the source database server to this server, and use the impdp dump file to add tablespace metadata to destination database.

```
###
### login as sysdba user and run the following:
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps_dir';
```

Directory created.

3. Import the TBS01 tablespace to the destination database DBTDE. Copy the expdp dump file of the source database to the database directory ttsps_dir. The impdp uses the dump file to add tablespace metadata to destination database. TRANSPORT_DATAFILES references the location of the data file in the destination database.

```
###
### Run impdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ impdp system TRANSPORT DATAFILES=\'/u02/app/oracle/oradata/dbtde/DBTDE/
datafile/o1 mf tbs01 lnlgn65j .dbf\' DIRECTORY=ttsps dir
dumpfile=expttps.dmp
Import: Release 19.0.0.0.0 - Production on Mon Nov 6 12:53:37 2023
Version 19.25.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Master table "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully loaded/
unloaded
Starting "SYSTEM"."SYS IMPORT TRANSPORTABLE 01": system/*******
TRANSPORT DATAFILES='/u02/app/oracle/oradata/dbtde/DBTDE/datafile/
o1 mf tbs01 lnlgn65j .dbf' DIRECTORY=ttsps dir dumpfile=expttps.dmp
```



```
Processing object type TRANSPORTABLE_EXPORT/PLUGTS_BLK
Processing object type TRANSPORTABLE_EXPORT/TABLE
Processing object type TRANSPORTABLE_EXPORT/STATISTICS/TABLE_STATISTICS
Processing object type TRANSPORTABLE_EXPORT/POST_INSTANCE/PLUGTS_BLK
Job "SYSTEM"."SYS_IMPORT_TRANSPORTABLE_01" successfully completed at Mon
Nov 6 12:53:46 2023 elapsed 0 00:00:03
```

Enable and test encryption on the destination Oracle Key Vault-enabled database.

```
###
### login as oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
```

SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	STATUS	ENC
SYSTEM	ONLINE	YES
SYSAUX	ONLINE	YES
UNDOTBS1	ONLINE	YES
TEMP	ONLINE	YES
USERS	ONLINE	YES
TBS01	READ ONLY	Y NO

SQL> alter tablespace TBS01 read write ;

Tablespace altered.

encrypt TBS01. In case encrypt operation is interrupted , run 'alter tablespace TBS01 encryption online finish encrypt ;'

SQL> alter tablespace TBS01 encryption online encrypt ;

Tablespace altered.

SQL> select TABLESPACE_NAME, STATUS , ENCRYPTED from dba_tablespaces ;

TABLESPACE_NAME	STATUS	ENC
SYSTEM	ONLINE	YES
SYSAUX	ONLINE	YES
UNDOTBS1	ONLINE	YES
TEMP	ONLINE	YES
USERS	ONLINE	YES
TBS01	ONLINE	YES

###
Retrieve the data from TAB1
###

SQL> select OWNER, table name from tab1 where rownum < 3;



OWNER _____ _____ ____ TABLE NAME _____ ____ SYS TS\$ SYS ICOL\$ ### ### When the wallet is closed or unavailable, same SQL does not retrieve data ### To simulate wallet absence rename the cwallet.sso wallet under <wallet root>/tde to some other name like cwallet.sso.orig ### and close the wallet. To return auto-login wallet , rename file back to cwallet.sso and run the SQL again. ### SQL> show parameter wallet root TYPE NAME VALUE _____ wallet root string /etc/OKV/dbtde

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Migrating Tablespaces from Non-TDE Oracle ASM Database to Oracle ASM Database on Oracle Database Appliance

Understand how you can migrate tablespaces from non-TDE Oracle ASM database to Oracle ASM database with Oracle Key Vault enabled on Oracle Database Appliance.

Ensure that there is a source and destination database. The two databases can be on one Oracle Database Appliance server or on different servers. The source database must be an non TDE-enabled database, either an Oracle Database Appliance database or any Oracle database with compatible Endian. The destination database must be an Oracle Database Appliance database created with ODACLI commands and with Oracle Key Vault enabled on it.

Step 1: Export the tablespace from the source database

 Consider that the source database has a tablespace TBS01 to be migrated to the destination database. Provide information about the tablespace.

 SQL> select TABLESPACE_NAME, STATUS , ENCRYPTED from dba_tablespaces ;

 TABLESPACE_NAME
 STATUS

 SYSTEM
 ONLINE

 SYSAUX
 ONLINE

 UNDOTBS1
 ONLINE



TEMP	ONLINE	NO
USERS	ONLINE	NO
TBS01	ONLINE	NO

SQL> SQL> select FILE_NAME from dba_data_files where TABLESPACE NAME='TBS01' ;

```
FILE_NAME
```

+DATA/ASMNOTDE/DATAFILE/tbs01.374.1152267015

```
###
### Checks if a set of tablespaces (to be transported) is self-contained
###
```

SQL> EXECUTE DBMS_TTS.TRANSPORT_SET_CHECK('tbs01',true) ;

PL/SQL procedure successfully completed.

 Create the database directory in the source database ASMNOTDE to use for the export. Create a database directory object in the destination database for expdp.

```
###
### login as oracle user
###
$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps_dir
mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump/ttsps_dir'
###
#### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps_dir';
Directory created
```

- Directory created.
- 3. Export the TBS01 tablespace from the souce database ASMNOTDE. First, set the tablespace to be copied in READ ONLY mode. Next, run expdp on the designated tablespace. Review the dump files for expdp stored under the database directory ttsps dir.

```
###
### Set the tablespaces that you need to be exported in read-only mode
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
SQL> ALTER TABLESPACE TBS01 READ ONLY;
Tablespace altered.
```



```
SOL>
###
### Run expdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ expdp system TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES
DIRECTORY=ttsps dir DUMPFILE=expttpsasm.dmp
Export: Release 19.0.0.0.0 - Production on Tue Nov 7 10:12:19 2023
Version 19.25.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Starting "SYSTEM"."SYS EXPORT TRANSPORTABLE 01": system/*******
TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES DIRECTORY=ttsps dir
DUMPFILE=expttpsasm.dmp
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
Master table "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully loaded/
unloaded
          *****
* * *
Dump file set for SYSTEM.SYS EXPORT TRANSPORTABLE 01 is:
 /u01/app/odaorabase0/oracle/dpdump/ttsps dir/expttpsasm.dmp
                                                               ********
* * *
Datafiles required for transportable tablespace TBS01:
 +DATA/ASMNOTDE/DATAFILE/tbs01.374.1152267015
Job "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully completed at Tue
Nov 7 10:12:49 2023 elapsed 0 00:00:20
```

4. Move data files to the destination database server and edit the status of the data file in the source database ASMNOTDE to READ WRITE.

```
###
### login to grid user
### Copying datafiles from ASM to filesystem
###
$ asmcmd cp +DATA/ASMNOTDE/DATAFILE/tbs01.295.1165369089 /home/grid/
tbs01.dbf
copying +DATA/ASMNOTDE/DATAFILE/tbs01.295.1165369089 -> /home/grid/
tbs01.dbf
###
```

In source database, set the tablespace back to read write mode

```
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> ALTER TABLESPACE TBS01 READ WRITE;
```

Step 2: Import the tablespaces into a TDE-enabled database

 Create a TDE-enabled database with Oracle Key Vault, ASMTDE as the destination database. Copy the data file and tablespace of the source database to this database using expdp and impdp. Create the database on an Oracle Database Appliance using the Browser User Interface (BUI) or ODACLI commands. For example:

```
# odacli create-database -n asmtde -t -kt okv -osc adminobj1 -dh
   e2a65596-6435-4410-9e8d-6b21a6005779 -r ASM
   # odacli describe-database -n asmtde
   Database details
    _____
                      ID: 5dfa97d9-d774-4a4a-93a2-d21a36faf283
              Description: asmtde
                  DB Name: asmtde
                  DB Type: SI
                     CDB: false
                  Storage: ASM
                  Home ID: e2a65596-6435-4410-9e8d-6b21a6005779
     TDE Wallet Management: ODA
              TDE Enabled: true
            KeystoreType : OKV
Copy the data file from file system to the destination Oracle ASM location of ASMTDE.
   ###
   ### login to grid user
   ###
   $ asmcmd cp /home/grid/tbs01.dbf +DATA/ASMTDE/DATAFILE/tbs01 --dest dbname
   ASMTDE
   copying /home/grid/tbs01.dbf -> +DATA/ASMTDE/DATAFILE/tbs01
   ASMCMD> ls --permission
   User
                                          Group Permission Name
   dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                                rw-----
   SYSAUX.292.1165368127
   dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                                 rw-----
   SYSTEM.279.1165368093
   dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                                 rw-----
   UNDOTBS1.290.1165368143
   dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                                 rw-----
   USERS.288.1165368875
     grid@66d5786e6a057fd3bfa6ca745d993aef
                                                 rw----- tbs01 => +DATA/
   ASMTDE/DATAFILE/tbs01.294.1165425531
     grid@66d5786e6a057fd3bfa6ca745d993aef
                                                 rw-----
   tbs01.294.1165425531
```

```
ASMCMD> chown dbusr1@66d5786e6a057fd3bfa6ca745d993aef tbs01
ASMCMD> ls --permission
User
                                       Group Permission Name
dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                              rw-----
SYSAUX.292.1165368127
dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                               rw-----
SYSTEM.279.1165368093
dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                               rw-----
UNDOTBS1.290.1165368143
dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                               rw-----
USERS.288.1165368875
dbusr1@66d5786e6a057fd3bfa6ca745d993aef
                                               rw----- tbs01 => +DATA/
OKVDB2/DATAFILE/tbs012.294.1165425531
                                               rw-----
dbusr1@66d5786e6a057fd3bfa6ca745d993aef
tbs01.294.1165425531
```

3. Create the database directory in the ASMTDE database for the import.

```
###
### login as oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SOL> CDEATE DIRECTORY traps dir AS !(u01(app(odsorsbase0(oracle/dpdum
###
```

SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/ ttsps_dir';

Directory created.

4. Import the TBS01 tablespace to the destination database ASMTDE. Copy the expdp dump file of the source database to the database directory ttsps_dir. The impdp uses the dump file to add tablespace metadata to destination database. TRANSPORT_DATAFILES references the location of the data file in the destination database.

```
###
### Run impdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ impdp system TRANSPORT DATAFILES=\'/u02/app/oracle/oradata/dbtde/DBTDE/
datafile/o1 mf tbs01 lnlgn65j .dbf\' DIRECTORY=ttsps dir
dumpfile=expttps.dmp
Import: Release 19.0.0.0.0 - Production on Mon Nov 6 12:53:37 2023
Version 19.25.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Master table "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully loaded/
unloaded
Starting "SYSTEM"."SYS IMPORT TRANSPORTABLE 01": system/*******
TRANSPORT DATAFILES='/u02/app/oracle/oradata/dbtde/DBTDE/datafile/
```



ol_mf_tbs01_lnlgn65j_.dbf' DIRECTORY=ttsps_dir dumpfile=expttps.dmp Processing object type TRANSPORTABLE_EXPORT/PLUGTS_BLK Processing object type TRANSPORTABLE_EXPORT/TABLE Processing object type TRANSPORTABLE_EXPORT/STATISTICS/TABLE_STATISTICS Processing object type TRANSPORTABLE_EXPORT/POST_INSTANCE/PLUGTS_BLK Job "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully completed

5. Enable and test encryption on the destination Oracle Key Vault-enabled database.

```
###
### login as oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
```

SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	STATUS	S ENC
SYSTEM	ONLINE	NO
SYSAUX	ONLINE	NO
UNDOTBS1	ONLINE	NO
TEMP	ONLINE	NO
USERS	ONLINE	YES
TBS01	READ ONLY	NO

6 rows selected.

SQL> alter tablespace TBS01 read write ;

Tablespace altered.

encrypt TBS01. In case encrypt operation is interrupted , run 'alter tablespace TBS01 encryption online finish encrypt ;'

SQL> alter tablespace TBS01 encryption online encrypt ;

Tablespace altered.

SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	STATU	S ENC
SYSTEM	ONLINE	NO
SYSAUX	ONLINE	NO
UNDOTBS1	ONLINE	NO
TEMP	ONLINE	NO
USERS	ONLINE	YES
TBS01	ONLINE	YES

6 rows selected.

Retrieve the data from TAB1



```
SQL> select OWNER, table name from tab1 where rownum < 3
OWNER
_____
____
TABLE NAME
_____
____
SYS
TS$
SYS
ICOL$
###
### When the wallet is closed or unavailable, same SQL does not retrieve
data
### To simulate wallet absence rename the cwallet.sso wallet under
<wallet root>/tde to some other name like cwallet.sso.orig
### and close the wallet. To return auto-login wallet , rename file back
to cwallet.sso and run the SQL again.
###
SQL> show parameter wallet root
NAME
                  TYPE VALUE
_____ __ ___
wallet root
                  string /etc/OKV/asmtde
```

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Migrating Tablespaces from Non-TDE Oracle ACFS Database to Oracle ACFS CDB Database on Oracle Database Appliance

Understand how you can migrate tablespaces from non-TDE Oracle ACFS database to Oracle ACFS CDB database with Oracle Key Vault enabled on Oracle Database Appliance.

Ensure that there is a source and destination database. The two databases can be on one Oracle Database Appliance server or on different servers. The source database must be an non TDE-enabled database, either an Oracle Database Appliance database or any Oracle database with compatible Endian. The destination database must be an Oracle Database Appliance database created with ODACLI commands and with Oracle Key Vault enabled on it.

Step 1: Export the tablespace from the source database

 Ensure that the source database has a tablespace TBS01 to be migrated to the destination database. Find the information about the tablespace.

```
###
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
```



SQL> select TABLESPACE_NAME, ENCRYPTED from dba_tablespaces ;

TABLESPACE_NAME	STATUS		ENC
SYSTEM	ONLINE	NO	
SYSAUX	ONLINE	NO	
UNDOTBS1	ONLINE	NO	
TEMP	ONLINE	NO	
USERS	ONLINE	NO	
TBS01	ONLINE	NO	

SQL> select FILE_NAME from dba_data_files where TABLESPACE_NAME='TBS01' ;

FILE NAME

/u02/app/oracle/oradata/dbnotde/DBNOTDE/datafile/o1_mf_tbs01_lnlgn65j_.dbf

SQL>

Checks if a set of tablespaces (to be transported) is self-contained

```
SQL> EXECUTE DBMS TTS.TRANSPORT SET CHECK('tbs01',true) ;
```

PL/SQL procedure successfully completed.

2. Create the database directory in the source database DBNOTDE to be used for the export. Create a database directory object in the destination database to be used by expdp.

```
###
### login as oracle user
###
$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps_dir
mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump/ttsps_dir'
###
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps_dir';
Directory created.
SQL>
```



 Export the TBS01 tablespace from souce database DBNOTDE. First, set the tablespace to be copied in READ ONLY mode. Next, run expdp on the designated tablespace. Review the log files for expdp stored under the database directory ttsps dir.

```
###
### login as oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> ALTER TABLESPACE TBS01 READ ONLY;
Tablespace altered.
###
### Run expdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ expdp system TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES
DIRECTORY=ttsps dir DUMPFILE=expttps.dmp
Export: Release 19.0.0.0.0 - Production on Mon Nov 6 12:47:00 2023
Version 19.25.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Starting "SYSTEM"."SYS EXPORT TRANSPORTABLE 01": system/*******
TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES DIRECTORY=ttsps dir
DUMPFILE=expttps.dmp
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
Master table "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully loaded/
unloaded
* * *
Dump file set for SYSTEM.SYS EXPORT TRANSPORTABLE 01 is:
 /u01/app/odaorabase0/oracle/dpdump/ttsps dir/expttps.dmp
*****
***
Datafiles required for transportable tablespace TBS01:
 /u02/app/oracle/oradata/dbnotde/DBNOTDE/datafile/
o1 mf tbs01 lnlgn65j .dbf
Job "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully completed at Mon
Nov 6 12:47:19 2023 elapsed 0 00:00:14
```

 Move data files to the destination database server and edit the status of the data file in the source database DBNOTDE to READ WRITE. Move the data file to the TDE-enabled database server in the PDB2 data files location.

```
###
### login as oracle user
###
$ cp /u02/app/oracle/oradata/dbnotde/DBNOTDE/datafile/
o1_mf_tbs01_lnlgn65j_.dbf /u02/app/oracle/oradata/cdbtde/CDBTDE/
092546916A493FE5E063E730850AF5BE/datafile/
###
####
#### In source database, set the tablespace back to read write mode
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> ALTER TABLESPACE TBS01 READ WRITE;
```

Step 2: Import the tablespaces into a TDE-enabled database

 Create a TDE-enabled database with Oracle Key Vault, CDBTDE as the destination database. Copy the data file and tablespace of the source database to this database using expdp and impdp. Create the database on an Oracle Database Appliance using the Browser User Interface (BUI) or ODACLI commands. For example:

```
# odacli create-database -n okvdb2 -t -kt okv -osc adminobj1 -dh
e2a65596-6435-4410-9e8d-6b21a6005779 -r ACFS --cdb -d pdbadmin -p pdb2
# odacli describe-database -n cdbtde
Database details
 _____
                   ID: c1ba7c6a-2808-4a20-bf23-e35cb62c3fd0
           Description: cdbtde
              DB Name: cdbtde
               DB Type: SI
                  CDB: true
              PDB Name: PDB2
   PDB Admin User Name: pdbadmin
               Storage: ACFS
              Home ID: e2a65596-6435-4410-9e8d-6b21a6005779
 TDE Wallet Management: ODA
           TDE Enabled: true
         KeystoreType : OKV
###
### login as oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
### Take a note of PDB2 GUID which helps to determine the path of PDB2
datafiles
###
SQL> col PDB NAME for a20
```



SQL> select PDB_NAME,GUID from dba_pdbs ; PDB_NAME GUID PDB2 092546916A493FE5E063E730850AF5BE PDB\$SEED 15998A6665985353E063BE6B1F0A494A

2. Create thsnames service for PDB2.

```
###
### Edit the file $ORACLE_HOME/network/admin/tnsnames.ora with the
following content
###
$ srvctl add service -db cdbtde -service cdbtde_pdb2 -pdb pdb2 -role
PRIMARY -policy AUTOMATIC
$ srvctl start service -db cdbtde -service cdbtde_pdb2
CDBTDE_PDB2 =
  (DESCRIPTION =
   (ADDRESS = (PROTOCOL = TCP)(HOST = <server-name>)(PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
   (SERVICE NAME = cdbtde pdb2.test)
```

3. Create directory in PDB2 for the import.

```
###
### login as oracle user
###
$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps_dir
mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump/ttsps_dir'
###
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> ALTER SESSION SET CONTAINER=PDB2 ;
SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps_dir';
Directory created.
SQL>
```

4. Import the TBS01 tablespace to the destination database PDB2 container on CDBTDE. Copy the expdp dump file of the source database to the database directory ttsps_dir. The impdp uses the dump file to add tablespace metadata to destination database. TRANSPORT_DATAFILES references the location of the data file in the destination database.

###
Run impdb as SYSTEM user, password for SYSTEM need to be entered when
prompted

###

\$ impdp system@pdb2 TRANSPORT DATAFILES=\'/u02/app/oracle/oradata/cdbtde/ CDBTDE/092546916A493FE5E063E730850AF5BE/datafile/ o1 mf tbs01 lnlgn65j .dbf/' DIRECTORY=ttsps dir dumpfile=exp1.dmp Import: Release 19.0.0.0.0 - Production on Thu Nov 9 21:42:25 2023 Version 19.25.0.0.0 Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved. Password: Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -Production Master table "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully loaded/ unloaded Starting "SYSTEM"."SYS IMPORT TRANSPORTABLE 01": system/******@pdb2 TRANSPORT DATAFILES='/u02/app/oracle/oradata/cdbtde/CDBTDE/ 092546916A493FE5E063E730850AF5BE/datafile/o1_mf_tbs01_lnlgn65j_.dbf' DIRECTORY=ttsps dir dumpfile=expl.dmp Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK Processing object type TRANSPORTABLE EXPORT/TABLE Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS Processing object type TRANSPORTABLE EXPORT/STATISTICS/MARKER Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK Job "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully completed at Thu Nov 9 21:42:52 2023 elapsed 0 00:00:19

Enable and test encryption on the destination Oracle Key Vault-enabled database PDB1.

###
login as oracle user
Connect to database using SQLPLUS as sysdba user (sqlplus / as
sysdba) and run the following
###

SQL> alter session set container=pdb2 ;

Session altered.

SQL> select TABLESPACE NAME, STATUS , ENCRYPTED from dba tablespaces ;

TABLESPACE_NAME	STATUS	S ENC
SYSTEM	ONLINE	NO
SYSAUX	ONLINE	NO
UNDOTBS1	ONLINE	NO
TEMP	ONLINE	NO
USERS	ONLINE	NO
TBS01	READ ONLY	NO

SQL> alter tablespace TBS01 read write ;

Tablespace altered.



encrypt TBS01. In case encrypt operation is interrupted , run 'alter tablespace TBS01 encryption online finish encrypt ;'

SQL> alter tablespace TBS01 encryption online encrypt ;

Tablespace altered.

SQL> select TABLESPACE_NAME, STATUS , ENCRYPTED from dba_tablespaces ;

TABLESPACE_NAME	STATUS	S ENC
SYSTEM	ONLINE	NO
SYSAUX	ONLINE	NO
UNDOTBS1	ONLINE	NO
TEMP	ONLINE	NO
USERS	ONLINE	NO
TBS01	ONLINE	YES

SQL> select FILE_NAME from dba_data_files where TABLESPACE_NAME='TBS01' ;

```
FILE_NAME
______
/u02/app/oracle/oradata/cdbtde/CDBTDE/092546916A493FE5E063E730850AF5BE/
datafile/
o1 mf tbs01 lnx8h50f .dbf
```

```
###
### Retrieve the data from TAB1
```

```
###
```

SQL> select OWNER, table_name from tab1 where rownum < 3

```
OWNER
```

```
TABLE_NAME
-----
SYS
TS$
```

SYS ICOL\$

###

When the wallet is closed or unavailable, same SQL does not retrieve
data
To simulate wallet absence rename the cwallet.sso wallet under
<wallet_root>/tde to some other name like cwallet.sso.orig
and close the wallet. To return auto-login wallet , rename file back
to cwallet.sso and run the SQL again.



###							
SQL> show parameter wallet_root							
NAME	TYPE	VALUE					
wallet_root	string	/etc/OKV/cdbtde					

Related Topics

odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.

Migrating Tablespaces from Non-TDE Oracle ASM Database to Oracle ASM CDB Database on Oracle Database Appliance

Understand how you can migrate tablespaces from non-TDE Oracle ASM database to Oracle ASM CDB database with Oracle Key Vault enabled on Oracle Database Appliance.

Ensure that there is a source and destination database. The two databases can be on one Oracle Database Appliance server or on different servers. The source database must be an non TDE-enabled database, either an Oracle Database Appliance database or any Oracle database with compatible Endian. The destination database must be an Oracle Database Appliance database created with ODACLI commands and with Oracle Key Vault enabled on it.

Step 1: Export the tablespace from the source database

 Ensure that the source database has a tablespace TBS01 to be migrated to the destination database. Find the information about the tablespace.

SQL> SQL> select TABLESPACE NAME, ENCRYPTED from dba tablespaces ; TABLESPACE NAME STATUS ENC _____ ____ SYSTEM ONLINE NO SYSAUX ONLINE NO UNDOTBS1 ONLINE NO TEMP ONLINE NO USERS ONLINE NO TBS01 ONLINE NO SQL> select FILE NAME from dba data files where TABLESPACE NAME='TBS01' ; FILE NAME _____ _____ +DATA/ASMNOTDE/DATAFILE/tbs01.374.1152267015 ### ### Checks if a set of tablespaces (to be transported) is self-contained ### SQL> EXECUTE DBMS TTS.TRANSPORT SET CHECK('tbs01',true) ; PL/SQL procedure successfully completed.



 Create the database directory in the source database ASMNOTDE to use for the export. Create a database directory object in the destination database for expdp.

```
###
   ### login as oracle user
   ###
   $ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps dir
   mkdir: created directory \/u01/app/odaorabase0/oracle/dpdump/ttsps dir'
   ###
   ### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
   sysdba ) and run the following
   ###
   SQL> CREATE DIRECTORY ttsps dir AS '/u01/app/odaorabase0/oracle/dpdump/
   ttsps dir';
   Directory created.

    Export the TBS01 tablespace from the souce database ASMNOTDE. First, set the

   tablespace to be copied in READ ONLY mode. Next, run expdp on the designated
   tablespace. Review the dump files for expdp stored under the database directory
   ttsps dir.
   ###
   ### Set the tablespaces that you need to be exported in read-only mode
   ### login as Oracle user
   ### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
   sysdba ) and run the following
   SQL> ALTER TABLESPACE TBS01 READ ONLY;
   Tablespace altered.
   SQL>
   ###
   ### Run expdb as SYSTEM user, password for SYSTEM need to be entered when
   prompted
   ###
```

\$ expdp system TRANSPORT_TABLESPACES=TBS01 TRANSPORT_FULL_CHECK=YES DIRECTORY=ttsps dir DUMPFILE=expttpsasm.dmp

Export: Release 19.0.0.0.0 - Production on Tue Nov 7 10:12:19 2023 Version 19.25.0.0.0

Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved. Password:

Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production



```
Starting "SYSTEM"."SYS EXPORT TRANSPORTABLE 01": system/*******
TRANSPORT TABLESPACES=TBS01 TRANSPORT FULL CHECK=YES DIRECTORY=ttsps dir
DUMPFILE=expttpsasm.dmp
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
Master table "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully loaded/
unloaded
+++
Dump file set for SYSTEM.SYS EXPORT TRANSPORTABLE 01 is:
 /u01/app/odaorabase0/oracle/dpdump/ttsps dir/expttpsasm.dmp
***
Datafiles required for transportable tablespace TBS01:
 +DATA/ASMNOTDE/DATAFILE/tbs01.374.1152267015
Job "SYSTEM"."SYS EXPORT TRANSPORTABLE 01" successfully completed at Tue
Nov 7 10:12:49 2023 elapsed 0 00:00:20
```

 Move data files to the destination database server and edit the status of the data file in the source database ASMNOTDE to READ WRITE.

```
###
### login to grid user
### Copying datafiles from ASM to filesystem
###
$ asmcmd cp +DATA/ASMNOTDE/DATAFILE/tbs01.374.1152267015 /home/grid/
tbs01.dbf
copying +DATA/ASMNOTDE/DATAFILE/tbs01.374.1152267015 -> /home/grid/
tbs01.dbf
###
### In source database, set the tablespace back to read write mode
### login as Oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
```

SQL> ALTER TABLESPACE TBS01 READ WRITE;

Step 2: Import the tablespaces into a TDE-enabled database

 Create a TDE-enabled database with Oracle Key Vault, ASMTDE as the destination database. Copy the data file and tablespace of the source database to this database using expdp and impdp. Create the database on an Oracle Database Appliance using the Browser User Interface (BUI) or ODACLI commands. For example:

```
# odacli create-database -n asmtde -t -kt okv -osc adminobj1 -dh
e2a65596-6435-4410-9e8d-6b21a6005779 -r ASM --cdb -d pdbadmin -p pdb1
# odacli describe-database -n asmtde
Database details
```



```
_____
                          _____
                  ID: 5dfa97d9-d774-4a4a-93a2-d21a36faf283
          Description: asmtde
             DB Name: asmtde
              DB Type: SI
                 CDB: true
             PDB Name: PDB1
   PDB Admin User Name: pdbadmin
             Storage: ASM
             Home ID: e2a65596-6435-4410-9e8d-6b21a6005779
 TDE Wallet Management: ODA
          TDE Enabled: true
        KeystoreType : OKV
###
### login as oracle user
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> col PDB NAME for a20
SQL> select PDB NAME, GUID from dba pdbs ;
PDB NAME
             GUID
-----
PDB1
              1599A96E256A8B99E063BE6B1F0AC02B
PDB$SEED
             15998A6665985353E063BE6B1F0A494A
```

 Copy the data file from file system to the destination Oracle ASM location of ASMTDE. Ensure that you set the relevant permissions after copying the file.

```
###
### login to grid user
###
$ asmcmd cp /home/grid/tbs01.dbf +DATA/ASMTDE/
1599A96E256A8B99E063BE6B1F0AC02B/DATAFILE/tbs01 --dest_dbname ASMTDE
copying /home/grid/tbs01.dbf -> +DATA/ASMTDE/
1599A96E256A8B99E063BE6B1F0AC02B/DATAFILE/tbs01
```

\$ asmcmd

```
ASMCMD> pwd
+DATA/ASMTDE/1599A96E256A8B99E063BE6B1F0AC02B/DATAFILE
ASMCMD> ls --permission
User
                                      Group Permission Name
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                             rw-----
SYSAUX.332.1165769683
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                             rw-----
SYSTEM.333.1165769683
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                             rw-----
UNDOTBS1.331.1165769683
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                             rw-----
USERS.335.1165769685
```



```
grid@00eea686ffb0ff1bbf28c0b8362cccf6 rw----- tbs01 => +DATA/
ASMTDE/DATAFILE/tbs01.338.1165770781
```

```
ASMCMD> chown dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6 tbs01
ASMCMD>
ASMCMD> ls --permission
User
                                        Group Permission Name
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                               rw-----
SYSAUX.332.1165769683
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                               rw-----
SYSTEM.333.1165769683
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                               rw-----
UNDOTBS1.331.1165769683
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                               rw-----
USERS.335.1165769685
dbusr1@00eea686ffb0ff1bbf28c0b8362cccf6
                                               rw----- tbs01 => +DATA/
ASMTDE/DATAFILE/tbs01.338.1165770781
```

3. Create thsnames service for PDB1.

```
###
### Edit the file $ORACLE_HOME/network/admin/tnsnames.ora with the
following content
###
$ srvctl add service -db asmtde -service asmtde_pdb1 -pdb pdb1 -role
PRIMARY -policy AUTOMATIC
$ srvctl start service -db asmtde -service asmtde_pdb1
ASMTDE_PDB1 =
  (DESCRIPTION =
   (ADDRESS = (PROTOCOL = TCP)(HOST = <server-name>)(PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
   (SERVICE NAME = asmtde pdb1.test)
```

4. Create the directory in PDB1 for the import.

```
###
### login as oracle user
###
$ mkdir -pv /u01/app/odaorabase0/oracle/dpdump/ttsps_dir
mkdir: created directory '/u01/app/odaorabase0/oracle/dpdump/ttsps_dir'
###
### Connect to database using SQLPLUS as sysdba user ( sqlplus / as
sysdba ) and run the following
###
SQL> ALTER SESSION SET CONTAINER=PDB1 ;
SQL> CREATE DIRECTORY ttsps_dir AS '/u01/app/odaorabase0/oracle/dpdump/
ttsps_dir';
Directory created.
```



SQL>

5. Import the tablespace to PDB1. Copy the expdp dump file of the source database to the database directory ttsps_dir. The impdp uses the dump file to add tablespace metadata to destination database. TRANSPORT_DATAFILES references the location of the data file in the destination database.

```
###
### Run impdb as SYSTEM user, password for SYSTEM need to be entered when
prompted
###
$ impdp system@asmtde pdb1 TRANSPORT DATAFILES=\'+DATA/ASMTDE/
1599A96E256A8B99E063BE6B1F0AC02B/DATAFILE/tbs01\' DIRECTORY=ttsps dir
dumpfile=expttpsasm.dmp
Import: Release 19.0.0.0.0 - Production on Mon Apr 8 17:52:09 2024
Version 19.23.0.0.0
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights
reserved.
Password:
Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Master table "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully loaded/
unloaded
Starting "SYSTEM"."SYS IMPORT TRANSPORTABLE 01": system/******@pdb1
TRANSPORT DATAFILES='+DATA/ASMTDE/1599A96E256A8B99E063BE6B1F0AC02B/
DATAFILE/tbs01' DIRECTORY=ttsps dir dumpfile=expttpsasm.dmp
Processing object type TRANSPORTABLE EXPORT/PLUGTS BLK
Processing object type TRANSPORTABLE EXPORT/TABLE
Processing object type TRANSPORTABLE EXPORT/STATISTICS/TABLE STATISTICS
Processing object type TRANSPORTABLE EXPORT/POST INSTANCE/PLUGTS BLK
Job "SYSTEM"."SYS IMPORT TRANSPORTABLE 01" successfully completed at Mon
Apr 8 17:52:18 2024 elapsed 0 00:00:03
```

6. Enable and test encryption on the destination Oracle Key Vault-enabled database PDB1.

ONLINE NO



SYSAUX

UNDOTBS1	ONLIN	NO	
TEMP	ONLIN	NO	
USERS	ONLIN	NO	
TBS01	READ	ONLY	NO

6 rows selected.

SQL> alter tablespace TBS01 read write ;

Tablespace altered.

encrypt TBS01. In case encrypt operation is interrupted , run 'alter tablespace TBS01 encryption online finish encrypt ;'

SQL> alter tablespace TBS01 encryption online encrypt ;

Tablespace altered.

SQL> select TABLESPACE_NAME, STATUS , ENCRYPTED from dba_tablespaces ;

TABLESPACE_NAME	STATU	JS	ENC			
SYSTEM	ONLINE	NO				
SYSAUX	ONLINE	NO				
UNDOTBS1	ONLINE	NO				
TEMP	ONLINE	NO				
USERS	ONLINE	NO				
TBS01	ONLINE	YES				
6 rows selected.						
###						
<pre>### Retrieve the dat ###</pre>	ca from TAB1					
SQL> select OWNER, 1 2 ;	table_name fr	rom ta	abl where	rownum <	3	
OWNER						
TABLE_NAME						
SYS						
TS\$						
SYS						
ICOL\$						
<pre>### ### When the wallet data</pre>	is closed or	r una	vailable,	same SÇ	L does no	t retrieve
<pre>### To simulate wall <wallet root="">/tde to</wallet></pre>						ıder



Related Topics

• odacli Multi-User Access Commands Use odacli commands to enable multi-user access for the appliance.



Managing Storage

Understand the storage options and how to manage storage for your Oracle Database Appliance deployment.

- About Managing Storage
 Understand Oracle Database Appliance storage options.
- About Managing Oracle ASM Disks Understand the Oracle ASM disk management features that Oracle Database Appliance supports.
- Managing Storage on Single-Node Systems
 Understand the storage options for your Oracle Database Appliance X11-S and X11-L systems.
- Managing Storage on High-Availability Systems
 Understand the storage for your Oracle Database Appliance X11-HA system.

About Managing Storage

Understand Oracle Database Appliance storage options.

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

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

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

Oracle Database Appliance X11-L and X11-HA models provide storage expansion options from the base configuration. In addition, on Oracle Database Appliance X11-HA multi-node platforms, you can add an optional storage expansion shelf.

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

About Managing Oracle ASM Disks

Understand the Oracle ASM disk management features that Oracle Database Appliance supports.

Oracle Database Appliance enables you to manage your Oracle ASM disks.

Bringing Oracle ASM Disk Groups Online Automatically

Oracle Database Appliance periodically checks the status of Oracle ASM disks in disk groups. If any Oracle ASM disk is OFFLINE due to transient disk errors, then Oracle Database Appliance attempts to bring the disk ONLINE.



Optimizing Oracle ASM Disk Group Rebalance Operations

Oracle Database Appliance ensures rebalancing of Oracle ASM disks to complete as quickly as possible, without overloading the system and the disks at the same time. This ensures that the system is in a steady state running with the appropriate redundancy. There are default thresholds for the values for rebalancing operations, and you can also set the custom threshold values. For example:

```
odacli modify-agentconfig-parameters -n ASMRM_CPU_RQ -v 50 -d "CPU RUN QUEUE
THRESHOLD" -u
odacli modify-agentconfig-parameters -n ASMRM_MAX_HDD_DISK_RQ -v 2 -d "HDD
DISK QUEUE THRESHOLD" -u
odacli modify-agentconfig-parameters -n ASMRM_MAX_SSD_DISK_RQ -v 32 -d "SSD
DISK QUEUE THRESHOLD" -u
odacli modify-agentconfig-parameters -n ASMRM_MAX_NVME_DISK_RQ -v 50 -d "NVME
DISK QUEUE THRESHOLD" -u
```

The above command options set custom threshold limits for rebalance monitoring of Oracle ASM disks.

You can monitor rebalance operations using the odacli describe-schedule -i *Schedule ID* and odacli list-scheduled-executions commands.

Managing Storage on Single-Node Systems

Understand the storage options for your Oracle Database Appliance X11-S and X11-L systems.

- About Storage on Oracle Database Appliance X11-S and X11-L Understand the storage for your Oracle Database Appliance single-node system.
- Adding Small Form Factor (SFF) NVMe Storage Disks
 Depending on the available drives, you can expand Oracle Database Appliance X11-L
 storage to add Small Form Factor (SFF) NVMe disks or replace existing NVMe disks.
- Adding Add-in-Card (AIC) NVMe Storage Disks You can expand Oracle Database Appliance X11-L storage with two or four Add-in-Card (AIC) NVMe disks. Oracle Database Appliance X11-L supports a maximum of four AICs.
- Replacing Small Form Factor (SFF) NVMe Storage Disks Understand how you can replace existing SFF NVMe disks on Oracle Database Appliance.

About Storage on Oracle Database Appliance X11-S and X11-L

Understand the storage for your Oracle Database Appliance single-node system.

Oracle Database Appliance X11-S has two 6.8TB NVMe disks that host DATA and RECO disk groups. There are ten partitions that you can divide between DATA and RECO for Oracle ASM storage information. By default, DATA has an eight partition configuration and RECO has a two partition configuration. The storage capacity is fixed and cannot be expanded.

Oracle Database Appliance X11-L has two form factor-based NVMe disks namely Small Form Factor (SFF) and AIC (Add-in-Card). Both form factor NVMe disks are of 6.8TB storage capacity. SFF is a single disk of 6.8TB capacity whereas AIC has two NVMe disks each of 3.4TB capacity, with a combined storage capacity of 6.8TB. The default configuration for



Oracle Database Appliance X11-L is two 6.8TB NVMe disks that host DATA and RECO disk groups.

When you first deploy and configure X11-L in this release, you can set the storage on X11-L in multiple of 2 packs of NVMe and AIC drives, such as 2, 4, and 6 disks, up to a maximum of 8 disks.

Oracle Database Appliance X11-L supports four SFF NVMe disks and four AIC NVMe disks. You must populate all four SFF NVMe disks before you add AIC NVMe disks to the system.

The table describes the NVMe storage configurations with expansion memory and storage options for single-node systems.

Configuration	Oracle Database Appliance X11-S	Oracle Database Appliance X11-L
Base Configuration	2 x 6.8 TB NVMe = 13.6 TB NVMe	2 x 6.8 TB NVMe = 13.6 TB NVMe
Storage addition options	None	6x6.8TB NVMe storage drives for total storage of 54.4TB NVMe.
		You must populate all four SFF NVMe disks before you add AIC NVMe disks to the system.
		For the additional two SFF NVMe order the following:
		Qty:1 (Two 6.8TB 2.5-inch NVMe PCIe SFF SSD with marlin bracket for Oracle Database Appliance X11-L)
		For the additional four NVMe AIC SSDs (these are PCIe NVMe Flash Cards that require cover removal to install), order the following:
		Qty:1 for two, Qty:2 for four:
		Qty:1 - (Two 6.8 TB NVMe PCIe Cards for Oracle Database Appliance X11-L)

Table 11-1 Storage Options for Oracle Database Appliance X11-S and X11-L

Adding Small Form Factor (SFF) NVMe Storage Disks

Depending on the available drives, you can expand Oracle Database Appliance X11-L storage to add Small Form Factor (SFF) NVMe disks or replace existing NVMe disks.

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

Preparing for a Storage Upgrade

Review and perform these best practices before adding storage.

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

```
# odaadmcli show disk
```



2. Run the the odaadmcli show disk and asmcmd lsdsk -p commands to view and review the storage disk information in OAKD and Oracle Automatic Storage Management (Oracle ASM).

```
# odaadmcli show disk
# asmcmd lsdsk -p
```

3. Use ORAchk to confirm Oracle ASM and Oracle Clusterware health.

Adding Small Form Factor (SFF) NVMe Storage Disks

The default configuration for Oracle Database Appliance X11-S or X11-L includes two NVMe disks. You cannot expand storage for Oracle Database Appliance X11-S.

For Oracle Database Appliance X11-L, you can expand storage by adding two SFF NVMe disks followed by two or four Add-in-Cards (AIC).

Important:

You must populate all four SFF slots before adding AIC.

WARNING:

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

Follow all these steps to add SFF NVMe disks:

- Before adding the NVMe disks, ensure that the current disks are online in oakd and Oracle ASM. Otherwise, the prechecks fail. For example, for 2-disks expansion to slots 2 and 3, the disks in slots 0 and 1 must be online in Oracle ASM and oakd.
- 2. Insert each disk one at a time in the appropriate slot and wait for the disk to power ON.
- 3. The disk automatically powers on when you insert the disk in the slot. Wait for one minute and then check disk status. If the disk is in the ON state, then you need not power on the disk manually. If the disk state is OFF as per the disk status, and then power on the disk manually, and then check the status again.

odaadmcli power disk status slot number

odaadmcli power disk on *slot number*



For example, to add two (2) NVMe disks, insert the disks in slots 2 and 3.

```
# odaadmcli power disk status pd_02
# odaadmcli power disk on pd_02
# odaadmcli power disk status pd_03
# odaadmcli power disk on pd 03
```

- 4. Repeat steps 2 and 3 for each disk to be added.
- 5. Run the odaadmcli expand storage command to add the new storage disks. Note: You must run this step to add the storage disk. Otherwise, the newly-added disk is not visible to OAKD and hence does not display when you run the odaadmcli show disk or odaadmcli show storage commands. The newly-added disk is recognized by OAKD after the odaadmcli expand storage command completes running successfully.

```
# odaadmcli expand storage -ndisk number of disks
```

For example, to add two (2) NVMe drives:

#odaadmcli expand storage -ndisk 2
Running precheck, it may take a few minutes.
Precheck passed.
Check the progress of expansion of storage by executing 'odaadmcli show
disk'
Waiting for expansion to finish. It may take several minutes to complete
depending upon the number of disks being expanded

6. Check the status of the new disk in OAKD with the odaadmcli show disk command. The disk must have the status Online and Good in OAKD.

odaadmcli show disk
NAME PATH TYPE STATE STATE_DETAILS
pd_00 /dev/nvme0n1 NVD ONLINE Good
pd_01 /dev/nvme1n1 NVD ONLINE Good
pd_02 /dev/nvme3n1 NVD ONLINE Good
pd_03 /dev/nvme2n1 NVD ONLINE Good
#

- Verify that the disks in slots 2 and 3 are added to Oracle Automatic Storage Management (Oracle ASM) as follows. The new disk in Oracle ASM must be in CACHED MEMBER ONLINE NORMAL state.
 - a. Run asm_script to verify that the disks in slots 2 and 3 are added to Oracle ASM. Verify that both disks are successfully added (CACHED and MEMBER). Following is example of default configuration of 80:20 where eight partitions (p1 to p8) are part of the DATA disk group and two partitions (p9 and p10) are part of the RECO disk group.

```
# su gridUser /opt/oracle/oak/bin/stordiag/asm_script.sh 0 6
# su grid /opt/oracle/oak/bin/stordiag/asm_script.sh 0 6
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Dec 11 08:26:05 2024
Version 19.25.0.0.0
Copyright (c) 1982, 2024, Oracle. All rights reserved.
```

Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production Version 19.25.0.0.0 SQL> SQL> SQL> SQL> SQL> PATH NAME GROUP NUMBER STATE MODE ST MOUNT S HEADER STATU _____ _____ _____ AFD:NVD S02 S6UENA0TC001P1 NVD S02 S6UENA0TC001P1 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P10 NVD S02 S6UENA0TC001P10 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P2 NVD S02 S6UENA0TC001P2 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P3 NVD S02 S6UENA0TC001P3 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P4 NVD S02_S6UENA0TC001P4 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P5 NVD S02 S6UENA0TC001P5 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P6 NVD S02 S6UENA0TC001P6 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P7 NVD S02 S6UENA0TC001P7 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P8 NVD S02 S6UENA0TC001P8 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S02 S6UENA0TC001P9 NVD S02 S6UENA0TC001P9 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P1 NVD S03 S6UENA0TC001P1 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P10 NVD S03 S6UENA0TC001P10 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P2 NVD S03 S6UENA0TC001P2 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P3 NVD S03 S6UENA0TC001P3 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P4 NVD S03 S6UENA0TC001P4 1 NORMAL ONLINE CACHED MEMBER

AFD:NVD S03 S6UENA0TC001P5 NVD S03 S6UENA0TC001P5 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P6 NVD S03 S6UENA0TC001P6 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P7 NVD S03 S6UENA0TC001P7 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P8 NVD S03 S6UENA0TC001P8 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S03 S6UENA0TC001P9 NVD S03 S6UENA0TC001P9 2 NORMAL ONLINE CACHED MEMBER

SQL> Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production Version 19.25.0.0.0 [root@node1 ~]#

b. Use the odaadmcli show validation storage errors command to view 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.

odaadmcli show validation storage errors

c. Use the odaadmcli show validation storage failures command to view soft validation errors. A typical soft disk error would be an invalid version of the disk firmware.

odaadmcli show validation storage failures

d. Confirm that the oak_storage_conf.xml file shows the number of disks added. For example, if you added 2 disks to the base configuration, then the oak storage conf.xml file must show numberOfDisks as 4.

```
#cat /opt/oracle/oak/conf/oak storage conf.xml
<!--
This file is created by the Oracle Database Appliance software as part
of system provisioning based on system provisioning requests.
Values of element nodes can be hanged by OAK in response to storage
configuration change operation.
DO NOT EDIT THIS FILE.
-->
<CometConfiguration>
  <OakStorageConfigInfo type="string" dimension="vector"
readonly="true" required="true" default="">
    <!-- Number of disks part of OAK -->
    <numberOfDisks>4</numberOfDisks>
    <!-- Number of partitions per disk part of DATA diskgroup in
multiple partition scheme
                           -->
   <!-- Number of partitions per disk part of RECO diskgroup in
multiple partition scheme
                           -->
    <!-- are derived from number of partitions per disk which are
```

Adding Add-in-Card (AIC) NVMe Storage Disks

You can expand Oracle Database Appliance X11-L storage with two or four Add-in-Card (AIC) NVMe disks. Oracle Database Appliance X11-L supports a maximum of four AICs.

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

Preparing for a Storage Upgrade

Review and perform these best practices before adding storage.

1. Update Oracle Database Appliance to the latest Patch Bundle before expanding storage.

odacli describe-component

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

odaadmcli show disk

- 3. Run the odaadmcli show diskgroup command to display and review Oracle Automatic Storage Management (Oracle ASM) disk group information.
- Use the asmcmd command to verify that all the disks for the four SFF slots are part of Oracle ASM.
- 5. Use Oracle ORAchk to confirm Oracle ASM and Oracle Clusterware health.

Adding Add-in-Cards (AIC) NVMe Storage Disks

For Oracle Database Appliance X11-L, you can expand storage by adding two SFF NVMe disks followed by two or four Add-in-Cards (AIC). You can expand storage by first adding 2 AIC NVMe disks or 4 AIC, up to a maximum of 4 AIC disks. When you expand storage, adding odd numbers of AIC drives is **not** supported.

Important:

You must populate all four SFF slots before adding AIC.

WARNING:

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



See Also:

Chapter Installing Oracle Database Appliance Into a Rack in the Oracle Database Appliance X11 Owner's Guide in the Oracle Database Appliance Documentation Library for this release for requirements before adding any optional PCIe add-in card storage

Note that you must install the AIC NVMe disks in the correct slots as described in the *Oracle Database Appliance X11 Owner's Guide* and complete all configuration steps to add the AIC NVMe disks. Following are PCI slot for AIC:

- x16-PCIe slot 2:NVMe AIC (first)
- x8-PCIe slot 3: NVMe AIC (second)
- x8-PCIe slot 9: NVMe AIC (third)
- x16-PCIe slot 1: NVMe AIC (fourth)

Follow these steps to add AIC NVMe disks:

1. On successful installation of AIC, the system restarts. Check that Oracle Clusterware is up and running.

```
crsctl check 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
```

2. Verify that the oakd process is running.

odaadmcli show disk

If the oakd process is not running, then start it:

odaadmcli start oak

3. Run the odaadmcli show disk command to check that oakd has discovered all AIC NVMe disks. For 2 AIC disks, there are four (4) NVMe disks of 3.4TB, and for four AIC disks, there are eight (8) 3.4TB NVME disks. For two AIC:

```
# odaadmcli show storage
==== BEGIN STORAGE DUMP =======
Host Description: Oracle Corporation:ORACLE SERVER E6-2L
Total number of controllers: 8
Id = 0
Pci Slot = 100
Serial Num = PHCP4246002S7P6CGN
Vendor = Solidigm
Model = SOLIDIGM SB5PH27X076TOC
FwVers = G70YR112
strId = nvme:71:00.00
Pci Address = 71:00.0
```



```
Id = 1
Pci Slot = 101
Serial Num = PHCP4302001Y7P6CGN
Vendor = Solidigm
Model = SOLIDIGM SB5PH27X076TOC
FwVers = G70YR112
strId = nvme:72:00.00
Pci Address = 72:00.0
Id = 2
Pci Slot = 103
Serial Num = PHCP424400EE7P6CGN
Vendor = Solidigm
Model = SOLIDIGM SB5PH27X076TOC
FwVers = G70YR112
strId = nvme: 73: 00.00
Pci Address = 73:00.0
Id = 3
Pci Slot = 102
Serial Num = PHCP424600527P6CGN
Vendor = Solidigm
Model = SOLIDIGM SB5PH27X076TOC
FwVers = G70YR112
strId = nvme: 74:00.00
Pci Address = 74:00.0
          = 4
Id
Pci Slot = 2
Serial Num = PHAZ2233000R6P4AGN-1
Vendor
         = Intel
Model
          = INTEL SSDPFCKE064T1S
FwVers
          = 9CV1R310
strId = nvme:c1:00.00
Pci Address = c1:00.0
          = 5
Id
Pci Slot = 22
Serial Num = PHAZ2233000R6P4AGN-2
Vendor
         = Intel
          = INTEL SSDPFCKE064T1S
Model
FwVers
          = 9CV1R310
strId
         = nvme:c2:00.00
Pci Address = c2:00.0
          = 7
Id
Pci Slot = 3
Serial Num = PHAZ2333000R6P4AGN-1
Vendor
         = Intel
Model
          = INTEL SSDPFCKE064T1S
FwVers
          = 9CV1R310
strId
          = nvme:e2:00.00
Pci Address = e2:00.0
           = 6
Id
```

```
Pci Slot = 23
        Serial Num = PHAZ2333000R6P4AGN-2
        Vendor
                  = Intel
        Model
                  = INTEL SSDPFCKE064T1S
                  = 9CV1R310
        FwVers
        strId
                   = nvme:e3:00.00
        Pci Address = e3:00.0
Total number of expanders: 0
Total number of PDs: 8
        /dev/nvmeOn1 Solidigm NVD 6801gb slot: 0 pci-addr : 71 SOLIDIGM
SB5PH27X076TOC SFF
        /dev/nvme1n1 Solidigm NVD 6801qb slot: 1 pci-addr : 72 SOLIDIGM
SB5PH27X076TOC SFF
        /dev/nvme3n1 Solidigm NVD 6801gb slot: 2 pci-addr : 74 SOLIDIGM
SB5PH27X076TOC SFF
        /dev/nvme2n1 Solidigm NVD 6801qb slot: 3 pci-addr : 73 SOLIDIGM
SB5PH27X076TOC SFF
        /dev/nvme8n1 Solidigm NVD 3400gb slot: 4 pci-addr : f1 SOLIDIGM
SB5PHC7E068TON AIC
        /dev/nvme9n1 Solidigm NVD 3400gb slot: 5 pci-addr : f2 SOLIDIGM
SB5PHC7E068TON AIC
        /dev/nvme6n1 Solidigm NVD 3400gb slot: 6 pci-addr : e1 SOLIDIGM
SB5PHC7E068TON AIC
        /dev/nvme7n1 Solidigm NVD 3400gb slot: 7 pci-addr : e2 SOLIDIGM
SB5PHC7E068TON AIC
==== END STORAGE DUMP =======
#
# odaadmcli show disk
       NAME
                       PATH
                                        TYPE
                                                        STATE
STATE DETAILS
        pd 00
                       /dev/nvme0n1
                                        NVD
                                                        ONLINE
Good
                       /dev/nvme1n1
        pd_01
                                        NVD
                                                        ONLINE
Good
                       /dev/nvme2n1
        pd_02
                                        NVD
                                                        ONLINE
Good
        pd 03
                       /dev/nvme3n1
                                        NVD
                                                        ONLINE
Good
        pd 04 c1
                       /dev/nvme5n1
                                                        UNKNOWN
                                        NVD
NewDiskInserted
        pd 04 c2
                        /dev/nvme4n1
                                        NVD
                                                        UNKNOWN
NewDiskInserted
        pd 05 c1
                        /dev/nvme9n1
                                        NVD
                                                        UNKNOWN
NewDiskInserted
                        /dev/nvme8n1
        pd 05 c2
                                        NVD
                                                        UNKNOWN
NewDiskInserted
```

For four AIC:

```
# odaadmcli show storage
==== BEGIN STORAGE DUMP =======
Host Description: Oracle Corporation:ORACLE SERVER E6-2L
Total number of controllers: 12
```

```
= 8
Id
Pci Slot = 9
Serial Num = PHCR429000036P8AGN-1
Vendor = Solidigm
         = SOLIDIGM SB5PHC7E068TON
Model
FwVers = G79YR112
strId = nvme:61:00.00
Pci Address = 61:00.0
         = 9
Id
Pci Slot = 29
Serial Num = PHCR429000036P8AGN-2
Vendor = Solidigm
Model
         = SOLIDIGM SB5PHC7E068TON
         = G79YR112
FwVers
        = nvme:62:00.00
strId
Pci Address = 62:00.0
         = 0
Id
Pci Slot = 100
Serial Num = PHCP430500077P6CGN
Vendor = Solidigm
Model
         = SOLIDIGM SB5PH27X076TOC
FwVers = G70YR112
strId = nvme:71:00.00
Pci Address = 71:00.0
         = 5
Id
Pci Slot = 101
Serial Num = PHCP424400JU7P6CGN
Vendor = Solidigm
Model = SOLIDIGM SB5PH27X076TOC
FwVers
         = G70YR112
       = nvme:72:00.00
strId
Pci Address = 72:00.0
Id
         = 6
Pci Slot = 103
Serial Num = PHCP424600977P6CGN
Vendor = Solidigm
Model = SOLIDIGM SB5PH27X076TOC
FwVers
         = G70YR112
strId
          = nvme:73:00.00
Pci Address = 73:00.0
         = 7
Id
Pci Slot = 102
Serial Num = PHCP430500067P6CGN
Vendor = Solidigm
Model
         = SOLIDIGM SB5PH27X076TOC
         = G70YR112
FwVers
strId
         = nvme:74:00.00
Pci Address = 74:00.0
         = 3
Id
Pci Slot = 1
```

Serial Num = PHCR4286000B6P8AGN-1 Vendor = Solidigm Model = SOLIDIGM SB5PHC7E068TON = G79YR112 FwVers = nvme:91:00.00 strId Pci Address = 91:00.0 Id = 4 Pci Slot = 21 Serial Num = PHCR4286000B6P8AGN-2 Vendor = Solidigm = SOLIDIGM SB5PHC7E068TON Model FwVers FwVers = G79YR112 strId = nvme:92:00.00 = G79YR112 Pci Address = 92:00.0= 1 Id Pci Slot = 2 Serial Num = PHCR4280002W6P8AGN-1 Vendor = Solidigm Model = SOLIDIGM SB5PHC7E068TON FwVers = G79YR112 strId = nvme:e1:00.00 Pci Address = e1:00.0Id = 2 Pci Slot = 22 Serial Num = PHCR4280002W6P8AGN-2 Vendor = Solidigm = SOLIDIGM SB5PHC7E068TON Model FwVers = G/91K112-+rTd = nvme:e2:00.00 Pci Address = e2:00.0= 10 Id Pci Slot = 3 Serial Num = PHCR4280004S6P8AGN-1 Vendor = Solidigm Model = SOLIDIGM SB5PHC7E068TON FwVers = G79YR112 strId = nvme:f1:00.00 Pci Address = f1:00.0= 11 Id Pci Slot = 23 Serial Num = PHCR4280004S6P8AGN-2 Vendor = Solidigm Model = SOLIDIGM SB5PHC7E068TON = G79YR112 FwVers = nvme:f2:00.00 strId Pci Address = f2:00.0 Total number of expanders: 0 Total number of PDs: 12 /dev/nvmeOn1 Solidigm NVD 6801gb slot: 0 pci-addr : 71 SOLIDIGM SB5PH27X076TOC SFF /dev/nvme1n1 Solidigm NVD 6801qb slot: 1 pci-addr :

72	SOLIDIGM SB5PH27X076	STOC	SFF						
12	/dev/nvme3n1		-	NVD	6801ab	slot:	2	pci-addr	•
74		2	SFF		000190	5100.	2	por addr	•
	/dev/nvme2n1	Solidiam		NVD	6801qb	slot:	3	pci-addr	:
73		-	SFF		2			-	
	/dev/nvme10n1	Solidigm		NVD	3400gb	slot:	4	pci-addr	:
e1	SOLIDIGM SB5PHC7E068	BTON	AIC		2			-	
	/dev/nvmel1n1	Solidigm		NVD	3400gb	slot:	5	pci-addr	:
e2	SOLIDIGM SB5PHC7E068	BTON	AIC						
	/dev/nvme8n1	Solidigm		NVD	3400gb	slot:	6	pci-addr	:
f1	SOLIDIGM SB5PHC7E068	BTON	AIC						
	/dev/nvme9n1	Solidigm		NVD	3400gb	slot:	7	pci-addr	:
f2	SOLIDIGM SB5PHC7E068	BTON	AIC						
	/dev/nvme6n1	Solidigm		NVD	3400gb	slot:	8	pci-addr	:
61	SOLIDIGM SB5PHC7E068	BTON	AIC						
	/dev/nvme7n1	-		NVD	3400gb	slot:	9	pci-addr	:
62	SOLIDIGM SB5PHC7E068		AIC						
	/dev/nvme12n1	-		NVD	3400gb	slot:	10	pci-addr	:
91	SOLIDIGM SB5PHC7E068								
	/dev/nvme13n1	-		NVD	3400gb	slot:	11	pci-addr	:
92	502121011 0201110/2000		AIC						
===	= END STORAGE DUMP ==								

For example, to add two (2) AIC disks, you must specify ndisk values as 4 because AIC has two NVMe disks, so the total value of two AIC disks is four NVMe disks.

```
#odaadmcli expand storage -ndisk 4
Running precheck, it may take a few minutes.
Precheck passed.
Check the progress of expansion of storage by executing 'odaadmcli show
disk'
Waiting for expansion to finish. It may take several minutes to complete
depending upon the number of disks being expanded
```

4. Run the odaadmcli show disk command to ensure that all disks are listed, are online, and are in a good state.

```
# odaadmcli show disk
NAME PATH TYPE STATE STATE_DETAILS
pd_00 /dev/nvme0n1 NVD ONLINE Good
pd_01 /dev/nvme1n1 NVD ONLINE Good
pd_02 /dev/nvme3n1 NVD ONLINE Good
pd_03 /dev/nvme14n2 NVD ONLINE Good
pd_04_c1 /dev/nvme10n1 NVD ONLINE Good
pd_04_c2 /dev/nvme1n1 NVD ONLINE Good
pd_05_c1 /dev/nvme8n1 NVD ONLINE Good
pd_05_c2 /dev/nvme9n1 NVD ONLINE Good
pd_05_c2 /dev/nvme9n1 NVD ONLINE Good
```

- Verify that the two AIC disks are added to Oracle Automatic Storage Management (Oracle ASM) as follows:
 - a. Run asm_script to verify that the disks in slots 3 and 4 are added to Oracle ASM. Verify that both disks are successfully added (CACHED and MEMBER). Following is an example of default configuration of 80:20 where eight partitions (p1 to p8) are part

of the DATA disk group and two partitions (p9 and p10) are part of the RECO diskgroup. # su gridUser /opt/oracle/oak/bin/stordiag/asm script.sh 0 6 # su grid /opt/oracle/oak/bin/stordiag/asm script.sh 0 6 SQL*Plus: Release 19.0.0.0.0 - Production on Tue Dec 10 11:28:07 2024 Version 19.25.0.0.0 Copyright (c) 1982, 2024, Oracle. All rights reserved. Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production Version 19.25.0.0.0 SQL> SQL> SQL> SQL> SQL> PATH NAME GROUP NUMBER STATE MODE ST MOUNT S HEADER STATU _____ _____ ____ -----AFD:NVD S04 C1 PHAZ22330P1 NVD S04 C1 PHAZ22330P1 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C1 PHAZ22330P2 NVD S04 C1 PHAZ22330P2 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C1 PHAZ22330P3 NVD S04 C1 PHAZ22330P3 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C1 PHAZ22330P4 NVD S04 C1 PHAZ22330P4 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C1 PHAZ22330P5 NVD S04 C1 PHAZ22330P5 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHAZ22330P10 NVD S04 C2 PHAZ22330P10 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHAZ22330P6 NVD S04 C2 PHAZ22330P6 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHAZ22330P7 NVD S04 C2 PHAZ22330P7 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHAZ22330P8 NVD S04 C2 PHAZ22330P8 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHAZ22330P9 NVD S04 C2 PHAZ22330P9 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHAZ23330P1 NVD S05 C1 PHAZ23330P1 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHAZ23330P2 NVD S05 C1 PHAZ23330P2 1 NORMAL ONLINE CACHED MEMBER

AFD:NVD S05 C1 PHAZ23330P3 NVD S05 C1 PHAZ23330P3 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHAZ23330P4 NVD S05 C1 PHAZ23330P4 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHAZ23330P5 NVD S05 C1 PHAZ23330P5 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C2 PHAZ23330P10 NVD S05 C2 PHAZ23330P10 2 NORMAL ONLINE CACHED MEMBER AFD:NVD_S05 C2 PHAZ23330P6 NVD S05 C2 PHAZ23330P6 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C2 PHAZ23330P7 NVD S05 C2 PHAZ23330P7 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C2 PHAZ23330P8 NVD S05 C2 PHAZ23330P8 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C2 PHAZ23330P9 NVD S05 C2 PHAZ23330P9 2 NORMAL ONLINE CACHED MEMBER AFD:SSD QRMDSK P2 0 NORMAL ONLINE CLOSED FORMER AFD:SSD QRMDSK P1 O NORMAL ONLINE CLOSED FORMER SQL> Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0 - Production Version 19.25.0.0.0

b. Use the odaadmcli show validation storage errors command to view 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.

odaadmcli show validation storage errors

c. Use the odaadmcli show validation storage failures command to view soft validation errors. A typical soft disk error would be an invalid version of the disk firmware.

odaadmcli show validation storage failures

d. Confirm that the oak_storage_conf.xml file shows the number of disks added. For example, if you added two AIC to four SFF, then the oak_storage_conf.xml file must show numberOfDisks as 8.

```
#cat /opt/oracle/oak/conf/oak_storage_conf.xml
<!--
This file is created by the ODA software as part of system provisioning
based on system provisioning requests. Values of element nodes can be
changed by OAK in response to storage configuration change operation.
DO NOT EDIT THIS FILE.
-->
```



```
<CometConfiguration>
  <OakStorageConfigInfo type="string" dimension="vector"
readonly="true" required="true" default="">
    <!-- Number of disks part of OAK -->
    <numberOfDisks>8</numberOfDisks>
    <!-- Number of partitions per disk part of DATA diskgroup in
multiple partition scheme
                           -->
    <!-- Number of partitions per disk part of RECO diskgroup in
multiple partition scheme
                          -->
    <!-- are derived from number of partitions per disk which are
part of ASM DATA diskgroup -->
    <numOfDataDiskPartitionInAsm>8</numOfDataDiskPartitionInAsm>
  </OakStorageConfigInfo>
</CometConfiguration>
#
```

For example, to add four (4) AIC disks, you must specify ndisk values as 8 because AIC has two NVMe disks, so the total value of four AIC disks is eight NVMe disks.

```
#odaadmcli expand storage -ndisk 8
Running precheck, it may take a few minutes.
Precheck passed.
Check the progress of expansion of storage by executing 'odaadmcli show
disk'
Waiting for expansion to finish. It may take several minutes to complete
depending upon the number of disks being expanded
```

e. Run the odaadmcli show disk command to ensure that all disks are listed, are online, and are in a good state.

odaadmcli show disk pd_00 /dev/nvme0n1 NVD ONLINE Good pd_01 /dev/nvme1n1 NVD ONLINE Good pd_02 /dev/nvme2n1 NVD ONLINE Good pd_03 /dev/nvme3n1 NVD ONLINE Good pd_04_c1 /dev/nvme4n1 NVD ONLINE Good pd_05_c1 /dev/nvme5n1 NVD ONLINE Good pd_05_c2 /dev/nvme9n1 NVD ONLINE Good pd_06_c1 /dev/nvme1n1 NVD ONLINE Good pd_06_c2 /dev/nvme10n1 NVD ONLINE Good pd_07_c1 /dev/nvme13n1 NVD ONLINE Good pd_07_c2 /dev/nvme13n1 NVD ONLINE Good

- f. Verify that the disks are added to Oracle Automatic Storage Management (Oracle ASM) as follows:
 - i. Run asm_script to verify that the AIC disks are added to Oracle ASM. Verify that both disks are successfully added (CACHED and MEMBER). Following is example of default configuration of 80:20 where eight partitions (p1 to p8) are part of the DATA disk group and two partitions (p9 and p10) are part of the RECO diskgroup.

su gridUser /opt/oracle/oak/bin/stordiag/asm_script.sh 0 6

su grid /opt/oracle/oak/bin/stordiag/asm_script.sh 0 6



SQL*Plus: Release 19.0.0.0.0 - Production on Tue Dec 10 11:56:05 2024 Version 19.25.0.0.0 Copyright (c) 1982, 2024, Oracle. All rights reserved. Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -Production Version 19.25.0.0.0 SQL> SQL> SQL> SQL> SQL> AFD:NVD S04 C1 PHCR42800P1 NVD S04 C1 PHCR42800P1 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C1 PHCR42800P2 NVD S04 C1 PHCR42800P2 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C1 PHCR42800P3 NVD S04 C1 PHCR42800P3 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C1 PHCR42800P4 NVD S04 C1 PHCR42800P4 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C1 PHCR42800P5 NVD_S04_C1_PHCR42800P5 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHCR42800P10 NVD S04 C2 PHCR42800P10 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHCR42800P6 NVD S04 C2 PHCR42800P6 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHCR42800P7 NVD S04 C2 PHCR42800P7 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHCR42800P8 NVD S04 C2 PHCR42800P8 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S04 C2 PHCR42800P9 NVD_S04_C2 PHCR42800P9 2 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHCR42800P1 NVD_S05_C1_PHCR42800P1 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHCR42800P2 NVD S05 C1 PHCR42800P2 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHCR42800P3 NVD S05 C1 PHCR42800P3 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHCR42800P4 NVD S05 C1 PHCR42800P4 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C1 PHCR42800P5 NVD S05 C1 PHCR42800P5 1 NORMAL ONLINE CACHED MEMBER AFD:NVD S05 C2 PHCR42800P10

NVD_S05_C2_PHCR42800P10	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD_S05_C2_PHCR42800P6		
NVD_S05_C2_PHCR42800P6	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD_S05_C2_PHCR42800P7		
NVD_S05_C2_PHCR42800P7	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD_S05_C2_PHCR42800P8		
NVD_S05_C2_PHCR42800P8	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD_S05_C2_PHCR42800P9		
NVD S05 C2 PHCR42800P9	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD S06 C1 PHCR42900P1		
NVD S06 C1 PHCR42900P1	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD S06 C1 PHCR42900P2		
NVD S06 C1 PHCR42900P2	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD S06 C1 PHCR42900P3		
NVD S06 C1 PHCR42900P3	1 NORMAL	ONLINE
CACHED MEMBER	1 NOIGHID	ONDINE
AFD:NVD S06 C1 PHCR42900P4		
NVD S06 C1 PHCR42900P4	1 NORMAL	ONLINE
CACHED MEMBER	I NOIGHIE	ONDIND
AFD:NVD S06 C1 PHCR42900P5		
NVD S06 C1 PHCR42900P5	1 NORMAL	ONT THE
CACHED MEMBER	I NORMAL	ONLINE
AFD:NVD_S06_C2_PHCR42900P10		ONT THE
NVD_S06_C2_PHCR42900P10	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD_S06_C2_PHCR42900P6	0.000000	
NVD_S06_C2_PHCR42900P6	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD_S06_C2_PHCR42900P7		
NVD_S06_C2_PHCR42900P7	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD_S06_C2_PHCR42900P8		
NVD_S06_C2_PHCR42900P8	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD_S06_C2_PHCR42900P9		
NVD_S06_C2_PHCR42900P9	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD S07 C1 PHCR42860P1		
NVD S07 C1 PHCR42860P1	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD S07 C1 PHCR42860P2		
NVD S07 C1 PHCR42860P2	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD S07 C1 PHCR42860P3		
NVD_S07_C1_PHCR42860P3	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:NVD S07 C1 PHCR42860P4		
NVD_S07_C1_PHCR42860P4	1 NORMAL	ONLINE
CACHED MEMBER	T 1101/1.111	01111111

AFD:NVD_S07_C1_PHCR NVD_S07_C1_PHCR4286 CACHED MEMBER				1 NORMAL	ONLINE
AFD:NVD_S07_C2_PHCR NVD S07 C2 PHCR4286				2 NORMAL	ONT THE
CACHED MEMBER	JOF I U			2 NORMAL	ONTINE
AFD:NVD S07 C2 PHCR	42860P6				
NVD_S07_C2_PHCR4286	0P6			2 NORMAL	ONLINE
CACHED MEMBER					
AFD:NVD_S07_C2_PHCR				2 NORMAL	ONL THE
NVD_S07_C2_PHCR4286 CACHED MEMBER	UP7			2 NORMAL	ONLINE
AFD:NVD S07 C2 PHCR	42860P8				
NVD_S07_C2_PHCR4286				2 NORMAL	ONLINE
CACHED MEMBER					
AFD:NVD_S07_C2_PHCR					
NVD_S07_C2_PHCR4286	0P9			2 NORMAL	ONLINE
CACHED MEMBER					
AFD:SSD_QRMDSK_P2					
	0 NORMAL	ONLINE	CLOSED	FORMER	
AFD:SSD_QRMDSK_P1					
	0 NORMAL	ONLINE	CLOSED	FORMER	

ii. Use the odaadmcli show validation storage errors command to view 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.

odaadmcli show validation storage errors

iii. Use the odaadmcli show validation storage failures command to view soft validation errors. A typical soft disk error would be an invalid version of the disk firmware.

odaadmcli show validation storage failures

iv. Confirm that the oak_storage_conf.xml file shows the number of disks added. For example, if you added four AIC to four SFF, then the oak_storage_conf.xml file must show numberOfDisks as 12, that is, four SFF NVME disks and eight NVMe disks for four AIC.

#cat /opt/oracle/oak/conf/oak_storage_conf.xml
<!-This file is created by the ODA software as part of system
provisioning
based on system provisioning requests. Values of element nodes can
be
changed by OAK in response to storage configuration change
operation.
DO NOT EDIT THIS FILE.
-->
<CometConfiguration>
 <OakStorageConfigInfo type="string" dimension="vector"
readonly="true" required="true" default="">
 <!-- Number of disks part of OAK -->
 </umberOfDisks>12</umberOfDisks>

Replacing Small Form Factor (SFF) NVMe Storage Disks

Understand how you can replace existing SFF NVMe disks on Oracle Database Appliance.

Preparing for a Storage Upgrade

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

```
# odaadmcli show disk
```

2. Run the the odaadmcli show disk and asmcmd lsdsk -p commands to view and review the storage disk information in OAKD and Oracle Automatic Storage Management (Oracle ASM).

odaadmcli show disk

asmcmd lsdsk -p

3. Use ORAchk to confirm Oracle ASM and Oracle Clusterware health.

Replacing NVMe Storage Disks

Follow all these steps to replace NVMe storage disks:

WARNING:

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

- 1. Power OFF the NVMe disk before removing it from the slot.
- 2. Wait for one minute for OAKD to complete the operation for disk removal.
- 3. Insert the new disk in the slot.
- Wait for at least 2-3 minutes between inserting each disk for OAKD to complete the operation to add the disk to Oracle ASM and OAK.



5. Check the status of the new disk in OAKD with the odaadmcli show disk command. The disk must have the status Online and Good in OAKD. Check the status of the new disk in Oracle ASM with the asmcmd lsdsk -p command. The disk must be in CACHED MEMBER ONLINE NORMAL state.

```
# odaadmcli show disk
```

```
# asmcmd lsdsk -p
```

Managing Storage on High-Availability Systems

Understand the storage for your Oracle Database Appliance X11-HA system.

- About Storage Options for Oracle Database Appliance X11-HA Oracle Database Appliance High-Availability systems have options for high performance and high capacity storage configurations.
- Adding Solid-State Drives (SSDs) for Data Storage
 Add a pack of solid-state drives (SSDs) for data storage into the existing Oracle Database
 Appliance X11-HA base configuration to fully populate the base storage shelf.
- Adding the Storage Expansion Shelf After the base storage shelf is fully populated, you can add the storage expansion shelf to expand your data storage on your high-availability platform.

About Storage Options for Oracle Database Appliance X11-HA

Oracle Database Appliance High-Availability systems have options for high performance and high capacity storage configurations.

The base configuration of Oracle Database Appliance X11-HA hardware model has six slots (slots 0-5) with 7.68 TB drives of SSD raw storage. If you choose to order and deploy the full storage capacity, then you can fill the remaining 18 slots (slots 6-23) with either SSD or HDD drives. For even more storage, you can add a storage expansion shelf to double the storage capacity of your appliance.

In all configurations, the base storage and the storage expansion shelf each have six SSDs for DATA/RECO in the SSD option or FLASH in the HDD option.

Oracle Database Appliance X11-HA does not allocate dedicated SSD drives for REDO disk groups. Instead, the space for REDO logs is allocated on SSD drives as required.

For Oracle ASM storage, the REDO logs are stored in the available disk group space during database creation, based on the database shape selected. For Oracle ACFS storage, the space for REDO logs is allocated during the database storage creation assuming the minimum db shape (odb1s). If you create the database storage without database, then the space allocated for REDO logs is 4 GB, assuming the minimum db shape (odb1s). Subsequently, when you create a database with your required database shape on the existing database storage, the REDO logs space is extended based on shape of the database.

On Oracle Database Appliance X11-HA High Performance configurations, with only SSD drives, the DATA and RECO disk groups use all the SSD drives whether 6, 12, 18, 24, or 48 with storage expansion shelf. REDO logs are stored in the RECO disk group.



On Oracle Database Appliance X11-HA High Capacity configurations, with both HDD and SSD drives, the DATA and RECO disk groups use the HDD drives, and the SSD drives store the FLASH disk group. REDO logs are stored in the FLASH disk group.

On both High Performance and High Capacity configurations, REDO logs are always created on SSD drives, similar to earlier Oracle Database Appliance hardware models. REDO logs are always created with high redundancy irrespective of the redundancy level of the disk group, whether RECO or FLASH.

High Performance

A high performance configuration uses solid state drives (SSDs) for DATA and RECO storage. The base configuration has six disks, each with 7.68 TB SSD raw storage for DATA and RECO.

You can add up to three (3) 6-Pack SSDs on the base configuration, for a total of 184.32 TB SSD raw storage. If you need more storage, you can double the capacity by adding an expansion shelf of SSD drives. The expansion shelf provides an additional 24 SSDs, each with 7.68TB raw storage for DATA and RECO, for a total of another 184.32 TB SSD raw storage.

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

A system fully configured for high performance has 368.64 TB SSD raw storage for DATA and RECO.

High Capacity

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

The base configuration has six disks, each with 7.68 TB SSD raw storage for FLASH.

The following expansion options are available:

- Base shelf: additional 396 TB HDD raw storage for DATA and RECO (18 HDDs, each with 22 TB storage)
- Expansion Storage shelf: additional shelf storage configuration must be identical to the storage configuration of the base shelf.

A system fully configured for high capacity has a total of 884.16 TB raw storage for DATA, RECO, and FLASH, with 92.16 TB SSD and 792 TB HDD.

Configuration	Oracle Database Appliance X11-HA SSD-Only Configuration for High Performance	Oracle Database Appliance X11-HA SSD and HDD Configuration for High Capacity
Base configuration	 Base storage shelf contains 6 SSDs of 7.68 TB. 6 x 7.68 TB SSD = 46 TB SSD 	 Base storage shelf is fully populated with 6-pack SSDs of 7.68 TB and 18-drives of HDDs with 22 TB. 6 x 7.68 TB SSD = 46 TB SSD 18 x 22TB HDD = 396 TB HDD Total storage on the first JBOD = 442 TB, with 46 TB SSD and 396 TB HDD HDD

Table 11-2 Storage Options for Oracle Database Appliance X11-HA



Configuration	Oracle Database Appliance X11-HA SSD-Only Configuration for High Performance	Oracle Database Appliance X11-HA SSD and HDD Configuration for High Capacity
Storage addition options	 Base shelf contains 6 SSDs. Additional 18 SSDs must be added in packs of 6. Base system: 6 x 7.68 TB SSD = 46 TB SSD Adding 6 SSDs: 12x 7.68 TB SSD = 92 TB SSD Adding 12 SSDs: 18 x 7.68 TB SSD = 138 TB SSD Adding 18 SSDs: 24 x 7.68 TB SSD = 184 TB SSD (full shelf) 	Not applicable. Base storage shelf is fully populated.
Storage shelf expansion options	 The optional expansion storage shelf can only be installed after the base storage shelf is fully populated, and it must have the same configuration as the base storage shelf. Total storage on the base storage shelf = 184 TB SSD Storage on the expansion shelf = 24 x 7.68 TB SSD = 184 TB SSD Total storage including both JBODs = 368.6 TB SSD 	 The optional expansion storage shelf can only be installed after the base storage shelf is fully populated, and it must have the same configuration as the base storage shelf. Total storage on the base storage shelf = 442 TB, with 46 TB SSD and 396 TB HDD Total storage including both JBODs = 884 TB, with 92 TB SSD and 792 TB HDD

Converting High Performance to High Capacity system

You can order a fully populated base storage shelf of 6 SSD + 18 HDD for high capacity configuration. If you initially ordered only the default 6 SSD base storage shelf and deployed high performance system, then you can later convert this to high capacity system configuration. Order 18 HDD and populate the base storage shelf as follows:

- 1. Takea backup of your database on the default storage of 6 SSD configuration on the provisioned system.
- 2. Run the cleanup utility with the --erasedata option on both nodes to erase all SSD disks of OAK and Oracle ASM headers. The --erasedata option completely erases the SSD disk so any data on the disks is lost and becomes unrecoverable.
- 3. After cleanup of both nodes, add 18 HDD disks to the base storage shelf. These 18 HDDs must be brand new disks from Oracle without any OAK and Oracle ASM header.
- 4. Reimage both nodes with the required OAK version.
- 5. Reprovision the system again.

Adding Solid-State Drives (SSDs) for Data Storage

Add a pack of solid-state drives (SSDs) for data storage into the existing Oracle Database Appliance X11-HA base configuration to fully populate the base storage shelf.

If you need to add storage to the base configuration, you can order one, two, or three 6-pack of SSDs to complete the base configuration on Oracle Database Appliance X11-HA.

You must fully populate the base configuration before you can add an expansion shelf to Oracle Database Appliance X11-HA. If you add an expansion shelf, the shelf must have the same disk storage configuration as the base configuration.

Note:

For a high-performance configuration, you can add SSDs to the base storage shelf or add a storage expansion shelf. For high-capacity base configuration with 6-SSDs, if you want to expand storage to use HDDs, then you must reimage and deploy the appliance.

Before adding the disks to the system, ensure that Oracle Database Appliance is on the latest release.

1. Insert disks one at a time in the slots.

To add one 6-pack of SSDs, insert the disks in slots 6 to 11. To add two 6-pack of SSDs, insert the disks in slots 6 to 17. To add three 6-pack of SSDs, insert the disks in slots 6 to 23.



Allow at least one minute between inserting each disk.

After all disks are added, go to Step 2.

2. Run the odaadmcli expand storage command on any node.

```
# odaadmcli expand storage -ndisk number_of_disks_to_be_added -enclosure
enclosure_number_of_the_disks_to_be_added
```

The enclosure number is 0 when you add storage disks to the first storage enclosure or JBOD (just a bunch of disks).

For example:

```
# odaadmcli expand storage -ndisk 6 -enclosure 0
Running precheck, it may take a few minutes.
Precheck passed.
Check the progress of expansion of storage by executing 'odaadmcli show
disk'
Waiting for expansion to finish. It may take several minutes to complete
depending upon the number of disks being expanded
odaadmcli expand storage command completed.
Check the status of the newly-expanded disk in OAK by running the
odaadmcli show disk command.
All disks must be in the ONLINE status. Check the status of the newly-
```

expanded disk in Oracle ASM by running the asmcmd lsdsk -p.

The mount status must be CACHED and the header status must be MEMBER for all the newly-added disks.



If the status of the newly-added disks in OAK and Oracle ASM are different, then the odaadmcli expand storage command failed.

It takes 10 to 12 minutes to add all of the disks to the configuration.

3. Run the odaadmcli show disk command to ensure that all disks are listed, are online, and are in a good state.

odaadmcli show disk

- Verify that the disks in slots 6 to 11 are added to Oracle Automatic Storage Management (Oracle ASM).
 - a. Run the asm_script to verify that the disks in slots 6 to 11 are added to Oracle Automatic Storage Management (Oracle ASM). If the 6 disks are successfully added (CACHED and MEMBER), then go to Step 7. Following is example of default configuration of 80:20 where eight partitions (p1 to p8) are part of the DATA disk group and two partitions (p9 and p10) are part of the RECO diskgroup.

```
# su gridUser /opt/oracle/oak/bin/stordiag/asm script.sh 1 6
```

For example:

```
# su gridUser /opt/oracle/oak/bin/stordiag/asm script.sh 1 6
# su grid /opt/oracle/oak/bin/stordiag/asm script.sh 1 6
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Dec 11 09:26:05 2024
Version 19.25.0.0.0
Copyright (c) 1982, 2024, Oracle. All rights reserved.
Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.25.0.0.0
SQL> SQL> SQL> SQL> SQL>
РАТН
NAME
                                GROUP NUMBER STATE MODE ST
MOUNT S HEADER STATU
_____
_____ ____
_____
AFD:SSD E0 S06 46724304P1
SSD E0 S06 46724304P1
                                         1 NORMAL ONLINE
CACHED MEMBER
AFD:SSD E0 S06 46724304P10
SSD E0 S06 46724304P10
                                        2 NORMAL
                                                   ONLINE
CACHED MEMBER
AFD:SSD E0 S06 46724304P2
SSD E0 S06 46724304P2
                                         1 NORMAL
                                                   ONLINE
CACHED MEMBER
AFD:SSD E0 S06 46724304P3
SSD E0 S06 46724304P3
                                        1 NORMAL
                                                   ONLINE
CACHED MEMBER
AFD:SSD E0 S06 46724304P4
SSD E0 S06 46724304P4
                                         1 NORMAL ONLINE
CACHED MEMBER
AFD:SSD E0 S06 46724304P5
```

SSD_E0_S06_46724304P5	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S06_46724304P6		
SSD_E0_S06_46724304P6	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD E0 S06 46724304P7		
SSD E0 S06 46724304P7	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD E0 S06 46724304P8		
SSD E0 S06 46724304P8	1 NORMAL	ONLINE
CACHED MEMBER	1 Nordani	ONDIND
AFD:SSD E0 S06 46724304P9		
		ONT THE
SSD_E0_S06_46724304P9	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S07_47182256P1	4	
SSD_E0_S07_47182256P1	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S07_47182256P10		
SSD_E0_S07_47182256P10	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S07_47182256P2		
SSD E0 S07 47182256P2	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD E0 S07 47182256P3		
SSD E0 S07 47182256P3	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD E0 S07 47182256P4		
SSD E0 S07 47182256P4	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD E0 S07 47182256P5		
SSD E0 S07 47182256P5	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD E0 S07 47182256P6		
SSD E0 S07 47182256P6	1 NORMAL	ONLINE
CACHED MEMBER	I NOIGHI	ONDIND
AFD:SSD E0 S07 47182256P7		
SSD_E0_S07_47182256P7	1 ΝΟΡΜΑΤ	ONI THE
	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S07_47182256P8	1 NODWAT	ONT THE
SSD_E0_S07_47182256P8	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S07_47182256P9	<u> </u>	
SSD_E0_S07_47182256P9	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S08_46724288P1		
SSD_E0_S08_46724288P1	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S08_46724288P10		
SSD_E0_S08_46724288P10	2 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S08_46724288P2		
SSD_E0_S08_46724288P2	1 NORMAL	ONLINE
CACHED MEMBER		
AFD:SSD_E0_S08_46724288P3		
SSD_E0_S08_46724288P3	1 NORMAL	ONLINE
CACHED MEMBER		

AFD:SSD_E0_S08_46724288P4			
SSD_E0_S08_46724288P4	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD_E0_S08_46724288P5			
SSD E0 S08 46724288P5	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD E0 S08 46724288P6			
SSD E0 S08 46724288P6	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD E0 S08 46724288P7			
SSD E0 S08 46724288P7	1	NORMAL	ONT THE
	T	NORMAL	
CACHED MEMBER			
AFD:SSD_E0_S08_46724288P8			
SSD_E0_S08_46724288P8	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD_E0_S08_46724288P9			
SSD_E0_S08_46724288P9	2	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD E0 S09 47180592P1			
SSD E0 S09 47180592P1	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD E0 S09 47180592P10			
SSD E0 S09 47180592P10	2	NORMAL	ONLINE
CACHED MEMBER	-		01122112
AFD:SSD E0 S09 47180592P2			
SSD E0 S09 47180592P2	1	NORMAL	ONT THE
	T	NORMAL	ONTINE
CACHED MEMBER			
AFD:SSD_E0_S09_47180592P3			
SSD_E0_S09_47180592P3	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD_E0_S09_47180592P4			
SSD_E0_S09_47180592P4	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD_E0_S09_47180592P5			
SSD E0 S09 47180592P5	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD E0 S09 47180592P6			
SSD E0 S09 47180592P6	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD E0 S09 47180592P7			
SSD E0 S09 47180592P7	1	NORMAL	ONLINE
CACHED MEMBER	Ŧ	NOIGHIE	
AFD:SSD E0 S09 47180592P8			
	1	NODMAT	ONT THE
SSD_E0_S09_47180592P8	T	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD_E0_S09_47180592P9			
SSD_E0_S09_47180592P9	2	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD_E0_S10_47182288P1			
SSD_E0_S10_47182288P1	1	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD_E0_S10_47182288P10			
SSD E0 S10 47182288P10	2	NORMAL	ONLINE
CACHED MEMBER			
AFD:SSD E0 S10 47182288P2			
SSD E0 S10 47182288P2	1	NORMAL	ONLINE

CACHED MEMBER AFD:SSD_E0_S10_47182288P3 SSD E0 S10 47182288P3 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S10 47182288P4 SSD E0 S10 47182288P4 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S10 47182288P5 SSD E0 S10 47182288P5 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S10 47182288P6 SSD E0 S10 47182288P6 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S10 47182288P7 SSD E0 S10 47182288P7 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S10 47182288P8 SSD E0 S10 47182288P8 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S10 47182288P9 SSD E0 S10 47182288P9 2 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P1 SSD_E0_S11_46722912P1 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P10 SSD E0 S11 46722912P10 2 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P2 SSD E0 S11 46722912P2 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P3 SSD E0 S11 46722912P3 1 NORMAL ONLINE CACHED MEMBER AFD:SSD_E0_S11_46722912P4 1 NORMAL SSD E0 S11 46722912P4 ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P5 SSD E0 S11 46722912P5 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P6 SSD_E0_S11_46722912P6 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P7 SSD E0 S11 46722912P7 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P8 SSD E0 S11 46722912P8 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S11 46722912P9 SSD E0 S11 46722912P9 2 NORMAL ONLINE CACHED MEMBER

SQL> Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0 - Production

```
Version 19.25.0.0.0 #
```

b. Use the odaadmcli show validation storage errors command to view 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.

odaadmcli show validation storage errors

c. Use the odaadmcli show validation storage failures command to view soft validation errors. A typical soft disk error would be an invalid version of the disk firmware.

```
# odaadmcli show validation storage failures
```

d. Confirm that the oak_storage_conf.xml file shows the number of disks added. For example, if you added 6 disks to the base configuration, then the oak_storage_conf.xml file must show numberOfDisks as 12. If you added 12 disks to the base configuration, then the oak storage conf.xml file must show 18.

```
#cat /opt/oracle/oak/conf/oak storage conf.xml
<!--
This file is created by the ODA software as part of system provisioning
based on system provisioning requests. Values of element nodes can be
changed by OAK in response to storage configuration change operation.
DO NOT EDIT THIS FILE.
-->
<CometConfiguration>
  <OakStorageConfigInfo type="string" dimension="vector"
readonly="true" required="true" default="">
    <!-- Number of disks part of OAK -->
    <numberOfDisks>12</numberOfDisks>
    <!-- Number of partitions per disk part of DATA diskgroup in
multiple partition scheme
                          -->
    <!-- Number of partitions per disk part of RECO diskgroup in
multiple partition scheme
                            -->
   <!-- are derived from number of partitions per disk which are
part of ASM DATA diskgroup -->
    <numOfDataDiskPartitionInAsm>8</numOfDataDiskPartitionInAsm>
  </OakStorageConfigInfo>
</CometConfiguration>
```

Adding the Storage Expansion Shelf

After the base storage shelf is fully populated, you can add the storage expansion shelf to expand your data storage on your high-availability platform.

The expansion shelf is available on Oracle Database Appliance high-availability platforms, such as Oracle Database Appliance X11-HA. The addition of the storage expansion shelf includes checks across both nodes. It is important to confirm that SSH does work across the nodes and all users can connect as expected using their shared password.

You must fully populate the base configuration before you can add an expansion shelf. If you add an expansion shelf, the shelf must have the same disk storage configuration as the base storage shelf.

Note:

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 Automatic Storage Management (Oracle ASM) automatically rebalances the disk groups. The rebalance operation may degrade database performance until the operation completes.

1. Install and cable the storage expansion shelf, but do **not** power on the expansion shelf.

Caution:

Review cabling instructions carefully 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.

2. Verify that both nodes plus the base storage shelf are up and running. Log into each server node and run the odacli validate-storagetopology command to confirm that the base configuration cabling is correct.

```
# odacli validate-storagetopology
...
INFO : Check if JBOD powered on
SUCCESS : JBOD : Powered-on
INFO : Check for correct number of EBODS(2 or 4)
SUCCESS : EBOD found :
2
INFO : Check for overall status of cable validation
on Node0
SUCCESS : Overall Cable Validation on Node0
SUCCESS : JBOD Nickname set correctly : Oracle Database Appliance - E0
```

Run the command to confirm that the two server nodes are properly cabled to the base storage shelf and all disks are online, with a good status, and added to the existing disk groups on both nodes. If there any failures, then fix the cabling before proceeding to the next step.

Note:

If the output shows that EBOD found is 2, then you only have the base storage shelf. If EBOD found is 4, then you have a base storage shelf and an expansion shelf.

Note: If you add a new JBOD fresh from the factory, then the output of the odacli validate-storagetopology command is: # odacli validate-storagetopology ... WARNING : JBOD Nickname is incorrectly set to :

- Power on the storage expansion shelf and wait for 20 minutes before issuing the CLI command for storage expansion.
- 4. Log in to each server node and run the odacli validate-storagetopology command to validate the storage cabling and confirm that the new storage shelf is recognized.

```
# odacli validate-storagetopology
  INFO
        : Check if JBOD powered on
  SUCCESS : 2JBOD : Powered-
on
         : Check for correct number of EBODS(2 or 4)
  INFO
  SUCCESS : EBOD found :
4
   . . .
   . . .
           : Check for overall status of cable validation on NodeO
   INFO
   SUCCESS : Overall Cable Validation on NodeO
   SUCCESS : JBODO Nickname set correctly : Oracle Database Appliance - E0
   SUCCESS : JBOD1 Nickname set correctly : Oracle Database Appliance -
E1
```

If you add a new JBOD fresh from the factory, then the output of the odacli validatestoragetopology command is:

```
# odacli validate-storagetopology
...
WARNING : JBOD Nickname is incorrectly set to :
```

Look for the following indicators that both storage shelves are recognized:

When there are two shelves, the JBOD is numbered. For example:

SUCCESS : 2JBOD : Powered-on

• When both shelves are recognized, the EBOD found value is 4.

```
SUCCESS : EBOD found : 4
```



• When the expansion shelf is cabled properly, the nickname is E1. For example:

```
SUCCESS : JBODO Nickname set correctly : Oracle Database
Appliance - E0
SUCCESS : JBOD1 Nickname set correctly : Oracle Database
Appliance - E1
```

Fix any errors before proceeding.

5. Run the odaadmcli show disk command to ensure that all disks in the expansion shelf are listed, are online, and are in a good state.

odaadmcli show disk

When all disks are online and in a good state, proceed to the next step.

6. Run the odaadmcli show enclosure command to check the health of components in expansion shelf.

odaadmcli show enclosure

7. Run the odaadmcli expand storage command.

odaadmcli expand storage -ndisk 24 -enclosure 1 Running precheck, it may take a few minutes. Precheck passed. Check the progress of expansion of storage by executing 'odaadmcli show disk' Waiting for expansion to finish. It may take several minutes to complete depending upon the number of disks being expanded

odaadmcli expand storage command completed.

It takes approximately 30 to 40 minutes to add all of the disks to the configuration.

8. Check the status of the newly-expanded disk in OAK by running the odaadmcli show disk command. All disks must have status ONLINE. Check the status of the newly-expanded disk in Oracle ASM by running the asmcmd lsdsk -p command. The mount status must be CACHED and header status must be MEMBER for all the newly-added disks. If the status of the newly-added disks in OAK and Oracle ASM is different, then the odaadmcli expand storage command failed.

Example of an Oracle Database Appliance X11-HA High Capacity System:

	dmcli show disk NAME DETAILS	PATH	TYPE	STATE
Good	e0_pd_00	/dev/sda	SSD	ONLINE
	e0_pd_01	/dev/sdb	SSD	ONLINE
Good	e0_pd_02	/dev/sdc	SSD	ONLINE
Good Good	e0_pd_03	/dev/sdab	SSD	ONLINE



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	e0_pd_04	/dev/sdad	SSD	ONLINE
Good	e0_pd_05	/dev/sdac	SSD	ONLINE
Good	e0_pd_06	/dev/sdae	HDD	ONLINE
Good	e0_pd_07	/dev/sdaf	HDD	ONLINE
Good	e0_pd_08	/dev/sdag	HDD	ONLINE
Good	e0_pd_09	/dev/sdai	HDD	ONLINE
Good	e0_pd_10	/dev/sdah	HDD	ONLINE
Good	e0_pd_11	/dev/sdaj	HDD	ONLINE
Good	e0_pd_12	/dev/sdak	HDD	ONLINE
Good	e0_pd_13	/dev/sdam	HDD	ONLINE
Good	e0_pd_14	/dev/sdal	HDD	ONLINE
Good	e0_pd_15	/dev/sdan	HDD	ONLINE
Good	e0_pd_16	/dev/sdap	HDD	ONLINE
Good	e0_pd_17	/dev/sdar	HDD	ONLINE
Good	e0_pd_18	/dev/sdaq	HDD	ONLINE
Good	e0_pd_19	/dev/sdao	HDD	ONLINE
Good	e0_pd_20	/dev/sdat	HDD	ONLINE
Good	e0_pd_21	/dev/sdas	HDD	ONLINE
Good	e0_pd_22	/dev/sdau	HDD	ONLINE
Good	e0_pd_23	/dev/sdav	HDD	ONLINE
Good	e1_pd_00	/dev/sdaw	SSD	ONLINE
Good	e1_pd_01	/dev/sdax	SSD	ONLINE
Good	e1_pd_02	/dev/sday	SSD	ONLINE
Good	e1_pd_03	/dev/sdaz	SSD	ONLINE
Good	e1_pd_04	/dev/sdba	SSD	ONLINE
Good	e1_pd_05	/dev/sdbb	SSD	ONLINE
Good	 e1_pd_06	/dev/sdbc	HDD	ONLINE
Good	 e1_pd_07	/dev/sdbd	HDD	ONLINE
Good	—			



Chapter 11 Managing Storage on High-Availability Systems

	e1 pd 08	/dev/sdbe	HDD	ON	LINE	
Good						
Good	e1_pd_09	/dev/sdbf	HDD	ON	LINE	
Good	e1_pd_10	/dev/sdbg	HDD	ON	LINE	
Good	e1_pd_11	/dev/sdbh	HDD	ON	LINE	
Good	e1_pd_12	/dev/sdbi	HDD	ON	LINE	
	e1_pd_13	/dev/sdbj	HDD	ON	LINE	
Good	e1_pd_14	/dev/sdbk	HDD	ON	LINE	
Good	e1_pd_15	/dev/sdbl	HDD	ON	LINE	
Good	e1_pd_16	/dev/sdbm	HDD	ON	LINE	
Good	e1_pd_17	/dev/sdbn	HDD	ON	LINE	
Good	e1_pd_18	/dev/sdbo	HDD	ON	LINE	
Good	el pd 19	/dev/sdbp	HDD	ON	LINE	
Good	 e1 pd 20	/dev/sdbq	HDD	ON	LINE	
Good	 e1 pd 21	/dev/sdbr	HDD		LINE	
Good	el pd 22	/dev/sdbs	HDD		LINE	
Good						
Good	e1_pd_23	/dev/sdbt	HDD	ON	LINE	
#						
# su g	rid /opt/oracle	e/oak/bin/stordia	ag/asm_script	c.sh 1 6		
	us: Release 19. n 19.25.0.0.0	.0.0.0.0 - Produc	ction on Wed	Dec 11 11	:28:05 2	2024
	ght (c) 1982, 2 ted to:	2024, Oracle. Al	ll rights res	served.		
Oracle		Enterprise Editio	on Release 19	9.0.0.0.0	- Produc	ction
	QL> SQL> SQL> S	SQL>				
PATH NAME		(GROUP_NUMBER	STATE	MODE_ST	MOUNT_S
•	_STATU 					
	D_E0_S06_134748 S06 1347486961		1	NORMAL	ONLINE	CACHED
MEMBER						
HDD_E0	_S06_134748696		2	NORMAL	ONLINE	CACHED
MEMBER						



AFD:HDD E0 S06 134748696P2 HDD E0 S06 134748696P2 MEMBER AFD:HDD E0 S06 134748696P3 HDD E0 S06 134748696P3 MEMBER AFD:HDD E0 S06 134748696P4 HDD E0 S06 134748696P4 MEMBER AFD:HDD E0 S06 134748696P5 HDD E0 S06 134748696P5 MEMBER AFD:HDD E0 S06 134748696P6 HDD E0 S06 134748696P6 MEMBER AFD:HDD E0 S06 134748696P7 HDD E0 S06 134748696P7 MEMBER AFD:HDD E0 S06 134748696P8 HDD E0 S06 134748696P8 MEMBER AFD:HDD E0 S06 134748696P9 HDD E0 S06 134748696P9 MEMBER AFD:HDD E0 S07 134749392P1 HDD E0 S07 134749392P1 MEMBER AFD:HDD E0 S07 134749392P10 HDD E0 S07 134749392P10 MEMBER AFD:HDD E0 S07 134749392P2 HDD E0 S07 134749392P2 MEMBER AFD:HDD E0 S07 134749392P3 HDD E0 S07 134749392P3 MEMBER AFD:HDD E0 S07 134749392P4 HDD E0 S07 134749392P4 MEMBER AFD:HDD E0 S07 134749392P5 HDD E0 S07 134749392P5 MEMBER AFD:HDD E0 S07 134749392P6 HDD E0 S07 134749392P6 MEMBER AFD:HDD E0 S07 134749392P7 HDD E0 S07 134749392P7 MEMBER AFD:HDD E0 S07 134749392P8 HDD E0 S07 134749392P8 MEMBER AFD:HDD E0 S07 134749392P9 HDD E0 S07 134749392P9 MEMBER

1 NORMAL ONLINE CACHED ONLINE CACHED 1 NORMAL 1 NORMAL ONLINE CACHED 2 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 2 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 2 NORMAL ONLINE CACHED



```
SQL> Disconnected from Oracle Database 19c Enterprise Edition Release
19.0.0.0.0 - Production
Version 19.25.0.0.0
#
```

Example of an Oracle Database Appliance X11-HA High Performance System:

# odaad STATE_D	mcli show disk NAME ETAILS	РАТН	TYPE	STATE
Good	e0_pd_00	/dev/sda	SSD	ONLINE
Good	e0_pd_01	/dev/sdc	SSD	ONLINE
Good	e0_pd_02	/dev/sdaa	SSD	ONLINE
Good	e0_pd_03	/dev/sdab	SSD	ONLINE
Good	e0_pd_04	/dev/sdac	SSD	ONLINE
Good	e0_pd_05	/dev/sdad	SSD	ONLINE
Good	e0_pd_06	/dev/sdag	SSD	ONLINE
Good	e0_pd_07	/dev/sdae	SSD	ONLINE
Good	e0_pd_08	/dev/sdah	SSD	ONLINE
Good	e0_pd_09	/dev/sdaf	SSD	ONLINE
Good	e0_pd_10	/dev/sdai	SSD	ONLINE
Good	e0_pd_11	/dev/sdaj	SSD	ONLINE
Good	e0_pd_12	/dev/sdak	SSD	ONLINE
Good	e0_pd_13	/dev/sdam	SSD	ONLINE
Good	e0_pd_14	/dev/sdal	SSD	ONLINE
Good	e0_pd_15	/dev/sdan	SSD	ONLINE
Good	e0_pd_16	/dev/sdap	SSD	ONLINE
Good	e0_pd_17	/dev/sdao	SSD	ONLINE
Good	e0_pd_18	/dev/sdaq	SSD	ONLINE
Good	e0_pd_19	/dev/sdar	SSD	ONLINE
Good	e0_pd_20	/dev/sdas	SSD	ONLINE
	e0_pd_21	/dev/sdau	SSD	ONLINE

Good					
Good	e0_pd_22	/dev/sdat	SSD	ONLINE	
Good	e0_pd_23	/dev/sdav	SSD	ONLINE	
Good	e1_pd_00	/dev/sdaw	SSD	ONLINE	
Good	el_pd_01	/dev/sdax	SSD	ONLINE	
	e1_pd_02	/dev/sday	SSD	ONLINE	
Good	e1_pd_03	/dev/sdaz	SSD	ONLINE	
Good	e1_pd_04	/dev/sdba	SSD	ONLINE	
Good	e1_pd_05	/dev/sdbb	SSD	ONLINE	
Good	e1_pd_06	/dev/sdbc	SSD	ONLINE	
Good	el pd 07	/dev/sdbd	SSD	ONLINE	
Good	 el pd 08	/dev/sdbe	SSD	ONLINE	
Good	e1 pd 09	/dev/sdbf	SSD	ONLINE	
Good	el pd 10	/dev/sdbg	SSD	ONLINE	
Good		/dev/sdbh	SSD	ONLINE	
Good	e1_pd_11				
Good	e1_pd_12	/dev/sdbi	SSD	ONLINE	
Good	e1_pd_13	/dev/sdbj	SSD	ONLINE	
Good	e1_pd_14	/dev/sdbk	SSD	ONLINE	
Good	e1_pd_15	/dev/sdbl	SSD	ONLINE	
Good	el_pd_16	/dev/sdbm	SSD	ONLINE	
Good	e1_pd_17	/dev/sdbn	SSD	ONLINE	
Good	e1_pd_18	/dev/sdbo	SSD	ONLINE	
	e1_pd_19	/dev/sdbp	SSD	ONLINE	
Good	e1_pd_20	/dev/sdbq	SSD	ONLINE	
Good	e1_pd_21	/dev/sdbr	SSD	ONLINE	
Good	e1_pd_22	/dev/sdbs	SSD	ONLINE	
Good	e1_pd_23	/dev/sdbt	SSD	ONLINE	
Good #					
#su grid /opt/oracle/oak/bin/stordiag/asm_script.sh 1 6					

SQL*Plus: Release 19.0.0.0.0 - Production on Wed Dec 11 11:46:05 2024 Version 19.25.0.0.0 Copyright (c) 1982, 2024, Oracle. All rights reserved. Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production Version 19.25.0.0.0 SQL> SQL> SQL> SQL> SQL> PATH GROUP NUMBER STATE MODE ST MOUNT S NAME HEADER STATU _____ _____ AFD:SSD E0 S00 51829200P1 SSD E0 S00 51829200P1 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S00 51829200P10 SSD E0 S00 51829200P10 2 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S00 51829200P2 SSD E0 S00 51829200P2 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S00 51829200P3 SSD E0 S00 51829200P3 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S00 51829200P4 SSD E0 S00 51829200P4 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S00 51829200P5 SSD E0 S00 51829200P5 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S00 51829200P6 SSD E0 S00 51829200P6 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S00 51829200P7 SSD_E0_S00_51829200P7 1 NORMAL ONLINE CACHED MEMBER AFD:SSD_E0 S00 51829200P8 SSD E0 S00 51829200P8 ONLINE CACHED 1 NORMAL MEMBER AFD:SSD_E0 S00 51829200P9 SSD_E0_S00_51829200P9 2 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S01 51829664P1 SSD E0 S01 51829664P1 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S01 51829664P10 SSD E0 S01 51829664P10 2 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S01 51829664P2 SSD E0 S01 51829664P2 1 NORMAL ONLINE CACHED MEMBER AFD:SSD E0 S01 51829664P3 SSD_E0_S01 51829664P3 1 NORMAL ONLINE CACHED MEMBER

AFD:SSD E0 S01 51829664P4 SSD E0 S01 51829664P4 MEMBER AFD:SSD E0 S01 51829664P5 SSD E0 S01 51829664P5 MEMBER AFD:SSD E0 S01 51829664P6 SSD E0 S01 51829664P6 MEMBER AFD:SSD E0 S01 51829664P7 SSD E0 S01 51829664P7 MEMBER AFD:SSD E0 S01 51829664P8 SSD E0 S01 51829664P8 MEMBER AFD:SSD E0 S01 51829664P9 SSD E0 S01 51829664P9 MEMBER AFD:SSD E0 S02 51849168P1 SSD_E0_S02_51849168P1 MEMBER AFD:SSD E0 S02 51849168P10 SSD E0 S02 51849168P10 MEMBER AFD:SSD_E0 S02 51849168P2 SSD E0 S02 51849168P2 MEMBER AFD:SSD_E0 S02 51849168P3 SSD E0 S02 51849168P3 MEMBER AFD:SSD E0 S02 51849168P4 SSD E0 S02 51849168P4 MEMBER AFD:SSD E0 S02 51849168P5 SSD E0 S02 51849168P5 MEMBER AFD:SSD E0 S02 51849168P6 SSD E0 S02 51849168P6 MEMBER AFD:SSD E0 S02 51849168P7 SSD E0 S02 51849168P7 MEMBER AFD:SSD E0 S02 51849168P8 SSD E0 S02 51849168P8 MEMBER AFD:SSD E0 S02 51849168P9 SSD E0 S02 51849168P9 MEMBER AFD:SSD E0 S03 51828144P1 SSD E0 S03 51828144P1 MEMBER AFD:SSD E0 S03 51828144P10 SSD E0 S03 51828144P10 MEMBER AFD:SSD E0 S03 51828144P2 SSD E0 S03 51828144P2

1 NORMAL ONLINE CACHED ONLINE CACHED 1 NORMAL 1 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 2 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 2 NORMAL ONLINE CACHED ONLINE CACHED 1 NORMAL 1 NORMAL ONLINE CACHED ONLINE CACHED 1 NORMAL 1 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 2 NORMAL ONLINE CACHED 1 NORMAL ONLINE CACHED 2 NORMAL ONLINE CACHED ONLINE CACHED 1 NORMAL



MEMBER AFD:SSD E0 S03 51828144P SSD E0 S03 51828144P3 MEMBER AFD:SSD E0 S03 51828144P SSD E0 S03 51828144P4 MEMBER AFD:SSD E0 S03 51828144P SSD E0 S03 51828144P5 MEMBER AFD:SSD E0 S03 51828144P SSD E0 S03 51828144P6 MEMBER AFD:SSD E0 S03 51828144P SSD E0 S03 51828144P7 MEMBER AFD:SSD E0 S03 51828144P SSD E0 S03 51828144P8 MEMBER AFD:SSD E0 S03 51828144P SSD E0 S03 51828144P9 MEMBER AFD:SSD E0 S04 51829536P SSD E0 S04 51829536P1 MEMBER AFD:SSD E0 S04 51829536P SSD E0 S04 51829536P10 MEMBER AFD:SSD E0 S04 51829536P2 SSD E0 S04 51829536P2 MEMBER AFD:SSD E0 S04 51829536P SSD E0 S04 51829536P3 MEMBER AFD:SSD E0 S04 51829536P SSD E0 S04 51829536P4 MEMBER AFD:SSD E0 S04 51829536P SSD E0 S04 51829536P5 MEMBER AFD:SSD E0 S04 51829536P SSD E0 S04 51829536P6 MEMBER AFD:SSD E0 S04 51829536P SSD E0 S04 51829536P7 MEMBER AFD:SSD_E0 S04 51829536P8 SSD_E0_S04_51829536P8 MEMBER AFD:SSD E0 S04 51829536P SSD E0 S04 51829536P9 MEMBER AFD:SSD E0 S05 51841136P SSD E0 S05 51841136P1 MEMBER AFD:SSD E0 S05 51841136P10

3	1	NORMAL	ONLINE	CACHED
4	1	NORMAL	ONLINE	CACHED
5	1	NORMAL	ONLINE	CACHED
6	1	NORMAL	ONLINE	CACHED
7	1	NORMAL	ONLINE	CACHED
8	1	NORMAL	ONLINE	CACHED
9	2	NORMAL	ONLINE	CACHED
1	1	NORMAL	ONLINE	CACHED
210	2	NORMAL	ONLINE	CACHED
2	1	NORMAL	ONLINE	CACHED
3	1	NORMAL	ONLINE	CACHED
4	1	NORMAL	ONLINE	CACHED
5	1	NORMAL	ONLINE	CACHED
6	1	NORMAL	ONLINE	CACHED
7	1	NORMAL	ONLINE	CACHED
8	1	NORMAL	ONLINE	CACHED
9	2	NORMAL	ONLINE	CACHED
1	1	NORMAL	ONLINE	CACHED
10				



```
2 NORMAL
SSD E0 S05 51841136P10
                                                           ONLINE CACHED
MEMBER
AFD:SSD E0 S05 51841136P2
SSD_E0_S05_51841136P2
                                                1 NORMAL
                                                           ONLINE CACHED
MEMBER
AFD:SSD E1 S23 51847424P9
SSD E1 S23 51847424P9
                                                2 NORMAL
                                                           ONLINE CACHED
MEMBER
. .
. .
. .
SQL> Disconnected from Oracle Database 19c Enterprise Edition Release
19.0.0.0.0 - Production
Version 19.25.0.0.0
#
```

9. Use the odaadmcli 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.

odaadmcli show validation storage errors

10. Use the odaadmcli show validation storage failures command to show soft validation errors.

A typical soft disk error would be an invalid version of the disk firmware.

odaadmcli show validation storage failures

- **11.** Run the odacli describe-component command to verify that all firmware components in the storage expansion are current.
 - # odacli describe-component
- **12.** If needed, update the storage shelf and then run the odacli describe-component command to confirm that the firmware is current.

```
# odacli update
# odacli describe-component
```



Managing Networks

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

- About Network Infrastructure and VLANs on Oracle Database Appliance Learn about networks and virtual local area networks (VLANs) on the appliance.
- About Oracle Database Appliance X11 Network Interfaces Learn about onboard network interfaces for Oracle Database Appliance.
- Viewing Configured Networks and Network Interfaces
 Use the Browser User Interface to display a list of configured networks, network details, and interfaces.
- Creating a Network Understand how you can use the Browser User Interface to create a network for the appliance.
- Creating a Physical Network Understand how you can use the Browser User Interface to create a physical network on the unused network interface.
- Updating a Network Understand how you can use the Browser User Interface to update a network and revise the IP address, subnet mask, gateway, or type of network.
- Adding a Network Interface Understand how you can add a configured network interface.
- Deleting a Network Interface Understand how you can delete a configured network interface.
- Deleting a Network Interface Using Browser User Interface Understand how you can delete a configured network interface using the Browser User Interface.
- Deleting a Network Using the Browser User Interface Understand how you can delete a configured network using the Browser User Interface.

About Network Infrastructure and VLANs on Oracle Database Appliance

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

Oracle Database Appliance has two dual-port public network interfaces (either copper or fiber), which are bonded. For dual-port networks cards, the bonded network interface used for primary public network is always btbond1. You can, optionally, configure upto six bonded interfaces, btbond1 to btbond6. If you use network cards with four ports, then you can select either btbond1 or btbond2 as the public network interface.

You can use the Browser User Interface to display all physical and virtual networks. You can use ODACLI commands or the Browser User Interface to create, update, and deleted networks.



Virtual Local Area Networks (VLANs)

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

The network interfaces differ, depending on your Oracle Database Appliance hardware. The VLAN is created on btbond0 in single-node and high-availability platforms. In all cases, connections to user domains are through the selected interfaces. A switch that supports tagged VLANs uses VLAN IDs to identify the packet, including to which network the packet belongs.

Note:

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

The Browser User Interface enables you to create, list, and delete VLANs on the appliance. For high-availability systems, you can use the Browser User Interface to create a VLAN on both nodes of the appliance. To create a VLAN on a specific node, use the command-line interface.

For a bare metal deployment, use the Browser User Interface or odacli commands to manage the following types of VLANs:

- Data Guard: For Oracle Data Guard.
- Database: For Oracle Database.
- Backup: For backup operations.
- Management: For management traffic.
- Other: For usage defined by the customer. For example, for applications.

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

About Oracle Database Appliance X11 Network Interfaces

Learn about onboard network interfaces for Oracle Database Appliance.

The network interfaces differ, depending on your Oracle Database Appliance hardware. In all cases, connections to user domains are through the selected interfaces. Two ports inside a network card are used to create an active-backup mode bonding interface.

The following table lists the default network interfaces for Oracle Database Appliance bare metal systems on Oracle Database Appliance X11-HA.



PCIe Network Card Slot	PCIe Network Port	Network Interfaces	Network Bonds	IP Addresses
PCIe Slot 1 (Interconnect)	2 x 10/25GbE SFP28 ports	p1p1, p1p2	icbond0	Node 0: 192.168.16.24
				Node 1: 192.168.16.25
PCIe Slot 5 (required - first NIC)	4 x 10GBase-T ports or 2 x 10/25GbE SFP28 ports	p5p1, p5p2 (p5p3, p5p4)	btbond1 (btbond2)	Can be assigned during provisioning or post deployment.
PCIe Slot 4 (optional - second NIC)	4 x 10GBase-T ports or 2 x 10/25GbE SFP28 ports	p4p1, p4p2 (p4p3, p4p4)	btbond3 (btbond4)	Can be assigned during provisioning or post deployment.
PCIe Slot 8 (optional - third NIC)	4 x 10GBase-T ports or 2 x 10/25GbE SFP28 ports	p8p1, p8p2 (p8p3, p8p4)	btbond5 (btbond6)	Can be assigned during provisioning or post deployment.
On-board	1GBase-T	em1	Not applicable	Assigned post deployment

Table 12-1	Network Interfaces for Oracle Database Appliance X11-HA Bare Metal
Deploymen	it

The following table lists the default network interfaces for Oracle Database Appliance bare metal systems on Oracle Database Appliance X11-S and X11-L.

Table 12-2Network Interfaces for Oracle Database Appliance X11-S and X11-L BareMetal Deployment

PCIe Network Card Slot	PCIe Network Port	Network Interfaces	Network Bonds	IP Addresses
PCIe Slot 5 (required - first NIC)	4 x 10GBase-T ports or 2 x 10/25GbE SFP28 ports	p5p1, p5p2 (p5p3, p5p4)	btbond1 (btbond2)	btbond1 and btbond2 can be assigned during deployment.
PCle Slot 4 (optional - second NIC for Oracle Database Appliance X11-L)	4 x 10GBase-T ports or 2 x 10/25GbE SFP28 ports	p4p1, p4p2 (p4p3, p4p4)	btbond3 (btbond4)	Can be assigned during deployment. If not assigned during deployment, then it can be assigned post deployment.
PCIe Slot 9 (optional - second NIC for Oracle Database Appliance X11-S)	4 x 10GBase-T ports or 2 x 10/25GbE SFP28 ports	p9p1, p9p2 (p9p3, p9p4)	btbond3 (btbond4)	Can be assigned during deployment. If not assigned during deployment, then it can be assigned post deployment.

PCIe Network Card Slot	PCIe Network Port	Network Interfaces	Network Bonds	IP Addresses
PCle Slot 8 (optional - third NIC)	4 x 10GBase-T ports or 2 x 10/25GbE SFP28 ports	p8p1, p8p2 (p8p3, p8p4)	btbond5 (btbond6)	Can be assigned during deployment. If not assigned during deployment, then it can be assigned post deployment.
On-board	1GBase-T	em1	Not applicable	Assigned post deployment

Table 12-2(Cont.) Network Interfaces for Oracle Database Appliance X11-S and X11-LBare Metal Deployment

Viewing Configured Networks and Network Interfaces

Use the Browser User Interface to display a list of configured networks, network details, and interfaces.

- 1. Click the Appliance tab in the Browser User Interface.
- 2. Click the **Network** tab in the left navigation to display a list of configured networks and configured databases.

When the appliance is a high-availability system, the network details for **Node0** and **Node1** display on the page.

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

If the appliance is a high-availability system, then the network interface details for **Node0** and **Node1** display on the page.

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

Creating a Network

Understand how you can use the Browser User Interface to create a network for the appliance.

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

- 1. Click the **Appliance** tab in the Browser User Interface.
- 2. Click the Network tab in the left navigation to display a list of configured networks.
- 3. If the appliance is a high-availability system, then the Browser User Interface helps you create the network for both nodes at the same time.
- 4. Click Create Network in the upper right corner.
- 5. Enter the network information in the required fields. The Interface field has a drop-down menu with available choices. The Subnet Mask field has a drop-down menu with available choices and a search box. Optionally, enter a Gateway IP address and select an option from the Network Type list. The network type helps to identify if the network is for backup, database, dataguard, management, private, or other.



If the appliance is a high-availability system, then you must also specify the SCAN (Oracle Single Client Access Name) details such as name and IP address, and VIP (Virtual IP) name and address.

6. Click Create.

Creating a Physical Network

Understand how you can use the Browser User Interface to create a physical network on the unused network interface.

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

Updating a Network

Understand how you can use the Browser User Interface to update a network and revise the IP address, subnet mask, gateway, or type of network.

- 1. Click the Appliance tab in the Browser User Interface.
- 2. Click the Network tab in the left navigation to display a list of configured networks.

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

- 3. If the appliance is a high-availability system, click **Node0** or **Node1** to display the node where the network that you want to edit resides.
- 4. Expand the Actions menu, then click Update for the network that you want to edit.
- 5. Update the information in the IP Address, Subnet Mask, and Gateway fields and select a network type from the list, as needed, then click **Update**. For High-Availability deployments, you can also update the Virtual IP Address and Oracle Single Client Access Name (SCAN).



Adding a Network Interface

Understand how you can add a configured network interface.

This procedure explains how to add a network interface card on Oracle Database Appliance.

- 1. Power off the appliance.
- 2. Add the network interface card.
- 3. Power on the appliance.
- 4. The network configuration files are automatically updated for network bonding and configuration changes.

Deleting a Network Interface

Understand how you can delete a configured network interface.

This procedure explains how to delete a network interface card on Oracle Database Appliance X11. You cannot delete the network interface card in slot 5. You also cannot delete the btbond1 and btbond2 networks.

- Disconnect all networks for the network interface card from all applications on the appliance.
- 2. Power off the appliance.
- 3. Remove the network interface card.
- 4. Power on the appliance.
- 5. Run the command odacli delete networkinterface to clean up the network configuration files.

odacli delete networkinterface network interface name

[root@oak ~]# odacli delete-networkinterface btbond3
Network btbond3 has been deleted successfully

[root@oak ~]# odacli delete-networkinterface btbond4 Network btbond4 has been deleted successfully

Deleting a Network Interface Using Browser User Interface

Understand how you can delete a configured network interface using the Browser User Interface.

- 1. Click the Appliance tab in the Browser User Interface.
- Click the Network tab in the left navigation to display a list of configured networks.
- 3. Click the **Show Interfaces** tab in the right navigation to display a list of configured network interfaces.
- Expand the Actions menu, then click Delete for the network interface that you want to delete.



5. Confirm the action when prompted.

Deleting a Network Using the Browser User Interface

Understand how you can delete a configured network using the Browser User Interface.

- 1. Click the **Appliance** tab in the Browser User Interface.
- 2. Click the **Network** tab in the left navigation to display a list of configured networks.

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

- 3. If the appliance is a high-availability system, then click **Node0** or **Node1** to display the node where the network that you want to delete resides.
- 4. Expand the Actions menu, then click **Delete** for the network that you want to delete.
- 5. Confirm the action when prompted.



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.
- Configuring NFS Backup and Restore on Oracle Database Appliance
 To backup databases to Network File System (NFS) location or to restore the database
 from NFS location, you must configure the NFS backup location to ensure that Oracle
 Database Appliance can perform read and write operations.
- 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 Backup Policy
 Use the Browser User Interface to update the recovery window, change the ObjectStore
 Credential, or change the crosscheck option for a 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. A user error or a physical problem with a disk can cause a failure of a read or write operation on a disk file required to run the database. 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 options.

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 backup. After a backup policy is attached to a database, the DCS agent automatically schedules the database backup and archive logs backup, for the database. By default, the frequency of the database backup schedule is once a day and the frequency of archivelog backup schedule is 30 minutes. The database backup scheduler performs level 0 backup every Sunday and a level 1 backup Monday through Saturday. However the level 0 backup day can be changed from the default Sunday to any day of the week. The database backup scheduler and archive logs backup schedulers can be disabled or have their frequencies changed.

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.

Oracle Database Appliance uses the Oracle Recovery Manager (RMAN) to recover the database. 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 Oracle 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 also attach a backup policy to an existing database or update a backup policy.

You can specify compression algorithm while 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. Refer to the *Oracle Database Licensing Information User Manual* for license considerations when you use LOW, MEDIUM, or HIGH compression algorithms for Disk or NFS backup policy.



Backup Levels

Specify the backup level when you take a backup. The supported back levels are:

- Level 0: This 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: This 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 Level 1 backup includes blocks that were changed from the most recent level 1 or level 0 backup.
- **LongTerm**: This 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 External FRA (NFS location) or Objectstore backup policy.
- Archivelog: This is a backup of all archive logs not yet backed up to the backup destination, such as Internal FRA, External FRA (NFS location), or Object Store.

When a database is modified with a backup configuration, database backup schedule and archive logs backup schedules are created automatically. Automatic database backup schedule creates a level 0 backup on Level 0 Backup Day, by default, on Sunday, and level 1 on the remaining days of the week. Also, automatic archive logs backup schedules creates archive logs backup for the database with a default frequency of 30 minutes. These backup schedules can be edited to enable or disable or change the frequency using cron expression.

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, the data for non-TDE database is not encrypted and RMAN backup encryption 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).
- If the database is TDE-enabled, then the RMAN backup encryption password is not required, irrespective of the backup destination.

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.
- Create a database and attach the backup policy to the database. When the backup policy is associated with a database, archive logs backups and database backups are automatically created.
- 3. 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 RMAN Backup Encryption password is applicable for databases that do not have TDE enabled. If the database has TDE enabled, then the RMAN backup password is not required, irrespective of the backup destination.

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 oracle 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.
- 4. 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.

Note:

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. For TDE-enabled databases, backups are encrypted by default and do not require the RMAN backup encryption password to be specified separately.

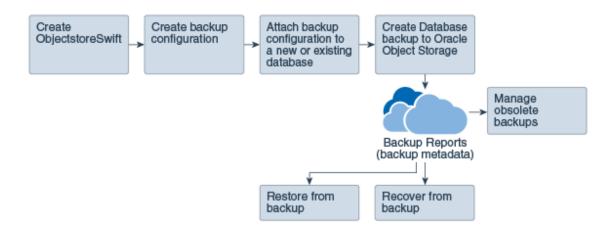
Caution:

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.
- 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.



Note:

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

Backup Reports

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

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

```
"id" : "2d82460c-d648-4e75-8c7d-72cc90bc442a",
   "dbResId" : "b5fc646e-01a6-4c8b-8286-7633346c4329",
  "tag" : null,
"dbId" : "2717054291",
"dbName" : "HRDb0",
  "dbUniqueName" : "HRDbOu",
"backupType" : "REGULAR-L1",
"keepDays" : null,
  "keepDays" : null,
"backupLocation" : "https://swiftobjectstorage.us-phoenix-l.oraclecloud.com/vl/dbaasimage/backupbucket",
"cfBackupHandle" : "c-2717054291-20171108-04",
"spfBackupHandle" : "c-2717054291-20171108-04",
"pitrStamp" : "November 08, 2017 12:43:14 PM UTC",
"pitrStN" : "l175058",
"resetLogsTimEStamp" : "November 08, 2017 09:55:34 AM UTC",
   "resetLogsISCN" : "112266",
"oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
  "sqlPatches" : "25811364,26609817",
"backupLogLoc" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/scaoda702c1n1/rmanlog/
HRDbOu/2717054291/2017-11-08/rman_backup_2017-11-08_12-42-41.0545.log",
"tdeWalletLoc": null,
"dbConfigLoc": "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/scaoda702c1n1/dbconfig/
HRDbOu/2717054291/2017-11-08/DBCONFIG_TAG20171108T124407_2017-11-08_12-44-07.0533.tar.gz",
   "name" : "Backup Report HRDbO",
   "createTime" : "November 08, 2017 12:42:08 PM UTC",
  "state" : {
    "status" : "CONFIGURED"
  "updatedTime" : "November 08, 2017 12:44:12 PM UTC",
"backupReportLogDetail" : "https://swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1/dbaasimage/backupbucket/scaoda702c1n1/
rmandetaillogreport/HRDbOu/2717054291/2017-11-08/rman list backup detail 2017-11-08 12-44-04.0362.log",
  "dbInfo" : {
 "dbClass" : "OLTP",
      "dbType" : "RAC",
      "dbShape" : "odb1",
      "dbEdition" : "EE",
      "dbStorage" : "ASM'
    "dbDataSize" : "1542M",
```



```
"dbRedoSize" : "16403M"
```

About Backup of TDE Wallet

When the database backup is performed, the TDE wallet backup is also taken. The database backup can be of any type like regular-L0, regular-L1, longterm and archivelog. Use the odacli list-tdebackupreports command to view the latest TDE wallet backup in a backup destination. For example, if a TDE-enabled database named tdedb1 was attached with Disk, and then NFS, and later Oracle Object Storage backup configuration, and the database was backed up to each of these backup destination eventually, then the odacli list-tdebackupreports command lists three entries of TDE wallet backup corresponding to Disk, NFS and Oracle Object Storage backup destination, respectively, for the database tdedb1. The reason for selecting the latest copy is that the TDE wallet is a cumulative wallet, that is, all previous changes, such as re-key operation is available in the latest TDE wallet itself.

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 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.

Restoring Archive Logs

The database auto backup policies - Regular-L0, and Regular-L1 delete archivelog, which could be essential in later process, such as in configuration or reinstate operations for Oracle Data Guard. Oracle Database Appliance supports restore of archive logs for a database. You can choose to restore archive logs from one SCN to another SCN, or from one timestamp to another timestamp.

Run the command odacli restore-archivelog specifying the SCN or timestamp period.

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, level 1, and archivelog backups, run the command odacli delete-backup for a given Database Resource Identifier to delete obsolete backups and backup reports 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 or NFS backup location and the back report you specify in the command.

Typically, older level 0 and level 1 database backups are considered obsolete based on the defined recovery window and those obsolete backups are deleted when you run the odacli delete-backup command. The defined recovery window is as follows:

- Disk: 1-14 days
- Object Storage: 1-30 days

Starting with Oracle Database Appliance release 19.15, on attaching a backup policy to a database, the DCS agent creates a scheduler for deleting the database backup. It deletes the obsolete backups and backup reports for the database. By default, the frequency of this delete



backup scheduler is once a week. It runs on every Monday to delete obsolete backups and backup reports of the database. The delete backup scheduler can be edited to disable it or to change its frequency.

Related Topics

 Configuring an NFS Backup Location
 Configure Network File System (NFS) backup location, to set up the NFS backup and mount the NFS client location on Oracle Database Appliance.

Configuring NFS Backup and Restore on Oracle Database Appliance

To backup databases to Network File System (NFS) location or to restore the database from NFS location, you must configure the NFS backup location to ensure that Oracle Database Appliance can perform read and write operations.

Following are the steps to configure the NFS location, backup database to NFS location, and restore database as a standby database from the NFS backup location.

- Configuring an NFS Backup Location Configure Network File System (NFS) backup location, to set up the NFS backup and mount the NFS client location on Oracle Database Appliance.
- Backing Up the Database to NFS Location
 To backup a database to NFS location on Oracle Database Appliance, you must create an NFS backup configuration object and then attach the same to the database.
- Restoring the Database from NFS Backup Understand the steps to restore a database from NFS location.

Configuring an NFS Backup Location

Configure Network File System (NFS) backup location, to set up the NFS backup and mount the NFS client location on Oracle Database Appliance.

An NFS setup involves an NFS server location and an NFS client location. While performing database backup operation, it is recommended that you configure the NFS server location on a different system, than the system where the source database, that is, the database to be backed up, is running. This ensures the database backups are not lost, even if the system where the source database is running, is corrupted or lost. However, the NFS client location must be configured on the same machine where the database is running, to perform database backup operation. Also, while performing database restore operation, the NFS client location must be configured on the same system where the database must be restored.

Note:

- An NFS backup configuration object must be created and attached to the database. This NFS backup location is a mandatory parameter to create a NFS backup configuration object.
- For TDE-enabled database, Oracle Database Appliance requires the backup path to be different for database and TDE wallet, as per security guidelines. If the source database is TDE-enabled, then configure another NFS client location following the steps in this topic.



Run the following steps on the NFS server:

1. Create an Oracle ADVM volume and format the volume as Oracle ACFS, on any node, for example, node0, of a different Oracle Database Appliance system, as the grid operating system user.

```
[root@**** ~] # su - grid
[grid@***** ~] # asmcmd
ASMCMD> volcreate -G data -s 100G backup
ASMCMD> volinfo -G data backup
Diskgroup Name: DATA
Volume Name: BACKUP
Volume Device: /dev/asm/backup-322
State: ENABLED
Size (MB): 102400
Resize Unit (MB): 64
Redundancy: HIGH
Stripe Columns: 8
Stripe Width (K): 4096
Usage:
Mountpath:
ASMCMD> exit
[grid@***** ~]$ mkfs -t acfs /dev/asm/backup-322
mkfs.acfs: version = 19.0.0.0.0
mkfs.acfs: on-disk version = 46.0
mkfs.acfs: volume = /dev/asm/backup-322
mkfs.acfs: volume size = 107374182400 ( 100.00 GB )
mkfs.acfs: Format complete.
```

[grid@**** ~]\$ exit

 Create an operating system directory as the root user to export Oracle ACFS volume created in the previous step.

[root@***** ~] # mkdir /nfs backup server

3. Register the file system with Oracle Clusterware and start the file system as the root user.

```
[root@***** ~]# /u01/app/19.13.0.0/grid/bin/srvctl add filesystem -
d /dev/asm/backup-322 -path /nfs_backup_server -mountowner oracle -
mountgroup asmadmin
[root@***** ~]#/u01/app/19.13.0.0/grid/bin/srvctl start filesystem -
d /dev/asm/backup-322
```

4. Identify the owner and group of the DBHOME/bin/oracle binary of the source database and set the directory ownership to the same owner and group. In the following example, the owner and group of the DBHOME/bin/oracle binary are oracle and asmadmin respectively. Hence, the ownership of NFS server location is set to the same. The permissions of the directory must be set to 750.

```
[root@***** ~]# ls -ltr /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome_1/bin/oracle
    -rwsr-s--x 1 oracle asmadmin 449234896 Sep 21 11:39 /u01/app/
```



```
odaorahome/oracle/product/19.0.0.0/dbhome_1/bin/oracle
[root@***** ~]# chown oracle:asmadmin /nfs_backup_server
[root@***** ~]# chmod 750 /nfs_backup_server
[root@***** ~]# ls -ld /nfs_backup_server
drwxr-x--- 2 oracle asmadmin 4096 Sep 21 12:25 /nfs backup server
```

5. When NFS server location and NFS client location are on different systems, then there may be cases where the IDs of the oracle user and the asmadmin group may be different. If the IDs of the oracle user and the asmadmin group are the same, then do not run step 6. In the following example, the ID of oracle user is 1001 on the NFS server system and 1000 on the NFS client system.

```
Output of the system where the NFS server location is configured:
    [root@***** ~]# id oracle
    uid=1001(oracle) gid=1001(oinstall)
groups=1001(oinstall),1006(asmdba),1003(dba),1002(dbaoper)
    Output of the system where the NFS client location is configured:
    [root@***** ~]# id oracle
    uid=1000(oracle) gid=1001(oinstall)
```

groups=1001(oinstall),1006(asmdba),1003(dba),1002(dbaoper)

In such a case, the ownership of the NFS server location must be set to the same ID as the oracle useron the system where the NFS client location is configured. The ownership of the /nfs backup server location must be set to 1000 as follows:

[root@***** ~] # chown 1000:asmadmin /nfs backup server/

6. Export the NFS server location to the systems where the NFS client location is created.

```
[root@***** ~]# cat /etc/exports
    /nfs_backup_server Node0_NFS_Client_Location_IP(rw,sync,no_root_squash)
    /nfs_backup_server Node1_NFS_Client_Location_IP(rw,sync,no_root_squash)
```

Note that the NFS mount option must be (rw, sync, no_root_squash). Starting with Oracle Database Appliance release 19.17, there is no dependency on NFS mount option no root squash, It can then be (rw, sync).

7. Restart the NFS server.

```
Command on Oracle Linux 7 systems:
    [root@***** ~]# /bin/systemctl restart nfs.service
Command on Oracle Linux 8 systems:
    [root@***** ~]# /bin/systemctl restart nfs-server
```

8. Verify the mount point using the showmount -e command.

```
[root@***** ~]# showmount -e
    Export list for *****:
```

```
/nfs_backup_server
Node0_NFS_Client_Location_IP,Node1_NFS_Client_Location_IP
```

Follow these steps to mount the NFS location on Oracle Database Appliance. If the source database is on an Oracle Database Appliance high-availability system, then run the following steps on both nodes.

1. Create a NFS client location as the root user.

```
[root@***** ~] # mkdir /nfs backup client
```

2. Mount the NFS client location on to the NFS server location, using the IP address of the system where the NFS server location is configured.

```
[root@***** ~]# mount -t nfs NFS_Server_Location_IP:/nfs_backup_server /
nfs backup client
```

Related Topics

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.

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).

Backing Up the Database to NFS Location

To backup a database to NFS location on Oracle Database Appliance, you must create an NFS backup configuration object and then attach the same to the database.

The relationship between NFS backup configuration object and database is one-to-many, that is, you can attach one NFS backup configuration object to multiple databases. Use the NFS backup location that you configured in the *Configuring an NFS Backup Location* topic to create an NFS backup configuration object.

Follow these steps to backup a database to an NFS location:

 Create the NFS backup configuration with the NFS backup location using the odacli create-backupconfig command. In the following sample output, the NFS backup location, specified using the -c option, is /nfs_backup_client/, the name of the NFS backup configuration object, specified using the -n option is nfsbcfg, the destination, specified using the -d option is nfs and the retention period, specified using the -w option is 1 day.

If the source database is TDE-enabled, then along with database backup location, specified using the -c option, the TDE wallet location must also be specified using the -f option. The TDE backup path must be different from the database backup path and can be configured in the same way as the database backup path.

```
# odacli create-backupconfig -n nfsbcfg -d nfs -c /nfs_backup_client/ -w 1
{
    "jobId" : "0a86bd50-7ac7-4d6d-af4b-1ee2c4d451d5",
    "status" : "Created",
    "message" : "backup config creation",
    "reports" : [ ],
```

```
"createTimestamp" : "September 21, 2022 17:02:21 PM UTC",
     "resourceList" : [ {
      "resourceId" : "023eb9ac-a4d0-4071-a358-c904791d15d7",
      "resourceType" : null,
      "resourceNewType" : "BackupConfig",
      "jobId" : "0a86bd50-7ac7-4d6d-af4b-1ee2c4d451d5",
      "updatedTime" : null
     }],
     "description" : "create backup config:nfsbcfg",
     "updatedTime" : "September 21, 2022 17:02:21 PM UTC"
   ł
# odacli describe-job -i 0a86bd50-7ac7-4d6d-af4b-1ee2c4d451d5
   Job details
                    _____
   _____
                     ID: 0a86bd50-7ac7-4d6d-af4b-1ee2c4d451d5
             Description: create backup config:nfsbcfg
                 Status: Success
                 Created: September 21, 2022 5:02:21 PM UTC
                Message: backup config creation
   Task Name
                                     Start
Time
                         End Time
                                                       Status
   _____
_____
                                            _____
   Backup config metadata persist September 21, 2022 5:02:21 PM
UTC September 21, 2022 5:02:21 PM UTC Success
```

 Attach the NFS backup configuration object to the database using the odacli modifydatabase command.

```
# odacli modify-database -n mydb -bin nfsbcfg
     "jobId" : "4cd995f1-feb4-413e-a863-71e87cc97cff",
     "status" : "Created",
     "message" : "Modify database",
     "reports" : [ ],
     "createTimestamp" : "September 21, 2022 17:37:13 PM UTC",
     "resourceList" : [ {
       "resourceId" : "09b476c2-8f09-4636-9233-d8789c320b25",
       "resourceType" : "DB",
       "resourceNewType" : null,
       "jobId" : "4cd995f1-feb4-413e-a863-71e87cc97cff",
       "updatedTime" : "September 21, 2022 17:37:13 PM UTC"
     } ],
     "description" : "Modify database : mydb",
     "updatedTime" : "September 21, 2022 17:37:13 PM UTC"
   }
 # odacli describe-job -i 4cd995f1-feb4-413e-a863-71e87cc97cff
   Job details
                         ID: 4cd995f1-feb4-413e-a863-71e87cc97cff
```



Description: Modify database : mydb Status: Success Created: September 21, 2022 5:37:13 PM UTC Message: Modify database Task Name Start Time End Time Status -----_____ Validate OMF parameter values September 21, 2022 5:37:18 PM UTC September 21, 2022 5:37:19 PM UTC Success update db with backupconfig attributes September 21, 2022 5:37:34 PM September 21, 2022 5:37:39 PM UTC Success UTC Enable Database Autobackup September 21, 2022 5:37:39 PM September 21, 2022 5:37:39 PM UTC Success UTC Enable Archivelog Autobackup September 21, 2022 5:37:39 PM September 21, 2022 5:37:39 PM UTC Success UTC Configure Control file Auto Backup Format September 21, 2022 5:37:39 PM UTC September 21, 2022 5:37:42 PM UTC Success Backup Current Control file September 21, 2022 5:37:42 PM UTC September 21, 2022 5:37:50 PM UTC Success Update metadata for database:mydb September 21, 2022 5:37:50 PM UTC September 21, 2022 5:37:50 PM UTC Success

3. Back up the database using the odacli create-backup command. For example, you can take a backup type called Regular-LO with archivelog using the -ka option.

Note that you must take the backup with the -ka option, if you want to restore the backup as a standby database only for Oracle Database Appliance releases earlier than 19.12. From Oracle Database Appliance release 19.12 and later, the -ka option is not mandatory for restoring the database as standby.

```
# odacli create-backup -n mydb -bt regular-10 -ka
    {
      "jobId" : "6dc7ae65-93e3-4dc2-b4a7-563c8f98b01a",
      "status" : "Created",
     "message" : null,
      "reports" : [ ],
      "createTimestamp" : "September 21, 2022 17:39:03 PM UTC",
      "resourceList" : [],
      "description" : "Create regular-10 Backup[TAG:auto][Db:mydb][NFS:/
nfs backup client/orabackups/scaoda823-c/database/3031000803/mydb]",
      "updatedTime" : "September 21, 2022 17:39:03 PM UTC"
    }
 # odacli describe-job -i 6dc7ae65-93e3-4dc2-b4a7-563c8f98b01a
    Job details
                         ID: 6dc7ae65-93e3-4dc2-b4a7-563c8f98b01a
               Description: Create regular-10 Backup[TAG:auto][Db:mydb]
[NFS:/nfs backup client/orabackups/scaoda823-c/database/3031000803/mydb]
                    Status: Success
                    Created: September 21, 2022 5:39:03 PM UTC
                    Message:
```

Г	Task Name			Start				
Time		En	d Time				Status	5
-								
V	Validate backup	config		September	21,	2022	5:39:05	PM
UTC	September 21,	2022 5:39:05	PM UTC	Success				
N	NFS location exi	stence valid	ation	September	21,	2022	5:39:05	ΡM
UTC	September 21,	2022 5:39:05	PM UTC	Success				
E	Backup Validatio	ons		September	21,	2022	5:39:05	PM
UTC	September 21,	2022 5:39:11	PM UTC	Success				
F	Recovery Window	validation		September	21,	2022	5:39:11	PM
UTC	September 21,	2022 5:39:13	PM UTC	Success				
A	Archivelog delet	ion policy c	onfigurat	ion September	21,	2022	5:39:13	PM
UTC	September 21,	2022 5:39:16	PM UTC	Success				
Ľ	Database backup			September	21,	2022	5:39:16	PM
UTC	September 21,	2022 5:40:27	PM UTC	Success				

4. Oracle Database Appliance creates a backup report corresponding to each backup. Identify the backup report of the above database backup job using the odacli listbackupreports command. Describe the backup using the odacli describe-backupreport - backupreport_id command and save its output to a JSON file, as shown in the following example. After the JSON file for the backup report is ready, copy the file to the target system where you want to restore the database backup.

```
# odacli list-backupreports | grep -i mydb
496d6e76-d061-4bc2-ae0a-b3325eaa15fa 09b476c2-8f09-4636-9233-
d8789c320b25 3031000803 mydb mydb regular-10
auto September 21, 2022 5:39:16 PM UTC September 21, 2022
5:39:16 PM UTC Configured
# odacli describe-backupreport -i 496d6e76-d061-4bc2-ae0a-b3325eaa15fa >
mydb.json
```

Restoring the Database from NFS Backup

Understand the steps to restore a database from NFS location.

Follow these steps to restore a database from an NFS location:

1. The NFS client location must be created on both the nodes of the Oracle Database Appliance system as the root user.

```
[root@***** ~] # mkdir /nfs backup client
```

2. At the server system, export the NFS server location to the Oracle Database Appliance system using the IP address of the Oracle Database Appliance system.

```
[root@***** ~]# cat /etc/exports
    /nfs_backup_server <Node0_target_machine_IP>(rw,sync,no_root_squash)
    /nfs_backup_server <Node1_target_machine_IP>(rw,sync,no_root_squash)
```

For Oracle Database Appliance release 19.16 and earlier, you must specify the no_root_squash parameter. Starting with Oracle Database Appliance release 19.17, you need not specify the no root squash parameter.



3. Restart the NFS server on the system with the NFS server location.

```
Command on Oracle Linux 7 systems:

[root@***** ~]# /bin/systemctl restart nfs.service

Command on Oracle Linux 8 systems:
```

[root@***** ~]# /bin/systemctl restart nfs-server

4. Restore the database.

```
# odacli irestore-database -r mydb.json
   Enter SYS user password:
   Retype SYS user password:
     "jobId" : "85a8792a-ca9b-4a50-8202-11d63949d3f2",
     "status" : "Created",
     "message" : null,
     "reports" : [ ],
     "createTimestamp" : "September 21, 2022 17:43:06",
     "resourceList" : [ ],
     "description" : "Database service recovery with db name: mydb",
     "updatedTime" : "September 21, 2022 17:43:06"
   }
 # odacli describe-job -i 85a8792a-ca9b-4a50-8202-11d63949d3f2
   Job details
   _____
                     ID: 85a8792a-ca9b-4a50-8202-11d63949d3f2
              Description: Database service recovery with db name: mydb
                  Status: Success
                 Created: September 21, 2022 5:43:06 PM UTC
                 Message:
   Task Name
                                       Start
Time
                          End Time
                                                         Status
   _____
 _____
   Check if cluster ware is running
                                       September 21, 2022 5:43:30 PM
UTC September 21, 2022 5:43:30 PM UTC Success
   Check if cluster ware is running
                                     September 21, 2022 5:43:30 PM
UTC September 21, 2022 5:43:30 PM UTC Success
   Creating DbStorage for DbRestore
                                      September 21, 2022 5:43:30 PM
UTC September 21, 2022 5:48:36 PM UTC Success
   Validating dbHome available space
                                       September 21, 2022 5:43:30 PM
UTC
    September 21, 2022 5:43:30 PM UTC
                                    Success
   Validating dbHome available space
                                       September 21, 2022 5:43:30 PM
UTC
    September 21, 2022 5:43:30 PM UTC Success
                                      September 21, 2022 5:43:30 PM
   Validating DiskSpace for DATA
UTC September 21, 2022 5:43:31 PM UTC Success
   Generating SSH key
                                     September 21, 2022 5:43:31 PM
UTC September 21, 2022 5:43:31 PM UTC Success
```

Reset Associated Networks	September 21, 2022 6:30:03 AM
UTC September 21, 2022 6:30:04 AM UTC	Success
Set log_archive_dest for Database	September 21, 2022 6:30:04 AM
UTC September 21, 2022 6:30:11 AM UTC	Success

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.

 Define the HttpProxyHost and HttpProxyPort settings in the modify-agentconfigparameters command.

```
# odacli modify-agentconfig-parameters -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, 2023 4:56:53 PM IST
Message:
```

Task Name Start Time End Time Status

For more information about the modify-agentconfig-parameters command usage, see the Oracle Database Appliance Command-Line Interface.

2. Verify that the update succeeded:

odacli describe-job -i 0b0cbf9b-b0ab-4523-a096-5da4e48fc825

```
Job details
```

```
-----
```

```
ID: 0b0cbf9b-b0ab-4523-a096-5da4e48fc825
Description: Update agent configuration parameter values [HttpProxyHost,
HttpProxyPort]
Status: Success
Created: October 23, 2023 4:56:53 PM IST
Message:
```

Task Name Start Time End Time Status

3. Run the list-agentconfigParameters command to view the changes in the proxy settings:

odacli list-agentConfigParameters



```
Name Value Description Updated

HttpProxyHost www-proxy.test.com October 23, 2023 4:56:53 PM IST

HttpProxyPort 80 October 23, 2018 4:56:53 PM IST

HttpsProxyHost Https proxy server host October 23, 2023 12:23:21 AM IST

HttpsProxyPort Https proxy server port October 23, 2023 12:23:21 AM IST

OSPatchRepos Repo list for OS patching October 23, 2023 12:23:21 AM IST
```

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 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 or in the media management catalog correspond to data in the RMAN repository. The Enable Compression checkbox is selected by default. Selecting this option ensures backups are compressed. 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.

- You must specify the TDE Wallet Backup Location to associate the backup configuration to a TDE-enabled database.
- 6. 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 and automatic backups for archivelog of the database.

Updating a Database with a Backup Policy

Attach a backup policy to a database to define the database backup attributes and destination.

- 1. In the Browser User Interface, click the **Database** tab.
- 2. For the database that you want to modify, select Modify in the Actions drop down list.
- In the Modify Database page, select a backup policy from the Select Backup Policy drop down list.
- 4. Specify and confirm the Backup Encryption Password.
- 5. Click **Modify** to submit the job.
- 6. Click the **Activity** tab to check the job status.

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

Updating a Backup Policy

Use the Browser User Interface to update the recovery window, change the ObjectStore Credential, or change the crosscheck option for a backup policy.

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

- 1. Click the **Database** tab in the 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.
- 4. To change the recovery window, use the up or down arrow to change the number of days.
- 5. To enable or disable the crosscheck, select or deselect Enable Crosscheck.
- 6. Click Update. Click Yes to confirm that you want to update the backup policy.

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

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.

- 3. Review the database information, including the backup policy name and destination details. To select a backup policy for the database, click Apply Backup Policy. Select a policy and specify the Backup Encryption Password. For TDE-enabled databases, backups are encrypted by default and do not require the RMAN backup encryption password to be specified separately. For databases that do not have TDE enabled, the Backup Encryption Password is mandatory for Objectstore backup destination, optional for NFS backup destination and not required for Disk backup destination.
- 4. Click Manual Backup, Update Database Backup Schedule or Update Archive Log Backup Schedule.

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

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

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

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.

- 2. Scroll to the bottom of the page to view a list of Backups.
- 3. Click the Job ID for a backup to view the Backup Report and more details about the backup.

Recovering a Database Using the Browser User Interface

Understand the recovery options available for recovering a database.

- 1. 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.

- Specify and confirm the Backup Encryption Password for databases without Transparent Database Encryption (TDE) enabled.
- If the database has TDE enabled, then the TDE Wallet Backup Location and TDE Password fields are displayed.
- 6. 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 .
- 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.
- 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 You can restore a database to a system from Oracle Object Storage or NFS backup location using a backup report and the command-line interface.
- Restoring Archivelog with the CLI You can restore archivelog from one SCN to another SCN, or from one timestamp to another timestamp using the command-line interface.
- Deleting Backups with the CLI Delete older, obsolete level 0, level 1, archive log, and long term backups along with obsolete backup reports.

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:

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

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

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

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

2. Check the job status.

```
# odacli describe-job -i job_id_from_step1
```

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 and automatic backups for the archivelog.

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

```
# odacli modify-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 modify-database -n mydb -bin mybcfg
```

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:

 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 mkgldailynfs with 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 describe-job -i job id from step1

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 and automatic backups for the archivelog.

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

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

The -bp option to specify the backup password is optional and is not applicable for TDEenabled databases.



Related Topics

 Configuring an NFS Backup Location Configure Network File System (NFS) backup location, to set up the NFS backup and mount the NFS client location on Oracle Database Appliance.

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 -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
```

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

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

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

The following example creates a backup configuration named hr_7d_cloud with a backup to the <code>ObjectStore</code>. 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 describe-job -i job_id_from_step2

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

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, automatic backups for the archivelog, and weekly deletion of obsolete backups and backup reports for the database.

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

Note:

When you create a new database, you have the option to associate the database with any type of backup configuration.

Backing Up a Database with the CLI

Create a level 0, level 1, LongTerm database backup, or archivelog backup with the commandline 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 modify-schedule to disable or change the scheduled backup time.

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

Note:

To recover a database, 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, using the command odacli create-backup.



Use the Database Resource ID or Database Name 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. 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
```

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.

When recovering a TDE-enabled database, you need not specify the backup password.

 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 7fbb06bf-e3a3-4aed-b617-4d1cd3d33387
  "id" : "7fbb06bf-e3a3-4aed-b617-4d1cd3d33387",
  "dbResId" : "4903d18a-6c20-4860-9ed0-d2ea7bd3d7b9",
  "tag" : "auto",
  "dbId" : "3022438697",
  "dbName" : "tdbasm1",
  "dbUniqueName" : "tdbasm1",
  "backupType" : "regular-10",
  "keepDays" : null,
  "backupLocation" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups",
  "cfBackupHandle" : "c-3022438697-20201022-03",
  "spfBackupHandle" : "c-3022438697-20201022-03",
  "pitrTimeStamp" : "October 22, 2020 07:51:59 AM UTC",
  "pitrSCN" : "2549429",
  "resetLogsTimeStamp" : "October 22, 2020 05:23:56 AM UTC",
  "resetLogsSCN" : "2510142",
  "oraHomeVersion" : "19.8.0.0.200714",
  "sqlPatches" : "31281355",
```

```
"backupLogLoc" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups/scaoda8s002-c/
database/3022438697/tdbasm1/rmanlog/2020-10-22/
rman backup auto 2020-10-22 07-51-06.0546.log",
  "tdeWalletLoc" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/TestLtBackupFailur/scaoda8s002-
c/database/3022438697/tdbasm1/tdewallet/
ewallet 2020102207525186 tdbasm1.p12",
  "dbConfigLoc" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups/scaoda8s002-c/
database/3022438697/tdbasm1/dbconfig/2020-10-22/
DBCONFIG auto 2020-10-22 07-52-43.0230.tar.gz",
  "name" : "Backup Report tdbasm1",
  "createTime" : "October 22, 2020 07:51:03 AM UTC",
  "state" : {
    "status" : "CONFIGURED"
  },
  "updatedTime" : "October 22, 2020 07:52:55 AM UTC",
  "backupReportLogDetail" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups/scaoda8s002-c/
database/3022438697/tdbasm1/rmandetaillogreport/2020-10-22/
rman list backup detail auto 2020-10-22 07-52-33.0919.log",
  "dbInfo" : {
    "dbClass" : "OLTP",
    "dbType" : "SI",
    "dbShape" : "odb1",
    "dbEdition" : "EE",
    "dbStorage" : "ASM"
    "dbRedundancy" : null,
    "pdbName" : null,
    "isCdb" : false
  },
  "dbDataSize" : "1662M",
  "dbRedoSize" : "12298M",
  "rmanBackupPieces" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups/scaoda8s002-c/
database/3022438697/tdbasm1/backuppieces/2020-10-22/
backupPieces auto 4903d18a-6c20-4860-9ed0-
d2ea7bd3d7b9 20201022075238.json",
  "compressionAlgo" : "MEDIUM",
  "cpuPool" : null,
  "numberOfCores" : null
l
```

3. To recover from a backup report, based on SCN, 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
```



 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
```

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
```

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.

Note:

Use the -p option only if the database backup is encrypted using the RMAN backup password. The -p option is not applicable for TDE-enabled databases.

Restoring a Database with the CLI

You can restore a database to a system from Oracle Object Storage or NFS backup location 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 any folder on the other machine and use the command odacli irestore-database with the backup report. You must provide the complete location of the backup report when you run the command odacli irestore-database.
- 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 from Object Store backup, the backup report corresponding to that backup must be present in the target system. Also an ObjectStoreSwift object with the credential that can access the Object Store backup must be created and specified while restoring the database.



Note: 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):

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

```
# odacli list-backupreports
```

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

```
# odacli describe-backupreport -i 7fbb06bf-e3a3-4aed-b617-4d1cd3d33387
{
  "id" : "7fbb06bf-e3a3-4aed-b617-4d1cd3d33387",
  "dbResId" : "4903d18a-6c20-4860-9ed0-d2ea7bd3d7b9",
  "tag" : "auto",
  "dbId" : "3022438697",
  "dbName" : "tdbasm1",
  "dbUniqueName" : "tdbasm1",
  "backupType" : "regular-10",
  "keepDays" : null,
  "backupLocation" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups",
  "cfBackupHandle" : "c-3022438697-20201022-03",
  "spfBackupHandle" : "c-3022438697-20201022-03",
  "pitrTimeStamp" : "October 22, 2020 07:51:59 AM UTC",
  "pitrSCN" : "2549429",
  "resetLogsTimeStamp" : "October 22, 2020 05:23:56 AM UTC",
  "resetLogsSCN" : "2510142",
  "oraHomeVersion" : "19.8.0.0.200714",
  "sqlPatches" : "31281355",
  "backupLogLoc" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups/scaoda8s002-c/
database/3022438697/tdbasm1/rmanlog/2020-10-22/
rman backup auto 2020-10-22 07-51-06.0546.log",
  "tdeWalletLoc" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/TestLtBackupFailur/scaoda8s002-
c/database/3022438697/tdbasm1/tdewallet/
ewallet 2020102207525186 tdbasm1.p12",
  "dbConfigLoc" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups/scaoda8s002-c/
database/3022438697/tdbasm1/dbconfig/2020-10-22/
DBCONFIG auto 2020-10-22 07-52-43.0230.tar.gz",
  "name" : "Backup Report tdbasm1",
  "createTime" : "October 22, 2020 07:51:03 AM UTC",
  "state" : {
    "status" : "CONFIGURED"
  },
  "updatedTime" : "October 22, 2020 07:52:55 AM UTC",
  "backupReportLogDetail" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups/scaoda8s002-c/
```

```
database/3022438697/tdbasm1/rmandetaillogreport/2020-10-22/
rman list backup detail auto 2020-10-22 07-52-33.0919.log",
  "dbInfo" : {
    "dbClass" : "OLTP",
    "dbType" : "SI",
    "dbShape" : "odb1",
    "dbEdition" : "EE",
    "dbStorage" : "ASM",
    "dbRedundancy" : null,
    "pdbName" : null,
    "isCdb" : false
  },
  "dbDataSize" : "1662M",
  "dbRedoSize" : "12298M",
  "rmanBackupPieces" : "https://swiftobjectstorage.us-
ashburn-1.oraclecloud.com/v1/paasdevdbcssi/Bha Backups/scaoda8s002-c/
database/3022438697/tdbasm1/backuppieces/2020-10-22/
backupPieces auto 4903d18a-6c20-4860-9ed0-
d2ea7bd3d7b9_20201022075238.json",
  "compressionAlgo" : "MEDIUM",
  "cpuPool" : null,
  "numberOfCores" : null
}
```

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 from Step 2, as a JSON file in any 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. You must specify the abolute path to the JSON file.

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

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

To restore a TDE-enabled database, the TDE wallet password must be provided. You must specify the -t option in the command odacli irestore-database. If source database is TDE enabled, then the target database which was restored will also have TDE enabled.

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
```



Restoring Archivelog with the CLI

You can restore archivelog from one SCN to another SCN, or from one timestamp to another timestamp using the command-line interface.

Follow these steps to restore archivelog using the command-line (CLI):

 Restore archivelog from one SCN to another SCN, or from one timestamp to another timestamp:

```
# odacli restore-archivelog -fs from_scn -ts to_scn
# odacli restore-archivelog -ft from timestamp -tt to timestamp
```

Deleting Backups with the CLI

Delete older, obsolete level 0, level 1, archive log, and long term backups along with obsolete backup reports.

For level 0, level 1, and archive log 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 or NFS, view the keepDays attribute of 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, level 1, and archivelog backups along with obsolete backup reports, 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 from the 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 and BUI for easy configuration and management of Oracle Data Guard for high availability, data protection, and disaster recovery.
- Deploying Multiple Standby Databases with Oracle Data Guard on Oracle Database
 Appliance

In this release, Oracle Database Appliance supports Oracle Data Guard configuration with multiple standby databases.

- Configuring Oracle Data Guard on Oracle Database Appliance
 Oracle Database Appliance enables you to set up Oracle Data Guard using ODACLI commands.
- Configuring Oracle Data Guard on Oracle Database Appliance Using BUI Oracle Database Appliance enables you to set up Oracle Data Guard using BUI.
- Viewing Oracle Data Guard Status on Oracle Database Appliance View Oracle Data Guard status using ODACLI commands.
- Viewing Oracle Data Guard Status on Oracle Database Appliance Using BUI View Oracle Data Guard status using BUI.
- Performing Oracle Data Guard Operations Perform failover, switchover, and reinstate operations on Oracle Data Guard using ODACLI commands.
- Performing Oracle Data Guard Operations Using BUI Perform failover, switchover, and reinstate operations on Oracle Data Guard using BUI.
- Creating an Oracle Data Guard Network
 Create an Oracle Data Guard network and associate it with a database using ODACLI
 commands.
- Migrating an Oracle Database from One System to Another Using Integrated Oracle Data Guard

Understand how you can use Integrated Oracle Data Guard to migrate an Oracle Database from one system to another.

- 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.
- Enabling Oracle Active Data Guard on Existing Configurations Understand how you can enable Oracle Active Data Guard on existing configurations.

- Registering Oracle Data Guard on Oracle Database Appliance Using ODACLI Commands Oracle Database Appliance enables you to migrate Oracle Data Guard configuration that were manually configured, and register the configuration metadata with Oracle Database Appliance using ODACLI commands.
- Registering Oracle Data Guard on Oracle Database Appliance Using BUI Oracle Database Appliance enables you to migrate Oracle Data Guard configuration that were manually configured, and register the configuration metadata with Oracle Database Appliance using BUI.
- Deconfiguring Oracle Data Guard on Oracle Database Appliance Deconfigure Oracle Data Guard status using ODACLI commands.
- Deconfiguring Oracle Data Guard on Oracle Database Appliance Using BUI Deconfigure Oracle Data Guard status using BUI.

About Oracle Data Guard on Oracle Database Appliance

Oracle Database Appliance provides client interface through ODACLI commands and BUI 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.

The ability to create clone databases on a standby system enables you to set up test or development environments based on your standby databases. Since standby systems are not production systems, they are a better choice for seeding test or development environments.

Note:

Oracle Database Enterprise Edition includes Oracle Data Guard.



Deploying Multiple Standby Databases with Oracle Data Guard on Oracle Database Appliance

In this release, Oracle Database Appliance supports Oracle Data Guard configuration with multiple standby databases.

Prerequisites for deploying multiple standby databases with Oracle Data Guard configuration

- Primary and standby databases must be on different Oracle Database Appliance systems.
- For multiple standby configuration, you must deploy three Oracle Database Appliance DB systems.
- You can deploy multiple standby databases by providing the values in the odacli configure-dataguard command or through JSON file.

Note:

In this release, you can configure a maximum of two standby databases with Oracle Data Guard configuration.

Note:

You can only configure all standby databases at the time of Oracle Data Guard configuration, that is, when you run the odacli configure-dataguard command. You cannot configure additional standby databases later.

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 that the primary and standby systems have the same Oracle
 Database Appliance configuration. The database must have identical configuration for
 database version and storage, that is, they 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 19.23 or later.
- If you have customized the operating system, then ensure that environments on the systems 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 the primary and standby systems.

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 modify-agentconfig-parameters -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 -n 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 -n 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).

```
# odacli create-backup --backupType Regular-L0 -n primary DB
```

For example:

odacli create-backup --backupType Regular-L0 -n test db

2. Save the backup report:

```
# odacli describe-backupreport -i eba406c7-ae46-4d1d-a1e5-3e985397b171 >
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. Note that to create a database with role as standby in an Oracle Data Guard configuration on Oracle Database Appliance, you do not need to copy the wallet of the primary database when using Oracle Key Vault keystore for TDE-enabled databases. The same wallet can be specified in the odacli irestore-database command.

```
# 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.

odacli irestore-database -r backup_report.json -u *dbUniqueName* -ro STANDBY Password for SYS user:

4. 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 CLL configuration stops, the parameters are as follows:

In the interactive CLI configuration steps, the parameters are as follows:

- Standby site address is IP address or host name 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.
- You can specify multiple standby databases.

 For multiple standby databases, on non-multi user access enabled systems, retain the default user name as oda-admin. Specify the BUI password for oda-admin user and operating system password for the root user when prompted.

```
# odacli configure-dataguard
Number of standby databases (enter 1 or 2 | default: 1): 2
Standby 1 site address: standby1
BUI username for Standby site standby. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby1, enter
'oda-admin'; otherwise, enter the name of the user who has irestored
the Standby
database (default: oda-admin):
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Standby 2 site address: standby2
BUI username for Standby site standby2. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby2, enter
'oda-admin'; otherwise, enter the name of the user who has irestored
the Standby
database (default: oda-admin):
BUI password for Standby site standby2:
Password for root user on Standby site standby2:
```

 For multiple standby databases, on multi-user access enabled systems, specify the user name who has irestored the standby database. Specify the BUI password of the same user when prompted.

```
# odacli configure-dataguard
Number of standby databases (enter 1 or 2 | default: 1): 2
Standby 1 site address: standby1
BUI username for Standby site standby1. If Multi-user Access/Multi-user
Access
Passwordless is not enabled on Standby site standby1, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): u1
BUI password for Standby site standby1. If Multi-user Access
Passwordless is enabled on
Standby site, copy the cwallet.sso file from Standby site
(/opt/oracle/dcs/conf/dcspublickey wallet/) to Primary site (/root/).
Rename the file to 'cwallet.sso.standby1', set the file ownership
(root:root) and file permission (0440) and then press enter:
Standby 2 site address: standby2
BUI username for Standby
 site standby2. If Multi-user Access/Multi-user Access
Passwordless is not enabled on Standby site standby2, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): usr1
BUI password for Standby
 site standby2. If Multi-user Access Passwordless is enabled on
Standby site, copy the cwallet.sso file from Standby site
(/opt/oracle/dcs/conf/dcspublickey wallet/) to Primary site (/root/).
Rename the file to 'cwallet.sso.standby2', set the file ownership
(root:root) and file permission (0440) and then press enter:
```

 For multiple standby databases, on multi-user access passwordless systems, specify the user name who has irestored the standby database. You are prompted to copy the wallet, follow the instructions in the interactive command flow.

```
# odacli configure-dataguard
Number of standby databases (enter 1 or 2 | default: 1): 2
Standby 1 site address: standby1
BUI username for Standby
 site standby1. If Multi-user Access/Multi-user Access
Passwordless is not enabled on Standby site standby1, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): u1
BUI password for Standby
site standby1. If Multi-user Access Passwordless is enabled on
Standby site, copy the cwallet.sso file from Standby site
(/opt/oracle/dcs/conf/dcspublickey wallet/) to Primary site (/root/).
Rename the file to 'cwallet.sso.standby1', set the file ownership
(root:root) and file permission (0440) and then press enter:
Standby 2 site address: standby2
BUI username for Standby
site standby2. If Multi-user Access/Multi-user Access
Passwordless is not enabled on Standby site standby2, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): usr1
BUI password for Standby
 site standby2. If Multi-user Access Passwordless is enabled on
Standby site, copy the cwallet.sso file from Standby site
(/opt/oracle/dcs/conf/dcspublickey wallet/) to Primary site (/root/).
Rename the file to 'cwallet.sso.standby2', set the file ownership
(root:root) and file permission (0440) and then press enter:
```

 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:

Protection Mode \ Transport Type	ASYNC	FASTSYNC**	SYNC
MAXPERFORMANCE	Y*	Y	Y
MAXAVAILABILITY***	Ν	Y*	Y
MAXPROTECTION	N	N	Y*

Table 14-1 Oracle Data Guard protection modes and transport modes

* in the table indicates the default supported pair and ** FASTSYNC mode is available only in Oracle Database 12.1 or later. *** MaxAvailability protection mode requires at least one standby having transport type FASTSYNC or SYNC.

Example with one standby configuration:

```
# odacli configure-dataguard
# /opt/oracle/dcs/bin/odacli configure-dataguard
Number of standby databases (enter 1 or 2 | default: 1):
Standby 1 site address: phxdbfzp04.dev3farm3phx.databasede3phx
```

```
BUI username for Standby site host1. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site
phxdbfzp04.dev3farm3phx.databasede3phx, enter 'oda-admin'; otherwise,
enter the name of the user who has irestored the Standby database
(default: oda-admin): oda-admin
BUI password for Standby site host2:
Password for root user on Standby site host2:
*****
Data Guard configuration name: tdb dg
Database name for Data Guard configuration: tdb
Primary database SYS password:
Protection mode [MAX PROTECTION, MAX PERFORMANCE, MAX AVAILABILITY]
(default: MAX PERFORMANCE):
Enable Active Data Guard (Y/N, default:N):
*****
Data Guard default settings for standby database - tdbstndby
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N): N
* * * * * * * * * * * * * * * *
Enter Primary database RMAN backup encryption password if any:
Do you want to provide another Primary database RMAN backup encryption
password if any? [y/n] (default 'n'):
Standby database's SYS password will be set to Primary database's after
Data Guard configuration. Ignore warning and proceed with Data Guard
configuration? (Y/N, default:N): Y
{
 "jobId" : "e02cc0b3-bce3-4d6c-a1f5-5b121bb7f66a",
 "status" : "Created",
 "message" : "",
 "reports" : [ ],
 "createTimestamp" : "January 23, 2025 03:12:44 AM UTC",
 "resourceList" : [],
 "description" : "DG Config service for DB tdb",
 "updatedTime" : "January 23, 2025 03:12:44 AM UTC",
 "jobType" : null,
 "cpsMetadata" : null
[root@host1 work]# /opt/oracle/dcs/bin/odacli describe-job -i e02cc0b3-
bce3-4d6c-a1f5-5b121bb7f66a
Job details
          _____
                   ID: e02cc0b3-bce3-4d6c-a1f5-5b121bb7f66a
          Description: DG Config service for DB tdb
               Status: Success
              Created: January 23, 2025 03:12:44 UTC
```

Message:

```
Task Name
                                 Start
Time
                            End
Time
                              Status
-----
_____
_____ ____
Validate configure primary request January 23, 2025 03:13:10
           January 23, 2025 03:13:21 UTC
UTC
                                            Success
(Primary site) (Host:
host1/Job
ID:
901389f5-0cad-4ee6-91be-3f77b85652af)
Validate configure standby request January 23, 2025 03:13:21
UTC
            January 23, 2025 03:13:29 UTC
                                            Success
(Standby site)
(Host:
host2/Job
ID:
856d86e4-dd51-41a7-9050-
b0c39ae771f9)
Uploading Primary DB Password File January 23, 2025 03:13:29
UTC
      January 23, 2025 03:13:52 UTC
                                            Success
(Standby
site)
Configure primary database (Primary January 23, 2025 03:13:52
UTC
            January 23, 2025 03:15:29 UTC
                                            Success
site) (Host: host1/Job
ID:
5dd46e86-
e07f-423f-9ebf-2515b4ac17d5)
Configure standby request (Standby January 23, 2025 03:15:29
UTC
           January 23, 2025 03:17:30 UTC
                                            Success
site)
(Host:
host2/Job
ID:
2ab511a2-15c0-4371-
bf30-9b7e27ff5288)
Create archive log restore (Primary January 23, 2025 03:17:30
            January 23, 2025 03:17:52 UTC Success
UTC
site) (Host: host1/Job
ID:
```



```
96766874-6537-4972-81a9-971440e2acfb)
Configure and enable Data Guard January 23, 2025 03:17:53
             January 23, 2025 03:19:19 UTC
UTC
                                                  Success
(Primary site) (Host:
host1/Job
ID:
7ad65ffa-ea06-479d-bb21-
e0b81fb8c743)
Enable Flashback (Standby site) (Host: January 23, 2025 03:19:19
             January 23, 2025 03:19:38 UTC
UTC
                                                   Success
host2/Job
ID:
a1768703-4dd4-4f1f-
b9a3-9fe0f99615d5)
Re-enable Data Guard (Primary site) January 23, 2025 03:19:38
UTC January 23, 2025 03:19:44 UTC
                                                  Success
(Host: host1/Job
ID:
3f6dd276-63e3-4804-a179-
e10052386206)
Create Data Guard status (Primary January 23, 2025 03:19:44
             January 23, 2025 03:19:49 UTC
UTC
                                                   Success
site) (Host: host1/Job
ID:
8a3eb946-3501-4618-9d4a-
ad8a6d298cc8)
Create Data Guard status (Standby January 23, 2025 03:19:49
             January 23, 2025 03:19:57 UTC
UTC
                                                  Success
site)
(Host:
host2/Job
ID:
d9d65942-6284-40d5-a991-b1d21edae96f)
Example with two standby databases configuration:
```

```
# odacli configure-dataguard
Number of standby databases (enter 1 or 2 | default: 1): 2
Standby 1 site address: standby1
BUI username for Standby site standby1. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby1, enter
'oda-admin'; otherwise, enter the name of the user who has irestored the
```

```
Standby
database (default: oda-admin):
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Standby 2 site address: standby2
BUI username for Standby site standby2. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby2, enter
'oda-admin'; otherwise, enter the name of the user who has irestored the
Standby
database (default: oda-admin):
BUI password for Standby site standby2:
Password for root user on Standby site standby2:
*****
Data Guard configuration name: dgbb
Database name for Data Guard configuration: bb
Primary database SYS password:
Protection mode [MAX PROTECTION, MAX PERFORMANCE, MAX AVAILABILITY]
(default:
MAX PERFORMANCE):
Enable Active Data Guard (Y/N, default:N):
*****
                                              *****
******
Data Guard default settings for standby database - bb1
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N):
Data Guard default settings for standby database - bb2
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N):
Warning: in compliance with Oracle MAA best practices. DbType (RAC) of
Primary
database bb is different from DbType (SI) of Standby database. Ignore
warning
and proceed with Data Guard configuration? (Y/N, default:N): y
Warning: in compliance with Oracle MAA best practices. DbType (RAC) of
Primary
database bb is different from DbType (SI) of Standby database. Ignore
warning
and proceed with Data Guard configuration? (Y/N, default:N): y
************
Enter Primary database RMAN backup encryption password if any:
Do you want to provide another Primary database RMAN backup encryption
password
if any? [y/n] (default 'n'):
```

```
Standby database's SYS password will be set to Primary database's after
Data
Guard configuration. Ignore warning and proceed with Data Guard
configuration?
(Y/N, default:N): y
{
 "jobId" : "f1df87d7-221c-4dc3-a15f-fa35d91560f5",
 "status" : "Created",
 "message" : "",
 "reports" : [ ],
 "createTimestamp" : "January 17, 2025 22:57:55 PM UTC",
 "resourceList" : [ ],
 "description" : "DG Config service for DB bb",
 "updatedTime" : "January 17, 2025 22:57:55 PM UTC",
 "jobType" : null,
 "cpsMetadata" : null
}
[root@host1 ~]# odacli describe-job -i
"fldf87d7-221c-4dc3-a15f-fa35d91560f5"
Job details
ID: f1df87d7-221c-4dc3-a15f-fa35d91560f5
         Description: DG Config service for DB bb
             Status: Success
             Created: January 17, 2025 22:57:55 UTC
             Message:
Task Name
                                 Node Name
                                                       Start
Time End Time
                     Status
_____
_____
_____ ____
                                host1 January 17,2025
Validate configure primary request
           January 17, 2025 22:58:44 UTC
                                               Success
22:58:38 UTC
(Primary site) (Host:host1/Job
ID:
eb8bbb43-159c-48e0-8dda-9e2bbd280669)
Validate configure standby request host1 January 17,2025
22:58:44 UTC January 17, 2025 22:58:52 UTC
                                                Success
(Standby site) (Host: standby1/Job
ID:
86345f35-500c-4ba8-8ff9-
f97c201ad3c7)
Uploading Primary DB Password File host1 January 17,2025
22:58:52 UTC January 17, 2025 22:59:07 UTC
                                                     Success
(Standby
site)
```



```
Configure primary database (Primary host1
                                             January 17,2025
22:59:07 UTC January 17, 2025 22:59:58 UTC Success
site) (Host: host1/Job ID:
23ee7263-a59e-40bd-
bbec-4c17a5d4ba99)
Configure standby request (Standby host1 January 17,2025
22:59:58 UTC January 17, 2025 23:02:00 UTC Success
site) (Host: standby1/Job
ID:
af543839-85ba-4e83-89d3-
af161d528256)
Create archive log restore (Primary host1 January 17,2025
23:02:00 UTC January 17, 2025 23:02:37 UTC Success
site) (Host: host1/Job ID:
b2940217-cec6-4b22-92d2-
f4ec8f26b8b8)
Configure and enable Data Guard host1 January 17,2025
23:02:37 UTC January 17, 2025 23:04:19 UTC Success
(Primary site)
(Host:
host1/Job ID:
7882e1e5-0d71-48df-bd86-
e79ee6b57a21)
Enable Flashback (Standby site) (Host: host1 January 17,2025
23:04:19 UTC January 17, 2025 23:04:37 UTC
                                               Success
standby1/Job
ID:
c2ef962c-
f429-4e97-8bc3-1355cd7d0ca8)
Re-enable Data Guard (Primary site) host1 January 17,2025
23:04:37 UTC January 17, 2025 23:04:43 UTC
                                                Success
(Host: host1/Job ID:
fb4a7055-0049-4d44-
a726-0871ed54ca07)
Create Data Guard status (Primary host1 January 17,2025
23:04:43 UTC January 17, 2025 23:04:54 UTC Success
site) (Host: host1/Job ID:
5aca5c16-632f-488b-
aade-1c677030c81d)
Create Data Guard status (Standby host1 January 17,2025
23:04:54 UTC January 17, 2025 23:05:07 UTC
                                               Success
site) (Host: standby1/Job
ID:
5f0c5460-4c38-4aed-8a5b-
e70c0ca70df8)
Validate configure primary request host1 January 17,2025
```

```
23:05:07 UTC
                   January 17, 2025 23:05:13 UTC
                                                     Success
(Primary site) (Host:host1/Job
TD.
5ac64b32-5da6-48df-
b8cc-020853363695)
Validate configure standby request host1 January 17,2025
23:05:13 UTC January 17, 2025 23:05:21 UTC
                                                Success
(Standby site) (Host: standby2/Job
ID:
81aa6900-4460-408e-9ab2-
fdcd92c8b7bf)
Uploading Primary DB Password File host1 January 17,2025
23:05:21 UTC January 17, 2025 23:05:32 UTC Success
(Standby
site)
Configure primary database (Primary host1 January 17,2025
23:05:32 UTC January 17, 2025 23:06:14 UTC Success
site) (Host: host1/Job ID:
c78a8072-8023-4278-
bd94-3dd1ef97e066)
Configure standby request (Standby host1 January 17,2025
                   January 17, 2025 23:07:43 UTC Success
23:06:14 UTC
site) (Host: standby2/Job
ID:
46274a35-bb06-43a9-
a8a5-66dc4d163463)
Create archive log restore (Primary host1 January 17,2025
23:07:43 UTC January 17, 2025 23:08:15 UTC Success
site) (Host: host1/Job ID:
2b20aaa2-fcb7-4bc5-
b501-27ad9d45f34b)
Configure standby TNS entry (New host1 January 17,2025
23:08:15 UTC January 17, 2025 23:08:24 UTC Success
standby site) (Host: standby2/Job
ID:
7e32db8c-999c-44fa-
bdf5-3aed77c9590c)
Configure standby TNS entry (Existing host1 January 17,2025
23:08:24 UTC
                   January 17, 2025 23:08:28 UTC Success
standby site) (Host: standby1/Job
ID:
6a44539e-d5b9-4c45-
ad2c-7bff8c871e37)
Add standby database (Primary site) host1 January 17,2025
23:08:28 UTC January 17, 2025 23:09:50 UTC Success
```

(Host: host1/Job ID: 1d7c6c93-bd85-496abb7d-67ae7b224d58) Enable Flashback (Standby site) (Host: host1 January 17,2025 January 17, 2025 23:10:03 UTC 23:09:50 UTC Success standby2/Job ID: 4a6b8623efc0-4016-80be-305b0ed56363) Re-enable Data Guard (Primary site) host1 January 17,2025 23:10:03 UTC January 17, 2025 23:10:09 UTC Success (Host: host1/Job ID: 2afea759-752a-42a4-a077bd85d4b687a3) Update Data Guard status (Primary host1 January 17,2025 23:10:09 UTC January 17, 2025 23:10:35 UTC Success site) (Host: host1/Job ID: 11d93988-ea4d-4e37af30-763c2522693d) Create Data Guard status (New standby host1 January 17,2025 23:10:35 UTC January 17, 2025 23:10:53 UTC Success site) (Host: standby2/Job ID: aa5b286f-30f1-48d1-8c2d-2490d15ce408) Update Data Guard status (Existing host1January 17,2025 23:10:53UTCJanuary 17, 2025 23:11:06 UTCSuccess standby site) (Host: standby1/JobID: 7d8ffa16-6785-468a-bff9-baf8e13b38ec)

Example with Oracle Data Guard custom configuration:

odacli configure-dataguard Number of standby databases (enter 1 or 2 | default: 1): 2 Standby 1 site address: standby1 BUI username for Standby site standby1. If Multi-user Access/Multi-user Access Passwordless is not enabled on Standby site standby1, enter 'odaadmin'; otherwise, enter the name of the user who has irestored the Standby database (default: oda-admin): BUI password for Standby site standby1: Password for root user on Standby site standby1: Standby 2 site address: standby2 BUI username for Standby site standby2. If Multi-user Access/Multi-user Access Passwordless is not enabled on Standby site standby2, enter 'odaadmin'; otherwise, enter the name of the user who has irestored the Standby database (default: oda-admin): BUI password for Standby site standby2: Password for root user on Standby site standby2:

Data Guard configuration name: dg6 Database name for Data Guard configuration: db



```
Primary database SYS password:
Protection mode [MAX PROTECTION, MAX PERFORMANCE, MAX_AVAILABILITY]
(default: MAX PERFORMANCE): MAX AVAILABILITY
Enable Active Data Guard? (Y/N, default:N): y
*****
                                              *****
*****
Data Guard default settings for standby database kdb
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N): y
*****
Primary site network for Data Guard configuration [Public-network]
(default: Public-network):
Standby site network for Data Guard configuration [Public-network]
(default: Public-network):
Primary database listener port (TCP) (default: 1521):
Standby database listener port (TCP) (default: 1521):
Transport type [ASYNC, FASTSYNC, SYNC] (default: ASYNC): SYNC
*****
*****
Data Guard default settings for standby database ldb
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N): y
*****
Primary site network for Data Guard configuration [Public-network]
(default: Public-network):
Standby site network for Data Guard configuration [Public-network]
(default: Public-network):
Primary database listener port (TCP) (default: 1521):
Standby database listener port (TCP) (default: 1521):
Transport type [ASYNC, FASTSYNC, SYNC] (default: ASYNC): SYNC
Enter Primary database RMAN backup encryption password if any:
Do you want to provide another Primary database RMAN backup encryption
password if any? [y/n] (default 'n'):
Standby database's SYS password will be set to Primary database's after
Data Guard configuration. Ignore warning and proceed with Data Guard
configuration? (Y/N, default:N): y
 "jobId" : "fcf23de7-3ef0-4dae-9a3c-735abf9bda4a",
 "status" : "Created",
 "message" : "",
 "reports" : [],
 "createTimestamp" : "December 13, 2024 01:58:53 AM CET",
 "resourceList" : [ ],
 "description" : "DG Config service for DB db",
 "updatedTime" : "December 13, 2024 01:58:53 AM CET",
 "jobType" : null,
```

```
"cpsMetadata" : null
}
[root@test host ~]# odacli describe-job -i
fcf23de7-3ef0-4dae-9a3c-735abf9bda4a
Job details
_____
                ID: fcf23de7-3ef0-4dae-9a3c-735abf9bda4a
         Description: DG Config service for DB db
             Status: Success
             Created: December 13, 2024 01:58:53 CET
            Message:
Task Name
                                Start
Time
                            End
Time
                             Status
_____
_____
_____
Validate configure primary request December 13, 2024 02:01:18
CET
          December 13, 2024 02:01:29 CET
                                           Success
(Primary site)
(Host:
test host/Job
ID:
cce1142e-24e4-4bbc-9d46-
f46f96bf3191)
Validate configure standby request December 13, 2024 02:01:29
CET December 13, 2024 02:01:45 CET Success
(Standby site)
(Host:
standby1/Job
ID:
f962f6dc-4eeb-497f-9a0c-
b9387d25318b)
Uploading Primary DB Password File December 13, 2024 02:01:45
CET
         December 13, 2024 02:02:16 CET Success
(Standby
site)
Configure primary database (Primary December 13, 2024 02:02:16
CET December 13, 2024 02:02:43 CET
                                           Success
site) (Host: test host/Job
ID:
0d909875-ecec-450a-
a2f9-6c09103d9f26)
Configure standby request (Standby December 13, 2024 02:02:43
```

```
December 13, 2024 02:04:11 CET
CET
                                                Success
site) (Host: standby1/Job
ID:
03ffc6b5-5f45-47af-b96c-
d75b82a09234)
Create archive log restore (Primary December 13, 2024 02:04:11
CET December 13, 2024 02:04:47 CET Success
site) (Host: test host/Job
ID:
49808676-bd12-4933-8c28-
eef7dee17503)
Configure and enable Data Guard December 13, 2024 02:04:47
CET December 13, 2024 02:06:32 CET
                                               Success
(Primary site)
(Host:
test host/Job
ID:
7ed03a2d-
bb93-4ff7-9e45-0f825c8fff2f)
Enable Flashback (Standby site) (Host: December 13, 2024 02:06:32
CET December 13, 2024 02:06:53 CET Success
standby1/Job
ID:
dalee6fb-cfb3-4f6d-9eaa-
a6c1c8811d0e)
Re-enable Data Guard (Primary site) December 13, 2024 02:06:53
CET December 13, 2024 02:06:59 CET Success
(Host: test_host/Job
ID:
f1b8f204-
da5b-40f4-886f-3dc2d0f71042)
Enable Active Data Guard (Standby December 13, 2024 02:06:59
CET December 13, 2024 02:07:26 CET Success
site) (Host: standby1/Job
ID:
d5982a61-
b48d-4449-8cad-2eb41fc89ff9)
Create Data Guard status (Primary December 13, 2024 02:07:26
CET December 13, 2024 02:07:42 CET Success
site) (Host: test host/Job
ID:
e7b6448b-301d-45e5-9a90-4388ac6f55f6)
```

```
Create Data Guard status (Standby December 13, 2024 02:07:42
          December 13, 2024 02:07:58 CET
CET
                                               Success
site) (Host: standby1/Job
ID:
b046c3ca-dcae-47c4-
b904-8fe8fb7cd166)
Validate configure primary request December 13, 2024 02:07:59
CET December 13, 2024 02:08:10 CET Success
(Primary site)
(Host:
test host/Job
ID:
f2cec30f-74ee-44e3-bbbc-
f6bc47bcc781)
Validate configure standby request December 13, 2024 02:08:10
CET December 13, 2024 02:08:26 CET
                                               Success
(Standby site)
(Host:
standby2/Job
ID:
f170c64f-347b-4606-af31-
dbb4c0abaccf)
Uploading Primary DB Password File December 13, 2024 02:08:26
CET December 13, 2024 02:08:57 CET Success
(Standby
site)
Configure primary database (Primary December 13, 2024 02:08:57
CET December 13, 2024 02:09:23 CET Success
site) (Host: test host/Job
ID:
f680835a-3813-433e-
bcc3-8d49ae235833)
Configure standby request (Standby December 13, 2024 02:09:23
CET December 13, 2024 02:11:02 CET Success
site) (Host: standby2/Job
ID:
d66ef480-0810-4219-
a5e1-633be0d6fe9a)
Create archive log restore (Primary December 13, 2024 02:11:03
CET December 13, 2024 02:11:36 CET Success
site) (Host: test host/Job
ID:
```

```
ae4e5f3d-6792-44c4-8971-
df41ae212a04)
Configure standby TNS entry (New December 13, 2024 02:11:36
            December 13, 2024 02:11:54 CET
CET
                                                 Success
standby site)
(Host:
standby2/Job
ID:
27bbe14a-6f7d-4a7f-
bded-9d530327090f)
Configure standby TNS entry (Existing December 13, 2024 02:11:54
          December 13, 2024 02:12:13 CET
CET
                                                Success
standby site)
(Host:
standby1/Job
ID:
dcf53474-
d649-452f-818a-4fe069e9761e)
Add standby database (Primary site) December 13, 2024 02:12:13
CET December 13, 2024 02:13:38 CET Success
(Host: test host/Job
ID:
2ffb36d8-74a0-4dc4-9f79-
cc74223f1016)
Enable Flashback (Standby site) (Host: December 13, 2024 02:13:38
            December 13, 2024 02:14:00 CET
CET
                                                Success
standby2/Job
ID:
01a23d42-
d49a-4b61-9c28-19e9f7639800)
Re-enable Data Guard (Primary site) December 13, 2024 02:14:00
CET December 13, 2024 02:14:06 CET Success
(Host: test host/Job
ID:
f416981a-99c1-4c0a-
ab72-2bbb5a0e3a40)
Enable Active Data Guard (Standby December 13, 2024 02:14:06
CET December 13, 2024 02:14:32 CET Success
site) (Host: standby2/Job
ID:
99618fc7-0500-4275-8ea2-
```



```
f65a8b4e8f77)
Update Data Guard status (Primary December 13, 2024 02:14:32
    December 13, 2024 02:14:48 CET Success
CET
site) (Host: test host/Job
ID:
14b4526c-
eebe-410a-920e-396df5216c93)
Create Data Guard status (Standby December 13, 2024 02:14:48
            December 13, 2024 02:15:15 CET
CET
                                                  Success
site) (Host: standby2/Job
ID:
090f829d-7f80-4481-800c-
c9c6115a4be2)
Update Data Guard status (Old Standby December 13, 2024 02:15:15
CET
            December 13, 2024 02:15:31 CET
                                                  Success
site) (Host: standby1/Job
ID:
afc0a2b3-18ad-461c-a13d-ec688427c6e6)
```

You can specify a JSON file to configure Oracle Data Guard. Ensure that you specify the databaseName and standbyEndpoints options in the JSON file.

```
{
   "name": "tdb DG",
    "protectionMode": "MAX PERFORMANCE",
    "enableFlashback": true,
    "enableActiveDg": "false",
    "databaseName": "tdb",
                                        ==> newly added mandatory field
    "replicationGroups": [
        {
            "sourceEndPoints": [
                {
                    "endpointType": "PRIMARY",
                    "hostName": "host name",
                    "listenerPort": 1521,
                    "databaseUniqueName": "tdb",
                    "ipAddress": "xx.xx.xx" ==> VIP of the
corresponding network
               }
            ],
            "targetEndPoints": [
                {
                    "endpointType": "STANDBY",
                    "hostName": "host name",
                    "listenerPort": 1521,
                    "databaseUniqueName": "tdbstndby",
                    "ipAddress": "xx.xx.xx.xx"
                }
            ],
```



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

Configuring Oracle Data Guard with one standby database on Oracle Database Appliance using JSON file

```
# /opt/oracle/dcs/bin/odacli configure-dataguard --requestjson /mnt/host1/
nfsbackup/dgcmd.json
Number of standby databases (enter 1 or 2 | default: 1):
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Primary database SYS password:
******
Standby database's SYS password will be set to Primary database's after Data
Guard configuration. Ignore warning and proceed with Data Guard
configuration? (Y/N, default:N): Y
{
 "jobId" : "73adf616-3b6c-452f-bf93-e95abc675cc5",
 "status" : "Created",
 "message" : "",
 "reports" : [ ],
  "createTimestamp" : "January 23, 2025 05:08:50 AM UTC",
 "resourceList" : [ ],
 "description" : "DG Config service for DB tdb",
 "updatedTime" : "January 23, 2025 05:08:50 AM UTC",
 "jobType" : null,
  "cpsMetadata" : null
}
[root@host1 work]# /opt/oracle/dcs/bin/odacli describe-job -i
73adf616-3b6c-452f-bf93-e95abc675cc5
Job details
_____
                            _____
                  ID: 73adf616-3b6c-452f-bf93-e95abc675cc5
          Description: DG Config service for DB tdb
              Status: Success
              Created: January 23, 2025 05:08:50 UTC
              Message:
Task Name
                                    Start
Time
                              End Time
Status
    -------
```



```
_____
_____
Validate configure primary request January 23, 2025 05:09:19
           January 23, 2025 05:09:30 UTC Success
UTC
(Primary site) (Host:
host1/Job
ID:
7bd1a3d5-2f8c-4d9e-
a381-61d04f01b514)
Validate configure standby request January 23, 2025 05:09:30
UTC January 23, 2025 05:09:43 UTC Success
(Standby site)
(Host:
host2/Job
ID:
18731cf2-bf42-4a3a-
b187-17e93cedbb7c)
Uploading Primary DB Password File January 23, 2025 05:09:43
     January 23, 2025 05:10:03 UTC Success
UTC
(Standby
site)
Configure primary database (Primary January 23, 2025 05:10:03
UTC January 23, 2025 05:11:35 UTC
                                            Success
site) (Host: host1/Job
ID:
d3030fe0-8885-42d6-a57f-
ae38baef54af)
Configure standby request (Standby January 23, 2025 05:11:35
          January 23, 2025 05:13:35 UTC
UTC
                                             Success
site)
(Host:
host2/Job
ID:
763881f4-ea4d-43bc-8e6a-
c7f78765c0ff)
Create archive log restore (Primary January 23, 2025 05:13:35
UTC January 23, 2025 05:13:54 UTC Success
site) (Host: host1/Job
ID:
5dfbe653-10c8-420f-
bada-4c0c8cb6a9e1)
Configure and enable Data Guard January 23, 2025 05:13:54
```

```
January 23, 2025 05:15:26 UTC
UTC
                                                    Success
(Primary site) (Host:
host1/Job
ID:
137d29a2-9d2c-4ddc-85c8-3a729847e188)
Enable Flashback (Standby site) (Host: January 23, 2025 05:15:26
UTC
              January 23, 2025 05:15:44 UTC
                                                    Success
host2/Job
ID:
70306983-40a2-4039-98cb-57ba5e11e9a5)
Re-enable Data Guard (Primary site) January 23, 2025 05:15:44
              January 23, 2025 05:15:50 UTC
UTC
                                                   Success
(Host: host1/Job
ID:
4a5fb2aa-1b0b-45c8-
b2f3-95103c9f1f00)
Create Data Guard status (Primary January 23, 2025 05:15:50
             January 23, 2025 05:15:56 UTC
UTC
                                                   Success
site) (Host: host1/Job
ID:
6848b9c1-356f-43ff-
b6e0-5e9b1b01fc53)
Create Data Guard status (Standby January 23, 2025 05:15:56
UTC
            January 23, 2025 05:16:09 UTC
                                                   Success
site)
(Host:
host2/Job
ID:
3109148f-9ef8-4914-ab43-adab4851e126)
```

Example JSON for configuring Oracle Data Guard with two standby databases on Oracle Database Appliance

To configure two standby databases using JSON file, you must specify two replicationGroups sections, where sourceEndpoints corresponds to the information about the primary database and targetEndPoints in each replicationGroups section corresponds to each standby database. For example:

```
{
   "name": "dgname",
   "protectionMode": "MAX_PERFORMANCE",
   "databaseName": "vmdb1",
   "enableActiveDg": false,
   "databaseName": "tdb", ==> newly added field
   "standbyEndpoints": [ ==> newly added field
```



```
{
            "name": "endpoint test",
            "dcsUserName": "oda-admin"
        }
    ]
  "replicationGroups": [
    {
      "sourceEndPoints": [
        {
          "databaseUniqueName": "vmdb1",
          "ipAddress": "xx.xx.xx.xx",
          "hostName": "host name",
          "listenerPort": 1521
        }
      ],
      "targetEndPoints": [
        {
          "databaseUniqueName": "bvmdb1",
          "ipAddress": "xx.xx.xx.xx",
          "hostName": "host name,
          "listenerPort": 1521
        }
      ],
      "transportType": "ASYNC"
    },
    {
      "sourceEndPoints": [
        {
          "databaseUniqueName": "vmdb1",
          "ipAddress": "xx.xx.xx.xx",
          "hostName": "host name",
          "listenerPort": 1521
        }
      ],
      "targetEndPoints": [
        {
          "databaseUniqueName": "avmdb1",
          "ipAddress": "xx.xx.xx",
          "hostName": "host name",
          "listenerPort": 1521
        }
      ],
      "transportType": "ASYNC"
    }
 ]
}
```

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.
- https://www.oracle.com/in/database/technologies/high-availability/maa.html

Configuring Oracle Data Guard on Oracle Database Appliance Using BUI

Oracle Database Appliance enables you to set up Oracle Data Guard using BUI.

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 that the primary and standby systems have the same Oracle
 Database Appliance configuration. The database must have identical configuration for
 database version and storage, that is, they 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 19.26 or later.
- If you have customized the operating system, then ensure that environments on the systems 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 the primary and standby systems.
- Ensure that the backup for for primary and standby databases is set up. 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.

Configuring Oracle Data Guard using BUI

Follow these steps:

- Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click Database.
- 3. In the Database page, click on the database to view the database details.
- 4. In the Database details page, click the **Dataguard Associations** tab. The Oracle Data Guard configurations associated with the database are displayed.
- 5. To configure an Oracle Data Guard configuration, click **Configure**.
- 6. In the System Information tab, you can use a JSON file to provide the Oracle Data Guard configuration values or specify the values for each field.
- 7. To configure Oracle Data Guard using JSON file, in the System Information tab, click **Browse** and load the configuration.
- 8. Or, specify the **Dataguard Configuration Name** and **Select Protection Mode**. The **Database name** field is already populated.
- 9. Select Enable Active Dataguard, if you want to enable Oracle Active Data Guard.



- In the Primary Information tab, specify the VIP of the Associated Network, Listener Port, Database SYS Password, and Backup Encryption Passwords. For highavailability systems, specify the Node 0 VIP of the Associated Network, Node 1 Primary Host Name, and Node 1 VIP of the Associated Network.
- 11. In the Standby Information tab, specify the Standby Host Name, VIP of the Associated Network, BUI User, BUI Password, System User, Database Unique Name, Database SYS Password, Listener Port, and Select Transport Type. For high-availability systems, specify the Node 0 Standby Host Name, Node 0 VIP of the Associated Network, Node 1 Standby Host Name, and Node 1 VIP of the Associated Network.
- You can add multiple standby Oracle Data Guard configurations. Click Add Standby to add a new standby Oracle Data Guard configuration. A new Standby Information tab is opened for each new standby you add.
- 13. For each new standby, specify the Standby Host Name, VIP of the Associated Network, BUI User, BUI Password, System User, Database Unique Name, Database SYS Password, Listener Port, and Select Transport Type. For high-availability systems, specify the Node 0 Standby Host Name, Node 0 VIP of the Associated Network, Node 1 Standby Host Name, and Node 1 VIP of the Associated Network.
- 14. Click Save Configuration if you want to save the configuration as a JSON file.
- **15.** Click **Configure** and click **Yes** to confirm. Verify that the job is submitted and completes successfully.

Example JSON for configuring Oracle Data Guard on Oracle Database Appliance

```
{
 "name": "test1 test7",
 "databaseName": "test",
  "protectionMode": "MAX PERFORMANCE",
  "enableFlashback": true,
  "enableActiveDg": false,
  "replicationGroups": [
    {
      "sourceEndPoints": [
        {
          "endpointType": "PRIMARY",
          "hostName": test domain1",
          "listenerPort": 1521,
          "databaseUniqueName": "test1",
          "ipAddress": "test IPaddress"
        },
    {
      "endpointType": "PRIMARY",
      "hostName": "test domain1",
      "listenerPort": 1521,
      "databaseUniqueName": "test1",
      "ipAddress": "test IPaddress2"
    }
      ],
      "targetEndPoints": [
          "endpointType": "STANDBY",
          "hostName": "test domain2",
          "listenerPort": 1521,
          "databaseUniqueName": "test7",
```



```
"ipAddress": "test_IPaddress3"
},
{
    "endpointType": "STANDBY",
    "hostName": "test_domain2",
    "listenerPort": 1521,
    "databaseUniqueName": "test7",
    "ipAddress": "test_IPaddress4"
    }
],
    "transportType": "ASYNC"
}
]
```

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.
- 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

odacli Oracle Data Guard Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle
 Database Appliance deployment.



Viewing Oracle Data Guard Status on Oracle Database Appliance Using BUI

View Oracle Data Guard status using BUI.

Listing and Viewing Oracle Data Guard Status using BUI

Follow these steps:

- Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click Database.
- 3. In the Database page, click on the database to view the database details.
- 4. In the Database details page, click the **Dataguard Associations** tab. The Oracle Data Guard configurations associated with the database are displayed.
- 5. To view the status of a specific Oracle Data Guard configuration, from the **Actions** dropdown list of the Oracle Data Guard configuration, select **View**.

Related Topics

odacli Oracle Data Guard 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. Specify the standby database unique name with the -u option.

```
# 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

odacli Oracle Data Guard Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle
 Database Appliance deployment.

Performing Oracle Data Guard Operations Using BUI

Perform failover, switchover, and reinstate operations on Oracle Data Guard using BUI.

Performing switchover, failover, and reinstate Oracle Data Guard operations using BUI

Follow these steps:

 Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html



- 2. Click Database.
- 3. In the Database page, click on the database to view the database details.
- 4. In the Database details page, click the **Dataguard Associations** tab. The Oracle Data Guard configurations associated with the database are displayed.
- 5. You can perform switchover operation only from the primary Oracle Data Guard Association using the BUI. From the **Actions** drop-down list of the Oracle Data Guard configuration, select **Switchover**.
- 6. In the Confirmation message, verify the DB Unique Name and Target Database Password, and click Yes.
- You can perform failover operation only from the standby Oracle Data Guard Association using the BUI. From the Actions drop-down list of the Oracle Data Guard configuration, select Failover.
- In the Confirmation message, verify the DB Unique Name and Target Database Password, and click Yes.
- You can perform reinstate operation only from the primary Oracle Data Guard Association using the BUI. To reinstate an Oracle Data Guard configuration, from the Actions dropdown list of the Oracle Data Guard configuration, select Reinstate.
- 10. In the Confirmation message, verify the DB Unique Name and Target Database Password, and click Yes.

Related Topics

odacli Oracle Data Guard 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:

1. 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

ID Interface Type Networks	Subnet Mask	Name Gateway	N VLAN ID	IIC Node
				-
836cfa4b-5d2c-4	5e3-a62d-099fc7c57	984 Private-net	work p	priv0



INTERNAL 255.255.240 [IP Address on node0: 192.168.16.24] 1a312239-761d-4321-84d2-8da406f21e5c Public-network btbond1.359 VLAN 255.255.250 10.209.10.65 359 [IP Address on node0: 192.209.10.69] f279ac96-5a4a-4b73-86af-1afbdb6ae5d4 vlan369 btbond1.369 VLAN 255.255.250 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

odacli Oracle Data Guard Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle
 Database Appliance deployment.

Migrating an Oracle Database from One System to Another Using Integrated Oracle Data Guard

Understand how you can use Integrated Oracle Data Guard to migrate an Oracle Database from one system to another.

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. The same steps can also be applied to migrate an Oracle Database from an Oracle Database Appliance bare Metal system to a DB system in a KVM deployment, or from one DB system in a KVM deployment to another DB system.

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).

```
# odacli create-backup primary DB
```

For example:

odacli create-backup --backupType Regular-L0 -n test db

2. Save the backup report:

```
# odacli describe-backupreport -i eba406c7-ae46-4d1d-a1e5-3e985397b171 >
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.

 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:

Configure Oracle Data Guard, by running the following command on the primary system:

```
# /opt/oracle/dcs/bin/odacli configure-dataguard
Number of standby databases (enter 1 or 2 | default: 1):
Standby 1 site address: standby1
BUI username for Standby site standby1. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby1, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): oda-admin
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
```



```
Enable Active Data Guard (Y/N, default:N):
******
Data Guard default settings for standby database - tdbstndby
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N): N
*****
Enter Primary database RMAN backup encryption password if any:
Do you want to provide another Primary database RMAN backup encryption
password if any? [y/n] (default 'n'):
Standby database's SYS password will be set to Primary database's after
Data Guard configuration. Ignore warning and proceed with Data Guard
configuration? (Y/N, default:N): Y
 "jobId" : "e02cc0b3-bce3-4d6c-a1f5-5b121bb7f66a",
 "status" : "Created",
 "message" : "",
 "reports" : [],
 "createTimestamp" : "January 23, 2025 03:12:44 AM UTC",
 "resourceList" : [ ],
 "description" : "DG Config service for DB tdb",
 "updatedTime" : "January 23, 2025 03:12:44 AM UTC",
 "jobType" : null,
 "cpsMetadata" : null
ł
[root@phxdbfzp22 work]# /opt/oracle/dcs/bin/odacli describe-job -i
e02cc0b3-bce3-4d6c-a1f5-5b121bb7f66a
Job details
_____
                 ID: e02cc0b3-bce3-4d6c-a1f5-5b121bb7f66a
         Description: DG Config service for DB tdb
             Status: Success
             Created: January 23, 2025 03:12:44 UTC
             Message:
Task Name
                                 Start
Time
                            End
Time
                              Status
-----
_____
_____
Validate configure primary request January 23, 2025 03:13:10
UTC
           January 23, 2025 03:13:21 UTC
                                            Success
(Primary site) (Host:
phxdbfzp22/Job
```

ID:



901389f5-0cad-4ee6-91be-3f77b85652af) Validate configure standby request January 23, 2025 03:13:21 UTC January 23, 2025 03:13:29 UTC Success (Standby site) (Host: host1/Job ID: 856d86e4-dd51-41a7-9050b0c39ae771f9) Uploading Primary DB Password File January 23, 2025 03:13:29 UTC January 23, 2025 03:13:52 UTC Success (Standby site) Configure primary database (Primary January 23, 2025 03:13:52 UTC January 23, 2025 03:15:29 UTC Success site) (Host: phxdbfzp22/Job ID: 5dd46e86e07f-423f-9ebf-2515b4ac17d5) Configure standby request (Standby January 23, 2025 03:15:29 January 23, 2025 03:17:30 UTC Success UTC site) (Host: host1/Job ID: 2ab511a2-15c0-4371bf30-9b7e27ff5288) Create archive log restore (Primary January 23, 2025 03:17:30 UTC January 23, 2025 03:17:52 UTC Success site) (Host: phxdbfzp22/Job ID: 96766874-6537-4972-81a9-971440e2acfb) Configure and enable Data Guard January 23, 2025 03:17:53 UTC January 23, 2025 03:19:19 UTC Success (Primary site) (Host: phxdbfzp22/Job ID: 7ad65ffa-ea06-479d-bb21e0b81fb8c743) Enable Flashback (Standby site) (Host: January 23, 2025 03:19:19 January 23, 2025 03:19:38 UTC Success UTC host1/Job

```
ID:
a1768703-4dd4-4f1f-
b9a3-9fe0f99615d5)
Re-enable Data Guard (Primary site) January 23, 2025 03:19:38
             January 23, 2025 03:19:44 UTC
UTC
                                                  Success
(Host: phxdbfzp22/Job
ID:
3f6dd276-63e3-4804-a179-
e10052386206)
Create Data Guard status (Primary January 23, 2025 03:19:44
             January 23, 2025 03:19:49 UTC
UTC
                                                  Success
site) (Host: phxdbfzp22/Job
ID:
8a3eb946-3501-4618-9d4a-
ad8a6d298cc8)
Create Data Guard status (Standby January 23, 2025 03:19:49
UTC
          January 23, 2025 03:19:57 UTC
                                                  Success
site)
(Host:
host1/Job
ID:
d9d65942-6284-40d5-a991-b1d21edae96f)
```

- 5. Check the status of Oracle Data Guard and ensure it is working:
 - # odacli describe-dataguardstatus -i dataguard_configuration_ID
- 6. Switch over to the standby database:

```
# odacli switchover-dataguard -i 75f23ce0-006a-4aeb-ba6d-b4b60275c19 -u
houdg02
```

 Deconfigure Oracle Data Guard. The process also deletes the standby database on the old Oracle Database Appliance hardware machine.

```
# /opt/oracle/dcs/bin/odacli deconfigure-dataguard --id "ee22f382-
b04e-4658-a6c7-ab00fc7e3270"
Number of standby databases (enter 1 or 2 | default: 1):
Standby 1 site address: standby1
BUI username for Standby site standby1. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby1, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): oda-admin
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Standby database will be deleted after Data Guard configuration is
removed. Ignore warning and proceed with Data Guard deconfiguration?
(Y/N): Y
```

```
{
 "jobId" : "0613c649-3da6-463a-8359-2f6d7d17399b",
 "status" : "Created",
 "message" : "",
 "reports" : [ ],
 "createTimestamp" : "January 23, 2025 03:42:41 AM UTC",
 "resourceList" : [ ],
 "description" : "DG Deconfig service",
 "updatedTime" : "January 23, 2025 03:42:41 AM UTC",
 "jobType" : null,
 "cpsMetadata" : null
}
[root@phxdbfzp22 work]# /opt/oracle/dcs/bin/odacli describe-job -i
0613c649-3da6-463a-8359-2f6d7d17399b
Job details
_____
                 ID: 0613c649-3da6-463a-8359-2f6d7d17399b
          Description: DG Deconfig service
              Status: Success
             Created: January 23, 2025 03:42:41 UTC
             Message:
Task Name
                                   Start
Time
                              End
Time
                               Status
        ------
_____
_____
De-configure Dataguard (Primary site) January 23, 2025 03:42:44
            January 23, 2025 03:44:22 UTC
UTC
                                              Success
(Host: phxdbfzp22/Job
ID:
93758e42-2cf4-4aa1-949e-
b6018c1c35d7)
Delete Dataguard Status(Primary site) January 23, 2025 03:44:22
            January 23, 2025 03:44:28 UTC
UTC
                                              Success
(Host: phxdbfzp22/Job
ID:
e090af71-9c6d-4d14-8e16-3c64c4aa7f14)
Delete Dataguard Status (Standby site) January 23, 2025 03:44:28
UTC
            January 23, 2025 03:44:36 UTC
                                              Success
(Host:
host1/Job
ID:
a5bf022a-
c1ca-4c1a-8747-4ff6a0e938c0)
Delete Standby Database (Standby site) January 23, 2025 03:44:36
```

UTC January 23, 2025 03:46:07 UTC Success (Host: host1/Job ID: f93b1f26-69d9-4690-84f9-4c0c9947423a)

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

Related Topics

odacli Oracle Data Guard 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.

Prerequisites for patching Oracle Data Guard primary and standby databases using ODACLI commands

Before patching the database homes, upload the Oracle Database 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 Oracle Database 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.

Important:

Patch the standby database on Oracle Database Appliance first, before patching the primary database to ensure that all functions are updated correctly. Patching the standby first may affect Oracle Active Data Guard OJVM functionality. Hence, ensure that you patch the standby system first, and then patch the primary system immediately after that.

Patching Oracle Data Guard primary and standby databases using odacli updatedatabase command

You can use the odacli update-database command to update the databases in your Oracle Data Guard configuration. Follow these steps for patching databases in your Oracle Data Guard configuration:

Patching workflow with primary database A and standby database B:



1. Create prepatch report for database B:

odacli create-prepatchreport -db -dbid databaseId -to dbhomeid

2. Update standby database B:

odacli update-database -i databaseId -to dbhomeId

- 3. Switch roles between the primary database and standby database in your Oracle Data Guard configuration, by running the following command on the primary system:
 - # odacli switchover-dataguard -i dgid -u db A
- 4. Create prepatch report for database A:

odacli create-prepatchreport -db -dbid databaseId -to dbhomeid

5. Update database A:

odacli update-database -i databaseId -to dbhomeid

6. Switch roles again between the primary database and standby database in your Oracle Data Guard configuration, by running the following command on the primary system:

odacli switchover-dataguard -i dgid -u db A

7. Create a prepatch report for the datapatch for database A:

odacli create-prepatchreport -dp -dbid databaseId

- 8. Apply datapatch on database A:
 - # odacli update-database -i databaseId -dp

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

Patching Oracle Data Guard primary and standby databases using odacli updatedbhome command

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.

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;

Registering Oracle Data Guard on Oracle Database Appliance Using ODACLI Commands

Oracle Database Appliance enables you to migrate Oracle Data Guard configuration that were manually configured, and register the configuration metadata with Oracle Database Appliance using ODACLI commands.

Prerequisites for Oracle Database Guard Registration

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 that the primary and standby systems have the same Oracle
 Database Appliance configuration. The database must have identical configuration for
 database version and storage, that is, they 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 19.23 or later.
- If you have customized the operating system, then ensure that environments on the systems 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.

Registering Oracle Data Guard using ODACLI commands

Follow these steps:

1. Register Oracle Data Guard with Oracle Database Appliance, in one of the following ways: Register Oracle Data Guard using interactive mode:

```
[root@node1 ~]# odacli register-dataguard
Number of standby databases (enter 1 or 2 | default: 1): 2
Standby 1 site address: host2
BUI username for Standby site host2. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site host2, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin):
BUI password for Standby site host2:
Password for root user on Standby site host2:
Standby 2 site address: host3
BUI username for Standby site host3. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site hostl, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin):
BUI password for Standby site host3:
Password for root user on Standby site host3:
*****
```

```
Data Guard default settings for standby database - books_u1
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
For standby 'books_u1', does the above Data Guard configuration match your
actual configuration? (Y/N, default:N): y
```



```
Data Guard default settings for standby database - books u2
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
For standby 'books u2', does the above Data Guard configuration match your
actual configuration? (Y/N, default:N): y
 "jobId" : "525d4c0d-5d4c-401b-9d7a-add15e1057a5",
 "status" : "Created",
 "message" : "",
 "reports" : [],
 "createTimestamp" : "December 15, 2024 03:22:40 AM MSK",
 "resourceList" : [ ],
 "description" : "Register Dataguard service for DB a9cca840-
d5f6-4c52-8136-10668ce88c69",
 "updatedTime" : "December 15, 2024 03:22:40 AM MSK",
 "jobType" : null,
 "cpsMetadata" : null
}
[root@host1 ~]# odacli describe-job -i 525d4c0d-5d4c-401b-9d7a-add15e1057a5
Job details
_____
                 ID: 525d4c0d-5d4c-401b-9d7a-add15e1057a5
          Description: Register Dataguard service for DB a9cca840-
d5f6-4c52-8136-10668ce88c69
              Status: Success
              Created: December 15, 2024 03:22:40 MSK
             Message:
Task Name
                                   Node Name
                                                  Start
Time
                              End
                               Status
Time
_____ _
_____
 ----- -----
Validate register dataguard primary host1 December 15,
2024 03:23:45 MSK December 15, 2024 03:24:20 MSK
Success
request (Primary site)
(Host:
host1/Job
ID:
ellda95d-
e00e-41b3-9894-8dd7a9ffceb9)
Validate register dataguard standby
                                  host1
                                                 December 15,
2024 03:24:20 MSK December 15, 2024 03:25:05 MSK
Success
request (Standby site)
```

```
(Host:
host2/Job
ID:
6e566598-700c-4154-8056-853df67d15b3)
Validate register dataguard standby host1 December 15,
2024 03:25:05 MSK December 15, 2024 03:25:45 MSK
Success
request (Standby site)
(Host:
host1/Job
ID:
11330cdd-ccdf-4e05-
acf8-2885418a9efc)
Create Data Guard status (Primary host1 December 15,
2024 03:25:45 MSK December 15, 2024 03:26:07 MSK
Success
site) (Host: host1/Job
ID:
a779a3d6-709a-4a1c-
a649-9fbf373624ed)
Create Data Guard status (Standby host1 December 15,
2024 03:26:07 MSK December 15, 2024 03:26:34 MSK
Success
site) (Host: host2/Job
ID:
9233aea0-021a-4790-
b359-60de42d50526)
Create Data Guard status (Standby host1
                                             December 15,
2024 03:26:34 MSK December 15, 2024 03:27:01 MSK
Success
site) (Host: host1/Job
ID:
79f7ec79-fb43-4f57-8f05-da37afbe275b)
Oracle Data Guard status on the primary system:
# odacli list-dataguardstatus
Updated about 2 minute(s) ago
It can take up to several minutes to update Data Guard status. You can re-
```

ID Name Database Name Role Protection Mode Status

run the command to obtain the latest status.



```
_____ _
                                        books dgconf
a3543f5a-63a8-42c3-abcc-a8e180a1dd25
                    PRIMARY MAX PERFORMANCE CONFIGURED
books
[root@host1 node1 ~]# odacli list-dataguardstatus -j
[ {
  "id" : "a3543f5a-63a8-42c3-abcc-a8e180a1dd25",
  "name" : "books dgconf",
  "databaseId" : "a9cca840-d5f6-4c52-8136-10668ce88c69",
  "protectionMode" : "MAX PERFORMANCE",
  "role" : "PRIMARY",
  "replicationGroups" : [ {
    "sourceEndPoints" : [ {
      "endpointType" : "PRIMARY",
      "databaseUniqueName" : "books",
      "ipAddress" : "xx.xx.xx.xx",
      "hostName" : "n1",
      "listenerPort" : 1521,
      "serviceName" : "test service",
      "sysPassword" : null,
      "openMode" : "READ WRITE",
      "state" : {
        "status" : "ENABLED"
      }
    }, {
      "endpointType" : "PRIMARY",
      "databaseUniqueName" : "books",
      "ipAddress" : "xx.xx.xxx.xxx",
      "hostName" : "host2",
      "listenerPort" : 1521,
      "serviceName" : "test service",
      "sysPassword" : null,
      "openMode" : "READ WRITE",
      "state" : {
        "status" : "ENABLED"
      }
    }],
    "targetEndPoints" : [ {
      "endpointType" : "STANDBY",
      "databaseUniqueName" : "books ul",
      "ipAddress" : "xx.xx.xx",
      "hostName" : "n2",
      "listenerPort" : 1521,
      "serviceName" : "test service",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
        "status" : "ENABLED"
    }, {
      "endpointType" : "STANDBY",
      "databaseUniqueName" : "books u1",
      "ipAddress" : "xx.xx.xx",
      "hostName" : "host_name",
      "listenerPort" : 1521,
      "serviceName" : "test service",
      "sysPassword" : null,
```

```
"openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "transportType" : "ASYNC",
  "applyLag" : "0 seconds",
  "transportLag" : "0 seconds",
  "approximateRoleTransitionTime" : "30 seconds",
  "applyRate" : "12.00 KByte/s"
}, {
  "sourceEndPoints" : [ {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "n1",
    "listenerPort" : 1521,
    "serviceName" : "test service",
    "sysPassword" : null,
    "openMode" : "READ WRITE",
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.x.xx.xxx",
    "hostName" : "host2",
    "listenerPort" : 1521,
    "serviceName" : "test service",
    "sysPassword" : null,
    "openMode" : "READ WRITE",
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "targetEndPoints" : [ {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "host1",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
  }, {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "host1",
    "sysPassword" : null,
```

```
"openMode" : null,
      "state" : {
       "status" : "ENABLED"
      }
   }],
   "transportType" : "ASYNC",
   "applyLag" : "0 seconds",
   "transportLag" : "0 seconds",
   "approximateRoleTransitionTime" : "30 seconds",
   "applyRate" : "5.00 KByte/s"
 }],
 "observers" : [ ],
 "createTime" : "December 15, 2024 03:25:48 AM MSK",
 "state" : {
   "status" : "CONFIGURED"
 },
 "updatedTime" : "December 15, 2024 03:26:06 AM MSK"
} 1
[root@host1_node2 ~]# odacli list-dataguardstatus -j
[ {
 "id" : "a3543f5a-63a8-42c3-abcc-a8e180a1dd25",
 "name" : "books dgconf",
 "databaseId" : "a9cca840-d5f6-4c52-8136-10668ce88c69",
 "protectionMode" : "MAX PERFORMANCE",
 "role" : "PRIMARY",
 "replicationGroups" : [ {
   "sourceEndPoints" : [ {
      "endpointType" : "PRIMARY",
      "databaseUniqueName" : "books",
      "ipAddress" : "xx.xx.xx.xx",
      "hostName" : "n1",
      "listenerPort" : 1521,
      "serviceName" : "test service",
      "sysPassword" : null,
      "openMode" : "READ WRITE",
      "state" : {
       "status" : "ENABLED"
   }, {
      "endpointType" : "PRIMARY",
      "databaseUniqueName" : "books",
      "ipAddress" : "xx.xx.xx",
      "hostName" : "host2",
      "listenerPort" : 1521,
      "serviceName" : "test_service",
      "sysPassword" : null,
      "openMode" : "READ WRITE",
      "state" : {
       "status" : "ENABLED"
      }
   }],
   "targetEndPoints" : [ {
      "endpointType" : "STANDBY",
      "databaseUniqueName" : "books ul",
      "ipAddress" : "xx.xx.xx.xx",
```

```
"hostName" : "n2",
    "listenerPort" : 1521,
    "serviceName" : "test service",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
 }, {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books ul",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "test service",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "transportType" : "ASYNC",
  "applyLag" : "0 seconds",
  "transportLag" : "0 seconds",
  "approximateRoleTransitionTime" : "30 seconds",
  "applyRate" : "12.00 KByte/s"
}, {
  "sourceEndPoints" : [ {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "n1",
    "listenerPort" : 1521,
    "serviceName" : "test service",
    "sysPassword" : null,
    "openMode" : "READ WRITE",
    "state" : {
      "status" : "ENABLED"
  }, {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx",
    "hostName" : "host2",
    "listenerPort" : 1521,
    "serviceName" : "test_service",
    "sysPassword" : null,
    "openMode" : "READ WRITE",
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "targetEndPoints" : [ {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "x.xx.xxx.xx",
```

```
"hostName" : "host name",
      "listenerPort" : 1521,
      "serviceName" : "host1",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
       "status" : "ENABLED"
      }
   }, {
      "endpointType" : "STANDBY",
      "databaseUniqueName" : "books u2",
      "ipAddress" : "xx.xx.xx.xx",
      "hostName" : "host name",
      "listenerPort" : 1521,
      "serviceName" : "host1",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
       "status" : "ENABLED"
   }],
   "transportType" : "ASYNC",
   "applyLag" : "0 seconds",
   "transportLag" : "0 seconds",
   "approximateRoleTransitionTime" : "30 seconds",
   "applyRate" : "5.00 KByte/s"
 }],
 "observers" : [ ],
 "createTime" : "December 15, 2024 03:25:48 AM MSK",
 "state" : {
   "status" : "CONFIGURED"
 },
 "updatedTime" : "December 15, 2024 03:26:06 AM MSK"
} ]
```

Oracle Data Guard status on the first standby system:

```
# odacli list-dataguardstatus
Updated about 3 minute(s) ago
It can take up to several minutes to update Data Guard status. You can re-
run the command to obtain the latest status.
ΤD
                                  Name
Database Name Role Protection Mode
                                          Status
_____
  ----- -----
a3543f5a-63a8-42c3-abcc-a8e180a1dd25 books dgconf
       STANDBY MAX PERFORMANCE CONFIGURED
books
[root@host2 node1 ~]# odacli list-dataguardstatus -j
[ {
 "id" : "a3543f5a-63a8-42c3-abcc-a8e180a1dd25",
 "name" : "books dgconf",
 "databaseId" : "d2ccb22b-3e31-47cb-967c-1f1fdefea54e",
 "protectionMode" : "MAX PERFORMANCE",
 "role" : "STANDBY",
 "replicationGroups" : [ {
```



```
"sourceEndPoints" : [ {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "targetEndPoints" : [ {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books ul",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service_name",
    "sysPassword" : null,
    "openMode" : "MOUNTED",
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books ul",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : "MOUNTED",
    "state" : {
      "status" : "ENABLED"
   }
  }],
  "transportType" : "ASYNC",
  "applyLag" : "0 seconds",
  "transportLag" : "0 seconds",
  "approximateRoleTransitionTime" : "30 seconds",
  "applyRate" : "11.00 KByte/s"
}, {
```

```
"sourceEndPoints" : [ {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "targetEndPoints" : [ {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service_name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
   }
  }],
  "transportType" : "ASYNC",
  "applyLag" : "0 seconds",
  "transportLag" : "0 seconds",
  "approximateRoleTransitionTime" : "30 seconds",
  "applyRate" : "5.00 KByte/s"
}],
```

```
"observers" : [ ],
  "createTime" : "December 15, 2024 00:26:21 AM GMT",
  "state" : {
   "status" : "CONFIGURED"
  },
  "updatedTime" : "December 15, 2024 00:26:31 AM GMT"
} 1
[root@host2 node2 bin]# odacli list-dataguardstatus
Updated about 5 minute(s) ago
It can take up to several minutes to update Data Guard status. You can re-
run the command to obtain the latest status.
ΙD
                                       Name
Database Name Role Protection Mode
                                                Status
_____
          _____ ___ ___
a3543f5a-63a8-42c3-abcc-a8e180a1dd25 books dgconf
books STANDBY MAX PERFORMANCE CONFIGURED
[root@scaoda603c4n2 bin]# odacli list-dataguardstatus -j
[ {
  "id" : "a3543f5a-63a8-42c3-abcc-a8e180a1dd25",
  "name" : "books dgconf",
  "databaseId" : "d2ccb22b-3e31-47cb-967c-1f1fdefea54e",
  "protectionMode" : "MAX PERFORMANCE",
  "role" : "STANDBY",
  "replicationGroups" : [ {
   "sourceEndPoints" : [ {
     "endpointType" : "PRIMARY",
     "databaseUniqueName" : "books",
     "ipAddress" : "xx.xx.xx.xx",
     "hostName" : "host_name",
     "listenerPort" : 1521,
     "serviceName" : "service name",
     "sysPassword" : null,
     "openMode" : null,
     "state" : {
       "status" : "ENABLED"
     }
   }, {
     "endpointType" : "PRIMARY",
     "databaseUniqueName" : "books",
     "ipAddress" : "xx.xx.xx",
     "hostName" : "host name",
     "listenerPort" : 1521,
     "serviceName" : "service name",
     "sysPassword" : null,
     "openMode" : null,
     "state" : {
       "status" : "ENABLED"
   }],
    "targetEndPoints" : [ {
     "endpointType" : "STANDBY",
     "databaseUniqueName" : "books ul",
     "ipAddress" : "xx.xx.xx",
     "hostName" : "host name",
```

```
"listenerPort" : 1521,
    "serviceName" : "service_name",
    "sysPassword" : null,
    "openMode" : "MOUNTED",
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books ul",
    "ipAddress" : "10.32.202.58",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : "MOUNTED",
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "transportType" : "ASYNC",
  "applyLag" : "0 seconds",
  "transportLag" : "0 seconds",
  "approximateRoleTransitionTime" : "30 seconds",
  "applyRate" : "11.00 KByte/s"
}, {
  "sourceEndPoints" : [ {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service_name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
  }],
  "targetEndPoints" : [ {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "10.32.202.9",
    "hostName" : "host name",
```

```
"listenerPort" : 1521,
      "serviceName" : "service_name",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
       "status" : "ENABLED"
   }, {
      "endpointType" : "STANDBY",
      "databaseUniqueName" : "books u2",
      "ipAddress" : "xx.xx.xx",
      "hostName" : "host name",
      "listenerPort" : 1521,
      "serviceName" : "service name",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
       "status" : "ENABLED"
     }
   }],
   "transportType" : "ASYNC",
   "applyLag" : "0 seconds",
   "transportLag" : "0 seconds",
   "approximateRoleTransitionTime" : "30 seconds",
   "applyRate" : "5.00 KByte/s"
 }],
 "observers" : [ ],
 "createTime" : "December 15, 2024 00:26:21 AM GMT",
 "state" : {
   "status" : "CONFIGURED"
 },
 "updatedTime" : "December 15, 2024 00:26:31 AM GMT"
} ]
```

Oracle Data Guard status on the second standby system:

```
# odacli list-dataguardstatus
Updated about 3 minute(s) ago
It can take up to several minutes to update Data Guard status. You can re-
run the command to obtain the latest status.
ID
                                Name
Database Name
             Role Protection Mode
                                         Status
      -----
_____ ____
a3543f5a-63a8-42c3-abcc-a8e180a1dd25 books dgconf
books STANDBY MAX PERFORMANCE CONFIGURED
[root@scaoda603c4n1 ~]# odacli list-dataguardstatus -j
[ {
 "id" : "a3543f5a-63a8-42c3-abcc-a8e180a1dd25",
 "name" : "books dgconf",
 "databaseId" : "d2ccb22b-3e31-47cb-967c-1f1fdefea54e",
 "protectionMode" : "MAX PERFORMANCE",
 "role" : "STANDBY",
 "replicationGroups" : [ {
   "sourceEndPoints" : [ {
```



```
"endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "targetEndPoints" : [ {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books ul",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service_name",
    "sysPassword" : null,
    "openMode" : "MOUNTED",
    "state" : {
      "status" : "ENABLED"
  }, {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books ul",
    "ipAddress" : "xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service_name",
    "sysPassword" : null,
    "openMode" : "MOUNTED",
    "state" : {
      "status" : "ENABLED"
  }],
  "transportType" : "ASYNC",
  "applyLag" : "0 seconds",
  "transportLag" : "0 seconds",
  "approximateRoleTransitionTime" : "30 seconds",
  "applyRate" : "11.00 KByte/s"
}, {
  "sourceEndPoints" : [ {
```

```
"endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }],
  "targetEndPoints" : [ {
   "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service_name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
  }],
  "transportType" : "ASYNC",
  "applyLag" : "0 seconds",
  "transportLag" : "0 seconds",
  "approximateRoleTransitionTime" : "30 seconds",
  "applyRate" : "5.00 KByte/s"
}],
"observers" : [ ],
```

```
"createTime" : "December 15, 2024 00:26:21 AM GMT",
  "state" : {
   "status" : "CONFIGURED"
  },
  "updatedTime" : "December 15, 2024 00:26:31 AM GMT"
} ]
[root@host3 node2 bin]# odacli list-dataguardstatus
Updated about 5 minute(s) ago
It can take up to several minutes to update Data Guard status. You can re-
run the command to obtain the latest status.
ID
                                      Name
                   Role
                           Protection Mode
Database Name
                                               Status
   ------
                                _____ ____
                                                       -----
    _____
a3543f5a-63a8-42c3-abcc-a8e180a1dd25 books dgconf
                  STANDBY MAX PERFORMANCE CONFIGURED
books
[root@scaoda603c4n2 bin]# odacli list-dataguardstatus -j
[ {
  "id" : "a3543f5a-63a8-42c3-abcc-a8e180a1dd25",
  "name" : "books dgconf",
  "databaseId" : "d2ccb22b-3e31-47cb-967c-1f1fdefea54e",
  "protectionMode" : "MAX PERFORMANCE",
  "role" : "STANDBY",
  "replicationGroups" : [ {
   "sourceEndPoints" : [ {
     "endpointType" : "PRIMARY",
     "databaseUniqueName" : "books",
     "ipAddress" : "xx.xx.xx.xx",
     "hostName" : "host name",
     "listenerPort" : 1521,
     "serviceName" : "service name",
     "sysPassword" : null,
     "openMode" : null,
     "state" : {
       "status" : "ENABLED"
     }
   }, {
     "endpointType" : "PRIMARY",
     "databaseUniqueName" : "books",
     "ipAddress" : "xx.xx.xx",
     "hostName" : "host name",
     "listenerPort" : 1521,
     "serviceName" : "service name",
     "sysPassword" : null,
     "openMode" : null,
     "state" : {
       "status" : "ENABLED"
     }
    }],
    "targetEndPoints" : [ {
     "endpointType" : "STANDBY",
     "databaseUniqueName" : "books ul",
     "ipAddress" : "xx.xx.xx",
     "hostName" : "host name",
     "listenerPort" : 1521,
```

```
"serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : "MOUNTED",
    "state" : {
      "status" : "ENABLED"
 }, {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books ul",
    "ipAddress" : "10.32.202.58",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : "MOUNTED",
    "state" : {
     "status" : "ENABLED"
   }
  }],
  "transportType" : "ASYNC",
  "applyLag" : "0 seconds",
  "transportLag" : "0 seconds",
  "approximateRoleTransitionTime" : "30 seconds",
  "applyRate" : "11.00 KByte/s"
}, {
  "sourceEndPoints" : [ {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service_name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
    }
  }, {
    "endpointType" : "PRIMARY",
    "databaseUniqueName" : "books",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host name",
    "listenerPort" : 1521,
    "serviceName" : "service name",
    "sysPassword" : null,
    "openMode" : null,
    "state" : {
      "status" : "ENABLED"
   }
  }],
  "targetEndPoints" : [ {
    "endpointType" : "STANDBY",
    "databaseUniqueName" : "books u2",
    "ipAddress" : "10.32.202.9",
    "hostName" : "host name",
    "listenerPort" : 1521,
```

```
"serviceName" : "service name",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
        "status" : "ENABLED"
   }, {
      "endpointType" : "STANDBY",
      "databaseUniqueName" : "books u2",
      "ipAddress" : "xx.xx.xx",
      "hostName" : "host name",
      "listenerPort" : 1521,
      "serviceName" : "service name",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
       "status" : "ENABLED"
      }
   }],
   "transportType" : "ASYNC",
   "applyLag" : "0 seconds",
   "transportLag" : "0 seconds",
   "approximateRoleTransitionTime" : "30 seconds",
   "applyRate" : "5.00 KByte/s"
 }],
 "observers" : [ ],
 "createTime" : "December 15, 2024 00:26:21 AM GMT",
 "state" : {
   "status" : "CONFIGURED"
 },
  "updatedTime" : "December 15, 2024 00:26:31 AM GMT"
} ]
```

Register Oracle Data Guard with two standby systems with JSON file:

```
[root@node1 ~]# odacli register-dataguard -r advregdg.json
Number of standby databases (enter 1 or 2 | default: 1): 2
Standby 1 site address: host2
BUI username for Standby site host2. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site host2, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): u1
BUI password for Standby site host2. If Multi-user Access Passwordless is
enabled on Standby site, copy the cwallet.sso file from Standby site (/opt/
oracle/dcs/conf/dcspublickey wallet/) to Primary site (/root/). Rename the
file to 'cwallet.sso.host2', set the file ownership (root:root) and file
permission (0440) and then press enter:
Standby 2 site address: host3
BUI username for Standby site host3. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site host3, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): usr1
BUI password for Standby site host3. If Multi-user Access Passwordless is
enabled on Standby site, copy the cwallet.sso file from Standby site (/opt/
oracle/dcs/conf/dcspublickey wallet/) to Primary site (/root/). Rename the
```



```
file to 'cwallet.sso.host3', set the file ownership (root:root) and file
permission (0440) and then press enter:
Primary database SYS password:
  "jobId" : "5c4be2a3-5892-4482-9549-e47005f05548",
  "status" : "Created",
  "message" : "",
  "reports" : [ ],
  "createTimestamp" : "December 19, 2024 01:13:42 AM UYT",
  "resourceList" : [ ],
  "description" : "Register Dataguard service for DB 0f56f07e-ale5-4c88-
a535-4cfc7858a80a",
  "updatedTime" : "December 19, 2024 01:13:42 AM UYT",
  "jobType" : null,
  "cpsMetadata" : null
}
[root@host2 ~]# odacli describe-job -i 5c4be2a3-5892-4482-9549-e47005f05548
Job details
_____
                  ID: 5c4be2a3-5892-4482-9549-e47005f05548
          Description: Register Dataguard service for DB 0f56f07e-
a1e5-4c88-a535-4cfc7858a80a
              Status: Success
              Created: December 19, 2024 01:13:42 UYT
              Message:
Task Name
                                    Start
Time
                              End
Time
                                Status
_____
 -----
_____
Validate register dataguard primary December 19, 2024 01:13:58
            December 19, 2024 01:14:15 UYT
UYT
                                                Success
request (Primary site)
(Host:
host2/Job
ID:
6e0cdfbd-69f8-442c-
be4a-73937e67b938)
Validate register dataguard standby December 19, 2024 01:14:15
            December 19, 2024 01:14:35 UYT
UYT
                                               Success
request (Standby site)
(Host:
host2/Job
ID:
f505eec8-533d-4a80-9edc-34ec16008167)
Validate register dataguard standby December 19, 2024 01:14:35
            December 19, 2024 01:15:01 UYT
UYT
                                                Success
```

```
request (Standby site)
(Host:
host2/Job
ID:
3d8e79e9-15ab-4d7d-
ba92-2f3d0e73852b)
Create Data Guard status (Primary December 19, 2024 01:15:01
UYT December 19, 2024 01:15:07 UYT Success
site) (Host: host2/Job
ID:
87591524-9ec4-42f6-
ae3a-1b5eddf4945d)
Create Data Guard status (Standby December 19, 2024 01:15:07
UYT
            December 19, 2024 01:15:15 UYT
                                                   Success
site) (Host: host2/Job
ID:
4705752a-24b7-41b5-
b2e5-2c64f6eac3c4)
Create Data Guard status (Standby December 19, 2024 01:15:15
             December 19, 2024 01:15:23 UYT
UYT
                                                    Success
site) (Host: host2/Job
ID:
0c7553ba-0f53-49f3-9f7f-8128f7d47e30)
{
  "name" : "dgconf c2",
  "protectionMode" : "MAX AVAILABILITY",
  "replicationGroups" : [ {
    "sourceEndPoints" : [ {
    "endpointType" : "PRIMARY",
     "databaseUniqueName" : "c2",
     "ipAddress" : "xx.xx.xx",
      "hostName" : "host2",
      "listenerPort" : 1521,
      "serviceName" : "c2",
     "sysPassword" : null
    }],
    "targetEndPoints" : [ {
    "endpointType" : "STANDBY",
     "databaseUniqueName" : "c2t 2",
      "ipAddress" : "xx.xx.xx.xx",
      "hostName" : "c2t 2",
     "listenerPort" : 1521,
      "serviceName" : "c2t 2",
      "sysPassword" : null
    }],
    "transportType" : "SYNC"
  }, {
```

```
"sourceEndPoints" : [ {
   "endpointType" : "PRIMARY",
    "databaseUniqueName" : "c2",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host2",
    "listenerPort" : 1521,
    "serviceName" : "c2",
    "sysPassword" : null
  }],
  "targetEndPoints" : [ {
     "endpointType" : "STANDBY",
    "databaseUniqueName" : "c2t 1",
    "ipAddress" : "xx.xx.xx.xx",
    "hostName" : "host2",
    "listenerPort" : 1521,
    "serviceName" : "c2t 1",
    "sysPassword" : null
  }],
  "transportType" : "FASTSYNC"
}]
```

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

Related Topics

https://www.oracle.com/in/database/technologies/high-availability/maa.html

Registering Oracle Data Guard on Oracle Database Appliance Using BUI

Oracle Database Appliance enables you to migrate Oracle Data Guard configuration that were manually configured, and register the configuration metadata with Oracle Database Appliance using BUI.

Prerequisites for Oracle Database Guard Registration

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 systems.
- Oracle recommends that the primary and standby systems have the same Oracle
 Database Appliance configuration. The database must have identical configuration for
 database version and storage, that is, they 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 19.26 or later.
- If you have customized the operating system, then ensure that environments on the systems 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.



Registering Oracle Data Guard using BUI

Follow these steps:

- Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click Database.
- 3. In the Database page, click on the database to view the database details.
- 4. In the Database details page, click the **Dataguard Associations** tab. The Oracle Data Guard configurations associated with the database are displayed.
- 5. To register an Oracle Data Guard configuration, click Register.
- 6. In the System Information tab, you can use a JSON file to provide the Oracle Data Guard configuration values or specify the values for each field.
- 7. To register Oracle Data Guard using JSON file, in the System Information tab, click **Browse** and load the configuration.
- 8. Or, specify the **Dataguard Configuration Name** and **Select Protection Mode**. The **Database name** field is already populated.
- 9. Select Enable Active Dataguard, if you want to enable Oracle Active Data Guard.
- In the Primary Information tab, specify the VIP of the Associated Network, Listener Port, Database SYS Password, and Backup Encryption Passwords. For highavailability systems, specify the Node 0 VIP of the Associated Network, Node 1 Primary Host Name, and Node 1 VIP of the Associated Network.
- In the Standby Information tab, specify the Standby Host Name, VIP of the Associated Network, BUI User, BUI Password, System User, Database Unique Name, Database SYS Password, Listener Port, and Select Transport Type. For high-availability systems, specify the Node 0 Standby Host Name, Node 0 VIP of the Associated Network, Node 1 Standby Host Name, and Node 1 VIP of the Associated Network.
- You can add multiple standby Oracle Data Guard configurations. Click Add Standby to add a new standby Oracle Data Guard configuration. A new Standby Information tab is opened for each new standby you add.
- 13. For each new standby, specify the Standby Host Name, VIP of the Associated Network, BUI User, BUI Password, System User, Database Unique Name, Database SYS Password, Listener Port, and Select Transport Type. For high-availability systems, specify the Node 0 Standby Host Name, Node 0 VIP of the Associated Network, Node 1 Standby Host Name, and Node 1 VIP of the Associated Network.
- 14. Click Save Configuration if you want to save the configuration as a JSON file.
- **15.** Click **Register** and click **Yes** to confirm. Verify that the job is submitted and completes successfully.

Example JSON for registering Oracle Data Guard on Oracle Database Appliance

```
[root@node1 ~]# cat dg.json
{
    "name" : "provdb1_sprovdb",
    "protectionMode" : "MAX_PERFORMANCE",
    "replicationGroups" : [ {
        "sourceEndPoints" : [ {
            "endpointType" : "PRIMARY",
            "databaseUniqueName" : "provdb1",
            "
```



```
"ipAddress" : "10.32.65.225",
      "hostName" : "host1.domain.com",
      "listenerPort" : 1521,
      "serviceName" : "provdb.domain.com",
      "sysPassword" : null
    }],
    "targetEndPoints" : [ {
      "endpointType" : "STANDBY",
      "databaseUniqueName" : "sprovdb",
      "ipAddress" : "10.32.65.230",
      "hostName" : "host2.domain.com",
      "listenerPort" : 1521,
      "serviceName" : "sprovdb.domain.com",
      "sysPassword" : null
    }],
    "transportType" : "ASYNC"
  } ]
}
```

Related Topics

https://www.oracle.com/in/database/technologies/high-availability/maa.html

Deconfiguring Oracle Data Guard on Oracle Database Appliance

Deconfigure Oracle Data Guard status using ODACLI commands.

Deconfiguring Oracle Data Guard Status using ODACLI commands

To deconfigure 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.

Follow these steps:

 To deconfigure Oracle Data Guard with one standby database, run the following command on the primary system:

```
# /opt/oracle/dcs/bin/odacli deconfigure-dataguard --id "ee22f382-
b04e-4658-a6c7-ab00fc7e3270"
Number of standby databases (enter 1 or 2 | default: 1):
Standby 1 site address: standby1
BUI username for Standby site standby1. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby1, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the
Standby database (default: oda-admin): oda-admin
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Standby database will be deleted after Data Guard configuration is
removed. Ignore warning and proceed with Data Guard deconfiguration?
(Y/N): Y
  "jobId" : "0613c649-3da6-463a-8359-2f6d7d17399b",
  "status" : "Created",
  "message" : "",
  "reports" : [ ],
```



```
"createTimestamp" : "January 23, 2025 03:42:41 AM UTC",
 "resourceList" : [ ],
 "description" : "DG Deconfig service",
 "updatedTime" : "January 23, 2025 03:42:41 AM UTC",
 "jobType" : null,
 "cpsMetadata" : null
}
[root@n1 oda]# /opt/oracle/dcs/bin/odacli describe-job -i
0613c649-3da6-463a-8359-2f6d7d17399b
Job details
_____
                 ID: 0613c649-3da6-463a-8359-2f6d7d17399b
          Description: DG Deconfig service
              Status: Success
             Created: January 23, 2025 03:42:41 UTC
             Message:
Task Name
                                   Start
Time
                             End
Time
                               Status
-----
_____
_____
De-configure Dataguard (Primary site) January 23, 2025 03:42:44
            January 23, 2025 03:44:22 UTC
UTC
                                              Success
(Host: phxdbfzp22/Job
ID:
93758e42-2cf4-4aa1-949e-
b6018c1c35d7)
Delete Dataguard Status(Primary site) January 23, 2025 03:44:22
            January 23, 2025 03:44:28 UTC
UTC
                                              Success
(Host: phxdbfzp22/Job
ID:
e090af71-9c6d-4d14-8e16-3c64c4aa7f14)
Delete Dataguard Status (Standby site) January 23, 2025 03:44:28
UTC
            January 23, 2025 03:44:36 UTC
                                              Success
(Host:
standby1
/Job
ID:
a5bf022a-
clca-4cla-8747-4ff6a0e938c0)
Delete Standby Database (Standby site) January 23, 2025 03:44:36
UTC
            January 23, 2025 03:46:07 UTC
                                               Success
(Host:
standby1
```

```
/Job
ID:
f93b1f26-69d9-4690-84f9-4c0c9947423a)
```

 To deconfigure Oracle Data Guard with two standby databases, run the following command on the primary system:

```
# odacli deconfigure-dataguard -i
281ed08c-302f-4a94-932f-02fabf95e88e
Number of standby databases (enter 1 or 2 | default: 1): 2
Standby 1 site address: standby1
BUI username for Standby site standby1. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby1, enter
'oda-admin'; otherwise, enter the name of the user who has irestored the
Standby
database (default: oda-admin):
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Standby 2 site address: standby2
BUI username for Standby site standby2. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby2, enter
'oda-admin'; otherwise, enter the name of the user who has irestored the
Standby
database (default: oda-admin):
BUI password for Standby site standby2:
Password for root user on Standby site standby2:
Standby database will be deleted after Data Guard configuration is removed.
Ignore warning and proceed with Data Guard deconfiguration? (Y/N): y
  "jobId" : "e0b74b70-da87-4f46-8950-8cf061a8c576",
  "status" : "Created",
  "message" : "",
  "reports" : [ ],
  "createTimestamp" : "January 17, 2025 21:12:57 PM UTC",
  "resourceList" : [ ],
  "description" : "DG Deconfig service",
  "updatedTime" : "January 17, 2025 21:12:57 PM UTC",
  "jobType" : null,
  "cpsMetadata" : null
[root@n1 ~]# odacli describe-job -i "e0b74b70-da87-4f46-8950-8cf061a8c576"
Job details
_____
                    ID: e0b74b70-da87-4f46-8950-8cf061a8c576
           Description: DG Deconfig service
                Status: Success
               Created: January 17, 2025 21:12:57 UTC
               Message:
Task Name
                                       Start
Time
End Time
                                        Status
                 -------
```

```
_____ ____
De-configure Dataguard (Primary site) January 17, 2025 21:13:02
          January 17, 2025 21:14:14 UTC
UTC
                                            Success
(Host: scaoda8m014/Job
ID:
65fbb55a-167d-428b-90ad-72c9e6acd706)
Delete Dataguard Status (Primary site) January 17, 2025 21:14:14
         January 17, 2025 21:14:20 UTC Success
UTC
(Host: scaoda8m014/Job
ID:
3ade2aa0-6dcf-469a-
a592-61e7111d26c2)
Delete Dataguard Status (Standby site) January 17, 2025 21:14:20
UTC January 17, 2025 21:14:29 UTC Success
(Host: standby1/Job
ID:
9948a60f-119f-4a6d-944f-
fe02741be5b9)
Delete Standby Database (Standby site) January 17, 2025 21:14:29
UTC January 17, 2025 21:16:41 UTC Success
(Host: standby1/Job
ID:
714e53db-3dd6-4a22-
b614-5110a4e98004)
Delete Dataguard Status(Standby site) January 17, 2025 21:16:41
         January 17, 2025 21:16:49 UTC Success
UTC
(Host: standby2/Job ID:
17958ff9-
c3e3-4ca8-9dc2-975ea2f369cb)
Delete Standby Database (Standby site) January 17, 2025 21:16:49
UTC January 17, 2025 21:19:22 UTC Success
(Host: standby2/Job ID:
c352ea80-6c98-4249-bc7f-2700f1e81fdc)
```

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

Related Topics

odacli Oracle Data Guard Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle
 Database Appliance deployment.



Deconfiguring Oracle Data Guard on Oracle Database Appliance Using BUI

Deconfigure Oracle Data Guard status using BUI.

Deconfiguring Oracle Data Guard Status using BUI

Follow these steps:

- 1. Log into the Browser User Interface: https://host-ip-address:7093/mgmt/index.html
- 2. Click Database.
- 3. In the Database page, click on the database to view the database details.
- 4. In the Database details page, click the **Dataguard Associations** tab. The Oracle Data Guard configurations associated with the database are displayed.
- 5. From the Actions drop-down list of the Oracle Data Guard configuration, select **Deconfigure**.
- 6. In the Standby Information tab, specify the Standby Host Name, VIP of the Associated Network, BUI User, BUI Password, System User, and Database SYS Password. For high-availability systems, specify the Node 0 Standby Host Name, Node 0 VIP of the Associated Network, Node 1 Standby Host Name, and Node 1 VIP of the Associated Network.
- 7. Select Force Run to run the operation.
- 8. Click Add Standby to add another standby for deconfiguration.
- After adding details of all the standby systems that you want to deconfigure, click Deconfigure and confirm the action. Verify that the job is submitted and completes successfully.

Related Topics

odacli Oracle Data Guard Commands
 Use ODACLI commands to configure and manage Oracle Data Guard in your Oracle
 Database Appliance deployment.



15

Managing CPU Pools on Oracle Database Appliance Bare Metal and KVM Deployments

Use CPU pools to manage CPU resources on Oracle Database Appliance bare metal and KVM deployments.

About CPU Pools

CPU pools enable management of CPU resources on Oracle Database Appliance on both bare metal and KVM deployments. There are three types of CPU pools, that is, BM, VM, and DB system.

- Creating a CPU Pool in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to create a CPU pool in a bare metal or KVM deployment.
- Remapping CPU Pools in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to remap CPU pools in a bare metal or KVM deployment.
- Viewing CPU Pools in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to view all CPU pools or details about a CPU pool in a bare metal or KVM deployment.
- Modifying a CPU Pool in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to modify a CPU pool in a bare metal or KVM deployment.
- Deleting a CPU Pool in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to delete a CPU pool in a bare metal or KVM deployment.
- Viewing CPU Pool Audit Records in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to view CPU pool audit records in a bare metal or KVM deployment.
- 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.

About CPU Pools

CPU pools enable management of CPU resources on Oracle Database Appliance on both bare metal and KVM deployments. There are three types of CPU pools, that is, BM, VM, and DB system.

Use the BM CPU pool to ensure that the database on a bare metal host runs exclusively on the CPU lists specified in the CPU pool. All Oracle processes are bound to the CPUs in this CPU pool and run only on these CPUs. The bare metal CPU pool is assigned to database by updating the init.ora parameter processor_group_name.

Use the VM CPU pools to cage and manage CPU resource allocations to workloads for virtual machines. Workloads are isolated by creating CPU pools and assigning or 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.

The DB system CPU pool is similar to the VM CPU pool, but it only applies to a DB system.

Resources in CPU pools cannot overlap, that is, CPU pools cannot share CPUs. But one CPU pool can be assigned to multiple databases (BM CPU pool), or VMs (VM CPU pools), or DB systems (shared DB system CPU pools).

Oracle Database Appliance provides ODACLI commands to create, update, modify, and delete CPU pools.

By default, the first core of the socket is reserved and cannot be used by the VM and DB system CPU pools for optimal performance. This behavior is available from release 19.12 and later when NUMA is enabled. If you want to use the first core of the socket in your CPU pool, then use the --use-reserved-cores option to enable use of the first core of socket for VM and DB system CPU pools.

About Bare Metal CPU Pools

For new databases, you can attach the new CPU pool using the create-database command. For existing databases, use the modify-database command to attach the CPU pool to the database. Restart the database manually for changes to take effect. Clone, irestore and recover database operations will also try to use the same CPU pool if the CPU pool is used by the source database. Specify the --cpupool option to use the new CPU pool. The standby database uses the CPU pool configured for the primary database. Specify the --cpupool option in the irestore-database command when restoring the backup to the standby site if you want to use a separate CPU pool on the standby site. For more details about the command syntax, see the Oracle Database Appliance Command Line Interface chapter in this guide.

About VM CPU Pools

For new VMs, you can attach the new CPU pool using the create-vm command. For existing VMs, use the modify-vm command to attach or update the CPU pool. Use the --live option to apply the changes to a running VM, and use the --config parameter to persist the change. For more details about the command syntax, see the *Oracle Database Appliance Command Line Interface* chapter in this guide.

About DB System CPU Pools

Creating a DB system automatically creates an internal DB system CPU pool associated with this DB system. The internal DB system CPU pool is created and managed internally. It cannot be created, modified, or deleted manually. Starting with Oracle Database Appliance release 19.11, you can create a new type of shared DB system CPU pool which can be shared among DB systems. For more details, see the topic *Managing Shared CPU Pool with Database System in a KVM Deployment* in this guide.

About Audit Records for CPU Pools

CPU pool operations history are recorded in audit records metadata and system log for audit purposes. The CPU pool changes include create, modify, delete operations, and attach and detach operations from VMs and databases. The CPU pool audit records can be queried using odacli list-auditrecords and odacli describe-auditrecord commands but they can not be changed or deleted. For more details about the command syntax, see the *Oracle Database Appliance Command Line Interface* chapter in this guide.



Understanding the Effect of Changing the CPU Cores on CPU Pool Allocation

You may have changed the CPU core count on Oracle Database Appliance using the odacli modify-cpucore command. You must assign cores in multiples of two, with a minimum of two cores. If you change the CPU core count, then you can subsequently only increase the CPU core count.

If you change the CPU core count in an Oracle Database Appliance environment which has CPU pools, then the following behavior is seen:

- odacli create-cpupool and odacli modify-cpupool will always select the online CPUs. Therefore, on both bare metal and KVM deployments, any CPU pool created after running the odacli modify-cpucore command, will select from the available online CPUs.
- For existing CPU pools on bare metal and KVM deployments, some CPUs can become offline when you run the odacli modify-cpucore command. Check the CPU pools for any offline CPUs using the odacli describe-cpupool command. You can then update the CPU pool to use available ONLINE CPUs by using the odacli modify-cpupool command.
- If the databases use a CPU pool and some CPUs become offline, then use the odacli modify-cpupool command to update the CPU pool. Restart the databases to use the updated CPU pool.

Related Topics

- Managing Shared CPU Pool with DB System in a KVM Deployment Use ODACLI commands or the Browser User Interface to manage shared CPU pool with DB system in a KVM deployment.
- Oracle Database Appliance Command-Line Interface
 The command-line interface has different classes of tools to manage Oracle Database
 Appliance.

Creating a CPU Pool in a Bare Metal or KVM Deployment

Use ODACLI commands or the Browser User Interface to create a CPU pool in a bare metal or KVM deployment.

Using ODACLI to Create a CPU Pool

Use the command odacli create-cpupool to create a CPU pool.

Create a VM CPU pool named cpupool1 with 6 cores associated to it.

odacli create-cpupool -n cpupool1 -c 6 -vm

Using Browser User Interface to Create a CPU Pool

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click **CPU Pool** to display the CPU Pool page.



- 4. Click Create CPU Pool.
- 5. In the Create CPU Pool page, specify the following:
 - CPU Pool Name: Name of the CPU pool
 - CPU Pool Type: Specify if the CPU pool is for bare metal or virtual system.
 - Number of CPU Cores: Number of CPU cores allocated to the pool
 - Socket to Use: Specify the sockets to use for the CPU pool.
 - Configure on: For high-availability deployments, select the nodes where you want to configure the CPU pool.
 - Use Reserved CPU Cores: Select this option to use reserved CPU cores.
- 6. Click Create.
- 7. 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.
- 8. 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.

Related Topics

- odacli modify-dbsystem
 Use the odacli modify-dbsystem command to modify a DB system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli modify-vm
 Use the odacli modify-vm command to modify a virtual machine on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- Remapping CPU Pools in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to remap CPU pools in a bare metal or KVM deployment.

Remapping CPU Pools in a Bare Metal or KVM Deployment

Use ODACLI commands or the Browser User Interface to remap CPU pools in a bare metal or KVM deployment.

Using ODACLI to Remap CPU Pools

When you patch the bare metal system to Oracle Database Appliance release 19.12 and later, NUMA is enabled after patching. Then, use the command odacli remap-cpupools to remap CPU pools.

See the topic About Enabling NUMA on Oracle Database Appliance for more information.

Using Browser User Interface to Remap CPU Pools

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click CPU Pool to display the CPU Pools page.



- 4. Click Remap CPU Pool on the page. This will remap all CPU pools for NUMA allocation.
- 5. In the confirmation dialog, select **Force Run** if you want to force the remap operation. Select **Use Reserved CPU Cores** to use reserved CPU cores.
- 6. Click Yes to confirm the action.
- 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.
- 8. 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.

Related Topics

- odacli modify-dbsystem
 Use the odacli modify-dbsystem command to modify a DB system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli modify-vm
 Use the odacli modify-vm command to modify a virtual machine on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Viewing CPU Pools in a Bare Metal or KVM Deployment

Use ODACLI commands or the Browser User Interface to view all CPU pools or details about a CPU pool in a bare metal or KVM deployment.

Using ODACLI to View CPU Pools

The command odacli describe-cpupool displays details about a CPU pool. Use the command odacli list-cpupools to view all CPU pools in the deployment.

```
# odacli list-cpupools
```

odacli describe-cpupool -n cpupool1

Using Browser User Interface to View CPU Pools

Follow these steps:

Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click CPU Pool to display the CPU Pool page.
- 4. You can view the list of all configured CPU pools.
- To view the details of a CPU pool, click on the CPU pool or click on the Actions drop down and select View Details.



Modifying a CPU Pool in a Bare Metal or KVM Deployment

Use ODACLI commands or the Browser User Interface to modify a CPU pool in a bare metal or KVM deployment.

Using ODACLI to Modify CPU Pool

Use the command odacli modify-cpupool to modify a CPU pool.

```
# odacli modify-cpupool -n cpupool1 -c 10
```

Restart the associated databases to use the updated CPU pool.

Using Browser User Interface to Modify CPU Pool

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- Click CPU Pool to display the CPU Pools page.
- From the Actions drop down list for the CPU pool you want to modify, select Modify.
- In the Modify CPU Pool page, specify any changes in the Number of CPU Cores, and select if you want to apply the changes to running VMs or if you want to force the modify operation. Then click Modify.
- 6. 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.
- 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.

Deleting a CPU Pool in a Bare Metal or KVM Deployment

Use ODACLI commands or the Browser User Interface to delete a CPU pool in a bare metal or KVM deployment.

Using ODACLI to Delete CPU Pool

Use the command odacli delete-cpupool to delete a CPU Pool.

Delete a CPU pool named cpupool1.

odacli delete-cpupool -n cpupool1

Using Browser User Interface to Delete CPU Pool

Follow these steps:



1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click CPU Pool to display the CPU Pool page.
- 4. From the Actions drop down list for the CPU pool you want to delete, select Delete.
- 5. Click Yes to confirm your choice.
- 6. 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.
- 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.

Viewing CPU Pool Audit Records in a Bare Metal or KVM Deployment

Use ODACLI commands or the Browser User Interface to view CPU pool audit records in a bare metal or KVM deployment.

Using ODACLI to View Audit Record Details for CPU Pools

Use the odacli list-auditrecords command to list the audit records for a CPU Pool:

odacli list-auditrecords

Use the odacli describe-auditrecord command to describe the audit record for a CPU Pool.

odacli describe-auditrecord

Using Browser User Interface to View Audit Record Details for CPU Pools

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Security tab.
- 3. Select **Show Advanced Search** and specify the filters for the CPU audit records details such as the From and To dates, Resource type, Resource name, DCS user name, Operation type, and the number of records to display the CPU Pool details.
- 4. From the list of audit records displayed, click on the audit record ID for which you to drill down for more details.

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.

16

Managing an Oracle Database Appliance KVM Deployment

KVM virtualization uses a kernel-based virtual machine (KVM) to create a virtualized environment for your Linux applications.

Understand the Oracle Database Appliance KVM architecture, and procedures to deploy a guest virtual machine, manage high availability, manage CPU pools, and configure network settings for Oracle Database Appliance KVM deployment.

- About Oracle Database Appliance KVM Deployment
 You can use Oracle KVM to optimize your system resource use for databases and applications.
- About Oracle Database Appliance KVM Virtualization Architecture Review this topic to understand how Oracle Database Appliance KVM deployment works with Oracle Database Appliance hardware.
- About Virtual Machines and Oracle Database Appliance KVM Deployments Oracle Database Appliance KVM deployment is designed to run and deploy virtual machines to manage system resources.
- About KVM DB Systems on Oracle Database Appliance Understand how you can deploy KVM-based DB systems on Oracle Database Appliance to run your Oracle Database environments.
- Deploying Multiple Databases on DB Systems on Oracle Database Appliance Understand the guidelines and procedure to deploy multiple databases on a DB system on Oracle Database Appliance.
- Managing DB Systems in KVM Deployment Use ODACLI to create, list, describe, start, stop, and delete DB systems in an Oracle Database Appliance KVM deployment.
- Setting Up and Configuring a KVM Deployment for Applications Understand the steps to set up and configure KVM deployment for applications.
- Managing VM Storage in KVM Deployment Use ODACLI to create, view, modify, and delete VM storage in an Oracle Database Appliance KVM deployment.
- Managing Virtual Networks in KVM Deployment Use ODACLI to create, view, start, stop, and delete virtual networks in an Oracle Database Appliance KVM deployment.
- Managing Virtual Disks in KVM Deployment Use ODACLI to create, view, clone, modify, and delete virtual disks on Oracle Database Appliance KVM deployment.
- Managing Virtual Machines in KVM Deployment Use ODACLI to create, view, clone, modify, start, stop, and delete virtual machines in an Oracle Database Appliance KVM deployment.
- About Overcommitting Memory or CPUs in an Oracle Database Appliance KVM System Understand performance and other considerations before overcommiting CPU and memory for application KVM.



- Example JSON File to Create a Single-Node DB System Follow the JSON file example to create a JSON file to deploy a single-node DB System, with role separation, with the command odacli create-dbsystem.
- Example JSON File to Create a High-Availability DB System Follow the JSON file example to create a JSON file to deploy a High-Availability DB system, with role separation, with the command odacli create-dbsystem.

About Oracle Database Appliance KVM Deployment

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

You can deploy a Kernel-based Virtual Machine (KVM) virtual platform on Oracle Database Appliance. With Oracle Database Appliance KVM deployments, you can use the capabilities of Oracle KVM 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.

🖍 See Also:

For more information about supported operating systems, see the Oracle Linux KVM User's Guide: https://docs.oracle.com/en/operating-systems/oracle-linux/kvm-user/index.html

The KVM feature provides a set of modules that enable you to use the Oracle Linux kernel as a hypervisor. KVM supports x86_64 processor architecture. By default, KVM is built into the Unbreakable Enterprise Kernel (UEK) release. KVM features are actively developed and may vary depending on platform and kernel release. If you are using Unbreakable Enterprise Kernel, you should refer to the release notes for the kernel release of your Oracle Database Appliance to obtain information about features and any known issues or limitations that may apply. KVM is supported on Oracle Linux 7.

What are the differences between KVM and Oracle VM Virtualization?

Oracle KVM makes it easy to setup and manage the virtualized environment with little virtualization expertise. With the KVM 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 KVM option:

- Deploy database and applications in a single hardware environment.
- Use your CPU cores (and memory) efficiently.
- Use virtual local area networks (VLANs) to provide separate networks to different virtual machines.
- Use VM storage to grow storage for the virtual machine repository.
- Enables easy resource management per VM and maintainence of quality of service (QoS)
- Provides solution-in-a-box with application, middleware, and databases.

- Improves data center efficiency by increasing space utilization and reducing energy consumption and cooling costs.
- Oracle KVM virtualization is available on bare metal deployments of Oracle Database Appliance, whereas Oracle VM virtualization on Oracle Database Appliance requires Virtualized Platform setup.
- Oracle Database Appliance supports KVM on all hardware models, whereas Virtualized Platform deployments using Oracle VM are supported on only Oracle Database Appliance High-Availability models.
- Oracle Database Appliance KVM deployments use Type 2 host operating system-based hypervisor, whereas Oracle Database Appliance Virtualized Platform deployments use Type 1 bare metal hypervisor.
- KVM is the virtualization technology used in Oracle Cloud Infrastructure (OCI), where as Oracle Database Appliance Virtualized Platform is based on Xen technology.

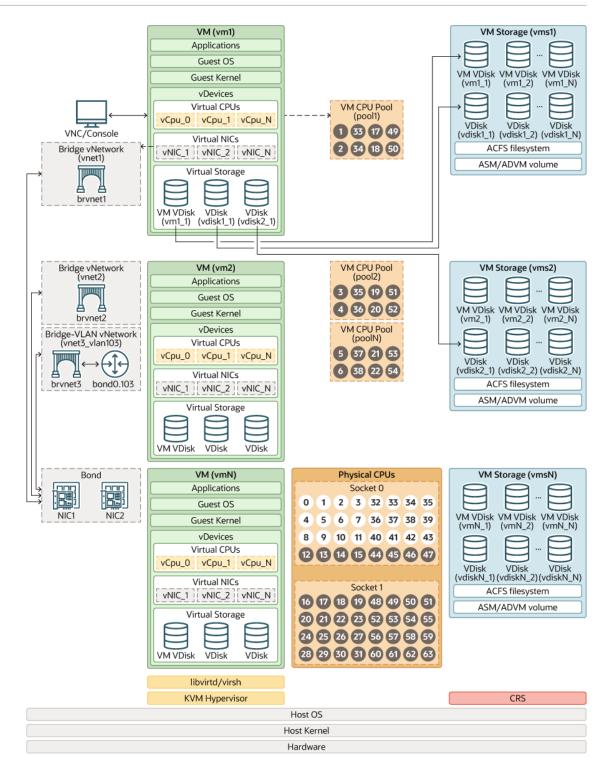
About Oracle Database Appliance KVM Virtualization Architecture

Review this topic to understand how Oracle Database Appliance KVM deployment works with Oracle Database Appliance hardware.

Oracle Database Appliance KVM deployment provides virtualization technology that enables multiple applications to share the same physical server. The Oracle Database Appliance KVM architecture is engineered specifically to leverage the Oracle Database Appliance hardware capabilities. Oracle Database Appliance KVM stack is integrated with Oracle Clusterware. The KVM resources such as VM storages and Virtual Machines are registered as CRS resources and are automatically managed by CRS for high availability.

The Oracle Database Appliance KVM virtualization architecture uses the virtual machine components shown in the following illustration:





About Virtual Machines and Oracle Database Appliance KVM Deployments

Oracle Database Appliance KVM deployment is designed to run and deploy virtual machines to manage system resources.



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

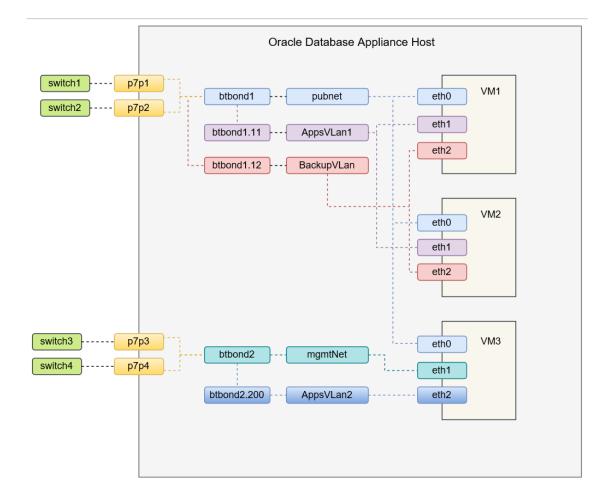
Understand the terminology of the various components you need to set up for an Oracle Database Appliance KVM deployment. The ODACLI tooling handles all the required configuration for your Oracle Database Appliance KVM deployment.

VM Storage

A VM storage is a central location for storing resources that are essential to creating and managing virtual machines. These resources include ISO files (virtual DVD images), virtual machine configuration files, and virtual disks. The VM storage is configured on an Oracle Automatic Storage Management Cluster File System (Oracle ACFS). Oracle Database Appliance KVM uses VM storage 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. You can:

- Create one or more virtual machines on the VM storage.
- Use ODACLI commands to create and manage VM storage, virtual disks, and their virtual machines, and the underlying architecture shown in the illustration.

Virtual Networks



Oracle Database Appliance KVM virtual network supports two type of networks, bridged and bridged-vlan. The above figure is an example of the KVM virtual network on Oracle Database Appliance X8-2 hardware models.

In a bridged network, a Linux bridge is created and the network interface or bond interface, is attached to the bridge. A default bridge network named pubnet is created on the public network selected during the appliance deployment. Any VM that wants to access this public network can be attached to this pubnet vnetwork. This pubnet vnetwork cannot be modified or deleted. In the above diagram, btbond1 is used for the public network, and default vnetwork pubnet is created with btbond1.eth0 of VMs are attached to this pubnet vnetwork. Except for the default pubnet bridge, no other bridged network is allowed to be created on this public network interface. Additional bridged vnetwork can be created on other interfaces that are not used for the public network. In the above diagram, the mgmtNet bridged network is created with btbond2.eth1 of VM3 is attached to this mgmtNet vnetwork.

For example:

```
odacli create-vnetwork --name mgmtNet --bridge mgmtNet --type bridged --
interface btbond2 --ip ip_address --gateway gateway --netmask netmask
```

In a bridged-vlan network, VLAN can be created on all available public interfaces, including the interface where public network is already configured. For example, you can create a VLAN on both btbond1 and btbond2. Follow proper procedures to configure the VLAN on the switch before creating the bridged-vlan network. In the figure above, backupVLan and AppsVlan1 are created from btbond1 and attached to eth1 and eth2 of VM1 and VM2 respectively.

For example:

```
odacli create-vnetwork --name backupvlan --bridge backupvlan --type bridged-
vlan --vlan-id 12 --interface btbond1 --ip ip_address --gateway gateway --
netmask netmask
```

vnetwork is not supported on private interfaces and secondary interfaces of the bond interface.

Virtual Disks

In addition to virtual machines, you can create virtual disks in VM storage. 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 disk if you no longer need the additional space. You can use virtual disks to expand existing file system storage inside the virtual machine by adding the new virtual disk to an existing logical volume, or by creating a new file system on a virtual disk. Virtual disks can optionally be attached to multiple virtual machines.

Virtual Machines

A *virtual machine* is granted virtual resources, and can be started, stopped, cloned, and restarted independently. By default, virtual machines are created with autostart and failover enabled for high-availability models. During failover, the VM is automatically started, and there will be attempt to restart once before failing over to a different node on high-availability models. You can enable or disable autostart and failover using the odacli modify-vm command options. The option to autostart is also available on single-node Oracle Database Appliance models.



About KVM DB Systems on Oracle Database Appliance

Understand how you can deploy KVM-based DB systems on Oracle Database Appliance to run your Oracle Database environments.

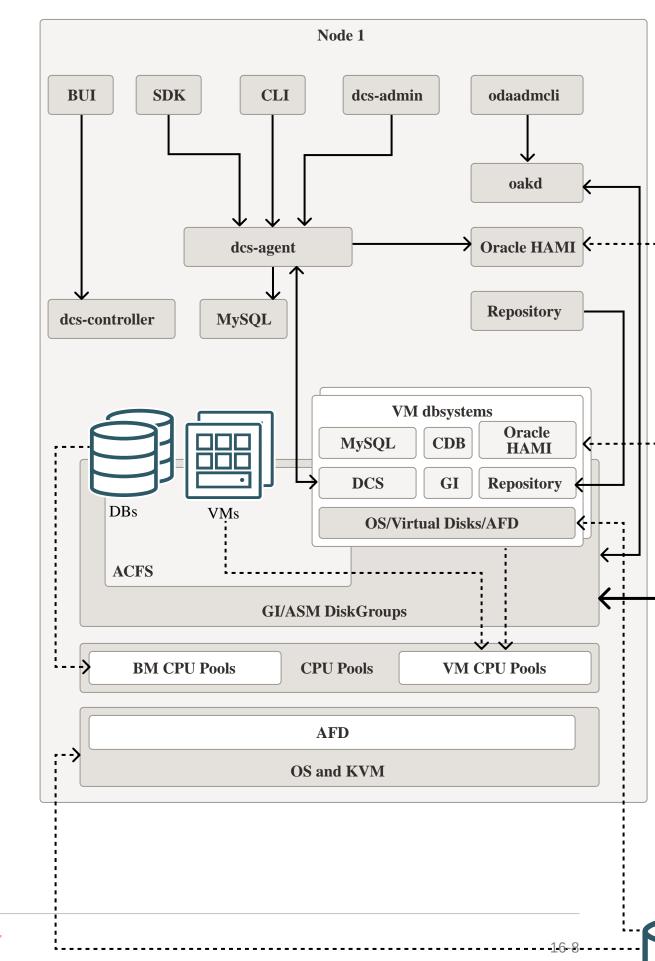
About KVM DB Systems

KVM DB systems enable hard partitioning for Oracle Database licensing, where each KVM DB system has its own CPU pool that is automatically assigned during KVM DB system creation. Oracle Database Appliance simplifies the management of KVM DB systems with the built-in Browser User Interface (BUI) or ODACLI Command Line Interface (ODACLI).

About KVM DB System Architecture

You can provision and configure a DB system on an Oracle KVM. The database can be a single-instance Oracle Database or an Oracle RAC Database with two instances. You can create multiple databases in each DB system.



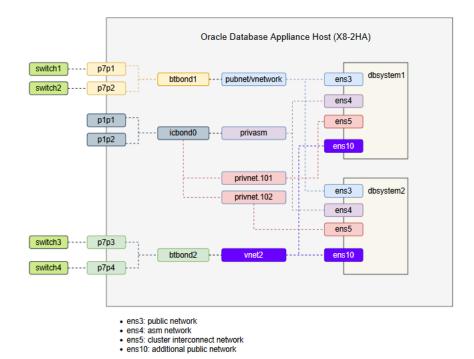




About KVM DB System Networks

Each Oracle Database Appliance DB system on KVM has the following networks created by default:

- **Public network:** The default vnetwork pubnet is created on the bare metal system, based on the public interface you select for Oracle Grid Infrastructure provisioning. When you create a DB system, the public network of the DB system is attached to the pubnet vnetwork created on the bare metal system. The pubnet network is selected by default as the public network of the DB system. You can also create a different vnetwork and use it as public network for the dbsystem.
- Oracle ASM network: Oracle Database Appliance DB system uses Oracle ASM to manage the database storage. The Oracle ASM instance runs on bare metal systems, but not on the DB system. The database on the DB System uses the Oracle ASM listener running on the bare metal system to communicate with Oracle ASM. The Oracle ASM network for example, privasm in the network diagram below, is created to facilitate this communication between the database on the DB system and the Oracle ASM listener on the bare metal system. This network is also used for communications between the DCS agent on the DB system and DCS agent on the bare metal systems. Starting with Oracle Database Appliance release 19.26, there are restrictions on the Oracle ASM network so that only authorized communications between DB system and bare metal host are allowed on the Oracle ASM network.
- **DB system cluster interconnect network:** When DB system is created as a two-node cluster on high-availability model, a cluster interconnect network is created automatically and it is deleted when the DB system is deleted. Each cluster owns its cluster interconnect. Different DB system cannots communicate with each other using cluster interconnect network. 192.168.16.0/24 and 192.168.17.0/24 are reserved for the use of these two internal networks. So, ensure that the IP CIDR 192.168.16.0/24 and 192.168.17.0/24 are available for use by Oracle Database Appliance DB system on KVM.
- Starting with Oracle Database Appliance release 19.12, you can create a vnetwork, either a bridged or bridged-vlan vnetwork, such as vnet2 in the image below, and then use the odacli modify-dbsystem command to attach the vnetwork to the dbsystem.



Restrictions When Deploying KVM DB System

The following restrictions apply when you deploy KVM DB system on Oracle Database Appliance:

- You cannot use Oracle ACFS for storage within the DB system. The database running inside the dbsystem uses Oracle ASM storage. The VM is created on Oracle ACFS based storage.
- On Oracle Database Appliance DB systems, the Oracle Grid Infrastructure software installed is of the same version as the Oracle Database version you install. The version is specified in the DB system JSON payload, with the attribute version for database.
- You cannot configure CPU pools or run VM commands within the DB system.

Deploying Multiple Databases on DB Systems on Oracle Database Appliance

Understand the guidelines and procedure to deploy multiple databases on a DB system on Oracle Database Appliance.

Supported DB System Shapes

In earlier releases of Oracle Database Appliance, where the DB system supported creation of only one database, the DB system shape was the same as the database shape. Starting with Oracle Database Appliance release 19.23, you can create multiple databases on the DB system, with a separate DB system shape dbsX, where X is the number of CPU cores on the DB system VM. X is an even number that ranges from 2 to N-2 where N is the maximum number of CPU cores on the bare metal system. You can view the value of N with the odacli list-cpucores command on the bare metal system. The default memory of the DB system is eight times that of the CPU cores of the DB system. You can create the DB system with

custom memory size that is larger than the default memory size by specifying the memory size in the JSON file or BUI when you create the DB system.

Restrictions and Guidelines for Deploying Multiple Databases on DB Systems

You can provision and configure a DB system on an Oracle KVM. The database can be a single-instance Oracle Database or an Oracle RAC Database with two instances. Starting with Oracle Database Appliance release 19.23, you can create multiple databases in each DB system. For an existing appliance, after you patch the bare metal system to Oracle Database Appliance release 19.23, you can create new DB systems that support multiple databases. For existing DB systems to support multiple databases, you must patch them to Oracle Database Appliance release 19.23 first. To check whether a DB system supports multiple databases, run the odacli list-dbsystems command and verify that the shape of the DB system is *dbsx*.

- You can create multiple databases on DB systems with Oracle Database release 19c version, but cannot create different major version databases within a DB system. To create a DB system that supports 19c database, specify a 19c starter database during the DB system creation. If no starter database is specified in the DB system creation payload, a DB system that supports 19c database is created.
- You can use the odacli create-database command to create the first database if you did not choose to create a starter database, or additional databases in the DB system. The Oracle Grid Infrastructure home and database home are configured on the local file system /u01 of the DB system.
- When you create a database in DB system with the odacli create-database command, the default database shape is odb1.
- DB system must be sized properly based on the sizing requirement of databases running in the DB system. Taken together, the shapes of databases running in a DB system must be no greater than the shape of the DB system, for example, databases odbA, odbB, ..., odbN running in the DB system shape dbsX, then A+B+...N must be less than or equal to X. You can change the DB system shapes to meet the sizing requirement of the databases in the DB system.
- When you create a DB system, if you specify the starter database, then Oracle Grid Infrastructure of the same release as the database is installed. If you do not specify a starter database when you create a DB system, then Oracle Grid Infrastructure of the same release as the Oracle Database Appliance is installed.
- When you delete a DB system, and you use the --force option with the odacli deletedbsystem command, all database data files in the DB system are deleted.
- You can move databases in the DB system across different database homes using the odacli move-database command.
- You can restore databases with the odacli irestore-database command to a DB system with support for multiple databases. This may result in multiple databases running in the DB system. Make sure the DB system shape supports the additional databases restored. If not, change the DB system shape to accommodate additional databases.
- Starting with Oracle Database Appliance release 19.23, the odacli modify-dbsystem -shape command only changes the shape of the DB system; it does not change the shapes of the database inside the DB system any more. You must modify database shapes accordingly based on the new shape of the DB system. Ensure that you scale up database shapes after the DB system shape is scaled up. Similarly, scale down database shapes before DB system shape is scaled down, otherwise databases could fail to start because of reduced DB system memory.

Creating Multiple Databases on DB Systems

You can create databases on the DB system in one of the following ways:

- When you create the DB system using the odacli create-dbsystem command, you can optionally choose to create the starter database. The Oracle Grid Infrastructure software is installed and the started database is created. You specify the starter database details in the JSON file.
- If you do not specify the starter database details in the JSON file when you create the DB system, then only Oracle Grid Infrastructure is installed, but a database is not created. After the odacli create-dbsystem command completes successfully, you can then create multiple databases using the odacli create-database command.

Example JSON files to create databases on DB systems

Example JSON file to create DB system with starter database:

```
{
    "system": {
         "name": "dbsystem1",
         "diskGroup": "DATA",
         "systemPassword": "password",
          "timeZone": "Pacific/Majuro",
          "enableRoleSeparation": false,
          "shape": "dbs4",
          "customRoleSeparation": {
                "users": [
                     {
                          "name": "oracle",
                          "id": 1618,
                          "role": "oracleUser"
                     }
                ],
                "groups": [
                     {
                          "name": "oinstall",
                          "id": 1018,
                          "role": "oinstall"
                     },
                     {
                          "name": "dbaoper",
                          "id": 1019,
                          "role": "dbaoper"
                     },
                     {
                          "name": "dba",
                          "id": 1020,
                          "role": "dba"
                     },
                     {
                          "name": "asmadmin",
                          "id": 1021,
                          "role": "asmadmin"
                     },
                     {
```

```
"name": "asmoper",
                    "id": 1022,
                    "role": "asmoper"
               },
               {
                    "name": "asmdba",
                    "id": 1023,
                    "role": "asmdba"
               }
          ]
     }
},
"network": {
     "domainName": "example.com",
     "ntpServers": [
          "xx.xx.xxx.xx"
     ],
     "dnsServers": [
          "xxx.xxx.xx.",
          "xxx.xx.xx"
     ],
     "scanName": "dbsystem1-scan",
     "scanIps": [
          "xx.xx.xxx.xxx",
          "xx.xx.xxx.xxx"
     ],
     "nodes": [
          {
               "name": "node1",
               "ipAddress": "xx.xx.xx.xx",
               "netmask": "xxx.xxx.xx",
               "gateway": "xx.xx.xx.x",
               "number": 0,
               "vipName": "nodel-vip",
               "vipAddress": "xx.xx.xxx.xxx"
          },
          {
               "name": "node2",
               "ipAddress": "xx.xx.xxx.xxx",
               "netmask": "xxx.xxx.0",
               "gateway": "xx.xx.xx.x",
               "number": 1,
               "vipName": "node2-vip",
               "vipAddress": "xx.xx.xxx.xxx"
          }
     ]
},
"grid": {
     "language": "en",
},
"database": {
     "name": "rZWuZTw4",
     "uniqueName": "rZWuZTw4U",
     "domainName": "test_domain",
     "adminPassword": "password",
     "version": "19.27.0.0.250415",
```

```
"edition": "EE",
     "type": "RAC",
     "dbClass": "IMDB",
     "shape": "odb2",
     "role": "PRIMARY",
     "targetNodeNumber": null,
     "enableDbConsole": false,
     "enableUnifiedAuditing": true,
     "redundancy": null,
     "characterSet": {
          "characterSet": "AL32UTF8",
          "nlsCharacterset": "AL16UTF16",
          "dbTerritory": "AMERICA",
          "dbLanguage": "AMERICAN"
     },
     "rmanBackupPassword": null,
     "level0BackupDay": null,
     "enableTDE": false,
     "tdePassword": null,
     "isCdb": true,
     "pdbName": "test pdb",
     "pdbAdminUser": "test_pdb_admin"
}
```

```
Example JSON file to create DB system without starter database:
```

```
{
    "system": {
         "name": "dbsystem1",
         "diskGroup": "DATA",
         "systemPassword": "password",
          "timeZone": "Pacific/Majuro",
          "enableRoleSeparation": false,
          "shape": "dbs4",
          "customRoleSeparation": {
                "users": [
                     {
                          "name": "oracle",
                          "id": 1618,
                          "role": "oracleUser"
                     }
               ],
                "groups": [
                     {
                          "name": "oinstall",
                          "id": 1018,
                          "role": "oinstall"
                     },
                     {
                          "name": "dbaoper",
                          "id": 1019,
                          "role": "dbaoper"
                     },
                     {
```



}

```
"name": "dba",
                    "id": 1020,
                    "role": "dba"
               },
               {
                    "name": "asmadmin",
                    "id": 1021,
                    "role": "asmadmin"
               },
               {
                    "name": "asmoper",
                    "id": 1022,
                    "role": "asmoper"
               },
               {
                    "name": "asmdba",
                    "id": 1023,
                    "role": "asmdba"
               }
          ]
     }
},
"network": {
     "domainName": "testdomain",
     "ntpServers": [
          "xx.xx.xxx.xx"
     ],
     "dnsServers": [
          "xxx.xxx.xx.",
          "xx.xx.xxx.xx"
     ],
     "scanName": "dbsystem1-scan",
     "scanIps": [
          "xx.xx.xxx",
          "xx.xx.xxx.xxx"
     ],
     "nodes": [
          {
               "name": "node1",
               "ipAddress": "xx.xx.xx.xx",
               "netmask": "xxx.xxx.xx",
               "gateway": "xx.xx.xx.x",
               "number": 0,
               "vipName": "nodel-vip",
               "vipAddress": "xx.xx.xxx.xxx"
          },
          {
               "name": "node2",
               "ipAddress": "xx.xx.xx.xx",
               "netmask": "xxx.xxx.xxx.r",
               "gateway": "xx.xx.xx.x",
               "number": 1,
               "vipName": "node2-vip",
               "vipAddress": "xx.xx.xxx.xxx"
          }
     ]
```

```
},
"grid": {
    "language": "en",
    },
"database": null
```

Managing DB Systems in KVM Deployment

Use ODACLI to create, list, describe, start, stop, and delete DB systems in an Oracle Database Appliance KVM deployment.

- Creating a DB System in a KVM Deployment Use ODACLI commands or the Browser User Interface to create a DB system in a KVM deployment.
- Listing DB Systems in a KVM Deployment Use ODACLI commands or the Browser User Interface to list DB systems in a KVM deployment.
- Describing a DB System in a KVM Deployment Use ODACLI commands or the Browser User Interface to describe a DB system in a KVM deployment.
- Modifying a DB System in a KVM Deployment Use ODACLI commands or the Browser User Interface to modify a DB system in a KVM deployment.
- Attaching and Detaching a Network for a DB System in a KVM Deployment Use ODACLI commands to attach or detach networks for DB system in a KVM deployment.
- Starting a DB System in a KVM Deployment Use ODACLI commands or the Browser User Interface to start a DB system in a KVM deployment.
- Stopping a DB System in a KVM Deployment Use ODACLI commands or the Browser User Interface to stop a DB system in a KVM deployment.
- Deleting a DB System in a KVM Deployment Use ODACLI commands or the Browser User Interface to delete a DB system in a KVM deployment.
- Managing Backup, Restore, and Recovery on a DB System in a KVM Deployment Understand the backup, restore, and recovery operations supported on a DB system in a KVM deployment.
- Managing Shared CPU Pool with DB System in a KVM Deployment Use ODACLI commands or the Browser User Interface to manage shared CPU pool with DB system in a KVM deployment.
- Managing Oracle Data Guard on a DB System in a KVM Deployment Understand the Oracle Data Guard operations supported on a DB system in a KVM deployment.



Creating a DB System in a KVM Deployment

Use ODACLI commands or the Browser User Interface to create a DB system in a KVM deployment.

Important:

Oracle Grid Infrastructure of the same version as the database version is installed in the DB system. Use the command odacli describe-dbsystem-image to check the supported database versions for the DB system. Oracle Database Appliance release 19.27 supports creation of 23ai DB system that runs Oracle Grid Infrastructure 23ai and and Oracle Database 23ai. To create 23ai DB system, download and update the repository with DBVM 23ai template (patch 36524660), Oracle Grid Infrastructure 23ai clone (patch 36524627), and Oracle Database 23ai clones (patch 36524642). Specify the starter Oracle Database 23ai version in the create-dbsystem JSON file. Use the odacli describe-dbsystem-image command to check the exact Oracle Database 23ai version. The 23ai DB system supports running only Oracle Database 23ai database.

NOT_SUPPORTED:

To create the DB system, access control must be enabled in Oracle ASM running on bare metal system. When the bare metal system is newly provisioned or patched to Oracle Database Appliance release 19.27, access control is already enabled, which is a prerequisite for setting appropriate file ownerships for all the files created in DB systems and on the bare metal system. Before you create the DB system, the files on Oracle ASM disk groups that do not have file ownership must be set up with ownership. If ownership is not set, then creation of DB system fails. Use the odacli modify-dbfileattributes command to set up the file ownerships.

Using ODACLI to Create a KVM DB System

Use the command odacli create-dbsystem to create a KVM DB system.

Follow these steps:

1. Download the Oracle Database Appliance KVM DB System Image 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, to create a 23ai DB system, use patch number 36524660. For 19c DB system, use patch number 32451228.

patch number 1927000 Linux-x86-64.zip

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

```
unzip patch_number_1927000_Linux-x86-64.zip
odacli-dcs-19.27.0.0.0-date-ODAVM-19.27.0.0.zip
```



3. Update the repository with the image.

```
# /opt/oracle/dcs/bin/odacli update-repository -f /tmp/odacli-
dcs-19.27.0.0.0-date-ODAVM-19.27.0.0.zip
```

4. Run the odacli describe-dbsystem-image command to query the supported Oracle Grid Infrastructure and Oracle Database versions for this DB system KVM image. The Oracle Grid Infrastructure version that supports the Oracle Database version is installed.

```
# odacli describe-dbsystem-image
DB System Image details
-----
                            _____
____
Component Name Supported Versions Available Versions
_____ ____
DBVM 23.5.0.1.0 23.5.0.1.0
GI 23.5.0.24.07 23.5.0.24.07
  23.5.0.24.07 23.5.0.24.07
DB 23.5.0.24.07 23.5.0.24.07
  23.5.0.24.07 23.5.0.24.07
DBVM 19.24.0.0.0 19.24.0.0.0
 GI 19.24.0.0.240716 19.24.0.0.240716
                    19.23.0.0.240416 not-available
                    19.22.0.0.240116 not-available
                    19.21.0.0.231017 not-available
                    19.20.0.0.230718 not-available
                    19.19.0.0.230418 not-available
                    19.18.0.0.230117 not-available
                    19.17.0.0.221018 not-available
                    19.16.0.0.220719 not-available
                    19.15.0.0.220419 not-available
                    19.14.0.0.220118 not-available
                    19.13.0.0.211019 not-available
                    19.12.0.0.210720 not-available
                    19.11.0.0.210420 not-available
                    21.8.0.0.221018 not-available
                    21.7.0.0.220719 not-available
                    21.6.0.0.220419 not-available
                    21.5.0.0.220118 not-available
                    21.4.0.0.211019 not-available
                    21.3.0.0.210720 not-available
  DB 19.24.0.0.240716 19.24.0.0.240716
                    19.23.0.0.240416 not-available
                    19.22.0.0.240116 not-available
                    19.21.0.0.231017 not-available
                    19.20.0.0.230718 not-available
                    19.19.0.0.230418 not-available
                    19.18.0.0.230117 not-available
                    19.17.0.0.221018 not-available
                    19.16.0.0.220719 not-available
                    19.15.0.0.220419 not-available
                    19.14.0.0.220118 not-available
                    19.13.0.0.211019 not-available
                    19.12.0.0.210720 not-available
                    19.11.0.0.210420 not-available
                    21.8.0.0.221018 not-available
```

21.7.0.0.220719 not-available 21.6.0.0.220419 not-available 21.5.0.0.220118 not-available 21.4.0.0.211019 not-available 21.3.0.0.210720 not-available

- 5. If the odacli describe-dbsystem-image command output shows any component as not-available on the system, then download the component with supported versions and run the odacli update-repository to import the component to the repository. To deploy Oracle Database release 19.27, deploy Oracle Grid Infrastructure release 19.27. To deploy 23ai DB system, ensure that the DBVM 23.4.x, Oracle Grid Infrastructure 23.4.x, and Oracle Database 23.4.x clones are shown available in the odacli describe-dbsystem-image command output.
- 6. Create the prov.json file as per examples provided in this chapter. Oracle Database 21c and later supports only Container Databases (CDB). Ensure that you set the parameter "isCdb": true, and provide both the pdbName and pdbAdminUser in the JSON file if provisioning an Oracle Database 21c or later DB system.
- 7. Run the odacli create-dbsystem command with the prov.json file on the host.

odacli create-dbsystem -p prov.json

- 8. If the odacli create-dbsystem command displays the message ASM ACL setup is not completed, please run 'odacli modify-dbfileattributes' command, then run the odacli modify-dbfileattributes command, and make sure the job finishes successfully before running the odacli create-dbsystem command.
- 9. If the odacli create-dbsystem command displays the message css_critical configuration should be different on both nodes on a high-availability environment, then follow the instructions below to set css_critical and ensure that the DB system functions properly when interconnect fails.
 - a. Run crsctl set server css_critical yes on the first bare metal host. You must restart the Oracle Clusterware stack on the node for the values to take effect.
 - **b.** Run crsctl set server css_critical no on the second bare metal host. You must restart the Oracle Clusterware stack on the node for the values to take effect.
 - c. Run crsctl get server css_critical to verify the value. Refer to Oracle Clusterware Administration and Deployment Guide for more details about setting css_critical.

Using Browser User Interface to Create a KVM DB System

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the **Appliance** tab.
- 3. Click **DB Systems** to display the DB Systems page.
- 4. In the page, click Create DB System.
- 5. In the Create DB System page, provide the DB system values.



- 6. If you want to use an existing configuration file, click **Browse** and select the configuration file. The system information from the file is populated in the relevant fields.
- 7. In the System Information tab, specify the values as follows.
 - **DB System Name**: Enter the DB System name. The name cannot end with a dash (-). Do not exceed 15 characters.
 - **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.
 - Select Specify Multi-User Access Option to enable multi-user access on the DB system. You can choose either the Enable Multi-User Access or Enable
 Passwordless Multi-User Access option. For more information about these features, see the chapter Implementing Multi-User Access on Oracle Database Appliance in this guide.
 - If you choose to enable multi-user access, then specify and confirm the ODA Administrator User Password, Oracle User Password, and Grid User Password. Click Configure Multi-User Access Settings and set the User Password Expiry Duration, Session Expiration for CLI, and Maximum Failed Login Attempts.
 - If you choose to enable passwordless multi-user access, then you do not need to specify any of the above passwords.
 - 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 contain at least two characters each from: uppercase letters, lowercase letters, numbers (0-9), and allowed special characters #, or _. The password must have a minimum of 9 characters and a maximum of 30 characters. Select the Assign same password for admin, oracle, and grid users option if you want to keep the same password for all users.
 - **Disk Group for VM Storage**: Select the disk group that is used for hosting the KVM storage. Note that this is different from the database file storage for the database that runs in the KVM, which is displayed automatically from the correct Oracle ASM disk group based on the database file type.
 - **CPU Pool Name**: Select the CPU pool to be associated with the DB system.
 - Select Force Run if you want to allow the DB system to use this CPU pool even if selecting the CPU pool leads to oversubscription of the CPU pool. Select Use Reserved CPU Cores to use reserved CPU cores.
 - **Memory Size**: Specify the memory to be allocated to the DB system. The memory size can be in KB, MB, GB, or TB. The default is GB.
 - VM Storage Redundancy: Specify the redundancy for the VM storage, either Mirror or High.
 - (Optional) **DNS Servers**: Enter addresses for one or more DNS servers.
 - (Optional) NTP Servers: Enter addresses for one or more NTP servers.
 - Public Network: Select from the existing virtual networks.
- 8. In the Network Information tab, specify the client access network details.
 - **Node Name**: For Node0, enter the host name for the primary client access network.
 - **IP Address**: Enter the virtual IP address that is shared between the nodes.



- Subnet Mask: Enter the subnet mask address for the primary client access network.
- Gateway: Enter the gateway address for the primary client access network.

For two-node deployments, provide the above values for both nodes. In addition, you must also specify the following:

- VIP Name and VIP Address: Specify the Virtual IP name and address.
- SCAN Name and SCAN IP Address: Specify the Single Client Access Name (SCAN) and SCAN IP address.
- **9.** In the User and Group Selection tab, configure your users and groups and specify 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.
 - Specify the GI User, DB User, Install Group, DBA Oper Group, DBA Group, ASM Admin Group, ASM Oper Group, ASM DBA Group, and the User and Group IDs.
- **10.** In the Database Information tab, specify the following information to configure the database:
 - **DB Name**: Enter a name for the database. The name must contain alphanumeric characters and cannot exceed 8 characters.
 - **DB Version**: Specify the database version.
 - (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 begin with a lowercase or uppercase letter, and contain only alphanumeric characters and underscores(_). The name must not contain dollar (\$), and pound (#) characters. The name cannot exceed 30 characters.
 - CDB: Select Yes or No to specify whether or not you want a Container Database (CDB).
 - **PDB Name**: Enter a name for the pluggable database (PDB).
 - **PDB Admin User**: Enter an Admin user name for the pluggable database (PDB). The name must begin with an alphanumeric character. You can specify alphanumeric characters and underscore (_) in the name.
 - **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 DB System.
 - Deployment: Select the type of Deployment, whether RAC, RAC One, or SI.
 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 Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, you can choose to enable high availability for single-instance databases. For

Enterprise Edition Oracle Database 19.15 or later or Oracle Database 21.6 or later, if you choose to create a single-instance database, then the high availability feature is disabled by default. To enable high-availability, set the value in the **Enable High Availability** field to **Yes**.

- Sys and PDB Admin User Password and Confirm Password: Provide a password for the database.
- Shape: Select a database shape from the list.
- Database Redundancy: If disk group redundancy is FLEX, then select HIGH or MIRROR from the drop down list for database redundancy. If the disk group redundancy is not FLEX, then the database redundancy field is not available and is set to the same as the disk group redundancy internally.
- 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.
- **Configure EM Express**: Select **Yes** or **No**. Select **Yes** to configure the Oracle Enterprise Manager Database Express (EM Express) console.
- Character set: Select a character set.
- National Characterset: Select a national characterset.
- Language: Select the database language.
- Territory: Select a territory or location from the list.
- For Oracle Database Enterprise Edition 19c or later, you can choose to enable Transparent Database Encryption (TDE). Select Yes or No in the Enable TDE option. Specify and confirm the TDE Password. By default, the TDE option is disabled.
- **Data Files on Flash Storage**: Select **Yes** or **No**. This option is only available if the high-availability system has HDD storage drives.
- 11. Click Create.
- **12.** 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.
- 13. 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.

Creating the BUI user oda-admin on a non-multi-user access enabled DB system

To create the BUI user oda-admin on a non-multi-user access enabled DB system, do one of the following:

- When you log into the DB system BUI for the first time after provisioning, you are prompted to enter a password and confirm the password to create the oda-admin user. After the oda-admin user is created, you can use the same credentials to log into the BUI.
- Run the odacli set-credential -u oda-admin command. When prompted, enter a password and confirm the password. After the command runs successfully, the oda-admin user is created. Use these credentials to log into the BUI.

Related Topics

 Implementing Multi-User Access on Oracle Database Appliance
 Understand how multi-user access can be implemented on Oracle Database Appliance, its advantages and restrictions and the associated life cycle management changes for your appliance.



- Example JSON File to Create a High-Availability DB System Follow the JSON file example to create a JSON file to deploy a High-Availability DB system, with role separation, with the command odacli create-dbsystem.
- Example JSON File to Create a Single-Node DB System Follow the JSON file example to create a JSON file to deploy a single-node DB System, with role separation, with the command odacli create-dbsystem.
- odacli describe-dbsystem-image
 Use the odacli describe-dbsystem-image command to view the supported Oracle Grid
 Infrastructure and Oracle Database versions and the availability of the clone files and
 Database System KVM image in the Oracle Database Appliance system.
- odacli modify-dbfileattributes

Use the odacli modify-dbfileattributes command to properly set the file attributes (permissions and ownership) of files on Oracle ASM disk group on a bare metal host to support a dbsystem. Only run this command if prompted by the odacli create-dbsystem command.

Listing DB Systems in a KVM Deployment

Use ODACLI commands or the Browser User Interface to list DB systems in a KVM deployment.

Using ODACLI to List DB Systems

Use the command odacli list-dbsystems to list DB systems.

odacli list-dbsystems

Using Browser User Interface to List DB Systems

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click DB Systems to display the DB Systems page.
- 4. In the page, click on the DB system for which you want to view details.

Related Topics

odacli list-dbsystems
 Use the odacli list-dbsystems command to view the database systems on Oracle
 Database Appliance Kernel-based Virtual Machine (KVM).



Describing a DB System in a KVM Deployment

Use ODACLI commands or the Browser User Interface to describe a DB system in a KVM deployment.

Using ODACLI to Describe a DB System

Use the command odacli describe-dbsystem to describe a DB system.

odacli describe-dbsystem -n dbsystem name

Using Browser User Interface to Describe a DB System

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click **DB Systems** to display the DB Systems page.
- In the page, click on the DB System for which you want to view details or click on the Actions drop down and select View Details to view the DB System details.
- Click on the System Information tab for the DB System details, associated CPU Pool, Storage details, and associated VMs.
- 6. Click on the Database Information tab to view the associated database details.
- 7. Click on the Network Information tab to view the network details for single node or highavailability deployments.

Related Topics

odacli describe-dbsystem

Use the odacli describe-dbsystem command to describe a database system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Modifying a DB System in a KVM Deployment

Use ODACLI commands or the Browser User Interface to modify a DB system in a KVM deployment.

Using ODACLI to Modify a DB System

Use the command odacli modify-dbsystem --shape to change shape of the DB system. Starting with Oracle Database Appliance release 19.23, the odacli modify-dbsystem --shape command only changes the shape of the DB system; it does not change the shapes of the database inside the DB system any more. You must modify database shapes accordingly based on the new shape of the DB system. Ensure that you scale up database shapes after the DB system shape is scaled up. Similarly, scale down database shapes before DB system shape is scaled down; otherwise databases could fail to start because of reduced DB system memory.

```
# odacli modify-dbsystem -n dbsystem_name -s dbs4 [-dvn v_networks_to_detach]
[-en] [-gw gateway] [-ip ip_address] [-nm netmask] [-sip scan_ip_address] [-
```



```
sn scan_name] [-s shape] [-vips vip_address] [-vt v_network_type] [-m
custom_memory_size]
```

You can attach a CPU pool to the DB system, or remove the CPU pool from the DB system.

Use the command odacli modify-dbsystem -m to increase the DB system memory. This does not change the database memory configuration. You must manually update the database memory configuration such as SGA, PGA, and others to utilize the increased memory. The command does not support reducing DB system memory. Changing the shape of the DB system after you change the DB system memory resets the memory of the DB system.

You can increase the DB system memory with the odacli modify-dbsystem command using the -m option.

```
# odacli modify-dbsystem -n dbsystem name -m 24G
```

To reduce the DB system memory, use the --shape option with the command odacli modifydbsystem. The DB system is automatically restarted for the new shape to take effect.

odacli modify-dbsystem --name dbsystem1 --shape dbs2

Use the command odacli modify-dbsystem to attach or detach a new network to the DB system. This new network can be used for database backup, Oracle Data Guard setup or other purposes in the DB system.

You can use odacli modify-dbsystem to attach or detach the shared DB system CPU pool. Attaching a shared DB system CPU pool removes the internal CPU pool that was created at DB system creation time. When detaching shared CPU pool from the DB system, an internal CPU pool is automatically created and attached to the DB system. One shared DB system CPU pool can be attached to multiple DB systems. Oversubscribing to shared DB system CPU pool is allowed, but there could be potential performance impact if shared CPU pool is oversubscribed.

Note:

The odacli modify-dbsystem -s shape command only works on Oracle Database Appliance release 19.13 and later DB systems. The CPU pool commands are available on Oracle Database Appliance release 19.11 and later DB systems. In Oracle Database Appliance release 19.23 and later, the odacli modify-dbsystem -s shape command changes the DB system shape only; it does not modify the database shape. Run the odacli modify-database command in the DB system to change the database shape in the DB system.

Using Browser User Interface to Modify a KVM DB System

Follow these steps:

1. Log into the Browser User Interface:

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

2. Click the **Appliance** tab.



- 3. Click **DB Systems** to display the DB Systems page.
- 4. In the page, click on the DB System for which you want to view details or click on the Actions drop down and select Modify to change the following:
 - DB System shape
 - Attach or detach CPU pool for the DB system
 - Attach or detach networks
 - Enable or disable NUMA for the DB system
 - Memory size allocated to the DB system
 - VM storage redundancy (either Mirror or High)
- 5. Select the new shape and CPU pool and click **Modify**.
- 6. Click Enable NUMA to set NUMA capabilities, and click Modify.
- Click the Detach Networks field to view the networks, select the network you want to detach, and click Modify.
- 8. To attach a network, specify the Name, IP Address, Subnet Mask, Gateway, Network Type, Default Network, and click Modify.
- 9. Confirm your action to submit the job to modify the DB System. You can manually run the odacli modify-database command inside the DB system to change the database shape.

Related Topics

- odacli modify-dbsystem
 Use the odacli modify-dbsystem command to modify a DB system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli modify-vm
 Use the odacli modify-vm command to modify a virtual machine on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli create-cpupool
 Use the odacli create-cpupool command to create a new CPU pool on Oracle Database
 Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Attaching and Detaching a Network for a DB System in a KVM Deployment

Use ODACLI commands to attach or detach networks for DB system in a KVM deployment.

Using ODACLI to Attach or Detach a Network to a DB System

You can attach a new vnetwork to the DB system and use it for database backup, Oracle Data Guard configuration, and other options. Use the odacli modify-dbsystem to attach or detach network for a DB system in a KVM deployment. The vnetwork must exist before you can attach it to the dbsystem.

Follow these steps to attach a vnetwork to a DB system:

1. Identify the name of vnetwork bridge to attach to the DB system using the odacli listvnetworks and odacli describe-vnetwork -n vnetwork name commands.



2. Use the odacli modify-dbsystem command to attach vnetwork to DB system:

```
# odacli modify-dbsystem -n dbsystem1 -avn vnet2 -t Dataguard -ip
192.168.10.119,192.168.10.120 -nm 255.255.240.0 -gw 192.168.10.1 -sn scan1
-sip 192.168.10.30,192.168.10.31 -vips
vip1:0:192.168.15.57,vip2:1:192.168.15.58
```

The IP address, netmask (nm) and gateway (gw) values are used to configure the new interface of the DB system. The SCAN name (sn), SCAN IP address (sip) and Virtual IP address (vip) are used when the vnetwork type is database or dataguard.

To detach a vnetwork in the DB system, run the following command:

odacli modify-dbsystem -n name -dvn vnetwork name

Using Browser User Interface to Modify a DB System

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click **DB Systems** to display the DB Systems page.
- In the page, click on the DB System for which you want to view details or click on the Actions drop down and select Modify to attach or detach vnetworks for the DB system.
- 5. Click the Detach Networks field to view the vnetworks, select the vnetwork you want to detach, and click Modify.
- 6. To attach a network, specify the Name, IP Address, Subnet Mask, Gateway, Network Type, Default Network, and click Modify.
- 7. Confirm your action to submit the job to modify the DB system.

Starting a DB System in a KVM Deployment

Use ODACLI commands or the Browser User Interface to start a DB system in a KVM deployment.

Using ODACLI to start a DB System

Use the command odacli start-dbsystem to start a DB system.

odacli start-dbsystem -n dbsystem_name

Using Browser User Interface to Start a DB System

Follow these steps:

1. Log into the Browser User Interface:

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

2. Click the Appliance tab.

- 3. Click DB Systems to display the DB Systems page.
- 4. In the page, click on the DB System which you want to start.
- 5. Click on the System Information tab and then click Start.
- 6. For high-availability deployments, select the node on which you want to start the DB System. Click **Yes**.
- 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.
- 8. 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.
- 9. When the DB System starts, the state displays as ONLINE.

Related Topics

odacli start-dbsystem
 Use the odacli start-dbsystem command to start a database system on Oracle
 Database Appliance Kernel-based Virtual Machine (KVM).

Stopping a DB System in a KVM Deployment

Use ODACLI commands or the Browser User Interface to stop a DB system in a KVM deployment.

Using ODACLI to Stop a DB System

Use the command odacli stop-dbsystem to stop a DB system.

```
# odacli stop-dbsystem -n dbsystem name
```

Using Browser User Interface to Stop a DB System

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click **DB Systems** to display the DB Systems page.
- 4. In the page, click on the DB System which you want to stop.
- 5. Click on the System Information tab and then click **Stop**.
- For high-availability deployments, select the node on which you want to stop the DB System. Click Yes.
- 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.
- 8. 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.
- 9. When the DB system stops, the state displays as OFFLINE.

Related Topics

odacli stop-dbsystem

Use the odacli stop-dbsystem command to stop a database system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Deleting a DB System in a KVM Deployment

Use ODACLI commands or the Browser User Interface to delete a DB system in a KVM deployment.

Using ODACLI to Delete a KVM DB System

Use the command odacli delete-dbsystem to delete a KVM DB system.

odacli delete-dbsystem -n dbsystem name -f

If you do not specify the -f option, then the operation deletes the DB system and Oracle Clusterware files, and retains the database files. With the -f option, the operation deletes the DB system, Oracle Clusterware files, and the database files.

Using Browser User Interface to Delete a KVM DB System

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the **Appliance** tab.
- 3. Click **DB Systems** to display the DB Systems page.
- 4. In the page, for DB System which you want to delete, click on the **Actions** drop down list and select **Delete**.
- Confirm that you want to delete the DB System. Select Force Delete if you want to delete the DB system, Oracle Clusterware files, and the database files during the delete operation. Click Yes.
- 6. 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.
- 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.

Related Topics

- odacli delete-dbsystem
 - Use the odacli delete-dbsystem command to delete a DB system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).



Managing Backup, Restore, and Recovery on a DB System in a KVM Deployment

Understand the backup, restore, and recovery operations supported on a DB system in a KVM deployment.

About Backup, Restore, and Recovery on a DB System

Similar to the bare metal systems, you can use ODACLI commands to configure and perform backup, restore, and recovery operations on DB systems. For information about backup, restore, and recovery on Oracle Database Appliance, see the chapter *Backup, Recover and Restore* in this guide.

Related Topics

Backup, Restore and Recover Databases
 Review backup, restore, and recovery operations for your databases.

Managing Shared CPU Pool with DB System in a KVM Deployment

Use ODACLI commands or the Browser User Interface to manage shared CPU pool with DB system in a KVM deployment.

Using ODACLI to Manage Shared CPU Pool with DB system

Creating a DB system automatically creates an internal DB system CPU pool associated with this DB system. This DB system pool is managed internally and cannot be created, modified, or deleted manually. You can create a new type of shared CPU pool using the odacli create-cpupool --dbsystem/-dbs -n cores command. Similarly to VM and BM types, this CPU pool must not overlap with other CPU pools. In high-availability environments, the DB system CPU pool cannot be local, it must exist on both nodes always.

Associating Shared DB System CPU Pool

A shared DB system CPU pool can be associated to a new DB system or existing DB system. To create a new DB system with shared DB system CPU pool, add the "cpuPoolName" parameter in the create-dbsystem json file. The associated internal CPU pool is automatically deleted after a shared CPU pool is attached to a DB system. Use the odacli modifydbsystem command to associate the CPU pool to an existing DB system.

odacli modify-dbsystem -n dbsystem name -cp dbspool1

The cores of the DB System (based on its shape) must fit into the shared DB System CPU pool. Associating a shared DB system CPU pool to an existing DB system removes the internal CPU pool associated to the DB system. A single shared DB System CPU pool can be shared by multiple DB Systems. Oversubscription to the DB system CPU pool is allowed, but performance may be impacted if the CPU pool is oversubscribed. The list of associated DB systems can be queried using odacli list-cpupool or odacli describe-cpupool commands.



Use odacli describe-dbsystem to check the details of the CPU pool associated to the DB system:

```
# odacli describe-dbsystem -n dbs4e912c
CPU Pool
Name: ce3f42bb28
Number of cores: 2
Host: n1
Effective CPU set: 9-10,29-30
Online CPUs: 9, 10, 29, 30
Offline CPUs: NONE
Host: n2
Effective CPU set: 9-10,29-30
Online CPUs: 9, 10, 29, 30
Offline CPUs: NONE
```

Use odacli list-cpupools to view the DB system CPU pool type and associated DB systems. The internal DB system CPU pool has type "DB_SYSTEM" and shared DB system CPU pool has type "DB_SYSTEM_SHARED".

<pre># odacli list-cpupool Name Associated resources Updated</pre>	Туре	Created	Configured on		Cores
bmpool1 NONE UTC	 BM	2021-03-3	n1, 0 17:54:59 UTC	2 2021-03-30	17:55:00
n2 vmpool1 NONE UTC	VM	2021-03-3	n1, 0 17:54:48 UTC	2 2021-03-30	17:54:49
n2 dbspool1 NONE UTC	db_system	_SHARED 2021-03-3	n1, 0 17:55:11 UTC		17:55:11
n2 ce3f42bb28 dbs4e912c UTC	DB_SYSTEM		n1, 0 17:57:43 UTC	2 2021-03-30	18:01:27

odacli describe-cpupool -n ce3f42bb28 CPU Pool details _____ ID: 8e62933b-b394-4bcf-9c32-6a4cea2e0360 Name: ce3f42bb28 Created: 2021-03-30 17:57:43 UTC Updated: 2021-03-30 18:01:27 UTC Type: DB SYSTEM Number of cores: 2 Associated resources: dbs4e912c CPU Allocations _____ Node: n1 Effective CPU set: 9-10,29-30 Online CPUs: 9, 10, 29, 30 Offline CPUs: NONE Node: n2 Effective CPU set: 9-10,29-30 Online CPUs: 9, 10, 29, 30 Offline CPUs: NONE

Use odacli describe-cpupool to find out more details about DB system CPU pool:

Dissociating Shared DB System CPU Pool

A DB System with a shared DB System CPU pool could have the shared CPU pool detached from it and an internal DB System CPU Pool is created. If the internal DB system CPU pool cannot be created, then the odacli modify-dbsystem command fails.

Dissociating shared DB System CPU Pool:

```
# odacli modify-dbsystem -n dbs4e912c -no-cp
```

Modifying Shared DB System CPU Pool

A shared DB system CPU pool could be resized if all the associated DB systems shapes still fit into the cores of the pool (CPU pool size >= individual DB system size) The change is effective immediately on running DB system VMs.

Modifying a DB System Associated with a Shared DB System CPU Pool

If a DB System is associated with a shared DB System CPU Pool and its shape is modified with the odacli modify-dbsystem command, then the new shape of the DB system must fit into the cores of the pool.

Deleting Shared DB System CPU Pool

A shared DB system CPU Pool can be deleted using the odacli delete-cpupool command only if it has no associated DB systems.

Related Topics

• Oracle Database Appliance KVM Hard Partitioning Compliance



odacli modify-dbsystem

Use the odacli modify-dbsystem command to modify a DB system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

- Remapping CPU Pools in a Bare Metal or KVM Deployment Use ODACLI commands or the Browser User Interface to remap CPU pools in a bare metal or KVM deployment.
- odacli modify-vm
 Use the odacli modify-vm command to modify a virtual machine on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli create-cpupool
 Use the odacli create-cpupool command to create a new CPU pool on Oracle Database
 Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Managing Oracle Data Guard on a DB System in a KVM Deployment

Understand the Oracle Data Guard operations supported on a DB system in a KVM deployment.

About Using Oracle Data Guard on a DB System

Similar to the bare metal systems, you can configure and use Oracle Data Guard on DB systems using ODACLI commands. You can set up Oracle Data Guard between the bare metal system and DB system, or between two DB systems. Integrated Oracle Data Guard can also be used for migrating from bare metal system to DB system, or between two DB systems. For information about Oracle Data Guard on Oracle Database Appliance, see the chapter *Using Oracle Data Guard for Disaster Management and Recovery on Oracle Database Appliance* in this guide.

Related Topics

 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.

Setting Up and Configuring a KVM Deployment for Applications

Understand the steps to set up and configure KVM deployment for applications.

Follow these steps to set up a KVM deployment on Oracle Database Appliance

- **1.** Create a VM storage.
- 2. Create a virtual network.
- 3. Create virtual disks.
- Create virtual machines.

The following links provide information about performing these steps:



Related Topics

- Creating a VM Storage in a KVM Deployment Use ODACLI commands or the Browser User Interface to create a VM storage in a KVM deployment.
- Creating a Virtual Network in a KVM Deployment Use ODACLI commands or the Browser User Interface to create a virtual network in a KVM deployment.
- Creating a Virtual Disk in a KVM Deployment Use ODACLI commands or the Browser User Interface to create a virtual disk in a KVM deployment.
- Creating a Virtual Machine with ODACLI or BUI in a KVM Deployment Use ODACLI commands or the Browser User Interface to create a virtual machine in a KVM deployment.

Managing VM Storage in KVM Deployment

Use ODACLI to create, view, modify, and delete VM storage in an Oracle Database Appliance KVM deployment.

- Creating a VM Storage in a KVM Deployment Use ODACLI commands or the Browser User Interface to create a VM storage in a KVM deployment.
- Viewing VM Storage in a KVM Deployment Use ODACLI commands or the Browser User Interface to view all VM storage or details about a VM storage in a KVM deployment.
- Modifying VM Storage in a KVM Deployment Use ODACLI commands or the Browser User Interface to modify VM storage in a KVM deployment.
- Deleting a VM Storage in a KVM Deployment Use ODACLI commands or the Browser User Interface to delete a VM storage in a KVM deployment.

Creating a VM Storage in a KVM Deployment

Use ODACLI commands or the Browser User Interface to create a VM storage in a KVM deployment.

Using ODACLI to Create VM Storage

Use the command odacli create-vmstorage to create a VM Storage.

Create a VM storage named share1 of 8 GB.

odacli create-vmstorage -n share1 -s 8G

Using Browser User Interface to Create VM Storage

Follow these steps:

1. Log into the Browser User Interface:

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

ORACLE[°]

- 2. Click the **Appliance** tab.
- 3. Click Show VM Instances to display the VM Instances page.
- 4. In the page, select the Create VM Storage option and click Next.
- 5. In the Create VM Storage page, specify the following:
 - Storage Name: Name of the VM storage
 - Storage Size: Size of the storage to be allocated
 - ASM Disk group: Select the Oracle ASM disk group
 - Redundancy: Select the VM storage redundancy, either Mirror or High
- 6. Click Create.
- 7. 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.
- 8. 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.

Viewing VM Storage in a KVM Deployment

Use ODACLI commands or the Browser User Interface to view all VM storage or details about a VM storage in a KVM deployment.

Using ODACLI to View VM Storage

The command odacli describe-vmstorage displays details about VM storage. Use the command odacli list-vmstorages to view all VM storages in the deployment.

odacli list-vmstorages

odacli describe-vmstorage

Using Browser User Interface to View VM Storage

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the **Show VM Storage** tab to view the list of all configured VM storages.
- 5. Click on a VM Storage to view the details of the VM storage.



Modifying VM Storage in a KVM Deployment

Use ODACLI commands or the Browser User Interface to modify VM storage in a KVM deployment.

Using ODACLI to Modify VM Storages

Use the command odacli modify-vmstorage to modify VM storage.

Increase the size of a VM storage named share1 by 10 gigabytes.

```
# odacli modify-vmstorage -n share1 -i 10G
```

Decrease the size of a VM storage named share1 by 5 gigabytes.

odacli modify-vmstorage -n share1 -s 5G

Using Browser User Interface to Modify VM Storage

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the **Appliance** tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show VM Storage tab.
- 5. In the page, select a VM Storage, select the Modify option and click Next.
- 6. In the Modify VM Storage page, specify **Increment** in size, the VM storage **Redundancy** as either **Mirror** or **High**, and click **Modify**.
- 7. 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.
- 8. 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.

Deleting a VM Storage in a KVM Deployment

Use ODACLI commands or the Browser User Interface to delete a VM storage in a KVM deployment.

Using ODACLI to Delete VM Storage

Use the command odacli delete-vmstorage to delete a VM storage.

Delete a VM storage named vs1.

odacli delete-vmstorage -n vs1



Using Browser User Interface to Modify VM Storage

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the **Appliance** tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show VM Storage tab.
- 5. In the page, select a VM Storage, select the **Delete** option.
- 6. Click Yes to confirm your choice.
- 7. 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.
- 8. 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.

Managing Virtual Networks in KVM Deployment

Use ODACLI to create, view, start, stop, and delete virtual networks in an Oracle Database Appliance KVM deployment.

- Creating a Virtual Network in a KVM Deployment
 Use ODACLI commands or the Browser User Interface to create a virtual network in a KVM deployment.
- Viewing Virtual Networks in a KVM Deployment Use ODACLI commands or the Browser User Interface to view all virtual networks or details about a virtual network in a KVM deployment.
- Starting and Stopping Virtual Networks in a KVM Deployment Use ODACLI commands or the Browser User Interface to start or stop virtual networks in a KVM deployment.
- Modifying a Virtual Network in a KVM Deployment
 Use ODACLI commands or the Browser User Interface to modify a virtual network in a KVM deployment.
- Deleting a Virtual Network in a KVM Deployment
 Use ODACLI commands or the Browser User Interface to delete a virtual network in a KVM deployment.

Creating a Virtual Network in a KVM Deployment

Use ODACLI commands or the Browser User Interface to create a virtual network in a KVM deployment.

Using ODACLI to Create Virtual Network

Use the command odacli create-vnetwork to create a virtual network.



Create a VM network of type bridged using the interface btbond2.

```
# odacli create-vnetwork --name mgmtNet --bridge mgmtNet --type bridged --
interface btbond2 --ip 192.168.120.26 --gateway 192.168.120.1 --netmask
255.255.255.0
```

Create a VM network of type bridged-vlan using the interface btbond1.

```
# odacli create-vnetwork --name backupvlan --bridge backupvlan --type bridged-
vlan --vlan-id 12 --interface btbond1 --ip 192.168.100.10 --gateway
192.168.100.1 --netmask 255.255.255.0
```

Using Browser User Interface to Create Virtual Network

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the **Appliance** tab.
- 3. Click Show VM Instances to display the VM Instances page.
- 4. In the page, select the Create Virtual Network option and click Next.
- 5. In the Create Virtual Network page, specify the following:
 - Name: Name of the virtual network
 - IP Address: Virtual network IP address
 - Subnet Mask and Gateway: Virtual network subnet mask and gateway
 - Network Type: Virtual network type
 - Interface: Virtual network interface
 - Bridge Name: Name of the network bridge
 - VLAN ID: ID of the VLAN network
- 6. Click Create.
- 7. 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.
- 8. 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.



Viewing Virtual Networks in a KVM Deployment

Use ODACLI commands or the Browser User Interface to view all virtual networks or details about a virtual network in a KVM deployment.

Using ODACLI to View Virtual Networks

The command odacli describe-vnetwork displays details about a virtual network. Use the command odacli list-vnetworks to view all virtual networks in the deployment.

odacli list-vnetworks

odacli describe-vnetwork -n vnet1

Using Browser User Interface to Create Virtual Networks

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show Virtual Networks tab to view the list of all configured virtual networks.
- 5. Click on a Virtual Network to view the details of the virtual network.

Starting and Stopping Virtual Networks in a KVM Deployment

Use ODACLI commands or the Browser User Interface to start or stop virtual networks in a KVM deployment.

Using ODACLI to Start and Stop Virtual Networks

The command odacli start-vnetwork starts a virtual network. Use the command odacli stop-vnetwork to stop a virtual network in the deployment.

```
# odacli start-vnetwork -n vnet1
```

```
# odacli stop-vnetwork -n vnet1
```

Using Browser User Interface to Start and Stop Virtual Networks

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the **Appliance** tab.
- 3. Click VM Instances to display the VM Details page.



- 4. Click the Show Virtual Networks tab to view the list of all configured virtual networks.
- 5. To start a virtual network, click on a Virtual Network, and then click Start.
- 6. To stop a virtual network, click on a virtual network, and then click Stop.

Modifying a Virtual Network in a KVM Deployment

Use ODACLI commands or the Browser User Interface to modify a virtual network in a KVM deployment.

Using ODACLI to Modify Virtual Network

Use the command odacli modify-vnetwork to modify a virtual network.

```
# odacli modify-vnetwork -n vnet1 -g 10.11.44.41
```

Using Browser User Interface to Modify Virtual Network

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the **Appliance** tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show Virtual Networks tab.
- 5. In the page, select a Virtual Network, select the Modify option and click Next.
- In the Modify Virtual Network page, specify any changes in the Subnet Mask, Gateway, or IP Address, and click Modify.
- 7. 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.
- 8. 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.

Deleting a Virtual Network in a KVM Deployment

Use ODACLI commands or the Browser User Interface to delete a virtual network in a KVM deployment.

Using ODACLI to Delete Virtual Networks

Use the command odacli delete-vnetwork to delete a virtual network.

Delete a virtual network named vnet1.

odacli delete-vnetwork -n vnet1

Using Browser User Interface to Modify Virtual Networks

Follow these steps:



1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show Virtual Networks tab.
- 5. In the page, select a virtual network, select the **Delete** option.
- 6. Click Yes to confirm your choice.
- 7. 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.
- 8. 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.

Managing Virtual Disks in KVM Deployment

Use ODACLI to create, view, clone, modify, and delete virtual disks on Oracle Database Appliance KVM deployment.

- Creating a Virtual Disk in a KVM Deployment Use ODACLI commands or the Browser User Interface to create a virtual disk in a KVM deployment.
- Viewing Virtual Disks in a KVM Deployment Use ODACLI commands or the Browser User Interface to view all virtual disks or details about a virtual disk in a KVM deployment.
- Cloning a Virtual Disk in a KVM Deployment Use ODACLI commands or the Browser User Interface to clone a virtual disk in a KVM deployment.
- Modifying a Virtual Disk in a KVM Deployment Use ODACLI commands or the Browser User Interface to modify a virtual disk in a KVM deployment.
- Deleting a Virtual Disk in a KVM Deployment Use ODACLI commands or the Browser User Interface to delete a virtual disk in a KVM deployment.

Creating a Virtual Disk in a KVM Deployment

Use ODACLI commands or the Browser User Interface to create a virtual disk in a KVM deployment.

Ensure that a VM storage exists before you create a virtual disk.

Using ODACLI to Create Virtual Disks

Use the command odacli create-vdisk to create a virtual disk.

Specify the name of the virtual disk in the command odacli create-vdisk -n name. Identify the storage in which you create the virtual disk by using the -vms storage option. Use the option -s size to specify the virtual disk size. If you want to configure the virtual disk as a shared disk, then use the option -sh.



The vdisk name must start with a letter followed by underscores, hyphens, or alphanumeric characters and can have a maximum length of 30 characters.

Create a 2 GB non-sparse and shareable virtual disk named vdisk1 inside the VM storage vms1.

odacli create-vdisk -n vdisk1 -vms vms1 -s 2G -sh

Using Browser User Interface to Create Virtual Disks

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the Virtual Disk page.
- 4. Click Create Virtual Disk.
- 5. In the page, select the Create Virtual Disk option and click Next.
- 6. In the Create Virtual Disk page, specify the following:
 - Virtual Disk Name: Name assigned to the virtual disk that is unique within the name repository
 - VM Storage Name: Name of the VM storage where the virtual disk will be created
 - Disk Size: Size of the virtual disk
 - Shared: Specify if you want to share the virtual disk
 - Sparse or Non-Sparse: Specify if the virtual disk is sparse
- 7. Click Create.
- 8. 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.
- 9. 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.

Viewing Virtual Disks in a KVM Deployment

Use ODACLI commands or the Browser User Interface to view all virtual disks or details about a virtual disk in a KVM deployment.

Using ODACLI to View Virtual Disks

The command odacli describe-vdisk displays details about a virtual disk. Use the command odacli list-vdisks to view all virtual disks in the deployment.

odacli list-vdisks

odacli describe-vdisk -n vdisk_name



Using Browser User Interface to Create Virtual Disks

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the **Appliance** tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show Virtual Disks tab to view the list of all configured virtual disks.
- 5. Click on a virtual disk to view the details of the virtual disk.

Cloning a Virtual Disk in a KVM Deployment

Use ODACLI commands or the Browser User Interface to clone a virtual disk in a KVM deployment.

Using ODACLI to Clone Virtual Disks

Use the command odacli clone-vdisk to clone an existing virtual disk.

Specify the source vdisk from which you want to clone with the -n option, and specify the name of the cloned virtual disk with the -cn option.

Create a clone of a virtual disk named vdisk1, with the name vdisk1_clone. The cloned disk is created on the same storage as vdisk1.

odacli clone-vdisk -n vdisk1 -cn vdisk1 clone

Using Browser User Interface to Create Virtual Disks

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the Virtual Disk page.
- 4. Click Create Virtual Disk.
- 5. In the page, select the Clone Virtual Disk option and click Next.
- 6. In the Clone Virtual Disk page, specify the following:
 - Select the source virtual disk you want to clone
 - Specify the name of the cloned virtual disk
- 7. Click Create.
- 8. 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.
- 9. 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.



Modifying a Virtual Disk in a KVM Deployment

Use ODACLI commands or the Browser User Interface to modify a virtual disk in a KVM deployment.

Using ODACLI to Modify Virtual Disks

Use the command odacli modify-vdisk to increase the size of a virtual disk.

Increase the size of a virtual disk named vdisk1 by 4 gigabytes.

```
# odacli modify-vdisk -n vdisk1 -i 4G
```

Using Browser User Interface to Modify Virtual Disks

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show Virtual Disks tab.
- 5. In the page, select a Virtual Disk, select the Modify Virtual Disk option and click Next.
- 6. In the Modify Virtual Disk page, specify Increment in size and if you want to share the virtual disk.
- 7. Click Modify.
- 8. 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.
- 9. 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.

Deleting a Virtual Disk in a KVM Deployment

Use ODACLI commands or the Browser User Interface to delete a virtual disk in a KVM deployment.

Using ODACLI to Delete Virtual Disks

Use the command odacli delete-vdisk to delete a virtual disk.

Delete a virtual disk named vdisk1.

odacli delete-vdisk -n vdisk1

Using Browser User Interface to Modify Virtual Disks

Follow these steps:



1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show Virtual Disks tab.
- 5. In the page, select a Virtual Disk, select the **Delete** option.
- 6. Click Yes to confirm your choice.
- 7. 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.
- 8. 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.

Managing Virtual Machines in KVM Deployment

Use ODACLI to create, view, clone, modify, start, stop, and delete virtual machines in an Oracle Database Appliance KVM deployment.

- Creating a Virtual Machine with ODACLI or BUI in a KVM Deployment Use ODACLI commands or the Browser User Interface to create a virtual machine in a KVM deployment.
- Creating a Virtual Machine with a Kickstart Configuration File
 Use a local kickstart configuration file to create a virtual machine in a KVM deployment.
- Cloning a Virtual Machine in a KVM Deployment Use ODACLI commands or the Browser User Interface to clone a virtual machine instance in a KVM deployment.
- Modifying a Virtual Machine in a KVM Deployment Use ODACLI commands or the Browser User Interface to modify a virtual machine in a KVM deployment.
- Viewing Virtual Machines in a KVM Deployment Use ODACLI commands or the Browser User Interface to view all virtual machines or details about a virtual machine in a KVM deployment.
- Starting and Stopping Virtual Machines in a KVM Deployment Use ODACLI commands or the Browser User Interface to start or stop virtual machines in a KVM deployment.
- Deleting a Virtual Machine in a KVM Deployment
 Use ODACLI commands or the Browser User Interface to delete a virtual machine in a KVM deployment.

Creating a Virtual Machine with ODACLI or BUI in a KVM Deployment

Use ODACLI commands or the Browser User Interface to create a virtual machine in a KVM deployment.

Ensure that a VM storage exists before you create a VM instance.



Using ODACLI to Create Virtual Machine Instance

Use the command odacli create-vm to create a VM instance. Specify the preferred node on which to start the virtual machine after creation (-pn option).

Following is an example command to create a VM named vm1 with 8 vcpus and 8 GB memory. A VM disk of size 10 GB is created automatically as /dev/vda inside the VM for the operating system installation. The VM disk is stored in the VM storage vms1. The source used for the installation is located on /u01/0L7.iso. If you want to attach an additional virtual disk to the VM, you can specify --vdisks vdisk_name, where vdisk_name is an existing virtual disk. This virtual disk when attached, is shown as /dev/vdb inside the VM.

```
# odacli create-vm -n vm1 -vc 8 -m 8G -vms vms1 -src /u01/OL7.iso -size 10G
```

To use a kickstart configuration file to create the VM instance, include the file in the --extraargs parameter. Include the file name in the --extra-args parameter, and use HTTP-based install tree. The --extra-args parameter does not work with ISO directly; it requires an installation tree. Create a kickstart configuration file, including the network configuration for the guest VM. Ensure that you specify the network details in the --extra-args parameter so that the VM bootstrap can use it to access the kickstart configuration file in this format "net.ifnames=0 biosdevname=0 dns=dns ip

ip=*ip*::*gateway*:*netmask*:*hostname*:*interface*:none". The IP must belong to the vnetwork to be attached to the VM, and the kickstart configuration must be available over this vnetwork.

For example:

```
odacli create-vm --name odaksvm --vnetwork pubnet --memory 4G --source
http_based_install_tree --vmstorage myvms --size 10G --vcpus 2 --extra-args
"net.ifnames=0 biosdevname=0 dns=dns_IP
ip=vm_IP::gateway_IP:netmask:vm_hostname:eth0:none console=tty0
console=ttyS0,115200 ks=http://Webserver IP:portnumber/ks.txt"
```

The odacli create-vm command also supports local kickstart configuration. Use the -k option to specify the path to the local kickstart file. For example:

```
odacli create-vm -vn pubnet -m 4G -vc 8 -src https://example.com/iso/
OracleLinux/OL9/u5/x86_64/OracleLinux-R9-U5-x86_64-dvd/ -vms vms1 -g
vnc,listen=0.0.0.0,port=5949 -n vm1 -s 20G --ks-config /u01/kvm/images/ks.txt
--extra-args "inst.ks=file:/ks.txt net.ifnames=0 biosdevname=0
nameserver=dns_IP ip=vm_ip::gateway_ip:netmask:vm_hostname:eth0:none"
```

If you do not use a kickstart configuration file to create the VM instance, then complete the VM instance creation as follows:

- 1. Run the odacli create-vm command and check that it completes successfully.
- 2. Use the odacli describe-vm command to check the VNC port.
- **3.** Log in to the VM instance using the VNC port: *host:vncport*. See the section *Connecting to the VM instance Using VNC* for the steps to connect to the VM instance using VNC.
- 4. Complete the installation process by providing your values for the installation screens.

- 5. Log in again to the VM instance using the VNC port: *host:vncport*. See the section *Connecting to the VM instance Using VNC* for the steps to connect to the VM instance using VNC.
- 6. If you specified --vnetwork in the odacli create-vm command, then you can run ifconfig -a to view the network interface in the VM. Configure the network as you would on a Linux system.
- 7. After the network is configured, log into the VM using the network and customize the VM instance.
- 8. If you did not specify --vnetwork in the odacli create-vm command, then the VM network is created using the default Network Address Translation (NAT) based KVM bridge virbr0. eth0 is configured as DHCP inside the VM.

Connecting to the VM instance Using VNC: Method 1

1. Find out the VNC display port of the VM from the command odacli describe-vm -n vm_name: 127.0.0.1:1

```
# odacli describe-vm -n vm1
VM details
-----
ID: c280af13-997c-49b1-97ce-0617610535f1
Name: vm1
...
Graphics settings: vnc,listen=127.0.0.1
Display Port: 127.0.0.1:1 <<<<
...</pre>
```

2. Run vncserver on the Oracle Database Appliance host. Note down the vncserver address odahost:11.

```
# vncserver
New 'odahost:11 (root)' desktop is odahost:11
```

- 3. Launch vncviewer from your desktop, login to the Oracle Database Appliance host using the vncserver address created in step 2: odahost:11. This launches a vncviewer that logs into the Oracle Database Appliance host.
- 4. From vncviewer launched in step 3, run the vncviewer command with the display port from the odacli describe-vm output. For example, in the previous step, the odacli describe-vm command shows the display port is 127.0.0.1:1, so type vncviewer 127.0.0.1:1.

Connecting to the VM instance Using VNC: Method 2

1. Find out the VNC display port of the VM from the command odacli describe-vm. For example, the Display Port is Display Port: 127.0.0.1:1, and the current node myodahost1.

```
# odacli describe-vm -n vm1
VM details
-----
ID: c280af13-997c-49b1-97ce-0617610535f1
Name: vm1
```



```
Graphics settings: vnc,listen=127.0.0.1
Display Port: 127.0.0.1:1 <<<<
...
Status
Current node: myodahost1 <<<
Current state: ONLINE
Target state: ONLINE
```

On Linux or macOS operating systems where you want to launch the vncviewer, use the following command to create the SSH tunnel:

ssh -L localport:127.0.0.1:vncport root@odahost

where localport is an available port number greater than 1024 on your local machine (for example, 12345) where vnc viewer is launched. vncport is the VNC port displayed in the odacli describe-vm command plus 5900. For example, if odacli describe-vm returns the display port as 127.0.0.1:1, then use 5901 as the VNC port. odahost1 is the host name of the Oracle Database Appliance host where the VM is running. 127.0.0.1 is the address where vnc server is listening at. Do not change the 127.0.0.1 address. For example:

ssh -L 12345:127.0.0.1:5901 root@odahost1

On Windows, use PuTTY to create the SSH tunnel.

3. Launch vncviewer from your desktop, enter VNC server address as localhost:localport, where localport is one used in the SSH tunnel in step 2 (such as 12345). For example:

vncserver: localhost:12345

How to find VM network interface attached to the vnetwork

If you specified --vnetwork in the odacli create-vm command, then you can run ifconfig -a to view the network interface in the VM. Find out the VM network interface name that is attached to the vnetwork by matching the interface MAC address to the MAC address displayed in the odacli describe-vm command.

For example:

vNetworks: pubnet:52:54:00:15:b5:c4 pubnet:52:54:00:15:b5:c4

<<<<

. . .

Run "ip link show"inside the VM, find the interface name whose MAC address (the link/ether field in the ip command output: link/ether 52:54:00:15:b5:c4) that matches the vnetwork MAC address in the describe-vm output "pubnet:52:54:00:15:b5:c4", in this case it is eth0. So eth0 is the interface attached to the vnetwork "pubnet".

Configure the network interface eth0 as you would on a Linux system.

Using Browser User Interface to Create Virtual Machine Instance

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click Show VM Instances to display the VM Instances page.
- 4. In the page, select the Create VM Instance option and click Next.
- 5. In the Create Virtual VM page, specify the following:
 - VM Name: Name assigned to the VM instance that is unique within the name repository
 - VM Storage Name: Name of the VM storage where the VM instance will be created
 - Source Installation: The source from which you want to create the VM
 - Preferred Node: Node where you want to run the VM instance
 - Memory Size: Size of the memory to be allocated
 - CPU Pool Name: Select the CPU Pool
 - Number of vCPUs to Use: Number of virtual CPUs to be allocated
- 6. Click Create.
- 7. 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.
- 8. 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.

Creating a Virtual Machine with a Kickstart Configuration File

Use a local kickstart configuration file to create a virtual machine in a KVM deployment.

Ensure that a VM storage exists before you create a VM instance.



Use a kickstart configuration file to create the VM instance as follows:

1. Create a kickstart file similar to the following:

```
[root@node1 html]# cat ks.txt
********
#
# Environment setup
#
****
# url --url="http://xxx.xxx.xxx.x:xxx/cent7"
text
cdrom
auth --enableshadow --passalgo=sha512
keyboard --vckeymap=us --xlayouts='us'
lang en US.UTF-8
eula --agreed
reboot
*****
#
# network configuration
#
****
network --bootproto=static --ip=xx.xx.xxx.xx --gateway=xx.xx.xx. --
netmask=xxx.xxx.xx --noipv6 --device=eth0 --nameserver=10.209.76.198 --
activate
#network --bootproto=dhcp --device=eth0 --ipv6=auto --activate
network --hostname=host1
timezone Africa/Nairobi --isUtc
********
#
# partitioning
#
******
ignoredisk --only-use=vda
bootloader --location=mbr --boot-drive=vda
zerombr
clearpart --none --initlabel
autopart --type=lvm
# part swap --asprimary --fstype="swap" --size=1024
# part /boot --fstype xfs --size=200
# part pv.01 --size=1 --grow
# volgroup rootvg01 pv.01
# logvol / --fstype xfs --name=lv01 --vgname=rootvg01 --size=1 --grow
```

```
##################
#
# User Accounts
# Generate encrypted password: python -c 'import crypt;
print(crypt.crypt("My Password"))'
# Or openssl passwd -1 password
#
rootpw password
# user --groups=wheel --name=josepy --password=password --gecos="Mutai
Josphat"
#
# SELinux and Firewalld
#
***********
selinux --enforcing
#selinux --permissive
#selinux --disabled
# firewall --enabled --http --ssh --ftp --port=https:tcp --port=ipp:tcp
# firewall --disabled
#
# Software Packages
#
*****
%packages --nobase --ignoremissing
@core
@base
vim
bash-completion
%end
[root@node1 html]# ll /etc/httpd/conf/httpd.conf
-rw-r--r 1 root root 11753 Jan 28 01:08 /etc/httpd/conf/httpd.conf
[root@node1 html]# 11
total 8
-rw-r--r-- 1 root root 2257 Feb 23 15:18 ks.txt
-rw-r--r-- 1 root root 15 Feb 23 14:37 test.html
[root@node1 html]#
[root@node1 html]# pwd
/var/www/html
```

 Run the odacli create-vm command and specify the kickstart configuration file location with the --ks-config /-k option, specifying the full file path, and adding the "ks=file:/ name of kickstart file only, no path" parameter.

```
[root@nodel log]# odacli create-vm -m 8G -n test1 -src /mnt/OL77 -vc 4 -
vms vms776904 -osv ol7.7 -ea
"ks=file:/ol_ks4540390061705364312.txt net.ifnames=0 biosdevname=0
dns=xxx.xxx.xx
ip=xx.xx.xx.xx::xx.xx.xx::host:eth0:none console=tty0
console=ttyS0, 11520"
-s 9G -k /tmp/ol ks4540390061705364312.txt
```

3. Log in to the VM instance and confirm that the VM is created.

```
[root@node1 network-scripts]# cat ifcfg-eth0
# Generated by parse-kickstart
UUID="3c4bce29-23d0-4dd2-b22b-349476a028a0"
DNS1="xx.xxx.xx.xx"
IPADDR="xx.xxx.xx"
GATEWAY="xx.xxx.xx.xx"
NETMASK="xx.xxx.xx.xx"
BOOTPROTO="static"
DEVICE="eth0"
ONBOOT="yes"
IPV6INIT="no"
[root@node1 network-scripts]#
 ~ % ssh root@node1
Warning: Permanently added 'host1' (ED25519) to the list of known hosts.
root@host1's password:
Last login: Thu Feb 23 18:17:34 2023
(reverse-i-search)`': ^C
[root@node1 ~]#
```

Cloning a Virtual Machine in a KVM Deployment

Use ODACLI commands or the Browser User Interface to clone a virtual machine instance in a KVM deployment.

Using ODACLI to Clone Virtual Machine Instance

Use the command odacli clone-vm to clone an existing virtual machine.

The name of the VM you create is defined by the command odacli clone-vm -cn name. Specify the source VM from which you want to clone.

Create a clone of a virtual machine named vm1, with the name vm1_clone. The cloned VM is created on the same storage as vm1.

```
# odacli clone-vm -n vm1 -cn vm1 clone
```

Using Browser User Interface to Clone Virtual Machine Instance

Follow these steps:

ORACLE

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Instance page.
- 4. Click Create VM Instance.
- 5. In the page, select the Clone VM Instance option and click Next.
- 6. In the Clone VM Instance page, specify the following:
 - Select the Source VM you want to clone
 - Specify the name and description of the cloned VM instance
- 7. Click Create.
- 8. 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.
- 9. 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.

Modifying a Virtual Machine in a KVM Deployment

Use ODACLI commands or the Browser User Interface to modify a virtual machine in a KVM deployment.

Using ODACLI to Modify Virtual Machines

Use the command odacli modify-vm to modify a virtual machine.

Update the configuration of a VM named vm1, setting the CPU count to 6 and the maximum memory to 6 gigabytes on both the running VM and subsequent boots.

```
# odacli modify-vm -n vm1 -c 6 -mm 6G --live --config
```

Modify a VM to attach a vnetwork:

odacli modify-vm -n vm_name -avn vnetwork_name

- When an application VM is created, a default network interface is created by default in the VM. This interface is attached to the default kvm bridge (virbr0) at the host. This interface is intended for convenient communication between the host and VM. This interface does not attach to any physical network interface at the host. Do not configure this interface to use for any external communication.
- You must create a vnetwork using the command odacli create-vnetwork and attach the vnetwork (odacli modify-vm -avn) to the VM. This creates a second interface in the VM. Configure this network interface for your network requirement.
- The network interface name in the VM depends on the operating system.

Using Browser User Interface to Modify Virtual Machines

Follow these steps:



1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show VM Instances tab.
- 5. In the page, select a Virtual Machine, select the Modify option and click Next.
- 6. In the Modify VM page, specify Increment in size, and if you want to Auto Start, Set Failover, or Enable NUMA.
- 7. You can also modify the CPU Pool, Number of vCPUs to use, Memory Size, and attach and detach virtual disks and virtual networks.
- 8. Select if you want to save the configuration or apply the configuration to the running VM.
- 9. Click Modify.
- **10.** 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.

Viewing Virtual Machines in a KVM Deployment

Use ODACLI commands or the Browser User Interface to view all virtual machines or details about a virtual machine in a KVM deployment.

Using ODACLI to View Virtual Machines

The command odacli describe-vm displays details about a virtual machine. Use the command odacli list-vms to view all virtual machines in the deployment.

```
# odacli list-vms
```

odacli describe-vm -n vm name

Using Browser User Interface to Create Virtual Machines

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show VM Instances tab to view the list of all configured virtual machines.
- 5. Click on a VM Instance to view the details of the virtual machine.



Starting and Stopping Virtual Machines in a KVM Deployment

Use ODACLI commands or the Browser User Interface to start or stop virtual machines in a KVM deployment.

Using ODACLI to Start and Stop Virtual Machines

The command odacli start-vm starts a virtual machine. Use the command odacli stop-vm to stop a virtual machine in the deployment.

If pref-node is defined for the VM, then the VM starts on the pref-node. If pref-node is not defined for the VM, then the VM can start on any node, in a high-availability deployment. However, if you specify the node name -n, then the VM starts on the specified node, even if the preferred node is defined.

```
# odacli start-vm -n vm1
```

odacli stop-vm -n vm1

Using Browser User Interface to Start and Stop Virtual Machines

Follow these steps:

1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show VM Instances tab to view the list of all configured virtual machines.
- 5. To start a virtual machine, click on a VM Instance, and then click **Start** and select the node to start the virtual machine.
- 6. To stop a virtual machine, click on a VM Instance, and then click **Stop** to stop the virtual machine. Click **Force Stop** to close all running processes and stop the virtual machine.

Deleting a Virtual Machine in a KVM Deployment

Use ODACLI commands or the Browser User Interface to delete a virtual machine in a KVM deployment.

Using ODACLI to Delete Virtual Machines

Use the command odacli delete-vm to delete a virtual machine.

Delete a virtual machine named vm1.

```
# odacli delete-vm -n vm1
```

Using Browser User Interface to Modify Virtual Machines

Follow these steps:



1. Log into the Browser User Interface:

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

- 2. Click the Appliance tab.
- 3. Click VM Instances to display the VM Details page.
- 4. Click the Show VM Instances tab.
- 5. In the page, select a VM Instance, select the **Delete** option.
- 6. Click Yes to confirm your choice.
- 7. 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.
- 8. 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.

About Overcommitting Memory or CPUs in an Oracle Database Appliance KVM System

Understand performance and other considerations before overcommiting CPU and memory for application KVM.

Oracle Database Appliance does not restrict overcommiting of CPU and memory for application KVM. However, it is not recommended to overcommit CPU or memory. Overcommitting CPU can lead to slow performance of the VMs and the host. Overcommitting memory can cause the system to run out of memory (OOM), which may lead to the Linux kernel shutting down important system processes. Before you decide to overcommit CPU or memory, ensure that you test your systems. When sizing the application VMs, it is recommended to reserve at least 24 GB memory and 2 CPU cores for bare metal system KVM host when there is no database running on the bare metal system host.

Oracle Database Appliance validates oversubscription of shared CPU pools for DB systems as well as memory associated with DB systems. Starting with Oracle Database Appliance release 19.15, the commands odacli start-dbsystem, odacli modify-dbsystem, odacli create-dbsystem, and odacli modify-cpupool display errors if the operations result in overcommiting of the CPU pool or memory for the DB system. You can use the --force/-f option to allow overcommit of resources for DB systems. This check applies to DB systems only, not for application VMs.

Example JSON File to Create a Single-Node DB System

Follow the JSON file example to create a JSON file to deploy a single-node DB System, with role separation, with the command odacli create-dbsystem.

Use the example JSON file to create a file for your environment.

Note:

It is important to review the readme and the examples carefully before creating your JSON file.



Example 16-1 JSON File to Create a Single-Node Oracle KVM Database System with Role Separation

The following is an example of a JSON file that creates a single-node DB 23ai DB system on Oracle Database Appliance bare metal system. To create a DB 23ai DB system, use the example JSON, and update the version in the database section to DB 23ai version. Use the odacli describe-dbsystem-image command to view the supported 23ai version. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test example",
        "shape": "odb2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "clusterName": "cl-test",
        "enableRoleSeparation": true,
        "customRoleSeparation": {
             "groups": [
                 {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                 },
                 {
                     "name": "dbaoper",
                     "id": 1002,
                     "role": "dbaoper"
                 },
                 {
                     "name": "dba",
                     "id": 1003,
                     "role": "dba"
                 },
                 {
                     "name": "asmadmin",
                     "id": 1004,
                     "role": "asmadmin"
                 },
                 {
                     "name": "asmoper",
                     "id": 1005,
                     "role": "asmoper"
                 },
                 {
                     "name": "asmdba",
                     "id": 1006,
                     "role": "asmdba"
                 }
             ],
             "users": [
                 {
                     "name": "grid",
```



```
"id": 1000,
                    "role": "gridUser"
                },
                {
                    "name": "oracle",
                    "id": 1001,
                    "role": "oracleUser"
                }
            ]
        }
    },
    "database": {
        "name": "db19",
        "uniqueName": "db19",
        "domainName": "example.com",
        "version": "23.5.0.24.07",
        "edition": "EE",
        "type": "SI",
        "dbClass": "OLTP",
        "shape": "odb2",
        "role": "PRIMARY",
        "targetNodeNumber": null,
        "enableDbConsole": false,
        "enableFlashStorage": false,
        "enableFlashCache": false,
        "enableUnifiedAuditing": true,
        "enableEEHA": true,
        "enableSEHA": false,
        "redundancy": null, <<< if diskgroup redundancy is FLEX, then database
redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can be null
        "characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "ENGLISH"
        },
        "enableTDE": false,
         "isCdb": true,
            "pdbName": "pdb1",
            "pdbAdminUser": "pdbadmin"
    },
    "network": {
        "domainName": "test domain",
        "ntpServers": [
            "xx.xxx.xx.xxx"
        ],
        "dnsServers": [
            "xx.xxx.xx.xx"
        ],
        "nodes": [
            {
                "name": "node1",
                "ipAddress": "xx.xx.xx.xx",
                "netmask": "xxx.xxx.xx",
                "gateway": "xx.xx.xx.x",
                "number": 0
```

Example 16-2 JSON File to Create a Single-Node Oracle KVM Database System without Role Separation

The following is an example of a JSON file that creates a single-node Oracle KVM Database System on Oracle Database Appliance bare metal platform, without role separation. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test example",
        "shape": "odb2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "clusterName": "cl-test",
        "enableRoleSeparation": true,
        "customRoleSeparation": {
            "groups": [
                 {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                 },
                 {
                     "name": "dbaoper",
                     "id": 1002,
                     "role": "dbaoper"
                 },
                 {
                     "name": "dba",
                     "id": 1003,
                     "role": "dba"
                 },
                 {
                     "name": "asmadmin",
                     "id": 1004,
                     "role": "asmadmin"
                 },
                 {
                     "name": "asmoper",
                     "id": 1005,
                     "role": "asmoper"
                 },
                 {
                     "name": "asmdba",
```

```
"id": 1006,
                    "role": "asmdba"
                }
            ],
            "users": [
                {
                    "name": "grid",
                    "id": 1000,
                    "role": "gridUser"
                },
                {
                    "name": "oracle",
                    "id": 1001,
                    "role": "oracleUser"
                }
            ]
        }
    },
    "database": {
        "name": "db19",
        "uniqueName": "db19",
        "domainName": "example.com",
        "version": "19.27.0.0.250415",
        "edition": "EE",
        "type": "SI",
        "dbClass": "OLTP",
        "shape": "odb4",
        "role": "PRIMARY",
        "targetNodeNumber": null,
        "enableDbConsole": false,
        "enableUnifiedAuditing": true,
        "redundancy": "HIGH", <<< if diskgroup redundancy is FLEX, then
database redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can
be null
        "characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "ENGLISH"
        },
        "enableTDE": false,
        "isCdb": true,
            "pdbName": "pdb1",
            "pdbAdminUser": "pdbadmin"
    },
    "network": {
        "domainName": "test domain",
        "ntpServers": [],
        "dnsServers": [
            "xx.xxx.xx."
        ],
        "nodes": [
            {
                "name": "node1",
                "ipAddress": "xx.xx.xx.xx",
                "netmask": "xxx.xxx.xxx.r",
```

}

{

Example 16-3 JSON File to Create a Single-Node Oracle KVM Database System with the --template/-t option

The following is an example of a JSON file template sample that creates a single-node Oracle KVM Database System on Oracle Database Appliance bare metal platform. This template sample is generated when you run the odacli create-dbsystem command with the -- template/-t option. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
"system": {
        "name": "test dbsystem",
        "shape": "dbs2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "enableRoleSeparation": true,
        "clusterName" : "clus-test",
        "customRoleSeparation": {
            "groups": [
                 {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                 }
            ],
            "users": [
                 {
                     "name": "grid",
                     "id": 1000,
                     "role": "gridUser"
                 },
                 {
                     "name": "oracle",
                     "id": 1001,
                     "role": "oracleUser"
                 }
            1
        }
    },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
```

```
"domainName": "example.com",
    "version": "19.16.0.0.220719",
    "edition": "EE",
    "type": "SI",
    "dbClass": "OLTP",
    "shape": "odb2",
    "role": "PRIMARY",
    "targetNodeNumber": "0",
    "enableDbConsole": false,
    "enableFlashStorage": false,
    "enableFlashCache": false,
    "enableUnifiedAuditing": true,
    "enableEEHA": true,
    "enableSEHA": false,
    "redundancy": "MIRROR",
    "characterSet": {
        "characterSet": "AL32UTF8",
        "nlsCharacterset": "AL16UTF16",
        "dbTerritory": "AMERICA",
        "dbLanguage": "ENGLISH"
   },
   "enableTDE": false,
    "isCdb": true,
    "pdbName": "pdb1",
    "pdbAdminUser": "pdbadmin"
},
"network": {
    "domainName": "example.com",
    "ntpServers": [
        "xxx.xxx.xxx"
   ],
    "dnsServers": [
        "xxx.xxx.xxx"
   ],
    "nodes": [
        {
            "name": "node1",
            "ipAddress": "xxx.xxx.xxx.xxx",
            "netmask": "xxx.xxx.xxx",
            "gateway": "xxx.xxx.xxx",
            "number": 0
        }
   ],
    "publicVNetwork": "vnet1"
},
"arid": {
   "language": "en"
}
```

Example 16-4 JSON File to Create a Single-Node Oracle KVM Database System with the --template-annotated/-ta option

The following is an example of a JSON file that creates a single-node Oracle KVM Database System on Oracle Database Appliance bare metal platform with the --template-annotated/-

}

ta option. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system" : {
       "name" : "test_dbsystem",
                                                      ---> The name for the
DB System
        "shape" : "dbs2",
                                                      ---> The shape for the
DB System
        "customMemorySize" : "24G",
                                                      ---> The memory size
for the DB System
       "timeZone" : "America/Los Angeles",
                                                      ---> The timezone for
the DB System
       "diskGroup" : "DATA",
                                                      ---> The ASM disk
group to be used for the DB System volumes. Allowed options: <DATA>, <RECO>,
<REDO>
        "cpuPoolName" : "shared dbsystem cpupool", ---> The CPU Pool for
the DB System
        "enableRoleSeparation" : true,
                                                  ---> Whether or not to
enable Role Separation. If true, need to specify 6 groups and two users.
'groupName' and 'userName' can be customized. If false, need to specify 2
groups and one user. 'groupName' and 'userName' can be customized. Allowed
options: <true>, <false>
        "customRoleSeparation" : {
            "groups" : [
                {
                    "name" : "oinstall",
                                                     ---> Name of the group
to create, must be unique
                   "id" : 1001,
                                                      ---> ID of the group
to create, must be unique
                   "role" : "oinstall",
                                                     ---> Role of the
qroup
               }
           ],
            "users" : [
                {
                    "name" : "grid",
                                                      ---> Name of the user
to create, must be unique
                   "id" : 1000,
                                                      ---> ID of the user to
create, must be unique
                    "role" : "gridUser",
                                                      ---> Role of the
user
                },
                {
                    "name" : "oracle",
                                                      ---> Name of the user
to create, must be unique
                   "id" : 1001,
                                                      ---> ID of the user to
create, must be unique
                    "role" : "oracleUser",
                                                      ---> Role of the
user
               }
           ]
       }
    },
    "database" : {
                                                      ---> Name for the DB
        "name" : "dbtest",
```

System database "uniqueName" : "dbtest", ---> The unique name for the DB System database "domainName" : "example.com", ---> The domain name that the DB System database will have "version" : "19.27.0.0.250415", ---> The version for the DB System database. Execute 'odacli describe-dbsystem-image' to get the supported version "edition" : "EE", ---> Enter 'EE' for Enterprise Edition, or 'SE' for Standard Edition "type" : "SI", ---> Enter a database deployment type. Allowed options: <RAC>, <RACOne>, <SI> (single instance database) "dbClass" : "OLTP", ---> The class for the DB System database. Standard Edition only supports OLTP. Allowed options: <OLT>, <DSS>, <IMDB> "shape" : "odb2", ---> The DB System database shape, it must be same as the DB System shape "role" : "PRIMARY", ---> The role for the DB System database. Allowed options: <PRIMARY>, <STANDBY> "targetNodeNumber" : "0", ---> Use '0' for Node0 and '1' for Nodel. For RAC or RACOne use null. The default is '0' for Node0 "enableDbConsole" : false, ---> Whether or not to create dbconsole or EM express. By default, dbconsole is disabled. Allowed options: <true>, <false> "enableFlashStorage" : false, ---> Whether or not to enable the flash storage for the DB System database. Allowed options: <true>, <false> "enableFlashCache" : false, ---> Whether or not to enable the flash cache for the DB System database. Allowed options: <true>, <false> "enableUnifiedAuditing" : true, ---> Whether or not to enable unified auditing for the DB System database. Allowed options: <true>, <false> "enableEEHA" : true, ---> Whether or not to enable HA for EE SI database. enableEEHA is only valid when the edition is EE. Allowed options: <true>, <false> "enableSEHA" : false, ---> Whether or not to enable HA for SE SI database. enableSEHA is only valid when the edition is SE. Allowed options: <true>, <false> "redundancy" : "MIRROR", ---> If diskgroup redundancy is FLEX, then database redundancy must be set to one of 'HIGH' or 'MIRROR', otherwise, can be null "characterSet" : { "characterSet" : "AL32UTF8", ---> The character set for the DB System database "nlsCharacterset" : "AL16UTF16", ---> The NLS character set for the DB System database "dbTerritory" : "AMERICA", ---> The territory for the DB System database "dbLanguage" : "ENGLISH", ---> The language for the DB System database }, "enableTDE" : false, ---> Whether or not to enable TDE. Allowed options: <true>, <false>

```
"isCdb" : true,
                                                      ---> Enter 'true' if
this database is container DB. For 21c and above, cdb must be true. Enter
'false' if this is non-cdb. Allowed options: <true>, <false>
       "pdbName" : "pdb1",
                                                      ---> Enter pdbName if
isCdb parameter is 'true', use 'null' if isCdb is 'false'
        "pdbAdminUser" : "pdbadmin",
                                                      ---> Enter PDB admin
user name, use 'null' if isCdb parameter is 'false'
   },
   "network" : {
       "domainName" : "example.com",
                                                     ---> The domain name
for the DB System network
       "ntpServers" : [
           "xxx.xxx.xxx"
       ],
       "dnsServers" : [
           "xxx.xxx.xxx"
       ],
       "nodes" : [
           {
               "name" : "node1",
                                                     ---> The name used to
configure the hostname
               "ipAddress" : "xxx.xxx.xxx",
                                                      ---> The IP address
for this node
               "netmask" : "xxx.xxx.xxx",
                                                      ---> The mask of the
network for this node
               "gateway" : "xxx.xxx.xxx.xxx",
                                                   ---> The gateway
address for this node
               "number" : 0,
                                                      ---> 0 (Use 0 for the
first node of the DB System instance)
           }
       ],
       "publicVNetwork" : "vnet1",
                                                      ---> The name of the
public virtual network. The ipAddress, vipAddress and scanIps must be on this
publicVNetwork
   },
   "grid" : {
       "language" : "en",
                                                     ---> The language used
for GI (Oracle Grid Infrastructure) installation
   }
}
```

Example JSON File to Create a High-Availability DB System

Follow the JSON file example to create a JSON file to deploy a High-Availability DB system, with role separation, with the command odacli create-dbsystem.

Use the example JSON file to create a file for your environment.

Example 16-5 JSON File to Create a High-Availability DB system without Role Separation

The following is an example of a JSON file that creates a High-Availability DB system on Oracle Database Appliance bare metal platform, without role separation. When using the

example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
"system": {
    "name": "test example",
    "shape": "odb2",
    "customMemorySize": "24G",
    "timeZone": "America/Los Angeles",
    "diskGroup": "DATA",
    "cpuPoolName": "shared dbsystem cpupool",
    "clusterName": "cl-test",
    "enableRoleSeparation": true,
    "customRoleSeparation": {
        "groups": [
            {
                 "name": "oinstall",
                "id": 1001,
                 "role": "oinstall"
            },
             {
                 "name": "dbaoper",
                 "id": 1002,
                "role": "dbaoper"
            },
            {
                 "name": "dba",
                "id": 1003,
                 "role": "dba"
            },
            {
                "name": "asmadmin",
                 "id": 1004,
                 "role": "asmadmin"
            },
            {
                 "name": "asmoper",
                 "id": 1005,
                 "role": "asmoper"
            },
            {
                "name": "asmdba",
                "id": 1006,
                 "role": "asmdba"
            }
        ],
        "users": [
            {
                "name": "grid",
                "id": 1000,
                 "role": "gridUser"
            },
            {
                "name": "oracle",
                 "id": 1001,
                 "role": "oracleUser"
```



{

```
}
            ]
        }
    },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
        "domainName": "test domain",
        "version": "19.27.0.0.250415",
        "edition": "EE",
        "type": "SI",
        "dbClass": "OLTP",
        "shape": "odb2",
        "role": "PRIMARY",
        "targetNodeNumber": "0",
        "enableDbConsole": false,version
        "enableUnifiedAuditing": true,
        "enableEEHA": true,
        "redundancy": "MIRROR", <<< if diskgroup redundancy is FLEX, then
database redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can
be null
        "characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "AMERICAN"
        },
         "enableTDE": false,
         "isCdb": true,
            "pdbName": "pdb1",
            "pdbAdminUser": "pdbadmin"
    },
    "network": {
        "domainName": "test domain",
        "ntpServers": [],
        "dnsServers": [
            "xx.xxx.xx."
        ],
        "nodes": [
            {
                "name": "node1",
                "ipAddress": "xx.xx.xxx.xx",
                "netmask": "xxx.xxx.xx",
                "gateway": "xx.xx.xx.x",
                "number": 0,
                "vipName": "nodel-vip",
                "vipAddress": "xx.xx.xxx"
            },
            {
                "name": "node2",
                "ipAddress": "xx.xx.xxx.xx",
                "netmask": "xxx.xxx.xx",
                "gateway": "xx.xx.xx.x",
                "number": 1,
                "vipName": "node2-vip",
                "vipAddress": "xx.xx.xxx.xx"
```

Example 16-6 JSON File to Create a High-Availability DB system with Role Separation

The following is an example of a JSON file that creates a High-Availability DB system 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.

```
{
    "system": {
        "name": "test system",
        "shape": "dbs2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "enableRoleSeparation": true,
        "customRoleSeparation": {
            "groups": [
                 {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                 },
                 {
                     "name": "dbaoper",
                     "id": 1002,
                     "role": "dbaoper"
                 },
                 {
                     "name": "dba",
                     "id": 1003,
                     "role": "dba"
                 },
                 {
                     "name": "asmadmin",
                     "id": 1004,
                     "role": "asmadmin"
                 },
                 {
                     "name": "asmoper",
                     "id": 1005,
                     "role": "asmoper"
```

```
},
                 {
                    "name": "asmdba",
                    "id": 1006,
                     "role": "asmdba"
                }
            ],
            "users": [
                {
                     "name": "grid",
                     "id": 1000,
                     "role": "gridUser"
                },
                 {
                     "name": "oracle",
                     "id": 1001,
                     "role": "oracleUser"
                }
            ]
        }
    },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
        "domainName": "test domain",
        "version": "23.5.0.24.07",
        "edition": "EE",
        "type": "SI",
        "dbClass": "OLTP",
        "shape": "odb2",
        "role": "PRIMARY",
        "targetNodeNumber": "0",
        "enableDbConsole": false,
        "enableUnifiedAuditing": true,
        "enableEEHA": true,
        "redundancy": null, <<< if diskgroup redundancy is FLEX, then
database redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can
be null
        "characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "AMERICAN"
        },
        "enableTDE": false,
        "isCdb": true,
            "pdbName": "pdb1",
            "pdbAdminUser": "pdbadmin"
    },
    "network": {
        "domainName": "test domain",
        "ntpServers": [],
        "dnsServers": [
            "xx.xxx.xx.xx"
        ],
        "nodes": [
```

```
{
            "name": "node1",
            "ipAddress": "xx.xx.xxx.xx",
            "netmask": "xxx.xxx.xxx.r",
            "gateway": "xx.xx.xx.x",
            "number": 0,
            "vipName": "nodel-vip",
            "vipAddress": "xx.xx.xxx"
        },
        {
            "name": "node2",
            "ipAddress": "xx.xx.xxx.xx",
            "netmask": "xxx.xxx.xx.x",
            "gateway": "xx.xx.xx.x",
            "number": 1,
            "vipName": "node2-vip",
            "vipAddress": "xx.xx.xxx.xx"
        }
    ],
    "publicVNetwork": "vnet1",
    "scanName": "test-scan",
    "scanIps": [
        "xx.xx.xxx.xx",
        "xx.xx.xxx.xx"
    1
},
"grid": {
    "language": "en"
}
```

Example 16-7 JSON File to Create a High-Availability DB system with Standard Edition High-Availability Enabled

The following is an example of a JSON file that creates a High-Availability DB system on Oracle Database Appliance bare metal platform. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test example",
        "shape": "odb2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "enableRoleSeparation": true,
        "customRoleSeparation": {
            "groups": [
                {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                },
                 {
```

}

```
"name": "dbaoper",
                     "id": 1002,
                    "role": "dbaoper"
                },
                {
                     "name": "dba",
                    "id": 1003,
                     "role": "dba"
                },
                {
                    "name": "asmadmin",
                     "id": 1004,
                     "role": "asmadmin"
                },
                {
                     "name": "asmoper",
                     "id": 1005,
                     "role": "asmoper"
                },
                {
                     "name": "asmdba",
                    "id": 1006,
                     "role": "asmdba"
                }
            ],
            "users": [
                {
                     "name": "grid",
                    "id": 1000,
                     "role": "gridUser"
                },
                {
                    "name": "oracle",
                     "id": 1001,
                     "role": "oracleUser"
                }
            ]
        }
    },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
        "domainName": "test_domain",
        "version": "19.27.0.0.250415",
        "edition": "SE",
        "type": "SI",
        "dbClass": "OLTP",
        "shape": "odb2",
        "role": "PRIMARY",
        "targetNodeNumber": "0",
        "enableDbConsole": false,
        "enableUnifiedAuditing": true,
        "enableSEHA": true,
        "redundancy": "MIRROR", <<< if diskgroup redundancy is FLEX, then
database redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can
be null
```

```
"characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "AMERICAN"
        },
         "enableTDE": false,
         "isCdb": true,
            "pdbName": "pdb1",
            "pdbAdminUser": "pdbadmin"
    },
    "network": {
        "domainName": "test domain",
        "ntpServers": [],
        "dnsServers": [
            "xx.xxx.xx.xx"
        ],
        "nodes": [
            {
                "name": "node1",
                "ipAddress": "xx.xx.xxx.xx",
                "netmask": "xxx.xxx.xxx.x",
                "gateway": "xx.xx.xx.x",
                "number": 0,
                "vipName": "nodel-vip",
                "vipAddress": "xx.xx.xxx"
            },
            {
                "name": "node2",
                "ipAddress": "xx.xx.xxx.xx",
                "netmask": "xxx.xxx.xx",
                "gateway": "xx.xx.xx.x",
                "number": 1,
                "vipName": "node2-vip",
                "vipAddress": "xx.xx.xxx.xx"
            }
        ],
        "publicVNetwork": "vnet1",
        "scanName": "test-scan",
        "scanIps": [
            "xx.xx.xxx",
            "xx.xx.xxx.xx"
        1
    },
    "grid": {
        "language": "en"
    }
}
```

Example 16-8 JSON File to Create a High-Availability DB system with Oracle RAC Database

The following is an example of a JSON file that creates a High-Availability DB system on Oracle Database Appliance bare metal platform. When using the example to create your JSON



file, change the definitions to match your environment. The password must meet password requirements.

```
"system": {
    "name": "test example",
    "shape": "odb2",
    "customMemorySize": "24G",
    "timeZone": "America/Los Angeles",
    "diskGroup": "DATA",
    "cpuPoolName": "shared dbsystem cpupool",
    "enableRoleSeparation": true,
    "customRoleSeparation": {
        "groups": [
            {
                 "name": "oinstall",
                "id": 1001,
                 "role": "oinstall"
            },
            {
                "name": "dbaoper",
                 "id": 1002,
                 "role": "dbaoper"
            },
            {
                 "name": "dba",
                 "id": 1003,
                 "role": "dba"
            },
             {
                "name": "asmadmin",
                "id": 1004,
                 "role": "asmadmin"
            },
            {
                 "name": "asmoper",
                 "id": 1005,
                 "role": "asmoper"
            },
            {
                 "name": "asmdba",
                "id": 1006,
                "role": "asmdba"
            }
        ],
        "users": [
            {
                 "name": "grid",
                "id": 1000,
                 "role": "gridUser"
            },
            {
                "name": "oracle",
                "id": 1001,
                 "role": "oracleUser"
            }
```

{

```
]
        }
    },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
        "domainName": "test domain",
        "version": "19.27.0.0.250415",
        "edition": "EE",
        "type": "RAC",
        "dbClass": "OLTP",
        "shape": "odb2",
        "role": "PRIMARY",
        "targetNodeNumber": "0",
        "enableDbConsole": false,
        "enableUnifiedAuditing": true,
        "redundancy": "MIRROR", <<< if diskgroup redundancy is FLEX, then
database redundancy must be set to one of "HIGH" or "MIRROR", otherwise, can
be null
        "characterSet": {
            "characterSet": "AL32UTF8",
            "nlsCharacterset": "AL16UTF16",
            "dbTerritory": "AMERICA",
            "dbLanguage": "AMERICAN"
        },
         "enableTDE": false,
         "isCdb": true,
            "pdbName": "pdb1",
            "pdbAdminUser": "pdbadmin"
    },
    "network": {
        "domainName": "test_domain",
        "ntpServers": [],
        "dnsServers": [
            "xx.xxx.xx.
        ],
        "nodes": [
            {
                "name": "node1",
                "ipAddress": "xx.xx.xxx.xx",
                "netmask": "xxx.xxx.xx",
                "gateway": "xx.xx.xx.x",
                "number": 0,
                "vipName": "nodel-vip",
                "vipAddress": "xx.xx.xxx"
            },
            {
                "name": "node2",
                "ipAddress": "xx.xx.xxx.xx",
                "netmask": "xxx.xxx.xxx.r",
                "gateway": "xx.xx.xx.x",
                "number": 1,
                "vipName": "node2-vip",
                "vipAddress": "xx.xx.xxx"
            }
        ],
```

```
"publicVNetwork": "vnet1",
    "scanName": "test-scan",
    "scanIps": [
        "xx.xx.xxx.xx",
        "xx.xx.xxx.xx"
    ]
},
"grid": {
    "language": "en"
}
```

}

Example 16-9 JSON File to Create a High-Availability DB system with the --template/-t option

The following is an example of a JSON file that creates a High-Availability DB system on Oracle Database Appliance bare metal platform. This template sample is generated when you run the odacli create-dbsystem command with the --template/-t option. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test dbsystem",
        "shape": "dbs2",
        "customMemorySize": "24G",
        "timeZone": "America/Los_Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "enableRoleSeparation": true,
        "customRoleSeparation": {
            "groups": [
                 {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                 }
            ],
            "users": [
                 {
                     "name": "grid",
                     "id": 1000,
                     "role": "gridUser"
                 },
                 {
                     "name": "oracle",
                     "id": 1001,
                     "role": "oracleUser"
                 }
            1
        }
    },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
        "domainName": "example.com",
```

```
"version": "19.27.0.0.250415",
    "edition": "EE",
    "type": "SI",
    "dbClass": "OLTP",
    "shape": "odb2",
    "role": "PRIMARY",
    "targetNodeNumber": "0",
    "enableDbConsole": false,
    "enableFlashStorage": false,
    "enableFlashCache": false,
    "enableUnifiedAuditing": true,
    "enableEEHA": true,
    "enableSEHA": false,
    "redundancy": "MIRROR",
    "characterSet": {
        "characterSet": "AL32UTF8",
        "nlsCharacterset": "AL16UTF16",
        "dbTerritory": "AMERICA",
        "dbLanguage": "AMERICAN"
   },
    "enableTDE": false,
    "isCdb": true,
    "pdbName": "pdb1",
    "pdbAdminUser": "pdbadmin"
},
"network": {
    "domainName": "example.com",
    "ntpServers": [
        "xxx.xxx.xxx"
   ],
    "dnsServers": [
        "xxx.xxx.xxx"
   ],
    "nodes": [
        {
            "name": "node1",
            "ipAddress": "xxx.xxx.xxx",
            "netmask": "xxx.xxx.xxx",
            "gateway": "xxx.xxx.xxx",
            "number": 0,
            "vipName": "nodel-vip",
            "vipAddress": "xxx.xxx.xxx"
        },
        {
            "name": "node2",
            "ipAddress": "xxx.xxx.xxx",
            "netmask": "xxx.xxx.xxx",
            "gateway": "xxx.xxx.xxx",
            "number": 1,
            "vipName": "node2-vip",
            "vipAddress": "xxx.xxx.xxx"
        }
   ],
    "publicVNetwork": "vnet1",
    "scanName": "dbtest-scan",
    "scanIps": [
```

```
"xxx.xxx.xxx.xxx.xxx",
"xxx.xxx.xxx.xxx"
]
},
"grid": {
"language": "en"
}
}
```

Example 16-10 JSON File to Create a High-Availability DB system with the --template/-t option

The following is an example of a JSON file that creates a High-Availability DB system on Oracle Database Appliance bare metal platform. This template sample is generated when you run the odacli create-dbsystem command with the --template/t option. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system": {
        "name": "test dbsystem",
        "shape": "dbs2",
        "customMemorySize": "24G",
        "timeZone": "America/Los Angeles",
        "diskGroup": "DATA",
        "cpuPoolName": "shared dbsystem cpupool",
        "enableRoleSeparation": true,
        "customRoleSeparation": {
            "groups": [
                 {
                     "name": "oinstall",
                     "id": 1001,
                     "role": "oinstall"
                 }
            ],
            "users": [
                 {
                     "name": "grid",
                     "id": 1000,
                     "role": "gridUser"
                 },
                 {
                     "name": "oracle",
                     "id": 1001,
                     "role": "oracleUser"
                 }
            1
        }
    },
    "database": {
        "name": "dbtest",
        "uniqueName": "dbtest",
        "domainName": "example.com",
        "version": "19.27.0.0.250415",
        "edition": "EE",
        "type": "SI",
```

```
"dbClass": "OLTP",
    "shape": "odb2",
    "role": "PRIMARY",
    "targetNodeNumber": "0",
    "enableDbConsole": false,
    "enableFlashStorage": false,
    "enableFlashCache": false,
    "enableUnifiedAuditing": true,
    "enableEEHA": true,
    "enableSEHA": false,
    "redundancy": "MIRROR",
    "characterSet": {
        "characterSet": "AL32UTF8",
        "nlsCharacterset": "AL16UTF16",
        "dbTerritory": "AMERICA",
        "dbLanguage": "AMERICAN"
   },
    "enableTDE": false,
    "isCdb": true,
    "pdbName": "pdb1",
    "pdbAdminUser": "pdbadmin"
},
"network": {
    "domainName": "example.com",
    "ntpServers": [
       "xxx.xxx.xxx"
    ],
    "dnsServers": [
       "xxx.xxx.xxx"
   ],
    "nodes": [
        {
            "name": "node1",
            "ipAddress": "xxx.xxx.xxx",
            "netmask": "xxx.xxx.xxx.xxx",
            "gateway": "xxx.xxx.xxx",
            "number": 0,
            "vipName": "nodel-vip",
            "vipAddress": "xxx.xxx.xxx"
        },
        {
            "name": "node2",
            "ipAddress": "xxx.xxx.xxx",
            "netmask": "xxx.xxx.xxx",
            "gateway": "xxx.xxx.xxx.xxx",
            "number": 1,
            "vipName": "node2-vip",
            "vipAddress": "xxx.xxx.xxx"
        }
   ],
    "publicVNetwork": "vnet1",
    "scanName": "dbtest-scan",
    "scanIps": [
        "xxx.xxx.xxx",
        "xxx.xxx.xxx"
   ]
```

```
},
"grid": {
"language": "en"
}
```

}

Example 16-11 JSON File to Create a High-Availability DB system with the --templateannotated/-ta option

The following is an example of a JSON file that creates a High-Availability DB system on Oracle Database Appliance bare metal platform. This template sample is generated when you run the odacli create-dbsystem command with the --template-annotated/-ta option. When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

```
{
    "system" : {
        "name" : "test dbsystem",
                                                       ---> The name for the
DB System
        "shape" : "dbs2",
                                                       ---> The shape for the
DB System
        "customMemorySize" : "24G",
                                                       ---> The memory size
for the DB System
       "timeZone" : "America/Los Angeles",
                                                       ---> The timezone for
the DB System
       "diskGroup" : "DATA",
                                                       ---> The ASM disk
group to be used for the DB System volumes. Allowed options: <DATA>, <RECO>,
<REDO>
        "cpuPoolName" : "shared dbsystem cpupool", ---> The CPU Pool for
the DB System
        "useReservedCores" : false,
                                                       ---> Whether or not to
use reserved CPU cores. Allowed options: <true>, <false>
        "enableRoleSeparation" : true,
                                                       ---> Whether or not to
enable Role Separation. If true, need to specify 6 groups and two users.
'groupName' and 'userName' can be customized. If false, need to specify 2
groups and one user. 'groupName' and 'userName' can be customized. Allowed
options: <true>, <false>
        "customRoleSeparation" : {
            "groups" : [
                {
                    "name" : "oinstall",
                                                       ---> Name of the group
to create, must be unique
                    "id" : 1001,
                                                       ---> ID of the group
to create, must be unique
                    "role" : "oinstall",
                                                      ---> Role of the
qroup
                }
            ],
            "users" : [
                {
                    "name" : "grid",
                                                       ---> Name of the user
to create, must be unique
                    "id" : 1000,
                                                       ---> ID of the user to
create, must be unique
                    "role" : "gridUser",
                                                       ---> Role of the
user
```

}, { "name" : "oracle", ---> Name of the user to create, must be unique "id" : 1001, ---> ID of the user to create, must be unique "role" : "oracleUser", ---> Role of the user }] } }, "database" : { "name" : "dbtest", ---> Name for the DB System database "uniqueName" : "dbtest", ---> The unique name for the DB System database "domainName" : "example.com", ---> The domain name that the DB System database will have "version" : "19.27.0.0.250415", ---> The version for the DB System database. Execute 'odacli describe-dbsystem-image' to get the supported version "edition" : "EE", ---> Enter 'EE' for Enterprise Edition, or 'SE' for Standard Edition "type" : "SI", ---> Enter a database deployment type. Allowed options: <RAC>, <RACOne>, <SI> (single instance database) "dbClass" : "OLTP", ---> The class for the DB System database. Standard Edition only supports OLTP. Allowed options: <OLT>, <DSS>, <IMDB> "shape" : "odb2", ---> The DB System database shape, it must be same as the DB System shape "role" : "PRIMARY", ---> The role for the DB System database. Allowed options: <PRIMARY>, <STANDBY> "dbStorage" : "ASM", ---> Storage type of the DB System database. The default value is ASM. Allowed options: <ASM>, <PMEM> "level0BackupDay" : "wednesday", ---> Backup day of the DB System database. Allowed options: <monday>, <tuesday>, <wednesday>, <thursday>, <friday>, <saturday>, <sunday> "targetNodeNumber" : "0", ---> Use '0' for Node0 and '1' for Nodel. For RAC or RACOne use null. The default is '0' for Node0 "enableDbConsole" : false, ---> Whether or not to create dbconsole or EM express. By default, dbconsole is disabled. Allowed options: <true>, <false> ---> Whether or not to "enableFlashStorage" : false, enable the flash storage for the DB System database. Allowed options: <true>, <false> "enableFlashCache" : false, ---> Whether or not to enable the flash cache for the DB System database. Allowed options: <true>, <false> "enableUnifiedAuditing" : true, ---> Whether or not to enable unified auditing for the DB System database. Allowed options: <true>, <false> "enableEEHA" : true, ---> Whether or not to

```
enable HA for EE SI database. enableEEHA is only valid when the edition is
EE. Allowed options: <true>, <false>
       "enableSEHA" : false,
                                                     ---> Whether or not to
enable HA for SE SI database. enableSEHA is only valid when the edition is
SE. Allowed options: <true>, <false>
       "redundancy" : "MIRROR",
                                                     ---> If diskgroup
redundancy is FLEX, then database redundancy must be set to one of 'HIGH' or
'MIRROR', otherwise, can be null
       "characterSet" : {
           "characterSet" : "AL32UTF8",
                                                     ---> The character set
for the DB System database
           "nlsCharacterset" : "AL16UTF16", ---> The NLS character
set for the DB System database
           "dbTerritory" : "AMERICA",
                                                    ---> The territory for
the DB System database
       "dbLanguage" : "AMERICAN",
                                                     ---> The language for
the DB System database
       },
       "enableTDE" : false,
                                                     ---> Whether or not to
enable TDE. Allowed options: <true>, <false>
       "isCdb" : true,
                                                     ---> Enter 'true' if
this database is container DB. For 21c and above, cdb must be true. Enter
'false' if this is non-cdb. Allowed options: <true>, <false>
       "pdbName" : "pdb1",
                                                     ---> Enter pdbName if
isCdb parameter is 'true', use 'null' if isCdb is 'false'
       "pdbAdminUser" : "pdbadmin",
                                                     ---> Enter PDB admin
user name, use 'null' if isCdb parameter is 'false'
   },
   "network" : {
       "domainName" : "example.com",
                                                    ---> The domain name
for the DB System network
       "ntpServers" : [
           "xxx.xxx.xxx"
       ],
       "dnsServers" : [
           "xxx.xxx.xxx"
       ],
       "nodes" : [
           {
               "name" : "node1",
                                                    ---> The name used to
configure the hostname
               "ipAddress" : "xxx.xxx.xxx",
                                                 ---> The IP address
for this node
               "netmask" : "xxx.xxx.xxx",
                                                     ---> The mask of the
network for this node
               "gateway" : "xxx.xxx.xxx.xxx",
                                                     ---> The gateway
address for this node
               "number" : 0,
                                                     ---> 0 (Use 0 for the
first node of the DB System instance)
               "vipName" : "nodel-vip",
                                                    ---> The VIP name for
this first node, only for HA case
               "vipAddress" : "xxx.xxx.xxx.xxx",
                                                    ---> The VIP address
for this first node, only for HA case
           },
           {
               "name" : "node2",
                                           ---> The name used to
```

```
configure the hostname
               "ipAddress" : "xxx.xxx.xxx.xxx",
                                                    ---> The IP address
for this node
               "netmask" : "xxx.xxx.xxx",
                                                    ---> The mask of the
network for this node
               "gateway" : "xxx.xxx.xxx.xxx",
                                                    ---> The gateway
address for this node
               "number" : 1,
                                                     ---> 1 (Use 1 for the
second node of the DB System instance)
               "vipName" : "node2-vip",
                                                     ---> The VIP name for
this second node, only for HA case
               "vipAddress" : "xxx.xxx.xxx", ---> The VIP address
for this second node, only for HA case
          }
       ],
       "publicVNetwork" : "vnet1",
                                                    ---> The name of the
public virtual network. The ipAddress, vipAddress and scanIps must be on this
publicVNetwork
       "scanName" : "dbtest-scan",
                                                     ---> The scan name of
the DB System. It should resolve to the IPs defined in the scanIps. Only for
HA case
       "scanIps" : [
           "xxx.xxx.xxx",
           "xxx.xxx.xxx"
       1
   },
   "grid" : {
       "language" : "en",
                                                    ---> The language used
for GI (Oracle Grid Infrastructure) installation
   }
}
```

17

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 Command Changes with Multi-User Access on Oracle Database Appliance Understand the ODACLI command changes when you enable multi-user access.
- odacli Network Commands Use the odacli network commands to list and describe network interfaces.
- odacli Multi-User Access Commands
 Use odacli commands to enable multi-user access for the appliance.
- 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 or NFS.
- odacli Oracle Data Guard 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 CPU Pool Commands for Bare Metal and KVM Use odacli commands to manage resource allocations on Oracle Database Appliance for bare metal and KVM deployments.
- 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 Diagnostics Collection Commands
 Use the diagnostics collection commands to display diagnostics details.
- odacli Job Commands
 Use the odacli list-jobs and odacli describe-job commands to display job details.
- odacli Oracle Key Vault Server Configuration Commands
 Use odacli commands to manage Oracle Key Vault server configuration for databases on
 Oracle Database Appliance.
- 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.
- Adaptive Classification and Redaction (ACR) Commands Understand Adaptive Classification and Redaction (ACR) commands.
- 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, disk groups, 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 or odacli describe-jobs.
- options are optional parts of the odacli command. Options can consist of one or more options that extend the use of the odacli command carried out on an object. Options include additional information about the action that you want to perform on the object. Option names are preceded with a dash. Some options require the name of an object for the command to perform the action that you want to carry out. If an option is preceded with an * (asterisk), this information is required to submit the command. When appending -j to the odacli command, the output is returned in JSON format. The help option (-h) is an option that is available with almost all commands. When you include the -h option, you can obtain additional information about the command that you want to perform.

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 to see detailed help about a specific command. For example, to see detailed help for the odacli describe-dbhome command, use the following:

odacli describe-dbhome -h

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 17-1 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.



Note:

Before database creation, you must set up user equivalency with SSH for the root user on each server. If you do not set up user equivalency and configure SSH on each server, then you are prompted to provide the root password for each server during database creation.

After you configure the sudger file with the user, the user jdge can run the set of odacli commands configured with the command alias ODACLI CMDS. For example:

```
odacli create-database --dbname newdb
Enter new 'SYS, SYSTEM and PDB Admin user' password:
Confirm 'SYS, SYSTEM and PDB Admin user' password:
```

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 17-2 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: system1001
         Domain Name: example.com
          Time Zone: America/Adak
          DB Edition: EE
         DNS Servers: 10.200.76.198 10.200.76.199 192.0.2.254
```



NTP Servers: 10.200.0.1 10.200.0.2

```
Disk Group Information
```

DG Name	Redundancy	Percentage
Data	Normal	90
Reco	Normal	10

In this example, the user jdoe2 tries to run the sudo odacli list-databases command, which is not part of the set of commands that is configured for that user. SUDO prevents jdoe2 from running the command.

```
[jdoe2@servernode1 ~]$ sudo /opt/oracle/dcs/bin/odacli list-databases
```

Sorry, user jdoe2 is not allowed to execute '/opt/oracle/dcs/bin/odacli listdatabases' as root on servernode1.

ODACLI Command Changes with Multi-User Access on Oracle Database Appliance

Understand the ODACLI command changes when you enable multi-user access.

About the odacli-view command

In a multi-user access-enabled environment, to run automated scripts, that is, to generate a system report based on the output of odacli commands, you may need to provide the user credentials when prompted by the system. In such cases, the automation of scripts may fail. In such cases, use the odacli-view command instead of the odacli command. The odacli-view command allows you to run read-only odacli commands as root user without providing user credentials. Read-only odacli commands include commands to list, describe, get, read, or ping.

However, the security of the system is not compromised because the user credentials of a securely-generated internal user are used for this purpose. The odacli-view command can be used in Oracle Database Appliance deployments with or without multi-user access. In an Oracle Database Appliance environment where multi-user access is not enabled, odacli-view has the same functionality as odacli. In a multi-user access-enabled environment, odacli-view provides the information about all the resources in a system. For example, odacli-view list-databases command lists all the databases in the system.

Usage:

/opt/oracle/dcs/bin/odacli-view command name

For example:

```
/opt/oracle/dcs/bin/odacli-view list-dbhomes
/opt/oracle/dcs/bin/odacli-view list-databases
/opt/oracle/dcs/bin/odacli-view list-users
```



ODACLI Command Usage and Entitlement Requirements When Multi-User Access is Enabled

Note:

If you have enabled multi-user access, then you can run all supported ODACLI commands on KVM and DB systems, after logging in as odaadmin.

Note:

The authentication token support for ODACLI session management is linked to a multi-user access user account. Since root is an operating system administrative user and not a multi-user access user, auth token based session management system is not supported when a user logs in as root. Therefore, you must provide an Oracle Database Appliance account user name and password to run any ODACLI command.

The following table describes the ODACLI commands that have changes for multi-user access and the entitlements required to run the commands.

ODACLI Command	Roles Required	Changes in command option
odacli configure-firstnet	ODA-ADMINISTRATOR	No change
odacli create-network	ODA-ADMINISTRATOR	No change
odacli delete-network	ODA-ADMINISTRATOR	No change
odacli delete-networkinterface	ODA-ADMINISTRATOR	No change
odacli describe-network	ODA-ADMINISTRATOR, ODA-DB	No change
odacli describe-networkinterface	ODA-ADMINISTRATOR, ODA-DB	No change
odacli list-networks	ODA-ADMINISTRATOR, ODA-DB	No change
odacli list-networkinterfaces	ODA-ADMINISTRATOR, ODA-DB	No change
odacli modify-network	ODA-ADMINISTRATOR	No change
odacli cleanup-patchrepo	ODA-ADMINISTRATOR, ODA-DB	No change
odacli create-prepatchreport	ODA-ADMINISTRATOR, ODA-DB	No change
odacli describe-prepatchreport	ODA-ADMINISTRATOR, ODA-DB	No change
odacli list-prepatchreports	ODA-ADMINISTRATOR, ODA-DB	No change
odacli delete-prepatchreport	ODA-ADMINISTRATOR, ODA-DB	No change
odacli list-availablepatches	ODA-ADMINISTRATOR, ODA-DB	No change
odacli describe-component	ODA-ADMINISTRATOR, ODA-DB	No change
odacli describe-latestpatch	ODA-ADMINISTRATOR, ODA-DB	No change
odacli list-agentconfig- parameters	ODA-ADMINISTRATOR	No change
odacli modify-agentconfig- parameters	ODA-ADMINISTRATOR	No change
odacli delete-agentconfig- parameters	ODA-ADMINISTRATOR	No change



ODACLI Command	Roles Required	Changes in command option
odacli update-dbhome	ODA-ADMINISTRATOR, ODA-DB	User odaadmin with the role of ODA-ADMINISTRATOR can update any database home. A custom user with the role of ODA- DB can only update a database home that they have primary access (as the creator) or shared access (as a user who is granted access by odaadmin).
odacli update-dcsadmin	ODA-ADMINISTRATOR	No change
odacli update-dcsagent	ODA-ADMINISTRATOR	No change
odacli update-dcscomponents	ODA-ADMINISTRATOR	No change
odacli update-registry	User with any role	No change
odacli update-repository	ODA-ADMINISTRATOR, ODA-DB	No change
odacli update-server	ODA-ADMINISTRATOR	No change
odacli update-storage	ODA-ADMINISTRATOR	No change
odaadmcli orachk	ODA-ADMINISTRATOR	No change
odacli set-credential	ODA-ADMINISTRATOR, ODA-DB	Not supported when multi-user access is enabled. When multi- user access is enabled, log in as a custom user and use odacli change-password instead.
odacli create-appliance	ODA-ADMINISTRATOR	Add an attribute called "isMultiUserAccessEnabled" :true in the provision.json file. When you run the command, you are prompted to enter and confirm passwords for odaadmin, oracle and grid users and the provisioning job is submitted.
odacli describe-system	User with any role	No change
odacli list-featuretracking	ODA-ADMINISTRATOR	No change
odacli create-backup	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli create-backupconfig	ODA-ADMINISTRATOR, ODA-DB	If creating backupconfig based on ObjectStoreSwift, user must be the creator of the ObjectStoreSwift.
odacli create-objectstoreswift	ODA-ADMINISTRATOR, ODA-DB	No change
odacli delete-backup	ODA-ADMINISTRATOR, ODA-DB	User must have primary (creator of that database) or shared access (granted by odaadmin) on the database whose backup is being deleted.
odacli delete-backupconfig	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli describe-backupreport	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli delete-objectstoreswift	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access



ODACLI Command	Roles Required	Changes in command option
odacli describe-schedule	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli irestore-database	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli list-backupconfigs	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli list-backupreports	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli list-objectstoreswifts	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli list-schedules	ODA-ADMINISTRATOR, ODA-DB	No changes
odacli list-tdebackupreports	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli recover-database	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli restore-archivelog	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli restore-tdewallet	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli modify-backupconfig	ODA-ADMINISTRATOR, ODA-DB	Must have primary or shared access
odacli modify-schedule	ODA-ADMINISTRATOR, ODA-DB	No change
odacli configure-dataguard	ODA-ADMINISTRATOR, ODA-DB	The creator of the primary database and the standby database could be the same or different users. The default is oda-admin.
odacli deconfigure-dataguard	ODA-ADMINISTRATOR, ODA-DB	The creator of the primary database and the standby database could be the same or different users. The default is oda-admin.
odacli describe-dataguardstatus	ODA-ADMINISTRATOR, ODA-DB	No change
odacli failover-dataguard	ODA-ADMINISTRATOR, ODA-DB	No change
odacli list-dataguardstatus	ODA-ADMINISTRATOR, ODA-DB	No change
odacli reinstate-dataguard	ODA-ADMINISTRATOR, ODA-DB	No change
odacli switchover-dataguard	ODA-ADMINISTRATOR, ODA-DB	No change
odacli list-cpucores	ODA-ADMINISTRATOR	No change
odacli describe-cpucore	ODA-ADMINISTRATOR	No change
odacli modify-cpucore	ODA-ADMINISTRATOR	No change
odacli create-cpupool	ODA-ADMINISTRATOR	Only odaadmin can create it but a non-admin user with role of ODA-DB can use them.
odacli remap-cpupools	ODA-ADMINISTRATOR	No change
odacli list-cpupools	ODA-ADMINISTRATOR, ODA-DB	A non-admin user with the role of ODA-DB can run the odacli list-cpupools command to view all available CPU pools.



ODACLI Command	Roles Required	Changes in command option
odacli describe-cpupool	ODA-ADMINISTRATOR, ODA-DB	A non-admin user with the role of ODA-DB can run the odacli describe-cpupool command to view details of the CPU pool.
odacli modify-cpupool	ODA-ADMINISTRATOR	No change
odacli delete-cpupool	ODA-ADMINISTRATOR	No change
odacli list-auditrecords	ODA-ADMINISTRATOR	No change
odacli describe-auditrecord	ODA-ADMINISTRATOR	No change
odacli clone-database	ODA-ADMINISTRATOR, ODA-DB	User must have primary or shared access to the database home and the source database being cloned. A user with shared access to source database gets only shared access to the cloned database. Hence, the primary owner of the source database remains the primary owner of the cloned database in this case.
odacli create-database	ODA-ADMINISTRATOR, ODA-DB	For database creation in an existing database home, the user must have primary or shared access to the database home. A user with shared access to the database home gets only shared access to the new database, whose primary owner remains the primary owner of the database home. When using existing database storage for the new database, the user must have primary or shared access to that database storage.
odacli delete-database	ODA-ADMINISTRATOR, ODA-DB	Can access only those databases where the user has primary or shared access
odacli describe-database	ODA-ADMINISTRATOR, ODA-DB	Can access only those databases where the user has primary or shared access
odacli list-databases	ODA-ADMINISTRATOR, ODA-DB	User can only view listing of the databases for which they have primary or shared access. Use the -all option to view all databases and request access.
odacli modify-database	ODA-ADMINISTRATOR, ODA-DB	User should have primary or shared access to the database and the backupconfig being attached. Additionally, the primary owner (creator) of the database and backupconfig should be the same.

ODACLI Command	Roles Required	Changes in command option
odacli move-database	ODA-ADMINISTRATOR, ODA-DB	User must have primary or shared access to the source database that is being moved and the target database home. Additionally, the primary owner of the source and target database home must be the same.
odacli register-database	ODA-ADMINISTRATOR, ODA-DB	User must be the primary owner (creator) of the database home on which this database is to be registered.
odacli upgrade-database	ODA-ADMINISTRATOR, ODA-DB	User must have primary or shared access to the source database (the database being upgraded) and the target database home. Additionally, the owner of the source and target database home must be the same.
odacli update-database	ODA-ADMINISTRATOR, ODA-DB	User must have primary or shared access to the source database (the database being updated) and the target database home. Additionally, the owner of the source and target database home must be the same.
odacli configure-dbhome-storage	ODA-ADMINISTRATOR	No change
odacli list-dbhome-storages	ODA-ADMINISTRATOR	No change
odacli describe-dbhome-storage	ODA-ADMINISTRATOR	No change
odacli modify-dbhome-storage	ODA-ADMINISTRATOR	No change
odacli create-dbhome	ODA-ADMINISTRATOR, ODA-DB	Can access only those database homes where the user has primary or shared access.
odacli delete-dbhome	ODA-ADMINISTRATOR, ODA-DB	Can access only those database homes where the user has primary or shared access.
odacli describe-dbhome	ODA-ADMINISTRATOR, ODA-DB	Can access only those database homes where the user has primary or shared access.
odacli list-dbhomes	ODA-ADMINISTRATOR, ODA-DB	Can access only those database homes where the user has primary or shared access. Use the -all option to view all database homes and request access.
odacli create-dbstorage	ODA-ADMINISTRATOR	Can access only those dbstorages where the user has primary or shared access.
odacli delete-dbstorage	ODA-ADMINISTRATOR	Can access only those dbstorages where the user has primary or shared access.
odacli describe-dbstorage	ODA-ADMINISTRATOR	Can access only those dbstorages where the user has primary or shared access.



ODACLI Command	Roles Required	Changes in command option
odacli list-dbstorages	ODA-ADMINISTRATOR	Can access only those dbstorages where the user has primary or shared access.
odacli modify-dbstorage	ODA-ADMINISTRATOR	Can access only those dbstorages where the user has primary or shared access.
odacli modify-dgstorage	ODA-ADMINISTRATOR	No change
odacli create-jobdata-retention- policy	ODA-ADMINISTRATOR	No change
odacli create-purge-jobdata-job	ODA-ADMINISTRATOR	No change
odacli delete-jobdata-retention- policy	ODA-ADMINISTRATOR	No change
odacli describe-job	User with any role	No change
odacli list-jobs	User with any role	No change
odacli list-jobdata-retention-policy	ODA-ADMINISTRATOR	No change
odacli list-purge-jobdata-job	ODA-ADMINISTRATOR	No change
odacli list-scheduled-executions	ODA-ADMINISTRATOR	No change
odaadmcli manage diagcollect	ODA-ADMINISTRATOR	No change
odacli create-auto-logclean-policy	ODA-ADMINISTRATOR	No change
odacli create-logcleanjob	ODA-ADMINISTRATOR	No change
odacli describe-logcleanjob	ODA-ADMINISTRATOR	No change
odacli list-auto-logclean-policy	ODA-ADMINISTRATOR	No change
odacli list-logcleanjobs	ODA-ADMINISTRATOR	No change
odacli list-logspaceusage	ODA-ADMINISTRATOR	No change
odacli configure-asr	ODA-ADMINISTRATOR	No change
odacli delete-asr	ODA-ADMINISTRATOR	No change
odacli describe-asr	ODA-ADMINISTRATOR	No change
odacli test-asr	ODA-ADMINISTRATOR	No change
odacli modify-asr	ODA-ADMINISTRATOR	No change
odacli list-osconfigurations	ODA-ADMINISTRATOR	No change
odacli modify-osconfigurations	ODA-ADMINISTRATOR	No change
odaadmcli show cooling	root	No change
odaadmcli show env_hw	root	No change
odaadmcli show fs	root	No change
odaadmcli show memory	root	No change
odaadmcli show network	root	No change
odaadmcli show power	root	No change
odaadmcli show processor	root	No change
odaadmcli show server	root	No change
odaadmcli asmops diskgroup	root	No change
odaadmcli expand storage	root	No change
odacli list-dgdisks	ODA-ADMINISTRATOR, ODA-DB	No change
odacli validate-storagetopology	ODA-ADMINISTRATOR	No change
odaadmcli power disk	root	No change



ODACLI Command	Roles Required	Changes in command option
odaadmcli show controller	root	No change
odaadmcli show disk	root	No change
odaadmcli show diskgroup	root	No change
odaadmcli show raidsyncstatus	root	No change
odaadmcli show storage	root	No change
odaadmcli stordiag	root	No change

odacli Network Commands

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

- odacli configure-firstnet Use the command odacli 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 odacli describe-network command to display the details of a specific network.
- odacli describe-networkinterface Use the odacli 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 modify-network
 Use the odacli modify-network command to update an existing network configuration.

odacli configure-firstnet

Use the command odacli 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.
- You can choose to enable Link Aggregation Control Protocol (LACP) on the bonding interface when you run odacli configure-firstnet.
- You can use the -o option with the odacli configure-firstnet command to configure the network speed for Oracle Dual Port 25 Gb Ethernet Adapter.
- You can also use the -o option with the odacli configure-firstnet command to enable or disable LACP on a bonding interface after deployment.

Enabling LACP on a bonding interface after deployment:

```
# odacli configure-firstnet -o
INFO: Configure network option
Select the Interface to configure the network on (btbond1 btbond3 btbond5)
[btbond1]:btbond3
Use LACP bonding on btbond3 (yes/no) [no]: yes
INFO: network interface [btbond3] setup in LACP mode
```

Disabling LACP on a bonding interface after deployment:

```
# odacli configure-firstnet -o
INFO: Configure network option
Select the Interface to configure the network on (btbond1 btbond3 btbond5)
[btbond1]:btbond3
Use LACP bonding on btbond3 (yes/no) [yes]: no
INFO: network interface [btbond3] setup in active-backup mode
```

Example 17-3 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:

Example 17-4 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 eml: [ 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 17-5 Configuring the Speed of the Network Interface

The following is an example of setting the speed of the network card manually.

```
# odacli configure-firstnet -o
INFO: Configure network option
Select the Interface to configure the network on (btbond1 btbond2 btbond3)
[btbond1]:btbond3
Use LACP bonding on btbond3 (yes/no) [no]:
Set the network speed on btbond3 to 1) AUTO, 2) 1G, 3) 10G, 4) 25G [AUTO]: 3
INFO: The speed of the network port is set to '10G'
INFO: Please set the speed for the connected ports in the switch
INFO: stop the network 'btbond3'
INFO: start the network 'btbond3'
INFO: Network interface btbond3 (p2p1, p2p2) has been set to using speed '10G'
```

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 name [-nn nodeName] [-lp listener_ports]
[-sp scan_ports] [-f interface] [ -p ipaddress] [-w {Public|Dataguard|
Database|Management|Backup|Other}] [-s subnetmask] [-g gateway] [-h] [-sip] [-
sn] [-vs] [-j]
```

Parameter	Description
defaultnetwork, -d	(Optional) Identifies the default network.
gateway,-g	(Optional) Defines the network gateway. The gateway is required for the default network.
help,-h	(Optional) Displays help for using the command.
interface,-f	(Optional) Defines the name of the network interface.
interfacetype,-t	(Optional) Defines the network interface type {BOND PHYSICAL VLAN INTERNAL} (non case-sensitive).



Parameter	Description
ipaddress, -p	(Optional) Defines the network IP address. This can be specified in the format IPAddress or nodeNumber0:IPAddress0,nodeNumber1:IPAddress1,
listener-ports,-lp	(Optional) Specifies the comma-separated list of listener ports. The default value is 1521.
scan-ports, -sp	(Optional) Specifies the comma-separated list of SCAN listener ports. The default value is 1521.
json,-j	(Optional) Displays JSON output.
networktype, -w	(Optional) Defines the type of network. Options are: {Public Dataguard Database Management Backup Other}. The default is Other.
name, -n	(Mandatory) Name of the network.
no-defaultnetwork, no-d	(Optional) Identifies a network as not the default network. Usedefaultnetwork -d to identify a default network.
subnetmask, -s	(Optional) Defines the Network Subnet Mask.
scanips,-sip	(Optional) Defines the SCAN IP addresses (in the format scanip0,scanip1,)
scanname, -sn	(Optional) Defines the SCAN name.
nodeName, -nn	(Optional) Defines the node name for High-Availability deployments.
vips,-vs	(Optional) List of virtual IP addresses. They can be specified in the format vipname0:nodeNumber0:vip0,vipname1:nodenumber1:vip1,.
vlanid, -v	(Optional) Add VLAN as a new network. This option is available for for High-Availability deployments.

Usage Notes

- 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 17-6 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 network1 -f sfpbond1 -p 192.0.2.15 -w Backup -s
255.255.255.0 -no-d
```



Example 17-7 Creating a VLAN Network

```
odacli create-network -g 10.31.131.129 -f btbond1 -t VLAN -p
0:10.31.131.132,1:10.31.131.133 -nn vlan150 -w Database -no-d -sip
10.31.131.134,10.31.131.135 -sn scaoda702c1-vlan150-scan -s 255.255.255.128 -
vs n1-vlan150-vip:0:10.31.131.136,n2-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 [-n] [-h] [-j]
```

Parameters

Parameter	Description	
id, -i	Defines the network identity.	
name, -n	Specifies the network name.	
json,-j	(Optional) Displays JSON output.	
help,-h	(Optional) Displays help for using the command.	

Usage Notes

You cannot delete the Public-network or Private-network after the system is deployed.

On High-Availability systems, if the node number is not specified in the odacli deletenetwork command, then the network on both nodes is deleted.

Example 17-8 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" : "March 8, 2025 23:14:32 PM EDT",
    "endTime" : "March 8, 2025 23:14:32 PM EDT",
```



```
"status" : "Running",
  "taskDescription" : null,
  "parentTaskId" : "TaskSequential 135",
  "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
  "tags" : [ ],
  "reportLevel" : "Info",
  "updatedTime" : "March 8, 2025 23:14:32 PM EDT"
},{
"taskId" : "TaskZJsonRpcExt 142",
 "taskName" : "Setting up Network",
  "taskResult" : "Network setup success",
  "startTime" : "March 8, 2025 23:14:32 PM EDT",
  "endTime" : "March 8, 2025 23:14:32 PM EDT",
  "status" : "Success",
  "taskDescription" : null,
  "parentTaskId" : "TaskParallel 141",
  "jobId" : "c26d217e-419b-4a91-8680-7b06bcfe9828",
  "tags" : [ ],
  "reportLevel" : "Info",
  "updatedTime" : "March 8, 2025 23:14:32 PM EDT" } ],
"createTimestamp" : "March 8, 2025 23:14:32 PM EDT",
"description" : "Network service delete",
"updatedTime" : "March 8, 2025 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 [-i id] [-n name] [-h] [-j]

Parameters

Parameter	Description
id, -i	Defines the network interface ID.
name, -n	Defines the network interface name.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

You cannot delete the network interface card in slot 7.



Example 17-9 Deleting a Network Interface

```
[root@oak ~]/opt/oracle/dcs/bin/odacli delete-networkinterface -n btbond4
{
   "jobId" : "a81066e2-417e-4df6-b810-08df24c646c1",
   "status" : "Running",
   "message" : null,
   "reports" : ,
   "createTimestamp" : "March 8, 2025 00:01:09 AM UTC",
   "resourceList" : ,
   "description" : "Network Interface Deletion with name btbond4",
   "updatedTime" : "March 8, 2025 00:01:09 AM UTC"
}
```

Example 17-10 Deleting btbond1 Network Interface is Not Allowed

[root@oak ~]# /opt/oracle/dcs/bin/odacli delete-networkinterface -n btbond1 DCS-10001:Internal error encountered: Delete operation is not allowed on network interface : btbond1.

Example 17-11 Deleting Network Interface When Network Exists is Not Allowed

[root@oak ~]# opt/oracle/dcs/bin/odacli delete-networkinterface -n 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] [-nn node name] [-n name] [-j][-h]
```

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, -n	Specifies the network name.
node-name, -nn	(Optional) Displays the network interface information for the specified node name.



Example 17-12 Displaying Network Details

Enter the following command to display the details of the public network:

odacli describe-network -n 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, 2023 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: odal-scan Scan Ips: 10.31.117.64 10.31.117.65 Vips: [odal-vip on node0: 10.31.116.61, oda2-vip on node1: 10.31.116.63] Associated Databases: odacn db122a db122b db122c db122d

Example 17-13 Displaying Network Details

Enter the following command to display the details of network ID 93c07043-3002-494a-8fa0f3ae932fb4c5:

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 -n name [-nn node name] [-j][-h]

Parameters

Parameter	Description
id, -i	Identifies the network interface ID. Use the odacli list- networks command to obtain the id.
name, -n	Specifies the network interface name.
json, -j	(Optional) Displays JSON output.
help,-h	(Optional) Displays help for using the command.
node-name, -nn	(Optional) Displays the network interface information for the specified node name.

Usage Notes

By default, this command always displays the network interface description of the local node. To display the description of another node, specify the node name option (-nn).

Example 17-14 Displaying Network Details

Enter the following command to display the details of network interface with ID fe1bf0a7f56e-44cd-9a84-f374c0aa4b61:

```
# /opt/oracle/dcs/bin/odacli describe-networkinterface
-i fe1bf0a7-f56e-44cd-9a84-f374c0aa4b61 -nn oda1
```

Network Interface details

ID: felbf0a7-f56e-44cd-9a84-f374c0aa4b61 Name: eth2 NIC: eth2 Type: PHYSICAL Members: eth2 Slave Interface: true Created: October 16, 2023 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 [-nn node name] [-j] [-h]

Parameters

Parameter	Description	
json,-j	(Optional) Displays JSON output.	
help, -h	(Optional) Displays help for using the command.	
node-name, -nn	(Optional) Displays the network interface information for the specified node name.	

Example 17-15 Displaying a List of Networks

Use the odacli list-networks command to display a list of networks:

```
# odacli list-networks
```

```
ID Name NIC Interface Type Subnet Mask Gateway VLAN ID Node Networks
```

30012eeb-1205-4cb6-9fc0-488972b2e420 Private-network priv0 INTERNAL 255.255.255.240 [IP Address on node0: 192.168.16.24] 75d01d4f-e940-4d0f-a4fe-ee04f5a90c73 Public-network btbond1.370 VLAN 255.255.255.0 10.209.10.241 370 [IP Address on node0: 10.209.10.244]

odacli list-networkinterfaces

Use the odacli list-networkinterfaces command to display network interfaces.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli list-networkinterfaces [-nn node_name] [-j] [-h]

Parameter	Description
json,-j	(Optional) Displays JSON output.



Parameter	Description
help,-h	(Optional) Displays help for using the command.
node-name, -nn	(Optional) Displays the network interface information for the specified node name.

Example 17-16 Displaying a List of Network Interfaces

Use the odacli list-networkinterfaces command to display a list of network interfaces:

<pre># odacli list-networkinterfaces -nn odal ID Type</pre>	Name	NIC
d5907a23-1c5d-48c7-8d47-2c188ed43ddd BOND	bond0	bond0
4f7ea558-9a43-42a9-8e08-6bfdf3a33229 BOND	bondl	bondl
743ced8d-bbe5-4987-b316-5fdf95d5e60b PHYSICAL	eth0	eth0
a4121f9e-e694-4852-a521-44efc6ef3fde PHYSICAL	eth1	eth1
c62c5f04-aa93-4783-a3a7-275bf9fab2d9 PHYSICAL	eth2	eth2
bda21dad-5c1c-4073-89e5-798b8fce8533 PHYSICAL	eth3	eth3
0141f1ac-5c34-4393-8b99-76094b6f795c PHYSICAL	ib0	ib0
e8cb138a-087f-4739-bb8d-90b1d903aeb6 PHYSICAL	ibl	ib1
a31cfd63-fb90-4cbb-a2fb-382c5e33983b BOND	ibbond0	ibbond0

odacli modify-network

Use the odacli modify-network command to update an existing network configuration.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To update a network:

```
odacli modify-network -i id -n name [-p IP address] [-lp listener_ports] [-
sp scan_ports] [-w {Public|Dataguard|Database|Management|Backup|Other} ] [-s
network subnet mask] [-g network gateway] [-sip] [-sn] [-vs] [-j] [-h]
```



Parameters

Parameter	Description	
id,-i	Defines the network identity.	
name, -n	Defines the network name.	
gateway,-g	(Optional) Defines the network gateway.	
ipaddress, -p	(Optional) Defines the network IP address. This can be specific in the format IPAddress or nodeNumber0:IPAddress0,nodeNumber1:IPAddress1,	
networktype,-w	(Optional) Defines the type of network. {Public Dataguard Database Management Backup Other}	
scanips,-sip	Defines the SCAN IP addresses (in the format scanip0,scanip1,)	
scanname, -sn	Defines the SCAN name.	
listener-ports,-lp	(Optional) Specifies the comma-separated list of listener ports. The default value is 1521.	
scan-ports,-sp	(Optional) Specifies the comma-separated list of SCAN listene ports. The default value is 1521.	
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.	
json,-j	(Optional) Displays JSON output.	

Usage Notes

- 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 17-17 Modifying a Network

The following example updates the network ID 192.0.0.2 and designates the network as a backup network:

```
# odacli modify-network -i 192.0.0.2 -w Backup
```



odacli Multi-User Access Commands

Use odacli commands to enable multi-user access for the appliance.

Note:

The multi-user access feature is available for standalone Oracle Database Appliance systems. During provisioning, a single domain and tenancy is created by default and all users are created within the default domain and tenancy.

• odacli list-domains

Use the odacli list-domains command to list all multi-user access domains.

- odacli describe-domain Use the odacli describe-domain command to describes a multi-user access domain.
- odacli list-tenants Use the odacli list-tenants command to list all tenants in a multi-user access domain.
- odacli describe-tenant Use the odacli describe-tenant command to describe a tenant in a multi-user access domain.
- odacli create-user
 Use the odacli create-user command to create a user in a multi-user access system.
- odacli activate-user Use the odacli activate-user command to activate a user in a multi-user access system.
- odacli list-users
 Use the odacli list-users command to list all users in a multi-user access system.
- odacli describe-user
 Use the odacli describe-user command to describe a user in a multi-user access system.
- odacli authorize-user

Use the odacli authorize-user command in a multi-user access system to unlock a user account that is locked due to multiple failed login attempts or where the password has expired, and authorize the user to reset their password to reactivate their account.

- odacli delete-user Use the odacli delete-user command in a multi-user access system to delete a user account.
- odacli list-user-roles Use the odacli list-user-roles command to list user roles in a multi-user access system.
- odacli describe-user-role
 Use the odacli describe-user-role command to describe a user role in a multi-user access system.



- odacli list-user-entitlements
 Use the odacli list-user-entitlements command to list all entitlements in a multiuser access system.
- odacli describe-user-entitlement Use the odacli describe-user-entitlement command to describe an entitlement in a multi-user access system.
- odacli list-user-operations
 Use the odacli list-user-operations command to list all operations in a multi-user access system.
- odacli describe-user-operation Use the odacli describe-user-operation command to describe an operation in a multi-user access system.
- odacli list-resources-access Use the odacli list-resources-access command to list access to DCS resources in a multi-user access system.
- odacli describe-resource-access Use the odacli describe-resource-access command to describe access to a DCS resource in a multi-user access system.
- odacli grant-resource-access Use the odacli grant-resource-access command to grant shared access to a DCS resource in a multi-user access system.
- odacli revoke-resource-access Use the odacli revoke-resource-access command to revoke access to a DCS resource in a multi-user access system.
- odacli reset-password Use the odacli reset-password command to reset the password for a user, after it is unlocked, in a multi-user access system.
- odacli change-password Use the odacli change-password command to change the password for a user in a multi-user access system.

odacli list-domains

Use the odacli list-domains command to list all multi-user access domains.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli list-domains [-j] [-h]
```

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



Usage Notes

• The odaadmin user can run this command to view all the multi-user access domains.

Example 17-18

```
[odaadmin@oda1 bin]$ odacli list-domains
ID Name Description Is Active
811f176a-26c9-4480-afb3-2c735d565d91 odalocal.com Default domain true
```

odacli describe-domain

Use the odacli describe-domain command to describes a multi-user access domain.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-domain -dn domain_name [-j] [-h]

Parameters

Parameter	Description
domain-name, -dn	(Required) Specifies the multi-user access domain.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

• The odaadmin user can run this command to view details of the multi-user access domain.

Example 17-19



odacli list-tenants

Use the odacli list-tenants command to list all tenants in a multi-user access domain.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-tenants -dn domain name [-j] [-h]

Parameters

Parameter	Description
domain-name,-dn	(Optional) Specifies the multi-user access domain name.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

• The odaadmin user can run this command to view the tenants in a multi-user access domain.

Example 17-20

odacli describe-tenant

Use the odacli describe-tenant command to describe a tenant in a multi-user access domain.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli describe-tenant -tn tenant_name -dn domain_name [-j] [-h]

Parameter	Description
tenant-name, -tn	(Required) Specifies the multi-user access tenant name.



Parameter	Description
domain-name, -dn	(Optional) Specifies the multi-user access domain name.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

• The odaadmin user can run this command to view the tenant details in a multi-user access domain.

Example 17-21

odacli create-user

Use the odacli create-user command to create a user in a multi-user access system.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli create-user -u user_id -r roles [-gc] [-j] [-h]

Parameter	Description
user-id,-u	(Required) Specifies the user whose details are being created.
user-roles, -r	(Required) Specifies the role to be assigned to the user. Use commas to specify multiple roles.
generate-cert, -gc	(Optional) This option generates and registers a pair of certificates, one for the client and the other for the server (DCS agent). After these certificates are mutually exchanged and authenticated, the client and server can communicate with each other using mTLS (mutual Transport Layer Security). This attribute is optional and must be enabled only when you need to connect to the DCS agent with mTLS in addition to Basic Authentication.
help, -h	(Optional) Displays help for using the command.



Parameter	Description
json,-j	(Optional) Displays JSON output.

Usage Notes

• Use the command to create a user in a multi-user access system. After odaadmin creates a user and generates temporary login credentials, the new user must activate their account by connecting to the appliance with the temporary password. Run the odacli activate-user command and provide the temporary password and then specify the new password. You can also activate the user from the Browser User Interface.

Example 17-22

```
[odaadmin@oda1 bin]$ odacli create-user -u dcsdb2 -r ODA-DB
Enter ODA account password for user 'dcsdb2':
Retype ODA account password for user 'dcsdb2':
Job details
_____
              ID: 856b3d79-8ae1-427c-a77a-8893254a451f
        Description: User creation(dcsdb2)
           Status: Running
           Created: November 29, 2023 7:01:54 AM UTC
           Message:
Task Name Start Time End Time Status
_____
[odaadmin@oda1 bin]$ odacli describe-job -i 856b3d79-8ae1-427c-
a77a-8893254a451f
Job details
_____
              ID: 856b3d79-8ae1-427c-a77a-8893254a451f
        Description: User creation(dcsdb2)
           Status: Success
           Created: November 29, 2023 7:01:54 AM UTC
           Message:
Task Name Start Time End Time Status
_____
                                _____ ____
```

odacli activate-user

Use the odacli activate-user command to activate a user in a multi-user access system.

File Path

```
/opt/oracle/dcs/bin/odacli
```



Syntax

odacli activate-user [-j] [-h]

Parameters

Parameter	Description
domain-name,-d	(Optional) Specifies the name of the domain in which the user exists.
tenant-name, -t	(Optional) Specifies the tenancy in which the user exists.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

• Use the command to activate a user in a multi-user access system. To activate a user, the user to be activated must connect to the Oracle Database Appliance system through SSH and then run the command.

Example 17-23

```
[dcsdb2@oda1 bin]$ odacli activate-user
Enter your ODA account password:
Enter new password for your ODA account:
Retype new password for your ODA account:
User 'dcsdb2' activated successfully.
```

odacli list-users

Use the odacli list-users command to list all users in a multi-user access system.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli list-users [-d domain name] [-t tenant name] [-u user id] [-j] [-h]
```

Parameter	Description
domain-name, -d	(Optional) Specifies the name of the domain in which the user exists.
tenant-name,-t	(Optional) Specifies the tenancy in which the user exists.
user-id,-u	(Optional) Specifies the user for whom the list is being generated.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.



Usage Notes

The odaadmin user can run this command to view all the users in a multi-user access system.

Example 17-24

[odaadmin@oda1 bin]\$ odacli list-users

ID DCS User Name OS User Name Role(s) Account Status User Type _____ _____ _____ ----- -----13b64a36-23f8-4ba2-9af3-e0a17a16b376 dcsdb2 dcsdb2 ODA-DB Active Custom 5006da5b-0fc0-4d6f-9115-17d89ad235e4 oakdroot oakdroot ODA-OAKDROOT Active System 7af066af-55bd-48a9-8db5-c0d3049a1541 ugrid ugrid ODA-Active System GRID 8361ca4b-8747-4687-9459-799c6a17d1b1 uoracle uoracle ODA-Active System DB a205ce98-2675-49a2-81e2-4e1c7540f023 odaadmin odaadmin ODA-ADMINISTRATOR Active System

odacli describe-user

Use the odacli describe-user command to describe a user in a multi-user access system.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli describe-user [-u user_id] [-d domain_name] [-rd] [-t tenant_name] [-
j] [-h]
```

Parameter	Description
user-id,-u	(Required) Specifies the user whose details are being viewed.
domain-name,-d	(Optional) Specifies the name of the domain in which the user exists.
role-details,-rd	(Optional) Specifies the entitlements and operations associated with the user role.
tenant-name,-t	(Optional) Specifies the tenancy in which the user exists.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.



Usage Notes

Use the command to view details about a user in a multi-user access system.

Example 17-25

odacli authorize-user

Use the odacli authorize-user command in a multi-user access system to unlock a user account that is locked due to multiple failed login attempts or where the password has expired, and authorize the user to reset their password to reactivate their account.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli authorize-user -u user_id [-d domain_name] [-t tenant_name] [-j] [-h]

Parameters

Parameter	Description
user-id, -u	(Required) Specifies the user whose account is locked.
domain-name,-d	(Optional) Specifies the name of the domain in which the user exists.
tenant-name, -t	(Optional) Specifies the tenancy in which the user exists.
help,-h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.

Usage Notes

• Use the command to authorize a user in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.



Example 17-26

[odaadmin@oda1 bin]\$ odacli authorize-user -u dcsdb2 Enter your ODA account password: Enter new password for user 'dcsdb2': Retype new password for user 'dcsdb2': User 'dcsdb2' authorized successfully. User can now login with the temporary password assigned to them by the system administrator and reset their password by executing 'odacli reset-password' command or via BUI.

odacli delete-user

Use the odacli delete-user command in a multi-user access system to delete a user account.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli delete-user -u user id [-d domain name] [-t tenant name] [-j] [-h]

Parameters

Parameter	Description
user-id,-u	(Required) Specifies the user account to be deleted.
domain-name,-d	(Optional) Specifies the name of the domain in which the user exists.
tenant-name,-t	(Optional) Specifies the tenancy in which the user exists.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

- Use the command to delete a user in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.
- The user can be deleted only if there are no resources currently being held in their name.

Example 17-27



odacli list-user-roles

Use the odacli list-user-roles command to list user roles in a multi-user access system.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-user-roles [-n role_name] [-j] [-h]

Parameters

Parameter	Description	
role-name, -n	(Optional) Displays the list for the specified role.	
help, -h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output.	

Usage Notes

• Use the command to view all the roles in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-28

[odaadmin@oda1 bin]\$ odacli list-user-roles



```
_____ ____
ODA-DB
             Role with DB provisioning related entitlements
false
         false
                   true
ODA-GRID
          Role with GRID provisioning related entitlements
false true
                   true
ODA-DBVMINFRA Role with DBVM user related entitlements false
true
          true
ODA-ADMINISTRATOR System Administrator role with all entitlements
          true
true
                    true
ODA-OAKDROOT Role with OAKD related entitlements
false true true
```

odacli describe-user-role

Use the odacli describe-user-role command to describe a user role in a multi-user access system.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-user-role [-n role name] [-j] [-h]

Parameters

Parameter	Description
role-name, -n	(Required) Specifies the user role for which you want to list the details.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

• Use the command to describe a user role in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-29



odacli list-user-entitlements

Use the odacli list-user-entitlements command to list all entitlements in a multi-user access system.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-user-entitlements [-ao] [-n entitlement name] [-j] [-h]

Parameters

Parameter	Description
active-only, -ao	(Optional) Lists the active entitlements.
entitlement-name,-n	(Optional) Displays the list for the specified entitlement.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

• Use the command to view all entitlements in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-30

[odaadmin@oda1 bin]\$ odacli list-user-entitlements

Entitlement Name Description		Is Active
TOKEN-MGMT		for performing user token management
operations	true	
OSCONFIGS-MGMT	Entitlement	for performing os configurations related
operations true	9	
FEATURETOGGLE-MGMT	Entitlement	for performing feature enable/diable
management operations true		
SERVER-MGMT	Entitlement	for performing server related
operations	true	
HAT-MGMT	Entitlement	for performing HAT Administrative
operations	true	
ASM-RDBMS-INSTANCE-MGN	MT Entitlement	for performing ASM/RDBMS instance related
operations true		
RMANREPORT-MGMT	Entitlement	for performing RMAN report(s) related
operations t	rue	
DBHOME-MGMT	Entitlement	for performing DBHomes (on ACFS) related
operations true	9	
DCSCOMPS-MGMT	Entitlement	for performing DCS component related
operations	true	



```
KVM-MGMT-INTERNALEntitlement for performing blackbox KVM relatedinternal operationstrue...
```

odacli describe-user-entitlement

Use the odacli describe-user-entitlement command to describe an entitlement in a multi-user access system.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli describe-user-entitlement -n entitlement_name [-j] [-h]
```

Parameters

Description	
(Required) Displays the details for the specified entitlement.	
(Optional) Displays help for using the command.	
(Optional) Displays JSON output.	

Usage Notes

• Use the command to view an entitlement in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-31



odacli list-user-operations

Use the odacli list-user-operations command to list all operations in a multi-user access system.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli list-user-operations [-ao] [-n operations name] [-j] [-h]

Parameters

Parameter	Description
active-only,-ao	(Optional) Lists the active multi-user access operations.
operation-name,-n	(Optional) Displays the list for the specified operation.
help,-h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.

Usage Notes

• Use the command to view operations in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-32

[odaadmin@oda1 bin]\$ odacli list-user-operations

odacli describe-user-operation

Use the odacli describe-user-operation command to describe an operation in a multiuser access system.

File Path

/opt/oracle/dcs/bin/odacli



Syntax

```
odacli describe-user-operation [-n operation name] [-j] [-h]
```

Parameters

Parameter	Description	
operation-name,-n	(Optional) Displays the details for the specified operation.	
help,-h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output.	

Usage Notes

• Use the command to view an operation in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-33

```
[odaadmin@oda1 bin]$ odacli describe-user-operation -n create-database
Operation details
------
Name: create-database
Description: Create database
Is Active: true
```

odacli list-resources-access

Use the odacli list-resources-access command to list access to DCS resources in a multi-user access system.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli list-resources-access [-ao] [-rn resource_name] [-rt resource_type] [-
j] [-h]
```

Parameters

Parameter	Description	
active-only, -ao	(Optional) Lists the active resources.	
resource-name, -rn	(Optional) Displays the list by resource name.	
resource-type,-rt	(Optional) Displays the list for the specified resource type, for example, oda_dbhome, oda_db, oda_dbstorage, oda_objstoreswift, and oda_backupconfig.	
help,-h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output.	



Usage Notes

• Use the command to view access to resources in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-34

[odaadmin@oda1 bin]\$ odacli list-resources-access

Resource ID Resource Name Resource Location Resource Type Primary Owner Shared Access Is Active _____ _____ _____ cfc65e00-5d9e-4c00-a7a0-f7ea37884e06 asmtde1 53f434fe-598e-46a0-bbdca456404da0c9 ODA DB odadb1 odaadmin true 1dd795e1-b582-49f1-b1fb-eb3d77eb158b bkpcfg o1 ObjectStore ODA BACKUPCONFIG odaadmin odadb1 true 06682f78-8f5f-4dd2-a918-7935e00bf0c4 o1 https:// swiftobjectstorage.us-phoenix-1.oraclecloud.com/v1 ODA OBJSTORESWIFT odadb1 odaadmin true 53f434fe-598e-46a0-bbdc-a456404da0c9 OraDB19000 home1 /u01/app/odaorahome/ odadb1/product/19.0.0.0/dbhome 1 ODA DBHOME odadb1 odaadmin true abc9a670-493e-4226-b186-6bc91ea48b9a default Disk ODA BACKUPCONFIG uoracle odaadmin true 2360eebc-8899-471c-828f-c008e56fefea asmtde1 DATA, RECO, RECO ODA DBSTORAGE odadb1 odaadmin true

odacli describe-resource-access

Use the odacli describe-resource-access command to describe access to a DCS resource in a multi-user access system.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-resource-access [-ri resource_ID] [-j] [-h]

Parameters

Parameter	Description	
resource-ID, -ri	(Required) Specifies the resource ID.	
help, -h	(Optional) Displays help for using the command.	



Parameter	Description
json,-j	(Optional) Displays JSON output.

Usage Notes

• Use the command to view access to a resource in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-35

odacli grant-resource-access

Use the odacli grant-resource-access command to grant shared access to a DCS resource in a multi-user access system.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli grant-resource-access [-ri resource ID] [-u user ID] [-j] [-h]
```

Parameters

Parameter	Description	
resource-ID, -ri	(Required) Specifies the resource ID.	
user-ID, -u	(Required) Specifies the user name to be granted shared access.	
help, -h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output.	

Usage Notes

• Use the command to grant access to a resource in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.



Example 17-36

```
[odaadmin@oda1 bin]$ odacli grant-resource-access -ri cfc65e00-5d9e-4c00-a7a0-
f7ea37884e06 -u odadb2
Shared access of resource granted to user successfully...
[odaadmin@oda1 bin]$ odacli describe-resource-access -ri cfc65e00-5d9e-4c00-
a7a0-f7ea37884e06
Resource Access details
                       _____
  _____
           Resource ID: cfc65e00-5d9e-4c00-a7a0-f7ea37884e06
         Resource Name: asmtdel
     Resource Location: 53f434fe-598e-46a0-bbdc-a456404da0c9
         Resource Type: ODA DB
         Primary Owner: odadb1
         Shared Access: odaadmin,odadb2
             Is Active: true
              Created: November 17, 2021 1:31:55 PM UTC
          Last Updated: November 19, 2021 12:46:55 PM UTC
```

odacli revoke-resource-access

Use the odacli revoke-resource-access command to revoke access to a DCS resource in a multi-user access system.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli revoke-resource-access [-ri resource ID] [-u user ID] [-j] [-h]

Parameters

Parameter	Description	
resource-ID, -ri	(Required) Specifies the resource ID.	
user-ID, -u	(Required) Specifies the user name whose shared access is to be revoked.	
help, -h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output.	

Usage Notes

• Use the command to revoke access to a resource in a multi-user access system. Only the system administrator odaadmin has the necessary privileges to run this command.

Example 17-37

```
[odaadmin@oda1 bin]$ odacli revoke-resource-access -ri cfc65e00-5d9e-4c00-
a7a0-f7ea37884e06 -u dcsdb2
Shared access of resource to the user revoked successfully...
[odaadmin@oda1 bin]$ odacli describe-resource-access -ri cfc65e00-5d9e-4c00-
a7a0-f7ea37884e06
```



Resource Access details Resource ID: cfc65e00-5d9e-4c00-a7a0-f7ea37884e06 Resource Name: asmtde1 Resource Location: 53f434fe-598e-46a0-bbdc-a456404da0c9 Resource Type: ODA_DB Primary Owner: odadb1 Shared Access: odaadmin Is Active: true Created: November 17, 2021 1:31:55 PM UTC Last Updated: November 19, 2021 12:53:43 PM UTC

odacli reset-password

Use the odacli reset-password command to reset the password for a user, after it is unlocked, in a multi-user access system.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli reset-password [-d domain name] [-t tenant name] [-j] [-h]

Parameters

Parameter Description		
domain-name,-d	(Optional) Specifies the name of the domain in which the user exists.	
tenant-name, -t	(Optional) Specifies the tenancy in which the user exists.	
help,-h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output.	

Usage Notes

• Use the command to reset the password for a user in a multi-user access system. The password of a user must be reset either when the user account is locked due to multiple failed login attempts or if the password has expired. The odaadmin must first unlock the user account by running the odacli authorize-user command. The user can then log in with the temporary password assigned by odaadmin, run the odacli reset-password command, provide the temporary password, and then specify the new password. You can also reset the password from the Browser User Interface.

Example 17-38

```
[dcsdb2@oda1 bin]$ odacli reset-password
Enter your ODA account password:
Enter new password for your ODA account:
Retype new password for your ODA account:
Password reset for user 'dcsdb2' successful...
```



odacli change-password

Use the odacli change-password command to change the password for a user in a multiuser access system.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli change-password [-d domain_name] [-t tenant_name] [-j] [-h]

Parameters

Description	
(Optional) Specifies the name of the domain in which the user exists.	
(Optional) Specifies the tenancy in which the user exists.	
(Optional) Displays help for using the command.	
(Optional) Displays JSON output.	

Usage Notes

• This command must be run by the active user who wants to change the password. To reset the password of a locked or expired account, use the odacli reset-password command.

Example 17-39

[dcsdb2@oda1 bin]\$ odacli reset-password Enter your ODA account password: Enter new password for your ODA account: Retype new password for your ODA account: Password reset for user 'dcsdb2' successful...

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 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.



- 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 delete-prepatchreport
 Use the odacli delete-prepatchreport command to delete any pre-check report.
- odacli list-availablepatches Use the odacli list-availablepatches command to display all available patches for Oracle Database Appliance.
- 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 list-agentconfig-parameters Use the odacli list-agentconfig-parameters command to list configuration variables used by the appliance.
- odacli modify-agentconfig-parameters Use the odacli modify-agentconfig-parameters command to modify configuration variables used by the appliance.
- odacli delete-agentconfig-parameters Use the odacli delete-agentconfig-parameters command to delete configuration variables used by the appliance.
- odacli update-database Use the odacli update-database command to update a database to a specific database home with later version, and within the same major release.

odacli update-dbhome

Use the odacli update-dbhome command to update a specific database home to the latest patch bundle version.

- odacli update-dcsadmin Use the odacli update-dcsadmin command to update the DCS admin for DCS components 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, CLI, and controller.
- odacli update-registry

Use the odacli update-registry command to update the metadata for the components that are already present in the registry. For database home and grid home, this command updates the patch information, 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

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli cleanup-patchrepo [-nn node_name] [-cl clones] [-v version [-comp
component] [-l local]
```

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. You cannot delete the initial or current release files.	
	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-name, -nn	(Optional) Cleans up the repository on the specified node names.	
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 17-40 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, 2024 06:44:28 AM UTC",
"resourceList" : ,
```



```
"description" : "Cleanup patchrepos",
"updatedTime" : "April 17, 2024 06:44:28 AM UTC"
```

Example 17-41 Deleting Clone Files

```
# odacli cleanup-patchrepo -cl
{
    "jobId" : "5d8549a2-1a5e-4b4f-9867-c1f671c659c4",
    "status" : "Created",
    "message" : null,
    "reports" : ,
    "createTimestamp" : "April 17, 2024 06:43:45 AM UTC",
    "resourceList" : ,
    "description" : "Cleanup patchrepos",
    "updatedTime" : "April 17, 2024 06:43:45 AM UTC"
}
```

odacli create-prepatchreport

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

Patching pre-checks help identify and remedy any problems before patching is attempted, and ensure all components are ready for updates.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli create-prepatchreport [-db] [-dbid database_id] [-dp] [-d][-i
dbhome_id] [-f files] [-1] [-nn node_name] [-os] [-r] [-s] [-sko] [-st] [-to
dest_db_home_id] [-v version] [-j] [-h]
```

Parameters

Parameter	Description
database,-db	(Optional) Specifies the database component for running the prechecks. This option cannot be used with the $-dp$ and $-d$ options.
databaseid,-dbid	(Optional) Specifies the ID of the database to be updated and for which you want to run the pre-checks.
datapatch, -dp	(Optional) Specifies the datapatch component for running the prechecks. This option cannot be used with the $-db$ and $-d$ options.
dbhome, -d	(Optional) Specifies the database home component for running the pre-checks. This option cannot be used with the $-{\rm d}p$ and $-{\rm d}b$ options.
dbhomeid, -i	(Optional) Specifies the IDs of the database homes to be updated and for which you want to run the pre-checks.
files,-f	(Optional) Specifies files required to update repository, comma- separated if multiple files are required.



Parameter	Description	
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-name, -nn	(Optional) Runs patch pre-checks on specified node names.	
local, -l	(Optional) Runs patch pre-checks on local node only.	
operating-system, -os	(Optional) Specify this option to run the patch pre-checks for the operating system components.	
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.	
to-home, -to	(Optional) Specifies the destination Oracle Database Home on the target database for the update. Note that you must use this option with the $-db$ option.	
help,-h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output. The default is false.	

Usage Notes

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

Example 17-42 Creating Pre-Check Report

odacli create-prepatchreport -v 19.27.0.0.0 -s

```
Job details

ID: e07993d5-0a06-44e7-819a-36d708c52bb6

Description: Patch pre-checks for [OS, ILOM, GI, ORACHKSERVER]

Status: Created

Created: September 20, 2023 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
```

Example 17-43 Creating Pre-Check Report for Updating Database and Applying Datapatch

odacli describe-prepatchreport -i efa93519-a365-4e9a-9f25-ad3c653cccef

Patch pre-check report

```
ORACLE
```

```
Job ID: efa93519-a365-4e9a-9f25-ad3c653cccef
           Description: Patch pre-checks for [SINGLEDB, ORACHKSINGLEDB]:
Target DB is db10181, Destination DbHome is OraDB19000 home8
               Status: SUCCESS
              Created: October 18, 2023 11:19:03 AM PDT
               Result: All pre-checks succeeded
Node Name
_____
node1
Pre-Check Status Comments
_____
 SINGLEDB
Is system provisioned Success Verified system is provisioned
Validate dbHomesOnACFS Success User has configured disk group for
configured Database homes on ACFS
Validate Oracle base Success Successfully validated Oracle Base
Evaluate DB clone availability Success Successfully validated clone file
                                      exists
Evaluate DB patching with RHP Success Successfully validated patching DB
                                     with RHP.
Validate command execution Success Validated command execution
 ORACHK
Running orachk Success Successfully ran Orachk
Validate command execution Success Validated command execution
wandli: Node Name
_____
node2
Pre-Check Status Comments
_____
 SINGLEDB
Is system provisioned Success Verified system is provisioned
Validate dbHomesOnACFS Success User has configured disk group for
configured Database homes on ACFS
Validate Oracle base Success Successfully validated Oracle Base
Evaluate DB clone availability Success Successfully validated clone file
                                     exists
Evaluate DB patching with RHP Success Successfully validated patching DB
                                      with RHP.
Validate command execution Success Validated command execution
 ORACHK
Running orachk Success Successfully ran Orachk
Validate command execution Success Validated command execution
wandli: example for applying datapatch,
[root@oda1 ~]# odacli describe-prepatchreport -i 2cdb0b6e-
ce24-4857-86ab-91480a2ac4e8
Patch pre-check report
                        _____
               Job ID: 2cdb0b6e-ce24-4857-86ab-91480a2ac4e8
           Description: Patch pre-checks for [SINGLEDB, ORACHKSINGLEDB]:
```

```
Target DB is season, Destination DbHome is OraDB19000_home6
               Status: SUCCESS
              Created: September 16, 2023 10:38:58 PM UTC
               Result: All pre-checks succeeded
Node Name
_____
oda1
Pre-Check Status Comments
       _____
 SINGLEDB
Is system provisioned Success Verified system is provisioned
Validate dbHomesOnACFS Success User has configured disk group for
configured Database homes on ACFS
Validate Oracle base Success Successfully validated Oracle Base
Evaluate DB clone availability Success Successfully validated clone file
                                      exists
Evaluate DB patching with RHP Success Successfully validated patching DB
                                      with RHP.
Validate command execution Success Validated command execution
 ORACHK
Running orachk Success Successfully ran Orachk
Validate command execution Success Validated command execution
```

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

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli describe-prepatchreport -i ID [-j] [-h]
```

Parameters

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

Usage Notes

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

The pre-checks report indicates whether the server patching can be rolling or not.



Example 17-44 Patch pre-checks report with rolling mode patching supported when expander upgrade is not required

```
[root@node1 bin]# odacli describe-prepatchreport -i 83e41cc6-bd0e-4c53-a9fe-
c3f6b7ecd47b
Patch pre-check report
_____
            Job ID: 83e41cc6-bd0e-4c53-a9fe-c3f6b7ecd47b
         Description: Patch pre-checks for [STORAGE]
             Status: SUCCESS
            Created: September 3, 2024 2:51:29 PM UTC
             Result: All pre-checks succeeded
Node Name
_____
node1
Pre-Check
                        Status Comments
----- -----
_____
 STORAGE
Validate patching tag Success Validated patching tag:
19.25.0.0.0.
Patch location validation Success Verified patch
location
Patch tag validation Success Verified patch
taq
Storage patch tag validation Success Verified storage patch
location
Verify ASM disks status Success ASM disks are
online
Validate rolling patch Success Rolling mode patching allowed
as
                                there is no expander
upgrade.
Validate command execution Success Validated command
execution
Node Name
_____
node2
Pre-Check
                       Status Comments
_____
_____
 STORAGE
Validate patching tag Success Validated patching tag:
19.25.0.0.0.
Patch location validation
                       Success Verified patch
location
Patch tag validation
                       Success Verified patch
taq
Storage patch tag validation Success Verified storage patch
location
```



Verify ASM disks status online	Success	ASM disks are
Validate rolling patch	Success	Rolling mode patching allowed
as		there is no expander
upgrade. Validate command execution	Success	Validated command execution

Example 17-45 Patch pre-checks report with rolling mode patching not supported when expander upgrade is required

```
[root@node1 bin]# odacli describe-prepatchreport -i 4a3bef2b-687e-41f2-b3d7-
cbda79e63877
Patch pre-check report
_____
             Job ID: 4a3bef2b-687e-41f2-b3d7-cbda79e63877
         Description: Patch pre-checks for [STORAGE]
            Status: SUCCESS
            Created: September 7, 2024 12:30:57 PM UTC
             Result: All pre-checks succeeded
Node Name
_____
node1
Pre-Check
                       Status Comments
_____ ____
_____
 STORAGE
Validate patching tag
                       Success Validated patching tag:
19.25.0.0.0.
Patch location validation Success Verified patch
location
Patch tag validation Success Verified patch
taq
Storage patch tag validation Success Verified storage patch
location
Verify ASM disks status
                       Success ASM disks are
online
Validate rolling patch Alert Rolling mode patching not allowed
as
                               there is expander
upgrade.
Validate command execution Success Validated command
execution
Node Name
_____
node2
Pre-Check
                       Status Comments
----- -----
_____
```



STORAGE Validate patching tag Success Validated patching tag: 19.25.0.0.0. Patch location validation Success Verified patch location Patch tag validation Success Verified patch taq Storage patch tag validation Success Verified storage patch location Verify ASM disks status Success ASM disks are online Validate rolling patch Alert Rolling mode patching not allowed as there is expander upgrade. Validate command execution Success Validated command execution

Example 17-46 Displaying the Patch Pre-Checks Report for Operating System, Oracle Grid Infrastructure, and ORAchk

[root@oda1 opt]# odacli describe-prepatchreport -i 20d59005-f7f1-421d-bbb1bfc4b5a26293 Patch pre-check report _____ Job ID: 20d59005-f7f1-421d-bbb1-bfc4b5a26293 Description: Patch pre-checks for [OS, ILOM, GI, ORACHKSERVER, SERVER1 Status: SUCCESS Created: May 13, 2025 7:31:24 AM HKT Result: All pre-checks succeeded Node Name ----node1 Pre-Check Status Comments _____ ____ -----OS Validate supported versions Success Validated minimum supported versions. Validate patching tag Success Validated patching tag: 19.25.0.0.0. Is patch location available Success Patch location is available. Success Verified OS Verify OS patch patch Validate command execution Success Validated command execution ILOM Validate ILOM server reachable Success Successfully connected with ILOM server using public IP and



interconnect Validate supported versions Success Validated minimum supported versions. Validate patching tag Success Validated patching tag: 19.25.0.0.0. Is patch location available Success Patch location is available. Checking Ilom patch Version Successfully verified the Success versions Patch location validation Success Successfully validated location Validate command execution Validated command Success execution GI Success Successfully validated GI Validate GI metadata metadata Validate supported GI versions Success Validated minimum supported versions. Validate available space Success Validated free space under /u01 Is clusterware running Success Clusterware is running Validate patching tag Validated patching tag: Success 19.25.0.0.0. Is system provisioned Success Verified system is provisioned Validate ASM in online Success ASM is online Validate kernel log level Successfully validated the OS Success log level GI patching enabled in Validate minimum agent version Success current DCSAGENT version Validate Central Inventory Success oraInventory validation passed Validate patching locks Success Validated patching locks Validate clones location exist Success Validated clones location Validate DB start dependencies Success DBs START dependency check passed Validate DB stop dependencies Success DBs STOP dependency check passed Evaluate GI patching Success Successfully validated GI patching Validate command execution Success Validated command execution ORACHK Running orachk Success Successfully ran

USB

Orachk Validate command execution Success Validated command execution SERVER Validate local patching Alert Rolling patching is not possible: in IB enabled environments Validate command execution Success Validated command execution Node Name _____ node2 Pre-Check Status Comments ----- ----------OS Validate supported versions Success Validated minimum supported versions. Validate patching tag Success Validated patching tag: 19.25.0.0.0. Is patch location available Success Patch location is available. Verify OS patch Success Verified OS patch Success Validated command Validate command execution execution ILOM Validate ILOM server reachable Success Successfully connected with ILOM server using public IP and USB interconnect Validate supported versions Success Validated minimum supported versions. Validate patching tag Success Validated patching tag: 19.25.0.0.0. Is patch location available Success Patch location is available. Successfully verified the Checking Ilom patch Version Success versions Patch location validation Success Successfully validated location Validate command execution Success Validated command execution GI Validate GI metadata Success Successfully validated GI metadata Validate supported GI versions Success Validated minimum supported versions.

Validate available space Success Validated free space under /u01 Is clusterware running Success Clusterware is running Validate patching tag Success Validated patching tag: 19.25.0.0.0. Is system provisioned Success Verified system is provisioned Validate ASM in online Success ASM is online Validate kernel log level Success Successfully validated the OS log level Validate minimum agent version Success GI patching enabled in current DCSAGENT version Validate Central Inventory Success oraInventory validation passed Validate patching locks Success Validated patching locks Validate clones location exist Success Validated clones location Validate DB start dependencies Success DBs START dependency check passed Validate DB stop dependencies Success DBs STOP dependency check passed Evaluate GI patching Success Successfully validated GI patching Validate command execution Success Validated command execution ORACHK_ Running orachk Success Successfully ran Orachk Validate command execution Success Validated command execution SERVER Validate local patching Alert Rolling patching is not possible: in IB enabled environments Validate command execution Success Validated command execution

Example 17-47 Pre-checks report for storage



Created: May 13, 2025 12:52:37 PM HKT Result: All pre-checks succeeded Node Name _____ node1 Pre-Check Status Comments ----- -----_____ STORAGE Validate patching tag Success Validated patching tag: 19.25.0.0.0. Patch location validation Success Verified patch location Patch tag validation Success Verified patch tag Storage patch tag validation Success Verified storage patch location Verify ASM disks status Success ASM disks are online Validate rolling patch Success Rolling mode patching allowed as there is no expander upgrade. Validate command execution Success Validated command execution Node Name _____ node2 Pre-Check Status Comments _____ _____ STORAGE Validate patching tag Success Validated patching tag: 19.25.0.0.0. Patch location validation Success Verified patch location Patch tag validation Success Verified patch tag Storage patch tag validation Success Verified storage patch location Verify ASM disks status Success ASM disks are online Validate rolling patch Success Rolling mode patching allowed as there is no expander



upgrade.

Example 17-48 Pre-checks report for updating database home

```
# odacli describe-prepatchreport -i 6f040374-d271-4711-a7db-e6c04597ad69
Patch pre-check report
_____
              Job ID: 6f040374-d271-4711-a7db-e6c04597ad69
          Description: Patch pre-checks for [DB, ORACHKDB]: DbHome is
OraDB19000 home1
              Status: SUCCESS
             Created: May 13, 2025 8:59:48 AM HKT
              Result: All pre-checks succeeded
Node Name
_____
node1
                         Status Comments
Pre-Check
_____
_____
 DB
Validate DB Home ID
                         Success Validated DB Home
TD:
d03d5187-1c20-470a-9d51-49a0d6f60772
Validate patching tag Success Validated patching tag:
19.25.0.0.0.
Is system provisioned Success Verified system is
provisioned
Validate minimum agent version Success Validated minimum agent
version
Is GI upgraded
                         Success Validated GI is
upgraded
Validate available space for Success Validated free space required
under
db
                                   /u01/app/
odaorahome
Validate dbHomesOnACFS Success User has configured diskgroup
for
configured
                                    Database homes on
ACFS
Validate Oracle base
                          Success Successfully validated Oracle
Base
Is DB clone available
                                    Successfully validated clone
                          Success
file
exists
Evaluate DBHome patching with Success Successfully validated
updating
RHP
                                    dbhome with RHP. and local
patching
                                    is
possible
Validate command execution Success Validated command
execution
```



ORACHK Running orachk Success Successfully ran Orachk Validate command execution Success Validated command execution Node Name _____ node2 Pre-Check Status Comments _____ ____ _____ DB Validate DB Home ID Success Validated DB Home ID: d03d5187-1c20-470a-9d51-49a0d6f60772 Validate patching tag Success Validated patching tag: 19.25.0.0.0. Is system provisioned Success Verified system is provisioned Validate minimum agent version Success Validated minimum agent version Is GI upgraded Success Validated GI is upgraded Validate available space for Success Validated free space required under db /u01/app/ odaorahome Validate dbHomesOnACFS Success User has configured diskgroup for configured Database homes on ACFS Validate Oracle base Success Successfully validated Oracle Base Is DB clone available Successfully validated clone Success file exists Evaluate DBHome patching with Success Successfully validated updating RHP dbhome with RHP. Success Validated command Validate command execution execution ORACHK Running orachk Success Successfully ran Orachk Validate command execution Success Validated command execution

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.

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]
```

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-prepatchreports command to display all pre-check reports.

Example 17-49 Displaying All Patch Pre-Checks Reports

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	
id,-i	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 17-50 Deleting A Patch Pre-Checks Report

odacli delete-prepatchreport -i 741f635b-7c75-4832-8813-782367f1e6fd

odacli list-availablepatches

Use the odacli list-availablepatches command to display all available patches for Oracle Database Appliance.

File Path

/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-availablepatches command to display all available patches for Oracle Database Appliance.

Example 17-51 Displaying All Available Patches on Bare Metal System

```
# odacli list-availablepatches
______
ODA Release Version Supported DB Versions Available DB Versions
Supported Platforms
_______
```



19.14.0.0.0 System	21.5.0.0.220118	21.5.0.0.220118	DB
Metal, DB System	19.14.0.0.220118	19.14.0.0.220118	Bare
Metal	12.2.0.1.220118	12.2.0.1.220118	Bare
Metal	12.1.0.2.220118	12.1.0.2.220118	Bare
Metal			
19.11.0.0.0 Metal, DB System	19.11.0.0.210420	19.11.0.0.210420	Bare
Metal	18.14.0.0.210420	18.14.0.0.210420	Bare
Metal	12.2.0.1.210420	12.2.0.1.210420	Bare
	12.1.0.2.210420	12.1.0.2.210420	Bare
Metal			

Example 17-52 Displaying All Available Patches on DB System

# odacli list-availablepatches				
Supported Platforms	Supported DB Versions			
10 14 0 0 0		01 5 0 0 000110		
19.14.0.0.0 System	21.5.0.0.220118	21.5.0.0.220118	DB	
-	19.14.0.0.220118	19.14.0.0.220118	Bare	
Metal, DB System	12.2.0.1.220118	12.2.0.1.220118	Bare	
Metal	12.1.0.2.220118	12.1.0.2.220118	Bare	
Metal	12.1.0.2.220110	12.1.0.2.220110	Dale	
19.11.0.0.0	19.11.0.0.210420	19.11.0.0.210420	Bare	
Metal, DB System				
	18.14.0.0.210420	18.14.0.0.210420	Bare	
Metal	12.2.0.1.210420	12.2.0.1.210420	Bare	
Metal				
Metal	12.1.0.2.210420	12.1.0.2.210420	Bare	

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 on Oracle Database Appliance, then the output displays the version details for each of the installed homes and the databases in each database home. 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][-nn node name]

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-name, -nn	(Optional) Describes the components for a specific node name on high availability (HA) systems. This option is not needed to display component details on single node systems.	
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 multinode environment, the command provides details across all nodes. Use the --node or -local option to get component details for a specific node.

The odacli describe-component command displays the local and shared storage components and the updates required for them separately.

Example 17-53 Displaying patch details for components for High-Availability Oracle Database Appliance Systems for a release



```
OAK 23.5.0.0.0 up-to-date
DCSCONTROLLER 23.5.0.0.0 up-to-date
DCSCLI 23.5.0.0.0 up-to-date
DCSAGENT 23.5.0.0.0 up-to-date
DCSADMIN 23.5.0.0.0 up-to-date
OS 8.10 up-to-date
ILOM 5.1.4.20.r157857 up-to-date
BIOS 84060600 up-to-date
LOCAL CONTROLLER FIRMWARE {
     [c0, c1] E2MU200 up-to-date
     [c4, c5, c6] 26.33.1048 26.37.1014
}
SHARED CONTROLLER FIRMWARE {
     [c2, c3] 23.00.01.00 up-to-date
}
FIRMWAREEXPANDER {
     [c2x0, c3x0] 0310 up-to-date
}
SHARED DISK FIRMWARE {
     [c2d0, c2d1, c2d2, RXA0 up-to-date
     c2d3, c2d4, c2d5,
     c3d0, c3d1, c3d2,
     c3d3, c3d4, c3d5]
     [c2d6, c2d7, c2d8, A7B0 up-to-date
     c2d9, c2d10,
     c2d11, c2d12,
     c2d13, c2d14,
     c2d15, c2d16,
     c2d17, c2d18,
     c2d19, c2d20,
     c2d21, c2d22,
     c2d23, c3d6, c3d7,
     c3d8, c3d9, c3d10,
     c3d11, c3d12,
     c3d13, c3d14,
     c3d15, c3d16,
     c3d17, c3d18,
     c3d19, c3d20,
     c3d21, c3d22, c3d23]
}
HMP 2.4.9.2.600 up-to-date
```



```
System Node Name
_____
oak1
Local System Version
_____
23.5.0.0.0
Component Installed Version Available Version
_____
_____
OAK 23.5.0.0.0 up-to-date
DCSCONTROLLER 23.5.0.0.0 up-to-date
DCSCLI 23.5.0.0.0 up-to-date
DCSAGENT 23.5.0.0.0 up-to-date
DCSADMIN 23.5.0.0.0 up-to-date
OS 8.10 up-to-date
ILOM 5.1.4.20.r157857 up-to-date
BIOS 84060600 up-to-date
LOCAL CONTROLLER FIRMWARE {
    [c0, c1] E2MU200 up-to-date
    [c4, c5, c6] 26.33.1048 26.37.1014
}
SHARED CONTROLLER FIRMWARE {
    [c2, c3] 23.00.01.00 up-to-date
FIRMWAREEXPANDER {
    [c2x0, c3x0] 0310 up-to-date
}
SHARED DISK FIRMWARE {
    [c2d0, c2d1, c2d2, RXA0 up-to-date
    c2d3, c2d4, c2d5,
    c3d0, c3d1, c3d2,
    c3d3, c3d4, c3d5]
    [c2d6, c2d7, c2d8, A7B0 up-to-date
    c2d9, c2d10,
    c2d11, c2d12,
    c2d13, c2d14,
    c2d15, c2d16,
    c2d17, c2d18,
    c2d19, c2d20,
    c2d21, c2d22,
    c2d23, c3d6, c3d7,
    c3d8, c3d9, c3d10,
    c3d11, c3d12,
```

```
c3d13, c3d14,
c3d15, c3d16,
c3d17, c3d18,
c3d19, c3d20,
c3d21, c3d22, c3d23]
}
HMP 2.4.9.2.600 up-to-date
```

Example 17-54 List DB Home Details

```
# odacli describe-component -d
System Version
______
23.5.0.0.0
System Node Name
______
oak0
Local System Version
______
23.5.0.0.0
System Node Name
______
oak1
Local System Version
_______
```

23.5.0.0.0

Example 17-55 List the Server Components and Versions

```
# odacli describe-component -s
[root@oak0 ~]# odacli describe-component -s
System Version
_____
23.5.0.0.0
System Node Name
_____
oak0
Local System Version
_____
23.5.0.0.0
Component Installed Version Available Version
_____ ____
_____
OAK 23.5.0.0.0 up-to-date
DCSCONTROLLER 23.5.0.0.0 up-to-date
```



```
OS 8.10 up-to-date
DCSCLI 23.5.0.0.0 up-to-date
DCSADMIN 23.5.0.0.0 up-to-date
ILOM 5.1.4.20.r157857 up-to-date
BIOS 84060600 up-to-date
LOCAL CONTROLLER FIRMWARE {
     [c0, c1] E2MU200 up-to-date
     [c4, c5, c6] 26.33.1048 26.37.1014
}
SHARED CONTROLLER FIRMWARE {
     [c2, c3] 23.00.01.00 up-to-date
}
FIRMWAREEXPANDER {
     [c2x0, c3x0] 0310 up-to-date
}
SHARED DISK FIRMWARE {
     [c2d0, c2d1, c2d2, RXA0 up-to-date
     c2d3, c2d4, c2d5,
     c3d0, c3d1, c3d2,
     c3d3, c3d4, c3d5]
     [c2d6, c2d7, c2d8, A7B0 up-to-date
     c2d9, c2d10,
     c2d11, c2d12,
     c2d13, c2d14,
     c2d15, c2d16,
     c2d17, c2d18,
     c2d19, c2d20,
     c2d21, c2d22,
     c2d23, c3d6, c3d7,
     c3d8, c3d9, c3d10,
     c3d11, c3d12,
     c3d13, c3d14,
     c3d15, c3d16,
     c3d17, c3d18,
     c3d19, c3d20,
     c3d21, c3d22, c3d23]
System Node Name
 -----
oak1
Local System Version
_____
23.5.0.0.0
Component Installed Version Available Version
```



```
_____ _
                                              _____
 _____
OAK 23.5.0.0.0 up-to-date
DCSCONTROLLER 23.5.0.0.0 up-to-date
OS 8.10 up-to-date
DCSCLI 23.5.0.0.0 up-to-date
DCSADMIN 23.5.0.0.0 up-to-date
ILOM 5.1.4.20.r157857 up-to-date
BIOS 84060600 up-to-date
LOCAL CONTROLLER FIRMWARE {
     [c0, c1] E2MU200 up-to-date
     [c4, c5, c6] 26.33.1048 26.37.1014
}
SHARED CONTROLLER FIRMWARE {
     [c2, c3] 23.00.01.00 up-to-date
}
FIRMWAREEXPANDER {
     [c2x0, c3x0] 0310 up-to-date
}
SHARED DISK FIRMWARE {
     [c2d0, c2d1, c2d2, RXA0 up-to-date
     c2d3, c2d4, c2d5,
     c3d0, c3d1, c3d2,
    c3d3, c3d4, c3d5]
     [c2d6, c2d7, c2d8, A7B0 up-to-date
     c2d9, c2d10,
     c2d11, c2d12,
     c2d13, c2d14,
     c2d15, c2d16,
    c2d17, c2d18,
     c2d19, c2d20,
     c2d21, c2d22,
     c2d23, c3d6, c3d7,
     c3d8, c3d9, c3d10,
     c3d11, c3d12,
     c3d13, c3d14,
     c3d15, c3d16,
     c3d17, c3d18,
    c3d19, c3d20,
    c3d21, c3d22, c3d23]
}
```

odacli describe-latestpatch

Use the odacli describe-latestpatch command to display a list of the latest supported patch versions for each component.

File Path

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

Syntax

odacli describe-latestpatch [-h]

Parameters

Parameter	Description
help,-h	(Optional) Displays help for using the command.
json, -j (Optional) Displays JSON output. The default is false.	

Example 17-56 Listing the Latest Supported Versions

#	odacli	describe-latestpatch
	OddCII	acourtoc faccocpaco.

ComponentType	availableVersion
<pre>gi db db db oak asr ilom ilom ilom ilom ilom ilom ilom</pre>	18.7.0.0.190716 18.7.0.0.190716 12.2.0.1.190716 12.1.0.2.190716 18.7.0.0.0 18.3.1 3.0.16.22.f.r100119 4.0.2.31.r126282 4.0.4.41.r130359 4.0.4.37.r130617 4.0.0.24.r121140 4.0.4.40.r130348
ilom os bios bios bios bios bios	4.0.4.38.r130206 6.10 17140300 30150300 25080100 41060300 38130200
bios bios firmwareexpandes firmwareexpandes firmwaredisk firmwaredisk firmwaredisk firmwarecontrol.	r 001e r 0306 a901 0r3q a29a



```
firmwarecontroller qdv1rf30
firmwarecontroller vdv1ry03
firmwarecontroller 20.08.01.14
firmwarecontroller 2.11.1280
firmwarecontroller 13.00.00.00
firmwarecontroller 4.650.00-7176
firmwarecontroller kpyair3q
dcsagent
             18.7.0.0.0
firmwaredisk a7e0
firmwaredisk a4c0
firmwaredisk a72a
firmwaredisk a880
firmwaredisk a122
firmwaredisk a38k
firmwaredisk c122
firmwaredisk 944a
firmwaredisk 9440
firmwaredisk e12b
firmwaredisk 5q08
firmwaredisk a902
firmwaredisk a140
firmwaredisk sa03
firmwaredisk 0b25
firmwaredisk sf04
firmwaredisk c38k
firmwaredisk a3a0
firmwaredisk pd51
firmwaredisk m554
firmwaredisk 0121
firmwaredisk xc311102
```

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]

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) Specifies the configuration value for the given type. The default value is PUBLIC.



Usage Notes

Use the odacli list-agentconfig-parameters command to list configuration variables used by the appliance.

Example 17-57 Displaying the HttpProxyPort

./odacli list-agentconfig-parameters -n HttpProxyPort

Name	Valu	е	Desci	ription		Upo	dated					
HttpProxy	Port	Http	proxy	server	port		March	8,	2025	4:14:10	AM	UTC

Example 17-58 Displaying the agent configuration

odacli list-agentconfig-parameters

Example 17-59 Displaying Oracle ASM configuration

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 modify-agentconfig-parameters

Use the odacli modify-agentconfig-parameters command to modify configuration variables used by the appliance.

File Path

```
/opt/oracle/dcs/bin/odacli
```

ORACLE

Syntax

```
odacli modify-agentconfig-parameters -n name_param [-adbs] [-a] [-bm] [-c
comment_param] [-dbs dbsys_param] [-d description_param] [-r] [-t type_param]
[-u] [-v value_param] [-j] [-h]
```

Parameters

Parameter	Description
append, -a	(Optional) Appends the parameter values. For example, -n p1 -v v1 -n p2 -v v2 -a.
all-dbsystems, -adbs	(Optional) Dynamic parameter update for all DB systems.
bm-only, -bm	(Optional) Dynamic parameter update for bare metal systems only.
comment,-c	(Optional) Specifies the comment for the parameter.
dbsystem, -dbs	(Optional) DB system name for dynamic parameter update.
description,-d	(Optional) Specifies the description of the parameter.
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	(Optional) Specifies the type of the parameter.
json,-j	(Optional) Displays JSON output. The default is false.
help, -h	(Optional) Displays help for using the command.

Usage Notes

Use the odacli modify-agentconfig-parameters command to modify configuration variables used by the appliance. The supported configuration parameters are <code>HttpsProxyHost</code> and <code>HttpsProxyPort</code>.

Multiple values can be specified. For High-Availability models, the command sets the parameter values on both nodes in the cluster.

For a DB system, dynamic parameter value specified using the -dbs flag has more priority than the parameter value specified using the -adbs flag, which in turn has a higher priority than the case where the parameter was updated without using any flag from the bare metal system.

Example 17-60 Setting Multiple Parameters

odacli modify-agentconfig-parameters -n HttpsProxyPort -v 80 -d "Http proxy port" -n HttpsProxyPort -v 80 -d "Https proxy port" -u
modify-agentconfig-parameters -n HttpsProxyPort -n HttpProxyPort -r
modify-agentconfig-parameters -n HttpsProxyHost -v 90 -a
modify-agentconfig-parameters -n OSPatchRepos -v

Example 17-61 Setting Oracle RDBMS Parameters

odacli modify-agent config-parameters -t RDBMS -n processes -v 300 -u The value of processes will be set to 300 in BM and all the DBVMs.

odacli list-agentconfig-parameters -t RDBMS -n processes

Name Updated	Value	Description						
- processes	300		March	8,	2025	5:24:45	PM	UTC

Example 17-62 Updating the RDBMS Parameter for all DB systems in the Bare Metal System

odacli modify-agentconfig-parameters -t RDBMS -n processes -v 400 -u -adbs

In the bare metal system, the value of the processes parameter is not changed:

odacli list-agentconfig-parameters -t RDBMS -n processes

Name Updated	Value	Description					
processes UTC	300		March	8,	2025	12:08:15	AM

In all DB systems, the value of processes is changed:

odacli list-agentconfig-parameters -t RDBMS -n processes

Name Updated	Value	Description						
				0	0005	10 00 15		
processes	400		March	8,	2025	12:08:15	AM	UTC



You can set the value for a specific DB system:

```
# odacli modify-agentconfig-parameters -t RDBMS -n processes -v 700 -u -dbs
DBSYSTEM1
```

Value is changed on DBSYSTEM1:

odacli list-agentconfig-parameters -t RDBMS -n processes

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 -n name_param [-adbs] [-bm] [-dbs
dbs_param] [-t type_param] [-j] [-h]
```

Parameters

Parameter	Description
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.
name, -n	(Mandatory) Specifies the name of the parameter.
type, -t	(Optional) Deletes the configuration value for the given type.
all-dbsystems, -adbs	(Optional) Deletes the dynamic parameter updated for DB systems, using the -ad option in the odacli modify-agentconfig- parameters command.
bm-only, -bm	(Optional) Deletes the dynamic parameter only from the bare metal systems.
dbsystem, -dbs	(Optional) Deletes the dynamic parameter for a specific DB system.



Usage Notes

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 17-63 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: March 8, 2025 9:45:39 AM PDT Message: Task Name Start Time End Time Status

----- -----

Example 17-64 Deleting processes configuration parameter

```
# odacli delete-agentconfig-parameters -t rdbms -n processes
odacli list-agentconfig-parameters -t RDBMS -n processes
No result found
```

Note: Parameters updated using -adbs, -dbs flags should be deleted using the same corresponding flags.

odacli delete-agentconfig-parameters -t rdbms -n processes -dbs DBSYSTEM1

odacli delete-agentconfig-parameters -t rdbms -n processes -adbs

odacli update-database

Use the odacli update-database command to update a database to a specific database home with later version, and within the same major release.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli update-database [-a] [-dp] [-f] [-i db_id] [-imp] [-l] [-n db_name] [-
nn node name] [-r] [-to db home id] [-j] [-h]
```



Parameters

Parameter	Description						
to-home, -to	(Optional) Specifies the destination Oracle Database Home ID.						
	The -to option is not a mandatory option if you want to apply datapatch using the odacli update-database command. The -to option is only required when you want to use the odacli update-database command to patch a specific database to a specific database home.						
abort,-a	(Optional) Aborts the unfinished or failed patching operation.						
name, -n	(Optional) Specifies the database name the patch.						
ignore-missing-patch,-imp	(Optional) Ignores all missing patches and forces the operation.						
force, -f	(Optional) Ignores precheck error and forces the operation.						
local,-l	(Optional) Updates the database locally.						
node-name, -nn	(Optional) Specifies the node name to be updated.						
id, -i	(Optional) Specifies the database ID to be patched.						
datapatch, -dp	(Optional) Applies only the datapatch.						
revert, -r	(Optional) Reverts the unfinished or failed patching operation.						
help,-h	(Optional) Displays help for using the command.						
json,-j	(Optional) Displays JSON output. The default is false.						

Usage Notes

- You must run the patching pre-checks at least once before running the odacli updatedatabase command. Analyze any failed pre-checks, fix them, and rerun pre-checks. If any of the failed pre-checks can be ignored, only then run the odacli update-database command with the -f option.
- The update-database command patches a database to a specific database home with later version, and within the same major release.
- To patch a database to a specific database home, the database must be running.
- To patch a database, it must have the status Configured. Use the odacli listdatabase command to see a list of configured databases. Patch requests for target databases in any other status are rejected during patching.
- You can patch only the database homes in the Configured status. Use the odacli list-dbhomes command to see a list of configured database homes. Patch requests for target database homes in any other status are rejected during patching.
- The --datapatch option applies the datapatch to the specific database. This option is helpful for databases that have moved to a destination database home without the datapatch. Examples of using the --datapatch option are as follows:

- When you patch the database as a standby database and then switch the database as the primary database.
- When you must apply additional or one-off data patches after patching your Oracle Database Appliance deployment.

Example 17-65 Updating an Oracle Database

To patch a specific database to a specific database home:

```
# odacli update-database -i e5b60db5-2ee9-4cfc-93ee-179302ee6ebc -to
dc98eaa9-289c-4710-a898-ca6287a07a9c
```

When the database home version is earlier than the target database version, an error is encountered:

```
# odacli update-database -i c05458c7-0f1d-4260-8e62-003b3ec26d74 -to
7ef2449d-3583-47fd-a57a-6ba3fd224119
DCS-10045:Validation error encountered: Target database's version is higher
than destination dbhome, no need to patch.
```

odacli update-dbhome

Use the odacli update-dbhome command to update a specific database home to the latest patch bundle version.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli update-dbhome -i dbhome_id -v version [-f] [-imp] [-p] [-l] [-nn node name] [-j] [-h]

Parameters

Parameter	Description
id, -i	Defines the Oracle Database Home to update.
help-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.
precheck, -p	(Optional) Analyzes the patch.
force, -f	(Optional) Ignores precheck error and forces the operation.
local,-l	(Optional) Updates the Database Home locally.
node-name, -n	(Optional) Specifies the node name to be updated.
version, -v	Defines the Oracle Database Appliance version to update. For example, 19.23.0.0.0.
ignore-missing-patch,-imp	(Optional) Ignores missing patch error and forces the operation.



Usage Notes

- You must run the patching pre-checks at least once before running the odacli updatedbhome command. Analyze any failed pre-checks, fix them, and rerun pre-checks. If any of the pre-checks fail, then run the odacli update-dbhome command with the -f option.
- 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.
- When you use the --local option, you can patch in the following way. Note that you can patch the nodes in any order, for example, you can patch the instance on node1 first, and then the instance on node0.
 - Run --local/--node 0 on node0, then --node 1 on node0.
 - Or, run --local/--node 0 on node0, then -local/--node 1 on node1.
 - Or, run --local/--node on either of the nodes, and then update the database home without using the --local/--node on either of the nodes.

Example 17-66 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 19.27.0.0.0

odacli update-dcsadmin

Use the odacli update-dcsadmin command to update the DCS admin for DCS components upgrade.

File Path

```
/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 17-67 Updating DCS Admin

```
# odacli update-dcsadmin -v 19.27.0.0.0
{
    "jobId" : "4c238b93-e641-4f9d-9f86-93d0574dd234",
    "status" : "Created",
    "message" : null,
    "reports" : [],
    "createTimestamp" : "March 8, 2025 03:11:53 AM UTC",
    "resourceList" : [],
    "description" : "DcsAdmin patching",
    "updatedTime" : "March 8, 2025 03:11:53 AM UTC"
}
```

odacli update-dcsagent

Use the odacli update-dcsagent command to update the agent.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli update-dcsagent -v version [-j] [-h]

Parameters

Parameter	Description	
version,-v	Defines the Oracle Database Appliance version after update.	
help, -h	(Optional) Displays help for using the command.	
json, -j	(Optional) Displays JSON output.	

Usage Notes

Note:

This command is deprecated in this release and may be desupported in a future release.

The update dcsagent command updates the dcs-agent to the RPM package that is located in the *location* and restarts the dcs-agent. After the update is applied, the agent automatically restarts. It will take a few minutes to reconnect to the dcs-agent. Wait until the agent shuts down and completes restarting before performing any tasks.



Note:

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

Example 17-68 Updating the Agent

To update the dcs-agent to version 19.27:

```
# odacli update-dcsagent -v 19.27
{
    "jobId" : "77e454d3-eb68-4130-a247-7633f8d6192b",
    "status" : "Created",
    "message" : null,
    "reports" : [],
    "createTimestamp" : "March 8, 2025 14:09:24 PM CST",
    "description" : "DcsAgent patching",
    "updatedTime" : "March 8, 2025 14:09:24 PM CST"
}
```

odacli update-dcscomponents

Use the odacli update-dcscomponents command to update the DCS components such as the DCS agent, CLI, and controller.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli update-dcscomponents -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-dcscomponents command sets up the dcscomponents such as the DCS agent, CLI, and controller.

Example 17-69 Updating DCS Components

```
# odacli update-dcscomponents -v 19.27.0.0.0
{
```



```
"jobId" : "4c238b93-e641-4f9d-9f86-93d0574dd234",
"status" : "Created",
"message" : null,
"reports" : [],
"createTimestamp" : "March 8, 2025 03:11:53 AM UTC",
"resourceList" : [],
"description" : "DcsComponents patching",
"updatedTime" : "March 8, 2025 03:11:53 AM UTC"
}
```

odacli update-registry

Use the odacli update-registry command to update the metadata for the components that are already present in the registry. For database home and grid home, this command updates the patch information, when you apply patches manually.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli update-registry -n component [-u db_unique_name] [-f] [-j] [-h]

Parameters

Defines the Oracle Database Appliance component for the registry update. When you specify system, then the components discovered include gihome, dbnode, sysinstance. When you specify
all, then the components discovered include dbhome, db, dbstorage, asr. You can also specify the individual component to be refreshed. The individual options include gihome, dbnode, sysinstance, dbhome, DB, dbstorage, ASR.
(Optional) Specifies the global unique name for the database. This option is only applicable for components DB or dbstorage.
This option is deprecated.
(Optional) Displays help for using the command.
(Optional) Displays JSON output.

Usage Notes

- Starting with Oracle Database Appliance release 19.18, the odacli update-registry command does not require the -force option for metadata refresh of a component that already exists in the registry metadata. If the metadata for the component to be updated already exists in the appliance registry metadata, then the command rediscovers the attributes from the environment and updates the system registry.
- The following attribute cannot be discovered with the odacli update-registry command:



- DB Component: rmanBkupPassword, enableEEHA, isBcfgInSync, dbConsoleEnable, cpupool, dbClass, backupConfigId, cloudStorageContainer, isAutoBackupDisabled, registerOnly, entitySource, instanceOnly, dbShape, enableSEHA.
- Use the --db-unique-name, -u option to update the appliance registry metadata for a specific database or dbstorage. The odacli update-registry command then modifies only the registry metadata for the database or dbstorage associated with the database unique name. For example:

```
odacli update-registry -n db -u db_unique_name
odacli update-registry -n dbstorage -u db unique name
```

• The odacli update-registry command discovers and updates the metadata in the registry only for databases created using ODACLI commands or the Browser User Interace (BUI). An error is displayed when you run the odacli update-registry command to update the metadata for databases that were not created using ODACLI commands or BUI. Hence, for database migration cases, do not use the odacli update-registry command. Instead, use the odacli register-database command. For example:

```
# odacli update-registry -n db -u provdb
DCS-10131: Database 'provdb' cannot discover because metadata does not
exist
# dcserr 10131
10131, Discover_New_Database_Not_Supported, "Database ''{0}'' cannot
discover because metadata does not exist."
// *Cause: The database did not support discovery of new entities.
// *Action: Use the 'odacli register-database' command.
```

• Similarly, if you run the odacli update-registry -n dbstorage command to update the metadata for databases or dbstorage that were not created using ODACLI commands or BUI, then an error is displayed. While migrating a database, if the database runs on the appliance and dbstorage also exists, but the corresponding appliance registry metadata does not exist, then you cannot run the odacli update-registry -n dbstorage command to discover the registry metadata. Instead, use the odacli create-dbstorage command.

```
# odacli update-registry -n dbstorage -u newstorage
DCS-10132: Dbstorage 'newstorage' cannot discover because metadata does
not exist
```

```
# dcserr 10132
10132, Discover_New_Dbstorage_Not_Supported, "Dbstorage ''{0}'' cannot
discover because metadata does not exist."
// *Cause: The database storage did not support discovery of new entities.
// *Action: Use the 'odacli create-dbstorage' command.
```

- The odacli update-registry command rediscovers only the following DCS components:
 - System resources : Oracle Grid Infrastructure (gihome), Oracle Database node (dbnode), System instance (sysinstance)
 - Database Home (dbhome)
 - Database (db)
 - Database storage (dbstorage)



- Oracle ASR (asr)

The odacli update-registry command does not rediscover any other components not mentioned in the above list.

- If a TDE database is created without using Oracle Database Appliance tooling and the registry is updated for database components, then this database is added to the DCS metadata. If the TDE Wallet Management of the database is ODA, then the TDE password of the database must be updated in the DCS metadata by modifying the database with the same option you use to change the TDE password. You can specify the same password for both the current and new TDE password to ensure that the TDE password is updated in the DCS metadata.
- A report is generated after the odacli update-registry command completes running. This report displays the values present before the command was run and the updated values. The report is saved in the location /opt/oracle/dcs/logs/discoveryReport.txt. If the command is run again, then the new report is appended to the same file along with the timestamp of the latest run of the command.

Example 17-70 Update Registry Report

```
# odacli update-registry -n system
-----Begin Discovery at 2023-01-24 12-06-28.0666------
*****
Database Storage Discovery
*****
*****
DbStorage Details : Vredf
_____
_____
_____
      Parameter Name
                           Old
Value
                                           New
Value
      _____
_____
_____
      Database Unique Name
Vredf
Vredf
      Name
Vredf
Vredf
      State
CONFIGURED
CONFIGURED
      Entity Source
n11]]
null
      Volume Name1
datvredf
datvredf
      Volume Type1
Data
Data
      Volume Disk Group1
```



data data Volume File System1 /u02/app/oracle/oradata/ Vredf /u02/app/oracle/oradata/ Vredf Volume Initial Size1 102400 102400 Volume Name2 orahome_sh orahome sh Volume Type2 Redo Redo Volume Disk Group2 data data Volume File System2 /u01/app/ /u01/app/ odaorahome odaorahome Volume Initial Size2 204800 204800 Volume Name3 reco reco Volume Type3 Reco Reco Volume Disk Group3 reco reco Volume File System3 /u03/app/ /u03/app/ oracle/ oracle/ Volume Initial Size3 3050496 3050496 _____ _____ DbStorage Location : Vredf _____ _____ _____ Parameter Name Old Value New Value _____ _____ _____ /u02/app/oracle/oradata/ DATA Destination /u02/app/oracle/oradata/ Vredf

```
Vredf
       Database Unique Name
Vredf
Vredf
                            6909f458-9bc4-5d7d-7606-
       Database Id
c765cd20b823
                        6909f458-9bc4-5d7d-7606-
c765cd20b823
       Database Storage Type
Acfs
Acfs
       Flash Cache Destination
null
null
                           /u03/app/oracle/
       Reco Destination
fast recovery area/
                             /u03/app/oracle/
fast_recovery_area/
       Redo Destination
                           /u04/app/oracle/
redo/
                             /u04/app/oracle/
redo/
       Name
Vredf
Vredf
       State
CONFIGURED
CONFIGURED
_____
 _____
 ______
-----Begin Discovery at 2023-01-24_12-43-48.0876------
*****
Database Home : OraDB19000 home1
*****
    _____
_____
_____
                         Old
    Parameter Name
                                     New Value
Value
    _____
_____
_____
    Database Edition
ΕE
                                        ΕE
                         /u01/app/odaorahome/oracle/product/
    Database Home Location
19.0.0.0/dbhome 1 /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome 1
    Database Version
19.18.0.0.230118
                                        19.18.0.0.230118
    Entity Source
null
                                        null
                         976643xf-6fa9-7466-
    Id
```

```
x7ws-391b6agb4d4c
                          5bb324e4-361e-4f76-
a40d-080f24d68faf
    Name
OraDB19000 home1
                                      OraDB19000 home1
    State
CONFIGURED
                                      CONFIGURED
                       2023-01-24
    Updated Time
03:33:31.65
                               Tue Jan 24 12:43:41 UTC
2023
    Unified Auditing
TRUE
                                      TRUE
_____
_____
*****
Database Home : OraDB19000 home2
******
    _____
_____
_____
    Parameter Name
                       Old
Value
                                   New Value
    _____
_____
_____
   Database Edition
ΕE
                                      ΕE
    Database Home Location
                       /u01/app/odaorahome/oracle/product/
19.0.0.0/dbhome 2
           /u01/app/odaorahome/oracle/product/19.0.0.0/
dbhome 2
    Database Version
19.18.0.0.230118
                                      19.18.0.0.230118
   Entity Source
null
                                      null
    Id
5f3595fa-3509-49a1-8507-36441e12ba46
b790a5f9-9792-421b-931a-fea341384f58
    Name
OraDB19000 home2
                                      OraDB19000 home2
   State
CONFIGURED
                                      CONFIGURED
    Updated Time
                       2023-01-24
08:21:30.65
                               Tue Jan 24 12:44:10 UTC
2023
    Unified Auditing
TRUE
                                      TRUE
_____
_____
*****
Database : oneDb
******************
    _____
_____
```



Old Parameter Name Value New Value _____ _____ _____ 24d62501-0b3e-44e5-Id e3c522ae-7d89-49ccbd09-0e49f57560c6 bd3c-291cef8fb606 dbName oneDb oneDb State CONFIGURED CONFIGURED BackupConfigId null null CloudStorageContainer null null CpuPool null null dbUniqueName oneDb0 oneDb0 Db Character Set AL32UTF8 AL32UTF8 DbLanguage AMERICAN AMERICAN DbTerritory AMERICA AMERICA NlsCharacterSet AL16UTF16 AL16UTF16 DbClass Oltp Oltp DbConsoleEnable false false DbDomainName null us.oracle.com DbEdition ΕE ΕE DbHomeId 976643xf-6fa9-7466x7ws-391b6agb4d4c 976643xf-6fa9-7466x7ws-391b6agb4d4c DBId 3409102472 3409102472 isCdb true true DbOnFlashStorage null false DbRedundancy null null DbRole PRIMARY PRIMARY DbShape Odb1 Odb1 DbStorage ACFS ACFS DbTargetNodeName() null null DbTargetNodeNumber()

0		0
PDB1	pdbName	PDB1
null	pdbUserName	PDBADMIN
Si	Database Type	Si
19.18.	DbVersion 0.0.230118	19.18.0.0.230118
false	enableEEHA	false
false	enableSEHA	false
false	enableTDE	false
false	InstanceOnly isAutoBackupDisabled	false
true	IsBcfgInSync	true
null	IsFileConversionComplete	null
null	Level0BackupDay	null
null	RegisterOnly	null
null	RmanBkupPassword	null
null	TdePassword	null
null	TdeWalletManagement	null
null		null
======		

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.
- Starting with Oracle Database Appliance release 19.12, a new Oracle ACFS file system is created to store the Oracle Database and Oracle Grid Infrastructure clone files. The DATA disk group provides a space of 150 GB for the file system. When provisioning a system with Oracle Database Appliance release 19.12, the file system is created after Oracle Grid Infrastructure software is configured. When patching a system with Oracle Database Appliance release 19.12, the file system with Oracle Database Appliance release 19.12, the file system with Oracle Database Appliance release 19.12, the file system is created when you run the odacli update-server command. If you run the command odacli update-repository after this file system is configured during provisioning or patching, then the odacli update-repository command fails if Oracle Clusterware is not running. The following error is displayed:

DCS-10626:Cannot update the repository as the Clusterware is down. Some files need to be stored on an ACFS file system.

Example 17-71 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-19.27.0.0.0-
date-server.zip,/tmp/oda-sm-19.27.0.0.0-date-server.zip
{
    "jobId" : "d3510276-da05-447b-990e-6d30964f8f79",
    "status" : "Created",
    "message" : "/u01/tmpdir/oda-sm-12.2.1.1.0-171031-server.zip",
    "reports" : [ ],
    "createTimestamp" : "March 8, 2025 14:13:45 AM CST",
    "description" : "Repository Update",
```



```
"updatedTime" : "March 8, 2025 14:13:45 AM CST"
}
[root@oak1 tmpdir]# ./odacli list-jobs
# odacli list-jobs
ID Description
Created Status
------
6f27a29a-959f-44e1-b984-7473e3c918ad Server Patching March 8, 2025
14:19:05 AM CST Success
```

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 [-c] -v version [-f][-ng] [-l] [-n node_name] [-j] [-h]

Parameters

Parameter	Description	
version, -v	(Mandatory) Defines the version to update.	
component,-c	(Optional) Component that is to be upgraded. Supported value is OS.	
force, -f	(Optional) Ignores precheck error and forces the patching operation.	
local,-l	(Optional) Updates the server on the local node.	
node-name, -nn	(Optional) Specifies the node name to be updated.	
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.

- You must run the patching pre-checks at least once before running the odacli updateserver command. Analyze any failed pre-checks, fix them, and rerun pre-checks. If any of the pre-checks fail, then run the odacli update-server command with the -f option.
- When you use the --local option, you can patch in the following way. Note that you can patch the nodes in any order, for example, you can patch the instance on node1 first, and then the instance on node0.



- Run --local/--node 0 on node0, then --node 1 on node0.
- Or, run --local/--node 0 on node0, then -local/--node 1 on node1.
- Or, run --local/--node on either of the nodes, and then update the server without using the --local/--node on either of the nodes.

Note:

Before updating the server, ensure that you do not have any jobs running or pending during the update window. You must run the odacli create-prepatchreport command before you patch your server; otherwise, the odacli update-server command fails with an error message prompting you to run the patching pre-checks. You can use the -f option to override precheck failures and complete the server patching.

Example 17-72 Updating the Server

Run the odacli update-server command to update the server to 19.27.0.0.0. On a highavailability system, run the command on one node. The patches are applied automatically to both nodes.

```
# odacli update-server -v 19.27.0.0.0
{
    "jobId" : "6f27a29a-959f-44e1-b984-7473e3c918ad",
    "status" : "Created",
    "message" : "Success of Server Update may trigger reboot of node after 4-5
minutes.
Please wait till node restart",
    "reports" : [ ],
    "createTimestamp" : "March 8, 2025 14:13:45 PM CST",
    "resourceList" : [ ],
    "description" : "Server Patching",
    "updatedTime" : "March 8, 2025 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 [-d] [-e] [-h] [-j] [-r]
```

Parameters

Parameter	Description
version, -v	Defines the version to update.



Parameter	Description	
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.	
only-disk, -d	(Optional) Specifies the storage disk firmware to be updated.	
only-expander, -e	(Optional) Specifies the storage expander firmware to be updated.	

Usage Notes

- If the FIRMWAREEXPANDER Installed Version is earlier than or equal to the Available Version, then you cannot use rolling mode to update the storage.
- Use either the --only-disk, -d option or the --only-expander, -e option independently to target specific components. If neither option is specified, both disk and expander are updated by default.

Example 17-73 Updating the Storage

odacli update-storage -v 19.27.0.0.0

odaadmcli orachk

Use the odaadmcli orachk command to check configuration settings for Oracle Database Appliance components.

File Path

```
/opt/oracle/oak/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 17-74 Running odaadmcli orachk

```
[root@oak bin] # ./odaadmcli orachk
INFO: 2019-09-04 16:41:26: Running orachk under /opt/oracle.SupportTools/
orachk
```

Example 17-75 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.

- odaconfigcli collectconfig
 Use the odaconfigcli collectconfig command to collect configuration data from the appliance.
- odacli extend-localvolume Use the odacli extend-localvolume command to extend the sizes of local volumes LOGVOLOPT and LOGVOLU01.
- odacli list-localvolumes Use the odacli list-localvolumes command to list all the local volumes.
- odacli modify-asmport
 Use the odacli modify-asmport command to modify the Oracle ASM listener port number.
- odacli set-credential Use the odacli set-credential command to change the oda-admin or oda-cliadmin user credentials on a deployment where multi user access is not enabled.
- 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 ping-agent
 Use the odacli ping-agent command to ping the DCS agent resource.
- odacli list-nodes
 Use the odacli list-nodes command to list all nodes in the deployment.
- odacli list-featuretracking Use the odacli list-featuretracking command to display the latest feature tracking report.



odaconfigcli collectconfig

Use the odaconfigcli collectconfig command to collect configuration data from the appliance.

File Path

/opt/oracle/odaconfig/bin/odaconfigcli

Syntax

To collect Oracle Database Appliance configuration information:

odaconfigcli collectconfig [-loc] [-dbsystems] [-redact] [-silent]

Parameters

Parameter	Description	
loc	(Optional) Specifies custom results location. The default is /opt/oracle/odaconfig/cnr_data.	
redact	(Optional) Redacts sensitive entities in configuration collection. Permitted values are sanitize and mask.	
	sanitize: Sensitive entities are replaced with a substitution string	
	mask: Sensitive entities are replaced with '*'	
-dbsystems	(Optional) Specifies the list of DB systems. Specify the DB system name as displayed in the odacli list-dbsystems command output. Do not specify the DB system host name or IP address.	
silent	(Optional) Suppresses all confirmation prompts.	

Example 17-76 Creating a diagnostics collection

odaconfigcli collectconfig

Oracle Database Appliance system config collection:

```
-- Performing validations:
```

```
-- Collecting configuration from the system test1
The config collection is being created at:
/opt/oracle/odaconfig/cnr data/odaconfig test1 23 01 2025 19 38 47
```

```
1. Collecting system info
Collecting system details [e.g. version, hardwaretype, etc] ....
Collecting storage details ....
Collecting RPM drift info ....
Collecting AFD state ....
Collecting network info ....
```



```
2. Collecting Baremetal database info
Collecting system info ....
Collecting component info ....
Collecting dbstorage info ....
Collecting database info ....
Collecting dbhome info ....
Collecting backupconfig info ....
Collecting cpupool info ....
Collecting network info ....
Collecting objectstoreswift info ....
Collecting backupreport info ....
3. Processing Odaconfig report. Please note ** it will take few minutes ** to
collect all the command outputs
Collecting ODA stack information
Collecting fixed commands information
Generating html ODAConfig report
4. Setting file protection to the files on config collection.
5. Not redacting the collection
Finished config collection and creating jsons. Following is the collection
summary:
Config collect bundle created at: /opt/oracle/odaconfig/cnr data/
odaconfig_testoda803c1n1_23_01_2025_19_38_47
HTML ODAConfig report can be found at: /opt/oracle/odaconfig/cnr data/
odaconfig testoda803c1n1 23 01 2025 19 38 47/
odaconfig testoda803c1n1 23 01 2025 19 38 47.html
Logs for this run can be found at : /opt/oracle/odaconfig/cnr data/
odaconfig_testoda803c1n1_23_01_2025_19_38_47/logs
```

odacli extend-localvolume

Use the odacli extend-localvolume command to extend the sizes of local volumes LOGVOLOPT and LOGVOLU01.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli extend-localvolume -is lv_increment_size -n local_volume_name [-f] [-
j] [-h]
```

Parameters

Parameter	Description (Mandatory) Specifies the size to be extended.	
increment-size,-is		
name, -n	(Mandatory) Specifies the name of the local volume: logvolopt or logvolu01. The value is not case-sensitive.	
force, -f	(Optional) Specifies to extend size by force.	



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

Example 17-77 Command output details

```
# odacli extend-localvolume -n LOGVOLOPT -is 10
Extending a local volume is a permanent change. ODA does not support any
option
to revert the change or reduce the volume size as that may induce data loss,
corruption etc. Are you sure you want to proceed with this operation? (Y/N):
У
Job details
_____
                 ID: 4a8a0c4e-62fc-42b9-b4da-96ecd933a72a
          Description: File system modification: LOGVOLOPT
             Status: Created
             Created: October 23, 2024 07:32:53 UTC
             Message:
Task Name
                                 Start
Time
                            End Time
Status
_____
_____
[root@n1 bin]# odacli describe-job -i 4a8a0c4e-62fc-42b9-b4da-96ecd933a72a
Job details
_____
                 ID: 4a8a0c4e-62fc-42b9-b4da-96ecd933a72a
          Description: File system modification: LOGVOLOPT
              Status: Success
             Created: October 23, 2024 07:32:53 UTC
             Message:
Task Name
                                 Node Name
                                                     Start
                            End Time
Time
Status
      _____ ____
_____
_____
                                 cln1
                                              October 23, 2024
Validate inputs

        07:32:54 UTC
        October 23, 2024 07:32:56 UTC
        Success

        Extend file system
        c1n1
        October 23, 202

Datend life systemcln1October 23, 202407:32:56 UTCOctober 23, 2024 07:32:56 UTCSuccess
```

Related Topics

 Managing Local Volumes Understand how you can modify the size of logical volumes LOGVOLOPT and LOGVOLU01.

odacli list-localvolumes

Use the odacli list-localvolumes command to list all the local volumes.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli list-localvolumes [-j] [-h]
```

Parameters

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

Example 17-78 Command output details on Oracle Database Appliance highavailability system

In the following example output, **Volume Size** specifies the total size of the physical volume. **Free Space** describes the total free space on the volume group. **ODABR Requirement** describes the space required to support ODABR backup. **Space for extension** describes the space available for extension as per ODABR requirements.

```
# odacli list-localvolumes
Local Disk and Volume details
_____
___
Node
_____
c1n1
Physical Volume details
_____
        Volume Size: 446.1G
         Free Space: 232.1G
     ODABR requirement: 190.0G
   Space for extension: 20.0G
Logical Volume details
_____
Volume Name Path
                                FS Type Mounted on
Size
   Used
______ _____
-----
                                ext4 /opt
LOGVOLOPT
40.0G 22.2G
LOGVOLROOT
                                ext4
                                      /
110.0G 9.2G
LOGVOLU01
                                ext4
                                      /u01
40.0G 22.2G
```



```
N/A
LOGVOLSWAP
                                         N/A
24.0G
Node
_____
c1n2
Physical Volume details
_____
         Volume Size: 446.1G
         Free Space: 312.1G
     ODABR requirement: 110.0G
    Space for extension: 20.0G
Logical Volume details
_____
Volume Name Path
                                   FS Type Mounted on
Size
   Used
______ _____
_____
LOGVOLOPT
                                   ext4 /opt
40.0G 22.6G
                                   ext4 /
LOGVOLROOT
30.0G 9.5G
LOGVOLU01
                                   ext4 /u01
40.0G 22.6G
                                   N/A N/A
LOGVOLSWAP
24.0G
```

Example 17-79 Command output details on Oracle Database Appliance single-node system

```
# odacli list-localvolumes
Local Disk and Volume details
_____
___
Node
-----
n1
Physical Volume details
_____
       Volume Size: 446.1G
        Free Space: 169.1G
    ODABR requirement: 231.0G
   Space for extension: 0.0G
Logical Volume details
_____
Volume Name Path
                               FS Type Mounted on
   Used
Size
______ _____
-----
                              ext4 /opt
LOGVOLOPT
70.0G 18.5G
```



LOGVOLROOT		ext4	/	
30.0G 10).1G			
LOGVOLU01		ext4	/u01	
131.0G 34	1.4G			
LOGVOLDATA		N/A	N/A	1.0G
LOGVOLEXTRA		ext4	/extra	
20.0G 24	1.0K			
LOGVOLRECO		N/A	N/A	1.0G

Related Topics

• Managing Local Volumes Understand how you can modify the size of logical volumes LOGVOLOPT and LOGVOLU01.

odacli modify-asmport

Use the odacli modify-asmport command to modify the Oracle ASM listener port number.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli modify-asmport -p [-j] [-h]
```

Parameters

Parameter	Description	
р, -р	(Mandatory) Specifies the new port number for the Oracle ASM listener.	
help, -h	(Optional) Displays help for using the command.	
json, -j	(Optional) Displays JSON output.	

Usage Notes

• You can modify the Oracle ASM listener port number on the bare metal system. All DB systems that you provision after changing the Oracle ASM listener port number use the new Oracle ASM port number.

Example 17-80 Command output details on bare metal system and DB system



Task Name Start Time End Time Status _____ _____ _____ July 18, 2024 4:03:05 PM Stop CRS on DB System(s) July 18, 2024 4:14:44 PM CST CST Success Modify the ASM listener port on BM July 18, 2024 4:14:44 PM July 18, 2024 4:14:48 PM CST CST Success Change discovery address for DB Systems July 18, 2024 4:14:48 PM July 18, 2024 4:34:17 PM CST CST Success

After running the command on the bare metal system, the DB system job details are as follows:

Stopping Oracle Clusterware [root@node1 ~]# odacli describe-job -i 72ed400c-c8ff-4d82-9d8c-b7561d3f3616 Job details _____ ID: 72ed400c-c8ff-4d82-9d8c-b7561d3f3616 Description: Stop Clusterware Status: Success Created: July 18, 2024 10:14:12 AM CEST Message: Task Name Start Time End Time Status _____ _____ _____ July 18, 2024 10:14:13 AM Stop crs with force option CEST July 18, 2024 10:14:23 AM CEST Success # Updating the port [root@node1 ~]# odacli describe-job -i b728b936-7426-463f-b6d4-b7ab9ff9f399 Job details _____ ID: b728b936-7426-463f-b6d4-b7ab9ff9f399 Description: Modify ASM listener port Status: Success Created: July 18, 2024 11:32:42 AM CEST Message: Task Name Start Time End Time Status



```
_____
 _____
Updating the ASM discovery address in July 18, 2024 11:32:43 AM
           July 18, 2024 11:32:43 AM CEST
CEST
                                            Success
OLR
Starting the clusterware
                                 July 18, 2024 11:32:43 AM
           July 18, 2024 11:33:44 AM CEST
CEST
                                             Success
Updating the ASM discovery address in July 18, 2024 11:33:44 AM
           July 18, 2024 11:34:44 AM CEST
CEST
                                            Success
OCR
Restarting Clusterware
                                 July 18, 2024 11:34:44 AM
           July 18, 2024 11:37:24 AM CEST
CEST
                                             Success
```

Related Topics

 odacli modify-asmport
 Use the odacli modify-asmport command to modify the Oracle ASM listener port number.

odacli set-credential

Use the odacli set-credential command to change the oda-admin or oda-cliadmin user credentials on a deployment where multi user access is not enabled.

Syntax

To reset the oda-admin or oda-cliadmin user credentials in interactive mode:

```
odacli set-credential --username username [-j] [-h]
```

Parameters

Parameter	Description	
username, -u	User name credentials that you want to reset. The user name can be oda-admin or oda-cliadmin. The oda-admin user credentials allow access to the BUI and the oda-cliadmin user credentials allow ODACLI to communicate with the DCS agent internally.	
json,-j	(Optional) Displays JSON output.	
help, -h	(Optional) Displays help for using the command.	

Usage Notes

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

Example 17-81 Resetting the oda-admin Password in Interactive Mode

To reset the oda-admin user password to a new password in interactive mode:

```
# odacli set-credential --username oda-admin
Enter 'user' password:
Retype 'user' password:
```



odacli create-appliance

Use the odacli create-appliance command in a JSON file format to provision Oracle Database Appliance.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

To view help for the odacli create-appliance command:

```
odacli create-appliance -r requestjson [-j] [-h]
```

Note:

The odacli create-appliance command only supports a JavaScript Object Notation (JSON) file format. An example JSON files and a readme are available in an appendix in this document and in the /opt/oracle/dcs/sample directory.

Parameters

Parameter	Description	
requestjson,-r	JSON input for appliance creation.	
json, -j	(Optional) Displays JSON output.	
help, -h	(Optional) Displays help for using the command.	

Usage Notes

For example JSON files, see the chapter *Creating an Appliance Using a JSON File* in this publication.

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 (Optional) Displays JSON output.	
json, -j		
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 $-{\rm b}$ and $-{\rm d}$ at the same time, in the command.

Example 17-82 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 Details	 Component		
NODE	Name : odal Domain Name : Time Stamp : Apr	ril 29, 2020 7:00:12 PM UTC	
RPMS	Installed RPMS :	<pre>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,</pre>	
python-2.4.5-6.el6.x86_64,			
libs-1.0.0-10.el6.x86_64,		augeas-	
authconfig-6.1.12-23.el6.x86_64,			
libs-0.6.25-17.el6.x86_64,		avahi- b43-openfwwf-5.2-10.el6.noarch,	
basesystem-10.0-4.0.1.el6.noa	arch,	bash-4.1.2-48.el6.x86_64, bc-1.06.95-1.el6.x86_64, bind-	



libs-9.8.2-0.62.rc1.el6_9.5.x86_64,	
utils-9.8.2-0.62.rc1.el6_9.5.x86_64,	bind-
binutils-2.20.51.0.2-5.47.el6_9.1.x86_64,	biosdevname-0.7.2-1.el6.x86_64, bridge-utils-1.2-10.el6.x86_64, busybox-1.15.1-21.el6_6.x86_64, bzip2-1.0.5-7.el6_0.x86_64, bzip2-
libs-1.0.5-7.el6_0.x86_64,	ca-
certificates-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,	cloog-
ppl-0.15.7-1.2.el6.x86_64,	<pre>compat-libcap1-1.10-1.x86_64, compat-libstdc+</pre>
+-33-3.2.3-69.el6.x86_64,	compat-
readline5-5.2-17.1.el6.x86_64, +-4.8.2-16.el6.x86 64,	compat-sap-c+
_	ConsoleKit-0.4.1-6.el6.x86_64, ConsoleKit-
libs-0.4.1-6.el6.x86_64, x11-0.4.1-6.el6.x86_64,	ConsoleKit-
coreutils-8.4-46.0.1.el6.x86_64, libs-8.4-46.0.1.el6.x86_64,	coreutils-
dicts-2.8.16-4.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-
_	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-

ORACLE

```
libs-1.2.0-11.el6.x86_64,
libs-1.4.2-78.el6_9.x86_64,
....
```

odacli ping-agent

Use the odacli ping-agent command to ping the DCS agent resource.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli ping-agent [-j] [-h]
```

Parameters

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

cups-

Example 17-83

odacli ping-agent

odacli list-nodes

Use the odacli list-nodes command to list all nodes in the deployment.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli list-nodes [-j] [-h]

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



Example 17-84

odacli list-nodes

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 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 17-85 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 8 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 1 Database Maximum number of EE Databases 1 Database Maximum number of SE Databases 0 Database Maximum number of CDBs 1 Database Maximum number of non-CDBs 0 Database Maximum number of RAC Databases Database 1 Maximum number of RAC One Databases 0 Database Maximum number of Single Instance Databases 0 Database Maximum number of PDBs 0 Database Maximum number of Datafiles 7 Database Maximum number of Database Homes Database 1 Maximum number of Flashback Databases 0 Database 6.40 Maximum size of a Database GΒ Database Minimum Database version 18.0.0.0.0 Database Maximum Database version 18.0.0.0.0 Database Maximum number of Backups 12 Database Maximum number of NFS Backups 0 Database Maximum number of Object Store Backups 12 Database Maximum number of Disk Backups 0 Database Maximum number of Regular-LO Backups 0 Database Maximum number of Regular-L1 Backups 1 Database Maximum number of ArchiveLog Backups

```
9
                     Database
Maximum number of Longterm Backups
2
                     Database
Maximum interval between Database Backups
                                                            0 Day(s),
01:01:06 Database
Maximum number of Object Store tenants
1
                     Object Store
Maximum number of enabled CPU cores
12
                     Server
Maximum number of disks
24
                     Storage
Maximum number of ASM Disks Groups
3
                     Storage
Maximum size of ASM Disk Groups
                                                            11.46
ͲB
              Storage
                                                            1.70
Maximum usage of ASM Disk Groups
2
                Storage
Maximum number of ASM Disks Groups with redundancy 'NORMAL'
0
                     Storage
Maximum number of ASM Disks Groups with redundancy 'HIGH'
3
                     Storage
Maximum number of ASM Disks Groups with redundancy 'EXTERN'
0
                     Storage
Maximum number of ASM Disks Groups with redundancy 'FLEX'
0
                     Storage
Maximum ASM Disk Groups compatibility
18.0.0.0.0
                     Storage
Minimum ASM Disk Groups compatibility
18.0.0.0.0 Storage
Maximum number of non-ACFS file systems
4
                     Storage
Maximum size of non-ACFS file systems
                                                            98.31
GB
               Storage
Maximum usage of non-ACFS file systems
                                                            82.71
               Storage
00
Maximum number of ACFS file systems
1
                     Storage
Maximum size of ACFS file systems
                                                            5.00
GB
                Storage
Maximum usage of ACFS file systems
                                                            12.19
               Storage
0/2
```

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 or NFS.

- odacli create-backup Use the command odacli create-backup to create a Level O, 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 describe-backupconfig Use the command odacli describe-backupconfig to describe a backup configuration.
•	odacli delete-backup Use the command odacli delete-backup to delete obsolete backups and backup reports.
•	odacli delete-backupconfig Use the command odacli 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 describe-objectstoreswift Use the command describe-objectstoreswift to describe a Swift ObjectStore.
•	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 backup report.
•	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 list-tdebackupreports Use the odacli list-tdebackupreports command to view TDE Wallet backup reports.
•	odacli recover-database Use the odacli recover-database command to recover or restore a database from backup.
•	odacli restore-archivelog Use the odacli restore-archivelog command to restore archivelog from one SCN to another SCN, or from one timestamp to another timestamp.

- odacli restore-tdewallet Use the odacli restore-tdewallet command to restore TDE wallet from the backup location.
- odacli modify-backupconfig Use the command odacli modify-backupconfig to update a backup configuration.
- odacli modify-objectstoreswift Use the command odacli modify-objectstoreswift to change the credentials for the ObjectStore account.
- odacli modify-schedule
 Use the command odacli modify-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 O, Level 1, archivelog, or Longterm backup.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli create-backup [-i Database Resource ID | -n Database Resource Name] [-h] [-j]

Parameter	Description
backupType,-bt {Regular-L0 Regular-L1 Longterm archivelog}	Defines the type of backup. The options are not case sensitive.
component,-c {Database TDEWallet}	(Optional) Defines the component. The supported options are Database and TDE Wallet. The options are not case-sensitive. The default value is Database. If you specify the value as Database, then a backup of both the database and TDE Wallet is taken.
name,-n	Defines the database name.
id, -i	Defines the Database Resource ID.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.
keep-archivelog,-ka	Keeps archive logs.
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. The tag must be wrapped in single quotes when special characters are used.



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.
 - Longterm: Longterm backups are available when backing up to NFS (External FRA) or 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.
- For TDE-enabled databases with TDE keys stored in Oracle Key Vault, the TDE wallet of the database is not backed up because the wallet is stored outside Oracle Database Appliance.
- The Backup Type must be specified in most cases, when you run the odacli createbackup command. If the Backup Component is TDE Wallet, then you need not specify the Backup Type.
- 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 17-86 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 17-87 Create a Level 0 Database Backup

Create a Level O backup named 2017Dec22ProductionLevelO for resource ID 20576eb1bc32-4e34-bf97-fda0b60ca15b

```
# odacli create-backup -i 20576eb1-bc32-4e34-bf97-fda0b60ca15b -bt Regular-L0
-t 2017Dec22ProductionLevel0
```

Example 17-88 Create a Backup of only the TDE Wallet

odacli create-backup -n testdb -c TDEWallet

Example 17-89 Create a Backup of the database and TDE Wallet

```
# odacli create-backup -n testdb -bt regular-10
```



odacli create-backupconfig

Use the command odacli create-backupconfig to create a backup configuration.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli create-backupconfig -n backup configuration name -d backup
destination{Disk|ObjectStore|NFS|None} [-c] [-cr] [-h] [-j] [-no-cr] [-o] [-
w] [-f] [-ca] [-dc] [-ec] [-on]
```

Parameter	Description
backupdestination,-d {Disk ObjectStore NFS None}	Defines the backup destination. The options are not case sensitive.
container,-c	(Optional) Defines the object store container.
crosscheck, -cr	(Optional) Enable crosscheck.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.
name, -n	Defines the backup configuration name.
no-crosscheck, -no-cr	(Optional) Disable crosscheck.
objectstoreswiftId,-o	(Optional) Defines the swift object store credential ID.
tde-container,-f	(Optional) Defines the container or backup location to backup the TDE Wallet. Must be the absolute path to the parent directory when the backup target is NFS, and must be the container name when the backup target is Objectstore.
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.
compression-algo,-ca	(Optional) Defines the compression algorithm {basic low medium high} that RMAN must use. (default: basic(disk/NFS), medium(ObjectStore))
disable-compression,-dc	(Optional) Disables compression for the backups. Compression is enabled by default.
enable-compression, -ec	(Optional) Enables compression for the backups. Compression is enabled by default.
objectstoreswiftName,-on	(Optional) Defines the Objectstore Swift resource name. Specify the Objectstore Swift resource name or Objectstore Swift ID.



Usage Notes

- To backup a TDE-enabled database, backup configuration with separate TDE Wallet backup location and Database backup location is mandatory.
- To backup a non-TDE database, backup configuration with either single database backup location or backup configuration with both database backup location and TDE Wallet backup location can be used.
- For Disk backup configuration, TDE Wallet backup location is by default, Fast Recovery Area (FRA), but in a separate path from the Database backup path within FRA. Hence, TDE Wallet backup location need not be specified when creating the Disk backup configuration.
- 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 17-90 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 17-91 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 17-92 Create a Backup Configuration with separate backup locations for database backup and TDE Wallet backup

```
# odacli create-backupconfig -n bcfg1 -d Objectstore -w 1 -c location1-on
oss1 -f location2
```

Example 17-93 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 Object Store backup configuration creation against the endpoint URL and tenancy.

odacli describe-backupconfig

Use the command odacli describe-backupconfig to describe a backup configuration.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli describe-backupconfig [-i backup_configuration_id] [-n name] [-h]
[-j]
```

Parameter	Description
id, -i	Specifies the backup configuration identifier (ID).
name, -n	Specifies the backup configuration name.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.



Example 17-94 Describing a Backup Configuration

Describe a backup configuration named production

odacli describe-backupconfig -n production

odacli delete-backup

Use the command odacli delete-backup to delete obsolete backups and backup reports.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli delete-backup -i Database Resource ID -n name [-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.
id, -i	Defines the Database Resource Identifier (ID). To delete obsolete level 0, level 1 and archivelog backups and backup reports, use the database resource ID.
name, -n	Defines the Database resource name.
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, archive log backups and backup reports 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 and backup report from Oracle Object Storage or NFS backup location 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 17-95 Delete a Level 0 or Level 1 Backup

odacli delete-backup -i 20576eb1-bc32-4e34-bf97-fda0b60ca15b



Example 17-96 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

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli delete-backupconfig -n name -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).
name, -n	Defines the Backup Config name.
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 17-97 Deleting a Backup Configuration

Delete a backup configuration named production

odacli delete-backupconfig -n production

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 17-98 Backup report for a TDE-enabled database (contains a keystoreType attribute)

```
odacli describe-backupreport -i d2326683-9766-4933-bee1-a2b59c9d7e9e
  "id" : "d2326683-9766-4933-bee1-a2b59c9d7e9e",
  "dbResId" : "96a98156-b657-403e-a87c-357c2069c285",
  "tag" : "auto",
  "dbId" : "1851419729",
  "dbName" : "db15",
  "dbUniqueName" : "db15",
  "backupType" : "Regular-L0",
  "keepDays" : null,
  "backupLocation" : "/nfs backup/orabackups/dbsfb225975e/database/1851419729/
db15/db",
  "cfBackupHandle" : "/nfs backup/orabackups/dbsfb225975e/database/1851419729/
db15/db/c-1851419729-20240326-03",
  "spfBackupHandle" : "/nfs backup/orabackups/dbsfb225975e/database/
1851419729/db15/db/c-1851419729-20240326-03",
  "pitrTimeStamp" : "March 26, 2024 04:15:06 AM PDT",
  "pitrSCN" : "1675444",
  "resetLogsTimeStamp" : "March 26, 2024 03:01:39 AM PDT",
  "resetLogsSCN" : "1575481",
  "oraHomeVersion" : "19.22.0.0.240116",
  "sqlPatches" : "35926646,34774667,35943157",
  "backupLogLoc" : "/nfs backup/orabackups/dbsfb225975e/database/1851419729/
db15/rmanlog/2024-03-26/rman backup auto 2024-03-26 04-14-29.0478.log",
  "tdeWalletLoc" : null,
  "dbConfigLoc" : "/nfs backup/orabackups/dbsfb225975e/database/1851419729/
db15/dbconfig/2024-03-26/DBCONFIG auto 2024-03-26 04-15-19.0472.tar.gz",
  "name" : "Backup Report db15",
  "createTime" : "March 26, 2024 04:14:26 AM PDT",
  "state" : {
    "status" : "CONFIGURED"
  },
  "updatedTime" : "March 26, 2024 04:14:26 AM PDT",
  "backupReportLogDetail" : "/nfs backup/orabackups/dbsfb225975e/database/
1851419729/db15/rmandetaillogreport/2024-03-26/
rman list backup detail_auto_2024-03-26_04-15-16.0129.log",
  "dbInfo" : {
    "dbClass" : "OLTP",
    "dbType" : "RAC",
    "dbShape" : "odb2",
    "dbEdition" : "EE",
    "dbStorage" : "ASM",
    "dbRedundancy" : null,
```

```
"pdbName" : null,
"isCdb" : false
},
"dbDataSize" : "2441M",
"dbRedoSize" : "16403M",
"rmanBackupPieces" : "/nfs_backup/orabackups/dbsfb225975e/database/
1851419729/db15/backuppieces/2024-03-26/backupPieces_auto_96a98156-b657-403e-
a87c-357c2069c285_20240326041518.json",
"compressionAlgo" : "BASIC",
"cpuPool" : null,
"numberOfCores" : null,
"keystoreType" : "OKV" <<<< HERE
}
```

Example 17-99 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" : "September 08, 2024 12:43:14 PM UTC",
  "pitrSCN" : "1175058",
  "resetLogsTimeStamp" : "September 08, 2024 09:55:34 AM UTC",
  "resetLogsSCN" : "1112268",
  "oraHomeVersion" : "12.2.0.1.170814 (26723265, 26609817)",
  "sqlPatches" : "25811364,26609817",
  "backupLoqLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/
backupbucket/scaoda702c1n1/rmanlog/ExampleDBu/2717054291/2018-01-08/
rman backup 2018-01-08 12-42-41.0545.log",
  "tdeWalletLoc" : null,
  "dbConfigLoc" : "https://swiftobjectstorage.example.com/v1/dbaasimage/
backupbucket/scaoda702c1n1/dbconfig/ExampleDBu/2717054291/2018-01-08/
DBCONFIG TAG20180108T124407 2018-01-08 12-44-07.0533.tar.gz",
  "name" : "Backup Report ExampleDB",
  "createTime" : "January 08, 2018 12:42:08 PM UTC",
  "state" : {
   "status" : "CONFIGURED"
 },
  "updatedTime" : "January 08, 2018 12:44:12 PM UTC",
  "backupReportLogDetail" : "https://swiftobjectstorage.example.com/v1/
dbaasimage/backupbucket/scaoda702c1n1/rmandetaillogreport/ExampleDBu/
2717054291/2018-01-08/rman list backup detail 2018-01-08 12-44-04.0362.log",
  "dbInfo" : {
    "dbClass" : "OLTP",
    "dbType" : "RAC",
```



```
"dbShape" : "odb1",
  "dbEdition" : "EE",
  "dbStorage" : "ASM"
},
"dbDataSize" : "1542M",
"dbRedoSize" : "16403M"
```

odacli describe-objectstoreswift

}

Use the command describe-objectstoreswift to describe a Swift ObjectStore.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
# odacli describe-objectstoreswift -i Object Store_Swift_id -n Object
Store Swift name [-h] [-j]
```

Parameters

Parameter	Description
id, -i	Specifies the Object Store Swift identifier (ID).
name, -n	Specifies the Object Store Swift name.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

Example 17-100 Describing the Swift Object Store

odacli describe-objectstoreswift -i Object Store Swift id

odacli delete-objectstoreswift

Use the command odacli delete-objectstoreswift to delete the credentials for the ObjectStore account.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
# odacli delete-objectstoreswift -i Object Store Swift id -n Object Store
Swift name [-h] [-j]
```



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 Object Store Swift identifier (ID).
name, -n	Defines the Object Store Swift name.

Usage Notes

You cannot delete the Object Store credentials if they are attached to a backup configuration.

Example 17-101 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

/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.
id, -i	Defines the schedule with an identifier (ID).

Example 17-102 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 backup report.

File Path

```
/opt/oracle/dcs/bin/odacli
```



Syntax

```
odacli irestore-database -r [-tn] [-n] [-bp] [-cl] [-nn] [-co] [-s] [-ro] [-
dr] [-y] [-c] [-oid] [-tf] [-bl] [-t] [-kt] [-ocp] [-tl] [-cp] [-dh] [-dn] [-
de] [-f] [-rd] [-on] [-ha|-no-ha] [-own] [-osc] [-h] [-j]
```

Parameter	Description
backupPassword(s),-bp	(Optional) Defines the RMAN password for recovery. You can provide more than one password, but the passwords must be separated by a comma(,).
backupReport,-r	JSON input for a backup report.
enable-tde, -t	Specifies whether to enable Transparent Data Encryption (TDE) which uses software keystore.
keystore-type,-kt	Specifies the type of keystore which stores the TDE master encryption key. The value can be software or okv. The default is software.
okvclient-path,-ocp	Specifies the absolute path to the okvclient.jar file. Multiple values must be comma-separated. Cannot be used with theokv-server-config, -osc option.
dbClass,-cl {EE: OLTP/DSS/IMDB, SE: OLTP}	(Optional) Defines the Database class.
dbConsoleEnable,-co	(Optional) Enables the Database Console.
dbShape, -s {odb1,odb2, and so on}	(Optional) Defines the database shape.
dbStorage, -dr {ACFS ASM}	(Optional) Defines the database storage. Database Storage {ACFS ASM} (non case-sensitive). The default is ASM.
dbType, -y	(Optional) Defines the type of database. For high-availability deployments, the values can be RAC RACOne SI, with the default as RAC. For single-node deployments, the value is SI.
dbEdition,-de	(Optional) Defines the Database Edition (SE or EE).
databaseHome, -dh	(Optional) Defines the database home.
dbName, -n	(Optional) Defines the database name.
dbUniqueName,-u	(Optional) Defines the database unique name.
dbDomainName,-dn	Defines the database domain name.
dbrole, -ro	Defines the database role for Oracle Data Guard operations. The options are PRIMARY STANDBY.
help,-h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.
node-name, -tn	(Optional) Specifies the target host name (applicable only for Oracle RAC One Node Database and single-instance Oracle Database, where supported). This option is available for Oracle Database Appliance high-availability deployments.
enable-tde,-t	(Optional) Specifies whether you want to enable TDE on the target database.
tde-backup-location, -tl	(Optional) Specifies the backup location for TDE wallet.



Parameter	Description			
keystore-type,-kt	Specifies the type of keystore which stores the TDE master encryption key. The value can be software or okv. The default is software.			
okv-server-config,-osc	Specifies the name of the Oracle Key Vault server configuration object which serves as the metadata of the Oracle Key Vault user credentials used by the target database.			
okv-wallet-name,-own	Specifies the name of the wallet of the target database on the Oracle Key Vault server. Use this option only if the wallet is manually created on the Oracle Key Vault server.			
noOfRmanChannels,-c	(Optional) Defines the number of RMAN channels (parallelism) Default: SE Edition: 1, Other Enterprise Editions: 5			
objectStoreId,-oid	Defines the Swift Object Store credential ID.			
objectStoreName,-on	Defines the Swift Object Store resource name.			
backuplocation,-bl	(Optional) Specifies the NFS or local directory path where backups are available.			
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.			
	The precedence logic for setting the dbRedundancy is:			
	 dbRedundancy that is specified in the irestore- database command. 			
	2. dbRedundancy in the backup report.			
	 If the disk group redundancy is FLEX, then the default dbRedundancy value is MIRROR. 			
associated-networks,-nn	Specifies the associated network names (in the format networkName1,networkName2,).			
dbOnFlashStorage,-f	(Optional) Specifies whether to enable data on Flash storage			
no-dbOnFlashStorage,-no-f	(Optional) Specifies whether to disable data on Flash storage.			
disable-ha,-no-ha	(Optional) Disables High Availability for single-instance Oracle Database 19c and later.			
enable-ha,-ha	(Optional) Enables High Availability for single-instance Oracle Database 19c and later.			

Usage Notes

Caution:

When you create a database with Transparent Data Encryption (TDE) enabled, with TDE keys stored in software keystore, you are prompted to set a password for the TDE wallet. Provide a strong password for security compliance. Set the password carefully, and ensure that this password is available to you at all times for database management operations. Failure to provide the TDE wallet password when prompted, will cause an error in accessing encrypted data.

- 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.
- If -cp parameter is provided as part of the command, the database is associated with the particular CPU pool.
- If -cp parameter is not provided as part of the command, and if the backup report has information about the associated CPU pool, then the command validates the CPU pool specified in the backup report. If the validation fails, then an error message is displayed.
- If the backup report does not have information about any associated CPU pool, then the database is created without being associated with any CPU pool.
- To restore a TDE-enabled database, the TDE wallet password must be provided.
- If source database is TDE enabled, then the target database which was restored will also have TDE enabled.
- Specify the TDE wallet location if the backup report does not have TDE wallet location or if the backup report is inaccessible or unavailable.
- To create a database with role as standby in an Oracle Data Guard configuration on Oracle Database Appliance, you do not need to copy the wallet of the primary database when using Oracle Key Vault keystore for TDE-enabled databases. The same wallet can be specified in the odacli irestore-database command.

Example 17-103 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 17-104 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 irestoredatabase with the backup report. Enter the SYS user password when prompted.

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

Example 17-105 Restoring a Database with TDE Wallet backup from a backup report

```
# odacli irestore-database -r backupreport.json -on oss1 -t
Enter SYS user password:
Retype SYS user password:
Enter TDE wallet password:
```

Example 17-106 Restoring a Database with TDE Wallet backup specified on the CLI

```
# odacli irestore-database -r backupreport.json -tl https://
swiftobjectstorage.us-ashburn-1.oraclecloud.com/v1/paas_test/tde_Backups/
test2-c/database/91276171/tdbacf2/tdewallet/ewallet_2020021714442745.p12 -on
oss2 -p -m
Enter SYS user password:
Retype SYS user password:
Enter TDE wallet password:
```

Example 17-107 Restoring to a standby database when Oracle Data Guard is configured

odacli irestore-database -r backup report.json -u dbUniqueName -ro STANDBY

Example 17-108 Recovering a Database that was associated with a CPU Pool

```
# odacli irestore-database -n irmendb3 -r dbcpupllong.json -on ostore -bp -dh
45156cc5-e768-4817-8b52-2a0a482be18f
Enter SYS user password:
Retype SYS user password:
Enter RMAN backup encryption password:
Do you want to provide another RMAN backup encryption password? [y/n]
(default 'n'): n
  "jobId" : "31af6cc8-5e04-459b-8017-271c55b8c99b",
  "status" : "Created",
  "message" : null,
  "reports" : [],
  "createTimestamp" : "August 10, 2024 11:20:08 AM UTC",
  "resourceList" : [ ],
  "description" : "Database service recovery with db name: irmendb3",
  "updatedTime" : "August 10, 2024 11:20:08 AM UTC"
}
```



Example 17-109 Recovering a Database that was associated with a CPU Pool

Restore an Oracle single-instance database okvdb without using the Oracle Key Vault server configuration object as follows:

```
odacli irestore-database -r /tmp/bkpreport.json -n okvdb8 -y SI -t -kt OKV -
ocp /tmp/okvclient.jar
Enter SYS and SYSTEM user password:
Retype SYS and SYSTEM user password:
Enter TDE wallet password:
Job details
_____
                 ID: dce7bde6-7fc4-48ec-891b-649525f1ce4f
          Description: Database service recovery with DB name: okvdb8
              Status: Success
             Created: August 28, 2024 2:50:46 PM CST
             Message:
Task Name
                                   Node Name
                                                         Start
Time
                             End Time
Status
    _____
-----
_____
                                 n1 August 28, 2024 2:51:09
Restore Database
PM CSTAugust 28, 2024 2:58:11PM CSTFailureRestore Databasen1August 28, 2024 2:51:10PM CSTAugust 28, 2024 2:58:10PM CSTFailureCheck if cluster ware is runningn1August 28, 2024 2:51:14
PM CST August 28, 2024 2:51:14 PM CST
                                            Success
                                           August 28, 2024 2:51:14
Check if cluster ware is running
                            n2
PM CST
             August 28, 2024 2:51:14 PM CST
                                            Success
                                           Success
August 28, 2024 2:51:14
Creating DbStorage for DbRestore n1
                                           Success
August 28, 2024 2:51:14
PM CST
             August 28, 2024 2:51:21 PM CST
Validating DiskSpace for DATA n1
PM CST
             August 28, 2024 2:51:15 PM CST
                                            Success
Setting up SSH equivalence
                          nl
                                           August 28, 2024 2:51:15
PM CST
             August 28, 2024 2:51:19 PM CST
                                             Success
Configuring user access to ACFS
                            n1
                                           August 28, 2024 2:51:20
PM CST
             August 28, 2024 2:51:20 PM CST
                                               Success
filesystems for
okvdb8st
Audit directory creation
                                  n1
                                             August 28, 2024 2:51:20
PM CST
        August 28, 2024 2:51:21 PM CST
                                             Success
                                             August 28, 2024 2:51:21
Audit directory creation
                                  n2
PM CST
             August 28, 2024 2:51:21 PM CST
                                                Success
Configure TDE for RestoreDb TaskFlow n1
                                            August 28, 2024 2:51:22
PM CST
             August 28, 2024 2:51:39 PM CST
                                            Success
Auxiliary Instance Creation
                                            August 28, 2024 2:51:24
                           n2
PM CST
             August 28, 2024 2:51:36 PM CST
                                            Success
TDE Wallet directory creation
                                           August 28, 2024 2:51:36
                            nl
PM CST
             August 28, 2024 2:51:36 PM CST
                                            Success
                                           August 28, 2024 2:51:36
Installing OKV Client Software
                             n2
PM CST
             August 28, 2024 2:51:37 PM CST
                                            Success
```

Auto login TDE Wallet creation n1 PM CST August 28, 2024 2:51:38 PM CST Password based TDE Wallet open n1 PM CST August 28, 2024 2:51:39 PM CST Install Object Store Swift module n2 PM CST August 28, 2024 2:52:16 PM CST Restoring Spfile From Casper n2 August 28, 2024 2:52:38 PM CST PM CST Customize Db Parameters n2 PM CST August 28, 2024 2:52:47 PM CST Create spfile for restore db n2 PM CST August 28, 2024 2:52:48 PM CST Restoring control file n2 PM CST August 28, 2024 2:53:11 PM CST Mounting db n2 August 28, 2024 2:53:35 PM CST PM CST Validating backup for RestoreDB n2 PM CST August 28, 2024 2:53:41 PM CST Restoring DB for migration n2 PM CST August 28, 2024 2:54:26 PM CST Change DBID and/or DBName n2 PM CST August 28, 2024 2:54:28 PM CST Register Database taskflow n1 August 28, 2024 2:57:08 PM CST PM CST Create SPFile in shared loc n2 PM CST August 28, 2024 2:54:37 PM CST Delete Local Spfile n2 PM CST August 28, 2024 2:54:37 PM CST Register DB with clusterware n2 August 28, 2024 2:55:23 PM CST PM CST Set SysPassword and Create PwFile n1 PM CST August 28, 2024 2:55:25 PM CST Enable block change tracking n2 August 28, 2024 2:55:28 PM CST PM CST Creating pfile n2 August 28, 2024 2:55:29 PM CST PM CST Updating db env n2 August 28, 2024 2:55:30 PM CST PM CST Enable DbSizing Template n2 PM CST August 28, 2024 2:56:20 PM CST Create ths entry n1 PM CST August 28, 2024 2:56:21 PM CST Create ths entry n2 August 28, 2024 2:56:22 PM CST PM CST Running datapatch n2 August 28, 2024 2:56:23 PM CST PM CST Set CPU pool n1 PM CST August 28, 2024 2:56:23 PM CST Reset Associated Networks for Database n2 PM CST August 28, 2024 2:57:13 PM CST Reset Associated Networks n1 PM CST August 28, 2024 2:57:14 PM CST Set log archive dest for Database n2 August 28, 2024 2:57:18 PM CST PM CST Setting Database parameter for OKV n1 August 28, 2024 2:58:05 PM CST PM CST

Augus		28, cces)2	4	2 :	: 5	1:	3	7
Augus	t		20)2	4	2 :	: 5	1:	3	8
Augus	t		20)2	4	2 :	: 5	1:	5	8
Augus	t		20)2	4	2 :	: 5	2:	1	6
Augus	t		20)2	4	2 :	: 5	2:	3	8
Augus	t		20)2	4	2 :	: 5	2:	4	7
Augus		28, cces)2	4	2 :	: 5	2:	4	8
Augus		28, cces)2	4	2 :	: 5	3:	1	1
Augus		28, cces)2	4	2 :	: 5	3:	3	5
Augus		28, cces)2	4	2 :	: 5	3:	4	1
Augus		28, cces)2	4	2 :	: 5	4:	2	7
Augus		28, cces)2	4	2 :	: 5	4:	3	1
Augus		28, cces)2	4	2 :	: 5	4:	3	1
Augus		28, cces)2	4	2 :	: 5	4:	3	7
Augus		28, cces)2	4	2 :	: 5	4:	3	7
Augus		28, cces)2	4	2 :	: 5	5:	2	3
Augus		28, cces)2	4	2 :	: 5	5:	2	6
	Su	cces	S							
Augus	Su	cces	S							
	Su	cces	S							
	Su	cces	S							
	Su	cces	S							
	Su	cces	S							
	Su	cces	S							
	Su	cces	S							
	Su	cces	S							
	Su	cces	s							
Augus		28, cces)2	4	2 :	: 5	7:	1	8

:07

:09

:09

Enable New Tab	lespace Encryp	tion		n2		August	28,	2024	2:58:
PM CST	August 28,	2024	2:58:08	ΡM	CST	Su	icces	SS	
Deleting OKV C	lient Software	Jar		n2		August	28,	2024	2:58:
PM CST	August 28,	2024	2:58:09	ΡM	CST	Su	icces	SS	
Copy Pwfile to	Shared Storag	e		n1		August	28,	2024	2:58:
PM CST	August 28,	2024	2:58:10	ΡM	CST	Su	icces	ss	

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 17-110 Displaying a List of Backup Configuration

Display a list of backup configurations.

odacli list-backupconfigs

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]

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 17-111 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 17-112 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

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli list-schedules [-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.

Usage Notes

The command lists all of the schedules in the system, including database backup schedules and some internal maintenance schedules.

Starting with Oracle Database Appliance release 19.16, DCS software provides a cron job for cleaning up SSH equivalence that was set up by DCS. The SSH cleaner job runs every 30 minutes. If the SSH cleaner job finds that there are currently no DCS jobs which use SSH, then it cleans up SSH keys, and removes passwordless SSH equivalence across the Oracle Database Appliance nodes on high-availability systems. It also deletes any SSH keys (id_rsa and id_rsa.pub) present in the /root/.ssh and /home/operating_system_user/.ssh directories. The SSH cleaner job ensures that DCS jobs are thread safe because jobs (threads) do not interleave while operating on shared resources, such as SSH. To retain the SSH equivalence, or the SSH keys, you can disable the SSH cleaner job job using the odacli modify-schedule command.

Example 17-113 Display a List of Scheduled Database Backups

Display a list of all scheduled database backups and details.

odacli list-schedules ID Name Description CronExpression Disabled _____ ____ _____ _____ 072dceea-9f09-4c1c-a155-6aa4e3d64669 AgentState metastore cleanup internal agentstateentry metastore maintenance 0 0 0 1/1 * ? false 76e530bf-50db-4598-8b9b-6aa89e58b7d7 bom maintenance bom 0 0 1 ? * SUN * reports generation false 7b2a8981-fb88-480f-8280-90d463fcbff8 feature tracking job Feature tracking job 0 0 20 ? * WED * false af5bc954-c867-4ba4-b587-c9d527cbe07b Log files Cleanup Auto 0 0 3 1/1 * ? * log file purge bases on policy false c4b14c87-e975-43ba-adf3-cb54c72c9cf0 Rebalance Monitoring Rebalance poll and Power modification 0 0/5 * 1/1 * ? true d21ccf0d-3341-4030-b204-f3eed892e443 SSHCleanerJob SSH cleaner job to clean up stale SSH keys 0 0/30 * 1/1 * ? * false



odacli list-tdebackupreports

Use the odacli list-tdebackupreports command to view TDE Wallet backup reports.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-tdebackupreports [-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 TDE backup report saves the latest TDE Wallet backup location of a TDE-enabled database, when a database backup or a TDE Wallet backup is taken for that database.

Example 17-114 Viewing the TDE backup report

```
# odacli list-tdebackupreports
DbResID
                                    OraDbId
BackupLocation
   _____
                _____
                                       _____
 -----
49772c1b-e4e4-401b-a5f0-16c7992d6766
                                   1080131389
                                                       https://
swiftobjectstorage.us-ashburn-1.oraclecloud.com/v1/paastest/
TestLtBackupFailur/test2-c/database/1080131389/tddb3/tdewallet/
ewallet 2020053120350968.p12
f1043fa4-b1ee-461b-84d6-8541e4f6f053
                                                        /u01/NFS TDE/
                                    1052183392
orabackups/test2-c/database/1052183392/tddb4/tdewallet/
ewallet 2020060102471941.p12
944a5613-2a1f-41fb-b7b1-91d35e3e8530
                                                       /u03/app/oracle/
                                    1002460890
fast recovery area/TDDB5/tdewallet/ewallet 2020060103125231.
```

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 [-i] [-br] [-h] [-j] [-r] [-t] [-p] [-s] [-n] [-
tp] [-tl] [-tz] [-cp]
```

Parameters

Parameter	Description
backupReport, -br{Regular-L0 Regular-L1 Longterm}	(Optional) JSON input for a backup report.
name, -n	Defines the database name.
id, -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.
tde-backup-location,-tl	(Optional) Specifies the backup location for TDE wallet. If not specified, the latest known TDE backup location is used.
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.
cpupool,-cp	(Optional) Specifies the CPU pool name.
timeZone,-tz	(Optional) Specifies the recovery time zone, in a format similar to {area}/{city} such as america/los_angeles. This option is required when the recovery type is a point in time recovery (PITR).

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 non-TDE database 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.

 If -cp parameter is provided as part of the command, recovered database is associated with the particular CPU pool.



- If -cp parameter is not provided as part of the command, and if the backup report has information about the associated CPU pool, then the recovered database is also associated with the same CPU pool.
- If the original database does not have any associated CPU pool, then the recovered database is also not associated with any CPU pool.

Example 17-115 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 17-116 Recovering a Database to the latest

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

Example 17-117 Recovering a Database to an SCN

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

Example 17-118 Restoring a TDE wallet when performing database recovery is not supported for TDE-enabled databases with TDE keys stored in Oracle Key Vault

The following error is displayed:

```
# odacli recover-database -n db15 -tl /nfs_backup/ewallet.p12 -t latest
DCS-10045:Validation error encountered: Usage of TDE wallet related
parameters is not allowed for a TDE database with OKV keystore type.
```

Example 17-119 Restoring the TDE Wallet while performing database recovery, if TDE wallets are lost

```
# odacli recover-database -n db1 -t latest -tp -tl /u01/NFS_TDE/testbackups/
test2-c/database/91276171/tdbacf2/tdewallet/ewallet_2020021714442745.p12
Enter TDE wallet password:
```

Example 17-120 Recovering a Database that was associated with a CPU Pool

```
# odacli recover-database -t latest -n irmendb4 -cp testcpupool3
{
    "jobId" : "b09f2d3f-2b01-4dbb-9797-122ba786e0e4",
    "status" : "Created",
    "message" : null,
    "reports" : [],
    "createTimestamp" : "May 10, 2023 14:56:57 PM UTC",
    "resourceList" : [],
    "description" : "Create recovery-latest for db : irmendb4",
    "updatedTime" : "May 10, 2023 14:56:57 PM UTC"
}
```



odacli restore-archivelog

Use the odacli restore-archivelog command to restore archivelog from one SCN to another SCN, or from one timestamp to another timestamp.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli restore-archivelog -n database_name -i DB_ID -fs from_scn -ts to_scn -ft from timestamp -tt to timestamp [-h] [-j]
```

Parameters

Parameter	Description
name, -n	Specifies the Database Name.
id, -i	(Optional) Specifies the Database resource ID.
from-scn, -fs	(Optional) Specifies the start SCN of archivelog restore.
from-timestamp,-ft	(Optional) Specifies the start time of archivelog restore (in the format mm/dd/yyyy hh:mi:ss).
to-scn, -ts	(Optional) Specifies the end SCN of archivelog restore.
to-timestamp, -tt	(Optional) Specifies the end time of archivelog restore (in the format mm/dd/yyyy hh:mi:ss).
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

Usage Notes

You can restore archivelog for all supported database versions and database types for an Oracle Database Appliance release.

Example 17-121 Restoring archivelog

```
# odacli restore-archivelog -fs from_scn -ts to_scn
# odacli restore-archivelog -ft from timestamp -tt to timestamp
```

odacli restore-tdewallet

Use the odacli restore-tdewallet command to restore TDE wallet from the backup location.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli restore-tdewallet [-i] [-n] [-tl] [-h] [-j]



Parameters

Parameter	Description
name,-n	Specifies the Database Name.
id, -i	Specifies the Database ID.
tde-backup-location,-tl	(Optional) Specifies the backup location for TDE wallet.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.

Usage Notes

Caution:

When you create a database with Transparent Data Encryption (TDE) enabled, you are prompted to set a password for the TDE wallet. Provide a strong password for security compliance. Set the password carefully, and ensure that this password is available to you at all times for database management operations. Failure to provide the TDE wallet password when prompted, will cause an error in accessing encrypted data.

- This command prompts for TDE wallet password. When prompted, enter the password of the TDE wallet. This password is the one you created or last updated using the modifydatabase command.
- TDE Wallet backup location is optional. If no TDE Wallet backup location is provided, then the latest TDE Wallet backup of the database known to the system is used for restoring the TDE Wallet.
- This command is not supported for the TDE-enabled databases with TDE keys stored in Oracle Key Vault. The following error is displayed:

```
# odacli restore-tdewallet -n db15
Enter TDE wallet password:
DCS-10144:Restore TDE wallet operation is not supported for TDE databases
with OKV keystore type.
```

Example 17-122 Restoring TDE wallet for a database from a backup location

```
# odacli restore-tdewallet -n testdb -tl /u01/NFS_TDE/testbackups/test2-c/
database/91276171/tdbacf2/tdewallet/ewallet_2020021714442745.p12
Enter TDE wallet password:
```

odacli modify-backupconfig

Use the command odacli modify-backupconfig to update a backup configuration.

File Path

```
/opt/oracle/dcs/bin/odacli
```



Syntax

```
odacli modify-backupconfig [-i] [-n] [-ca] -d backup destination{Disk|
ObjectStore|None} [-c] [-cr][-no-cr] [-dc] [-ec] [-o][-w] [-h] [-j]
```

Parameters

Parameter	Description
id, -i	Defines the Backup Config ID.
name, -n	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.
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.
disable-compression, -dc	(Optional) Disables compression for the backups.
enable-compression, -ec	(Optional) Enables compression for the backups.
objectstoreswiftname,-on	(Optional) Describes the Swift Object Store credential name.
help,-h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

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 17-123 Revise a Backup Configuration for Disk

Create a backup configuration named production that backs up to disk with a 14 day recovery window.

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

odacli modify-objectstoreswift

Use the command odacli modify-objectstoreswift to change the credentials for the ObjectStore account.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
# odacli modify-objectstoreswift [-n name] [-i id] [-p swiftpassword] [-u
Object Store user name] [-h] [-j]
```

Parameters

Parameter	Description
id, -i	Defines the Object Store Swift identifier (ID).
name, -n	Defines the Object Store Swift name.
swiftpassword,-p	(Optional) Defines the Object Store Swift password.
username, -u	(Optional) Defines the Object Store Swift user name.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.

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 modify-backupconfig with objectstore as the destination. The credentials are not validated against endpoint URL and tenancy.

Example 17-124 Changing the Oracle Casper ObjectStore Password

odacli modify-objectstoreswift -i Object Store Swift id -p



Example 17-125 Changing the Oracle ObjectStore User Name

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

odacli modify-schedule

Use the command odacli modify-schedule to update the schedule for a database, or to disable the database backup schedule.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
# odacli modify-schedule [-i] [-x cronExpression] [-t description] [-d] [-
e] [-h] [-j]
```

Parameters

Parameter	Description
scheduleid, -i	Defines the schedule with an identifier (ID).
cronExpression,-x	(Optional) Specifies the cron expression. Use 5 fields or 6 fields cron expression only.
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.

Usage Notes

Backups incur overhead on the system. When possible, do not schedule backups to run when users are trying to access data.

Starting with Oracle Database Appliance release 19.20, the DCS agent supports only 5 fields cron expressions or 6 fields cron expressions by default, in job schedules. When you patch your deployment from Oracle Database Appliance release 19.19 or earlier, the DCS agent automatically converts all 7 fields cron expression from existing job schedules into an equivalent 6 fields cron expression.

Example 17-126 Modify the Time the Backup Occurs

Edit the cron expression to change the time of scheduled backups for a given schedule ID.

```
# odacli modify-schedule -i scheduleid -x "0 0 13 1/1 * *" -e
```

Example 17-127 Disable Scheduled Database Backups

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

odacli Oracle Data Guard 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. Oracle Data Guard operations such as switchover, failover, and reinstate can be run in parallel for different Oracle Data Guard configurations.

• 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. Oracle Data Guard operations such as switchover, failover, and reinstate can be run in parallel for different Oracle Data Guard configurations.

odacli register-dataguard

Use the command odacli register-dataguard to register Oracle Data Guard with Oracle Database Appliance.

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. Oracle Data Guard operations such as switchover, failover, and reinstate can be run in parallel for different Oracle Data Guard configurations.

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] [-du]

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.
db-user, -du	(Optional) Specifies the database user. The default is SYS.

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 17-128 Configuring Oracle Data Guard interactively on the command line

Example with one standby configuration:

```
# odacli configure-dataguard
# /opt/oracle/dcs/bin/odacli configure-dataguard
Number of standby databases (enter 1 or 2 | default: 1):
Standby 1 site address: phxdbfzp04.dev3farm3phx.databasede3phx
BUI username for Standby site host1. If Multi-user Access/Multi-user Access
Passwordless is not enabled on Standby site
phxdbfzp04.dev3farm3phx.databasede3phx, enter 'oda-admin'; otherwise, enter
the name of the user who has irestored the Standby database (default: oda-
admin): oda-admin
BUI password for Standby site host2:
Password for root user on Standby site host2:
******
Data Guard configuration name: tdb dg
Database name for Data Guard configuration: tdb
Primary database SYS password:
Protection mode [MAX PROTECTION, MAX PERFORMANCE, MAX AVAILABILITY] (default:
MAX PERFORMANCE):
Enable Active Data Guard (Y/N, default:N):
*****
******
```

Data Guard default settings for standby database - tdbstndby



```
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N): N
*******
**********
Enter Primary database RMAN backup encryption password if any:
Do you want to provide another Primary database RMAN backup encryption
password if any? [y/n] (default 'n'):
Standby database's SYS password will be set to Primary database's after Data
Guard configuration. Ignore warning and proceed with Data Guard
configuration? (Y/N, default:N): Y
{
  "jobId" : "e02cc0b3-bce3-4d6c-a1f5-5b121bb7f66a",
  "status" : "Created",
  "message" : "",
  "reports" : [],
  "createTimestamp" : "January 23, 2025 03:12:44 AM UTC",
  "resourceList" : [ ],
  "description" : "DG Config service for DB tdb",
  "updatedTime" : "January 23, 2025 03:12:44 AM UTC",
  "jobType" : null,
  "cpsMetadata" : null
}
[root@host1 work]# /opt/oracle/dcs/bin/odacli describe-job -i e02cc0b3-
bce3-4d6c-a1f5-5b121bb7f66a
Job details
                   ____
                  ID: e02cc0b3-bce3-4d6c-a1f5-5b121bb7f66a
          Description: DG Config service for DB tdb
              Status: Success
              Created: January 23, 2025 03:12:44 UTC
              Message:
Task Name
                                    Start
Time
                              End Time
Status
_____
     _____ ____
Validate configure primary request January 23, 2025 03:13:10
            January 23, 2025 03:13:21 UTC
UTC
                                               Success
(Primary site) (Host:
host1/Job
ID:
901389f5-0cad-4ee6-91be-3f77b85652af)
Validate configure standby request January 23, 2025 03:13:21
UTC
             January 23, 2025 03:13:29 UTC
                                                Success
(Standby site)
```

```
(Host:
host2/Job
ID:
856d86e4-dd51-41a7-9050-
b0c39ae771f9)
Uploading Primary DB Password File January 23, 2025 03:13:29
UTC
           January 23, 2025 03:13:52 UTC
                                                 Success
(Standby
site)
Configure primary database (Primary January 23, 2025 03:13:52
    January 23, 2025 03:15:29 UTC
UTC
                                                 Success
site) (Host: host1/Job
ID:
5dd46e86-
e07f-423f-9ebf-2515b4ac17d5)
Configure standby request (Standby January 23, 2025 03:15:29
UTC January 23, 2025 03:17:30 UTC
                                                Success
site)
(Host:
host2/Job
ID:
2ab511a2-15c0-4371-
bf30-9b7e27ff5288)
Create archive log restore (Primary January 23, 2025 03:17:30
            January 23, 2025 03:17:52 UTC
UTC
                                                Success
site) (Host: host1/Job
ID:
96766874-6537-4972-81a9-971440e2acfb)
Configure and enable Data Guard January 23, 2025 03:17:53
             January 23, 2025 03:19:19 UTC
                                                 Success
UTC
(Primary site) (Host:
host1/Job
ID:
7ad65ffa-ea06-479d-bb21-
e0b81fb8c743)
Enable Flashback (Standby site) (Host: January 23, 2025 03:19:19
UTC January 23, 2025 03:19:38 UTC Success
host2/Job
ID:
a1768703-4dd4-4f1f-
b9a3-9fe0f99615d5)
```



```
Re-enable Data Guard (Primary site) January 23, 2025 03:19:38
             January 23, 2025 03:19:44 UTC
UTC
                                                   Success
(Host: host1/Job
тD・
3f6dd276-63e3-4804-a179-
e10052386206)
Create Data Guard status (Primary January 23, 2025 03:19:44
             January 23, 2025 03:19:49 UTC
UTC
                                                  Success
site) (Host: host1/Job
ID:
8a3eb946-3501-4618-9d4a-
ad8a6d298cc8)
Create Data Guard status (Standby January 23, 2025 03:19:49
            January 23, 2025 03:19:57 UTC
UTC
                                                   Success
site)
(Host:
host2/Job
ID:
d9d65942-6284-40d5-a991-b1d21edae96f)
```

Example 17-129 Configuring Oracle Data Guard with two standby configurations

Example with two standby databases configuration:

```
# odacli configure-dataguard
Number of standby databases (enter 1 or 2 | default: 1): 2
Standby 1 site address: standby1
BUI username for Standby site standby1. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby1, enter
'oda-admin'; otherwise, enter the name of the user who has irestored the
Standby
database (default: oda-admin):
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Standby 2 site address: standby2
BUI username for Standby site standby2. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby2, enter
'oda-admin'; otherwise, enter the name of the user who has irestored the
Standby
database (default: oda-admin):
BUI password for Standby site standby2:
Password for root user on Standby site standby2:
*****
******
Data Guard configuration name: dgbb
Database name for Data Guard configuration: bb
Primary database SYS password:
Protection mode [MAX_PROTECTION, MAX_PERFORMANCE, MAX_AVAILABILITY] (default:
```



```
MAX PERFORMANCE):
Enable Active Data Guard (Y/N, default:N):
******
Data Guard default settings for standby database - bb1
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N):
Data Guard default settings for standby database - bb2
Primary site network for Data Guard configuration: Public-network
Standby site network for Data Guard configuration: Public-network
Primary database listener port (TCP): 1521
Standby database listener port (TCP): 1521
Transport type: ASYNC
Do you want to edit this Data Guard configuration? (Y/N, default:N):
Warning: in compliance with Oracle MAA best practices. DbType (RAC) of Primary
database bb is different from DbType (SI) of Standby database. Ignore warning
and proceed with Data Guard configuration? (Y/N, default:N): y
Warning: in compliance with Oracle MAA best practices. DbType (RAC) of Primary
database bb is different from DbType (SI) of Standby database. Ignore warning
and proceed with Data Guard configuration? (Y/N, default:N): y
*****
Enter Primary database RMAN backup encryption password if any:
Do you want to provide another Primary database RMAN backup encryption
password
if any? [y/n] (default 'n'):
Standby database's SYS password will be set to Primary database's after Data
Guard configuration. Ignore warning and proceed with Data Guard configuration?
(Y/N, default:N): y
{
  "jobId" : "f1df87d7-221c-4dc3-a15f-fa35d91560f5",
  "status" : "Created",
  "message" : "",
  "reports" : [ ],
  "createTimestamp" : "January 17, 2025 22:57:55 PM UTC",
  "resourceList" : [ ],
  "description" : "DG Config service for DB bb",
  "updatedTime" : "January 17, 2025 22:57:55 PM UTC",
  "jobType" : null,
  "cpsMetadata" : null
}
[root@host1 ~]# odacli describe-job -i
"f1df87d7-221c-4dc3-a15f-fa35d91560f5"
Job details
_____
                  _____
                    ID: f1df87d7-221c-4dc3-a15f-fa35d91560f5
           Description: DG Config service for DB bb
                Status: Success
```

Created: January 17, 2025 22:57:55 UTC Message: Task Name Node Name Start Time End Time Status _____ _____ _____ _ Validate configure primary request host1 January 17,2025 22:58:38 UTC January 17, 2025 22:58:44 UTC Success (Primary site) (Host:host1/Job ID: eb8bbb43-159c-48e0-8dda-9e2bbd280669) Validate configure standby requesthost1January 17,202522:58:44 UTCJanuary 17, 202522:58:52 UTCSuccess (Standby site) (Host: standby1/Job ID: 86345f35-500c-4ba8-8ff9f97c201ad3c7) Uploading Primary DB Password Filehost1January 17,202522:58:52 UTCJanuary 17, 202522:59:07 UTCSuccess (Standby site) Configure primary database (Primary host1 January 17,2025 22:59:07 UTC January 17, 2025 22:59:58 UTC Success site) (Host: host1/Job ID: 23ee7263-a59e-40bdbbec-4c17a5d4ba99) Configure standby request (Standby host1 January 17,2025 22:59:58 UTC January 17, 2025 23:02:00 UTC Success site) (Host: standby1/Job ID: af543839-85ba-4e83-89d3af161d528256) Create archive log restore (Primary host1 January 17,2025 23:02:00 UTC January 17, 2025 23:02:37 UTC Success site) (Host: host1/Job ID: b2940217-cec6-4b22-92d2f4ec8f26b8b8) Configure and enable Data Guard host1 January 17,2025 23:02:37 UTC January 17, 2025 23:04:19 UTC Success (Primary site) (Host: host1/Job ID: 7882e1e5-0d71-48df-bd86-



e79ee6b57a21) Enable Flashback (Standby site) (Host: host1 January 17,2025 23:04:19 UTC January 17, 2025 23:04:37 UTC Success standby1/Job ID: c2ef962cf429-4e97-8bc3-1355cd7d0ca8) Re-enable Data Guard (Primary site) host1 January 17,2025 23:04:37 UTC January 17, 2025 23:04:43 UTC Success (Host: host1/Job ID: fb4a7055-0049-4d44a726-0871ed54ca07) Create Data Guard status (Primary host1 January 17,2025 23:04:43 UTC January 17, 2025 23:04:54 UTC Success site) (Host: host1/Job ID: 5aca5c16-632f-488baade-1c677030c81d) Create Data Guard status (Standby host1 January 17,2025 23:04:54 UTC January 17, 2025 23:05:07 UTC Success site) (Host: standby1/Job ID: 5f0c5460-4c38-4aed-8a5be70c0ca70df8) Validate configure primary requesthost1January 17,202523:05:07 UTCJanuary 17, 202523:05:13 UTCSuccess (Primary site) (Host:host1/Job ID: 5ac64b32-5da6-48dfb8cc-020853363695) Validate configure standby requesthost1January 17,202523:05:13 UTCJanuary 17, 202523:05:21 UTCSuccess (Standby site) (Host: standby2/Job TD. 81aa6900-4460-408e-9ab2fdcd92c8b7bf) Uploading Primary DB Password File host1 January 17,2025 23:05:21 UTC January 17, 2025 23:05:32 UTC Success (Standby site) Configure primary database (Primary host1 January 17,2025 23:05:32 UTC January 17, 2025 23:06:14 UTC Success site) (Host: host1/Job ID: c78a8072-8023-4278bd94-3dd1ef97e066) Configure standby request (Standby host1 January 17,2025 23:06:14 UTC January 17, 2025 23:07:43 UTC Success site) (Host: standby2/Job ID: 46274a35-bb06-43a9-



a8a5-66dc4d163463) Create archive log restore (Primary host1 January 17,2025 23:07:43 UTC January 17, 2025 23:08:15 UTC Success site) (Host: host1/Job ID: 2b20aaa2-fcb7-4bc5b501-27ad9d45f34b) Configure standby TNS entry (New host1 January 17,2025 23:08:15 UTC January 17, 2025 23:08:24 UTC Success standby site) (Host: standby2/Job ID: 7e32db8c-999c-44fabdf5-3aed77c9590c) Configure standby TNS entry (Existing host1 January 17,2025 23:08:24 UTC January 17, 2025 23:08:28 UTC Success standby site) (Host: standby1/Job ID: 6a44539e-d5b9-4c45ad2c-7bff8c871e37) Add standby database (Primary site) host1 January 17,2025 23:08:28 UTC January 17, 2025 23:09:50 UTC Success (Host: host1/Job ID: 1d7c6c93-bd85-496abb7d-67ae7b224d58) Enable Flashback (Standby site) (Host: host1 January 17,2025 23:09:50 UTC January 17, 2025 23:10:03 UTC Success standby2/Job ID: 4a6b8623efc0-4016-80be-305b0ed56363) Re-enable Data Guard (Primary site) host1 January 17,2025 23:10:03 UTC January 17, 2025 23:10:09 UTC Success (Host: host1/Job ID: 2afea759-752a-42a4-a077bd85d4b687a3) Update Data Guard status (Primary host1 January 17,2025 23:10:09 UTC January 17, 2025 23:10:35 UTC Success site) (Host: host1/Job ID: 11d93988-ea4d-4e37af30-763c2522693d) Create Data Guard status (New standby host1 January 17,2025 23:10:35 UTC January 17, 2025 23:10:53 UTC Success site) (Host: standby2/Job ID: aa5b286f-30f1-48d1-8c2d-2490d15ce408) Update Data Guard status (Existing host1 January 17,2025 23:10:53 UTC January 17, 2025 23:11:06 UTC Success



```
standby site) (Host: standby1/JobID:
7d8ffa16-6785-468a-bff9-baf8e13b38ec)
```

Example 17-130 Configuring Oracle Data Guard using JSON file

```
# /opt/oracle/dcs/bin/odacli configure-dataguard --requestjson /mnt/host1/
nfsbackup/dgcmd.json
Number of standby databases (enter 1 or 2 | default: 1):
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Primary database SYS password:
*****
Standby database's SYS password will be set to Primary database's after Data
Guard configuration. Ignore warning and proceed with Data Guard
configuration? (Y/N, default:N): Y
{
  "jobId" : "73adf616-3b6c-452f-bf93-e95abc675cc5",
 "status" : "Created",
 "message" : "",
 "reports" : [ ],
  "createTimestamp" : "January 23, 2025 05:08:50 AM UTC",
 "resourceList" : [ ],
 "description" : "DG Config service for DB tdb",
 "updatedTime" : "January 23, 2025 05:08:50 AM UTC",
 "jobType" : null,
  "cpsMetadata" : null
}
[root@host1 work]# /opt/oracle/dcs/bin/odacli describe-job -i
73adf616-3b6c-452f-bf93-e95abc675cc5
Job details
_____
                 ID: 73adf616-3b6c-452f-bf93-e95abc675cc5
          Description: DG Config service for DB tdb
              Status: Success
             Created: January 23, 2025 05:08:50 UTC
             Message:
Task Name
                                  Start
Time
                            End Time
Status
_____
   _____
----- -----
Validate configure primary request
                                 January 23, 2025 05:09:19
            January 23, 2025 05:09:30 UTC
UTC
                                             Success
(Primary site) (Host:
host1/Job
ID:
7bd1a3d5-2f8c-4d9e-
a381-61d04f01b514)
```



```
Validate configure standby request January 23, 2025 05:09:30
            January 23, 2025 05:09:43 UTC
UTC
                                                Success
(Standby site)
(Host:
host2/Job
ID:
18731cf2-bf42-4a3a-
b187-17e93cedbb7c)
Uploading Primary DB Password File January 23, 2025 05:09:43
    January 23, 2025 05:10:03 UTC Success
UTC
(Standby
site)
Configure primary database (Primary January 23, 2025 05:10:03
UTC January 23, 2025 05:11:35 UTC
                                                Success
site) (Host: host1/Job
ID:
d3030fe0-8885-42d6-a57f-
ae38baef54af)
Configure standby request (Standby January 23, 2025 05:11:35
            January 23, 2025 05:13:35 UTC
UTC
                                                Success
site)
(Host:
host2/Job
ID:
763881f4-ea4d-43bc-8e6a-
c7f78765c0ff)
Create archive log restore (Primary January 23, 2025 05:13:35
UTC January 23, 2025 05:13:54 UTC
                                                Success
site) (Host: host1/Job
ID:
5dfbe653-10c8-420f-
bada-4c0c8cb6a9e1)
Configure and enable Data Guard January 23, 2025 05:13:54
UTC
    January 23, 2025 05:15:26 UTC
                                               Success
(Primary site) (Host:
host1/Job
ID:
137d29a2-9d2c-4ddc-85c8-3a729847e188)
Enable Flashback (Standby site) (Host: January 23, 2025 05:15:26
UTC
         January 23, 2025 05:15:44 UTC
                                                Success
host2/Job
```



```
ID:
70306983-40a2-4039-98cb-57ba5e11e9a5)
Re-enable Data Guard (Primary site) January 23, 2025 05:15:44
              January 23, 2025 05:15:50 UTC
UTC
                                                     Success
(Host: host1/Job
ID:
4a5fb2aa-1b0b-45c8-
b2f3-95103c9f1f00)
Create Data Guard status (Primary January 23, 2025 05:15:50
              January 23, 2025 05:15:56 UTC
UTC
                                                      Success
site) (Host: host1/Job
тD・
6848b9c1-356f-43ff-
b6e0-5e9b1b01fc53)
Create Data Guard status (Standby
                                       January 23, 2025 05:15:56
UTC
              January 23, 2025 05:16:09 UTC
                                                     Success
site)
(Host:
host2/Job
ID:
3109148f-9ef8-4914-ab43-adab4851e126)
```

Example 17-131 Sample JSON for configuring Oracle Data Guard with two standby databases

To configure two standby databases using JSON file, you must specify two replicationGroups sections, where sourceEndpoints corresponds to the information about the primary database and targetEndPoints in each replicationGroups section corresponds to each standby database. For example:

```
{
  "name": "dqname",
  "protectionMode": "MAX PERFORMANCE",
  "databaseName": "vmdb1",
  "enableActiveDg": false,
  "databaseName": "tdb", ==> newly added field
  "standbyEndpoints": [ ==> newly added field
        {
            "name": "endpoint test",
            "dcsUserName": "oda-admin"
        }
    1
  "replicationGroups": [
    {
      "sourceEndPoints": [
        {
          "databaseUniqueName": "vmdb1",
          "ipAddress": "xx.xx.xx.xx",
```



```
"hostName": "host name",
        "listenerPort": 1521
      }
    ],
    "targetEndPoints": [
     {
        "databaseUniqueName": "bvmdb1",
        "ipAddress": "xx.xx.xx",
        "hostName": "host_name,
        "listenerPort": 1521
      }
    ],
    "transportType": "ASYNC"
  },
  {
    "sourceEndPoints": [
     {
        "databaseUniqueName": "vmdb1",
        "ipAddress": "xx.xx.xx.xx",
        "hostName": "host name",
        "listenerPort": 1521
      }
    ],
    "targetEndPoints": [
      {
        "databaseUniqueName": "avmdb1",
        "ipAddress": "xx.xx.xx.xx",
        "hostName": "host name",
        "listenerPort": 1521
      }
    ],
    "transportType": "ASYNC"
  }
]
```

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 [-f]

Parameters

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



Parameter	Description			
json, -j	(Optional) Displays JSON output. The default is false.			
id, -i	Specifies the Oracle Data Guard Configuration ID.			
force, -f	Forces the deconfiguration of Oracle Data Guard.			

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 17-132 Deconfiguring Oracle Data Guard with one standby database

```
# /opt/oracle/dcs/bin/odacli deconfigure-dataguard --id "ee22f382-b04e-4658-
a6c7-ab00fc7e3270"
Number of standby databases (enter 1 or 2 | default: 1):
Standby 1 site address: standby1
BUI username for Standby site standby1. If Multi-user Access/Multi-user
Access Passwordless is not enabled on Standby site standby1, enter 'oda-
admin'; otherwise, enter the name of the user who has irestored the Standby
database (default: oda-admin): oda-admin
BUI password for Standby site standby1:
Password for root user on Standby site standby1:
Standby database will be deleted after Data Guard configuration is removed.
Ignore warning and proceed with Data Guard deconfiguration? (Y/N): Y
{
  "jobId" : "0613c649-3da6-463a-8359-2f6d7d17399b",
  "status" : "Created",
  "message" : "",
  "reports" : [ ],
  "createTimestamp" : "January 23, 2025 03:42:41 AM UTC",
  "resourceList" : [ ],
  "description" : "DG Deconfig service",
  "updatedTime" : "January 23, 2025 03:42:41 AM UTC",
  "jobType" : null,
  "cpsMetadata" : null
}
[root@n1 oda]# /opt/oracle/dcs/bin/odacli describe-job -i
0613c649-3da6-463a-8359-2f6d7d17399b
Job details
_____
                     _____
                    ID: 0613c649-3da6-463a-8359-2f6d7d17399b
           Description: DG Deconfig service
                Status: Success
               Created: January 23, 2025 03:42:41 UTC
               Message:
Task Name
                                        Start
Time
                                  End Time
Status
```

```
_____
 _____
De-configure Dataguard (Primary site) January 23, 2025 03:42:44
             January 23, 2025 03:44:22 UTC
UTC
                                               Success
(Host: phxdbfzp22/Job
ID:
93758e42-2cf4-4aa1-949e-
b6018c1c35d7)
Delete Dataguard Status (Primary site) January 23, 2025 03:44:22
             January 23, 2025 03:44:28 UTC
UTC
                                                Success
(Host: phxdbfzp22/Job
ID:
e090af71-9c6d-4d14-8e16-3c64c4aa7f14)
Delete Dataquard Status (Standby site) January 23, 2025 03:44:28
UTC
            January 23, 2025 03:44:36 UTC
                                                Success
(Host:
standby1
/Job
ID:
a5bf022a-
clca-4cla-8747-4ff6a0e938c0)
Delete Standby Database (Standby site) January 23, 2025 03:44:36
UTC
            January 23, 2025 03:46:07 UTC
                                                Success
(Host:
standby1
/Job
ID:
f93b1f26-69d9-4690-84f9-4c0c9947423a)
```

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 -i [-h] [-j] [-s]

Parameters

Parameter	Description			
id, -i	(Mandatory) Specifies the Oracle Data Guard Status ID.			
synchronous, -s	(Optional) Obtains the latest Oracle Data Guard status synchronously.			
help,-h	(Optional) Displays help for using the command.			
json,-j	(Optional) Displays JSON output. The default is false.			

Usage Notes

Example 17-133 Viewing Oracle Data Guard configuration status

```
# odacli describe-dataguardstatus -i 1b13fddf-1648-44e9-b928-7aa6b36b783f -j
{
  "id" : "1b13fddf-1648-44e9-b928-7aa6b36b783f",
  "name" : "dgname",
  "databaseId" : "216697dd-c590-4807-8e15-98afc8624fa4",
  "protectionMode" : "MAX PROTECTION",
  "role" : "STANDBY",
  "replicationGroups" : [ {
    "sourceEndPoints" : [ {
      "endpointType" : "PRIMARY",
      "databaseUniqueName" : "ctest",
      "ipAddress" : "xx.xx.xx.xx",
      "hostName" : "n1",
      "listenerPort" : 1521,
      "serviceName" : "serice name",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
        "status" : "ENABLED"
     }
    }],
    "targetEndPoints" : [ {
     "endpointType" : "STANDBY",
      "databaseUniqueName" : "ptest",
      "ipAddress" : "xx.xx.xx",
      "hostName" : "n2",
      "listenerPort" : 1521,
      "serviceName" : "pservice name",
      "sysPassword" : null,
      "openMode" : "READ ONLY WITH APPLY",
      "state" : {
        "status" : "ENABLED"
      }
    } ],
    "transportType" : "SYNC",
    "applyLag" : "0 seconds",
    "transportLag" : "0 seconds",
    "approximateRoleTransitionTime" : "30 seconds",
```



```
"applyRate" : "3.00 KByte/s"
  }, {
    "sourceEndPoints" : [ {
      "endpointType" : "PRIMARY",
      "databaseUniqueName" : "ctest",
      "ipAddress" : "xx.xx.xx.xx",
      "hostName" : "n1",
      "listenerPort" : 1521,
      "serviceName" : "servic nae",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
        "status" : "ENABLED"
      }
    }],
    "targetEndPoints" : [ {
     "endpointType" : "STANDBY",
      "databaseUniqueName" : "dtest",
      "ipAddress" : "xx.xx.xx.xx",
      "hostName" : "host name",
      "listenerPort" : 1521,
      "serviceName" : "service name",
      "sysPassword" : null,
      "openMode" : null,
      "state" : {
        "status" : "ENABLED"
      1
    }],
    "transportType" : "ASYNC",
    "applyLag" : "0 seconds",
    "transportLag" : "0 seconds",
    "approximateRoleTransitionTime" : "30 seconds",
    "applyRate" : "15.00 KByte/s"
  }],
  "observers" : [ ],
  "createTime" : "November 22, 2024 23:47:13 CET",
  "state" : {
    "status" : "CONFIGURED"
 },
  "updatedTime" : "November 23, 2024 00:12:24 CET"
}
```

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. Oracle Data Guard operations such as switchover, failover, and reinstate can be run in parallel for different Oracle Data Guard configurations.

File Path

```
/opt/oracle/dcs/bin/odacli
```



Syntax

odacli failover-dataguard [-h] [-j] [-i] [-u] [-du]

Parameters

Parameter	Description				
help, -h	(Optional) Displays help for using the command.				
json,-j	(Optional) Displays JSON output. The default is false.				
id,-i	Specifies the Oracle Data Guard Status ID.				
databaseUniqueName,-u	Specifies the unique name of the database to failover to.				
db-user, -du	(Optional) Specifies the database user. The default is SYS.				

Usage Notes

After performing the failover, view the status with the odacli list-dataguardstatus command.

Example 17-134 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 [-s] [-h] [-j]

Parameters

Parameter	Description		
synchronous, -s	(Optional) Obtains the latest Oracle Data Guard status synchronously.		
help, -h	(Optional) Displays help for using the command.		
json, -j	(Optional) Displays JSON output. The default is false.		

Usage Notes



Example 17-135 Viewing Oracle Data Guard status on 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. Oracle Data Guard operations such as switchover, failover, and reinstate can be run in parallel for different Oracle Data Guard configurations.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
# odacli reinstate-dataguard [-h] [-j] [-i] [-u] [-du]
```

Parameters

Parameter	Description
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.
id, -i	Specifies the Oracle Data Guard Status ID.
databaseUniqueName,-u	(Optional) Specifies the unique name of the database to reinstate.
db-user, -du	(Optional) Specifies the database user. The default is SYS.

Usage Notes

After completing the reinstate operation, view the status with the odacli listdataguardstatus command.

Example 17-136 Performing reinstate operation on Oracle Data Guard

odacli reinstate-dataguard -i 75f23ce0-006a-4aeb-ba6d-b4b60275c19 -u houdg02



odacli register-dataguard

Use the command odacli register-dataguard to register Oracle Data Guard with Oracle Database Appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli register-dataguard [-h] [-j] [-r json_input_file]

Parameters

Parameter	Description
requestjson,-r	Specifies the JSON input for creation of Oracle Data Guard configuration in the advanced option.
help,-h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

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. Oracle Data Guard operations such as switchover, failover, and reinstate can be run in parallel for different Oracle Data Guard configurations.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli switchover-dataguard [-h] [-j] [-i] [-u] [-du]

Parameters

Parameter	Description				
help, -h (Optional) Displays help for using the					
json, -j	(Optional) Displays JSON output.				
id, -i	Specifies the Oracle Data Guard Status ID.				
databaseUniqueName,-u	(Optional) Specifies the unique name of the database to switchover to.				
db-user, -du	(Optional) Specifies the database user. The default is SYS.				



Usage Notes

After performing the switchover, view the status with the odacli list-dataguardstatus command.

Example 17-137 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.
- odacli modify-cpucore
 Use the odacli modify-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]

Parameters

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

Example 17-138 Displaying a List of Cores



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 17-139 Displaying the Current Core Configuration

odacli describe-cpucore

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

odacli modify-cpucore

Use the odacli modify-cpucore command to enable the number of CPU cores in the system.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli modify-cpucore -c cores [-j] [-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.
json,-j	(Optional) Displays JSON output.

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.
- When you run the command, you are prompted to confirm the operation with the following message:

Modifying the enabled number of CPU requires a reboot of all nodes in the ODA system. Are you sure you want to proceed with this operation? (Y/N):

 Nodes are restarted after modifying the cores in the BIOS. Note this results in database outage as all the nodes in the cluster are restarted at the same time. Once the system is restarted, the system is updated with the correct number of cores.

Example 17-140 Enabling CPU Cores

The following command enables 8 CPU cores.

```
# odacli modify-cpucore -c 32
Modifying the enabled number of CPU requires a reboot of all nodes in the ODA
system. Are you sure you want to proceed with this operation? (Y/N): y
  "jobId" : "1a59d182-79f0-4847-81e6-ab3ebf779096",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "March 8, 2025 10:29:37 AM UTC",
  "resourceList" : [ ],
  "description" : "CPU cores service update",
  "updatedTime" : "March 8, 2025 10:29:37 AM UTC"
}
WARNING: Reducing the number of enabled cores may set offline any of the CPUs
used by a CPU Pool. Thus, please review the status of all the CPU Pools after
this operation using the 'describe-cpupool' command. In case of any CPU from
a CPU Pool was offline please run 'modify-cpupool' to update the list of CPUs
and use only online CPUs.
WARNING: All the nodes in this ODA system will reboot after this operation
```

odacli CPU Pool Commands for Bare Metal and KVM

Use odacli commands to manage resource allocations on Oracle Database Appliance for bare metal and KVM deployments.

CPU pools enable management of CPU resources in both bare metal and KVM environments. There are two types of CPU pools, that is, BM and VM.

Use the BM CPU pool to ensure that the database on a bare metal host runs exclusively on the CPUs specified in the CPU pool.

Use the VM CPU pools to cage and manage CPU resource allocations to workloads for virtual machines. Workloads are isolated by creating CPU pools and assigning or 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.

Resources in CPU pools cannot overlap, that is, CPU pools cannot share CPUs.

odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

- odacli list-cpupools
 Use the odacli list-cpupools command to list all CPU Pools on Oracle Database
 Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.
- odacli describe-cpupool

Use the odacli describe-cpupool command to describe CPU Pools on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

- odacli modify-cpupool
 Use the odacli modify-cpupool command to modify a CPU Pool configuration on Oracle
 Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.
- odacli delete-cpupool

Use the odacli delete-cpupool command to delete a CPU Pool configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli list-auditrecords

Use the odacli list-auditrecords command to list the audit records for a CPU Pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli describe-auditrecord

Use the odacli describe-auditrecord command to describe the audit record for a CPU Pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

```
odacli create-cpupool -n name -c number_of_cores {-bm|-vm} [-nn node_name] [-s socket]
[-dbs] [-urc] [-j] [-h]
```

Parameters

Parameter	Description
name, -n	Specifies the CPU Pool name.
cores, -c	Specifies the CPU Pool cores.
bm, -bm	(Optional) Specifies the CPU Pool as Bare Metal.
vm, -vm	(Optional) Specifies the CPU Pool as Virtual Machine.
dbsystem,-dbs	(Optional) Specifies the CPU Pool type as DB System.
socket,-s	(Optional) Specifies the socket to use. If not specified, then use all available sockets.



Parameter	Description
use-reserved-cores, - urc	(Optional) Specifies to use reserved CPU cores.
node-name, -nn	(Optional) Specifies the node where the CPU Pool will be created. On High-Availability deployment, if this option is not specified, then the CPU pool is created on both nodes.
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Usage Notes

- Attach the BM CPU pool to databases. Bare metal CPU pools can be assigned to multiple databases.
- Attach VM CPU pool VM to guest machines. VM CPU pools can be assigned to multiple VMs.
- Attach dbsystem CPU pool to DB systems. dbsystem CPU pool can be assigned to multiple DB systems. After you create a dbsystem CPU pool, you can create a new DB system with this CPU pool by adding the new CPU pool parameter in the create-dbsystem json file, or modify-dbsystem to attach CPU pool to an existing DB system.
- Resources in CPU pools cannot overlap, that is, CPU pools cannot share CPUs.
- After you create a BM CPU pool, you can associate this CPU pool to a database using the create-database or modify-database command.
- After you create a VM CPU pool, you can associate this CPU pool to a VM using the create-vm or modify-vm command.
- Number of cores must be an even number between 2 and the total number of available cores on the system.
- By default, a CPU in the CPU pool is allocated across two sockets in release 19.12 and later. Optionally, you can choose to allocate the CPU based on the socket number (0 or 1). This is especially useful to support Standard Edition licensing. It is recommended that you use the default allocation and do not mix two types of allocation.
- By default, the first core of the socket is reserved and cannot be used by the VM and DB system CPU pools for optimal performance. Use the --use-reserved-cores option to enable use of the first core of socket for VM and DB system CPU pools.

Example

Create a BM CPU pool named cpupool1 with 6 cores associated to it.

```
# odacli create-cpupool -n cpupool1 -c 6 -bm
```

Create a VM CPU pool named cpupool2 with 6 cores associated to it.

```
# odacli create-cpupool -n cpupool2 -c 6 -vm
```

Create a DB System CPU pool named cpupool3 with 6 cores associated to it.

```
# odacli create-cpupool -n cpupool3 -c 6 -dbs
```

ORACLE

Create a DB System CPU pool named cpupool4 with 4 cores of CPUs allocated from socket 0.

odacli create-cpupool -n cpupool4 -dbs -s 0 -c 4

odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

odacli remap-cpupools -f -urc [-j] [-h]

Parameters

Parameter	Description
force, -f	(Optional) Specifies to force the operation.
use-reserved-cores, -j	(Optional) Specifies to use reserved CPU cores.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Usage Notes

If the odacli remap-cpupools command fails with the error DCS-10001:Internal error encountered: Not enough physical CPUs available for CPU Pool 'cpupool_name' on node 'node_name', run the odacli remap-cpupools command again with the --use_reserved-cores option.

Use the --force option to remap CPU pools even if the CPU pool is marked as NUMAenabled. You must use odacli remap-cpupools command, after updating the bare metal CPU cores with the command odacli modify-cpucores for CPU core number changes.

By default, the first core of the socket is reserved and cannot be used by the VM and DB system CPU pools for optimal performance. Use the --use-reserved-cores option to enable use of the first core of socket for VM and DB system CPU pools.

Example

odacli remap-cpupools

Related Topics

odacli modify-vm
 Use the odacli modify-vm command to modify a virtual machine on Oracle Database

Appliance Kernel-based Virtual Machine (KVM).

odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli modify-dbsystem

Use the odacli modify-dbsystem command to modify a DB system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).



odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli list-cpupools

Use the odacli list-cpupools command to list all CPU Pools on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

odacli list-cpupools [-j] [-h]

Parameters

Parameter	Description
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

odacli list-cpupools

odacli describe-cpupool

Use the odacli describe-cpupool command to describe CPU Pools on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

odacli describe-cpupool -n name [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the name of the CPU Pool.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example: Describing a CPU pool named cpupool1

```
# odacli describe-cpupool -n cpupool1
```

odacli modify-cpupool

Use the odacli modify-cpupool command to modify a CPU Pool configuration on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

```
odacli modify-cpupool -n name -c cores -f -l [-j] [-h]
```



Parameters

Parameter	Description
name, -n	Specifies the CPU Pool name
cores, -c	Specifies the new number of CPU cores
force, -f	(Optional) Forces the operation
live,-l	(Optional) Applies the changes to running VMs
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Usage Notes

For VM CPU pool, if --live is not specified, then the changes are applied to the VM configuration file and will be activated next time the VM is started. If --live is specified, then the changes will be applied to both VM configuration file and to the running VM.

Example

Set the size of a CPU Pool cpupcol1 to 10. If --live is not specified, the change is applied to the VM configuration file and will be activated next time the VM is started.

odacli modify-cpupool -n cpupool1 -c 10

odacli delete-cpupool

Use the odacli delete-cpupool command to delete a CPU Pool configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli delete-cpupool -n name -f [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the CPU Pool name to be deleted
force, -f	(Optional) Forces deletion.
json, -j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Delete a CPU pool named cpupool1.

odacli delete-cpupool -n cpupool1



odacli list-auditrecords

Use the odacli list-auditrecords command to list the audit records for a CPU Pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

odacli list-auditrecords -du dcs-username -f from_date-range -l latest -nn node_name ot operation_type -ou OS_username -rn resource_name -rt resource_type -t to_date-range [j] [-h]

Parameters

Parameter	Description
dcs-user, -du	(Optional) Specifies the DCS user name.
from, -f	(Optional) Specfies the <i>from</i> date in the date range for the CPU pool audit records.
latest,-l	(Optional) Specifies the latest number of CPU pool audit records.
node-name, -nn	(Optional) Specifies the node name.
op-type, -ot	(Optional) Specifies the type of operation.
os-user, -ou	(Optional) Specifies the operating system user.
rsc-name, -rn	(Optional) Specifies the resource name.
rsc-type, -rt	(Optional) Specifies the resource type.
to, -t	(Optional) Specfies the <i>to</i> date in the date range for the CPU pool audit records.
json, -j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

# odacli list-auditrecords		
ID	Resource type	e Resource name
Operation type DCS username (OS username	Timestamp
41295d99-f263-4284-b6d9-2aff1ae0f85	50 BM_CPU_POOL	testbmpool
CREATE oda-admin	root	2020-10-08 13:27:05 UTC
0f07a013-5bb4-4cd8-bd49-04dc61fcd45	54 BM_CPU_POOL	pool_9f74a8e9-
DELETE oda-admin	root	2020-10-08 12:26:30 UTC
d858269b-6c28-4bc2-af71-79004f3561e	e6 BM_CPU_POOL	pool_9f74a8e9-
CREATE oda-admin	root	2020-10-08 12:24:36 UTC
9d7852c1-93fb-410e-9e0c-8c0a95ed3f0	Oc VM CPU POOL	pool d48e81e4-
DELETE oda-admin	root – –	2020-10-08 12:06:45 UTC
0235cc84-9345-40bc-ac4f-7de3f63202e	e2 VM_CPU_POOL	pool_4fe0b4f4-
DELETE oda-admin	root	2020-10-08 12:06:45 UTC
762f7263-7bd9-4b12-b891-48305165bf3	36 VM CPU POOL	pool 4fe0b4f4-
MODIFY oda-admin	root – –	2020-10-08 12:06:22 UTC
0bd2a25d-2327-4918-bd47-8c00f7406f9	92 VM_CPU_POOL	pool_4fe0b4f4-
MODIFY		—



odacli describe-auditrecord

Use the odacli describe-auditrecord command to describe the audit record for a CPU Pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

odacli describe-auditrecord -i [-j] [-h]

Parameters

Parameter	Description
id, -i	Describes the ID of the audit record.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

odacli describe-auditrecord -i 41295d99-f263-4284-b6d9-2aff1ae0f850
Audit Record details

```
Event details
```

```
Record ID: 41295d99-f263-4284-b6d9-2afflae0f850
Record timestamp: 2020-10-08 13:27:05 UTC
DCS username: oda-admin
OS username: root
Cluster ID: test_cluster-c
Node ID: test_cluster
```

Resource/Operation

```
Resource type: BM_CPU_POOL
Resource ID: b17cb623-bf79-491f-86d8-d8502987e26c
Resource name: testbmpool
Operation type: CREATE
Operation description: Created with '2' cores and allocation
'test_cluster:1-2,17-18'
```

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, and to change TDE wallet management from EXTERNAL to ODA.

- 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 use the odacli upgrade-database command to upgrade a database from a supported release.

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] [-dh] [-nh] [-ro] [-s] [-t] [-j] [-f] [-nn] [-
p] [-h] [-ha|-no-ha] [-cp]
```

Parameters

Parameter	Description
databaseUniqueName,-u	Defines a unique name for the database.
dbname, -n	Defines the name given to the new database (dbname.)
dbhomeid, -dh	Specifies the database home ID of the new database.
newhome, -nh	Specifies that a new database home must be created.
readonly, -ro	(Optional) Specifies to open the database in read-only mode.
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.
dbtype, -t [RAC RACOne SI]	(Optional) Defines the database type. The default database type is the source database type, if the option is not specified. For high-availability deployments, the values can be RAC RACOne SI, with the default as RAC. For single-node deployments, the value is SI.
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
associated-networks,-nn	(Optional) Specifies the associated network names (in the format networkName1,networkName2,).
disable-ha,-no-ha	(Optional) Disables High Availability for single-instance Oracle Database 19c and later.
enable-ha,-ha	(Optional) Enables High Availability for single-instance Oracle Database 19c and later.
cpupool,-cp	(Optional) Specifies the CPU pool name.
tdepassword, -p	(Optional) Specifies the TDE password of the source database.

Usage Notes

- The source database must be up and running.
- The source database must be opened in either read-write mode, or read-only mode if it is a primary database. A standby database can be in mounted or read-only open mode.
- The source database must use Oracle ACFS storage.
- The source database must not be a multitenant container database (CDB)
- If -cp parameter is provided as part of the command, cloned database is associated with the particular CPU pool.
- If -cp parameter is not provided as part of the command, and if the parent database has an associated CPU pool, then the cloned database is also associated with the same CPU pool as that of parent database.
- If -cp parameter is not provided as part of the command, and if the parent database does not have any associated CPU pool, then the cloned database is also not associated with any CPU pool.
- All data files of the source database must be in the same Oracle ACFS directory.

Example 17-141 Cloning a Database in a new database home

<pre># odacli list-databases</pre>

ID			DB Name	e DB	Туре Г	ЭB				
Version	CDB	Class	Shape S	Storage	Stat	us				
DbHomeID										
bb06935b-384d-482	2f-b494-45d3	368d2122a	mydb	SI						
19.16.0.0.220719	true	OLTP	odb1	ACFS	C	CONFIGURED				
542032e5-a76c-4d66-92e1-bb297ec6192d										
a03b5971-bee5-4d9	a-b003-009c	df6f018f6	primary	/ SI						
19.16.0.0.220719	false	OLTP	odb1	ACFS	C	CONFIGURED				
618b26d7-a49b-452f-a14b-cfc2c79d0555										
a5173f68-6b5c-491	f-b8b4-05bc	ce0e7ec20	chome1	SI						
19.16.0.0.220719	false	OLTP	odb1	ACFS	C	CONFIGURED				
6339e2fc-7ae7-4de	2-ac3c-9f5b	2eaec131								



odacli list-dbhomes

```
ΙD
                               Name
                                               DB
Version
                            Home
Location
                               Status
 _____
  _____
  _____
542032e5-a76c-4d66-92e1-bb297ec6192d
                               OraDB19000 home1
                              /u01/app/odaorahome/oracle/product/
19.16.0.0.220719
19.0.0/dbhome 1 CONFIGURED
6339e2fc-7ae7-4de2-ac3c-9f5b2eaec131 OraDB19000_home2
19.16.0.0.220719
                              /u01/app/odaorahome/oracle/product/
19.0.0/dbhome 2 CONFIGURED
618b26d7-a49b-452f-a14b-cfc2c79d0555
                              OraDB19000 home3
19.16.0.0.220719
                               /u01/app/odaorahome/oracle/product/
19.0.0/dbhome 3 CONFIGURED
# odacli clone-database -n chome4 -u chome4 -f primary -nh
Enter SYS user password:
Retype SYS user password:
Job details
_____
               ID: f3052b47-e9b6-4825-bef3-91635db4f255
         Description: Snap Database service creation with db name: chome4
            Status: Created
            Created: August 4, 2022 12:23:41 PM UTC
            Message:
Task Name
                              Start Time
End Time
                           Status
 _____
  _____ ____
# odacli describe-job -i f3052b47-e9b6-4825-bef3-91635db4f255
Job details
_____
               ID: f3052b47-e9b6-4825-bef3-91635db4f255
         Description: Snap Database service creation with db name: chome4
            Status: Success
            Created: August 4, 2022 12:23:41 PM UTC
            Message:
Task Name
                               Start Time
End Time
                           Status
_____
_____
                              August 4, 2022 12:24:00 PM UTC
Validate HugeSpaces
August 4, 2022 12:24:00 PM UTC Success
Validate source database
                              August 4, 2022 12:24:00 PM UTC
August 4, 2022 12:24:11 PM UTC
                         Success
Setting up ssh equivalance
                              August 4, 2022 12:24:11 PM UTC
August 4, 2022 12:24:12 PM UTC
                         Success
Creating volume rdochome4
                               August 4, 2022 12:24:12 PM UTC
```



August 4, 2022 12:24:28 PM UTC Creating ACFS filesystem for RECO August 4, 2022 12:24:46 PM UTC Database home creation August 4, 2022 12:28:06 PM UTC Creating ACFS database home August 4, 2022 12:24:46 PM UTC Validating dbHome available space August 4, 2022 12:24:46 PM UTC Creating DbHome Directory August 4, 2022 12:24:46 PM UTC Create required directories August 4, 2022 12:24:46 PM UTC Extract DB clone August 4, 2022 12:26:14 PM UTC ProvDbHome by using RHP August 4, 2022 12:27:43 PM UTC Enable DB options August 4, 2022 12:28:02 PM UTC Creating wallet for DB Client August 4, 2022 12:28:06 PM UTC Audit directory creation August 4, 2022 12:28:06 PM UTC Creation of snapshot database August 4, 2022 12:32:46 PM UTC Removing Disabled Redo Threads August 4, 2022 12:32:47 PM UTC Creation of SPFile for Shared location August 4, 2022 12:32:56 PM UTC Delete SPFile from local location August 4, 2022 12:32:56 PM UTC Register DB with clusterware August 4, 2022 12:34:23 PM UTC Set SysPassword and Create PwFile August 4, 2022 12:34:27 PM UTC Creating pfile August 4, 2022 12:34:28 PM UTC Disabling external references August 4, 2022 12:34:29 PM UTC Set CPU pool August 4, 2022 12:34:29 PM UTC Enabling supplemental log data August 4, 2022 12:35:46 PM UTC Enabling blockchange tracking August 4, 2022 12:35:47 PM UTC Enabling flashback August 4, 2022 12:35:48 PM UTC Copy Pwfile to Shared Storage August 4, 2022 12:35:51 PM UTC Create tns entry August 4, 2022 12:35:52 PM UTC Reset Associated Networks August 4, 2022 12:35:55 PM UTC Set log archive dest for Database August 4, 2022 12:35:58 PM UTC

Success August 4, 2022 12:24:28 PM UTC Success August 4, 2022 12:24:46 PM UTC Success <====== New task August 4, 2022 12:24:46 PM UTC Success <===== New task August 4, 2022 12:24:46 PM UTC Success <====== New task August 4, 2022 12:24:46 PM UTC Success <====== New task August 4, 2022 12:24:46 PM UTC Success <===== New task August 4, 2022 12:24:46 PM UTC Success <======= New task August 4, 2022 12:26:14 PM UTC Success <====== New task August 4, 2022 12:27:43 PM UTC Success <====== New task August 4, 2022 12:28:06 PM UTC Success <====== New task August 4, 2022 12:28:06 PM UTC Success <====== New task August 4, 2022 12:28:06 PM UTC Success August 4, 2022 12:32:46 PM UTC Success August 4, 2022 12:32:50 PM UTC Success August 4, 2022 12:32:56 PM UTC Success August 4, 2022 12:32:56 PM UTC Success August 4, 2022 12:34:23 PM UTC Success August 4, 2022 12:34:27 PM UTC Success August 4, 2022 12:34:28 PM UTC Success August 4, 2022 12:34:29 PM UTC Success August 4, 2022 12:35:45 PM UTC Success August 4, 2022 12:35:46 PM UTC Success August 4, 2022 12:35:47 PM UTC Success August 4, 2022 12:35:48 PM UTC Success August 4, 2022 12:35:51 PM UTC Success August 4, 2022 12:35:52 PM UTC Success August 4, 2022 12:35:55 PM UTC Success

odacli list-databases

```
DB Name DB Type DB
ΙD
Version
              CDB
                     Class
                             Shape Storage Status
DbHomeID
-----
  _____ ____
   _____
bb06935b-384d-482f-b494-45d368d2122a mydb
                                        SI
19.16.0.0.220719
                     OLTP odb1 ACFS
              true
                                                 CONFIGURED
542032e5-a76c-4d66-92e1-bb297ec6192d
a03b5971-bee5-4d9a-b003-009df6f018f6 primary SI
19.16.0.0.220719
                       OLTP
                                odb1 ACFS
               false
                                                 CONFIGURED
618b26d7-a49b-452f-a14b-cfc2c79d0555
                               chomel SI
a5173f68-6b5c-491f-b8b4-05bce0e7ec20
                                 odb1 ACFS
19.16.0.0.220719 false OLTP
                                                CONFIGURED
6339e2fc-7ae7-4de2-ac3c-9f5b2eaec131
6bf06951-d89f-4acb-bb93-39ebdfcec4d7
                                chome4 SI
19.16.0.0.220719 false OLTP
                                 odb1 ACFS CONFIGURED
31693275-85f5-4932-8ad6-8abe8c93ce46
# odacli list-dbhomes
ID
                                 Name
                                                 DB
Version
                              Home
Location
                                 Status
   _____
 _____
542032e5-a76c-4d66-92e1-bb297ec6192d
                                OraDB19000 home1
19.16.0.0.220719
                                 /u01/app/odaorahome/oracle/product/
19.0.0.0/dbhome 1 CONFIGURED
6339e2fc-7ae7-4de2-ac3c-9f5b2eaec131
                               OraDB19000 home2
19.16.0.0.220719
                                 /u01/app/odaorahome/oracle/product/
19.0.0/dbhome 2 CONFIGURED
618b26d7-a49b-452f-a14b-cfc2c79d0555
                                 OraDB19000 home3
19.16.0.0.220719
                                 /u01/app/odaorahome/oracle/product/
19.0.0./dbhome 3 CONFIGURED
31693275-85f5-4932-8ad6-8abe8c93ce46
                                 OraDB19000 home4
                                 /u01/app/odaorahome/oracle/product/
19.16.0.0.220719
19.0.0.0/dbhome 4 CONFIGURED <=== New DB Home
# odacli describe-database -n chome4
Database details
 _____
                ID: 6bf06951-d89f-4acb-bb93-39ebdfcec4d7
         Description: chome4
            DB Name: chome4
          DB Version: 19.16.0.0.220719
            DB Type: SI
            DB Role: PRIMARY
   DB Target Node Name: scaoda8m002
          DB Edition: EE
              DBID: 2169245064
Instance Only Database: false
```

CDB: false PDB Name: PDB Admin User Name: High Availability: false Class: OLTP Shape: odb1 Storage: ACFS DB Redundancy: CharacterSet: AL32UTF8 National CharacterSet: AL16UTF16 Language: AMERICAN Territory: AMERICA Home ID: 31693275-85f5-4932-8ad6-8abe8c93ce46 <================= OraDB19000 home4 Console Enabled: false TDE Wallet Management: TDE Enabled: false Level 0 Backup Day: AutoBackup Enabled: false Created: August 4, 2022 12:23:41 PM UTC DB Domain Name: example.com Associated Networks: Public-network CPU Pool Name:

Example 17-142 Cloning a Database in an existing database home

```
# odacli list-dbhomes
ID
                                          DB
                            Name
Version
                          Home
Location
                            Status
 _____
_____
   _____
542032e5-a76c-4d66-92e1-bb297ec6192d OraDB19000 home1
19.16.0.0.220719
                            /u01/app/odaorahome/oracle/product/
19.0.0/dbhome 1 CONFIGURED
# odacli create-dbhome -v 19.16.0.0.220719
# odacli describe-job -i e2e73a4a-cb54-4bef-90ba-e6d6aeff594a
Job details
_____
               _____
              ID: e2e73a4a-cb54-4bef-90ba-e6d6aeff594a
        Description: Database Home OraDB19000 home2 creation with
version :19.16.0.0.220719
           Status: Success
           Created: August 4, 2022 11:00:48 AM UTC
           Message: Create Database Home
Task Name
                            Start Time
End Time
                        Status
_____
                                 _____
   _____ ____
```



Setting up ssh equivalance August 4, 2022 11:01:05 AM UTC Setting up ssh equivalance August 4, 2022 11:01:06 AM UTC Creating ACFS database home August 4, 2022 11:01:06 AM UTC Validating dbHome available space August 4, 2022 11:01:06 AM UTC Creating DbHome Directory August 4, 2022 11:01:06 AM UTC Create required directories August 4, 2022 11:01:06 AM UTC Extract DB clone August 4, 2022 11:02:35 AM UTC ProvDbHome by using RHP August 4, 2022 11:04:06 AM UTC Enable DB options August 4, 2022 11:04:25 AM UTC Creating wallet for DB Client August 4, 2022 11:04:29 AM UTC

August	4,	2022	11:01:04	AM	UTC
Success					
August	4,	2022	11:01:05	AM	UTC
Success					
August	4,	2022	11:01:06	AM	UTC
Success					
August	4,	2022	11:01:06	AM	UTC
Success					
August	4,	2022	11:01:06	AM	UTC
Success					
August	4,	2022	11:01:06	AM	UTC
Success					
August	4,	2022	11:01:06	AM	UTC
Success					
August	4,	2022	11:02:35	AM	UTC
Success					
August	4,	2022	11:04:06	AM	UTC
Success					
August	4,	2022	11:04:29	AM	UTC
Success					

odacli list-dbhomes

ID Name DB Version Home Location Status _____ _____ 542032e5-a76c-4d66-92e1-bb297ec6192d OraDB19000_home1 19.16.0.0.220719 /u01/app/odaorahome/oracle/product/ 19.0.0.0/dbhome 1 CONFIGURED 6339e2fc-7ae7-4de2-ac3c-9f5b2eaec131 OraDB19000_home2 19.16.0.0.220719 /u01/app/odaorahome/oracle/product/ 19.0.0/dbhome 2 CONFIGURED

odacli clone-database -n chome1 -u chome1 -f primary -dh 6339e2fc-7ae7-4de2ac3c-9f5b2eaec131 <======== New DB Home OraDB19000_home2 [root@scaoda8m002 bin]# odacli describe-job -i ed76ad28-aff6-47c7-9233-6ef2f7c3e8cd

```
Job details
_____
              ID: ed76ad28-aff6-47c7-9233-6ef2f7c3e8cd
        Description: Snap Database service creation with db name: chomel
           Status: Success
           Created: August 4, 2022 12:02:54 PM UTC
           Message:
Task Name
                            Start Time
End Time
                         Status
 _____
                                  _____
_____
Validate HugeSpaces
                           August 4, 2022 12:02:59 PM UTC
August 4, 2022 12:03:00 PM UTC Success
Validate source database
                           August 4, 2022 12:03:00 PM UTC
```



August 4, 2022 12:03:11 PM UTC Success Setting up ssh equivalance August 4, 2022 12:03:11 PM UTC August 4, 2022 12:03:11 PM UTC Success Creating volume rdochome1 August 4, 2022 12:03:11 PM UTC August 4, 2022 12:03:27 PM UTC Success Creating ACFS filesystem for RECO August 4, 2022 12:03:27 PM UTC August 4, 2022 12:03:45 PM UTC Success Audit directory creation August 4, 2022 12:03:45 PM UTC August 4, 2022 12:03:45 PM UTC Success Creation of snapshot database August 4, 2022 12:03:45 PM UTC August 4, 2022 12:08:25 PM UTC Success Removing Disabled Redo Threads August 4, 2022 12:08:25 PM UTC August 4, 2022 12:08:26 PM UTC Success August 4, 2022 12:08:28 PM UTC Creation of SPFile for Shared location August 4, 2022 12:08:35 PM UTC Success Delete SPFile from local location August 4, 2022 12:08:35 PM UTC August 4, 2022 12:08:35 PM UTC Success August 4, 2022 12:08:35 PM UTC Register DB with clusterware August 4, 2022 12:10:00 PM UTC Success Set SysPassword and Create PwFile August 4, 2022 12:10:00 PM UTC August 4, 2022 12:10:03 PM UTC Success Creating pfile August 4, 2022 12:10:03 PM UTC August 4, 2022 12:10:04 PM UTC Success Disabling external references August 4, 2022 12:10:04 PM UTC August 4, 2022 12:10:06 PM UTC Success Set CPU pool August 4, 2022 12:10:06 PM UTC August 4, 2022 12:10:06 PM UTC Success Enabling supplemental log data August 4, 2022 12:11:18 PM UTC August 4, 2022 12:11:20 PM UTC Success Enabling blockchange tracking August 4, 2022 12:11:20 PM UTC August 4, 2022 12:11:21 PM UTC Success Enabling flashback August 4, 2022 12:11:21 PM UTC August 4, 2022 12:11:22 PM UTC Success Copy Pwfile to Shared Storage August 4, 2022 12:11:22 PM UTC August 4, 2022 12:11:25 PM UTC Success Create ths entry August 4, 2022 12:11:25 PM UTC August 4, 2022 12:11:26 PM UTC Success August 4, 2022 12:11:26 PM UTC Reset Associated Networks August 4, 2022 12:11:29 PM UTC Success August 4, 2022 12:11:29 PM UTC Set log archive dest for Database August 4, 2022 12:11:32 PM UTC Success

odacli list-databases

ID DB Name DB Type DB Version CDB Class Shape Storage Status DbHomeID _____ _ ____ _____ ____ _____ bb06935b-384d-482f-b494-45d368d2122a mydb SI 19.16.0.0.220719 true OLTP odb1 ACFS CONFIGURED 542032e5-a76c-4d66-92e1-bb297ec6192d a03b5971-bee5-4d9a-b003-009df6f018f6 SI primary 19.16.0.0.220719 false odb1 CONFIGURED OLTP ACFS 618b26d7-a49b-452f-a14b-cfc2c79d0555



```
a5173f68-6b5c-491f-b8b4-05bce0e7ec20
                                    chome1
                                              SI
19.16.0.0.220719 false OLTP odb1 ACFS CONFIGURED
6339e2fc-7ae7-4de2-ac3c-9f5b2eaec131 <======= CLONE DB CREATED
SUCCESSFULLY
# odacli describe-database -n chome1
Database details
_____
                   ID: a5173f68-6b5c-491f-b8b4-05bce0e7ec20
          Description: chome1
              DB Name: chome1
           DB Version: 19.16.0.0.220719
              DB Type: SI
              DB Role: PRIMARY
   DB Target Node Name: scaoda8m002
           DB Edition: EE
                 DBID: 2639447957
Instance Only Database: false
                 CDB: false
             PDB Name:
   PDB Admin User Name:
     High Availability: false
                Class: OLTP
                Shape: odb1
              Storage: ACFS
        DB Redundancy:
          CharacterSet: AL32UTF8
 National CharacterSet: AL16UTF16
             Language: AMERICAN
            Territory: AMERICA
              Home ID: 6339e2fc-7ae7-4de2-ac3c-9f5b2eaec131
       Console Enabled: false
 TDE Wallet Management:
          TDE Enabled: false
    Level 0 Backup Day:
    AutoBackup Enabled: false
              Created: August 4, 2022 12:02:54 PM UTC
        DB Domain Name: example.com
   Associated Networks: Public-network
        CPU Pool Name:
```

Example 17-143 Cloning a Database and associating it with the same CPU Pool as the parent database

 Task Name
 Start Time

 End Time
 Status

Example 17-144 Cloning a Database and associating it with a different CPU pool

```
# odacli clone-database -f dbcpupin -n db1clone -u db1cloneUnique -cp
testdbcpupool2
Enter SYS user password:
Retype SYS user password:
Job details
_____
              ID: 2fe285b5-2e3b-4e80-9121-e7c8380952b3
        Description: Snap Database service creation with db name:
dblclone
           Status: Created
           Created: August 09, 2022 10:36:55 AM UTC
           Message:
Task Name
                             Start Time
End Time
                         Status
 _____
    ----- -----
```

Example 17-145 Cloning a TDE-enabled database

```
# odacli clone-database --sourcedbname tdbacf2 --dbname tdbacf2c --
databaseUniqueName tdacf2cu -p
Enter SYS user password:
Retype SYS user password:
Enter TDE wallet password of source database:
```

Example 17-146 Cloning a database and opening the clone in read only mode

```
# odacli clone-database -n clonedb -u clonedb -f sourcedb -ro
Enter SYS user password:
Retype SYS user password:
```

The task Open Clone DB in READ ONLY mode is displayed as the last task in the description of the above job.

Related Topics

 Cloning an Oracle ACFS Database Create a database from an existing Oracle ACFS database using ODACLI commands or BUI.



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 -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] [-tn node_name] [-h] [-rd] [-ha|-no-
ha] [-t] [-cp] [-osc] [-kt] [-ocp]
```

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.	
cpupool, -cp	Defines the CPU pool name. The CPU pool must be of type bare metal (BM).	
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.	



Parameter	Description	
dbterritory,-dt	Defines the database territory. The default territory is AMERICA.	
dbtype, -y [RAC RACOne SI]	Defines the database type. For high-availability deployments, the values can be RAC RACOne SI, with the default as RAC. For single-node deployments, the value 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,-ns	Defines the NLS National Character Set. The default is AL16UTF16.	
no-cdb, -no-c	(Optional) Creates a database that is <i>not</i> a container database. Use this flag when you want to create a non-CDB database. Use the $-c$ flag to create a container database.	
no-dbconsole, -no-co	(Optional) Disables Database Console. Use the -co flag to enable Database Console.	
pdbadmin,-d	Defines the Pluggable Database (PDB) Admin User.	
pdbname, -p	Defines the Pluggable Database (PDB) name. The default value is pdb1.	
version,-v	Defines the database bundle patch number. To install the latest bundle patch for a release, specify the release version.	
	To specify a specific supported bundle, use the 5 digit format.	
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, all disk groups must have FLEX redundancy. 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,).	
enable-tde,-t	Specifies whether to enable Transparent Data Encryption (TDE) which uses software keystore.	
keystore-type,-kt	Specifies the type of keystore which stores the TDE master encryption key. The value can be software or okv. The default is software.	
okv-server-config,-osc	Specifies the name of the Oracle Key Vault server configuration which serves as the metadata of the Oracle Key Vault user credentials. This option must be provided only when the keystore-type, -kt option is specified	
okvclient-path,-ocp	Specifies the absolute path to the okvclient.jar file. Multip values must be comma-separated. Cannot be used with the okv-server-config, -osc option.	
target-node, -tn	(Optional) Specifies the target node name (applicable only for Oracle RAC One Node Database and single-instance Oracle Database, where supported).	
levelzerobackupday, -lb	(Optional) Specifies the level zero backup day. The values can be Monday Tuesday Wednesday Sunday. The default is Sunday.	



Parameter	Description	
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.	
dbOnFlashStorage,-f	(Optional) Specifies whether to enable data on Flash storage.	
no-dbOnFlashStorage,-no-f	(Optional) Specifies whether to disable data on Flash storage.	
disable-ha,-no-ha	(Optional) Disables High Availability for single-instance Oracle Database 19c and later.	
enable-ha,-ha	(Optional) Enables High Availability for single-instance Oracle Database 19c and later. Theenable-ha, -ha option is the default for single-instance databases on high availability deployments.	

- 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 singleinstance Oracle Database with or without high-availability enabled.
- Transparent Data Encryption (TDE) is an Advanced Security Option (ASO) available with Oracle Database Enterprise Edition.
- TDE is not configured by default during database creation.
- 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. Underscores are not permitted only if the -- dbname is set to RACOne, as it is used as a delimiter to identify the database instance. 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 19c and later is supported on both Oracle Automatic Storage Management (Oracle ASM) and Oracle ASM Cluster file system (ACFS). The default is Oracle ASM.
- When databases are created on 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.
- For the version, you can specify the database version, for example, 19.24.0.0, 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.
- You must specify either the Oracle Key Vault server configuration or the absolute path of the okvclient.jar file.
- You cannot configure Oracle Key Vault on Oracle RAC One database and single-instance database with high-availability enabled.
- For Oracle Key Vault configuration, you must specify one okvclient.jar file path for single-instance database. For Oracle RAC database, you must specify multiple okvclient.jar file path.
- For TDE-enabled database configuration, if the keystore type is not specified, then, by default, the keystore is software keystore.

Caution:

When you create a database with Transparent Data Encryption (TDE) enabled, you are prompted to set a password for the TDE wallet. Provide a strong password for security compliance. Set the password carefully, and ensure that this password is available to you at all times for database management operations. Failure to provide the TDE wallet password when prompted, will cause an error in accessing encrypted data.

Example 17-147 Creating a TDE-Enabled Database with Software Keystore

```
# odacli create-database -n test -t
Enter new 'SYS, SYSTEM and PDB Admin user' password:
Confirm 'SYS, SYSTEM and PDB Admin user' password:
Enter new 'TDE wallet' password:
Confirm 'TDE wallet' password:
```



Example 17-148 Creating a Database in Interactive Mode

This example creates a 19.27.0.0.0 OLTP container database named hrdb with shape odb2 and enables you to provide the password interactively.

```
# odacli create-database -n hrdb -c -cl OLTP -s odb2 -p pdb1
Enter new 'SYS, SYSTEM and PDB Admin user' password:
Confirm 'SYS, SYSTEM and PDB Admin user' password:
{
    "jobId" : "f12485f2-dcbe-4ddf-aee1-de24d37037b6",
    "status" : "Created",
    "message" : null,
    "reports" : [],
    "createTimestamp" : "March 8, 2025 03:54:03 AM EDT",
    "description" : "Database service creation with db name: hrdb",
    "updatedTime" : "March 8, 2025 03:54:03 AM EDT"
}
```

Example 17-149 Creating a Database Against a Different Version

Either of the following statements creates a database against a home with Oracle Database Bundle applied:

```
# odacli create-database -n hrmsdb1 -v 19.27.0.0.0
# odacli create-database -n hrmsdb2 -v 19.27.0.0.250415
```

The following statement creates a new database against a home with a specific Oracle Database Bundle:

```
# odacli create-database -n hrmsdb3 -v 19.27.0.0.250415
```

Example 17-150 Creating a Database associated with a CPU Pool

The following command creates a new database associated with a CPU pool:

```
# odacli create-database -j -n dbcpupl -r ACFS -cp testdbcpupool
```

Example 17-151 Creating a TDE-Enabled Database with Credentials of a User on Oracle Key Vault

An example to create a database dbokv1 which uses Oracle Key Vault credentials represented by Oracle Key Vault server configuration okvobj1 is as follows:

odacli create-database -n dbokv1 -t -osc okvobj1 -kt OKV Enter SYS and SYSTEM user password: Enter SYS and SYSTEM user password:



Example 17-152 Creating a TDE-Enabled Database with keys stored in Oracle Key Vault

Create an Oracle RAC database okvdbrac without using the Oracle Key Vault server configuration object. Specify the path to the okvclient.jar file for the local database instance first, followed by the path to okvclient.jar file for the remote database instance in the request.

```
odacli create-database -n okvdbrac -y RAC -t -kt OKV -ocp /tmp/okvracdb1/
okvclient.jar,/tmp/okvracdb2/okvclient.jar
Enter SYS and SYSTEM user password:
Retype SYS and SYSTEM user password:
Enter TDE wallet password:
Retype TDE wallet password:
Job details
_____
                ID: cb611ec2-ff87-44f9-a79b-3ab1a290644f
         Description: Database service creation with DB name: okvdbrac
             Status: Created
            Created: October 20, 2024 6:13:28 AM PDT
            Message:
Task Name
                               Start
Time
                          End Time
Status
_____
_____
_____
odacli describe-job -i cb611ec2-ff87-44f9-a79b-3ab1a290644f
Job details
_____
               ID: cb611ec2-ff87-44f9-a79b-3ab1a290644f
         Description: Database service creation with DB name: okvdbrac
             Status: Success
            Created: October 20, 2024 6:13:28 AM PDT
            Message:
Task Name
                               Node Name
                                                   Start
Time
                          End Time
Status
_____ ____
   _____
----- -----
Validating dbHome available space n1
                                          October 20, 2024
                October 20, 2024 6:13:49 AM PDT
6:13:49 AM PDT
Success
Validating dbHome available space
                               n2
                                           October 20, 2024
6:13:49 AM PDT
             October 20, 2024 6:13:49 AM PDT
Success
Setting up SSH equivalence
                                           October 20, 2024
                               n1
6:13:51 AM PDT October 20, 2024 6:13:54 AM PDT
Success
                                          October 20, 2024
Setting up SSH equivalence
                              n1
```



October 20, 2024 6:13:57 AM PDT 6:13:54 AM PDT Success Creating ACFS database home n1 October 20, 2024 October 20, 2024 6:13:58 AM PDT 6:13:58 AM PDT Success n1 Validating dbHome available space October 20, 2024 6:13:59 AM PDT October 20, 2024 6:13:59 AM PDT Success Setting TDE Master Encryption Key n1 October 20, 2024 6:34:15 AM PDT October 20, 2024 6:34:56 AM PDT Success n1 October 20, 2024 Create Users tablespace 6:34:57 AM PDT October 20, 2024 6:34:59 AM PDT Success October 20, 2024 Clear all listeners from Database nl 6:35:00 AM PDT October 20, 2024 6:35:01 AM PDT Success Deleting OKV Client Software Jar October 20, 2024 n1 6:35:03 AM PDT October 20, 2024 6:35:04 AM PDT Success Deleting OKV Client Software Jar n2 October 20, 2024 6:35:04 AM PDT October 20, 2024 6:35:04 AM PDT Success Encrypt all Tablespaces n1 October 20, 2024 6:35:04 AM PDT October 20, 2024 6:36:15 AM PDT Success

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 -n name [-h] [-j] [-fd]
```

Parameter	Description
id, -i	Identifies the database home identifier (ID) to display.
	Use the odacli list-databases command to obtain theid.
name, -n	Defines the database name.
force, -fd	(Optional) Forces the delete operation.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.



Usage

- When you run the odacli delete-database command on a TDE-enabled database that uses software keystore to store TDE keys, the TDE wallet is also deleted.
- When you run the odacli delete-database command on a TDE-enabled database that uses Oracle Key Vault to store TDE keys and was created using Oracle Key Vault user credentials, the TDE wallet and the corresponding endpoints in the Oracle Key Vault are also deleted.
- However, when you run the odacli delete-database command on a TDE-enabled database that uses Oracle Key Vault to store TDE keys and was created using endpoints in Oracle Key Vault server, the TDE wallet and the corresponding endpoints in the Oracle Key Vault are not deleted automatically. You must manually delete the TDE wallet and the corresponding endpoints in the Oracle Key Vault.
- The odacli 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. If you have manually added static entries for the database you want to delete in your listener.ora file, then remove these entries before running the odacli delete-database command.
- The odacli delete-database command does not delete the database files. This is expected behavior so that you can archive the database files, if required, or manually restore the database with these database files. Use the --force option to delete the database files completely.

Example 17-153 Deleting a Database Named hrmsdb

In this example we want to delete a database named hrmsdb. Before we can delete the database, we need to know the database home identifier (*dbid*). This example shows how to run the odacli list-databases command to list the databases and their associated *dbid*, then how to delete database hrmsdb.

odacli list-databases

ID			DB Name	DB Version	CDB Class
		-bad7-898afcf9de46 -9391-841838d2c42f	hrmsdb crmdb	19.22.0.0 19.22.0.0.	true OLTP false OLTP
(continu Shape 	,	Status			
odb1 odb1	ACFS ACFS	Configured Configured			
# odacli	delete-da	tabase -i a3f4a6c0-a	0c9-4c79	-bad7-898afcf9	de46



odacli describe-database

Use the odacli describe-database command to display database details.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To display database details:

odacli describe-database -i dbid -n name [-h] [-j]

Parameters

Parameter	Description	
id, -i	Identifies the database home identifier (ID) to display.	
	Use the odacli list-databases command to obtain theid.	
name, -n	Defines the database name.	
json,-j	(Optional) Displays JSON output.	
help,-h	(Optional) Displays help for using the command.	

Example 17-154

Display information for a database.

```
# odacli describe-database -n 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:
High Availability Enabled: false
                Class: Oltp
                Shape: Odb1
              Storage: Asm
        DB Redundancy: MIRROR
         CharacterSet: AL32UTF8
 National CharacterSet: AL16UTF16
             Language: AMERICAN
```



```
Territory: AMERICA
Home ID: bcc3991a-Offc-4d29-86ae-40f2b8721dc4
Console Enabled: false
Level 0 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 17-155 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: 19.27.0.0.0
DBID: 1339792271
CDB: true
PDB Name: r1pdb1
PDB Admin User Name: pdbadmin
Class: OLTP
Shape: odb2
Storage: ASM
CharacterSet: DbCharacterSet(characterSet=AL32UTF8,
nlsCharacterset=AL16UTF16, dbTerritory=AMERICA, dbLanguage=AMERICAN)
Home ID: fe87f30c-b810-45d1-8b96-13996ad7a255
Console Enabled: true
Created: March 8, 2025, 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.



Parameter	Description	
-all	(Optional) This option is available only when multi-user access is enabled. Provides a read-only view of all the databases in the system.	

Example 17-156 Displaying a List of Databases

Display a list of databases:

odacli list-databases

 ID
 DB Name
 DB Version
 CDB

 ad6c7326-e460-411e-94df-230dedbef743
 rdb121a
 19.27.0.0.0
 true

 fb4d02f3-2413-47ca-8584-a768e23ec2e7
 ee12db
 19.27.0.0.0
 false

(Continued)

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

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, and to change TDE wallet management from EXTERNAL to ODA.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli modify-database [-i] [-dn] [-no-ha] [ha] [-lb] [-no-bkp] [-tn

node_name] [-g] [-cl] [-rd] [-s] [-an] [-ctm] [-bi] [-bin] [-bp] [-id] [-n] [-

y] [-cp] [-no-cpupool] [-rkt] [-ctp] [-h] [-j]
```

Parameter	Description	
name, -n	Defines the database name to be updated. Specify eithername orid.	
id, -i	Defines the database ID to be updated. Specify either name orid.	
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.	



Parameter	Description	
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-backup, -no-bkp	(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.	
dbtype,-y	Defines new database type. The only option is SI. The conversion to single-instance database is available only for Oracle Database Standard Edition.	
disable-ha,-no-ha	(Optional) Disables High Availability for single-instance Oracle Database 19c and later.	
enable-ha,-ha	(Optional) Enables High Availability for single-instance Oracle Database 19c and later.	
target-node, -tn	(Optional) Specifies the target node name (applicable only for Oracle RAC One Node Database and single- instance Oracle Database, where supported).	
cpupool,-cp	(Optional) Specifies the CPU pool name. Use this option to associate a CPU pool to a database that does not use any CPU pool or to change the existing association of a CPU pool to a new CPU pool for a database.	
no-cpupool	(Optional) Removes the attached CPU pool.	
change-tde-password,-ctp	(Optional) When specified, you are prompted for the current and new TDE Wallet password. Note that in this release, you cannot modify the TDE configuration to use Oracle Key Vault.	
change-tdewallet-mgmt,-ctm	(Optional) When specified, the TDE wallet is changed from external to ODA.	
rekey-tde,-rkt	(Optional) When specified, current TDE Wallet password is prompted to rekey the TDE master encryption key.	



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

Caution:

When you change the TDE wallet password for a database with Transparent Data Encryption (TDE) enabled, you are prompted to set a password for the TDE wallet. Provide a strong password for security compliance. Set the password carefully, and ensure that this password is available to you at all times for database management operations. Failure to provide the TDE wallet password when prompted, will cause an error in accessing encrypted data.

Example 17-157 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-b42ffdab3fe1",
    "status" : "Created",
    "message" : null,
    "reports" : [],
    "createTimestamp" : "May 16, 2023 06:48:58 AM UTC",
    "resourceList" : [],
    "description" : "modify-database service with db ids: 1941d594-
c777-4eca-9fce-18b778d5c153",
    "updatedTime" : "May 16, 2023 06:48:58 AM UTC"
}
```

Example 17-158 Converting Oracle RAC or Oracle RAC One Node Database to Singleinstance Oracle Database

```
# odacli modify-database -n db18 -v 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" : "May 21, 2023 00:32:55 AM UTC",
  "resourceList" : [ {
    "resourceId" : "de2a7959-e31b-4dee-b600-6b16dfb78c34",
    "resourceType" : "DB",
    "resourceNewType" : null,
    "jobId" : "4b548365-dac5-4557-a6a8-2f65c2b725e7",
    "updatedTime" : "May 21, 2023 00:32:55 AM UTC"
  }],
  "description" : "Modify database : db18",
```



```
"updatedTime" : "May 21, 2023 00:32:55 AM UTC"
```

Example 17-159 Specifying the target node when converting database

```
# odacli modify-database -n db18 -y SI -g node_number
# odacli modify-database -n db18 -y SI -th node name
```

Example 17-160 Changing the TDE Wallet Password

```
# odacli modify-database -n testdb -ctp
Enter current 'TDE wallet' password:
Enter new 'TDE wallet' password:
Confirm 'TDE wallet' password:
```

Example 17-161 Re-keying the TDE Master Encryption Password

```
# odacli modify-database -n testdb -rkt
Enter current 'TDE wallet' password:
```

Example 17-162 Removing a CPU pool

```
# odacli modify-database -n dbcpupin -cp testdbcpupool2
DB will be restarted as part of CPU Pool operation. Do you want to continue
[y/n]:y
For moving a database between homes please use the command 'move-database'.
  "jobId" : "c1d05fb3-828a-4644-af9a-9d82b4ef5a89",
  "status" : "Created",
  "message" : "Modify database",
  "reports" : [ ],
  "createTimestamp" : "May 09, 2023 16:18:54 PM UTC",
  "resourceList" : [ {
    "resourceId" : "ff9c138b-a003-40cf-b1fc-0b33cd955ebf",
    "resourceType" : "DB",
   "resourceNewType" : null,
    "jobId" : "c1d05fb3-828a-4644-af9a-9d82b4ef5a89",
    "updatedTime" : "May 09, 2023 16:18:54 PM UTC"
  }],
  "description" : "Modify database : dbcpupin",
  "updatedTime" : "May 09, 2023 16:18:54 PM UTC"
ι
```

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] [-imp] [-nr] [-n dbname] [-dh dest-dbhome-id] [-dhn dest-dbhome-name][-j] [-h]
```

Parameters

Parameter	Description
id, -i	(Optional) Defines the database ID.
name, -n	(Optional) Defines the database name.
non-rolling,-nr	(Optional) Specifies whether you want to move the target database in non-rolling manner. By default, the value is false and the database is moved in a rolling manner.
ignore-missing-patch,-imp	(Optional) Ignores all missing patches and forces the operation.
dest-db-home-id, -dh	(Optional) Defines the destination database home ID.
dest-dbhome-name, -dhn	(Optional) Defines the destination database home name.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.

Usage Notes

Starting with Oracle Database Appliance release 19.19, when you run the odacli movedatabase, the database is moved in a rolling manner, unless you specify the --non-rolling, nr option.

Example 17-163 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} -osc [-co|-no-co] [-nn
associated_network_names] [-bi backup_config_id] [-c db_class] [-s db_shape]
[-t {RAC|RACOne|SI}] [-no-ha] [-ha] [-o host_name] [-osc okv_server_config] [-
sn service_name] [-tp] [-j] [-h]
```



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 RACOne RAC]	Defines the type of database. For high-availability deployments, the values can be RAC RACOne SI, with the default as RAC. For single-node deployments, the value is SI.
help,-h	(Optional) Displays help for using the command.
hostname, -o	Defines the host name. Default: local host name
json, -j	(Optional) Displays JSON output.
no-dbconsole, -no-co	(Optional) Disables Database Console. Use the - coflag to enable Database Console.
servicename,-sn	Defines the Database Service Name. Using this service name, the EZCONNECT String is derived for connecting to the database. For example, hostname:port/servicename.
	The Port number is the port configured for the listener, as part of the deployment.
associated-networks,-nn	Specifies the associated network names (in the format networkName1,networkName2,).
disable-ha,-no-ha	(Optional) Disables High Availability for single- instance Oracle Database 19c and later.
enable-ha,-ha	(Optional) Enables High Availability for single- instance Oracle Database 19c and later.
tde-wallet-passwd, -tp	Specifies the password for the TDE wallet.
okv-server-config,-osc	Specifies the name of the Oracle Key Vault server configuration object which serves as the metadata of the Oracle Key Vault user credentials.

Note:

It is a good practice to use Easy Connect (EZCONNECT) to test the database connectivity before registering the database. Log in as the sys user and enter the following command:

sqlplus sys/password@//hostname:1521/service name

- The odacli register-database command is supported on the primary and the standby database. For the standby database, only the database is registered with Oracle Database Appliance. Oracle Data Guard is not registered with Oracle Database Appliance.
- 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 control file and spfile to the correct locations.
- Some init.ora parameters are set, or reset, as part of the registration. Review the parameter changes before and after registration.

The following are examples of changes implemented as part of registration:

- The memory_target is reset.
- The sga_target/pga_aggregate_target/log_buffer/inmemory_size is configured based on the database class and database shape settings used during registration.
- The registration process sets or resets the recommended appliance-specific parameters. The database is restarted as part of the register database operation.
- 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.
- TDE-enabled database can also be registered. If TDE is configured using software keystore and the database version is 18c and higher, then TDE wallet management is also supported similar to a TDE database created using the Oracle Database Appliance framework.
- TDE-enabled databases that use Oracle Key vault to store TDE keys can also be registered. If you want Oracle Database Appliance tooling to handle the TDE password, then the database must be registered using Oracle Key Vault server configuration object, by specifying its current TDE password. If you do not want Oracle Database Appliance tooling to handle the TDE password, then the database must be registered without using Oracle Key Vault server configuration.



Example 17-164 Registering a TDE-enabled Database with TDE keys stored on Oracle Key Vault

Following is the example of a register-database job which does not use Oracle Key Vault server configuration.

```
odacli register-database -sn example.com --dbclass OLTP --dbshape odb2
Enter SYS, SYSTEM and PDB Admin user password:
Retype SYS, SYSTEM and PDB Admin user password:
  "jobId" : "f82172e2-c4c1-4a77-ba41-c3d241127325",
  "status" : "Created",
  "message" : "",
  "reports" : [ ],
  "createTimestamp" : "May 07, 2025 08:54:50 PDT",
  "resourceList" : [ ],
  "description" : "Database service registration with DB service name:
aokv1.us.oracle.com",
  "updatedTime" : "May 07, 2025 08:54:50 PDT",
  "jobType" : null,
  "cpsMetadata" : null
odacli describe-job -i f82172e2-c4c1-4a77-ba41-c3d241127325
Job details
  _____
                   ID: f82172e2-c4c1-4a77-ba41-c3d241127325
           Description: Database service registration with DB service name:
aokv1.us.oracle.com
                Status: Success
               Created: May 07, 2025 08:54:50 PDT
               Message:
                                      Node Name Start
Task Name
Time
                  End Time
                                           Status
_____
         Setting Database parameter for OKV
                                      scaoda806c1n1 May 07, 2025 08:54:53
PDT May 07, 2025 08:56:29 PDT Success
Validate Hugepages For Register DB
                                      scaoda806c1n1 May 07, 2025 08:56:29
PDT May 07, 2025 08:56:29 PDT Success
Enable OMF parameters
                                      scaoda806c1n1 May 07, 2025 08:56:33
PDT May 07, 2025 08:56:33 PDT Success
dharm: Setting DB character set
                                      scaoda806c1n1 May 07, 2025 08:56:33
PDT May 07, 2025 08:56:34 PDT Success
Move Spfile to right location
                                      scaoda806c1n1 May 07, 2025 08:56:34
PDT May 07, 2025 08:56:42 PDT Success
Enable DbSizing Template
                                      scaoda806c1n1 May 07, 2025 08:58:23
PDT May 07, 2025 09:00:41 PDT Success
Add Startup Trigger to Open all PDBS
                                      scaoda806c1n1 May 07, 2025 09:00:42
PDT May 07, 2025 09:00:43 PDT Success
                                      scaoda806c1n1 May 07, 2025 09:00:43
Running DataPatch
PDT May 07, 2025 09:01:37 PDT Success
Reset Associated Networks for Database scaoda806c1n1 May 07, 2025 09:01:38
PDT May 07, 2025 09:01:41 PDT Success
```



```
Reset Associated Networks s
PDT May 07, 2025 09:01:41 PDT Success
```

scaoda806c1n2 May 07, 2025 09:01:41

Example 17-165 Registering a TDE-enabled Database with TDE keys stored on Oracle Key Vault

Following is the example of a register-database job which uses Oracle Key Vault server configuration.

```
odacli register-database -sn example.com --dbclass OLTP --dbshape odb2 -osc
okvobj1
Enter SYS, SYSTEM and PDB Admin user password:
Retype SYS, SYSTEM and PDB Admin user password:
Enter TDE wallet password:
Retype TDE wallet password:
{
 "jobId" : "37cb49bb-6129-4c49-a44e-6ee4b5c97e98",
 "status" : "Created",
 "message" : "",
 "reports" : [],
  "createTimestamp" : "May 07, 2025 02:16:42 PDT",
 "resourceList" : [ ],
 "description" : "Database service registration with DB service name:
sokv10.us.oracle.com",
  "updatedTime" : "May 07, 2025 02:16:42 PDT",
 "jobType" : null,
 "cpsMetadata" : null
}
odacli describe-job -i 37cb49bb-6129-4c49-a44e-6ee4b5c97e98
Job details
         _____
                 ID: 37cb49bb-6129-4c49-a44e-6ee4b5c97e98
          Description: Database service registration with DB service name:
sokv10.us.oracle.com
              Status: Success
             Created: May 07, 2025 02:16:42 PDT
             Message:
Task Name
                                  Node Name
                                                        Start
Time
                             End Time
Status
  _____
_____
Setting Database parameter for OKV nl
                                              May 07, 2025 02:16:51
               May 07, 2025 02:17:59 PDT
                                              Success
PDT
                                             May 07, 2025 02:17:59
External Store Autologin wallet creation n1
              May 07, 2025 02:18:09 PDT
PDT
                                               Success
                                              May 07, 2025 02:18:09
Shutdown database
                                  n1
PDT
              May 07, 2025 02:19:19 PDT
                                              Success
Mount database using SQL
                                 n2
                                              May 07, 2025 02:19:19
               May 07, 2025 02:19:46 PDT
PDT
                                               Success
External Store Autologin wallet creation n1
                                              May 07, 2025 02:19:46
              May 07, 2025 02:19:57 PDT
                                                 Success
PDT
```



Shutdown database n2 PDT May 07, 2025 02:20:18 PDT Startup database using SQL n1 PDT May 07, 2025 02:20:49 PDT Re-enroll and Provision of Endpoint n1 May 07, 2025 02:21:31 PDT PDT Save the new TDE password using a n1 PDT May 07, 2025 02:21:39 PDT temporary custom attribute on OKV TDE Wallet closure n1 May 07, 2025 02:21:40 PDT PDT Change the TDE password in local wallet n1 PDT May 07, 2025 02:21:57 PDT Auto login TDE Wallet creation n1 PDT May 07, 2025 02:22:01 PDT Shutdown database n1 PDT May 07, 2025 02:22:35 PDT n2 Mount database using SQL PDT May 07, 2025 02:23:01 PDT Re-enroll and Provision of Endpoint n2 PDT May 07, 2025 02:23:43 PDT Change the TDE password in local wallet n2 PDT May 07, 2025 02:23:55 PDT Auto login TDE Wallet creation n1 PDT May 07, 2025 02:24:00 PDT Shutdown database n2 PDT May 07, 2025 02:24:22 PDT Startup database using SQL n1 PDT May 07, 2025 02:24:53 PDT Save new TDE password on OKV n2 PDT May 07, 2025 02:24:59 PDT Delete the temporary custom attribute n2 May 07, 2025 02:25:03 PDT PDT on OKV Database stop (Srvctl) n1 PDT May 07, 2025 02:26:04 PDT Deleting OKV Client Software Jar n2 PDT May 07, 2025 02:25:04 PDT Database start (Srvctl) n1 PDT May 07, 2025 02:26:36 PDT Checking the TDE wallet status nl PDT May 07, 2025 02:26:40 PDT Validate Hugepages For Register DB n1 May 07, 2025 02:26:42 PDT PDT Enable OMF parameters n1 May 07, 2025 02:26:46 PDT PDT Move Spfile to right location n1 PDT May 07, 2025 02:26:54 PDT Setting DB character set n1 PDT May 07, 2025 02:26:46 PDT Restart RACOne database n1

May 07, 2025 02:28:29 PDT

n1

May 07, 2025 02:19:57 Success May 07, 2025 02:20:19 Success May 07, 2025 02:20:50 Success May 07, 2025 02:21:31 Success May 07, 2025 02:21:39 Success May 07, 2025 02:21:41 Success May 07, 2025 02:21:57 Success May 07, 2025 02:22:01 Success May 07, 2025 02:22:35 Success May 07, 2025 02:23:01 Success May 07, 2025 02:23:43 Success May 07, 2025 02:23:56 Success May 07, 2025 02:24:00 Success May 07, 2025 02:24:22 Success May 07, 2025 02:24:53 Success May 07, 2025 02:24:59 Success May 07, 2025 02:25:04 Success May 07, 2025 02:25:04 Success May 07, 2025 02:26:04 Success May 07, 2025 02:26:36 Success May 07, 2025 02:26:41 Success May 07, 2025 02:26:45 Success May 07, 2025 02:26:46 Success May 07, 2025 02:26:46 Success May 07, 2025 02:26:54 Success May 07, 2025 02:28:29

PDT

Enable DbSizing Template

```
May 07, 2025 02:30:04 PDT
                                                     Success
PDT
Running DataPatch
                                   n1
                                                May 07, 2025 02:30:05
               May 07, 2025 02:30:41 PDT
                                                Success
PDT
Reset Associated Networks for Database n1
                                                May 07, 2025 02:30:42
               May 07, 2025 02:30:45 PDT
                                                 Success
PDT
                                                Success
May 07, 2025 02:30:45
Reset Associated Networks
                               n2
PDT
               May 07, 2025 02:30:45 PDT
                                                   Success
```

Example 17-166 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
Enter new 'SYS user' password:
Confirm 'SYS user' password:
{
  "jobId" : "317b430f-ad5f-42ae-bb07-13f053d266e2",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "March 8, 2025 05:55:49 AM EDT",
  "description" : "Database service registration with db service name:
crmdb.example.com",
  "updatedTime" : "March 8, 2025 05:55:49 AM EDT"
}
rpandrap: ]# odacli describe-job -i "317b430f-ad5f-42ae-bb07-13f053d266e2"
Job details
_____
                 ID: 317b430f-ad5f-42ae-bb07-13f053d266e2
          Description: Database service registration with db service name:
crmdb.example.com
              Status: Success
              Created: March 8, 2025 5:55:49 AM EDT
              Message:
Task Name
                           Start Time
_____
restore control file
                          March 8, 2025 5:55:49 AM EDT
move spfile to right location March 8, 2025 5:56:08 AM EDT
register DB with clusterware March 8, 2025 5:56:13 AM EDT
reset db parameters March 8, 2025 5:57:05 AM EDT
                          March 8, 2025 5:57:36 AM EDT
Running DataPatch
(Continued)
 End Time
                          Status
----- -----
March 8, 2025 5:56:08 AM EDT Success
March 8, 2025 5:56:13 AM EDT Success
March 8, 2025 5:57:05 AM EDT Success
March 8, 2025 5:57:36 AM EDT Success
March 8, 2025 5:57:49 AM EDT Success
```

odacli upgrade-database

You can use the odacli upgrade-database command to upgrade a database from a supported release.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To upgrade an Oracle Database:

odacli upgrade-database -i Comma separated list of database ids -n Comma separated list of database names -from source dbhome id -to destination dbhome id | -fn source dbhome name -tn destination dbhome name [-ctm] [-j] [h] [-ha|-no-ha]

Parameters

Parameter	Description
ids,-i	(Optional) Defines the Database IDs to upgrade. You can use a comma separated list of database IDs.
names, -n	(Optional) Defines the names of the databases to upgrade.
dest-dbhome-id,-to	The DB HOME ID of the destination database home.
dest-dbhome-name,-tn	The DB HOME name of the destination database home.
source-dbhome-id, -from	The DB HOME ID of the source database home.
source-dbhome-name, -fn	The DB HOME name of the source database home.
change-tdewallet-mgmt, -ctm	(Optional) When specified, the TDE wallet management attribute is changed from External to ODA.
json,-j	(Optional) Displays JSON output. The default is false.
disable-ha,-no-ha	(Optional) Disables High Availability for single-instance Oracle Database 19c and later.
enable-ha,-ha	(Optional) Enables High Availability for single-instance Oracle Database 19c and later.
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 12.2 to 19c
- Oracle Database 12.1 to 19c
- Oracle Database 12.1 to 12.2

Example 17-167 Upgrading an Oracle Database

In this example, a single database is upgraded. Use the command odacli listdatabases to display the database ID, then use the command odacli upgradedatabases to upgrade the database. After the upgrade is complete, you can run the command odacli list-databases again to verify the upgrade.

```
# odacli list-databases
ID
                              DB Name DB Version CDB
  _____
                               _____
fb4d02f3-2413-47ca-8584-a768e23ec2e7 ee12db 12.1.0.2 false
(Continued)
Class Shape Storage Status
OLTP odb1 ACFS Configured
IMDB odb1 ASM Configured
# odacli upgrade-database -i ad6c7326-e460-411e-94df-230dedbef743 -from fa4321f5-0543-477d-bb54-
a429dcc8ee8d -to d752df28-ecdd-4af4-9454-38085ea17f8b
{
  "jobId" : "1bbe8boe-acb0-4296--9c8b-473b69da0c18",
  "status" : "Created",
  "message" : null,
  "reports" : [ ],
  "createTimestamp" : "October 24, 2017 03:54:03 AM EDT",
  "description" : "Database service upgrade with db ids: [ad6c7326-e460-411e-94df-230dedbef743]",
  "updatedTime" : "October 24, 2017 03:54:03 AM EDT"
}
# odacli list-databases
ID
                              DB Name DB Version CDB
ad6c7326-e460-411e-94df-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 configure-dbhome-storage Use the odacli configure-dbhome-storage command to configure the database home storage.
- odacli list-dbhome-storages
 Use the odacli list-dbhome-storages command to view the database home storage resources after the volumes for ORACLE_HOME and ORACLE_BASE are created.
- odacli describe-dbhome-storage
 Use the odacli describe-dbhome-storage command to view information such as how much space is available (at a volume or diskgroup level).
- odacli modify-dbhome-storage Use the odacli modify-dbhome-storage command to modify database home storage and add additional disk space.
- 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 configure-dbhome-storage

Use the odacli configure-dbhome-storage command to configure the database home storage.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli configure-dbhome-storage -dg disk group [-s volume size] [-j] [-h]

Parameter	Description
diskgroup, -dg	(Mandatory) Defines the name of the disk group.
size,-s	(Optional) Defines the size, in gigabytes (GB), of the ORACLE_HOME volume. The default is: 80 GB. The minimum value that can be specified is 25GB and the maximum value is 1024GB.
json,-j	(Optional) Displays the output in JSON format.
help, -h	(Optional) Displays help for using the command.



- Valid values for the --diskgroup option vary depending on the hardware. For the X5-2, X6-2 and X7-2 HA platforms, you can select between the DATA or RECO diskgroup. For all other platforms such as X8-2, you must select only the DATA diskgroup. With later hardware, you must still run the odacli configure-dbhome-storage command.
- When you run the command to create a new database home, it also creates the volumes to hold the database homes. Till the volumes are created, you can run the odacli configure-dbhome-storage command to change the diskgroup or the initial size of the volume. Once the volumes for this feature are created, running this command results in an error:

```
# odacli configure-dbhome-storage -dg RECO
DCS-10606:Database homes storage has already been created, no changes are
allowed.
```

Example 17-168 Creating Database Home Storage

```
# odacli configure-dbhome-storage -dg DATA
{
    "jobId" : "553bfeb9-0092-4d73-bbd4-43fcb590886f",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "May 11, 2021 06:48:12 AM GMT",
    "resourceList" : [ ],
    "description" : "Configure database home storage",
    "updatedTime" : "May 11, 2021 06:48:12 AM GMT"
}
```

odacli list-dbhome-storages

Use the odacli list-dbhome-storages command to view the database home storage resources after the volumes for ORACLE_HOME and ORACLE_BASE are created.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-dbhome-storages [-j] [-h]

Parameter	Description
json,-j	(Optional) Displays the output in JSON format.
help,-h	(Optional) Displays help for using the command.



odacli list-dbhome-storages

odacli list-dbhome-storages

- Starting with Oracle Database Appliance release 19.27, Oracle Database homes are no longer created on the local disk. New Oracle Database homes are created on an Oracle ACFS-managed file system. To create an Oracle ACFS file system, ADVM volumes are created.
- The command lists the resource ID, the node on which the volume is created, and the diskgroup on which the volume is created.

Example 17-169 Listing Database Home Storage on a Single-Node System

_____ _____ ID Node Description Disk Group Volume Size(GB) Status _____ ____ ----- ----- ------6801cabb-4e45-41d7-9f20-c75dc7cf30c2 0 ORACLE HOME DATA orahome sh 80 CONFIGURED f5ad1258-a4a1-4cc1-980c-e2eeca738d99 0 ORACLE BASE DATA CONFIGURED odabase n0 80 _____

Example 17-170 Listing Database Home Storage on a High-Availability System

_____ _____ ID Node Description Disk Group Volume Size(GB) Status _____ ----- -----67622ce6-0a00-4fec-b948-7a0ba7922311 0,1 SHARED ORACLE HOME DATA orahome sh 200 CONFIGURED ac813348-2935-4903-b9a6-eb4f0d9637b3 0 ORACLE BASE DATA odabase n0 80 CONFIGURED c8153e7b-6ab7-4a55-90ad-20d4196d2ac4 1 ORACLE BASE DATA odabase n1 80 CONFIGURED _____

odacli describe-dbhome-storage

Use the odacli describe-dbhome-storage command to view information such as how much space is available (at a volume or diskgroup level).

File Path

```
/opt/oracle/dcs/bin/odacli
```



Syntax

odacli describe-dbhome-storage -i db home id [-j] [-h]

Parameters

Parameter	Description
id, -i	(Mandatory) Specifies the Oracle home storage ID. This is the ID listed in the odacli list-dbhome- storages command output.
json, -j	(Optional) Displays the output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example 17-171 Describing Database Home Storage

```
odacli describe-dbhome-storage -i 67622ce6-0a00-4fec-b948-7a0ba7922311
ORACLE HOME storage details:
_____
                ID: 67622ce6-0a00-4fec-b948-7a0ba7922311
              State: CONFIGURED
            Created: February 11, 2021 5:30:10 AM UTC
            Updated: February 18, 2021 4:33:30 PM UTC
Volume Details
_____
               Name: ORAHOME SH
         Disk Group: DATA
         Description: SHARED ORACLE HOME
         Node Number: 0,1
      Allocated Space: 200.0 GB
          Used Space: 12.10 GB
          Free Space: 187.89 GB
           Location: /u01/app/odaorahome
DiskGroup Details
_____
              Name: DATA
      Allocated Space: 15.52 TB
          Used Space: 2.69 TB
          Free Space: 12.83 TB
_____
```

odacli modify-dbhome-storage

Use the odacli modify-dbhome-storage command to modify database home storage and add additional disk space.

File Path

```
/opt/oracle/dcs/bin/odacli
```



Syntax

odacli modify-dbhome-storage -i db home id -s size[-j] [-h]

Parameters

Parameter	Description
id, -i	(Mandatory) Specifies the Oracle home storage ID. This is the ID listed in the odacli list-dbhome- storages command output.
size,-s	(Mandatory) Specifies the new size in GB. The minimum value that can be specified is 25GB and the maximum value is 1024GB.
json,-j	(Optional) Displays the output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example 17-172 Modifying Database Home Storage

```
odacli modify-dbhome-storage -i 9b9c9e0f-db04-4985-be48-3fle263cd73a -s 30
{
    "jobId" : "badfad81-cfc1-4c82-a181-69ebdfb11c22",
    "status" : "Created",
    "message" : null,
    "reports" : [ ],
    "createTimestamp" : "May 11, 2021 14:04:09 PM CST",
    "resourceList" : [ ],
    "description" : "Modify database home storage",
    "updatedTime" : "May 11, 2021 14:04:09 PM CST"
}
```

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]

Parameter	Description
-v version number	Defines the database bundle patch number.
json,-j	(Optional) Displays JSON output.



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

For the version number, you can specify the database version, such as 18.7.0.0, 18.5.0.0, 12.2.0.1, or 12.1.0.2, or you can use a 5 digit format to specify a specific patch bundle version. For example, 19.27.0.0.250415. If you use the database version without specifying the bundle patch number, then the latest bundle patch is used.

Example 17-173 Creating an Oracle Database Home

The following example creates an Oracle Database Home version 19.27.0.0.250415.

odacli create-dbhome -v 19.27.0.0.250415

odacli delete-dbhome

Use the ${\tt odacli}$ delete-dbhome command to delete database home that is not associated with a database.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli delete-dbhome -i db home ID | -n db home name [-h]
```

Parameters

Parameter	Description
id, -i	Identifies the database home using a database identifier (ID).
name, -n	Identifies the database home using a database name.
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 17-174 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

/opt/oracle/dcs/bin/odacli

Syntax

To display details about Oracle Database Home:

odacli describe-dbhome -i dbhomeid -n name [-h] [-j] [-v]

Parameters

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

Example 17-175 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: OraDB19_home1 Version: 19.19.0.0.0 Home Location: /u01/app/orauser/product/19/dbhome_1 Created: Jun 2, 2023 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.
-all	(Optional) This option is available only when multi-user access is enabled. Provides a read-only view of all the database homes in the system.

Example 17-176 Displaying a List of Oracle Home Directories

Run the following command to display a list of Oracle Home directories:

```
# odacli list-dbhomes
```

ID	Name	DB Version
b727bf80-c99e-4846-ac1f-28a81a725df6	OraDB12102_home1	12.1.0.2
(continued)		

Home Location

/u01/app/orauser/product/12.1.0.2/dbhome_1

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 modify-dbstorage Use the odacli modify-dbstorage command to resize the database storage.
- odacli modify-dgstorage Use the odacli modify-dgstorage command to release disks.

odacli create-dbstorage

Use the odacli create-dbstorage command to create the file system for database migrations.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli create-dbstorage -n dbname -s dataSize -u databaseUniqueName -r [ASM| ACFS] -rd [high|mirror] [-h]

Parameter	Description
dbname, -n	Defines the name of the database.
dataSize,-s	(Optional) Defines the size, in gigabytes (GB), of the filesystem for storing database files and temp files. The default is: 100 GB The minimum size is 10 GB. When entering the size, do not include GB. For example, for 50 GB, use 50.
databaseUniqueName,-u	(Optional) Defines a unique name for the database. Specify only if the database unique name is different than the database name. The command creates the following mount point: /u02/app/ oracle/oradata/db unique name
dbstorage,-r [ASM ACFS]	(Optional) Defines the type of database storage, either ASM or ACFS. When you select ASM, the command only creates the supporting directory structure for storing non-database files. The default is ASM.
db-redundancy, -rd	(Optional) Defines the database redundancy. The values can be high or mirror.
	The database redundancy is not applicable to database storages of Oracle ASM type, or database storages on normal or high redundancy disk groups. For database storages of Oracle ACFS type, specifying this option creates volumes of the specified redundancy on Oracle ASM disk groups of flex redundancy.



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

- 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 17-177 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

1

Use the odacli delete-dbstorage command to delete database storage that is not associated with a database.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli delete-dbstorage -i ID -n name [-h] [-j]

Parameter	Description
id, -i	Identifies the database storage using a database identifier (ID).
name, -n	Specifies the database storage name.
help, -h	(Optional) Displays help for using the command.



Parameter	Description
json,-j	(Optional) Displays JSON output.

- 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 17-178 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

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli describe-dbstorage -i ID -n name [-j] [-h]
```

Parameters

Parameter	Description
id, -i	Specifies the database storage ID.
name, -n	Specifies the database storage name.
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 17-179 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 17-180 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

odacli describe-dgstorage

Use the odacli 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 17-181 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$asm file.bytes)
                                Free Space: xGB (PhyFree/redundancy)
                                Physical Space:
vGB(v$asm_diskgroup.total_mb)
                                Physical Used : wGB (v$asm_file.space)
                                Physical Free :
```



```
uGB(v$asm diskgroup.free mb)
                                    Physical Reserved : uGB(Lookup Table)
Diskgroup: RECO
                  Redundancy: normal|high|flex
                  Physical Free Space: wGB
                  Physical Total Space: xGB
                  Database Unique Name: rdbx
                                    Location: /u02/app/test/fast_recovery_area
                                    Used Space: dGB (acfsutil.total -
acfsutil.freespace)
                                    Free Space: dGB (acfsutil.freespace)
                 Database Unique Name: rdby
                                    Location: +DATA/rdby
                                    Used Space: zGB (v$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 createdatabase command and the create-dbstorage command.

Example 17-182 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 \mbox{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 17-183 Displaying Disk Group Storage

# odacl	i lis	t-dgstora	ages -r	red	undanc	Y			
2	-	edundancy e Space				Space	Physical	Reserved	Space
data ygb		FLEX			- xGB				
	zGB					l	JGB		
REDO yGB		HIGH			xGB				
-	zGB					۱	JGB		
RECO yGB		NORMAL		хGВ					
zGB						uGB			

odacli modify-dbstorage

Use the odacli modify-dbstorage command to resize the database storage.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli modify-dbstorage [-ds] [-in] [-fs] [-rcs] [-rds] [-h] [-j]
```

Parameters

Parameter	Description
datasize,-ds	(Optional) Specifies the extendable size in GB for the DATA volume. Specify at least one size from FLASH, RECO, REDO, or DATA volumes.
dbname,-in	Defines the database name on which you want to extend the volumes.
flashsize,-fs	(Optional) Specifies the extendable size in GB for the FLASH volume.
recosize,-rcs	(Optional) Specifies the extendable size in GB for the RECO volume.



Parameter	Description
redosize,-rds	(Optional) Specifies the extendable size in GB for the REDO volume.
help, -h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

- The command can resize DATA, RECO, REDO, and FLASH volumes.
- Database name is a mandatory parameter. All other parameters are optional, however, one
 of the volume sizes must be specified. If you only provide the DATA size, then the DCS
 agent calculates the recommended RECO size for the given DATA size is internally
 calculated. The storage is then extended with the recommended values.
- The mounted Oracle ACFS and its underlying Oracle ADVM storage is extended by the specified value.
- The maximum resize value that can be specified in the command at a time is 100 GB. To
 resize with a value greater than 100 GB, run the command multiple times with a maximum
 value of 100 GB each time. For further resize, ensure that the command completes
 successfully before you run it again.
- To check the result of the resize operation, use the odacli list-dbstorages command.
- After database resize operation is completed, use the odacli describe-dbstorage command to display storage configuration details.

Example 17-184 Modifying the Database Storage

```
# odacli modify-dbstorage -ds 10 -rcs 15 -n amdb1
{
    "jobId" : "e6d54155-ed4c-4fd6-a3f6-454120fa5c18",
    "status" : "Created",
    "message" : null,
    "reports" : [],
    "createTimestamp" : "June 03, 2019 06:06:42 AM UTC",
    "resourceList" : [],
    "description" : "Database storage modify operation",
    "updatedTime" : "June 03, 2019 06:06:42 AM UTC"
}
```

odacli modify-dgstorage

Use the odacli modify-dgstorage command to release disks.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To release disks:

odacli modify-dgstorage [-f] [-rd list] [-j] [-h]



Parameters

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

Usage Notes

- Run the odacli list-dgdisks to view details of the disk, before running the odacli modify-dgstorage command.
- The odacli modify-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 17-185 Releasing a physical disk HDD_E0_S10_577135552 which has two logical partitions on two different disk groups

odacli modify-dgstorage -rd HDD E0 S10 577135552 Job details _____ ID: 46bc736c-417b-4ac2-826e-aa857db50e29 Description: Release disks: [HDD E0 S10 577135552] Status: Running Created: March 8, 2025 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: March 8, 2025 6:24:27 PM PDT Message: Release ASM disks

odacli Diagnostics Collection Commands

Use the diagnostics collection commands to display diagnostics details.

 odacli create-diagcollection
 Use the odacli create-diagcollection command to create diagnostics collection data from the appliance.



- odacli describe-diagcollection Use the odacli describe-diagcollection command to describe diagnostics collection data from the appliance.
- odacli list-diagcollections
 Use the odacli list-diagcollections command to list the diagnostics collections.
- odacli delete-diagcollection Use the odacli delete-diagcollection command to delete diagnostics collection data from the appliance.

odacli create-diagcollection

Use the odacli create-diagcollection command to create diagnostics collection data from the appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To create diagnostics collection:

odacli create-diagcollection -i id [-d] [-t] [-j] [-h]

Parameters

Parameter	Description
id, -i	(Mandatory) Specifies the DCS job ID for the collection.
description, -d	(Optional) Description of the diagnostic collection.
tag, -t	(Optional) Specifies tag name to identify the collection.
json, -j	(Optional) Displays JSON output.
help,-h	(Optional) Displays help for using the command.

Example 17-186 Creating a diagnostics collection

odacli create-diagcollection -i ID
Job details
ID: f840feb8-7712-49a1-a525-1ee911176c50
Description: Diagnostic collection creation
Status: Created
Created: April 11, 2023 7:15:30 PM UTC
Message:



odacli describe-diagcollection

Use the odacli describe-diagcollection command to describe diagnostics collection data from the appliance.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

To describe diagnostics collection:

odacli describe-diagcollection -i id [-j] [-h]

Parameters

Parameter	Description
id, -i	(Mandatory) Specifies the diagnostics collection ID.
json, -j	(Optional) Displays JSON output.
help,-h	(Optional) Displays help for using the command.

Example 17-187 Describing a diagnostics collection

odacli list-diagcollections

Use the odacli list-diagcollections command to list the diagnostics collections.

File Path

/opt/oracle/dcs/bin/odacli



Syntax

To list all diagnostics collections:

```
odacli list-diagcollections [-j] [-h]
```

Parameters

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

Example 17-188 Listing all diagnostics collections

```
ID
Description
                                        Collection
size Start time
                      End time
 _____
_____
_____
3c65bcd3-cd30-4332-88b7-fc25b256db75 Diagnostic collection for job
'DcsAdmin patching' 8.37 MB 2023-03-08 15:37:02
     2023-03-08 15:38:01 UTC
UTC
7dd1d951-056c-47b2-ad78-8614d0b3bbd0 Diagnostic collection for job 'VM
winvml start'
             6.59 MB 2023-03-08 15:37:02
UTC
  2023-03-08 15:38:01 UTC
```

odacli delete-diagcollection

Use the odacli delete-diagcollection command to delete diagnostics collection data from the appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

To delete diagnostics collection:

odacli delete-diagcollection -i id [-j] [-h]

Parameters

Parameter	Description
id, -i	(Mandatory) Specifies the diagnostics collection ID to be deleted.
json, -j	(Optional) Displays JSON output.
help,-h	(Optional) Displays help for using the command.



Example 17-189 Deleting a diagnostics collection

```
# odacli delete-diagcollection -i ID
```

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. The default number of jobs listed is 50 from the earliest to the latest.
- odacli list-pendingjobs
 Use the odacli list-pendingjobs command to list all pending jobs.
- 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-jobs
 Use the odacli list-purge-jobdata-jobs 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 17-190 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 c40c17f0-4185-40fe-a126-30fe1f0e5cdd
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 April 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 17-191 Set up a retention policy of 10 days for the schedule
'archive_log_backup'
# odacli create-jobdata-retention-policy -s 284a22b5-41e6-4be1-
a916-048eac74e076 -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
284a22b5-41e6-4be1-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.



Parameter	Description
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 17-192 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-4812-b653-0fc3208e0929 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 17-193 Purging job data older than 5 hours, including all jobs and scheduled executions related records



```
Description: purge job data
Status: Created
Created: April 23, 2020 1:55:59 PM PDT
Message:
Task Name Start Time End Time Status
 _____
----- -----
[root@oda1]# odacli describe-job -i 4d065c96-a8eb-4974-a446-573b5ad3cb95
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
     _____
                                  _____
_____ ____
purge job data April 23, 2020 1:55:59 PM PDT
1:55:59 PM PDT Success
                                         April 23, 2020
Example 17-194 Purging job data for multiple jobs
# odacli create-purge-jobdata-job -i 87a926cd-a243-49e0-
```

ba02-9d8968e1de1e,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@oda1]# 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-ba02-9d8968e1de1e Purge job with ID:0e2a38c0-041a-41d8-91ad-7f9f7c646f12

Task Name Start Time End Time Status _____ _____ ____



 purge job data
 April 23, 2020 2:01:25 PM PDT
 April 23, 2020

 2:01:25 PM PDT
 Success

Example 17-195 Purging job data for specific job data schedules older than 5 days

```
# odacli create-purge-jobdata-job -s 39cc86d6-30c2-4744-bfbc-
e62535e2aa67,31b3a83b-76ca-44d3-9268-b4dac948e217 -o 5 -u Day
Job details
_____
ID: be839a81-a79b-43ce-bf70-c8aba1a9cc91
Description: purge job data
Status: Created
Created: April 23, 2020 2:44:54 PM PDT
Message:
Task Name Start Time End Time Status
_____ ____
  ----- -----
[root@oda1]# ./odacli describe-job -i be839a81-a79b-43ce-bf70-c8aba1a9cc91
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 PDT
Success
```

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.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

To delete job data retention:

```
odacli delete-jobdata-retention-policy [-j] [-h][-s]
```



Parameters

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 17-196 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
PDT April 23, 2020 7:34:05 PM PDT Running
                                   April 23, 2020 7:34:05 PM
[root@oda1]# odacli describe-job -i ab819d57-9e35-4f55-bd5e-d26fc6372448
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
remove auto job data schedule
                                   April 23, 2020 7:34:05 PM
      April 23, 2020 7:34:05 PM PDT
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

```
/opt/oracle/dcs/bin/odacli
```

Syntax

To view a specific job, status, and tasks:

```
odacli describe-job -i id [-e] [-n parent_task] [-sd sorted_by_duration] [-
s status] [-j] [-h]
```

Parameters

Parameter	Description
id, -i	(Mandatory) Identifies the job. To get the job identifier (jobid), run the list-jobs command.
ecr, -e	(Optional) Specifies to display the error correlation report.
number, -n	(Optional) Specifies the number of parent tasks.
sort-duration,-sd	(Optional) Sorts tasks by duration, either ascending (asc) or descending (desc).
status,-s	(Optional) Specifies the status of the task, such as running, failure, success.
json,-j	(Optional) Displays JSON output.
help, -h	(Optional) Displays help for using the command.

Example 17-197 Displaying Details for a Job

To display details of a specific job with job ID 02df22c8-c21f-4162-8265-97f7826c243a:

odacli describe-job -i 02df22c8-c21f-4162-8265-97f7826c243a

Example 17-198 Viewing Error Correlation Report

To view error correlation report using ODACLI command:



```
Failed Task Messages
_____
[Database service deletion with DB name: zdjGIEn with id : 4ab1da3e-3918-4acf-
bb7f-5529e750849f] - DCS-10001:Internal error encountered: Failed to delete:
RECO/ZDJGIENU for the database: zdjGIEn.
odal Log Messages
------
 DCS Agent
 ~~~~~~~~
   Error Logs
   _____
    [Kill Pmon Process] - No process running for database : zdjGIEnU
    [Database Files Deletion] - Failed to delete directory RECO/ZDJGIENU due
to error: ORA-29261: bad argument
    [Database Files Deletion] - ORA-15178: directory 'ZDJGIENU' is not empty;
cannot drop this directory
    [Database Files Deletion] - ORA-15028: ASM file '+REC0.431.1134101713'
not dropped; currently being accessed
    [Database Files Deletion] - ORA-06512: at "SYS.X$DBMS DISKGROUP", line
666
    [Database Files Deletion] - ORA-06512: at line 2 (DBD ERROR:
OCIStmtExecute)
    [Database Files Deletion] - Failed to delete: RECO/ZDJGIENU for the
database: zdjGIEn
    [Database Service deletion for 4ab1da3e-3918-4acf-bb7f-5529e750849f] -
DCS-10001:Internal error encountered: Failed to delete: RECO/ZDJGIENU for the
database: zdjGIEn.
     Error code - DCS-10001
     Cause: An internal error occurred.
     Action: Contact Oracle Support for assistance.
RHP Error Logs
   _____
    [jobid-cb6faa85-d2b4-441a-864a-17a8532cf78d] -
[BatchMoveOpImpl.getMoveDBStateInfo:9195] attempt to fetch metadata from
repos failed with EntityNotExistsException : PRGR-110 : Repository object
"dbsa03b123e2;;;/u01/app/oracle/product/19.0.0.0/dbhome 1" of type "MOVE"
does not exist.
     Error code - PRGR-110
     Cause: The specified repository object does not exist in the repository
database.
     Action: Specify the correct repository object name.
    [jobid-cb6faa85-d2b4-441a-864a-17a8532cf78d] -
[GridHomeFactoryImpl.getTempLocation:1437] Exception node : PRCR-1001 :
Resource ora.rhpserver does not exist
     Error code - PRCR-1001
     Cause: An attempt was made to operate on a resource that does not
exist.
     Action: Check the resource using the command 'srvctl config <object>'
and if the resource does not exist, then create it using the command 'srvctl
add <object>'.
Release Notes
```

No matching results were found.



```
Documentation
-----
1. Deleting a Database
    Abstract - Use the Oracle Appliance Manager Browser User Interface to
delete an Oracle database.
    Link -
https://domainname:7093/docs/cmtxn/managing-databases-oda.html#GUID-
D85D987A-1D9E-4615-B9DB-65B4B393B1D1
```

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. The default number of jobs listed is 50 from the earliest to the latest.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

To list jobs and view job details and status:

```
odacli list-jobs [-all] [-d] [-desc description_pattern] [-ec] [-o day]
  [-f from] [-hd head] [-l last] [-msg message_pattern]
  [-ndesc not_match_description_pattern]
  [-nmsg not_match_message_pattern] [-sd sorted_by_duration]
  [-s status] [-tl tail] [-t to] [-j] [-h]
```

Parameters

Parameter	Description
all-jobs,-all	(Optional) Displays jobs created by both DCS and error correlation framework.
ec-jobs, -ec	(Optional) Displays jobs created by the error correlation framework.
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:
	# odacli list-jobs -f 2018-08-27 # odacli list-jobs -f "2018-08-27 03:00:00"
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
last,-l	(Optional) Describes jobs created from last 'n' time unit - where n can be any integer and time unit can be d for days, h for hours or m for minutes.
tail,-tl	(Optional) Describes the maximum number of latest jobs to be displayed, values can be 1 to 200.
	Example:
	<pre># odacli list-jobs -tl 10</pre>
description,-desc	(Optional) Specifies the pattern to filter jobs based on their description. For example, .*a, b.*, .*a b.*
no-desc,-ndesc	(Optional) Specifies the pattern to filter jobs that do not match their description. For example, .*a, b.*, .*a b.*
message,-msg	(Optional) Specifies the pattern to filter jobs based on their message. For example, .*a, b.*, .*a b.*
no-message, -nmsg	(Optional) Specifies the pattern to filter jobs that do not match their message. For example, .*a, b.*, .*a b.*



Parameter	Description
sort-duration,-sd	(Optional) Specifies to sort jobs by duration, either asc or desc.
status,-s	(Optional) Specifies the status of the job, such as created, scheduled, running, failure, success, internalerror.
	Example:
	# odacli list-jobs -s success
describe-job,-d	(Optional) Specifies the description of the filtered job, if the filter returns a single job.
json,-j	(Optional) Displays JSON output.
help,-h	(Optional) Displays help for using the command.

Example 17-199 Displaying a List of Jobs

To display a list of jobs:

Example 17-200 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 17-201 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
Oae9a312-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
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 Success
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
09f56fb0-1e91-4b02-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
458d1c45-02dc-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-8b92-00fcc4f8c41e Discover Components : db August 8, 2018 10:17:22 AM UTC Success

odacli list-pendingjobs

Use the odacli list-pendingjobs command to list all pending jobs.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli list-pendingjobs [-j] [-h]

Parameters

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

Example 17-202

odacli list-pendingjobs

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 17-203 Listing all job retention policies

odacli list-purge-jobdata-jobs

Use the odacli list-purge-jobdata-jobs 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-jobs [-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 17-204 Listing history, statistics, and rules for job data purge jobs



```
4d065c96-a8eb-4974-a446-573b5ad3cb95
                                      TaskReport
102
                 Metadata April 23, 2020 1:55:59 PM PDT
4d065c96-a8eb-4974-a446-573b5ad3cb95 ServiceJobReport
                 Metadata April 23, 2020 1:55:59 PM PDT
24
4d065c96-a8eb-4974-a446-573b5ad3cb95 LogCleanupSummary
                 Metadata April 23, 2020 1:55:59 PM PDT
2
4d065c96-a8eb-4974-a446-573b5ad3cb95 JobExecutionResource
                 Metadata April 23, 2020 1:55:59 PM PDT
93
4d065c96-a8eb-4974-a446-573b5ad3cb95 JobDataPurgeResult
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]

Parameters

Parameter	Description
executionid, -e	(Optional) Displays the execution ID.
scheduleid, -i	(Optional) Displays the Schedule ID.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.

Example 17-205 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
ΤD
                                Name
Description
 _____
 _____
d136cc72-4a80-4ab8-9f1e-120b995b2794 metastore maintenance
internal metastore maintenance
04b5750c-0d13-42cf-aba3-85416e8edafb AgentState metastore cleanup
internal agentstateentry metastore maintenance
7eele2aa-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
```

odacli Oracle Key Vault Server Configuration Commands

Use odacli commands to manage Oracle Key Vault server configuration for databases on Oracle Database Appliance.

- odacli create-okvserverconfig
 Use the command odacli create-okvserverconfig to create an Oracle Key Vault server configuration.
- odacli copy-okvtdewallet Use the command odacli copy-okvtdewallet to copy an Oracle Key Vault TDE wallet.
- odacli delete-okvserverconfig
 Use the command odacli delete-okvserverconfig to delete an Oracle Key Vault server configuration.
- odacli describe-okvserverconfig
 Use the command odacli describe-okvserverconfig to view the Oracle Key Vault server configuration details.
- odacli list-okvserverconfigs
 Use the command odacli list-okvserverconfigs to view all Oracle Key Vault server configurations.
- odacli update-okvendpoints Use the command odacli update-okvendpoints to update Oracle Key Vault endpoints software.



odacli create-okvserverconfig

Use the command odacli create-okvserverconfig to create an Oracle Key Vault server configuration.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli create-okvserverconfig -n name -u okv_user_name [-d okv_description]
[-host okv_host_name] [-ip okv_ip_address] [-h] [-j]

Parameters

Parameter	Description	
name, -n	(Mandatory) Specifies the name of the Oracle Key Vault server configuration object.	
user-name, -u	(Mandatory) Specifies the name of the Oracle Key Vault user on the Oracle Key Vault server.	
description,-d	(Optional) Describes the Oracle Key Vault server configuration object.	
hostname, -host	(Optional) Specifies the name of the Oracle Key Vault server where the Oracle Key Vault user has an account.	
server-ip, -ip	(Optional) Specifies the IP address of the Oracle Key Vault server where the Oracle Key Vault user has an account.	
help, -h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output. The default is false.	

Usage Notes

To create an Oracle Key Vault server configuration okvobj1 for the Oracle Key Vault server user epokvusr1 on the specified server:

Example 17-206 Creating an Oracle Key Vault server configuration

```
odacli create-okvserverconfig -n okvobjl -u epokvusrl -ip xxx.xxx.xxx
Enter OKV user password :
Retype OKV user password :
```

odacli copy-okvtdewallet

Use the command odacli copy-okvtdewallet to copy an Oracle Key Vault TDE wallet.

File Path

```
/opt/oracle/dcs/bin/odacli
```



Syntax

```
# odacli copy-okvtdewallet -swn source_wallet_name -tosc
target_okv_server_config -twn target_okv_wallet_name [-shn hostname] [-sip
ip_address] [-su user_name] [-j] [-h]
```

Parameters

Parameter	Description		
source-wallet-name, -swn	(Mandatory) Specifies the name of the wallet from which TDE keys must be copied to the target wallet in the Oracle Key Vault server.		
target-okvserverconfig,-tosc	(Mandatory) Specifies the name of the Oracle Key Vault server configuration object where the target wallet must be created.		
target-wallet-name,-twn	(Mandatory) Specifies the name of the wallet to which the TDE keys must be copied from the source wallet in the Oracle Key Vault server.		
source-hostname, -shn	(Optional) Specifies the fully-qualified domain name (FQDN) of the Oracle Key Vault server where the source wallet is created. Specify this value only if the source wallet and the target wallet use different Oracle Key Vault servers.		
source-ip,-sip	(Optional) Specifies the IP address of the Oracle Key Vault server where the source wallet is created. Specify this value only if the source wallet and the target wallet use different Oracle Key Vault servers.		
source-username, -su	(Optional) Specifies the name of the Oracle Key Vault user who owns the source wallet on the Oracle Key Vault server. Specify this value only if the source wallet and the target wallet use different Oracle Key Vault servers.		
help, -h	(Optional) Displays help for using the command.		
json,-j	(Optional) Displays JSON output. The default is false.		

Example 17-207 Copying the TDE wallet in the same Oracle Key Vault server and owned by the same Oracle Key Vault user

The source TDE wallet and the target TDE wallet are on the same Oracle Key Vault server, and both are owned by the same user on the Oracle Key Vault server.



Example 17-208 Copying the TDE wallet on the same Oracle Key Vault server but using a different Oracle Key Vault user

The source and the target wallet are on the same Oracle Key Vault server but are owned by different users on the Oracle Key Vault server. In this scenario, the target wallet user must copy the source wallet with the following command. Before running the ODACLI command to copy the wallet, the source wallet Oracle Key Vault user must provide read and manage access permissions on the wallet, to the target wallet Oracle Key Vault user. For more details, see the *Restoring TDE-Enabled Database with TDE Keys Stored on Oracle Key Vault*

Time End Time Status ------Creating a TDE wallet copy in the OKV June 20, 2024 2:56:03 AM CST June 20, 2024 2:57:17 AM CST Success server

Example 17-209 Copying the TDE wallet to a different Oracle Key Vault server

The source wallet and the target wallet are on different Oracle Key Vault servers. Specify the source wallet Oracle Key Vault server details also must be provided in the ODACLI command. Specify the source wallet Oracle Key Vault user password, when prompted.



```
Status: Success
          Created: June 20, 2024 2:56:02 AM CST
          Message:
Task Name
                          Start
                      End Time
Time
Status
-----
_____
_____
Creating a TDE wallet copy in the OKV June 20, 2024 2:56:03 AM
          June 20, 2024 2:57:17 AM CST
CST
                                    Success
server
```

odacli delete-okvserverconfig

Use the command odacli delete-okvserverconfig to delete an Oracle Key Vault server configuration.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli delete-okvserverconfig [-n name] [-h] [-j]

Parameters

Parameter	Description
name, -n	(Mandatory) Specifies the Oracle Key Vault server configuration to delete.
help,-h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output. The default is false.

Usage Notes

Use the odacli delete-okvserverconfig command to delete Oracle Key Vault server configuration. You can delete the Oracle Key Vault server configuration only if the databases that used the Oracle Key Vault server configuration are already deleted.

Example 17-210 Deleting Oracle Key Vault server configuration

odacli delete-okvserverconfig -n okvobj1



odacli describe-okvserverconfig

Use the command odacli describe-okvserverconfig to view the Oracle Key Vault server configuration details.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli describe-okvserverconfig [-n name] [-h] [-j]

Parameters

Parameter	Description
name, -n	(Mandatory) Specifies the Oracle Key Vault server configuration.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output. The default is false.

Usage Notes

For example, the odacli describe-okvserverconfig command in a multi-user access enabled system displays the following:

Example 17-211 Viewing Oracle Key Vault server configuration details in a multi-user access enabled system

```
odacli describe-okvserverconfig -n okvobj1
OKV Server Config details
                         _____
                   ID: 441fb120-35f8-4c9a-9a5c-76aebaba1c36
                 Name: okvobj1
         OKV User Name: epadmin
         OKV Server IP: xxx.xx.xx.xx
         Primary owner: okvusr1
      Secondary owners: [odaadmin,dbusr1, dbusr2]
odacli describe-okvserverconfig -n okvobj1 -j
{
   "ID" : "441fb120-35f8-4c9a-9a5c-76aebaba1c36",
   "Name" : "okvobj1"
   "Primary owner" : "okvusr1"
   "Secondary Owners : [ "odaadmin", "dbusr1", "dbusr2" ]
   "createTime" : "January 04, 2024 11:25:04 AM UTC",
   "updatedTime" : "January 04, 2024 11:37:48 AM UTC"
}
```



Example 17-212 Viewing Oracle Key Vault server configuration details in a non-multi user access enabled system

In a non-multi user access enabled system, the primary and secondary owner details are not displayed:

```
odacli describe-okvserverconfig -n okvobj1
OKV Server Config details
                       _____
 _____
                   ID: 441fb120-35f8-4c9a-9a5c-76aebaba1c36
                 Name: okvobj1
         OKV User Name: epadmin
         OKV Server IP: xxx.xxx.xx.xxx
odacli describe-okvserverconfig -n okvobj1 -j
{
   "ID" : "441fb120-35f8-4c9a-9a5c-76aebaba1c36",
   "Name" : "okvobj1",
   "OKV User Name" : "epadmin",
   "OKV Server IP": "xxx.xxx.xx.xxx",
   "createTime" : "January 04, 2024 11:25:04 AM UTC",
   "updatedTime" : "January 04, 2024 11:37:48 AM UTC"
}
```

Example 17-213 Viewing Oracle Key Vault server configuration details with the -j option

```
odacli describe-okvserverconfig -n dokvobj1 -j
{
    "id" : "2348516e-37f4-41a6-b482-c70ce0e53bc8",
    "name" : "dokvobj1",
    "userName" : "user1",
    "hostname" : null,
    "ipAddress" : "xxx.xxx.xx.xx",
    "description" : null,
    "createTime" : "October 20, 2024 05:49:22 AM PDT",
    "updatedTime" : "October 20, 2024 05:49:47 AM PDT",
    "state" : {
        "status" : "CONFIGURED"
    }
}
```

odacli list-okvserverconfigs

Use the command odacli list-okvserverconfigs to view all Oracle Key Vault server configurations.

File Path

```
/opt/oracle/dcs/bin/odacli
```



Syntax

odacli list-okvserverconfigs [-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 17-214 Viewing all Oracle Key Vault server configurations

```
odacli list-okvserverconfigs
```

ID	IP address	Name	User
Name		Host Name	Description
d017d35a-075 epadmin description	7-460a-98f0-9f8d0944 xxx.xx.xx.xx	c872 okvobj1 Null	Brief
b6336173-666	b-4d81-88bd-5ae38441	.9114 okvobj2	Brief description
epadmin2	xxx.xx.xx.xx	Null	

odacli update-okvendpoints

Use the command odacli update-okvendpoints to update Oracle Key Vault endpoints software.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli update-okvendpoints [-es] [-lib] [-oj okv_client_json] [-j] [-h]

Parameters

Description	
When specified, updates the endpoint software of databases that use Oracle Key Vault.	
When specified, updates Oracle Key Vault PKCS library and restarts all databases. Also updates Oracle Key Vault REST client of all Oracle Key Vault server configuration object available in the system.	



Parameter	Description Specifies the absolute path to JSON file which contains database name and absolute path to okvclient.jar file, corresponding to each database instance.	
okvclient-json,-oj		
help,-h	(Optional) Displays help for using the command.	
json, -j	(Optional) Displays JSON output. The default is false.	

Usage Notes

Sample command to update endpoint software of Oracle Key Vault TDE databases that were created without using Oracle Key Vault user credentials is as follows:

```
cat /tmp/okvclient.json
[
 {
   "dbName" : "racdb1",
   "node1" : "/tmp/racdb11/okvclient.jar",
   "node2" : "/tmp/racdb12/okvclient.jar"
 },
 {
   "dbName" : "sidb1",
   "node1" : "/tmp/sidb1/okvclient.jar"
 }
]
odacli update-okvendpoints -es -oj /tmp/okvclient.json
Enter TDE password of 'racdb1' database:
Enter TDE password of 'sidb1' database:
Job details
_____
                   ID: 64ae75d4-6435-4842-b507-8adcd12bd4bd
          Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
               Status: Created
              Created: May 29, 2025 19:24:55 PDT
              Message:
Task Name Start Time End Time Status
 _____
odacli describe-job -i 64ae75d4-6435-4842-b507-8adcd12bd4bd
Job details
                   ID: 64ae75d4-6435-4842-b507-8adcd12bd4bd
          Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
               Status: Success
              Created: May 29, 2025 19:24:55 PDT
```

```
Message:
Task Name Node Name Start Time End Time Status
_____ ____
_____
     _____
Endpoint update : racdb1 scaoda806c1n1 May 29, 2025 19:24:58 PDT May 29, 2025
19:24:59 PDT Success
Endpoint update : racdb1 scaoda806c1n2 May 29, 2025 19:24:59 PDT May 29, 2025
19:25:01 PDT Success
Endpoint update : sidb1 scaoda806c1n1 May 29, 2025 19:25:05 PDT May 29, 2025
19:25:06 PDT Success
dharm: Sample command to update endpoint software of Oracle Keyvault TDE
databases that were created using okv user credentials.
cat /tmp/okvclient 2.json
[
 {
   "dbName" : "mydb"
 }
]
odacli update-okvendpoints -es -oj /tmp/okvclient 2.json
Job details
_____
               ID: 245a2d23-4a6a-4fe8-943f-9a81e1059fe7
         Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
            Status: Created
            Created: May 29, 2025 19:26:57 PDT
            Message:
Task Name Start Time End Time Status
_____
_____
odacli describe-job -i 245a2d23-4a6a-4fe8-943f-9a81e1059fe7
Job details
_____
               ID: 245a2d23-4a6a-4fe8-943f-9a81e1059fe7
         Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
            Status: Success
            Created: May 29, 2025 19:26:57 PDT
            Message:
Task Name Node Name Start Time End Time Status
_____ ____
   _____
_____ ____
Endpoint update : mydb scaoda806c1n1 May 29, 2025 19:27:53 PDT May 29, 2025
19:28:47 PDT Success
```



An example to update the Oracle Key Vault PKCS library is as follows. Confirm your action when prompted in the command output flow.

```
odacli update-okvendpoints -lib
Databases [racdb1, sidb1, mydb] will be restarted during library update. Want
to proceed? (Y/N): y
Job details
_____
                 ID: f5f6a0f4-061b-4ab1-9656-51beaa381438
          Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
              Status: Created
             Created: May 29, 2025 19:42:07 PDT
             Message:
Task Name Start Time End Time Status
_____
odacli describe-job -i f5f6a0f4-061b-4ab1-9656-51beaa381438
Job details
_____
                 ID: f5f6a0f4-061b-4ab1-9656-51beaa381438
          Description: Update all databases endpoints, OKV PKCS library and
all OKV REST clients
              Status: Success
             Created: May 29, 2025 19:42:07 PDT
             Message:
Task Name
                              Node Name Start Time
End Time
                     Status
_____ ____
-----
Okvobj1 : OKV client library update scaoda806c1n1 May 29, 2025 19:42:20 PDT
May 29, 2025 19:42:22 PDT Success
                              scaoda806c1n1 May 29, 2025 19:42:22 PDT
Racdb1:Database stop (Srvctl)
May 29, 2025 19:42:55 PDT Success
Sidb1:Database stop (Srvctl)
                              scaoda806c1n1 May 29, 2025 19:42:55 PDT
May 29, 2025 19:43:21 PDT Success
Mydb:Database stop (Srvctl)
                              scaoda806c1n1 May 29, 2025 19:43:21 PDT
May 29, 2025 19:43:44 PDT Success
dharm: Database start (Srvctl)
                              scaoda806c1n1 May 29, 2025 19:43:44 PDT
May 29, 2025 19:44:21 PDT Success
OKV PKCS library update
                              scaoda806c1n1 May 29, 2025 19:43:44 PDT
May 29, 2025 19:43:44 PDT Success
Database start (Srvctl)
                              scaoda806c1n1 May 29, 2025 19:44:22 PDT
May 29, 2025 19:44:53 PDT Success
Database start (Srvctl)
                              scaoda806c1n1 May 29, 2025 19:44:53 PDT
May 29, 2025 19:45:28 PDT Success
```

Related Topics

Updating Oracle Key Vault Endpoints for Databases

Understand how you can update the Oracle Key Vault client on Oracle Database Appliance when the Oracle Key Vault server is updated to the latest release or when certificates are regenerated on the Oracle Key Vault server.

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 delete-auto-logclean-policy
 Use the odacli delete-auto-logclean-policy command to delete 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

/opt/oracle/oak/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.	
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 "oCjIN7F8P", in the TFA collection.



Example 17-215 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

/opt/oracle/dcs/bin/odacli

Syntax

```
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 com separated by comma. The values database dcs For example, gi	
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 specified number of percentage of partition size. Valid range is 20-50.	
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 17-216 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 OlderThanUnit
```



dcs		30	20	0
30	Day			

odacli delete-auto-logclean-policy

Use the odacli delete-auto-logclean-policy command to delete a policy for a job to automatically purge log files for a specified time period when certain criteria are met.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli odacli delete-auto-logclean-policy [-c] [-h] [-j]

Parameters

Parameter	Description	
components, -c	(Optional) Specifies the list of components, separated by comma. The values are gi database dcs For example, gi dcs.	
help, -h	(Optional) Displays help for using the command.	
json,-j	(Optional) Displays JSON output. The default is false.	

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]

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 gil databaseldcs For example, gi, dcs.
olderthan,-o	(Optional) Cleans logs older than specified time interval. Default is 30 if it is not specified.



Parameter	Description
unit,-u	(Optional) Unit for theolderthan parameter. Default is Day if it is not specified.

Example 17-217 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:
Task Name Start Time End Time Status
    -------
                                          _____ _
Clean TFA logs July 25, 2018 8:06:56 PM UTC July 25, 2018 8:06:59 PM UTC
Success
Clean DCS logs July 25, 2018 8:06:56 PM UTC July 25, 2018 8:06:56 PM
```

UTC Success

odacli describe-logcleanjob

Use the odacli describe-logcleanjobcommand to 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 -i [-h] [-j]

Parameters

Parameter	Description	
help, -h	(Optional) Displays help for using the command.	
json, -j	(Optional) Displays JSON output.	
id, -i	Displays the summary of the log cleanup with the specified job ID.	

Example 17-218 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 gil database dcs For example, gi, dcs.	

Example 17-219 Listing Jobs to Purge Logs

To list jobs to purge logs:

```
# odacli list-auto-logclean-policy
Component UsageOverPercentage freeSpaceBelowPercentage UsageOverMB
OlderThan OlderThanUnit
____ _____
  _____
              40
                             20
gi
0
             60 Day
database
             40
                             20
0
              60 Day
              30
                             20
dcs
              30
0
                   Day
```

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 17-220 Listing Jobs to Purge Logs

To list jobs to purge logs:

```
# odacli list-logcleanjobs
JobId Files Deleted Size Freed Component Top Path TimeStamp
```



odacli list-logspaceusage

Use the odacli list-logspaceusage command to display the log file usage.

File Path

```
/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 17-221 Displaying a List of Logs

To display log file space usage for a list of components:

```
root@node1 ~]# odacli list-logspaceusage
         Timestamp: January 13, 2022 8:38:32 AM UTC
 _____
Node : node1
-----
                                   LogUsagePercentage
Component Size (MB) Partition
PartitionFreePercentage
 _____
 _____
dcs
     685.00 /dev/mapper/VolGroupSys-LogVolOpt 0.76
                                               84.00
gi 2293.76 /dev/mapper/VolGroupSys-LogVolU01 1.63
                                                79.00
database 744.14 /dev/asm/odabase n0-159
                                   7.27
                                                83.00
```



Node : no	de2			
Component Partition		Partition ntage	LogUsagePercentage	
dcs gi database	174.00 1863.68 299.36	/dev/mapper/VolGroupSys-LogVolOpt /dev/mapper/VolGroupSys-LogVolU01 /dev/asm/odabase_n1-159		85.00 79.00 90.00

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 Use the odacli configure-asr command to configure Oracle Auto Service Request (Oracle ASR) after deploying the appliance.
- odacli describe-asr
- odacli delete-asr
- odacli export-asrconfig
- odacli modify-asr
- odacli test-asr

odacli configure-asr

Use the odacli configure-asr command to configure Oracle Auto Service Request (Oracle ASR) after deploying the appliance.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli configure-asr -u asr_usr [-e asr_type] [-t proxy_port] [-r
proxy server] [-y proxy usr] [-hp HTTPS port] [-j] [-h]
```

Parameter	Description
username, -u	Specifies the Oracle ASR user name. The user name is the My Oracle Support user name under which the server is registered.
asrtype, -e {internal external}	Specifies the Oracle ASR Configuration Type. The default is internal.
https-port, -hp	(Optional) Specifies the HTTPS port for Oracle ASR Manager. The default port is 16162.



Parameter	Description
proxyport, -t	(Optional) Specifies the port on which Oracle ASR must be configured.
proxyserver, -r	(Optional) Specifies the proxy server address that can enable connect to My Oracle Support.
proxyuser, -y	(Optional) Specifies the proxy user name needed to authenticate the proxy server.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.

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.

Example 17-222 Configuring Oracle ASR with a Proxy Server

This example configures Oracle ASR for user name user@example.com. An HTTPS port 16165 is defined.

```
# odacli configure-asr -u user@example.com -hp 16165
Enter ASR user's password:
Retype ASR user's password:
Job details
_____
                 ID: 2e6244e5-41e3-46cf-bd7a-43098dd071d8
          Description: Configure ASR
              Status: Success
             Created: September 5, 2023 2:08:56 PM CST
             Message:
Task Name
                                  Start Time
End Time
                              Status
_____ ____
_____ ____
Modify JavaExec Path
                                  September 5, 2023 2:08:57 PM CST
September 5, 2023 2:08:57 PM CST Success
Install ASR
                                 September 5, 2023 2:08:57 PM CST
September 5, 2023 2:10:13 PM CST Success
Registering ASR Manager
                                  September 5, 2023 2:10:14 PM CST
September 5, 2023 2:10:22 PM CST Success
Creating ASR configuration folders
                                 September 5, 2023 2:10:22 PM CST
September 5, 2023 2:10:22 PM CST Success
Enable HTTPS for ASR
                                  September 5, 2023 2:10:22 PM CST
September 5, 2023 2:10:46 PM CST Success
Importing ASR certificate into DCS
                                 September 5, 2023 2:10:46 PM CST
September 5, 2023 2:10:48 PM CST Success
truststore
```

```
Registering Asset: ODA HostSeptember 5, 2023 2:10:48 PM CSTSeptember 5, 2023 2:10:48 PM CSTSuccessASR assets activationSeptember 5, 2023 2:10:48 PM CSTSeptember 5, 2023 2:10:49 PM CSTSuccessRemove AsrConfBackup FileSeptember 5, 2023 2:10:55 PM CSTSeptember 5, 2023 2:10:55 PM CSTSuccess
```

Example 17-223 Configuring an External Oracle ASR

This example configures Oracle Database Appliance to use an external Oracle ASR instance.

```
# odacli configure-asr -e External
Enter ASR user's password:
Retype ASR user's password:
Job details
_____
                  -----
                ID: cdd8445f-aefb-4f43-881a-145eaa1a1181
         Description: Configure ASR
             Status: Success
             Created: September 5, 2023 1:41:33 PM CST
             Message:
Task Name
                                  Start Time
End Time
                             Status
_____
 _____ ____
Creating ASR configuration folders September 5, 2023 1:41:37 PM CST
September 5, 2023 1:41:38 PM CST Success
Importing ASR certificate into DCS September 5, 2023 1:41:38 PM CST
September 5, 2023 1:41:39 PM CST Success
truststore
Registering Asset: ODA Host
                                  September 5, 2023 1:41:39 PM CST
September 5, 2023 1:41:39 PM CST Success
ASR assets activation
                                 September 5, 2023 1:41:39 PM CST
September 5, 2023 1:41:40 PM CST Success
```

odacli describe-asr

Use the odacli describe-asr command to display Oracle Auto Service Request (Oracle ASR) configuration details.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

describe-asr [-h]



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

Example 17-224 Displaying Oracle ASR Details for ASR Type Internal

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 17-225 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 export-asrconfig

Use the odacli export-asrconfig command to export the internal Oracle ASR Manager configuration files into a zip. The generated zip file can be used to configure the external Oracle ASR Manager on another Oracle Database Appliance.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli export-asrconfig [-j] [-h]
```

Parameters

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

Example 17-226 Exporting the Internal Oracle ASR Configuration

odacli modify-asr

Use the odacli modify-asr command to make changes to Oracle Auto Service Request (Oracle ASR) configuration details after deploying the appliance.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli modify-asr -u username [-r proxyserver] [-t proxyport] [-y proxyuser] - e [internal|external][-hp HTTPS port] [-j] [-h]
```



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.
asrtype, -e [internal external]	Defines the Oracle ASR configuration type. The default is internal.
https-port,-hp	(Optional) Specifies the HTTPS port for Oracle ASR Manager. The default port is 16162.
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.
help,-h	(Optional) Displays help for using the command.
json,-j	(Optional) Displays JSON output.

Usage Notes

- Enter the ASR user password during Oracle ASR configuration.
- All log files for Oracle ASR are located in the /var/opt/asrmanager/log/ directory.
- You cannot use the modify-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.
- You cannot modify an external Oracle ASR Manager using the odacli modify-asr command. To modify external ASR, you must delete the existing Oracle ASR configuration and reconfigure Oracle ASR using the odacli configure-asr command. Before running the odacli configure-asr command, you must update the repository with the modified Oracle ASR Manager configuration zip file.

Example 17-227 Modifying Oracle ASR to use 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.



 Task Name
 Start Time
 End Time
 Status

odacli test-asr

Use the odacli test-asr command to test the Oracle Auto Service Request (Oracle ASR) configuration. When the command is run, an email alert is sent to each host and Oracle ILOM registered with Oracle ASR Manager.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli test-asr [-h]

Parameters

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

Example 17-228 Testing the Oracle ASR Configuration

Adaptive Classification and Redaction (ACR) Commands

Understand Adaptive Classification and Redaction (ACR) commands.

- odacli describe-acr Use the odacli describe-acr command to check the status of ACR.
- odacli enable-acr Use the odacli enable-acr command to enable ACR across all nodes, causing redaction of files during Oracle Trace File Analyzer diagnostic collections to occur.



- odacli redact-acr Use the odacli redact-acr command to enable ACR across all nodes, causing redaction of files during Oracle Trace File Analyzer diagnostic collections to occur.
- odacli list-acr
 Use the odacli list-acr command to print reverse map of sanitized entities.
- odacli disable-acr Use the odacli disable-acr command to disable ACR across all nodes. Redaction of files during Oracle Trace File Analyzer diagnostic collections, then, does not occur.

odacli describe-acr

Use the odacli describe-acr command to check the status of ACR.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

```
odacli describe-acr [-j] [-h]
```

Parameters

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

Example 17-229

odacli describe-acr

odacli enable-acr

Use the odacli enable-acr command to enable ACR across all nodes, causing redaction of files during Oracle Trace File Analyzer diagnostic collections to occur.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli enable-acr [-j] [-h]
```

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



Example 17-230

odacli enable-acr

odacli redact-acr

Use the odacli redact-acr command to enable ACR across all nodes, causing redaction of files during Oracle Trace File Analyzer diagnostic collections to occur.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli redact-acr -i path name -m mode [-j] [-h]

Parameters

Description
(Required) Specifies the path of input file to be redacted.
(Required) Specifies the redaction mode. The values can be mask or sanitize.
(Optional) Displays help for using the command.
(Optional) Displays JSON output.

Example 17-231

odacli redact-acr -i path_name -m sanitize

odacli list-acr

Use the odacli list-acr command to print reverse map of sanitized entities.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

odacli list-acr -l *list* [-j] [-h]

Parameter	Description
list,-l	(Required) Specifies the list of sanitized entities.
help, -h	(Optional) Displays help for using the command.
json, -j	(Optional) Displays JSON output.



Example 17-232

odacli list-acr -l list

odacli disable-acr

Use the odacli disable-acr command to disable ACR across all nodes. Redaction of files during Oracle Trace File Analyzer diagnostic collections, then, does not occur.

File Path

/opt/oracle/dcs/bin/odacli

Syntax

odacli disable-acr [-j] [-h]

Parameters

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

Example 17-233

odacli disable-acr

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 modify-osconfigurations Use the command odacli modify-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]
```



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 17-234 Displaying a List of Configured and Suggested Memlock and HugePage Configurations

odacli list-osconfigurations

Parameter	User	ConfiguredValue	SuggestedValue
Memlock	grid	295971180KB	289034355KB
Memlock	oracle	295971180KB	289034355KB
HugeSpace	default	101430MB	101161MB

odacli modify-osconfigurations

Use the command ${\tt odacli}\ {\tt modify-osconfigurations}$ to update the HugePage and memlock values.

File Path

```
/opt/oracle/dcs/bin/odacli
```

Syntax

```
odacli modify-osconfigurations [-hs hugepage] [-m memlock] [-nhp
number of hugepages] [-j] [-h]
```

Parameter	Description		
memlock, -m	(Optional) Updates only the memlock value.		
hugepage, -hs	(Optional) Updates only the HugePage value.		
number-hugepages, -nhp (Optional) Updates HugePages val			
json, -j (Optional) Displays JSON output. The false.			
help,-h	(Optional) Displays help for using the command.		



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 modify memlock or hugepage. If no option is provided, then both parameters are updated to the suggested values.

Example 17-235 Updating the HugePage and Memlock Parameters to the Suggested Values

```
odacli modify-osconfigurations
"jobId" : "954cf7a5-9cad-451c-8820-3140a716af26",
"status" : "Created",
"message" : "Successfully submitted a request to configure OS
parameters.",
 'reports" : [ ],
"createTimestamp" : "March 8, 2025 00:03:51 AM MST",
"resourceList" : [ ],
"description" : "Configuring OS Parameter",
"updatedTime" : "March 8, 2025 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: March 8, 2025 12:03:51 AM MST
Message:
Task Name
                     Start Time
                                                       End Time
                                                                                           Status
_____ _____
Setting up memlock. March 8, 2025 12:03:51 AM MST March 8, 2025 12:03:51 AM MST Success
Setting up HugeSpace March 8, 2025 12:03:51 AM MST March 8, 2025 12:03:51 AM MST Success
```

odaadmcli Hardware Monitoring Commands

Use the hardware monitoring commands to display hardware configurations.

- odaadmcli show localdisk Use the odaadmcli show localdisk command to show the status and details of the local operating system disks.
- 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 localdisk

Use the odaadmcli show localdisk command to show the status and details of the local operating system disks.

File Path

/opt/oracle/oak/bin/odaadmcli

Syntax

To show the status and details of the local operating system disks:

```
odaadmcli show localdisk [-h]
```

Parameters

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

Example

<pre># odaadmcli show loca</pre>	ldisk	
NAME	PATH	TYPE
STATUS	STATE_IN_ILOM	
lpd_0	/dev/sda	SSD
PredictiveFailure	OK	
lpd_1	/dev/sdb	SSD
OK	OK	

odaadmcli show cooling

Use the odaadmcli show cooling command to show cooling details.

File Path

/opt/oracle/oak/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 <code>odaadmcli show env_hw</code> command to display information about the environment and hardware.

File Path

/opt/oracle/oak/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 17-236 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 X7-2 Medium

odaadmcli show fs

Use the odaadmcli show fs command to display filesystem details.

File Path

/opt/oracle/oak/bin/odaadmcli

Syntax

To display filesystem details:

```
odaadmcli show fs [-h]
```



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

Example 17-237 Displaying Filesystem Details

# odaadı	ncli show fs			
Туре	Total Space	Free Space	Total DG Space	Free DG Space
ext3	30237M	7763M	-	-
ext3	484M	416M	-	-
ext3	60475M	38149M	-	-
ext3	100793M	22060M	-	-
acfs	102400M	102158M	4894016M	2418668M
acfs	102400M	100501M	4894016M	2418668M
acfs	102400M	100601M	4894016M	2418668M
(Continu	ued)			
Diskgrou	up Mount Point			
	/			
	/boot			
	/opt			
	/u01			
DATA	/u02/app/or	acle/oradata/ACF	SDB1	
DATA	ATA /u02/app/oracle/oradata/ACFSDB2			
DATA	DATA /u02/app/oracle/oradata/EE12NCDB			

odaadmcli show memory

Use the odaadmcli show memory command to display memory details.

File Path

/opt/oracle/oak/bin/odaadmcli

Syntax

To show memory details:

```
odaadmcli show memory [-h]
```

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



Example 17-238 Display Memory Details

odaadmcli show memory
NAME HEALTH HEALTH_DETAILS PART_NO. SERIAL_NO.
DIMM_0 OK - 3A4K40BB1-CRC 00CE01154602EADA96
DIMM_11 OK - 3A4K40BB1-CRC 00CE01154602EADADA
DIMM_3 OK - 3A4K40BB1-CRC 00CE01154602EADBC7
DIMM_8 OK - 3A4K40BB1-CRC 00CE01154602EADBA0

(Continued)
LOCATION MANUFACTURER MEMORY_SIZE CURR_CLK_SPEED ECC_Errors
P0/D0 Samsung 32 GB 2400 MHz 0
P0/D1 Samsung 32 GB 2400 MHz 0
P0/D3 Samsung 32 GB 2400 MHz 0
P0/D8 Samsung 32 GB 2400 MHz 0

odaadmcli show network

Use the odaadmcli show network command to show network details.

File Path

/opt/oracle/oak/bin/odaadmcli

Syntax

To show network details:

odaadmcli show network [-h]

Parameters

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

Example 17-239 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/oak/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 17-240 Displaying Power Supply Details

#	odaadmcli	show	power	
---	-----------	------	-------	--

NAME Power_Supply		HEALTH_DETAILS -	PART_NO. 7079395	-	AL_NO. 2+1514CE056G
	INPUT_POWER Present	OUTPUT_POWER 112 watts	INLET_TEMP 28.000 degre		EXHAUST_TEMP 34.938 degree C

odaadmcli show processor

Use the odaadmcli show processor command to display processor details.

File Path

/opt/oracle/oak/bin/odaadmcli

Syntax

To show processor details:

odaadmcli show processor [-h]

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



Example 17-241 Displaying Processor Details

odaadmcli show processor
NAME HEALTH HEALTH_DETAILS PART_NO. LOCATION MODEL
CPU_0 OK - 060F P0 (CPU 0) Intel(R) Xeon(R) CPU
E5-2630
(Continued)
MAX_CLK_SPEED TOTAL_CORES ENABLED_CORES
2.200 GHz 10 10

odaadmcli show server

Use the odaadmcli show server command to display server details.

File Path

/opt/oracle/oak/bin/odaadmcli

Syntax

To show server details:

odaadmcli show server [-h]

Parameters

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

Example 17-242 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 asmops diskgroup Use the odaadmcli asmops diskgroup command to manage Oracle ASM disk group.
- 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 asmops diskgroup

Use the odaadmcli asmops diskgroup command to manage Oracle ASM disk group.

File Path

/opt/oracle/oak/bin/odaadmcli

Syntax

```
odaadmcli asmops diskgroup -G diskgroup_name -o {add|remove|offline|
online} -p path -D disk name -f -w -t timeout [-h]
```



Parameter	Description
-G	(Mandatory) Specifies the disk group name.
-0	(Mandatory) Specifies the operation to be performed on Oracle ASM disk. Add disk to disk group, remove from disk group, offline the disk or online the disk.
- <u>p</u>	(Mandatory for addition of disks) Specify the disk path during addition of disk to Oracle disk group.
-D	(Mandatory) Specify Oracle ASM disk name or alias.
help, -h	(Optional) Displays help for using the command.
-f	(Optional) Specifies if you want to force the operation.
-w	(Optional) Specifies if you want to wait for the operation to complete. This option is valid for the disk online operation.
-t	(Optional) Specifies the duration after which the disks are dropped by Oracle ASM after a disk offline operation. The time out values can be specified in the format 35m, 2h, and so on. This option is valid for the disk offline operation.

Usage Notes

Run the command on the Oracle Database Appliance system to manage Oracle ASM disk group.

odaadmcli expand storage

Use the odaadmcli expand storage command to expand storage.

File Path

```
/opt/oracle/oak/bin/odaadmcli
```

Syntax

```
odaadmcli expand storage -ndisk number of disks to be added -enclosure {0| 1} [-h]
```

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.



Parameter	Description
-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).

Note:

In addition to reviewing the expand storage command, it is important to follow the procedures for adding storage. Cabling validation and disk placement is important. In some cases, you must move disks to different slots to successfully expand storage.

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]

Parameter	Description (Optional) Displays JSON output.	
json,-j		
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 17-243 Listing All Available Disks on the System

odacli list-dgdisks -dg ALL

Group Mount St Group Num Mode St State Name Redundancy Fail Grp Path Health Inc _____ ____ _____ ____ HDD_E0_S19_576667504P1 DATA CACHED 1 ONLINE NORMAL UNKNOWN HDD E0 S19 576667504P1 AFD:HDD E0 S19 576667504P1 0 0 HDD E0 S08 577087696P1 DATA CACHED 1 ONLINE NORMAL UNKNOWN HDD E0 S08 577087696P1 AFD:HDD E0 S08 577087696P1 0 0 HDD E0 S11 576021940P1 DATA CACHED 1 ONLINE NORMAL UNKNOWN HDD E0 S11 576021940P1 AFD:HDD E0 S11 576021940P1 0 0 HDD E0 S13 576660012P1 DATA CACHED 1 ONLINE NORMAL UNKNOWN HDD E0 S13 576660012P1 AFD:HDD E0 S13 576660012P1 0 0 HDD E0 S15 577131668P1 DATA CACHED 1 ONLINE NORMAL UNKNOWN HDD E0 S15 577131668P1 AFD:HDD E0 S15 577131668P1 0 0 HDD E0 S09 576662448P1 DATA CACHED 1 ONLINE NORMAL UNKNOWN HDD E0 S09 576662448P1 AFD:HDD E0 S09 576662448P1 0 0 HDD E0 S18 577136300P1 DATA CACHED 1 ONLINE NORMAL UNKNOWN HDD E0 S18 577136300P1 AFD:HDD E0 S18 577136300P1 0 0

Example 17-244 Listing Disks with the Specified Disk Path on the System

odacli list-dgdisks -dp HDD_E0_S10_577135552

NameGroup Mount St Group Num Mode St StateRedundancyFail GrpPathHealth Inc------------HDD_E0_S10_577135552P1DATA CACHED 1ONLINE NORMALHDD_E0_S10_577135552P1AFD:HDD_E0_S10_577135552P10HDD_E0_S10_577135552P2RECOCACHED 2ONLINE NORMALHDD_E0_S10_577135552P2RECOCACHED 2ONLINE NORMALHDD_E0_S10_577135552P2AFD:HDD_E0_S10_577135552P200

odacli validate-storagetopology

Use the odacli validate-storagetopology command to check the cable connections between the system controllers and the storage shelf, as well as the cable connection to the storage expansion shelf (if one is installed).

Oracle recommends that you run the odacli validate-storagetopology command before deploying the system to ensure that the cabling is correct. This will avoid and prevent problems during deployment due to incorrect or missing cable connections. If the cabling is not correct, you will see errors in your output.

File Path

```
$ORACLE HOME/opt/oracle/dcs/bin/odacli
```



Syntax

```
odacli validate-storagetopology [-h]
```

Parameters

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

odaadmcli power disk

Use the odaadmcli power disk command to power a disk on or off for NVMe drives only.

File Path

/opt/oracle/oak/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 17-245 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 17-246 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

/opt/oracle/oak/bin/odaadmcli

Syntax

To display details of the controller:

odaadmcli show controller id [-h]

Parameters

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

Example 17-247 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

/opt/oracle/oak/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 17-248 Displaying the Status of All Disks

To display the status of all the disks on the system:

# odaadmcli show disk									
NAME	PATH	TYPE	STATE	STATE_DETAILS					
pd_00	/dev/nvme0n1 1	NVD	ONLINE	Good					
pd_01	/dev/nvme1n1 1	NVD	ONLINE	Good					

Example 17-249 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/nvmeOn1
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

```
/opt/oracle/oak/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]

Parameter	Description
DATA	(Optional) Displays the DATA diskgroup configurations.



Parameter	Description		
RECO	(Optional) Displays the RECO diskgroup configurations.		
help,-h	(Optional) Displays help for using the command.		

Example 17-250 Listing All Diskgroups

odaadmcli show diskgroup
DiskGroups

DATA RECO

Example 17-251 Displaying DATA Configurations

odaadmcli show diskgroup DATA
ASM_DISK PATH DISK STATE STATE_DETAILS
data_00 /dev/NVD_S00_S2LHNAAH101026p1 pd_00 ONLINE Good
data_01 /dev/NVD_S01_S2LHNAAH101008p1 pd_01 ONLINE Good

odaadmcli show raidsyncstatus

Use the odaadmcli show raidsyncstatus command to display the RAID SYNC status.

File Path

/opt/oracle/oak/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 17-252 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

```
/opt/oracle/oak/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 17-253 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 ${\tt odaadmcli}$ stordiag command to collect detailed information for each disk or NVMe.

File Path

```
/opt/oracle/oak/bin/odaadmcli
```

Syntax

To collect storage diagnostics for disks and NVM Express (NVMe):

```
odaadmcli stordiag [-n] [-h]
```

Parameters

Parameter	Description
-n <i>disk_name</i>	Defines the disk resource name. The resource name format is pd_[03].
help, -h	(Optional) Displays help for using the command.

Example 17-254 Displaying NVMe Details

To display detailed information for NVMe pd 00:

odaadmcli stordiag pd 00



18

Oracle Database Appliance Command-Line Interface for KVM

Use odacli commands to manage Oracle Linux Kernel-based Virtual Machine (KVM) on Oracle Database Appliance.

Note:

If you have enabled multi-user access, then you can run all supported ODACLI commands on KVM and DB systems, after logging in as odaadmin.

- About Command-Line Interface for Kernel-Based Virtual Machine (KVM) The odacli commands are the primary method for performing database and system administration on Oracle Database Appliance Kernel-Based Virtual Machine (KVM).
- About ODACLI Commands Supported on Oracle KVM Database System Understand the odacli commands supported on Oracle Database Appliance Kernel-Based Virtual Machine (KVM) Database System in this release.
- odacli DB System Commands for KVM
 Use the odacli DB system commands to manage databases on Oracle Database
 Appliance for Oracle KVM.
- odacli VM Storage Commands for KVM Use the odacli virtual machine storage commands to manage storage on Oracle Database Appliance for Oracle KVM.
- odacli Virtual Disk Commands for Oracle KVM
 Use the odacli virtual disk commands to manage virtual disks on Oracle Database
 Appliance for Oracle KVM.
- odacli CPU Pool Commands for Bare Metal and KVM
 Use odacli commands to manage resource allocations on Oracle Database Appliance for bare metal and KVM deployments.
- odacli VM Network Commands for KVM Use the odacli virtual machine network commands to manage network on Oracle Database Appliance for Oracle KVM.
- odacli Virtual Machine Commands for Oracle KVM
 Use the odacli virtual machine commands to manage virtual machines on Oracle Database
 Appliance for Oracle KVM.

About Command-Line Interface for Kernel-Based Virtual Machine (KVM)

The odacli commands are the primary method for performing database and system administration on Oracle Database Appliance Kernel-Based Virtual Machine (KVM).



You can perform the following tasks with ODACLI commands on Kernel-Based Virtual Machine (KVM):

- Manage VM instances
- Manage VM storage
- Manage virtual disks
- Manage virtual network
- Manage CPU pools

ODACLI Command Location and Path Configuration

The odacli command-line interface is in the following directory:

/opt/oracle/dcs/bin/odacli

Configure the root user account on your Oracle Database Appliance servers to have the PATH variable defined to search for odacli commands in the path /opt/oracle/dcs/bin/ odacli.

ODACLI Syntax

Oracle Appliance Manager command-line interface commands and parameters are casesensitive.

An odacli command uses the following command syntax:

odacli 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 odacli command performs the operation. For example, you issue a command to create or configure a virtual disk, or a network, or perform other system or software administration. You can also use object abbreviations.
- 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. 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 odacli commands available for your Oracle Database Appliance:

odacli -h

Run the following command to see detailed help about a specific odacli command:

odacli command -h



Run the following command to see detailed help about a specific odacli command carried out on an object, and the options that are available for you to use with that object.

```
odacli command object -h
```

About ODACLI Commands Supported on Oracle KVM Database System

Understand the odacli commands supported on Oracle Database Appliance Kernel-Based Virtual Machine (KVM) Database System in this release.

This release of Oracle Database Appliance supports the provisioning of Oracle KVM database system through odacli create-dbsystem or the Browser User Interface. The following ODACLI commands are supported on Oracle KVM Database System on Oracle Database Appliance:

- odacli ping-agent
- odacli delete-agentconfig-parameters
- odacli list-agentconfig-parameters
- odacli modify-agentconfig-parameters
- odacli restore-archivelog
- odacli create-auto-logclean-policy
- odacli delete-auto-logclean-policy
- odacli list-auto-logclean-policy
- odacli list-availablepatches
- odacli create-backup
- odacli delete-backup
- odacli create-backupconfig
- odacli delete-backupconfig
- odacli describe-backupconfig
- odacli list-backupconfigs
- odacli modify-backupconfig
- odacli describe-backupreport
- odacli describe-component
- odacli set-credential
- odacli create-database
- odacli delete-database
- odacli describe-database
- odacli irestore-database
- odacli list-databases
- odacli modify-database



- odacli recover-database
- odacli register-database
- odacli configure-dataguard
- odacli deconfigure-dataguard
- odacli failover-dataguard
- odacli reinstate-dataguard
- odacli register-dataguard
- odacli switchover-dataguard
- odacli describe-dataguardstatus
- odacli list-dataguardstatus
- odacli create-dbhome
- odacli delete-dbhome
- odacli describe-dbhome
- odacli list-dbhomes
- odacli create-dbstorage
- odacli delete-dbstorage
- odacli describe-dbstorage
- odacli list-dbstorages
- odacli describe-job
- odacli list-jobs
- odacli create-jobdata-retention-policy
- odacli delete-jobdata-retention-policy
- odacli list-jobdata-retention-policy
- odacli describe-latestpatch
- odacli create-logcleanjob
- odacli describe-logcleanjob
- odacli list-logcleanjobs
- odacli list-logspaceusage
- odacli describe-network
- odacli list-networks
- odacli describe-networkinterface
- odacli list-networkinterfaces
- odacli list-nodes
- odacli create-objectstoreswift
- odacli delete-objectstoreswift
- odacli describe-objectstoreswift



- odacli list-objectstoreswifts
- odacli modify-objectstoreswift
- odacli list-osconfigurations
- odacli modify-osconfigurations
- odacli list-pendingjobs
- odacli create-prepatchreport
- odacli delete-prepatchreport
- odacli describe-prepatchreport
- odacli list-prepatchreports
- odacli create-purge-jobdata-job
- odacli list-purge-jobdata-jobs
- odacli describe-schedule
- odacli list-schedules
- odacli modify-schedule
- odacli list-scheduled-executions
- odacli describe-systemcomponent
- odacli list-tdebackupreports
- odacli restore-tdewallet

Note:

No other ODACLI commands than the ones above are supported on Oracle Database Appliance KVM Database System, in this release.

odacli DB System Commands for KVM

Use the odacli DB system commands to manage databases on Oracle Database Appliance for Oracle KVM.

odacli create-dbsystem

Use the odacli create-dbsystem command to create a new database system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli modify-dbsystem

Use the odacli modify-dbsystem command to modify a DB system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli modify-dbfileattributes

Use the odacli modify-dbfileattributes command to properly set the file attributes (permissions and ownership) of files on Oracle ASM disk group on a bare metal host to support a dbsystem. Only run this command if prompted by the odacli create-dbsystem command.



- odacli list-dbsystems
 Use the odacli list-dbsystems command to view the database systems on Oracle
 Database Appliance Kernel-based Virtual Machine (KVM).
- odacli describe-dbsystem
 Use the odacli describe-dbsystem command to describe a database system on Oracle
 Database Appliance Kernel-based Virtual Machine (KVM).
- odacli describe-dbsystem-image

Use the odacli describe-dbsystem-image command to view the supported Oracle Grid Infrastructure and Oracle Database versions and the availability of the clone files and Database System KVM image in the Oracle Database Appliance system.

odacli start-dbsystem

Use the odacli start-dbsystem command to start a database system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

- odacli stop-dbsystem
 Use the odacli stop-dbsystem command to stop a database system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli delete-dbsystem
 Use the odacli delete-dbsystem command to delete a DB system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).

odacli create-dbsystem

Use the odacli create-dbsystem command to create a new database system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli create-dbsystem [-f] [-p json_payload_path] [-t template] [-ta] [-j] [-h]

Parameters

Parameter	Description
params, -p	(Optional) Specifies the input parameters file path for DB system creation.
force, -f	(Optional) Forces the operation with the specified parameters.
template,-t	(Optional) Specifies the path where the template with sample values will be created.
template-annotated,-ta	(Optional) Displays the DB system template with field descriptions.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Usage Notes

For example JSON files that you can use to create the DB system, see the *Example JSON File* to Create a High-Availability DB System and *Example JSON File to Create a Single-Node DB* System topics in this guide.



Example

Create a KVM database system using a JSON file for input parameters.

```
# odacli create-dbsystem -p example_system.json
Job details
ID: fcfe305c-3e75-4af4-8702-992aa15619d0
Description: DB System example_system creation
Status: Created
Created: March 8, 2025 9:28:03 AM CST
Message:
Task Name
Start Time
End Time
Status
```

Related Topics

- Example JSON File to Create a High-Availability DB System Follow the JSON file example to create a JSON file to deploy a High-Availability DB system, with role separation, with the command odacli create-dbsystem.
- Example JSON File to Create a Single-Node DB System
 Follow the JSON file example to create a JSON file to deploy a single-node DB System, with role separation, with the command odacli create-dbsystem.
- odacli describe-dbsystem-image
 Use the odacli describe-dbsystem-image command to view the supported Oracle Grid
 Infrastructure and Oracle Database versions and the availability of the clone files and
 Database System KVM image in the Oracle Database Appliance system.

odacli modify-dbsystem

Use the odacli modify-dbsystem command to modify a DB system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli modify-dbsystem -n name [-cp cpu_pool_name] [-no-cp] [-r]
[-avd v_disk_to_attach] [-avn v_network]
[-dvd v_disk_to_detach] [-dvn v_networks_to_detach] [-en] [-gw gateway]
[-ip ip_address] [-nm netmask] [-tvm vm_name]
[-sip scan_ip_address] [-sn scan_name] [-s shape]
[-vips vip address] [-vt v network type] [-m] [-j] [-h]
```

Parameter	Description
name, -n	(Mandatory) Describes the name of the DB system.



Parameter	Description
redundancy, -r	(Optional) Specifies the VM storage redundancy for a DB system. The value can be HIGH or MIRROR. This option is not supported for DB systems on non-FLEX disk group. The options can be MIRROR or HIGH. The default option is MIRROR.
attach-vdisk,-avd	(Optional) Specifies the vdisk to attach.
attach-vnetwork, -avn	(Optional) Specifies the name of the vnetwork to attach.
cpupool,-cp	(Optional) Specifies the shared DB System CPU Pool name.
detach-vdisk,-dvd	(Optional) Specifies the vdisk to detach.
detach-vnetwork, -dvn	(Optional) Specifies the name of the vnetworks to detach.
enable-numa,-en	(Optional) Enables NUMA configuration for the DB System.
gateway,-gw	(Optional) Specifies the network gateway. If the gateway is specified, it is added as the default gateway. If you do not want to configure a default gateway, then do not specify thegateway option.
ip, -ip	(Optional) Specifies the network IP address.
netmask, -nm	(Optional) Specifies the netmask of the network.
no-cpupool, -no-cp	(Optional) Specifies to dissociate the current DB System CPU Pool name.
target-vm,-tvm	(Optional) Specifies the DB system host name to attach or detach a vdisk.
scan-ips,-sip	(Optional) Specifies the SCAN IP of the network.
scan-name, -sn	(Optional) Specifies the SCAN of the network.
shape, -s	(Optional) Specifies the new shape. You can specify a higher or lower value than the current shape. This option only changes the shape of the DB system. It does not change the shape of databases in the DB system.
vips,-vips	(Optional) Specifies the virtual IP of the network in the format vip_name_0:0:vip_ip_0,vip_name_1:1:vip_ip_1.
vnetwork-type,-vt	(Optional) Specifies the vnetwork type to attach.
memory, -m	(Optional) Defines the memory size. The format is M G.
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Usage Notes

- The odacli modify-dbsystem command supports the following use cases:
 - attach or detach the shared DB system cpupools. Attaching a CPU pool:

odacli modify-dbsystem --name dbsystem_name -cp cpupool

Detaching a CPU pool:

odacli modify-dbsystem --name dbsystem_name --no-cp



- Change DB system shape, that is, scale up (increase) or scale down (decrease):

odacli modify-dbsystem -n dbsystem name -s new shape

 Enable NUMA for the existing DB system. NUMA is enabled on Oracle Database Appliance release 19.12 and later. For existing DB sytems created before release 19.12, use the odacli modify-dbsystem --enable_numa command to enable the NUMA for the DB system. This command includes enabling the NUMA for the VM configuration, operation system, and the database inside the DB system.

odacli modify-dbsystem --name dbsystem name --enable numa

 Attach or detach new network to the DB system. Before attaching a vnetwork, ensure that the vnetwork exists. You must specify the IP address and netmask to configure the new network interface inside the DB system. If the network type is database or dataguard, specify the VIPs, SCAN name, and SCAN IPs.

odacli modify-dbsystem -n dbsystem1 -avn vnet2 -t Dataguard -ip 192.168.10.119,192.168.10.120 -nm 255.255.240.0 -gw 192.168.10.1 -sn scan1 -sip 192.168.10.30,192.168.10.31 -vips vip1:0:192.168.15.57,vip2:1:192.168.15.58

To detach a network from DB system:

odacli modify-dbsystem -n dbsystem1 -dvn vnet2

- Starting with Oracle Database Appliance release 19.23, the odacli modify-dbsystem -shape command only changes the shape of the DB system; it does not change the shapes of the database inside the DB system any more. You must modify database shapes accordingly based on the new shape of the DB system. Ensure that you scale up database shapes after the DB system shape is scaled up. Similarly, scale down database shapes before DB system shape is scaled down, otherwise databases could fail to start because of reduced DB system memory.
- To attach a vdisk to a DB system, note the following:
 - The vdisk must already exist.
 - When you attach a vdisk, the vdisk attaches to the DB system and displays in the DBVM operating system as a block device, for example, /dev/vdc. You must format and create a file system with the block device and maintain the device in the DB system.
 - For high-availability systems, you must specify the DB system to attach the vdisk, using the --target-vm option. Specify the VM host name without the domain name in the --target-vm option. You can view the VM host name with the odacli describedbsystem command.
 - On high-availability systems, the vdisk attached to the two nodes on the DB system is local to the DBVM it is attached to. The vdisk is not shared and cannot be shared between two DBVMs in the DB system.
- To detach a vdisk from a DB system, note the following:
 - Detaching a vdisk from the DB system removes the vdisk from the DBVM. The block device, for example, /dev/vdc is removed from the DBVM operating system level. You must ensure that sufficient care is exercised at the operating system level, for example, properly back up the content of the file system, remove the block device from



logical volume manager, or remove the block device from /etc/fstab, before you detach the vdisk. Without proper handling, the DBVM could fail to restart after running the detach vdisk operation.

- For high-availability systems, you must specify the DB system from which to detach the vdisk, using the --target-vm option. Specify the VM host name without the domain name in the --target-vm option. You can view the VM host name with the odacli describe-dbsystem command.
- If the detach vdisk operation fails, then you can retry the detach operation with the -force, -f parameter to ensure that the vdisk is detached from the device block list
 and the metadata as well.
- The attach and detach vdisk operations restart the DB system.

Example: Modify a KVM DB system

```
# odacli modify-dbsystem -n example system1 -cp example pool -s new shape
```

Example: Increase the DB System memory to 24 GB

The command supports increasing the DB system memory. To reduce the DB system memory, use the --shape option with the command odacli modify-dbsystem.

```
# odacli modify-dbsystem -n dbsystem name -m 24G
```

Related Topics

odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli create-cpupool
 Use the odacli create-cpupool command to create a new CPU pool on Oracle Database
 Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli modify-dbfileattributes

Use the odacli modify-dbfileattributes command to properly set the file attributes (permissions and ownership) of files on Oracle ASM disk group on a bare metal host to support a dbsystem. Only run this command if prompted by the odacli create-dbsystem command.

Syntax

odacli modify-dbfileattributes [-in db_name] [-j] [-h]

Parameter	Description
dbname,-in	(Optional) Describes the name of the database for which you want to modify the file attributes.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.



Usage Notes

- To create the database system, access control must be enabled in Oracle ASM running on bare metal system. When the bare metal system is newly provisioned or patched to Oracle Database Appliance release 19.27, access control is already enabled. This helps you set appropriate file ownerships for all the files created in DB systems and on bare metal.
- Before you create the database system, the files on Oracle ASM disk groups that do not have file ownership must be set up with ownership. The creation of dbsystem fails, and you are prompted to run the odacli modify-dbfileattributes command to set up the file ownership and permission. Since there can be many files on Oracle ASM disk group, the user can run this step at their own convenience. Use the odacli modifydbfileattributes command to set up the file ownerships.
- This command sets the file attributes (permissions and ownership) of all files on Oracle ASM disk group. The files include database files and also Oracle Clusterware files such as OCR (Oracle Clusterware Registry). Before creating the first DB system, set up attributes for files owned by both Oracle Grid Infrastructure and Oracle Database by running the odacli modify-dbfileattributes command with no arguments.
- If the overall operation was successful for many files, but failed for some files, then you can run the command again by specifying the database names.

Example

Modify the file attributes of the databases.

odacli modify-dbfileattributes -in example_db_name

odacli list-dbsystems

Use the odacli list-dbsystems command to view the database systems on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli list-dbsystems [-j] [-h]
```

Parameters

Parameter	Description
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

List the KVM database systems.



dbsystem2 odb2 2 16.00 GB CREATING 2020-12-16 09:28:03 CST 2020-12-16 09:28:03 CST

odacli describe-dbsystem

Use the odacli describe-dbsystem command to describe a database system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli describe-dbsystem -n db system name [-p payload] [-j] [-h]
```

Parameters

Parameter	Description
name, -n	(Mandatory) Describes the name of the DB system.
payload, -p	(Optional) Displays the payload describing the specified DB system. The option that can be specified is COPY.
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Usage Notes

Image version is the version which the DB System was created from. Current version is the current version of the DB system. For instance, if the DB System was created on 19.26 and it was patched to 19.27, the output is as follows:

```
Image version: 19.26.0.0.0
Current version: 19.27.0.0.0
```

Example

View details of a KVM database system on a single-node system.

CPU Pool



_____ Name: c4bfa26faa Number of cores: 2 Host: nl Effective CPU set: 0-1,20-21 Online CPUs: 0, 1, 20, 21 Offline CPUs: NONE Host: n2 Effective CPU set: 0-1,20-21 Online CPUs: 0, 1, 20, 21 Offline CPUs: NONE VM Storage ------Disk group: DATA Volume name: S4BFA26FAA Volume device: /dev/asm/s4bfa26faa-497 Size: 400.00 GB Mount Point: /u05/app/sharedrepo/example system VMs -----Host: host1 VM Name: x4bfa26faa VM Host Name: example domain1 VM image path: /vm image path1 Target State: ONLINE Current State: ONLINE Host: host2 VM Name: y4bfa26faa VM Host Name: example domain2 VM image path: /vm image path2 Target State: ONLINE Current State: ONLINE VNetworks _____ Host: example domain1 VM Name: x4bfa26faa Public: xxx.xxx.xxx / xxx.xxx.xxx / ens3 / BRIDGE (pubnet) ASM: xxx.xxx.xxx / xxx.xxx.xxx / ens4 / BRIDGE (privasm) VLAN (icbond0.100) Interconnect: xxx.xxx.xxx / xxx.xxx.xxx / ens5 / Host: example domain2 VM Name: y4bfa26faa Public: xxx.xxx.xxx / xxx.xxx.xxx / ens3 / BRIDGE (pubnet) ASM: xxx.xxx.xxx / xxx.xxx.xxx / ens4 / BRIDGE (privasm) VLAN (icbond0.100)

```
Interconnect: xxx.xxx.xxx / xxx.xxx.xxx / ens5 /
Databases
_____
                    Name: flashvm
             Resource ID: 350b72f7-2351-49e7-ada3-4051af9594f0
             Unique name: flashvmU
             Database ID:
             Domain name: domain name
              DB Home ID: 617664f6-0a16-4922-8346-9eeb3d7256ee
                   Shape: odb2
                 Version: 19.0.0.0
                 Edition: EE
                    Type: SI
                    Role: PRIMARY
                   Class: OLTP
                 Storage: ASM
              Redundancy:
        Target node name:
           Character set: AL32UTF8
       NLS character set:
                Language: AMERICAN
               Territory: AMERICA
         Console enabled: false
            SEHA enabled: false
     Associated networks: NONE
        Backup config ID:
      Level 0 Backup Day: sunday
      Autobackup enabled: true
             TDE enabled: true
                CDB type: false
                PDB name:
          PDB admin user:
```

View details of a KVM database system on a High Availability system, with InfiniBand.

```
# odacli describe-dbsystem -n example system3
DB System details
_____
                  ID: 0c5280a1-3ee1-438e-ad11-1cee23de17fd
                 Name: example system3
         Image version: 19.16.0.0.0
        Current version: 19.16.0.0.0
                Shape: odb2
          Cluster name: dbsa4b75be52
          Grid version: 19.27.0.0.250415
               Memory: 16.00 GB
          NUMA enabled: YES
               Status: CONFIGURED
              Created: 2020-12-10 02:11:11 UTC
              Updated: 2020-12-10 02:11:11 UTC
CPU Pool
 _____
```

```
Name: ce2ab55255
         Number of cores: 2
                  Host: node1
       Effective CPU set: 4-5,24-25
            Online CPUs: 4, 5, 24, 25
           Offline CPUs: NONE
                   Host: node2
       Effective CPU set: 4-5,24-25
            Online CPUs: 4, 5, 24, 25
           Offline CPUs: NONE
VM Storage
_____
             Disk group: DATA
            Volume name: SE2AB55255
           Volume device: /dev/asm/se2ab55255-187
                   Size: 400.00 GB
            Mount Point: /u05/app/sharedrepo/example system
VMs
 _____
                   Host: host1
                VM Name: xe2ab55255
           VM Host Name: host_name1
           VM image path: /vm image path1
           Target State: ONLINE
           Current State: ONLINE
                   Host: host2
                VM Name: ye2ab55255
           VM Host Name: host name2
           VM image path: /vm_image_path2
           Target State: ONLINE
           Current State: ONLINE
VNetworks
_____
                  Host: node1
                VM Name: xe2ab55255
                Public: xxx.xxx.xxx /xxx.xxx.xxx / ens3 /
BRIDGE (pubnet)
                   ASM: xxx.xxx.xxx / xxx.xxx.xxx / ibbond0 /
VF(90:03.5)
           Interconnect: xxx.xxx.xxx / xxx.xxx.xxx / ibbond1 /
VF(90:01.7)
                   Host: node2
                VM Name: ye2ab55255
                 Public: xxx.xxx.xxx / xxx.xxx.xxx / ens3 /
BRIDGE (pubnet)
                   ASM: xxx.xxx.xxx / xxx.xxx.xxx / ibbond0 /
VF(90:01.0)
           Interconnect: xxx.xxx.xxx / xxx.xxx.xxx / ibbond1 /
```

```
VF(90:01.6)
```

```
Databases
_____
                    Name: datavm
             Resource ID: 6aac341a-3c73-46eb-af2a-1eada9b57661
             Unique name: datavmU
             Database ID: 3806144946
             Domain name: domain name
              DB Home ID: dcc928f1-5eb3-477b-875d-050640b7f68c
                   Shape: odb2
                 Version: 19.27.0.0.250415
                 Edition: EE
                    Type: RAC
                    Role: PRIMARY
                   Class: OLTP
                 Storage: ASM
              Redundancy:
        Target node name:
           Character set: AL32UTF8
       NLS character set:
                Language: AMERICAN
               Territory: AMERICA
         Console enabled: false
            SEHA enabled: false
     Associated networks: NONE
        Backup config ID:
      Level 0 Backup Day: sunday
      Autobackup enabled: true
             TDE enabled: true
                CDB type: false
                PDB name:
          PDB admin user:
```

View details of a DB system in the JSON file format

```
# odacli describe-dbsystem -n scaoda815c2 -p
{
  "forced" : null,
  "system" : {
    "name" : "scaoda815c2",
    "shape" : "odb4",
    "customMemorySize" : "32.00 GB",
    "cpuPoolName" : "c519cd5314",
    "useReservedCores" : false,
    "diskGroup" : "DATA",
    "systemPassword" : null,
    "timeZone" : "UTC",
    "enableRoleSeparation" : true,
    "singleNode" : null,
    "failOver" : false,
    "customRoleSeparation" : {
      "groups" : [ {
        "id" : 1001,
        "name" : "oinstall",
```

```
"role" : "oinstall"
   }, {
     "id" : 1002,
     "name" : "dbaoper",
     "role" : "dbaoper"
   }, {
      "id" : 1003,
     "name" : "dba",
     "role" : "dba"
   }, {
     "id" : 1004,
     "name" : "asmadmin",
      "role" : "asmadmin"
   }, {
      "id" : 1005,
     "name" : "asmoper",
     "role" : "asmoper"
   }, {
     "id" : 1006,
     "name" : "asmdba",
     "role" : "asmdba"
   }],
    "users" : [ {
     "id" : 1000,
     "name" : "grid",
     "role" : "gridUser"
   }, {
      "id" : 1001,
     "name" : "oracle",
     "role" : "oracleUser"
   } ]
 },
 "redundancy" : "MIRROR"
},
"network" : {
 "domainName" : "testdomain.com",
 "ntpServers" : [ ],
 "dnsServers" : [ "xxx.xxx.xxx" ],
 "scanName" : "scaoda815c2-scan",
 "scanIps" : [ "xxx.xxx.xxx", "xxx.xxx.xxx"],
 "nodes" : [ {
   "number" : 1,
   "name" : "scaoda815c2n2",
   "ipAddress" : "xxx.xxx.xxx",
   "netmask" : "xxx.xxx.xxx",
   "gateway" : "xxx.xxx.xxx",
   "vipName" : "scaoda815c2n2-vip",
   "vipAddress" : "xxx.xxx.xxx"
 }, {
    "number" : 0,
   "name" : "n1",
   "ipAddress" : "xxx.xxx.xxx",
   "netmask" : "xxx.xxx.xxx",
   "gateway" : "xxx.xxx.xxx",
   "vipName" : "n1-vip",
   "vipAddress" : "xxx.xxx.xxx.xxx"
```

```
}],
  "publicVNetwork" : null,
  "clusterInterconnect" : null
},
"grid" : {
  "language" : "en",
},
"database" : {
 "name" : "mydb2",
  "uniqueName" : "mydb2u",
  "domainName" : "domainname",
  "adminPassword" : null,
  "version" : "19.27.0.0.250415",
  "edition" : "EE",
  "type" : "RAC",
  "dbClass" : "OLTP",
 "shape" : "odb4",
  "role" : "PRIMARY",
  "redundancy" : "MIRROR",
  "characterSet" : {
    "characterSet" : "AL32UTF8",
    "nlsCharacterset" : "AL16UTF16",
    "dbTerritory" : "AMERICA",
    "dbLanguage" : "AMERICAN"
  },
  "enableDbConsole" : false,
  "enableSEHA" : false,
  "enableEEHA" : false,
  "enableFlashStorage" : false,
  "rmanBackupPassword" : null,
  "level0BackupDay" : "sunday",
  "enableTDE" : false,
  "tdePassword" : null,
  "enableUnifiedAuditing" : false,
  "isCdb" : true,
 "pdbName" : "pdb1",
  "pdbAdminUser" : "pdbadmin",
  "targetNodeNumber" : 0,
  "dbStorage" : "ASM"
}
```

odacli describe-dbsystem-image

}

Use the odacli describe-dbsystem-image command to view the supported Oracle Grid Infrastructure and Oracle Database versions and the availability of the clone files and Database System KVM image in the Oracle Database Appliance system.

Syntax

```
odacli describe-dbsystem-image [-j] [-h]
```



Parameters

Parameter	Description
json, -j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

View details of a KVM database system image

```
# odacli describe-dbsystem-image
DB System Image details
----
Component Name Supported Versions Available Versions
---
DBVM 19.10.0.0.0 19.10.0.0.0
GI 19.10.0.0.210119 19.10.0.0.210119
DB 19.10.0.0.210119 19.10.0.0.210119
```

View details of a system where KVM database system image is not available

```
# odacli describe-dbsystem-image
DB System Image details
---
Component Name Supported Versions Available Versions
---
DBVM 19.10.0.0.0 not-available
GI 19.10.0.0.210119 19.10.0.0.210119
DB 19.10.0.0.210119 19.10.0.0.210119
```

The output shows that the KVM Database System image is not yet available on the system. Download the image and run the odacli update-repository to import the image to the repository. The output shows that the Oracle Grid Infrastructure and Oracle Database clones are already available on the system.

odacli start-dbsystem

Use the odacli start-dbsystem command to start a database system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli start-dbsystem -n dbsystem_name [-nn node_name] [-j] [-h]
```

Parameter	Description
name, -n	(Mandatory) Describes the name of the DB system.



Parameter	Description
node-name, -nn	(Optional) Specifies the bare metal system node name on which to start the DB system VM.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

Start a KVM database system.

```
# odacli start-dbsystem -n example_system
Job details
_____
             ID: 68044afa-d3cc-4024-9dc8-50fcf847642c
        Description: DB System scaoda8s008c4 start
           Status: Success
           Created: December 16, 2020 9:12:51 AM UTC
          Message:
Task Name
                            Start Time
End Time
                        Status
----- -----
                                  _____
_____
Start DB System
                           December 16, 2020 9:12:51 AM UTC
December 16, 2020 9:12:52 AM UTC Success
```

odacli stop-dbsystem

Use the odacli stop-dbsystem command to stop a database system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli stop-dbsystem -n dbsystem_name [-nn node_name] [-f] [-j] [-h]
```

Parameter	Description
name, -n	(Mandatory) Describes the name of the DB system.
force, -f	(Optional) Forces the operation to stop the DB system.
node-name, -nn	(Optional) Specifies the bare metal system node name on which to stop the DB system VM.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.



Example

Stop a KVM database system.

```
# odacli stop-dbsystem -n example system
Job details
       _____
_____
              ID: 68044afa-d3cc-4024-9dc8-50fcf847642c
        Description: DB System scaoda8s008c4 start
           Status: Success
           Created: December 16, 2020 9:12:51 AM UTC
           Message:
Task Name
                            Start Time
End Time
                        Status
_____ ____
_____
                         December 16, 2020 9:12:51 AM UTC
Stop DB System
December 16, 2020 9:12:52 AM UTC Success
```

odacli delete-dbsystem

Use the odacli delete-dbsystem command to delete a DB system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli delete-dbsystem -n dbsystem name [-f] [-j] [-h]

Parameters

Parameter	Description
name, -n	(Mandatory) Describes the name of the DB system.
force, -f	(Optional) If specified, then the operation deletes the database system, Oracle Clusterware files, and the database files.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Usage Notes

 If you do not specify the -f option, then the delete DB system operation validates that the DB system does not contain any database. If there are any databases within the DB system, then the following error message is displayed:

```
DB System 'name' must not have any database in order to be deleted, found following databases: list of databases
```

- Specify the -f option to delete the DB system, the Oracle Clusterware files, and the database files.
- The odacli delete-dbsystem command does not delete the database files. This is expected behavior so that you can archive the database files, if required, or manually



restore the database with these database files. Use the --force option to delete the database files completely.

Example

Delete a DB system.

[root@nodelhal7clnl log]# odacli delete-dbsystem -n dbsfe0bd8
WARNING: Use --force option to delete the database and datafiles.
Do you confirm delete DB System 'dbsfe0bd8'? (Options: y/n, default: n): y
DCS-10045:Validation error encountered: DB System 'dbsfe0bd8' must not have
any database in order to be deleted, found following databases: dbb34f97.

```
[root@nodelha17c1n1 log]# odacli describe-job -i 41de9e46-e1d4-44c0-b0ab-
c6049579e9f8
```

Job details _____ ID: 41de9e46-e1d4-44c0-b0ab-c6049579e9f8 Description: DB System dbs7283a3 deletion [Forced] Status: Success Created: June 13, 2024 8:14:08 PM UTC Message: Task Name Node Name Start Time End Time Status _____ _____ _____ Delete database nodelha17c1n1 June 13, 2024 June 13, 2024 8:14:09 PM UTC 8:14:08 PM UTC Success Remove DB System from Clusterware nodelhal7cln1 June 13, 2024 June 13, 2024 8:14:09 PM UTC 8:14:09 PM UTC Success Delete ASM client cluster config June 13, 2024 nodelha17c1n1 June 13, 2024 8:14:09 PM UTC 8:14:09 PM UTC Success Deprovision DB System VM(s) nodelhal7c1n1 June 13, 2024 8:14:09 PM UTC June 13, 2024 8:14:10 PM UTC Success Delete DB System ACFS filesystem nodelhal7cln1 June 13, 2024 8:14:10 PM UTC June 13, 2024 8:14:11 PM UTC Success Delete DB System ACFS mount point June 13, 2024 nodelha17c1n1 June 13, 2024 8:14:11 PM UTC 8:14:11 PM UTC Success Delete DB System ASM volume June 13, 2024 nodelha17cln1 8:14:11 PM UTC June 13, 2024 8:14:12 PM UTC Success June 13, 2024 Delete DB System Networks nodelhal7cln1 8:14:12 PM UTC June 13, 2024 8:14:12 PM UTC Success Remove unused network interfaces nodelha17c1n1 June 13, 2024



8:14:12 PM UTC	June 13,	2024	8:14:12 PM UTC	
Success				
Delete imported certificat	es		nodelha17c1n1	June 13, 2024
8:14:12 PM UTC	June 13,	2024	8:14:13 PM UTC	
Success				
Delete DB System metadata			nodelha17c1n1	June 13, 2024
8:14:13 PM UTC	June 13,	2024	8:14:13 PM UTC	Success

odacli VM Storage Commands for KVM

Use the odacli virtual machine storage commands to manage storage on Oracle Database Appliance for Oracle KVM.

odacli create-vmstorage

Use the odacli create-vmstorage command to create a new VM storage on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

- odacli list-vmstorages
 Use the odacli list-vmstorages command to list all VM storages on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli describe-vmstorage
 Use the odacli describe-vmstorage command to describe VM storage on Oracle
 Database Appliance Kernel-based Virtual Machine (KVM).
- odacli modify-vmstorage
 Use the odacli modify-vmstorage command to modify VM storage configuration on
 Oracle Database Appliance Kernel-based Virtual Machine (KVM).
- odacli delete-vmstorage
 Use the odacli delete-vmstorage command to delete a vmstorage configuration on
 Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli create-vmstorage

Use the odacli create-vmstorage command to create a new VM storage on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli create-vmstorage -n name -s size -dg disk group [-r {MIRROR|HIGH}] [-j] [-h]

Parameter	Description
name, -n	Name assigned to the VM storage.
size,-s	Specifies the storage size. Format is K M G T. Minimum Size is 1024M (1G)
diskgroup,-dg	(Optional) Defines the ASM disk group of the VM storage (Default: DATA).
redundancy, -r	(Optional) Specifies the VM storage redundancy for a DB system. The value can be HIGH or MIRROR. This option is not supported for DB systems on non-FLEX disk group. The options can be MIRROR or HIGH. The default option is MIRROR.
json, -j	(Optional) Displays output in JSON format.



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

Example

Create a VM storage named share1 of 8 GB.

odacli create-vmstorage -n share1 -s 8G

odacli list-vmstorages

Use the odacli list-vmstorages command to list all VM storages on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli list-vmstorages [-j] [-h]
```

Parameters

Parameter	Description
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

odacli list-vmstorages

odacli describe-vmstorage

Use the odacli describe-vmstorage command to describe VM storage on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli describe-vmstorage -n name [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the name of the VM storage.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example: Describing a VM Storage named share1

odacli describe-vmstorage -n share1



odacli modify-vmstorage

Use the odacli modify-vmstorage command to modify VM storage configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli modify-vmstorage -n name -i increment [-r {MIRROR|HIGH}] [-s decrement] [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the VM storage name
increment,-i	(Optional) Defines the size to grow the VM storage. Format is $K M G T$
shrink,-s	(Optional) Defines the size to shrink the VM storage. Format is $K M G T$
redundancy, -r	(Optional) Specifies the VM storage redundancy for a DB system. The value can be HIGH or MIRROR. This option is not supported for DB systems on non-FLEX disk group. The options can be MIRROR or HIGH. The default option is MIRROR.
json, -j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

Increase the size of a VM storage named share1 by 10 gigabytes.

odacli modify-vmstorage -n share1 -i 10G

odacli delete-vmstorage

Use the odacli delete-vmstorage command to delete a vmstorage configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli delete-vmstorage -n name [-f] [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the vmstorage name to be deleted
force, -f	(Optional) Specifies the force option
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

Delete a VM storage named share1.

odacli delete-vmstorage -n share1



odacli Virtual Disk Commands for Oracle KVM

Use the odacli virtual disk commands to manage virtual disks on Oracle Database Appliance for Oracle KVM.

- odacli create-vdisk Use the odacli create-vdisk command to create a new virtual disk in a VM storage on Oracle Database Appliance Kernel-based Virtual Machine (KVM).
- odacli list-vdisks Use the odacli list-vdisks command to list all virtual disks on Oracle Database Appliance Kernel-based Virtual Machine (KVM).
- odacli describe-vdisk
 Use the odacli describe-vdisk command to describe a virtual disk on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli modify-vdisk

Use the odacli modify-vdisk command to modify a virtual disk on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

- odacli clone-vdisk Use the odacli clone-vdisk command to clone a virtual disk on Oracle Database Appliance Kernel-based Virtual Machine (KVM).
- odacli delete-vdisk

Use the odacli delete-vdisk command to delete a virtual disk on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli create-vdisk

Use the odacli create-vdisk command to create a new virtual disk in a VM storage on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli create-vdisk -n name -vms vmstorage name -s size -sh -sp [-j] [-h]
```

Parameter	Description
name, -n	Name assigned to the virtual disk that is unique within the name repository
vmstorage, -vms	Name of the VM storage where the virtual disk will be created
size,-s	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). Format is $K M G T$
shareable,-sh	(Optional) Sets the option of allowing the virtual disk to be shared by more than one virtual machine (shared)
sparse, -sp	(Optional) Creates a sparse vdisk. Use the default option, non-sparse, to pre-allocate the full vdisk size in the vdisk image. Specify sparse vdisk with thesparse, -sp option when you do not need to pre-allocate the vdisk size in the vdisk image. The image size can increase till it reaches the total current vdisk size.



Parameter	Description
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Create a 2 GB non-sparse and shareable Virtual Disk named vdisk1 inside the VM storage vms1.

odacli create-vdisk -n vdisk1 -vms vms1 -s 2G -sh

odacli list-vdisks

Use the odacli list-vdisks command to list all virtual disks on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli list-vdisks [-j] [-h]

Parameters

Parameter	Description
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

odacli list-vdisks

odacli describe-vdisk

Use the odacli describe-vdisk command to describe a virtual disk on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli describe-vdisk -n name [-j] [-h]
```

Parameters

Parameter	Description
name, -n	Specifies the name of the virtual disk.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example: Describing a Virtual Disk named vdisk1

odacli describe-vdisk -n vdisk1



odacli modify-vdisk

Use the odacli modify-vdisk command to modify a virtual disk on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli modify-vdisk -n name -i [-no-s|-s] [-j] [-h]
```

Parameters

Parameter	Description
name, -n	Specifies the virtual disk name
increment,-i	Defines the size to increase the virtual disk. Format is value units, units are $K M G T$
-no-shareable,no-s	(Optional) Set the Virtual Disk as non-shareable
shareable,-s	(Optional) Set the Virtual Disk as shareable
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

Increase the size of a virtual disk named vdisk1 by 4 gigabytes.

```
# odacli modify-vdisk -n vdisk1 -i 4G
```

odacli clone-vdisk

Use the odacli clone-vdisk command to clone a virtual disk on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli clone-vdisk -n name -cn clone_name [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the virtual disk name to be cloned
clone-name, -cn	Specifies the name of the cloned virtual disk
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Create a clone of a virtual disk named vdisk1, with the name vdisk1_clone. The cloned disk is created on the same storage as vdisk1.

odacli clone-vdisk -n vdisk1 -cn vdisk1_clone



odacli delete-vdisk

Use the odacli delete-vdisk command to delete a virtual disk on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli delete-vdisk -n name [-f] [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the virtual disk name to be deleted
force, -f	(Optional) Specifies the force option
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Delete a virtual disk named vdisk1.

odacli delete-vdisk -n vdisk1

odacli CPU Pool Commands for Bare Metal and KVM

Use odacli commands to manage resource allocations on Oracle Database Appliance for bare metal and KVM deployments.

CPU pools enable management of CPU resources in both bare metal and KVM environments. There are two types of CPU pools, that is, BM and VM.

Use the BM CPU pool to ensure that the database on a bare metal host runs exclusively on the CPUs specified in the CPU pool.

Use the VM CPU pools to cage and manage CPU resource allocations to workloads for virtual machines. Workloads are isolated by creating CPU pools and assigning or 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.

Resources in CPU pools cannot overlap, that is, CPU pools cannot share CPUs.

odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

• odacli list-cpupools

Use the odacli list-cpupools command to list all CPU Pools on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.



odacli describe-cpupool

Use the odacli describe-cpupool command to describe CPU Pools on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

- odacli modify-cpupool
 Use the odacli modify-cpupool command to modify a CPU Pool configuration on Oracle
 Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.
- odacli delete-cpupool Use the odacli delete-cpupool command to delete a CPU Pool configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).
- odacli list-auditrecords
 Use the odacli list-auditrecords command to list the audit records for a CPU Pool on
 Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM)
 deployment.
- odacli describe-auditrecord Use the odacli describe-auditrecord command to describe the audit record for a CPU Pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

```
odacli create-cpupool -n name -c number_of_cores {-bm|-vm} [-nn node_name] [-s socket]
[-dbs] [-urc] [-j] [-h]
```

Parameters

Parameter	Description
name, -n	Specifies the CPU Pool name.
cores, -c	Specifies the CPU Pool cores.
bm, -bm	(Optional) Specifies the CPU Pool as Bare Metal.
vm, -vm	(Optional) Specifies the CPU Pool as Virtual Machine.
dbsystem,-dbs	(Optional) Specifies the CPU Pool type as DB System.
socket,-s	(Optional) Specifies the socket to use. If not specified, then use all available sockets.
use-reserved-cores,- urc	(Optional) Specifies to use reserved CPU cores.
node-name, -nn	(Optional) Specifies the node where the CPU Pool will be created. On High-Availability deployment, if this option is not specified, then the CPU pool is created on both nodes.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Usage Notes

 Attach the BM CPU pool to databases. Bare metal CPU pools can be assigned to multiple databases.



- Attach VM CPU pool VM to guest machines. VM CPU pools can be assigned to multiple VMs.
- Attach dbsystem CPU pool to DB systems. dbsystem CPU pool can be assigned to
 multiple DB systems. After you create a dbsystem CPU pool, you can create a new DB
 system with this CPU pool by adding the new CPU pool parameter in the create-dbsystem
 json file, or modify-dbsystem to attach CPU pool to an existing DB system.
- Resources in CPU pools cannot overlap, that is, CPU pools cannot share CPUs.
- After you create a BM CPU pool, you can associate this CPU pool to a database using the create-database or modify-database command.
- After you create a VM CPU pool, you can associate this CPU pool to a VM using the create-vm or modify-vm command.
- Number of cores must be an even number between 2 and the total number of available cores on the system.
- By default, a CPU in the CPU pool is allocated across two sockets in release 19.12 and later. Optionally, you can choose to allocate the CPU based on the socket number (0 or 1). This is especially useful to support Standard Edition licensing. It is recommended that you use the default allocation and do not mix two types of allocation.
- By default, the first core of the socket is reserved and cannot be used by the VM and DB system CPU pools for optimal performance. Use the --use-reserved-cores option to enable use of the first core of socket for VM and DB system CPU pools.

Example

Create a BM CPU pool named cpupool1 with 6 cores associated to it.

odacli create-cpupool -n cpupool1 -c 6 -bm

Create a VM CPU pool named cpupool2 with 6 cores associated to it.

```
# odacli create-cpupool -n cpupool2 -c 6 -vm
```

Create a DB System CPU pool named cpupool3 with 6 cores associated to it.

odacli create-cpupool -n cpupool3 -c 6 -dbs

Create a DB System CPU pool named cpupool4 with 4 cores of CPUs allocated from socket 0.

```
# odacli create-cpupool -n cpupool4 -dbs -s 0 -c 4
```

odacli remap-cpupools

Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

```
odacli remap-cpupools -f -urc [-j] [-h]
```



Parameters

Parameter	Description
force, -f	(Optional) Specifies to force the operation.
use-reserved-cores, -j	(Optional) Specifies to use reserved CPU cores.
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Usage Notes

If the odacli remap-cpupools command fails with the error DCS-10001:Internal error encountered: Not enough physical CPUs available for CPU Pool '*cpupool_name*' on node '*node_name*', run the odacli remap-cpupools command again with the --use_reserved-cores option.

Use the --force option to remap CPU pools even if the CPU pool is marked as NUMAenabled. You must use odacli remap-cpupools command, after updating the bare metal CPU cores with the command odacli modify-cpucores for CPU core number changes.

By default, the first core of the socket is reserved and cannot be used by the VM and DB system CPU pools for optimal performance. Use the --use-reserved-cores option to enable use of the first core of socket for VM and DB system CPU pools.

Example

odacli remap-cpupools

Related Topics

- odacli modify-vm Use the odacli modify-vm command to modify a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).
- odacli remap-cpupools
 Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on
 Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM)
 deployment.
 - odacli modify-dbsystem Use the odacli modify-dbsystem command to modify a DB system on Oracle Database Appliance Kernel-based Virtual Machine (KVM).
 - odacli create-cpupool
 Use the odacli create-cpupool command to create a new CPU pool on Oracle Database
 Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli list-cpupools

Use the odacli list-cpupools command to list all CPU Pools on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

```
odacli list-cpupools [-j] [-h]
```



Parameters

Parameter	Description
json, -j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

odacli list-cpupools

odacli describe-cpupool

Use the odacli describe-cpupool command to describe CPU Pools on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

odacli describe-cpupool -n name [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the name of the CPU Pool.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example: Describing a CPU pool named cpupool1

odacli describe-cpupool -n cpupool1

odacli modify-cpupool

Use the odacli modify-cpupool command to modify a CPU Pool configuration on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

```
odacli modify-cpupool -n name -c cores -f -l [-j] [-h]
```

Parameter	Description
name, -n	Specifies the CPU Pool name
cores, -c	Specifies the new number of CPU cores
force, -f	(Optional) Forces the operation
live,-l	(Optional) Applies the changes to running VMs
json, -j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.



Usage Notes

For VM CPU pool, if --live is not specified, then the changes are applied to the VM configuration file and will be activated next time the VM is started. If --live is specified, then the changes will be applied to both VM configuration file and to the running VM.

Example

Set the size of a CPU Pool cpupcol1 to 10. If --live is not specified, the change is applied to the VM configuration file and will be activated next time the VM is started.

odacli modify-cpupool -n cpupool1 -c 10

odacli delete-cpupool

Use the odacli delete-cpupool command to delete a CPU Pool configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli delete-cpupool -n name -f [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the CPU Pool name to be deleted
force, -f	(Optional) Forces deletion.
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Delete a CPU pool named cpupool1.

odacli delete-cpupool -n cpupool1

odacli list-auditrecords

Use the odacli list-auditrecords command to list the audit records for a CPU Pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

```
odacli list-auditrecords -du dcs-username -f from_date-range -l latest -nn node_name -
ot operation_type -ou OS_username -rn resource_name -rt resource_type -t to_date-range [-
j] [-h]
```

Parameter	Description
dcs-user, -du	(Optional) Specifies the DCS user name.
from, -f	(Optional) Specfies the <i>from</i> date in the date range for the CPU pool audit records.



Parameter	Description
latest, -l	(Optional) Specifies the latest number of CPU pool audit records.
node-name, -nn	(Optional) Specifies the node name.
op-type, -ot	(Optional) Specifies the type of operation.
os-user, -ou	(Optional) Specifies the operating system user.
rsc-name, -rn	(Optional) Specifies the resource name.
rsc-type,-rt	(Optional) Specifies the resource type.
to, -t	(Optional) Specfies the <i>to</i> date in the date range for the CPU pool audit records.
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

# odacli list-au	ditrecords			
ID		Resource	type	Resource name
Operation type	DCS username	OS username	Timestar	np
41295d99-f263-42	84-b6d9-2aff1ae0	f850 BM_CPU_P	DOL	testbmpool
CREATE	oda-admin	root	2020-10-	-08 13:27:05 UTC
0f07a013-5bb4-4c	:d8-bd49-04dc61fc	d454 BM_CPU_P	DOL	pool_9f74a8e9-
DELETE	oda-admin	root	2020-10-	-08 12:26:30 UTC
d858269b-6c28-4b	c2-af71-79004f35	61e6 BM_CPU_P	DOL	pool_9f74a8e9-
CREATE	oda-admin	root	2020-10-	-08 12:24:36 UTC
9d7852c1-93fb-41	0e-9e0c-8c0a95ed	3f0c VM_CPU_P	DOL	pool_d48e81e4-
DELETE	oda-admin	root	2020-10-	-08 12:06:45 UTC
0235cc84-9345-40	bc-ac4f-7de3f6320	02e2 VM_CPU_P	DOL	pool_4fe0b4f4-
	oda-admin			
762f7263-7bd9-4b	12-b891-48305165	bf36 VM_CPU_P	DOL	pool_4fe0b4f4-
MODIFY	oda-admin	root	2020-10-	-08 12:06:22 UTC
0bd2a25d-2327-49	18-bd47-8c00f740	6f92 VM_CPU_P	DOL	pool_4fe0b4f4-
MODIFY				

odacli describe-auditrecord

Use the odacli describe-auditrecord command to describe the audit record for a CPU Pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

Syntax

odacli describe-auditrecord -i [-j] [-h]

Parameters

Parameter	Description
id, -i	Describes the ID of the audit record.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.



Example

```
# odacli describe-auditrecord -i 41295d99-f263-4284-b6d9-2aff1ae0f850
Audit Record details
 _____
Event details
_____
            Record ID: 41295d99-f263-4284-b6d9-2aff1ae0f850
       Record timestamp: 2020-10-08 13:27:05 UTC
          DCS username: oda-admin
           OS username: root
           Cluster ID: test_cluster-c
              Node ID: test cluster
Resource/Operation
_____
         Resource type: BM_CPU_POOL
          Resource ID: b17cb623-bf79-491f-86d8-d8502987e26c
         Resource name: testbmpool
        Operation type: CREATE
   Operation description: Created with '2' cores and allocation
'test cluster:1-2,17-18'
```

odacli VM Network Commands for KVM

Use the odacli virtual machine network commands to manage network on Oracle Database Appliance for Oracle KVM.

odacli create-vnetwork

Use the odacli create-vnetwork command to create a new network on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

- odacli list-vnetworks
 Use the odacli list-vnetworks command to list all virtual networks on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli describe-vnetwork
 Use the odacli describe-vnetwork command to describe virtual networks on Oracle
 Database Appliance Kernel-based Virtual Machine (KVM).
- odacli start-vnetwork
 Use the odacli start-vnetwork command to start a virtual network on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli stop-vnetwork Use the odacli stop-vnetwork command to stop a virtual network on Oracle Database Appliance Kernel-based Virtual Machine (KVM).
- odacli modify-vnetwork

Use the odacli modify-vnetwork command to modify a network on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli delete-vnetwork
 Use the odacli delete-vnetwork command to delete a virtual network configuration on
 Oracle Database Appliance Kernel-based Virtual Machine (KVM).



odacli create-vnetwork

Use the odacli create-vnetwork command to create a new network on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli create-vnetwork -n name -if interface-name -t type -br bridge -g gateway -ip IP-
address -nm netmask -u uniform -vlan VLAN-network ID [-j] [-h]
```

Parameters

Parameter	Description
name, -n	Specifies the virtual network name.
interface-name,-if	Specifies the the network interface on the host. This can be physical interface or bonded interface.
type, -t	Specifies the virtual network type. Values are bridged or bridged-vlan.
bridge,-br	(Optional) Specifies the name of the bridge.
gateway,-gw	(Optional) Specifies the virtual network gateway
ip, -ip	(Optional) Specifies the virtual network addresses. For more than one address, use the format "node0_ip,node1_ip,"
netmask, -nm	(Optional) Specifies the virtual network netmask
uniform, -u	(Optional) Specifies whether the virtual network is created on both nodes in a high-availability deployment
vlan-id,-vlan	(Optional) Specifies the VLAN network ID
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Usage Notes

If you did not specify the IP address, or netmask, or gateway during vnetwork creation, then you can add them later using the <code>odacli modify-vnetwork</code> command.

Example

Create a VM network of type bridged using the interface btbond2.

odacli create-vnetwork -n vnet1 -if btbond2 -type bridged

odacli list-vnetworks

Use the odacli list-vnetworks command to list all virtual networks on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli list-vnetworks [-j] [-h]
```



Parameters

Parameter	Description
json, -j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

odacli list-vnetworks

odacli describe-vnetwork

Use the odacli describe-vnetwork command to describe virtual networks on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli describe-vnetwork -n [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the name of the virtual network.
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example: Describing a VM Network named vnet1

odacli describe-vnetwork -n vnet1

odacli start-vnetwork

Use the odacli start-vnetwork command to start a virtual network on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli start-vnetwork -n name [-j] [-h]
```

Parameters

Parameter	Description
name, -n	Specifies the virtual machine name to be stopped
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

Start a virtual network named vnet1.

```
# odacli start-vnetwork -n vnet1
```



odacli stop-vnetwork

Use the odacli stop-vnetwork command to stop a virtual network on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli stop-vnetwork -n name [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the virtual network to be stopped
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Stop a virtual network named vnet1.

odacli stop-vnetwork -n vnet1

odacli modify-vnetwork

Use the odacli modify-vnetwork command to modify a network on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli modify-vnetwork -n name -if -t -br -gw -ip -nm -u -vlan [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the virtual network name.
gateway,-gw	(Optional) Specifies the virtual network gateway
ip,-ip	(Optional) Specifies the virtual network addresses. For more than one address, use the format "node0_ip,node1_ip,". Specify the value as none to remove the IP address.
netmask, -nm	(Optional) Specifies the virtual network netmask
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

Modify a VM network to specify the gateway.

odacli modify-vnetwork -n vnet1 -g 10.11.44.41



odacli delete-vnetwork

Use the odacli delete-vnetwork command to delete a virtual network configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli delete-vnetwork -n name [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the vnetwork name to be deleted
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Delete a VM network named vnet1.

odacli delete-vnetwork -n vnet1

odacli Virtual Machine Commands for Oracle KVM

Use the odacli virtual machine commands to manage virtual machines on Oracle Database Appliance for Oracle KVM.

odacli create-vm

Use the odacli create-vm command to create a new virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli list-vms

Use the odacli list-vms command to list all virtual machines on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

- odacli describe-vm
 Use the odacli describe-vm command to describe a virtual machine on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).
- odacli modify-vm

Use the odacli modify-vm command to modify a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli start-vm

Use the odacli start-vm command to start a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

 odacli stop-vm Use the odacli stop-vm command to stop a virtual machine on Oracle Database

Appliance Kernel-based Virtual Machine (KVM).

odacli migrate-vm

Use the odacli migrate-vm command to migrate a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).



odacli clone-vm

Use the odacli clone-vm command to clone a virtual machine configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli delete-vm

Use the odacli delete-vm command to delete a virtual machine configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

odacli create-vm

Use the odacli create-vm command to create a new virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli create-vm -n name -m memory -bo boot_options -src source -vc vcpus -vms
vmstorage -cp cpupool -d description -g graphics
-mm max-mem-size -mvc max-vcpu-count -osv os_variant -pn preferred_node -s disk_size -vd
vdisks
-vn virtual network names -ea extra args -esrc extra srcs [-j] [-h]
```

Parameters

Parameter	Description
name, -n	Specifies the VM name
memory, -st	Specifies the size of the VM memory. The format is "value_unit". Unit is M G.
source, -src	Specifies the source installation. If local, it can be an ISO or a bootable disk image. If remote, it can be an URI pointing to an install tree hosted remotely over HTTP, HTTPS, or FTP.
vcpus, -vc	Specifies the number of vCPUs to use.
vmstorage, -vms	Specifies the VM storage name.
boot-options,-bo	Specifies the VM boot options.
cpupool,-cp	(Optional) Specifies the CPU pool name
extra-srcs, -esrc	(Optional) Specifies the extra sources for the guest VM that are mounted as CDROM devices
description,-d	(Optional) Specifies the VM description
extra-args, -ea	(Optional) Specifies the extra arguments for the VM installer.
graphics,-g	(Optional) Specifies the graphics settings for the VM
max-memory, -mm	(Optional) Specifies the maximum size of the VM memory. The format is "value_unit". Unit is M G.
max-vcpus, -mvc	(Optional) Specifies the maximum number of VCPUs
os-variant,-osv	(Optional) Specifies the operating system variant. Use the command osinfo-query os to get the list of the accepted OS variants.
pref-node,-pn	(Optional) Specifies the preferred node to run the VM
size,-s	(Optional) Specifies the size of the VM. The format is "value_unit". Unit is $K M G T.$
vdisks,-vd	(Optional) Specifies the names of the vdisks to use
vnetworks, -vn	(Optional) Specifies the names of the virtual networks to use
json,-j	(Optional) Displays output in JSON format.



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

Usage Notes

 Use the --extra-args parameter to add kickstart configuration file, kernel parameters for example, serial console. For example: --extra-args "console=tty0 console=ttyS0,115200 ks=http://192.168.122.100:80/ks.txt"

Example

Create a VM named vm1 with 8 vcpus and 8 GB memory. The VM is stored in the VM Storage vms1. The source used for the installation is located on /u01/0L7.iso.

odacli create-vm -n vml -vc 8 -m 8G -vms vsl -src /u01/OL7.iso

Example

If the installation source is located through network, the network configuration of the VM must be provided by --extra-args so that the network can be setup at the bootstrap of the VM, to reach the installation source over the network. For example, to create a VM from source https://example.com/iso/OracleLinux/OL7/u9/x86_64/OracleLinux-R7-U9-Server-x86_64-dvd/:

```
# odacli create-vm -vn pubnet -m 4G -vc 8 -src https://example.com/iso/
OracleLinux/OL7/u9/x86_64/OracleLinux-R7-U9-Server-x86_64-dvd/ -vd vmstorage_vdisk2 -vms
vmstore -g vnc,listen=0.0.0.0,port=5949 -n vm1 -s 20G --extra-args
"dns=<dns_server_ip_addr>
ip=<vm1 ip addr>::<gateway ip>:<netmask>:<vm1 hostname>:ens3:none"
```

odacli list-vms

Use the odacli list-vms command to list all virtual machines on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
odacli list-vms [-j] [-h]
```

Parameters

Parameter	Description
json, -j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

odacli list-vms



odacli describe-vm

Use the odacli describe-vm command to describe a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli describe-vm -n name [-j] [-h]

Parameters

Parameter	Description	
name, -n	Specifies the name of the virtual machine.	
json,-j	(Optional) Displays output in JSON format.	
help,-h	(Optional) Displays help for using the command.	

Example: Describing a Virtual Machine named vm1

odacli describe-vm -n vm1

odacli modify-vm

Use the odacli modify-vm command to modify a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli modify-vm -n name -as -en -bo boot_options -cfg -avd attach_vdisks -avn attach_vnetworks -dev device -d description -dn -dvd detach-vdisk -dvn detach-vnetworks mm max-memory -mvc max-vcpuc -m memory -no-cp -pn preferred-node -vc vcpu_count -di diskincrement -en -fo -g graphics -l -no-as [-f] [-g] [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the VM name
autostart,-as	(Optional) Specifies if the auto-start option must be set for the VM
no-autostart, -no-as	(Optional) Disables the auto-start option for the VM
boot-options,-bo	(Optional) Specifies the the boot options to use
config,-cfg	(Optional) Specifies whether the changes persist.
live, -l	(Optional) Indicates whether the specified changes take place live (true) or after the next boot (false). Default is false
enable-numa,-en	(Optional) Enables NUMA configuration for the VM.
disable-numa,-dn	(Optional) Disables NUMA configuration for the VM.
cpu-pool, -cp	(Optional) Specifies the CPU pool name
description,-d	(Optional) Specifies the VM description
failover,-fo	(Optional) Specifies the configuration for the failover
no-failover,-no-fo	(Optional) Specifies the configuration for the failover



Parameter	Description
vcpus, -vc	(Optional) Specifies the number of vCPUs.
memory, -m	(Optional) Specifies the memory size of the VM. The format is "value_unit". Unit is M G.
max-memory, -mm	(Optional) Specifies the maximum memory size of the VM. The format is "value_unit". Unit is M G.
max-vcpus, -mvc	(Optional) Specifies the maximum number of vCPUs.
no-cpupool, -no-cp	(Optional) Dissasociates the associated CPU Pool
detach-vdisk,-dvd	(Optional) Specifies the names of the virtual disks to detach
detach-vnetworks,-dvn	(Optional) Specifies the names of the virtual networks to detach
pref-node, -pn	(Optional) Specifies the preferred node to run the VM
disk-increment,-di	Specifies the change in size of the VM. The format is "value_unit". Unit is K M G T.
attach-vdisks,-avd	(Optional) Specifies the names of the vdisks to attach
attach-vnetworks, -avn	(Optional) Specifies the names of the virtual networks to attach
device, -dev	(Optional) Modifies the device as specified in the expression: Where device_expression = [vdisk=vdisk_name,] [bus=bus_type,][target=target_device]
	vdisk_name: If specified, must refer to an attached vDisk name. Otherwise it refers to the VM image.
	bus_type: The value can be ide, virtio, scsci, fdc, xen, usb, sata or sd.
	target_device: Must be a device name compatible with the bus_type. For example : vda, hda, sda.
force, -f	(Optional) Specifies to force the operation.
graphics,-g	(Optional) Defines the graphics settings for the VM. The supported graphics setting is VNC. For example, vnc, listen=127.0.0.1, port=5901.
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Usage Tips

- --live: The change is applied to the running VM instance, but does not persist after the VM stops.
- --enable-numa: Use this option to enable NUMA for an existing VM.
- --config: The change persists in the configuration of VM instance and takes effect on subsequent reboots.
- If neither --live or --config is specified, then the default behavior is --config.
- You can specify both the --live or --config options if you want the modification to take effect immediately and on subsequent boots.
- When an application VM is created, a default network interface is created by default in the VM. This interface is attached to the default kvm bridge (virbr0) at the host. This interface is intended for convenient communication between the host and VM. This interface does not attach to any physical network interface at the host. Do not configure this interface to use for any external communication.



- You must create a vnetwork using the command odacli create-vnetwork and attach the vnetwork (odacli modify-vm -avn) to the VM. This creates a second interface in the VM. Configure this network interface for your network requirement.
- The network interface name in the VM depends on the operating system.

Modifying CPU Count and Memory for a VM

Update the configuration of a VM named vm1, setting the CPU count to 6 and the maximum memory to 6 gigabytes on both the running VM and subsequent boots.

odacli modify-vm -n vml -vc 6 -mm 6G --live --config

Enabling NUMA

Use --enable-numa to enable NUMA for the VM configuration. The command odacli modifydbsystem --enable-numa is only supported on application VMs with even number of CPU cores so that CPU cores can be evenly distributed to NUMA nodes. In Oracle Database Appliance, one CPUcore is equal to 2 vCPU. For more information, see *About Enabling NUMA on Oracle Database Appliance*.

odacli modify-vm --name name --enable-numa

Modifying a VM to attach a vnetwork

Modify a VM to attach a vnetwork:

odacli modify-vm -n vm name -avn vnetwork name

Modifying a VM to change the bus type for the VM image

Modify the bus type for the VM image from virtio to sata. This is useful when the VM image does not support the virtio driver, for example, a Windows VM without virtio driver installed:

```
# odacli modify-vm -dev "bus=sata" -n winvm
```

Modifying a VM to change the bus type for a specific vdisk attached to the VM

To modify the bus type for a specific vdisk attached to the VM, run the following command:

odacli modify-vm -dev "vdisk=vdisk name, bus=sata" -n winvm

The command changes the winvm bus type of *vdisk_name* to sata. If you do not specify the vdisk parameter, the command changes the bus type to the vdisk that holds the VM image.

Related Topics

- odacli remap-cpupools
 Use the odacli remap-cpupools command to remap CPU pools to NUMA allocation on
 Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM)
 deployment.
- odacli modify-dbsystem
 Use the odacli modify-dbsystem command to modify a DB system on Oracle Database
 Appliance Kernel-based Virtual Machine (KVM).



odacli create-cpupool

Use the odacli create-cpupool command to create a new CPU pool on Oracle Database Appliance Bare Metal or Kernel-based Virtual Machine (KVM) deployment.

odacli start-vm

Use the odacli start-vm command to start a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli start-vm -n name -nn [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the virtual machine name to be stopped
node-name, -nn	(Optional) Specifies the node name where the virtual machine will be started
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Usage Notes

- If pref-node is defined for the VM, then the VM starts on the pref-node. If pref-node is not defined for the VM, then the VM can start on any node, in a high-availability deployment.
- If you specify the node name -n, then the VM starts on the specified node, even if the preferred node is defined.

Example

Start a virtual machine named vm1.

```
# odacli start-vm -n vm1
```

odacli stop-vm

Use the odacli stop-vm command to stop a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli stop-vm -n name [-f] [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the virtual machine name to be stopped
force, -f	(Optional) Specifies the force option
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.



Example

Stop a virtual machine named vm1.

odacli stop-vm -n vm1

odacli migrate-vm

Use the odacli migrate-vm command to migrate a virtual machine on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli migrate-vm -n name -th node_name [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the virtual machine name to be migrated.
target-node, -th	Specifies the destination node name.
json,-j	(Optional) Displays output in JSON format.
help,-h	(Optional) Displays help for using the command.

Example

Migrate a virtual machine named vm1 to node named oda1.

```
odacli migrate-vm -n vml -th odal
```

odacli clone-vm

Use the odacli clone-vm command to clone a virtual machine configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

```
# odacli clone-vm -n name_of_vm_to_clone_from -cn clone_name [-j] [-h]
```

Parameters

Parameter	Description
name, -n	Specifies the virtual machine name to be cloned
clone-name, -cn	Specifies the name of the cloned virtual machine
description,-d	(Optional) Specifies the description of the virtual machine
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Create a clone of a virtual machine named vm1, with the name $vm1_clone$. The cloned VM is created on the same storage as vm1.



odacli clone-vm -n vml -cn vml_clone

odacli delete-vm

Use the odacli delete-vm command to delete a virtual machine configuration on Oracle Database Appliance Kernel-based Virtual Machine (KVM).

Syntax

odacli delete-vm -n name [-f] [-j] [-h]

Parameters

Parameter	Description
name, -n	Specifies the virtual machine name to be deleted
force, -f	(Optional) Specifies the force option
json,-j	(Optional) Displays output in JSON format.
help, -h	(Optional) Displays help for using the command.

Example

Delete a virtual machine named vm1.

odacli delete-vm -n vml



19

Configuring and Using Oracle Auto Service Request (Oracle ASR)

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

About Configuring Oracle ASR

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

- Configuring Internal Oracle ASR
 Use ODACLI commands or the Browser User Interface (BUI) to configure Oracle Auto Service Request (Oracle ASR) in Oracle Database Appliance.
- Registering with External Oracle ASR Manager Use ODACLI commands or the Browser User Interface to register Oracle Database Appliance with an external Oracle Auto Service Request (Oracle ASR) Manager.
- Configuring External Oracle ASR When Oracle ASR Manager Does Not Run on an Oracle Database Appliance
 Understand how you can configure Oracle Database Appliance with an external Oracle Auto Service Request (Oracle ASR) Manager.
- Testing Oracle ASR Use the odacli test-asr command to confirm that your Oracle ASR configuration is working.
- Managing an Oracle ASR Configuration Use the command-line to review an existing configuration, make changes to a configuration, or delete a configuration.
- Additional Resources for Oracle ASR
 Refer to these sections for more information about Oracle ASR.

About Configuring Oracle ASR

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

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

Oracle Database Appliance supports two types of Oracle ASR configurations - Internal and External. You can use the odacli configure-asr command to configure both types of Oracle ASR.

• Internal Oracle ASR: For this type of configuration, Oracle ASR Manager is installed on the Oracle Database Appliance, where assets need to be monitored. For this type of configuration, Oracle ASR Manager is installed on the Oracle Database Appliance, where



assets need to be monitored. The assets Oracle ILOM and the host are registered with Oracle ASR using an XML payload that is sent to the HTTPS endpoint of Oracle ASR Manager. After successful registration, the alerts are also sent from the assets to the Oracle ASR Manager by composing an XML payload. Once the XML file is sent, an SR is generated based on the alert information present in the XML file.

• External Oracle ASR: For this type of configuration, Oracle ASR Manager is not installed on one Oracle Database Appliance. For example, if Oracle ASR manager is not installed on oda1, but Oracle ASR Manager is installed on another Oracle Database Appliance, oda2, then the assets that belong to oda2 assets are registered with Oracle ASR Manager installed on oda1. To register Oracle Database Appliance assets with an external Oracle ASR Manager, you must first update the repository with Oracle ASR Manager configuration files. After that, configure Oracle ASR as external to register the assets with Oracle ASR Manager.

Note:

With an internal Oracle ASR Manager, an alert is not sent when the server is not running because the Oracle ASR Manager runs on the same server. However, if a critical event occurs on Oracle Database Appliance with an external Oracle ASR Manager, then an alert can still be generated since the Oracle ASR Manager is not running on the same host.

You can configure Oracle ASR as part of deploying the appliance, or you can use the Browser User Interface (BUI) or command-line interface to configure or edit an Oracle ASR after deployment.

Starting with Oracle Database Appliance release 19.21, when you configure Oracle ASR, you specify HTTPS settings and not the SNMP settings. Following are the requirements to configure Oracle ASR:

- Oracle Database Appliance hardware must be associated with a Support Identifier (SI) in My Oracle Support.
- If a proxy server is required for Internet access to Oracle, then you must also provide the name of the proxy server.
- To configure an internal Oracle ASR Manager, you need a My Oracle Support account user name (e-mail address) and password associated with the My Oracle Support account under which the server is registered.
- To register with an external Oracle ASR Manager, use zip file generated by the odacli export-asrconfig command when it is run on the appliance where Oracle ASR Manager runs.

Related Topics

- Configuring Internal Oracle ASR Use ODACLI commands or the Browser User Interface (BUI) to configure Oracle Auto Service Request (Oracle ASR) in Oracle Database Appliance.
- Configuring External Oracle ASR Use ODACLI commands or the Browser User Interface to register Oracle Database Appliance with an external Oracle Auto Service Request (Oracle ASR) Manager.
- odacli configure-asr
 Use the odacli configure-asr command to configure Oracle Auto Service Request (Oracle ASR) after deploying the appliance.



Configuring Internal Oracle ASR

Use ODACLI commands or the Browser User Interface (BUI) to configure Oracle Auto Service Request (Oracle ASR) in Oracle Database Appliance.

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

You need the following information to configure Oracle ASR:

- The e-mail address associated with the My Oracle Support account under which the server is registered
- The password associated with the My Oracle Support account under which the server is registered
- If a proxy server is required for Internet access to Oracle, then you must also provide the name of the proxy server

Configuring Internal ASR Using ODACLI Commands

Use the odacli configure-asr command to configure Oracle ASR after deploying the appliance.

```
# odacli configure-asr -u user@example.com -hp 16165
Enter ASR user's password:
Retype ASR user's password:
Job details
_____
               ID: 1c9f126e-f5d2-4178-9d59-1343314b86ee
         Description: Configure ASR
            Status: Success
            Created: November 29, 2023 4:42:07 PM UTC
            Message:
Task Name
                               Start
Time
                           End Time
Status
_____
_____ ____
Setting up SSH equivalence
                              November 29, 2023 4:42:07 PM
UTC November 29, 2023 4:42:07 PM UTC Success
Modify JavaExec Path
                              November 29, 2023 4:42:08 PM
UTC November 29, 2023 4:42:08 PM UTC Success
Install ASR
                               November 29, 2023 4:42:08 PM
UTC
       November 29, 2023 4:44:53 PM UTC Success
Registering ASR Manager
                    November 29, 2023 4:45:01 PM
         November 29, 2023 4:45:09 PM UTC Success
UTC
                               November 29, 2023 4:45:09 PM
Configure ILOM
UTC
         November 29, 2023 4:45:13 PM UTC Success
Creating ASR configuration folders November 29, 2023 4:45:13 PM
        November 29, 2023 4:45:13 PM UTC Success
UTC
Setup ASR XML templates
                              November 29, 2023 4:45:13 PM
```



November 29, 2023 4:45:13 PM UTC UTC Success Enable HTTPS for ASR November 29, 2023 4:45:13 PM UTC November 29, 2023 4:45:36 PM UTC Success Importing ASR certificate into DCS November 29, 2023 4:45:36 PM November 29, 2023 4:45:38 PM UTC UTC Success truststore November 29, 2023 4:45:38 PM Registering Asset: ODA Host UTC November 29, 2023 4:45:38 PM UTC Success November 29, 2023 4:45:39 PM ASR assets activation

```
UTCNovember 29, 2023 4:45:40 PM UTCSuccessRemove AsrConfBackup FileNovember 29, 2023 4:45:41 PM2023 4:45:41 PMUTCNovember 29, 2023 4:45:41 PM UTCSuccess
```

After configuring Oracle ASR, check the the asset status for both the host and the Oracle ILOM asset as follows:

Please use My Oracle Support 'http://support.oracle.com' to view the activation status. To view the latest available asset status in ASR Manager please execute the 'send asset status' command.

Configuirng Internal ASR Using the BUI

1. Open a browser and enter the following URL to access BUI:

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

- 2. Login as oda-admin.
- 3. Click the Appliance tab.
- 4. Click the Oracle ASR menu.
- 5. If Oracle ASR is already configured, then in the Configure ASR page, provide the Oracle ASR configuration values.
- 6. Select Internal in the ASR Type field.
- In the ASR User Name field, enter e-mail address associated with the My Oracle Support account under which the server is registered.
- 8. In the **ASR Password** field, enter the password associated with the My Oracle Support account under which the server is registered.
- (Optional) Specify the HTTPS port for the Oracle ASR Manager. The default HTTPS port is 16162.
- **10.** (Optional) If you are using an HTTP Proxy for upload to Oracle ASR, complete the following:
 - a. HTTP Proxy used for Upload to ASR: Select Yes.



- b. Proxy User Name: If you are using a proxy for upload, enter the proxy user name.
- c. **Proxy Port**: If you are using a proxy for upload, enter the proxy port.
- d. (Optional) HTTP Proxy Requires Authentication: If you are using a proxy for upload, select Yes if you require authentication. If you do not require authentication, select No.
- e. (Optional) Proxy Password: If you are using a proxy for upload and require authentication, enter the proxy password.
- 11. Click Create.

Registering with External Oracle ASR Manager

Use ODACLI commands or the Browser User Interface to register Oracle Database Appliance with an external Oracle Auto Service Request (Oracle ASR) Manager.

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

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

Before configuring external Oracle ASR on an appliance, ensure that Oracle ASR Manager is configured on another appliance.

Configuring External ASR Using ODACLI Commands

Run these steps on the appliance where Oracle ASR Manager is configured:

1. Export the internal Oracle ASR Manager configuration files into a zip file:

```
[root@node1 bin]# odacli export-asrconfig
```

Job details ID: 9c9e74d4-d3d8-4f77-9394-42c8eb7bfele Description: Export ASR Config Status: Success Created: November 30, 2023 7:02:51 AM UTC Message: Run update repository with the zip /opt/ oracle/asr/asrConfiguration/ASRConfiguration.zip in the External ASR host once the current job is successful Task Name End Time Status

Creating a zip of ASR config files November 30, 2023 7:02:52 AM UTC November 30, 2023 7:02:52 AM UTC Success

 Copy the zip file from the Oracle ASR Manager appliance to the system where the external Oracle ASR Manager must be configured. The zip file path is displayed in the job description in step 1.

\$ scp zipFilePath user@system name/IP:destination path for the zip

After copying the Oracle ASR Manager configuration zip file to the external Oracle ASR appliance, run the following steps on the external Oracle ASR appliance:



1. Run the odacli update-repository command to extract the zip file on the external Oracle ASR Manager system.

2. Configure Oracle ASR Manager as External.

```
[root@node1 bin]# odacli configure-asr -e External
Enter ASR user's password:
Retype ASR user's password:
[root@node1 bin]# odacli describe-job -i cdd8445f-
aefb-4f43-881a-145eaa1a1181
root@scaoda6f001 ~]# odacli describe-job -i 1099eac8-2879-4341-b391-
d56237696395
Job details
_____
                 ID: 1099eac8-2879-4341-b391-d56237696395
          Description: Configure ASR
              Status: Success
             Created: November 30, 2023 3:46:50 PM CST
             Message:
Task Name
                                   Start Time
End Time
                            Status
_____
_____
Setting up SSH equivalence
                                  November 30, 2023 3:46:52 PM CST
November 30, 2023 3:46:54 PM CST Success
                               November 30, 2023 3:46:54 PM CST
Creating ASR configuration folders
November 30, 2023 3:46:54 PM CST Success
                                   November 30, 2023 3:46:54 PM CST
Setup ASR XML templates
November 30, 2023 3:46:54 PM CST Success
Importing ASR certificate into DCS
                                 November 30, 2023 3:46:54 PM CST
November 30, 2023 3:46:56 PM CST Success
truststore
Registering Asset: ODA Host
                                   November 30, 2023 3:46:56 PM CST
November 30, 2023 3:46:57 PM CST Success
ASR assets activation
                                   November 30, 2023 3:46:57 PM CST
```



November 30, 2023 3:46:58 PM CST Success Configure ILOM November 30, 2023 3:46:58 PM CST November 30, 2023 3:47:07 PM CST Success

 To verify the successful activation of the assets with the external Oracle ASR Manager, run the command to list assets in the Oracle ASR Manager host as follows:

```
[root@node1 bin]# /opt/asrmanager/bin/asr list asset
IP ADDRESS HOST NAME SERIAL NUMBER PARENT SERIAL ASR ASR STATUS
PROTOCOL SOURCE LAST HEARTBEAT PRODUCT NAME
_____ _ ____
IP address 1 oda1 1642NM10D1
                                  Y Active
HTTP ESSW XML NA ORACLE SERVER X7-2
IP address 2 oda2 1921XLAOAN
                                  Y Active
HTTP ILOM XML NA ORACLE SERVER X8-2L
IP address 3 oda3 1921XLAOAN Y Active
HTTP ESSW XML NA ORACLE SERVER X8-2L x86/x64 System
IP_address_4 oda4 1921XLA0AW Y Active
HTTP ILOM XML NA ORACLE SERVER X8-2L
IP address 5 oda5 1921XLA0AW Y Active
HTTP ESSW XML NA ORACLE SERVER X8-2L x86/x64 System
```

Use *My Oracle Support* to view the activation status. To view the latest available asset status in Oracle ASR Manager, run the send asset status command.

Configuring External Oracle ASR Using the BUI

Ensure that the zip file of Oracle ASR configured externally is imported to the repository using the odacli update-repository command, and then run the following steps:

1. Open a browser and enter the following URL to access BUI:

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

- 2. Login as oda-admin.
- 3. Click the Appliance tab.
- 4. Click the Oracle ASR menu.
- 5. Select External from the ASR Type menu.
- 6. Click Create.

Configuring External Oracle ASR When Oracle ASR Manager Does Not Run on an Oracle Database Appliance

Understand how you can configure Oracle Database Appliance with an external Oracle Auto Service Request (Oracle ASR) Manager.

Prerequisites:

1. Ensure that the ASR manager is installed with version 23.2.0 or above. Run the /opt/ asrmanager/bin/asr show version command to view the Oracle ASR version:

/opt/asrmanager/bin/asr show version



```
ASR Manager version: 23.2.0
Rules definitions version: 23.2.0.0
Auto Update Statistics
_____
Last Run Time: 2024-02-08 12:19:27.777
Last Run Status: Oracle Automated Service Manager not yet registered.
Next Run Time: 2024-02-09 12:19:27.777
Skipping ASR connectivity tests as ASR Auto Update isn't enabled
Auto Update Status
_____
Auto Update functionality is disabled.
Please refer to the My Oracle Support Doc Id: 1503107.1 for instructions
on Auto Update of ASR Manager software.
ASR Manager Services
_____
ASR Notification Trap is enabled.
```

2. Ensure that Oracle ASR is enabled to run with HTTPS by running the following commands:

```
/opt/asrmanager/bin/asr https_config
/opt/asrmanager/bin/asr https enable
```

Remote Request feature is enabled.

Ensure that the required setting is present by running the /opt/asrmanager/bin/asr show http receiver command as follows:

/opt/asrmanager/bin/asr show_http_receiver
HTTP Receiver configuration:

HTTP Receiver Status: Enabled Host Name: xx.xxx.x.xxx SFB forward: true HTTP Port: 16161 HTTPS/SSL Port: 16162 HTTPS/SSL: Enabled Jetty HTTP Compliance: Medium - RFC2616 Enable Jetty Older Ciphers: true

The output of the command must display HTTPS/SSL as Enabled.

Note that when you run the /opt/asrmanager/bin/asr https_config command, and the "What is your first and last name?" question is prompted for the certificate, you must enter the ASR manager IP address and keep the rest of the answers default.

Configuring External ASR Using ODACLI Commands

Run these steps on the appliance where Oracle ASR Manager is configured:



1. Create a directory called asr under /tmp.

mkdir /tmp/asr

2. Go to the directory created in step 1.

cd /tmp/asr

3. Generate the public key with the name asrHTTPSCertificate.crt under the directory created in step 1 for Oracle ASR Manager, using its keystore present at /var/opt/ asrmanager/configuration/asrmKeyStore.jks. The following command creates a certificate /tmp/asr/asrHTTPSCertificate.crt for the keystore:

```
jdkbinpath/keytool -exportcert -alias alias set for the keystore -
keystore /var/opt/asrmanager/configuration/asrmKeyStore.jks -file /tmp/asr/
asrHTTPSCertificate.crt -rfc
Enter keystore password: Enter the certificate password provided in "asr
https_config" command
```

- Create a new JSON file with the name asrdetails.json with the following details under /tmp/asr and set the values for the following:
 - asrManagerIp: The IP address of the host where Oracle ASR Manager runs.
 - userName: The email ID with which Oracle ASR Manager is registered.
 - httpsPortNumber: The HTTPS port number set for Oracle ASR Manager in the asr https config command.
 - httpsCertAlias: The certificate ALIAS set when prompted by the asr https_config command.

Example of /tmp/asr/asrdetails.json:

```
"asrManagerIp" : "xx.xxx.x.xx",
"userName" : "test",
"httpsPortNumber" : 16162,
"httpsCertAlias" : "oda-asr-client2024-01-31t10:15:52"
```

5. Generate a zip file with the files created in step 3 and step 4 asrHTTPSCertificate.crt and asrdetails.json from the asr directory present under /tmp directory.

cd /tmp zip ASRConfiguration.zip asr/asrHTTPSCertificate.crt asr/asrdetails.json

6. Copy the zip file created in step 5 to the Oracle Database Appliance machine whose assets must be registered with the external Oracle ASR.

```
$ scp /tmp/ASRConfiguration.zip user@machine name/IP:destination path for
the zip
```

After copying the external Oracle ASR Manager configuration zip file to Oracle Database Appliance, run the following steps on the Oracle Database Appliance:



1. Run the odacli update-repository command to unzip the zip file created on the external Oracle ASR machine and copied to the appliance.

```
$odacli update-repository -f <zip file path>
  odacli describe-job -i c659b6ee-9f02-4cb4-aba4-4ed8de883e3a
  Job details
  _____
                 ID: c659b6ee-9f02-4cb4-aba4-4ed8de883e3a
           Description: Repository Update
               Status: Success
              Created: November 30, 2023 3:44:28 PM CST
              Message: /opt/oracle/dcs/bin/ASRConfiguration.zip
  Task Name
                                 Start
  Time
                            End
  Time
                              Status
      _____
  _____
  _____
                                November 30, 2023 3:44:28 PM
  Unzip bundle
  CST November 30, 2023 3:44:28 PM CST Success
2. Configure Oracle ASR Manager as External.
  $odacli configure-asr -e External
  Enter ASR user's password: <SSO password>
  Retype ASR user's password:
  odacli describe-job -i 1099eac8-2879-4341-b391-d56237696395
  Job details
  _____
                  ID: 1099eac8-2879-4341-b391-d56237696395
           Description: Configure ASR
               Status: Success
              Created: November 30, 2023 3:46:50 PM CST
              Message:
  Task Name
                                Start
  Time
                            End
  Time
                              Status
      _____
  _____
  _____
  Setting up SSH equivalence
                               November 30, 2023 3:46:52 PM
      November 30, 2023 3:46:54 PM CST Success
  CST
  Creating ASR configuration folders November 30, 2023 3:46:54 PM
  CST
          November 30, 2023 3:46:54 PM CST Success
                    November 30, 2023 3:46:54 PM
  Setup ASR XML templates
          November 30, 2023 3:46:54 PM CST Success
  CST
  Importing ASR certificate into DCS November 30, 2023 3:46:54 PM
      November 30, 2023 3:46:56 PM CST Success
  CST
  truststore
```

Registering Asset: ODA HostNovember 30, 2023 3:46:56 PMCSTNovember 30, 2023 3:46:57 PMCSTSuccessASR assets activationNovember 30, 2023 3:46:57 PMCSTNovember 30, 2023 3:46:58 PMCSTSuccessConfigure ILOMNovember 30, 2023 3:46:58 PMCSTNovember 30, 2023 3:47:07 PMCSTSuccessSuccess

Configuring External ASR Using Browser User Interface (BUI)

After copying the external Oracle ASR Manager configuration zip file to Oracle Database Appliance, follow these steps:

1. Open a browser and enter the following URL to access BUI:

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

- 2. Login as oda-admin.
- 3. Click the Appliance tab.
- Click the Oracle ASR menu, and then click Export on the ASR Information page. Note: You must run the export operation from the Oracle Database Appliance on which internal Oracle ASR Manager is configured.
- After the job completes successfully, a zip file is generated in the location /opt/ oracle/asr/asrConfiguration.
- 6. Manually copy the zip file from the appliance with the internal Oracle ASR Manager to the system where the external Oracle ASR Manager must be configured.
- 7. In the Configure ASR page, select ASR Type as External.
- 8. Specify the **Zip File Location** copied in step 6.
- 9. Click Update Repository.
- 10. After the repository is updated with the zip file, click Next.
- **11.** Specify and confirm the **ASR Password**.
- **12.** Click **Configure ASR**.
- After the job completes sccessfully, verify the Oracle ASR configuration on the ASR Information page.

Testing Oracle ASR

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

When you run the command, a test alert is sent to Oracle ASR manager from both Oracle ILOM and the host registered with Oracle ASR. The registered email ID receives an email about the test alert for the registered Oracle ILOM and host.

Attempting to test the configuration outside of the odacli test-asr command might not provide the expected test result.

1. Log in as root user.



2. Run the odacli test-asr command.

Managing an Oracle ASR Configuration

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

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

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

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

```
# odacli describe-asr
ASR details
ID: e0e31043-c312-4371-8301-e62642ef8a4a
Name: ASR
ASR Type: Internal
ASR Manager IP : 10.32.202.13
ASR Manager username: scott.tiger@example.com
HTTPS port number: 16164
State: CONFIGURED
Created: September 3, 2023 4:02:38 AM UTC
Updated: September 3, 2023 4:03:32 AM UTC
```

- 2. (Optional) To make changes to Oracle ASR configuration details after deploying the appliance, use the odacli modify-asr command.
- 3. (Optional) To remove the Oracle ASR configuration from the system, use the odacli delete-asrcommand.

```
# odacli delete-asr
{
```



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

Related Topics

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

Additional Resources for Oracle ASR

Refer to these sections for more information about Oracle ASR.

Oracle ASR product page:

http://www.oracle.com/asr

- Oracle Database Appliance products qualified for Oracle ASR:
 - Oracle ASR Qualified Oracle Database Appliance Products
 - IMPORTANT: Oracle ASR Qualifed Product and Fault Rule Coverage Supplement (Doc ID 2142295.1)
- Oracle ASR user documentation:

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

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Troubleshooting Oracle Database Appliance

Understand tools you can use to validate changes and troubleshoot Oracle Database Appliance problems.

- About Oracle Database Appliance Configuration Collection Utility Oracle Database Appliance configuration collection collects configuration information for all components in the appliance.
- About Setting Up and Removing SSH Configuration Understand how you can set up and remove SSH configuration.
- Viewing Oracle Database Appliance Error Correlation Reports Understand how to view Error Correlation Report and how to interpret the report to troubleshoot your appliance.
- About Enabling Linux Kernel Core Extractor for Troubleshooting
 Understand how to manage Linux Kernel Core Extractor to troubleshoot your appliance.
- Viewing Details About DCS Error Messages Understand how to view details about DCS errors for troubleshooting them.
- Collecting Diagnostics Data Using the BUI Understand how to collect diagnostics data to troubleshoot errors.
- Resolving Errors When Updating DCS Components During Patching
 Understand how to troubleshoot errors when updating DCS components during patching.
- 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.
- 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.
- 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.



About Oracle Database Appliance Configuration Collection Utility

Oracle Database Appliance configuration collection collects configuration information for all components in the appliance.

The utility generates a configuration collection with a specific timestamp that can be utilized by other utilities. The collection contains configuration details for all Oracle Database Appliance components in the form of JSON files and a unified HTML configuration report. Creating a snapshot of the appliance configuration assists in debugging issues on the appliance and provides a comprehensive record of all object versions and configuration details at a specific date and time. Additionally, it serves as a valuable reference for tracking configuration changes over time.

The configuration collection tool obtains and stores details about the following components:

- DCS framework such as DCS controller, DCS agent, DCS admin, etc CPU pools, Oracle Grid Infrastructure, Oracle Database, operating system, Oracle ILOM, BIOS, Oracle ASR, the firmware, Oracle HMP, and so on.
- Operating system, storage, Oracle Clusterware, Oracle KVM, and others.

The utility, by default, collects DB system list and describe information available on the bare metal system. To collect detailed information from DB systems, use the -dbsystems option. You must set passwordless SSH connection from the bare metal system to the DB system. The utility does not store any credentials or perform authentication of the connection. You can restore connectivity to the previous state after configuration is collected.

Use the odaconfigcli collectconfig [-loc] [-dbsystems] [-redact] [-silent] command to run the configuration collection.

```
# odaconfigcli collectconfig
Oracle Database Appliance system config collection:
-- Performing validations:
-- Collecting configuration from the system test1
The config collection is being created at:
/opt/oracle/odaconfig/cnr data/odaconfig test1 23 01 2025 19 38 47
1. Collecting system info
Collecting system details [e.g. version, hardwaretype, etc] ....
Collecting storage details ....
Collecting RPM drift info ....
Collecting network info ....
2. Collecting Baremetal database info
Collecting system info ....
Collecting component info ....
Collecting dbstorage info ....
Collecting database info ....
Collecting dbhome info ....
Collecting backupconfig info ....
Collecting cpupool info ....
Collecting network info ....
Collecting objectstoreswift info ....
```



Collecting backupreport info 3. Processing Odaconfig report. Please note ** it will take few minutes ** to collect all the command outputs Collecting ODA stack information Collecting fixed commands information Generating html ODAConfig report 4. Setting file protection to the files on config collection. 5. Not redacting the collection Finished config collection and creating jsons. Following is the collection summary: Config collect bundle created at: /opt/oracle/odaconfig/cnr data/ odaconfig testoda803c1n1 23 01 2025 19 38 47 HTML ODAConfig report can be found at: /opt/oracle/odaconfig/cnr data/ odaconfig testoda803c1n1 23 01 2025 19 38 47/ odaconfig testoda803c1n1 23 01 2025 19 38 47.html Logs for this run can be found at : /opt/oracle/odaconfig/cnr data/ odaconfig_testoda803c1n1_23_01_2025_19_38_47/logs

When you run the utility from the bare metal system, the output includes the list of DB systems and their configurations, as this information is available in the bare metal DCS metadata. The collected configuration data is provided in the form of JSON files and a unified HTML report. The CLI offers a redaction option for configuration collection, with two modes: sanitize and mask. In the sanitize mode, sensitive entities such as host name and database name are replaced with alternative strings, while in the mask mode, they are replaced with *.

Prerequisites to run the utility

- You must run the utility from the bare metal system as the root user.
- You can also run the utility on multi-user access enabled systems and multi-user access enabled passwordless systems. Since the utility uses odacli-view, no password prompts are required in these environments. If you want to redact the output in a multi-user access enabled environment, ensure that passwordless login for odacli from the odaadmin user is enabled, eliminating the need for password input.
- The oakd service must be running, as the utility uses <code>odaadmcli</code> to gather hardware information.
- The system must be provisioned, as there is typically minimal DCS configuration to collect on a new system.

Command and parameters

odaconfigcli collectconfig [-loc] [-dbsystems] [-redact] [-silent]
Parameter	Description
-loc	(Optional) Customizes results location. The default is /opt/oracle/odaconfig/cnr_data.



Parameter	Description
-dbsystems	(Optional) Specifies the list of DB systems. Specify the DB system name as displayed in the odacli list-dbsystems command output. Do not specify the DB system host name or IP address.
-redact	(Optional) Redacts sensitive entities in configuration collection. Permitted values are sanitize and mask.
	sanitize: Sensitive entities are replaced with a substitution string
	mask: Sensitive entities are replaced with '*'
-silent	(Optional) Suppresses all confirmations.

You can specify custom commands for the tool in a JSON file. For example:

/opt/oracle/odaconfig/customize/commands_output.json:

```
"name" : "DCS Extra",
      "commands":
             [
                 "command": "rpm -qa | grep -e dcs -e oda-hw-mgmt -e hami -e
mysql",
                  "filename": "dcsextra rpmqadcs.out"
               },
               {
                 "command": "/opt/oracle/dcs/bin/odacli list-featuretracking",
                  "filename": "dcsextra listfeaturetracking.out"
               },
               {
                 "command": "/opt/oracle/dcs/bin/odacli list-dataguardstatus",
                  "filename": "dcsextra listdataguardstatus.out"
               },
               {
                 "command": "/opt/oracle/dcs/bin/odacli list-schedules",
                  "filename": "dcsextra listschedules.out"
               },
               {
 . . . . . . . . .
. . . . . . . . . . . .
    "os":
    {
      "name" : "Operating System",
      "commands":
            ſ
                  "command": "lscpu",
                  "filename": "os_lscpu.out"
                },
                {
```



```
"command": "free",
  "filename": "os_free.out"
},
{
    "command": "top -bn1 | head -n 50",
    "filename": "os_top50.out"
},
```

Related Topics

 odaconfigcli collectconfig
 Use the odaconfigcli collectconfig command to collect configuration data from the appliance.

About Setting Up and Removing SSH Configuration

Understand how you can set up and remove SSH configuration.

In earlier Oracle Database Appliance releases, the DCS agent used a scheduled SSH cleaner job that ran every 30 minutes, to clean up SSH connections configured in the system. Starting with Oracle Database Appliance release 19.24, the DCS agent does not remove SSH configurations.

The DCS agent has a new <code>agentconfig</code> parameter called <code>ODA_MANAGED_SSH</code> that you can use to deactivate the <code>Setup_SSH</code> job on Oracle Database Appliance. You must set up SSH before you run any job that requires SSH configuration between nodes. If you run a job that requires SSH configuration, then the job uses the pre-configured SSH setup. If the SSH keys are present, but not functioning, or SSH configuration does not exist, then the job displays an error. You must set up a working SSH equivalence between nodes before you rerun the job.

The DCS agent does not configure SSH between nodes when the ODA_MANAGED_SSH parameter is set to false. For example:

```
odacli modify-agentconfig-parameters -n ODA MANAGED SSH -u -v false
```

You can view the current value of the ODA_MANAGED_SSH parameter using the odacli listagentconfig-parameters command. For example:

```
odacli list-agentconfig-parameters -n ODA MANAGED SSH
```

Viewing Oracle Database Appliance Error Correlation Reports

Understand how to view Error Correlation Report and how to interpret the report to troubleshoot your appliance.

About Error Correlation Reports

If a DCS job fails, an Error Correlation job is created automatically to generate an Error Correlation report. You can access and review the generated Error Correlation report from the BUI to explore possible ways of error resolution.

The Error Correlation Report contains the following:

• Log Messages: Errors, exceptions and warnings from various log files.

- Failed Task Messages: Error message displayed when the DCS job failed.
- **Release Notes:** Relevant Known Issues from *Oracle Database Appliance Release Notes* to help resolve the issue.
- **Documentation:** Relevant topics from the Oracle Database Appliance Documentation Library to help resolve the error.

The Error Correlation Report is generated for every failed DCS job and can be accessed from the BUI. On Oracle Database Appliance high-availability deployments, the Error Correlation report contains the error information derived from log files of both the nodes.

Viewing Error Correlation Reports using ODACLI Commands

You can view the Error Correlation report of a failed DCS job by running the odacli describejob -i failed_dcs_job_id --ecr command. For an example output, see the topic odacli describe-job in this guide.

Viewing Error Correlation Reports from the BUI

To view the Error Correlation Report from the Activities page in the BUI:

1. Log into the Browser User Interface:

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

- 2. Click the Activity tab.
- In the Activities page, click the Failure or InternalError link in the failed DCS job for which you want to view the Error Correlation report. Note that only failed DCS jobs have associated Error Correlation Reports.
- 4. You can also view the Error Correlation Report for the failed DCS job when you click the **Actions** menu, and select **View Error Correlation Report**.
- 5. The Error Correlation Report contains the following tabs:
 - Log Messages: Displays the logs for DCS agent, DCS admin, Oracle HAMI, MySQL, and Oracle FPP. You can expand each section to view the details. Only components that have logs are displayed. If no errors are found, then the message No errors or exceptions found in logs is displayed in the Log Messages section.
 - Failed Task Messages: Displays the specific error message displayed when the task failed.
 - **Release Notes:** Displays relevant Known Issues from *Oracle Database Appliance Release Notes* to help resolve the issue. You can click each of these links to view the Release Notes entry. If no relevant Known issues are found, then the message No matching results were found. is displayed.
 - Documentation: Displays relevant topics from the Oracle Database Appliance Documentation Library to help resolve the error. You can click each of these links to view the documentation topic from the Oracle Database Appliance documentation.

To view the Error Correlation Report from the Diagnostics page in the BUI:

- 1. In the BUI, click the **Diagnostics** tab.
- 2. In the Diagnostics page, click Collect Diagnostic Data for a failed job.
- The Collect Diagnostics page displays the Error Correlation Report and Job Details in separate tabs for the failed DCS job. Click the **Report File Name** link to download the Error Correlation Report to your local system.



4. The Job details tab displays the steps in the job and the Error Correlation Report contains the Log Messages, Failed Task Messages, Release Notes, and Documentation tabs.

Related Topics

- 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.

About Enabling Linux Kernel Core Extractor for Troubleshooting

Understand how to manage Linux Kernel Core Extractor to troubleshoot your appliance.

About Linux Kernel Core Extractor

A Linux kernel panic can occur due to various reasons such as faulty hardware, driver crashes, or software bugs. To identify the cause of kernel panic, it is essential to collect and analyze the vmcore of the crashed kernel. The kdump service is used to collect the vmcore after the first kernel crash. This process is slow for systems with high memory and often fails to generate vmcore when the available space is not sufficient. When Linux Kernel Core Extractor is enabled on Oracle Database Appliance bare metal systems, the crash utility in the kdump kernel collects useful information for troubleshooting without generating vmcore.

Linux Kernel Core Extractor Commands

List generated crash reports:

```
# /usr/sbin/oled lkce list
Followings are the crash*out found in /var/oled/lkce dir:
/var/oled/lkce/crash_20220307-154542.out
```

Purge existing all but last three crash reports:

```
# /usr/sbin/oled lkce clean
lkce deletes all but last three /var/oled/lkce/crash*out files. do you want
to proceed(yes/no)? [no]:
```

Purge all crash reports:

```
# /usr/sbin/oled lkce clean --all
lkce removes all the files in /var/oled/lkce dir. do you want to proceed(yes/
no)? [no]:
```

By default, the crash report contains output for the following crash commands. You can add other crash commands to the /etc/oled/lkce/crash cmds file.

```
#
# This is the input file for crash utility. You can edit this manually
# Add your own list of crash commands one per line.
#
bt
bt
bt -a
bt -FF
dev
kmem -s
```



foreach bt log mod mount net ps -m ps -S runq quit

By default, vmcore generation is disabled. You can enable vmcore generation as follows:

```
# oled lkce configure --vmcore=yes
Restarting kdump service... done!
lkce: set vmcore to yes
```

For additional Linux Kernel Core Extractor commands, refer to the Linux Kernel Core Extractor help.

```
# oled lkce help
Usage: lkce options
options:
    report report-options -- Generate a report from vmcore
    report-options:
        --vmcore=/path/to/vmcore - path to vmcore
[--vmlinux=/path/to/vmlinux] - path to vm.
                                           - path to vmlinux
        [--crash_cmds=cmd1,cmd2,cmd3,..] - crash commands to include
[--outfile=/path/to/outfile] - write output to a file
    configure [--default] -- configure lkce with default values
    configure [--show] -- show lkce configuration -- default
    configure [config-options]
    config-options:
        [--vmlinux path=/path/to/vmlinux] - set vmlinux path
        [--crash cmds file=/path/to/file] - set crash cmds file
        [--kdump report=yes/no] - set crash report in kdump kernel
        [--vmcore=yes/no]
                                     - set vmcore generation in kdump kernel
        [--max out files=<number>]
                                     - set max out files
    enable -- enable lkce in kdump kernel
    disable -- disable lkce in kdump kernel
    status -- status of lkce
    clean [--all] -- clear crash report files
    list -- list crash report files
```



Viewing Details About DCS Error Messages

Understand how to view details about DCS errors for troubleshooting them.

About Viewing Information About DCS Errors

To view more details about any errors during DCS operations, use the command dcserr error code.

```
# /opt/oracle/dcs/bin/dcserr
dcserr error_code
# dcserr 10001
10001, Internal_Error, "Internal error encountered: {0}."
// *Cause: An internal error occurred.
// *Action: Contact Oracle Support Services for assistance.
/
# dcserr 1001
Unknown error code
```

To view more details about DCS errors in the Browser User Interface (BUI), you can provide the DCS error code in the Search box in the BUI. The Search results display the Cause and Action of DCS error codes.

Collecting Diagnostics Data Using the BUI

Understand how to collect diagnostics data to troubleshoot errors.

About Collecting Diagnostics Data

Use the **Diagnostics** tab in the Browser User Interface to view diagnostic information about your deployment and the installed components.

In the Diagnostic Collection page, you can view the available diagnostics collections. Click **Collect Diagnostic Data** to start diagnostics collection. Once the data is collected, click on the collection file path to download the file.

In the Collect Diagnostics page, specify the Job ID for the diagnostics data collection. Optionally, specify a tag and a description for the collection. The details of the Job ID are displayed. Click **Collect** to start the diagnostics data collection.

You can also collect diagnostics from the Activity page, by selecting **Collect Diagnostics** from the **Actions** drop down for a specific job. Click **Collect** to start the diagnostics data collection.

To delete a diagnostic collection, from the Diagnostic Collection page, select the specific collection, and click **Delete**.

This diagnostic collection feature does not replace the odaadmcli manage diagcollect command. You can use the odaadmcli manage diagcollect command also to enable diagnostics collections, independently of this new feature from the BUI. The odaadmcli manage diagcollect command and the diagnostics collection from BUI use the tfactl command internally. The diagnostics collection from BUI is aimed to collect other data from DCS metadata that is not collected through tfactl and provide greater context for root cause analysis of related DCS jobs failures.

Resolving Errors When Updating DCS Components During Patching

Understand how to troubleshoot errors when updating DCS components during patching.

About DCS Components

When you run the odacli update-dcscomponents command during patching, pre-checks for MySQL installation are automatically verified before update of Oracle HAMI, MySQL, and DCS components. If any of the pre-checks fail, then the command errors out with a reference to the pre-check report log file location /opt/oracle/dcs/log/jobfiles/jobId/ dcscomponentsPreCheckReport.log. Review the pre-check report and take corrective actions and then rerun the odacli update-dcscomponents command. If there are no pre-check errors, then the patching process proceeds with updating Oracle HAMI, MySQL, and DCS components such as the DCS Agent, DCS CLI, and DCS Controller.

Note:

Run the odacli update-dcsadmin command prior to running the odacli updatedcscomponents command.

When the odacli update-dcscomponents command completes successfully:

The command output is as follows:

```
# ./odacli update-dcscomponents -v 19.27.0.0.0
{
    "jobId" : "3ac3667a-fa22-40b6-a832-504a56aa3fdc",
    "status" : "Success",
    "message" : "Update-dcscomponents is successful on all the node(s):DCS-Agent
shutdown is successful. MySQL upgrade is done before. Metadata migration is
successful. Agent rpm upgrade is successful. DCS-CLI rpm upgrade is
successful.
DCS-Controller rpm upgrade is succ",
    "reports" : null,
    "createTimestamp" : "March 8, 2025 02:37:37 AM CST",
    "description" : "Update-dcscomponents job completed and is not part of Agent
job list",
    "updatedTime" : "March 8, 2025 02:39:10 AM CST"
}
```

The pre-check report log file at the location /opt/oracle/dcs/log/jobfiles/jobId/ dcscomponentsPreCheckReport.log contains the following:

```
Pre-check Name: Space check
Status: Success
Comments: Required space 3 GB is available in /opt
Pre-check Name: Port check
```



Status: Success Comments: Port 3306 is available for running ODA MySQL Pre-check Name: ODA MySQL rpm installation dry-run check Status: Success Comments: ODA MySQL rpm dry-run passed Pre-check Name: Check for the existence of MySQL connector/J library Status: Success Comments: ODA MySQL connector/J library found Pre-check Name: Check for the existence of Metadata migration utility Status: Success Comments: Metadata migration utility found dcs-admin version: Pre-check Name: dcs-admin version validation Status: Success Comments: dcs-admin is already updated :19.27.0.0.0 Config File Exist dcscontroller: Pre-check Name: Check DCS config files exists for dcscontroller Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-controller.yml and /opt/oracle/dcs/ conf/dcs-controller-logback.xml exist Config File Exist dcsagent: Pre-check Name: Check DCS config files exists for dcsagent Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-agent.yml and /opt/oracle/dcs/conf/ dcs-agent-logback.xml exist Validate scheduler cron expressions:

Pre-check Name: Validate scheduler cron expressions Status: Success Comments: Scheduler cron expressions for existing job schedules are up to date

When the odacli update-dcscomponents command fails:

On Oracle Database Appliance single-node systems, the command output is as follows:

./odacli update-dcscomponents -v 19.27.0.0.0

DCS-10008:Failed to update DCScomponents: 19.26.0.0.0 Internal error while patching the DCS components : DCS-10231:Cannot proceed. Pre-checks for update-dcscomponents failed. Refer to /opt/oracle/dcs/log/jobfiles/jobId/dcscomponentsPreCheckReport.log on node 0 for details.

On Oracle Database Appliance high-availability systems, the command output is as follows:

./odacli update-dcscomponents -v 19.27.0.0.0

Internal error while patching the DCS components : DCS-10231:Cannot proceed. Pre-checks for update-dcscomponents failed. Refer to



```
/opt/oracle/dcs/log/jobfiles/jobId/dcscomponentsPreCheckReport.log
on node 0 and /opt/oracle/dcs/log/jobfiles/jobId/
dcscomponentsPreCheckReport.log
on node 1 for details.
```

The command runs all pre-checks one by one, and errors out at the end if any of the prechecks is marked as Failed. When a pre-check fails, the error message is displayed on to the console along with the reference to pre-check report log location. The pre-check report log file is at the location /opt/oracle/dcs/log/jobfiles/jobId/dcscomponentsPreCheckReport.log.

```
Pre-check Name: Space check
Status: Failed
Comments: Available space in /opt is 2 GB but minimum required space in /opt
is 3 GB
Pre-check Name: Port check
Status: Success
Comments: Port 3306 is available for running ODA MySQL
Pre-check Name: ODA MySQL rpm installation dry-run check
Status: Success
Comments: ODA MySQL rpm dry-run passed
Pre-check Name: Check for the existence of MySQL connector/J library
Status: Success
Comments: ODA MySQL connector/J library found
Pre-check Name: Check for the existence of Metadata migration utility
Status: Success
Comments: Metadata migration utility found
Pre-check Name: dcs-admin version validation
Status: Success
Comments: dcs-admin is already updated :19.20.0.0.0
Config File Exist dcscontroller:
Pre-check Name: Check DCS config files exists for dcscontroller
Status: Success
Comments: Files /opt/oracle/dcs/conf/dcs-controller.yml and /opt/oracle/dcs/
conf/dcs-controller-logback.xml exist
Config File Exist dcsagent:
Pre-check Name: Check DCS config files exists for dcsagent
Status: Success
Comments: Files /opt/oracle/dcs/conf/dcs-agent.yml and /opt/oracle/dcs/conf/
dcs-agent-logback.xml exist
Validate scheduler cron expressions:
```

Validate scheduler cron expressions: Pre-check Name: Validate scheduler cron expressions Status: Success Comments: Scheduler cron expressions for existing job schedules are up to date



When the odacli update-dcscomponents command fails due to space check error:

The pre-check report log contains the following:

Pre-check Name: Space check
Status: Failed
Comments: Available space in /opt is 2 GB but minimum required space in /opt
is 3 GB

Pre-check Name: Port check Status: Success Comments: Port 3306 is available for running ODA MySQL

Pre-check Name: ODA MySQL rpm installation dry-run check Status: Success Comments: ODA MySQL rpm dry-run passed

Pre-check Name: Check for the existence of MySQL connector/J library Status: Success Comments: ODA MySQL connector/J library found

Pre-check Name: Check for the existence of Metadata migration utility Status: Success Comments: Metadata migration utility found

Pre-check Name: dcs-admin version validation Status: Success Comments: dcs-admin is already updated :19.20.0.0.0

Config File Exist dcscontroller: Pre-check Name: Check DCS config files exists for dcscontroller Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-controller.yml and /opt/oracle/dcs/ conf/dcs-controller-logback.xml exist

Config File Exist dcsagent: Pre-check Name: Check DCS config files exists for dcsagent Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-agent.yml and /opt/oracle/dcs/conf/ dcs-agent-logback.xml exist

Validate scheduler cron expressions: Pre-check Name: Validate scheduler cron expressions Status: Success Comments: Scheduler cron expressions for existing job schedules are up to date

When the odacli update-dcscomponents command fails due to port check error:

The pre-check report log contains the following:

Pre-check Name: Space check
Status: Success
Comments: Required space 3 GB is available in /opt

Pre-check Name: Port check



Status: Failed Comments: No port found in the range (3306 to 65535) Pre-check Name: ODA MySQL rpm installation dry-run check Status: Success Comments: ODA MySQL rpm dry-run passed Pre-check Name: Check for the existence of MySQL connector/J library Status: Success Comments: ODA MySQL connector/J library found Pre-check Name: Check for the existence of Metadata migration utility Status: Success Comments: Metadata migration utility found Pre-check Name: dcs-admin version validation Status: Success Comments: dcs-admin is already updated :19.20.0.0.0 Config File Exist dcscontroller: Pre-check Name: Check DCS config files exists for dcscontroller Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-controller.yml and /opt/oracle/dcs/ conf/dcs-controller-logback.xml exist Config File Exist dcsagent: Pre-check Name: Check DCS config files exists for dcsagent Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-agent.yml and /opt/oracle/dcs/conf/ dcs-agent-logback.xml exist Validate scheduler cron expressions:

Pre-check Name: Validate scheduler cron expressions Status: Success Comments: Scheduler cron expressions for existing job schedules are up to date

When the odacli update-dcscomponents command fails due to MySQL RPM installation dry-run check error:

The pre-check report log contains the following:

Pre-check Name: Space check Status: Success Comments: Required space 3 GB is available in /opt

Pre-check Name: Port check Status: Success Comments: Port 3306 is available for running ODA MySQL

Pre-check Name: ODA MySQL rpm installation dry-run check Status: Failed Comments: ODA MySQL rpm dry-run failed. Failed due to the following error : Exception details are displayed below

Pre-check Name: Check for the existence of MySQL connector/J library Status: Success



Comments: ODA MySQL connector/J library found

Pre-check Name: Check for the existence of Metadata migration utility Status: Success Comments: Metadata migration utility found

Pre-check Name: dcs-admin version validation Status: Success Comments: dcs-admin is already updated :19.20.0.0.0

Config File Exist dcscontroller: Pre-check Name: Check DCS config files exists for dcscontroller Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-controller.yml and /opt/oracle/dcs/ conf/dcs-controller-logback.xml exist

Config File Exist dcsagent: Pre-check Name: Check DCS config files exists for dcsagent Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-agent.yml and /opt/oracle/dcs/conf/ dcs-agent-logback.xml exist

Validate scheduler cron expressions: Pre-check Name: Validate scheduler cron expressions Status: Success Comments: Scheduler cron expressions for existing job schedules are up to date

When the odacli update-dcscomponents command fails due to MySQL connector/J library check error:

The pre-check report log contains the following:

Pre-check Name: Space check
Status: Success
Comments: Required space 3 GB is available in /opt

Pre-check Name: Port check Status: Success Comments: Port 3306 is available for running ODA MySQL

Pre-check Name: ODA MySQL rpm installation dry-run check Status: Success Comments: ODA MySQL rpm dry-run passed

Pre-check Name: Check for the existence of MySQL connector/J library Status: Failed Comments: MySQL connector/J library does not exist. Ensure update-repository with latest serverzip bundles ran first without any issues prior to running update-dcscomponents

Pre-check Name: Check for the existence of Metadata migration utility Status: Success Comments: Metadata migration utility found

dcs-admin version: Pre-check Name: dcs-admin version validation



Status: Success Comments: dcs-admin is already updated :19.20.0.0.0

Config File Exist dcscontroller: Pre-check Name: Check DCS config files exists for dcscontroller Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-controller.yml and /opt/oracle/dcs/ conf/dcs-controller-logback.xml exist

Config File Exist dcsagent: Pre-check Name: Check DCS config files exists for dcsagent Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-agent.yml and /opt/oracle/dcs/conf/ dcs-agent-logback.xml exist

Validate scheduler cron expressions: Pre-check Name: Validate scheduler cron expressions Status: Success Comments: Scheduler cron expressions for existing job schedules are up to date

When the odacli update-dcscomponents command fails due to Metadata migration utility check error:

The pre-check report log contains the following:

Pre-check Name: Space check Status: Success Comments: Required space 3 GB is available in /opt Pre-check Name: Port check Status: Success Comments: Port 3306 is available for running ODA MySQL Pre-check Name: ODA MySQL rpm installation dry-run check Status: Success Comments: ODA MySQL rpm dry-run passed Pre-check Name: Check for the existence of MySQL connector/J library Status: Success Comments: ODA MySQL connector/J library found Pre-check Name: Check for the existence of Metadata migration utility Status: Failed Comments: Metadata migration utility does not exist. Ensure update-repository with latest serverzip bundles ran first without any issues prior to running update-dcscomponents. dcs-admin version: Pre-check Name: dcs-admin version validation Status: Success Comments: dcs-admin is already updated :19.20.0.0.0 Config File Exist dcscontroller: Pre-check Name: Check DCS config files exists for dcscontroller Status: Success

Comments: Files /opt/oracle/dcs/conf/dcs-controller.yml and /opt/oracle/dcs/



conf/dcs-controller-logback.xml exist

Config File Exist dcsagent: Pre-check Name: Check DCS config files exists for dcsagent Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-agent.yml and /opt/oracle/dcs/conf/ dcs-agent-logback.xml exist

Validate scheduler cron expressions: Pre-check Name: Validate scheduler cron expressions Status: Success Comments: Scheduler cron expressions for existing job schedules are up to date

When the odacli update-dcscomponents command displays a warning due to scheduler cron expression:

When patching from Oracle Database Appliance release 19.19 or earlier to the latest release, and you run the odacli update-dcscomponents command, there may be a warning in the precheck report log file if the default cron expressions from the existing list of job schedules are modified. The pre-check report log contains the following:

Pre-check Name: Space check Status: Success Comments: Required space 3 GB is available in /opt Pre-check Name: Port check Status: Success Comments: Port 3306 is available for running ODA MySQL Pre-check Name: ODA MySQL rpm installation dry-run check Status: Success Comments: ODA MySQL rpm dry-run passed Pre-check Name: Check for the existence of MySQL connector/J library Status: Success Comments: ODA MySQL connector/J library found Pre-check Name: Check for the existence of Metadata migration utility Status: Success Comments: Metadata migration utility found dcs-admin version: Pre-check Name: dcs-admin version validation Status: Success Comments: dcs-admin is already updated :19.20.0.0.0 Config File Exist dcscontroller: Pre-check Name: Check DCS config files exists for dcscontroller Status: Success Comments: Files /opt/oracle/dcs/conf/dcs-controller.yml and /opt/oracle/dcs/ conf/dcs-controller-logback.xml exist Config File Exist dcsagent: Pre-check Name: Check DCS config files exists for dcsagent Status: Success

Comments: Files /opt/oracle/dcs/conf/dcs-agent.yml and /opt/oracle/dcs/conf/



dcs-agent-logback.xml exist Validate scheduler cron expressions: Pre-check Name: Validate scheduler cron expressions Status: Warning Comments: Following cron expressions in the scheduler were modified from their default values. Starting 19.20, DCS Agent converts 7 fields cron expression into 6 fields cron expression. No further action needed. Schedule ID : 3f671ee7-1a03-43fd-b98b-ce33eb09de08 , Custom cron expression : 10 25 * 1/1 * ? 2023

Note that the Status: Warning means the update-dcscomponents pre-check has detected custom cron expressions from the existing list of job schedules. The DCS agent automatically converts from the 7 fields custom cron expression to the equivalent 6 fields cron expression after patching DCS components.

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.

Viewing Component Information on the Appliance

View details of all the components installed on the appliance, and the RPM drift information.

Collecting and Viewing the Bill of Materials in the Browser User Interface

Use the Appliance tab in the Browser User Interface to collect and 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 **Collect Bill of Materials** to initiate a collection and submit the job. The job ID is displayed. After the collection is complete, click **Refresh** to refresh the information.

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 /opt/oracle/dcs/Inventory/ for bare metal deployments and in the /opt/oracle/oak/Inventory/ directory for virtualized platforms. The file is stored in the format oda_bom_TimeStamp.json. Use the command describe-system to view the bill of materials on the command line. See the Oracle Database Command-Line Interface chapter for command options and usage notes.

Example 20-1 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 : oda1
                           Domain Name : testdomain.com
                           Time Stamp : April 21, 2020 6:21:15 AM UTC
RPMS
                           Installed RPMS : abrt-2.1.11-55.0.1.el7.x86 64,
                                          abrt-addon-
ccpp-2.1.11-55.0.1.el7.x86 64,
                                           abrt-addon-
kerneloops-2.1.11-55.0.1.el7.x86 64,
                                           abrt-addon-
pstoreoops-2.1.11-55.0.1.el7.x86 64,
                                           abrt-addon-
python-2.1.11-55.0.1.el7.x86 64,
                                           abrt-addon-
vmcore-2.1.11-55.0.1.el7.x86 64,
                                           abrt-addon-
xorg-2.1.11-55.0.1.el7.x86 64,
                                           abrt-
cli-2.1.11-55.0.1.el7.x86 64,
                                           abrt-console-
notification-2.1.11-55.0.1.el7.x86 64,
                                           abrt-
dbus-2.1.11-55.0.1.el7.x86 64,
                                           abrt-
libs-2.1.11-55.0.1.el7.x86 64,
                                           abrt-
python-2.1.11-55.0.1.el7.x86 64,
                                           abrt-
tui-2.1.11-55.0.1.el7.x86 64,
                                           acl-2.2.51-14.el7.x86 64,
                                           adwaita-cursor-
theme-3.28.0-1.el7.noarch,
                                           adwaita-icon-
```



```
theme-3.28.0-1.el7.noarch,
                                                 aic94xx-
firmware-30-6.el7.noarch,
                                                 aide-0.15.1-13.0.1.el7.x86 64,
                                                 alsa-
firmware-1.0.28-2.el7.noarch,
                                                 alsa-lib-1.1.8-1.el7.x86 64,
                                                 alsa-tools-
firmware-1.1.0-1.el7.x86 64,
                                                at-3.1.13-24.el7.x86 64,
                                                 at-spi2-
atk-2.26.2-1.el7.x86 64,
                                                 at-spi2-
core-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,
                                                 audit-libs-2.8.5-4.el7.x86 64,
                                                 audit-libs-
python-2.8.5-4.el7.x86 64,
                                                 augeas-libs-1.4.0-9.el7.x86 64,
                                                 authconfig-6.2.8-30.el7.x86 64,
                                                 autogen-
libopts-5.18-5.el7.x86 64,
                                                 avahi-
libs-0.6.31-19.el7.x86 64,
basesystem-10.0-7.0.1.el7.noarch,
                                                 bash-4.2.46-33.el7.x86 64,
                                                 bash-
completion-2.1-6.el7.noarch,
                                                bc-1.06.95-13.el7.x86 64,
                                                bind-export-
libs-9.11.4-9.P2.el7.x86 64,
                                                bind-
libs-9.11.4-9.P2.el7.x86 64,
                                                bind-libs-
lite-9.11.4-9.P2.el7.x86 64,
                                                 bind-
license-9.11.4-9.P2.el7.noarch,
                                                 bind-
utils-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-date-
time-1.53.0-27.el7.x86 64,
                                                boost-
filesystem-1.53.0-27.el7.x86 64,
                                                boost-
iostreams-1.53.0-27.el7.x86 64,
. . . .
. . . .
```

```
••••
```



Example 20-2 Example Command to View the Bill of Materials from the Command Line for Virtualized Platforms

```
# oakcli describe-system -b
```

Example 20-3 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.

Note:

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 oda-admin password, then a message is displayed, advising you to change the default password to comply with your system security requirements.

- 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-ipaddress:7070/login
- 7. Get the security certificate (or certificate), confirm the security exception, and add an exception.
- Refresh the Browser User Interface URL: https://ODA-host-ip-address:7093/mgmt/ index.html



Note:

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

- Creating the Appliance Create the appliance using the Browser User Interface or ODACLI commands.
- 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.

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 19.27.
- 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.

- Generating and Viewing Database Security Assessment Reports in the Browser User Interface
 Generate and view Database Security Assessment Reports using the Browser User Interface.
- Running Oracle Trace File Analyzer (TFA) Collector Commands Understand the installed location of tfact1 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.
- Enabling Adaptive Classification and Redaction (ACR)
 Oracle Database Appliance supports 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.
- Redacting and Sanitizing Entities in the BUI Enable and disable trace file redaction, redact files, and show or hide sanitized entities using the Browser User Interface.
- 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 19.27.

When you provision or patch your appliance to Oracle Database Appliance release 19.27, 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
```

Note:

When you provision or patch to Oracle Database Appliance release 19.27, 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.

Note:

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 19.27 Baremetal Systems for New Installation

When you provision or upgrade to Oracle Database Appliance 19.27, 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 19.27 Virtualized Platform

When you provision or upgrade to Oracle Database Appliance 19.27, 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.
- 3. 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.

5. 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.

- 6. 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.
- 7. To delete an ORAchk report: In the Actions menu for the ORAchk report you want to delete, click Delete.

Generating and Viewing Database Security Assessment Reports in the Browser User Interface

Generate and view Database Security Assessment Reports using the Browser User Interface.

1. Log into the Browser User Interface with the oda-admin username and password.

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

- 2. Click the Security tab.
- 3. In the Security page, on the left navigation pane, click **DBSAT Reports**.



On the Database Security Assessment Reports page, a list of all the generated DBSAT reports is displayed.

4. In the Actions menu for the ORAchk report you want to view, click View.

The Oracle Database Security 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 a DBSAT report: On the DBSAT Reports page, click Create and then click Yes in the confirmation box.

The job to create a DBSAT report is submitted.

- 6. 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 DBSAT Reports page.
- 7. To delete a DBSAT report: In the Actions menu for the DBSAT 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 19.27, 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 tfact1:

```
/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|-crs|-cha|-wls|
-emagent|-oms|-ocm|-emplugins|-em|-acfs|-install|-cfgtools|-os|-ashhtml|-
ashtext|
-awrhtml|-awrtext -mask -sanitize
```

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.

Table 20-1 Command Options for tfactl Tool



-odaconfig(Optional) Use this option to view configuration- related diagnostic logsodasystem(Optional) Use this option to view system informationodastorage(Optional) Use this option to view the diagnostic logs for the Appliance storage.	Option	Description
logs for Cracle Data Guard component of the Applianceodaprovisioning(Optional) Use this option to view provisioning logs for the Applianceodaconfig(Optional) Use this option to view configuration- related diagnostic logsodasystem(Optional) Use this option to view system informationodastorage(Optional) Use this option to view the diagnostic logs for the Appliance storagedatabase(Optional) Use this option to view the diagnostic logs for the Appliance storagedatabase(Optional) Use this option to view the diagnostic logs for the Applianceasm(Optional) Use this option to view the diagnostic logs for the Appliancedbclient(Optional) Use this option to view the diagnostic logs for the Appliancedbwlm(Optional) Use this option to view the diagnostic logs for the Applianceths(Optional) Use this option to view the diagnostic logs for The Applianceths(Optional) Use this option to view the diagnostic logs for the Appliancedbwlm(Optional) Use this option to view the diagnostic logs for TNSths(Optional) Use this option to view the diagnostic logs for TRS-cha(Optional) Use this option to view the diagnostic logs for the Oracle Clusterwareemagent(Optional) Use this option to view the diagnostic logs for the Oracle Enterprise Manager agentoms(Optional) Use this option to view the diagnostic logs for the Oracle Enterprise Manager logs for Cracle Enterprise Manager logs for Cracle Enterprise Manager logs for Cracle Enterprise Manager logs for Cracle Enterprise Manager logs for	-odapatching	
-odaconfig (Optional) Use this option to view configuration-related diagnostic logs. -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 the diagnostic logs for the Appliance. -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. -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 Appliance. -ths (Optional) Use this option to view the diagnostic logs for the specified component. -ths (Optional) Use this option to view the diagnostic logs for TNS. -rhp (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 the Cluster Health Monitor. -wls (Optional) Use this option to view the diagnostic logs for the Clase Enterprise Manager agent. -oms (Optional) Use this option to view the diagnostic logs for the Cracle WebLogic Server. -ema	-odadataguard	logs for Oracle Data Guard component of the
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-acfs logs for Oracle Enterprise Manager deployment. (Optional) Use this option to view the diagnostic	-emplugins	
	-em	
	-acfs	

Table 20-1	(Cont.) Command Options for tfactl Tool



Option	Description
-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.
-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.

Table 20-1 (Cont.) Command Options for tfactl Tool

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 files and directory 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 20-4 Block dumps before redaction

14A533F40 0000000 0000000 0000000 002C0000 [...............] 14A533F50 35360C02 30352E30 31322E37 380C3938 [..650.507.2189.8] 14A533F60 31203433 37203332 2C303133 360C0200 [34 123 7310,...6]

Example 20-5 Block dumps after redaction

Example 20-6 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 20-7 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.



Enabling Adaptive Classification and Redaction (ACR)

Oracle Database Appliance supports Adaptive Classification and Redaction (ACR) to sanitize sensitive data.

After collecting copies of diagnostic data, Oracle Database Appliance use Adaptive Classification and Redaction (ACR) to sanitize sensitive data in the collections. You can use the commands odacli enable-acr and odacli disable-acr to enable or disable ACR across both nodes, not just on the local node.

See Also:

For more information about setting up the staging server for Adaptive Classification and Redaction (ACR), see My Oracle Support note 2882798.1.

Example 20-8 Describing current status of ACR

```
bash-4.2# odacli describe-acr
Trace File Redaction: Enabled
```

Example 20-9 Enabling ACR:

bash-4.2# odacli enable-acr

Job details

ID: 12bbf784-610a-40a8-b409-e74c58bc35aa Description: Enable ACR job Status: Created Created: April 8, 2021 3:04:13 AM PDT

Example 20-10 Disabling ACR

bash-4.2# odacli disable-acr

Job details

ID: 1d69f8b3-3989-4192-bbb9-6518e425061a Description: Disable ACR job Status: Created Created: April 8, 2021 3:04:13 AM PDT



Example 20-11 Enabling ACR during provisioning of the appliance

You can enable ACR during provisioning of the appliance by adding the acr option to the JSON file used for provisioning. Specify true or false for the field acrEnable in the JSON file. If the acr option is not specified, then ACR is disabled.

```
"acr": {
    "acrEnable": true
}
```

Related Topics

https://support.oracle.com/rs?type=doc&id=2882798.1

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 -mask option blocks out the sensitive data in all collections, for example, replaces myhost1 with ******. The -sanitize option replaces the sensitive data in all collections with random characters, for example, replaces myhost1 with orzhmv1. The none option does not mask or sanitize sensitive data in collections. The default is none.

Enabling On-Demand Redaction

You can redact collections on-demand, for example, tfactl diagcollect -srdc ORA-00600 - mask or tfactl 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 20-12 Masking or Sanitizing Sensitive Data in a Specific Collection

```
tfactl diagcollect -srdc ORA-00600 -mask tfactl diagcollect -srdc ORA-00600 -sanitize
```

Redacting and Sanitizing Entities in the BUI

Enable and disable trace file redaction, redact files, and show or hide sanitized entities using the Browser User Interface.



1. Log into the Browser User Interface with the oda-admin username and password.

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

- 2. Click the Security tab.
- 3. In the Security page, on the left navigation pane, click **Trace File Redaction**.
- 4. Click the Trace File Redaction Status tab.

The current ACR status is displayed.

- You can enable or disable ACR status based on the current ACR staus. For example, if the ACR status is disabled, then click **Enable** to enable ACR. The job to change the ACR status is submitted.
- 6. Click Refresh Status to refresh the ACR status display.
- 7. Click the **Redact Files** tab.
- 8. Specify the Input File Path of the file to be redacted. The file must be in the .tar, or .gz, or .zip file format.
- 9. Select either Sanitize or Mask for the Redaction Mode.
- 10. Click Redact. The job to redact files is submitted.
- **11.** Click the **Show Sanitized Entities** tab.
- Specify the List of sanitized entities and click Show. The list of sanitized entities are displayed.

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 20-13 Sanitizing Sensitive Information in Specific Collection IDs

orachk -sanitize comma delimited list of collection IDs

Example 20-14 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 20-15 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 20-16 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 orachk -rmap to lookup a value sanitized by Oracle Trace File Analyzer.

Example 20-17 Printing the Reverse Map of Sanitized Elements

orachk -rmap MF NK1, fcb63u2

| Entity Type | Substituted Entity Name | Original Entity Name |

dbname	MF NK1	HR DB1	
dbname	fcb63u2	rac12c2	I

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 odaadmcli show -h

To see information about specific components, use the command syntax odaadmcli show *component*, where *component* is the hardware component that you want to query. For example, the command odaadmcli show power shows information specifically about the Oracle Database Appliance power supply:

odaadmcli show power

NAME	health	HEALTH_DETAILS	PART_NO.	-	AL_NO.
Power_Supply	7_0 Ok	-	7079395		Z+1514CE056G
(Continued) LOCATION PS0	INPUT_POWER Present	OUTPUT_POWER 112 watts	INLET_TEMP 28.000 degre	ee C	EXHAUST_TEMP 34.938 degree C

Virtualized Platform

You can see the list of monitored components by running the command oakcli show -h

To see information about specific components, use the command syntax oakcli show component, where component is the hardware component that you want to query. For example,



the command oakcli show power shows information specifically about the Oracle Database Appliance power supply:

oakcli show power

NAME HEALTH HEALTH_DETAILS PART_NO. SERIAL_NO. Power Supply_0 OK - 7047410 476856F+1242CE0020 Power Supply_1 OK - 7047410 476856F+1242CE004J (Continued) LOCATION INPUT_POWER OUTPUT_POWER INLET_TEMP EXHAUST_TEMP PS0 Present 88 watts 31.250 degree C 34.188 degree C PS1 Present 66 watts 31.250 degree C 34.188 degree C

Note:

Oracle Database Appliance Server Hardware Monitoring Tool is enabled during initial startup of ODA_BASE on Oracle Database Appliance Virtualized Platform. When it starts, the tool collects base statistics for about 5 minutes. During this time, the tool displays the message "Gathering Statistics..." message.

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

2. 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.
- Use the Error Correlation report available in the /opt/oracle/dcs/da/da_repo directory.



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 20-18 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
```



Oracle Database Appliance Software Configuration Defaults

Oracle Database Appliance software configuration defaults.

- Directory Paths for Oracle Database Appliance Understand the storage and mount configuration file paths for Oracle Database Appliance.
- Port Numbers and Protocols of Oracle Database Appliance Components Understand the port numbers and protocols of Oracle Database Appliance components.
- 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 created when you deploy the appliance. All passwords are set to the password that you define during deployment.

Directory Paths for Oracle Database Appliance

Understand the storage and mount configuration file paths for Oracle Database Appliance.

Oracle homes on Oracle Database Appliance follow Optimal Flexible Architecture guidelines.

Item	Directory Path
Grid home	/u01/app/release-specific_name/gi owner
Grid base	/u01/app/gi owner
Oracle home	/u01/app/odaorahome/ <i>rdbms owner</i> /product/ <i>rdbms_version/</i> <i>dbhome_home_sequence_number</i>
Oracle base	/u01/app/odaorabase/ <i>rdbms owner</i>
Oracle Inventory	/u01/app/oraInventory
Java Runtime Environment (JRE)	/opt/oracle/dcs/java/ release_specific_JRE_version/
Java SDK	/opt/oracle/dcs/odajavasdk/
Oracle ACFS file system	/opt/oracle/oak/pkgrepos/orapkgs/clones
	Starting with Oracle Database Appliance release 19.12, a new Oracle ACFS file system is created to store the Oracle Database and Oracle Grid Infrastructure clone files. The DATA disk group provides a space of 150 GB for the file system.

Directory Paths for Oracle Database Appliance

Port Numbers and Protocols of Oracle Database Appliance Components

Understand the port numbers and protocols of Oracle Database Appliance components.

Component	Description	Default Port Number	Protocol	Network
BUI	A web-based application to administer and manage the Oracle Database Appliance.	7093	ТСР	public
dcs-agent	The DCS agent is a REST application that performs various operations on the appliance.	7070, 7071	ТСР	public and private
dcs-admin	This application performs lifecycle management operations on the DCS agent, DCS controller, ODACLI, and other components.	7060	TCP	public and private
MySQL	The metadata store used by DCS agent.	3306	ТСР	private
Oracle HAMI	Oracle High Availability Metadata Infrastructure service providing distributed services required by DCS including locking and synchronizing configuration details in the cluster.	22001	TCP	private
oakd	Managing the storage components of Oracle Database Appliance.	Dynamic	ТСР	private

 Table A-1
 Port Numbers and Protocols of Oracle Database Appliance Components

Component	Description	Default Port Number	Protocol	Network	
Oracle ASR Manager	Oracle Auto Service Request. Refer to Oracle Auto Service Request documentation for other ports used by ASR Manager.	16161	TCP	public	
Oracle ILOM/IPMI	Oracle ILOM for Oracle Database Appliance servers.	623	UDP	public	
Oracle Database listeners	Database listeners, including local listener and SCAN listener.	1521	TCP	public	
Oracle ASM Listener	Oracle ASM listener	1525	ТСР	private	
EM Express	Oracle Enterprise Manager Database Express (EM Express).	5500 and increment one per database	TCP	public	
ssh	SSH connection to the Oracle Database Appliance servers.	22	SSH over TCP	public and private	
VNC Server	IC Server The VNC server created by KVM for KVM virtual guest machines		ТСР	localhost (127.0.0.1)	
NFS	The central repository on bare metal system is shared by the DB Systems using NFS. Refer to the Oracle Linux documentation to identify ports used by NFS.	2049 - nfs	TCP	private	

Table A-1 (Cont.) Port Numbers and Protocols of Oracle Database Appliance Components

Note: IP addresses of the private network that Oracle Database Appliance uses are 192.168.16.0/24 and 192.168.17.0/24.

Related Topics

• Port Numbers and Protocols of Oracle Components

See Also:

Oracle Real Application Clusters Installation Guide for Linux and UNIX for port numbers and protocols used by Oracle Database components

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 /opt/oracle/dcs/log, /opt/ oracle/dcs/da/da repo, and /opt/oracle/dcs/dcscli/log directories.

Patching Log Files

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

Error Correlation Reports

If a DCS job fails, an Error Correlation report is generated and is available in the /opt/ oracle/dcs/da/da repo directory.

DCS Agent Log Directories

Agent-specific activities are logged in the dcs-agent log.

The DCS Agent, controller, and command-line interface output are stored 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/dcscli/log/dcscli.log file first.

DCS Components Log Directories

The Oracle HAMI logs are stored in the directory /opt/oracle/hami/base, /opt/oracle/ hami/obase, and /opt/oracle/dcs/hami/log. The Oracle HAMI logs are hamiws_pid_n.trc, hamictl timestamp pid.log, and hamiwsmkwallets pid.trc.

The MySQL logs are stored in the log /opt/oracle/dcs/mysql/log/mysqldb.log. The log contains information about MySQL such as startup, shutdown, connection transaction details, and errors encountered when running MySQL.

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 directory.

/opt/oracle/oak/log/hostname/oakdiag/file name.tar.gz

For example, /opt/oracle/oak/log/myhost/oakdiag/oakStoragemyhost-20161120_2217.tar.gz

Upgrade using Data Preserving Reprovisioning Logs

The odaupgradeutil utility logs are stored at opt/oracle/oak/restore/log.

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/</code> database unique name.

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 created when you deploy the appliance. All passwords are set to the password that you define during deployment.

Default Operating System Groups and User Configurations

Table A-2 Default Operating System Groups and Users Configuration for Oracle Database Appliance

Groups and Users	Default Value
Oracle Grid Infrastructure installation owner	grid, UID 1001
Oracle Database installation owner	oracle, UID 1000
Oracle Database system administrator	sys
Oracle Database generic administrator	system
Oracle Inventory system privileges group	oinstall, GID 1001
Oracle ASM Administrators system privileges	asmadmin, GID 1004
Oracle ASM Users system privileges	asmdba, GID 1006
Oracle ASM Operator system privileges	asmoper, GID 1005
Oracle Database Administrators system privileges	dba, GID 1003
Oracle Database Operator system privileges	dbaoper, GID 1002



Oracle Groups and User Configurations

You can use the 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.

- About Database File Storage
 Use Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage
 Management Cluster File System (Oracle ACFS) for database files storage.
- Oracle ACFS Mount Points and Storage Space Review Oracle ASM Cluster file system (ACFS) mount points for Oracle Database Appliance.
- Displaying Mounted Disk Details
 Use the Oracle Automatic Storage Management lsdg command to display mounted disk
 groups and their information for Oracle Database Appliance.
- Usable Space on Oracle Database Appliance X11-S and X11-L Review the table for the approximate amount of usable space for Oracle Database Appliance X11-S and X11-L.
- Usable Space on Oracle Database Appliance X11-HA Review the table for the approximate amount of usable space for high performance and high capacity storage on Oracle Database Appliance X11-HA.
- Usable Free Space with Oracle ASM When Oracle ASM calculates usable Free Space, it determines the amount of space to reserve in the case of a disk failure.

About Database File Storage

Use Oracle Automatic Storage Management (Oracle ASM) or Oracle Automatic Storage Management Cluster File System (Oracle ACFS) for database files storage.

Database file systems are used exclusively for storing database files, and they include separate file systems for data files and archive files or backups. You determine the type of database storage when you create the database.

About Oracle ASM Database Storage

With Oracle ASM, database datafiles are stored in DATA disk group. On X8-2, X7-2S, X7-2M, and X6-2 S/M/L systems, which do not have REDO disk group, redo and archive files are stored in RECO disk group. X7-2-HA and other older High-Availability systems have dedicated disks for REDO disk group; redo logs are stored in the REDO disk group.

Reserved storage is the amount of Oracle Automatic Storage Management (Oracle ASM) storage required to restore redundancy in the event of a disk failure. If you use the reserve storage capacity, then the system continues to run, and it is protected through Oracle ASM mirroring. However, in the event of a disk failure, the system is then running in a non-protected and degraded mode. In this event, you must replace disks immediately. If there is no reserved space available, then rebalance cannot restore redundancy after a disk failure.

If you specify mirroring for a file, then Oracle ASM automatically stores redundant copies of the file extents in separate failure groups. Failure groups apply to normal, high, and flex



redundancy disk groups. You can define the failure groups for each disk group when you create or alter the disk group.

See Also:

Oracle Automatic Storage Management Administrator's Guide in the Oracle Database documentation library for information about Oracle ASM Mirroring and Disk Group Redundancy.

About Oracle ACFS Database Storage

With Oracle ACFS, an Oracle ACFS file system is created from DATA disk group for each database to store datafiles, and an Oracle ACFS file system is created from RECO disk group for redo and fast recovery area for all databases.

Each database created under ACFS has it own mount points, /u02/app/oracle/oradata/ *dbid*. When you delete a database, you should clean up the files.

Storage Configuration Options

When Oracle Database Appliance is deployed, you can configure how the storage capacity is shared between DATA disk group and RECO disk group. You can choose anywhere from 10% to 90% for DATA and the remainder for RECO. The amount of usable storage is determined by the percentage configured for DATA. You can run the command <code>asmcmd lsdg</code> to determine the usable storage on the DATA disk group. You can also run the command <code>odacli list-dbstorages</code> command to determine the storage available.

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 disk group.

If you select Oracle ACFS for database storage, then each database has its own Oracle ACFS mount point:

- DATA disk group: /u02/app/oracleuser/oradata/db_name
- RECO disk group: /u03/app/oracleuser.
- REDO disk group: /u04/app/oracleuser/redo/db name

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.
- For Oracle Database Appliance single-node and High-Availability High Performance systems, the REDO volume is created on the RECO disk group. For Oracle Database Appliance High-Availability High Capacity system, the REDO volume is created on FLASH disk group. The REDO volume stores redo logs.



File System	Oracle ASM Disk Group	Oracle ASM Dynamic Volume	Mount Point	
DATA	+DATA	/dev/asm/dat <i>dbname-nnn</i>	/u02/app/oracleuser/oradata/	
		For example: /dev/asm/	dbname	
		datodacn-123	For example: /u02/app/example/ oradata/odacn	
RECO	+RECO	/dev/asm/reco-nn	/u03/app/oracleuser	
			This mount point is shared by all databases for fast_recovery_area and redo logs.	
			For fast_recovery_area, the path is: /u03/app/ <i>oracleuser/</i> fast_recovery_area/db_name	
REDO	+RECO/ +FLASH	/dev/asm/rdo/dbName-nnn	/u04/app/ <i>oracleuser</i> /redo/ <i>db_name</i> For example :	
	depending on		· · · · · · · · · · · · · · · · · · ·	
	environment type (High Capacity or High Performance)		/u04/app/oracle/redo/mydb	

Table B-1 Oracle ACFS Mount Points and Related Oracle ASM Disk Groups and Volume Information

Example B-1 Oracle ACFS Storage Space

When the Oracle ACFS file systems are created, they do not initially consume all of the storage in the appliance. Space is preserved for additional repositories, or in some cases, database files stored directly in Oracle ASM. You can check for available storage space in your file systems by running the operating system command df -k as shown in the following example.

# df -k					
Filesystem	1K-blocks	Used	Available	Use%	Mounted
on					
/dev/mapper/VolGroupSys-LogVolRoot	30963708	14203568	15187276	49%	/
tmpfs	65952292	647800	65304492		
1% /dev/shm					
/dev/sda1	495844	43872	426372	10%	/boot
/dev/mapper/VolGroupSys-LogVolOpt	61927420	18594420	40187272	32%	/opt
/dev/mapper/VolGroupSys-LogVolU01	103212320	49621560	48347880	51%	/u01
/dev/asm/reco-62	76546048	1469676	75076372		
2% /u03/app/oracle					
/dev/asm/datrdb2-268	104857600	3872368	100985232		
4% /u02/app/oracle/oradata/rdb2					
/dev/asm/datndb11-268	104857600	247160	104610440		
1% /u02/app/oracle/oradata/ndb11					
/dev/asm/datndb12-268	104857600	247160	104610440		
1% /u02/app/oracle/oradata/ndb12					

Displaying Mounted Disk Details

Use the Oracle Automatic Storage Management lsdg command to display mounted disk groups and their information for Oracle Database Appliance.

To display information about a specific disk group, specify the disk group in the command.



1. Log in as a grid user.

2. Run the Oracle Automatic Storage Management lsdg command.

Example B-2 Determining Storage on the DATA Disk Group

ASMCMD [+] > lsdg data State Туре Rebal Sector Block AU Total MB Free MB Req mir free MB Usable file MB MOUNTED NORMAL N 512 4096 4194304 12288 8835 3859 1117 (continued) Offline disks Voting_files Name 0 N DATA

Usable Space on Oracle Database Appliance X11-S and X11-L

Review the table for the approximate amount of usable space for Oracle Database Appliance X11-S and X11-L.

Oracle Database Appliance X11-S and X11-L use 6.8TB NVMe. The storage capacity is the aggregate for DATA and RECO disk groups. The raw storage capacity in the table is based on disk hardware terabytes (based on 1 kilobyte equals 1000 bytes). Approximate usable storage capacity is shown in software storage terabytes (based on 1 kilobyte equals 1024 bytes). Approximate usable storage also accounts for 15% reserved space required to restore full redundancy in case of disk failure (not applicable to the two-drive configuration). The high redundancy values in the table describe the space needed to recover from one failure only.

Note:

The usable storage space described in this topic are approximate values, and may vary as per your deployment.

Table B-2	Usable Disk Capacity	y on Oracle Database	Appliance X11-S and X11-L

Number of Drives	Raw Storage	Usable Storage with Normal Redundancy (Double Mirroring)	Usable Storage with High Redundancy (Triple Mirroring)
X11-S/X11-L (2 drives)	13.6 TB	6.2 TB	Not Applicable
X11-L (4 drives)	27.2 TB	10.5 TB	7.0 TB
X11-L (6 drives)	40.8 TB	15.8 TB	10.5 TB
X11-L (8 drives)	54.4 TB	21.0 TB	14.0 TB

Usable Space on Oracle Database Appliance X11-HA

Review the table for the approximate amount of usable space for high performance and high capacity storage on Oracle Database Appliance X11-HA.

Usable Space for High Performance

Note:

The usable storage space described in this topic are approximate values, and may vary as per your deployment.

Oracle Database Appliance X11-HA with high performance configuration uses 7.68TB solid state drives (SSDs). The storage capacity is the aggregate for DATA and RECO disk groups. The raw storage capacity in the table is based on disk hardware terabytes (based on 1 kilobyte equals 1000 bytes). Approximate usable storage capacity is shown in software storage terabytes (based on 1 kilobyte equals 1024 bytes). Approximate usable storage also accounts for 15% reserved space required to restore full redundancy in case of disk failure. The high redundancy values in the table describe the space needed to recover from one failure only.

Number of Drives	Raw Storage	Usable Storage with Normal Redundancy (Double Mirroring)	Usable Storage with High Redundancy (Triple Mirroring)
6 SSD drives	46 TB	17.8 TB	11.9 TB
12 SSD drives	92 TB	35.6 TB	23.7 TB
18 SSD drives	138 TB	53.4 TB	35.6 TB
24 SSD drives	184 TB	71.2 TB	47.5 TB
48 SSD drives	369 TB	142.5 TB	95.0 TB

Table B-3 Usable Disk Capacity for High Performance on Oracle Database Appliance X11-HA

Usable Space for High Capacity

Oracle Database Appliance X11-HA with high capacity configuration uses 7.68TB solid state drives (SSDs) and 22TB hard disk drives (HDDs). SSD storage capacity is allocated to the FLASH disk group. HDD storage capacity is the aggregate for DATA and RECO disk groups. The raw storage capacity in the table is based on disk hardware terabytes (based on 1 kilobyte equals 1000 bytes). Approximate usable storage capacity is shown in software storage terabytes (based on 1 kilobyte equals 1024 bytes). Approximate usable storage also accounts for 15% reserved space required to restore full redundancy in case of disk failure. The high redundancy values in the table describe the space needed to recover from one failure only.

Note:

The usable storage space described in this topic are approximate values, and may vary as per your deployment.

Number of Drives	Raw Storage	Usable Storage with Normal Redundancy (Double Mirroring)	Usable Storage with High Redundancy (Triple Mirroring)
6 SSD drives and 18 HDD	SSDs: 46 TB	SSDs: 17.8 TB	SSDs: 11.9 TB
drives	HDDs: 396 TB	HDDs: 153.1 TB	HDDs: 102 TB
12 SSD drives and 36 HDD	SSDs: 92 TB	SSDs: 35.6 TB	SSDs: 23.7 TB
drives	HDDs: 792 TB	HDDs: 306.1 TB	HDDs: 204.1 TB

Table B-4 Usable Disk Capacity for High Capacity on Oracle Database Appliance X11-HA

Usable Free Space with Oracle ASM

When Oracle ASM calculates usable Free Space, it determines the amount of space to reserve in the case of a disk failure.

For Oracle Database Appliance with 2 or 4 NVMe drives, this reserved space is not required. When you query Oracle ASM or Oracle Database Appliance commands to view the amount of storage available, the <code>usable_File_MB</code> value may report a negative number.

Table B-5 Oracle ASM Calculations

Number of Drives	Redundancy	Total_MB	Free_MB	Req_mir_free_ MB	Usable_file_MB	Name
2	NORMAL	4894016	4893372	0	1220644	RECO/
4	NORMAL	1231176	1230996	610468	305150	RECO/

Note:

Note: 1TB = MB divided by 1024^2

How Oracle ASM and Oracle Database Appliance Define Capacity

The following table describes how capacity terms are defined by Oracle ASM and Oracle Database Appliance.

Table B-6Definition of Terminology

Term	Oracle ASM Definition	Oracle Database Appliance Definition
Total_MB	Size of the disk group in MB	Total usable storage. For example, for 2 NVMe drives, total usable storage is 5.8TB.
Free_MB	Free space in the disk group in MB, without regard to redundancy.	Total usable storage after formatting to Oracle ASM disk groups. For example, for 2 NVMe drives, total usable storage is 5.8TB.



Term	Oracle ASM Definition	Oracle Database Appliance Definition
Req_mir_free_MB	Amount of space that must be available in the disk group to restore full redundancy after the worst failure that can be tolerated by the disk group.	Amount of space that must be available in the disk group to restore full redundancy after the most severe failure that can be tolerated by the disk group. This is the REQUIRED_MIRROR_FREE_MB column from the V\$ASM_DISKGROUP view.
Usable_file_MB	Amount of free space, adjusted for mirroring, that is available for new files.	Total usable space taking into consideration the mirroring level. Oracle ASM also calculates the amount of space required.



Creating an Appliance Using JSON File

Understand the process to create an appliance using the command odacli createappliance 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 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 High-Availability Appliance with the CLI Follow the JSON file example to create a JSON file to deploy a high-availability 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 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.
- 5. Make any changes required, and submit the request to create the appliance

Note that for security requirements, you must enter passwords manually.

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.



Note:

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

Readme

The readme is located in the /opt/oracle/dcs/sample directory. Review the readme carefully along with the provided JSON example files. Create a JSON file with the necessary changes based on your environment and requirements.

Example JSON Files to Create a Single Node Appliance with the CLI

Follow these JSON file examples to create a JSON file to deploy a single node appliance with the command odacli create-appliance.

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

Note:

If you do not enter your network and Oracle ILOM information correctly based on your setup, then network access is lost to both the host and Oracle ILOM.

When using the example to create your JSON file, change the definitions to match your environment. The password must meet password requirements.

Note: To configure Oracle ASR during provisioning, always specify the asrType parameter in the JSON file.

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" : ["xx.xx.xx"],
   "dnsServers" : ["xx.xx.xx","xx.xx.xx","xx.xx.xx"],
   "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"
   } ]
 }
},
"sysOraHomeStorage": {
      "volumeSize": "160",
      "diskgroup": "DATA"
  }
"nodes" : [ {
  "nodeNumber" : "0",
  "nodeName" : "odambox",
  "network" : [ {
     "nicName" : "btbond1",
     "ipAddress" : "xx.xx.xx",
     "subNetMask" : "xx.xx.xx",
     "gateway" : "xx.xx.xx.xx",
     "networkType" : [ "Public" ],
     "isDefaultNetwork" : true
   },
 ],
  "ilom" : {
   "ilomName":"odambox-c",
    "ipAddress":"xx.xx.xx.xx",
    "subNetMask":"xx.xx.xx",
    "gateway":"xx.xx.xx"
```

```
}
}],
"grid" : {
  "diskGroup" : [ {
    "diskGroupName" : "DATA",
    "redundancy" : "NORMAL",
    "diskPercentage" :80
  }, {
    "diskGroupName" : "RECO",
    "redundancy" : "NORMAL",
    "diskPercentage" :20
  }],
"scan" : {
   "scanName":"odambox-scan",
   "ipAddresses":[
  "xx.xx.xx.
   ]
  },
"vip":[
  {
  "nodeNumber":"0",
  "vipName": "odambox-vip",
  "ipAddress":"xx.xx.xx"
  }
  ],
  "language" : "en"
},
"database" : {
  "dbName" : "myTestDb",
  "databaseUniqueName":"myTestDb sealkj",
  "dbEdition" : "EE",
  "dbVersion" : "19.26.0.0.0",
  "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" : ["xx.xx.xx.xx"],
    "dnsServers" : ["xx.xx.xx", "xx.xx.xx", "xx.xx.xx"],
    "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" : "xx.xx.xx",
       "subNetMask" : "xx.xx.xx",
       "gateway" : "xx.xx.xx.xx",
       "networkType" : [ "Public" ],
       "isDefaultNetwork" : true
     },
    ],
```

```
"ilom" : {
   "ilomName":"odambox-c",
   "ipAddress":"xx.xx.xx.xx",
    "subNetMask":"xx.xx.xx",
    "gateway":"xx.xx.xx.xx"
   }
}],
"grid" : {
 "diskGroup" : [ {
   "diskGroupName" : "DATA",
   "redundancy" : "NORMAL",
    "diskPercentage" :80
  }, {
    "diskGroupName" : "RECO",
   "redundancy" : "NORMAL",
   "diskPercentage" :20
  }],
"scan" : {
   "scanName":"odambox-scan",
   "ipAddresses":[
  "xx.xx.xx.
  ]
 },
"vip":[
  {
  "nodeNumber":"0",
  "vipName":"odambox-vip",
  "ipAddress":"xx.xx.xx"
  }
 ],
 "language" : "en"
},
"database" : {
  "dbName" : "myTestDb",
  "databaseUniqueName": "myTestDb sealkj",
  "dbEdition" : "EE",
  "dbVersion" : "19.26.0.0.0",
 "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",
    "proxyPort":"80",
    "proxyUserName":"proxy-user",
    "proxyUserName":"proxy-user",
    "proxyPassword":"proxy-password",
    "snmpVersion":"v2"
}
```

Example JSON File to Create a High-Availability Appliance with the CLI

Follow the JSON file example to create a JSON file to deploy a high-availability 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 high-availability Oracle Database Appliance with Role Separation

The following is an example of a JSON file that creates a high-availability 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.

```
"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"
      1
   },
   "objectStoreCredentials":null
},
"sysOraHomeStorage": {
     "volumeSize": "160",
     "diskgroup": "DATA"
 }
"nodes":[
   {
      "nodeNumber":"0",
      "nodeName": "odahaboxc1n2",
      "network":[
         {
            "nicName":"btbond1",
```

```
"ipAddress":"xx.xx.xx.xx",
            "subNetMask":"xx.xx.xx",
            "gateway":"xx.xx.xx.xx",
            "networkType":[
               "Public"
            ],
            "isDefaultNetwork":true
         }
      ],
      "ilom":{
         "ilomName": "odahabox2-c",
         "ipAddress":"xx.xx.xx.xx",
         "subNetMask":"xx.xx.xx",
         "gateway":"xx.xx.xx"
      }
  },
   {
      "nodeNumber":"1",
      "nodeName": "odahaboxc1n1",
      "network":[
         {
            "nicName":"btbond1",
            "ipAddress":"xx.xx.xx.xx",
            "subNetMask":"xx.xx.xx",
            "gateway":"xx.xx.xx",
            "networkType":[
               "Public"
            ],
            "isDefaultNetwork":true
         }
      ],
      "ilom":{
         "ilomName":"odahabox1-c",
         "ipAddress":"xx.xx.xx.xx",
         "subNetMask":"xx.xx.xx",
         "gateway":"xx.xx.xx"
   }
],
"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":[
         "xx.xx.xx",
         "xx.xx.xx.xx"
      1
   },
   "vip":[
      {
         "nodeNumber":"0",
         "vipName": "odahaboxc1n2-vip",
         "ipAddress":"xx.xx.xx.xx"
      },
      {
         "nodeNumber":"1",
         "vipName": "odahaboxc1n1-vip",
         "ipAddress":"xx.xx.xx"
      }
   ],
   "language":"en"
},
"database":{
   "dbName": "myTestDb",
   "databaseUniqueName":"myTestDb sea1kj",
   "dbVersion":"19.26.0.0.0",
   "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
```

Example C-4 JSON File to Create a high-availability Oracle Database Appliance with Enterprise Edition High Availability Enabled

The following is an example of a JSON file that creates a high-availability appliance on Oracle Database Appliance bare metal platform. The example shows enabling of Enterprise Edition

}

High Availability. 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" : ["xx.xx.xx", "xx.xx.xx", "xx.xx.xx"],
      "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"
```

```
}
      1
   },
   "objectStoreCredentials":null
},
"sysOraHomeStorage": {
     "volumeSize": "160",
     "diskgroup": "DATA"
 }
"nodes":[
  {
      "nodeNumber":"0",
      "nodeName": "odahaboxc1n2",
      "network":[
         {
            "nicName":"btbond1",
            "ipAddress":"xx.xx.xx.xx",
            "subNetMask":"xx.xx.xx",
            "gateway":"xx.xx.xx.xx",
            "networkType":[
               "Public"
            ],
            "isDefaultNetwork":true
         }
      ],
      "ilom":{
         "ilomName":"odahabox2-c",
         "ipAddress":"xx.xx.xx",
         "subNetMask":"xx.xx.xx",
         "gateway":"xx.xx.xx"
      }
  },
   {
      "nodeNumber":"1",
      "nodeName": "odahaboxc1n1",
      "network":[
        {
            "nicName":"btbond1",
            "ipAddress":"xx.xx.xx.xx",
            "subNetMask":"xx.xx.xx",
            "gateway":"xx.xx.xx.xx",
            "networkType":[
               "Public"
            ],
            "isDefaultNetwork":true
         }
      ],
      "ilom":{
         "ilomName":"odahabox1-c",
         "ipAddress":"xx.xx.xx.xx",
         "subNetMask":"xx.xx.xx",
         "gateway":"xx.xx.xx"
      }
   }
],
"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":[
         "xx.xx.xx",
         "xx.xx.xx"
      ]
   },
   "vip":[
      {
         "nodeNumber":"0",
         "vipName": "odahaboxc1n2-vip",
         "ipAddress":"xx.xx.xx"
      },
      {
         "nodeNumber":"1",
         "vipName": "odahaboxc1n1-vip",
         "ipAddress":"xx.xx.xx.xx"
   ],
   "language":"en"
},
"database":{
   "dbName": "myTestDb",
   "databaseUniqueName":"myTestDb sea1kj",
   "dbVersion":"19.26.0.0.0",
   "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
```

}

{

Example C-5 JSON File to Create a high-availability Oracle Database Appliance with Standard Edition High Availability Enabled

The following is an example of a JSON file that creates a high-availability appliance on Oracle Database Appliance bare metal platform. The example shows enabling of Standard Edition High Availability. 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":"SE",
  "timeZone":"UTC",
  "ntpServers" : ["10.0.3.14"],
  "dnsServers" : ["xx.xx.xx","xx.xx.xx","xx.xx.xx"],
  "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
},
"sysOraHomeStorage": {
     "volumeSize": "160",
     "diskgroup": "DATA"
 }
"nodes":[
   {
      "nodeNumber":"0",
      "nodeName": "odahaboxc1n2",
      "network":[
         {
            "nicName":"btbond1",
            "ipAddress":"xx.xx.xx",
            "subNetMask":"xx.xx.xx",
            "gateway":"xx.xx.xx.xx",
            "networkType":[
               "Public"
            ],
            "isDefaultNetwork":true
         }
      ],
      "ilom":{
         "ilomName": "odahabox2-c",
         "ipAddress":"xx.xx.xx.xx",
         "subNetMask":"xx.xx.xx",
         "gateway":"xx.xx.xx"
      }
  },
   {
      "nodeNumber":"1",
      "nodeName": "odahaboxc1n1",
      "network":[
         {
            "nicName":"btbond1",
            "ipAddress":"xx.xx.xx.xx",
            "subNetMask":"xx.xx.xx",
            "gateway":"xx.xx.xx.xx",
```

```
"networkType":[
               "Public"
            ],
            "isDefaultNetwork":true
         }
      ],
      "ilom":{
         "ilomName":"odahabox1-c",
         "ipAddress":"xx.xx.xx",
         "subNetMask":"xx.xx.xx",
         "gateway":"xx.xx.xx.xx"
      }
   }
],
"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":[
         "xx.xx.xx",
         "xx.xx.xx.xx"
      ]
   },
   "vip":[
      {
         "nodeNumber":"0",
         "vipName":"odahaboxc1n2-vip",
         "ipAddress":"xx.xx.xx"
      },
      {
         "nodeNumber":"1",
         "vipName":"odahaboxc1n1-vip",
         "ipAddress":"xx.xx.xx.xx"
  ],
   "language":"en"
},
"database":{
   "dbName":"myTestDb",
   "databaseUniqueName":"myTestDb sealkj",
```

```
"dbVersion":"19.26.0.0.0",
   "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 Shapes for Oracle Database Appliance

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

- About Database Shapes and Classes
 Review this information to help determine the database shape (also known as a database
 template) and class to use based on the common workload your databases perform.
- Database Shapes for the OLTP Class
 Use Oracle Database Appliance OLTP Database Shapes if your database workload is
 primarily online transaction processing (OLTP).
- Database Shapes for the In-Memory Class
 Use Oracle Database Appliance In-Memory (IMDB) database shapes if your database
 workload can fit in memory, and can benefit from in-memory performance capabilities.
- Database Shapes for the DSS Class
 Use DSS database shapes if your database workload is primarily decision support services
 (DSS) or data warehousing.

About Database Shapes and Classes

Review this information to help determine the database shape (also known as a database template) and class to use based on the common workload your databases perform.

Oracle Database Appliance shapes define databases with parameters selected specifically to optimize performance on Oracle Database Appliance. In addition, these shapes help you to set up appropriate instance caging.

Oracle Database Appliance enables you to consolidate many databases into a single system. Consolidation can minimize idle resources, maximize efficiency, and lower costs. By using instance caging in conjunction with Oracle Database Resource Manager (the Resource Manager), you can provide desired levels of service across multiple instances on a single Oracle Database Appliance.

Oracle Database Appliance shapes are already tuned for the size of each database instance workload. They are designed to run on a specific number of cores. Caging ensures that each database workload is restricted to the set of cores allocated by the shape, enabling multiple databases to run concurrently with no performance degradation, up to the capacity of Oracle Database Appliance. You can select database shape sizes larger than your current needs to provide for planned growth, which you accommodate later by adjusting System Global Area (SGA) and Program Global Area (PGA) sizes as well as the number of cores.



Note:

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

Important:

Except for the largest database shape, all other database shapes supported on the Oracle Database Appliance bare metal system are also supported on Oracle Database Appliance DB system.

Choosing a Database Shape

Database shapes are configured specifically for the type of database workload that you want to carry out on your databases on Oracle Database Appliance. Choose the shape that best matches the common workload your databases perform (OLTP, DSS, In-Memory).

The database sizing tables provide shape names and sizing based on the number of CPUs and memory attributes for each type of database workload.

Identify the shape type that is appropriate to your database workload and hardware:

- Use Oracle Database Appliance OLTP Database Shapes if your database workload is primarily online transaction processing (OLTP).
- Use Oracle Database Appliance DSS database shapes if your database workload is primarily decision support services (DSS) or data warehousing.
- Use Oracle Database Appliance In-Memory (IMDB) database shapes if your database workload can fit in memory, and can benefit from in-memory performance capabilities.

Use the database shape tables to help select the best shapes for your databases. When using these tables remember the following:

- The information in the tables assumes that you are creating local disk backups. Consider the space requirements for your database and the policy for local disk backups versus external backups. Typically, external backups have more space available for the database than local backups.
- The log file size assumes three (3) REDO log groups for each instance with a log switch every 15 minutes when the system is running at full capacity.

Database Shapes for the OLTP Class

Use Oracle Database Appliance OLTP Database Shapes if your database workload is primarily online transaction processing (OLTP).

The tables list the online transaction processing (OLTP) database shape sizes for Oracle Database Appliance X11-S, X11-L, and X11-HA.

The information in the table assumes the following:



• You are creating local disk backups. Consider the space requirements for your database and the policy for local disk backups versus external backups. Typically, external backups have more space available for the database than local backups.

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	200	4	32
odb1	1	4	2	200	4	32
odb2	2	8	4	400	4	32
odb4	4	16	8	800	4	64
odb6	6	24	12	1200	8	256
odb08	8	32	16	1600	8	256
odb10	10	40	20	2000	8	256
odb12	12	48	24	2400	16	256
odb16	16	64	32	3200	16	256
odb20	20	80	40	4000	16	256
odb24	24	96	48	4800	16	256
odb28	28	112	56	5600	16	256
odb32	32	128	64	6400	16	256

Table D-1 Oracle Database Appliance X11-S OLTP Database Shapes

Table D-2 Oracle Database Appliance X11-L and X11-HA OLTP Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	200	4	32
odb1	1	4	2	200	4	32
odb2	2	8	4	400	4	32
odb4	4	16	8	800	4	64
odb6	6	24	12	1200	8	256
odb08	8	32	16	1600	8	256
odb10	10	40	20	2000	8	256
odb12	12	48	24	2400	16	256
odb16	16	64	32	3200	16	256
odb20	20	80	40	4000	16	256
odb24	24	96	48	4800	16	256
odb28	28	112	56	5600	16	256
odb32	32	128	64	6400	16	256
odb36	36	144	72	7200	32	256
odb42	42	168	84	8400	32	256
odb48	48	192	96	9600	32	256
odb56	56	224	112	11200	32	256

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb64	64	256	128	12800	32	256

Table D-2 (Cont.) Oracle Database Appliance X11-L and X11-HA OLTP Database Shapes

Database Shapes for the In-Memory Class

Use Oracle Database Appliance In-Memory (IMDB) database shapes if your database workload can fit in memory, and can benefit from in-memory performance capabilities.

The tables list the In-Memory database shape sizes for Oracle Database Appliance X11-2S, X11-2L, and X11-2-HA.

The information in the table assumes the following:

• You are creating local disk backups. Consider the space requirements for your database and the policy for local disk backups versus external backups. Typically, external backups have more space available for the database than local backups.

Table D-3 Oracle Database Appliance X11-S In-Memory Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes n - M e m o r y	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	200	4	32
odb1	1	4	2	2 00	4	32
odb2	2	8	4	400	4	32
odb4	4	16	8	8 00	4	64
odb6	6	24	12	1 200 2	8	256
odb08	8	32	16	1 600 6	8	256
odb10	10	40	20	2 000 0	8	256
odb12	12	48	24	2 400 4	16	256
odb16	16	64	32	3 200 2	16	256
odb20	20	80	40	4 000 2	16	256
odb24	24	96	48	4 800 8	16	256
odb28	28	112	56	5 600 6	16	256

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes n - M e m o r y	Redo log file size (GB)	Log buffer (MB)
odb32	32	128	64	6 400 4	16	256

Table D-3 (Cont.) Oracle Database Appliance X11-S In-Memory Database Shapes

Table D-4 Oracle Database Appliance X11-L and X11-HA In-Memory Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes n - M e m o r y	Redo log file size (GB)	Log buffer (MB)
odb1s	1	2	1	200	4	32
odb1	1	4	2	2 00	4	32
odb2	2	8	4	400	4	32
odb4	4	16	8	8 00	4	64
odb6	6	24	12	1 200 2	8	256
odb08	8	32	16	1 600 6	8	256
odb10	10	40	20	2 000 0	8	256
odb12	12	48	24	2 400 4	16	256
odb16	16	64	32	3 200 2	16	256
odb20	20	80	40	4 000 2	16	256
odb24	24	96	48	4 800 8	16	256
odb28	28	112	56	5 600 6	16	256
odb32	32	128	64	6 400 4	16	256
odb36	36	144	72	7 200 2	32	256
odb42	42	168	84	8 400 4	32	256

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes n - M e m o r y	Redo log file size (GB)	Log buffer (MB)
odb48	48	192	96	9 600 6	32	256
odb56	56	224	112	1 1200 1 2	32	256
odb64	64	256	128	1 2800 2 8	32	256

Table D-4 (Cont.) Oracle Database Appliance X11-L and X11-HA In-Memory Database Shapes

Database Shapes for the DSS Class

Use DSS database shapes if your database workload is primarily decision support services (DSS) or data warehousing.

The tables list the DSS database shape sizes for Oracle Database Appliance X11-S, X11-L, and X11-HA.

The information in the table assumes the following:

• You are creating local disk backups. Consider the space requirements for your database and the policy for local disk backups versus external backups. Typically, external backups have more space available for the database than local backups.

Table D-5 Oracle Database Appliance X11-S DSS Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	1	2	200	4	32
odb1	1	2	4	200	4	32
odb2	2	4	8	400	4	32
odb4	4	8	16	800	4	64
odb6	6	12	24	1200	8	256
odb08	8	16	32	1600	8	256
odb10	10	20	40	2000	8	256
odb12	12	24	48	2400	16	256
odb16	16	32	64	3200	16	256
odb20	20	40	80	4000	16	256
odb24	24	48	96	4800	16	256
odb28	28	56	112	5600	16	256

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb32	32	64	128	6400	16	256

Table D-5 (Cont.) Oracle Database Appliance X11-S DSS Database Shapes

Table D-6 Oracle Database Appliance X11-L and X11-HA DSS Database Shapes

Shape	CPU Cores	SGA (GB)	PGA (GB)	Processes	Redo log file size (GB)	Log buffer (MB)
odb1s	1	1	2	200	4	32
odb1	1	2	4	200	4	32
odb2	2	4	8	400	4	32
odb4	4	8	16	800	4	64
odb6	6	12	24	1200	8	256
odb08	8	16	32	1600	8	256
odb10	10	20	40	2000	8	256
odb12	12	24	48	2400	16	256
odb16	16	32	64	3200	16	256
odb20	20	40	80	4000	16	256
odb24	24	48	96	4800	16	256
odb28	28	56	112	5600	16	256
odb32	32	64	128	6400	16	256
odb36	36	72	144	7200	32	256
odb42	42	84	168	8400	32	256
odb48	48	96	192	9600	32	256
odb56	56	112	224	11200	32	256
odb64	64	128	256	12800	32	256

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