

Disaster Recovery Configuration for Oracle Analytics Cloud

Describes best practices for disaster recovery. Guidance for Oracle Analytics Cloud administrators who are responsible for developing and maintaining a robust disaster recovery plan that ensures business continuity and minimizes the impact of any disruptions.

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Author: Veera Raghavendra Rao Koka

Contributing Authors: Ahmed Awan, Amarpreet Nagra, Ravi Bhuma, Lisa Garczynski



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Terminology

This disaster recovery guide uses the following terms, acronyms, and abbreviations.

- ADW Oracle Autonomous Data Warehouse
- CIDR classless inter-domain routing
- DBCS Oracle Database Cloud Service
- DR disaster recovery
- IAM Oracle Identity and Access Management
- IDCS Oracle Identity Cloud Service

OAC – Oracle Analytics Cloud

- **Primary OAC instance** An OAC instance created and used for production purposes. In this example, the OAC production instance was created in the OCI home region.
- **Disaster recovery OAC instance** An OAC instance created as a backup for the production OAC instance. In this example, the OAC backup instance was created in the OCI DR region.
- Source and Target OAC instance for the Data Migration utility
 - Source The OAC instance where you take a backup of the data files is the source OAC instance.
 - Target The OAC instance where you restore the data files is the target OAC instance.

Examples in this document use the OAC instance in the OCI home region (**Ashburn**) as the primary or source OAC instance. The OAC instance in the OCI DR region (**Phoenix**) is used as DR or target OAC instance.

OCI – Oracle Cloud Infrastructure

OCI regions - Regions and Availability Domains

- OCI data regions <u>Public Cloud Regions</u>, <u>OCI Data Regions</u>
- OCI home region When you sign up for OCI, Oracle creates a tenancy for you in one region. This is your home region. Your home region is where your IAM resources are defined. When you subscribe to another region, your IAM resources are available in the new region; however, the master definitions reside in your home region and can only be changed there.
- **OCI disaster recovery region -** When you subscribe to another region other than the home region for the same cloud services, create an OAC instance as a standby and use it when a disaster occurs.

OCID – Oracle Cloud Identifier

- PAC private access channel
- **RDG** remote Data Gateway
- RPO recovery point objective
- **RTO** recovery time objective
- VCN virtual cloud network
- VPN virtual private network
- WAF Web application firewall

For more information, refer to the Oracle Cloud Infrastructure Glossary.



Introduction

This document provides guidance and best practices for OAC administrators, OCI administrators, IDCS/IAM administrators, and database administrators who are responsible for disaster recovery of OAC services. The information in this guide will help administrators develop and maintain a robust disaster recovery plan that ensures business continuity and minimizes the impact of any disruptions.

Overview

Ensuring business continuity and disaster recovery is essential for OAC to withstand unforeseen disasters and natural calamities. One approach is to establish an active-passive model by creating a standby region geographically disparate from the production region.

The standby region, which may have fewer or equivalent services and resources to the production region, periodically receives replicated data such as application content (snapshot), system settings configuration, data source connections, and security data (users and groups). The standby region remains inactive until manually activated after a disruption in the production region.

This document details the process for configuring disaster recovery using essential manual and automated tasks and outlines the associated limitations.

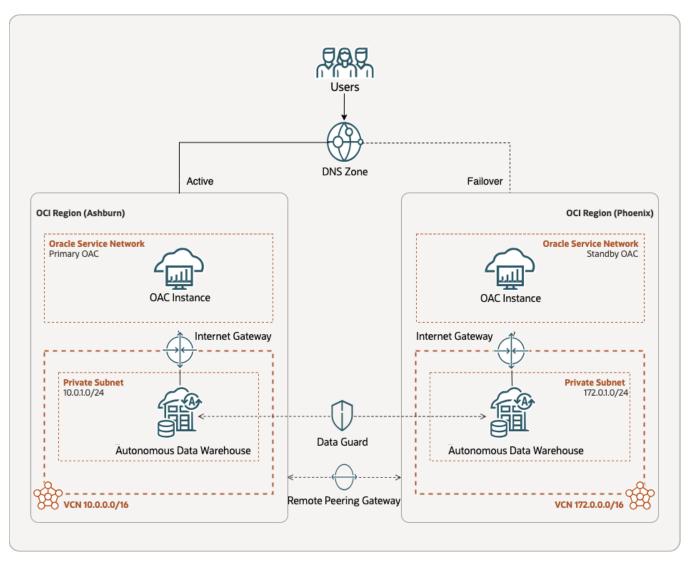
High-Level Steps

- 1. Subscribe to OCI Console Announcements.
- 2. Subscribe to a secondary region in OCI.
- 3. Set up IDCS or IAM identity domain for DR.
- 4. Configure the same users and groups in both the primary and DR OAC instances.
- 5. Configure the same external identity providers for single sign-on.
- 6. Create OAC instances in two different OCI regions.
- 7. To ensure proper network connectivity and prevent routing conflicts, configure your VCN with a non-overlapping CIDR range for both OCI regions.
- 8. To make DR easier to manage, configure PAC or RDG with the exact connection string for your on-premises or Oracle Cloud data sources on both the primary and DR OAC instances.
- 9. Set up a standby ADW or DBCS using Data Guard to replicate the data sources across the primary and DR regions.
- 10. Create object storage buckets in both OCI regions.
- 11. Use snapshots to replicate the content between the primary and DR OAC instances.
- 12. Configure the same SMTP server and system settings in both OAC instances.
- 13. Create the same vanity URL for both OAC instances.
- 14. Map the vanity URL DNS name to the active OAC instance IP address.
- 15. Configure the public OCI load balancer to access the private endpoint OAC instance and map the load balancer IP address to the DNS name.
- 16. Fallback from the DR OAC instance to the primary OAC instance using the snapshot and the Data Migration utility.



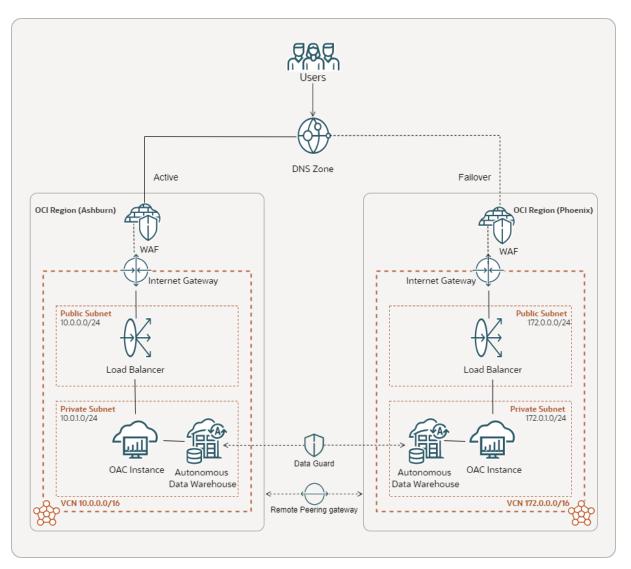
Architecture

Oracle Analytics Cloud Disaster Recovery Architecture Across Different Oracle Cloud Infrastructure Regions

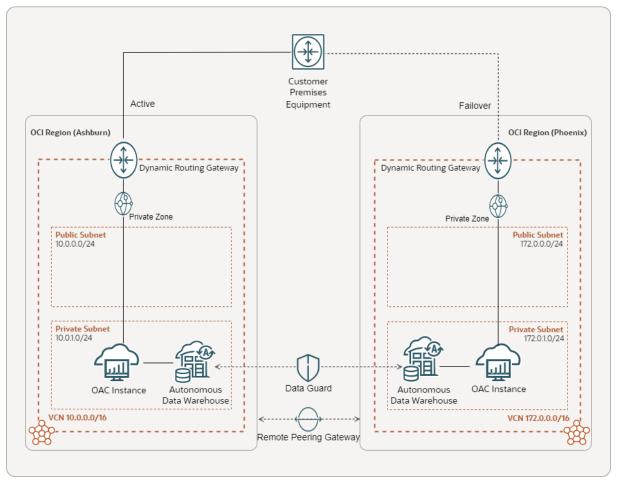


Oracle Analytics Cloud on a Public Endpoint with a Vanity URL





Oracle Analytics Cloud on a Private Endpoint with a Vanity URL and Public Load Balancer



Oracle Analytics Cloud on Private Endpoint with a Vanity URL and Private DNS Zone

Subscribe to a Secondary Oracle Cloud Infrastructure Region

For example, if Ashburn in North America is your OCI home region, subscribe to another region in North America suitable as a DR for the home region such as Phoenix. Always select the home and DR regions in the same Oracle Cloud region to ensure compliance with regional data regulations. See <u>Oracle Cloud Regions Worldwide</u>.

Follow the table in the <u>Disaster Recovery Region Pairings</u> in the OCI commercial realm and select the respective region for DR.

Manage Regions Infrastructure Regions Platform Services Regions	Infrastructure Regions For a complete list of services available by region, see <u>Data Regions for Platform and Infrastructure Services</u> .				
	Region	Subscription Status			
	US East (Ashburn) - Home Region Region Identifier: us-ashburn-1	Subscribed			
	US West (Phoenix) Region Identifier: us-phoenix-1	Subscribed			
	Region Identifier: ap-sydney-1	Subscribe			

This example shows an OCI tenancy subscribed to Ashburn and Phoenix.

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Set Up Identity Cloud Service or IAM Identity Domain for Disaster Recovery

Tenancies with Oracle Identity Cloud Service

For disaster recovery of IDCS, it seems logical to create two IDCS stripes each in a different region, for example, Ashburn and Phoenix. However, we strongly discourage creating IDCS stripes in other OCI data regions.

For information about creating multiple IDCS stripes in different data regions, see About Multiple Instances.

Before creating the secondary IDCS stripe, consider the following:

The Cloud Account Administrator must grant Identity Instance Creation Role to the user creating the IDCS stripe.

You can create multiple IDCS stripes of the required license type in the home region. For example, Ashburn (North America data region).

You must always create secondary IDCS stripes in the OCI home region. You can't create secondary IDCS stripes in a different OCI region, even if they're located within the same OCI data region, such as North America.

You must extend the subscription to another OCI data region and then create a secondary IDCS stripe. See, <u>Extending</u> <u>Your Subscription to Another Data Region</u>.

You can configure a secondary IDCS stripe if you agree to have the secondary IDCS stripe in another OCI data region, such as Latin America, EMEA, and so on, which may violate the data existence region.

Tenancies with IAM Identity Domains

For disaster recovery of the IAM identity domain, it seems logical to create two domains each in a different region, for example, Ashburn and Phoenix. However, we strongly discourage creating domains in different OCI data regions.

Here are the steps to create multiple IAM Identity Domains in different regions.

Create IAM Domain on the OCI Home Region (Ashburn)

Follow these steps to create an IAM identity domain for identity management.

- 1. Sign in to the tenancy's OCI Console as the default domain user and select the home region. For example, Ashburn.
- 2. Create a domain from the available **Domain types** (Free, Oracle Apps, Oracle Apps Premium, Premium, and External User). For more information on domain types, see <u>IAM Identity Domain Types</u>.



Create domain		
create domain		
Display name		
AshIDMDomain		
The only characters allowed are letters and numbers (for example, a-z, A-Z, 0-9), an underscore (_), a period (.), and a	hyphen (-).	
Description		
IAM Identity Domain on Ashburn		
Domain type		
Free	Oracle Apps Premium	Premium
Authentication and Access Management for Oracle Cloud (IaaS and PaaS services) with limits on usage and functionality.	Authentication and Access Management for all of your Oracle apps. • Unimited support for Oracle Apps including hybrid IAM. • Unimited external Identity Providers.	Enterprise Identify & Access Management for employee workforce scenarios.
External User Identity storage, Access Management, and API accurity for consumer and non- employee use-cases. Indicate the storage of the storage of the storagement. - United enterprise and Mytel Mix Nearone. - Excludes App Catalog provisioning connectors.		
Domain administrator Create an administrative user for this domain Administrator's first name		
Administrator's last name		
Administrator's username/email		
vans optiverda angerate can		
Use the email address as the username		
Compartment		
oaseceal2 (root)		\$
Create domain Cancel		

The home region of the IAM domain that you create will be the same as the current region of the OCI Console, for example US East (Ashburn).

Overview in AshIDMDomain Domain							
Edit domain Move resou	rce Add tags	Reset all passwords	More actions 🔻				
Domain information Tags							
OCID:xnhimq Show Copy							
Domain type: Free Description:ntity Domain on Ashburn Show Copy							
Domain replication: - Home region: US East (Ashburn)							

Create IAM Domain on the OCI Disaster Recovery Region (Phoenix)

Follow these steps to create an IAM identity domain for identity management.

- 1. Sign in to the tenancy's OCI Console as the default domain user and select the DR region. For example, Phoenix.
- 2. Create a domain from the available **Domain types** (Free, Oracle Apps, Oracle Apps Premium, Premium, and External User). For more information on domain types, see <u>IAM Identity Domain Types</u>.

Note: In this example, we select the **Free** domain type. There are certain limitations to using Free Tier identity domains so ensure that you choose the appropriate domain type for your requirements.

ORACLE

Create domain		
Display name		
PhxIDMDomain		
The only characters allowed are letters and numbers (for example, a-z, A-Z, 0-9), an underscore (_), a period (.), and a l	hyphen (-).	
Description		
IAM Identity Domain on Phoenix		
Domain type		
Free	Oracle Apps Premium	Premium
Authentication and Access Management for Oracle Cloud (lasS and PasS services) with limits on usage and functionality. - Umit of 2000 users. - Umited flasture support - Umited flasture support - Limit of 3 external identity Providers.	Authentication and Access Management for all of your Oracle apps. - Unintential support for Oracle Apps including hybrid IAM. - Limit of 6 non-Cade apps. - Unintential external identity Providers.	Enterprise Identity & Access Management for employee workforce scenarios. • Includes all features. • Danad support for hybrid IAM use-cases. • Untimited support for Chucke and non-Chucke Apps. • Untimited estimat Identity Providers.
External User Identity storage, Access Management, and API security for consumer and non- employee use-case. - Provide social logon hypothypothypothypothypothypothypothypot		
Domain administrator Create an administrative user for this domain Administrator's first name		
Administrator's last name		
Rota		
Administrator's username/email		
same approved a rangement cont		
Use the email address as the username		
Compartment		
oaseceal2 (root)		\$
Create domain Cancel		

The home region for the IAM domain used for DR will be the same as the current region of the OCI Console, for example US West (Phoenix).

Overview in PhxIDMDomain Domain						
Edit domain Move resource Add tags Reset all passwords More actions 👻						
Domain information Tags						
OCID:uj6ria Show Copy						
Domain type: Free						
Description:ntity Domain on Phoenix Show Copy						
Domain replication: -						
Home region: US West (Phoenix)						

For more details on IAM identity domain types, feature availability for identity domain types, and IAM Object Limits, see <u>Managing IAM</u>.

Reasons to Discourage IDCS Stripes or IAM Domains on Different Data Regions

IDCS and IAM identity domains already have a DR mechanism. An outage on the IDCS or IAM identity domain home region, automatically triggers replication to the DR region. After this process completes, the IDCS or IAM identity domain services become operational.

During the replication time, users may be unable to access their services, and some limitations may exist when the services are available from the DR region.



Replication can take a few hours. Currently, there are no published RTO and RPO numbers from IDCS. See <u>Disaster</u> <u>Recovery and Identity Domains</u> and <u>Disaster Recovery Region Pairings</u>.

Since IDCS and IAM identity domains have a DR mechanism, we don't recommend you create IDCS stripes in other data regions or IAM identity domains in other OCI regions.

To enhance the resilience and availability of identity management for OAC services using IDCS, you can create IDCS stripes in different data regions and associate them with the OCI Console as a *Federation Identity Provider*. Furthermore, you can create an OAC instance in the OCI Console by signing in to the OCI Console as the IDCS stripe user and configuring the IDCS stripe as the identity management for the OAC instance. By leveraging this feature, you can effectively prepare your services for potential disruptions, ensuring that your services remain accessible and operational.

Since IDCS stripes are limited only to the home region, it's better to consider the DR feature provided by IDCS.

If you plan to have different IDCS stripes, we suggest using IDCS Foundation License for Secondary Stripes. See <u>Oracle Identity Cloud Service (IDCS) Pricing Models</u>.

Note: In the future, all the tenancies that use IDCS for identity management will be upgraded to use IAM identity domains.

To enhance the resilience and availability of identity management for OAC services using identity domains, you can create IAM domains in different OCI regions. Furthermore, you can create an OAC instance in the OCI Console by signing in to the OCI Console as the IAM domain user and configuring the IAM domain as the identity management for the OAC instance. By leveraging this feature, you can effectively prepare your services for potential disruptions, ensuring that your services remain accessible and operational.

Using an IAM identity domain other than the Free type can incur extra costs depending on the domain type.

Due to the additional costs involved in having both home and DR regions for an IAM identity domain, users have two options. They can either set up a second IAM identity domain in the DR region or use the same IAM identity domain for both the primary and DR regions and rely on the default disaster recovery mechanism provided by the IAM identity domain.

Synchronize Users and Groups Between IDCS Stripes or IAM Domains

There are multiple ways to onboard users and groups into IDCS and IAM identity domains. The onboarding process is the same for IDCS and IAM identity domains.

Refer to the section **Multiple ways to onboard users and groups into the Oracle Identity Cloud Service (IDCS)** in the blog <u>Single Sign-On Solutions for Oracle Analytics Server on On-Premises and on Oracle Cloud</u>. This information also applies to IAM identity domains.

Use the approaches discussed in the above blog to onboard the users and groups into the home region and DR region IDCS stripes or IAM identity domains. See also, <u>Managing IDCS Users</u> and <u>Managing IAM Users</u>.

After successfully onboarding users and groups to the home region (primary) IDCS stripe or IAM identity domain, you must synchronize them with the DR region (secondary) IDCS stripe or IAM identity domain. You can do this using the *GenericSCIM - Client Credentials* template. See <u>Synchronize Users and Groups Between Oracle Identity Cloud Service</u> Instances.

Configure External Identity Providers with Single Sign-On

If an external identity provider is configured for single sign-on (SSO) in the home region IDCS stripe or IAM identity domain, configure the same identity provider for the DR region IDCS stripe or IAM identity domain.

Apply the same IDP policies, sign-on policies, network perimeter, and MFA if applicable.

Site-to-Site VPN and FastConnect

Site-to-Site VPN or FastConnect is required to connect on-premises networks to Oracle Cloud so that your OAC instances can connect to on-premises data sources using a private access channel (PAC).

For more information on Site-to-Site VPN, see Site-to-Site VPN.

For more information on FastConnect, see <u>FastConnect Overview</u>.

You can connect your OAC instance to remote on-premises data sources over a PAC or use Data Gateway. Usually, a PAC is better than using Data Gateway because it provides direct and secure connectivity without installing agents in between.

While a PAC offers you ongoing simplicity and better performance, it requires a VPN or some other direct network connectivity between Oracle Cloud and your data center, which is not required for Data Gateway.

Before you choose your preferred approach, use OAC's supported data source matrix to check whether you can use a PAC or Data Gateway to connect to your on-premises data sources. See <u>Supported Data Sources</u>.

Create an Oracle Analytics Cloud Instance in Each Region

For details, see Create Services with Oracle Analytics Cloud.

On the Oracle Cloud Infrastructure Console Home Region (Ashburn)

- Create a compartment
- Create a VCN for an OAC instance with a private endpoint
- Configure access control
- Define route rules
- Create an OAC instance in the public or private subnet of the VCN

Create a Compartment

- 1. Sign in to the OCI Console as an administrator on the home region. For example, Ashburn.
- 2. Navigate to **Identity & Security → Compartments → Create Compartment**. For example, **oacdr**.
- 3. Manage the policies for the new compartment as per your security requirements.

Tenancies that have IDCS for identity management:

https://docs.oracle.com/en-us/iaas/Content/Identity/Concepts/policies.htm

Tenancies that have IAM Identity Domains for identity management:

https://docs.oracle.com/en-us/iaas/Content/Identity/policieshow/how-policies-work.htm

Create a VCN for the OAC with a Private Endpoint

- 1. Sign in to the OCI Console as an administrator on the home region. For example, Ashburn.
- 2. Navigate to Networking → Virtual Cloud Networks → Select the Compartment (for example, oacdr) → Start VCN Wizard → Create VCN with Internet Connectivity.

Subnets in oacdr Compar	tment			
Create Subnet				
Name State IPv4 CIDR Block Submet Access Created				Created
Public Subnet-oacvon	Available	10.0.0/24	Public (Regional)	Tue, Mar 15, 2022, 10:18:02 UTC
Private Subnet-oacvon	Available	10.0.1.0/24	Private (Regional)	Tue, Mar 15, 2022, 10:18:02 UTC
Create a VCN wi	th Internet Connectiv	vity		
Configuration Review and Create	Configuration			
	() Resource availability check	ked successfully.		Close
	Basic Information			
	VCN Name 🛈			
	oacvcn			
	Compartment (i)			•
	oacdr oaseceal (root)/oacdr			¢
	Configure VCN and	Subnets		
	VCN CIDR Block			
	10.0.0/16			
		r VCN, the VCNs must not have overlapping CIDRs. Learn mo	re.	
	Public Subnet CIDR Block (i)			
	10.0.0/24 The subnet CIDR blocks must not overla	ID.		
	Private Subnet CIDR Block (i)			
	10.0.1.0/24			
	The subnet CIDR blocks must not overla	ıp.		
	DNS Resolution			
	Use DNS hostnames in this Required for instance hostname as	VCN ssignment if you plan to use VCN DNS or a third-party DNS. Th	is choice cannot be changed after the VCN is created, $\underline{\textbf{I}}$	earn more.
	Show Tagging Options			

Configure Access Control for OAC with a Private Endpoint

Add an ingress rule to access port 443 from a public subnet where the load balancer will be set up.

Networking × Virtual Cloud Networks × o	oecvcn » Security List Detail	5							
	Security Lis	t for Private Subnet-oacvcn							
	Instance traffic is contr	olled by frewall rules on each instance in addition to this t	Security List						
(SL)	Move resource A	udd Tags Terminate							
	Security List Info	rmation Tags							
AVAILABLE	OCID:bdxpqq S Created: Tue, Mar	ihow Conv. 15, 2022, 10:18:02 UTC			Compartment: or	acdr			
Resources	Ingress Rul	les							
Ingress Rules (5)	Add Ingress Rules	Edit Remove							
Egress Rules (1)	Stateless *	Source	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allows	Description	
	No	10.0.0.0/18	TCP	All	22		TCP traffic for ports: 22 SSH Remote Login Protocol		i
	No.	0.0.0.0/0	ICMP			3, 4	ICMP traffic for: 3, 4 Destination Unreachable: Fragmentation Neede d and Don't Fragment was Set		1
	No	10.0.0.0/16	ICMP			3	ICMP traffic for: 3 Destination Unreachable		1
	No	10.0.0.0/24	TOP	All	443		TCP traffic for porta: 443 HTTPS	Ingress from LB Pub SN	:
	No	10.0.0.0/24	TCP	All	9502		TCP traffic for ports: 9502		1
	0 Selected								Showing 5 Items $\ < \ 1 \ of \ 1 \ >$

Note: Security rules are required on private subnets if you create the OAC instance with a private endpoint.



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Add Route Rules for OAC with a Private Endpoint

Add a route rule for a private subnet for NAT Gateway and Service Gateway (exists if you create the VCN using the wizard).

Networking » Virtual Cloud Networks » oacvon » Route Table Details								
	Route Table for Private Subnet-oacvcn							
	Move resource Add Tags Terminate							
RT	Route Table Information Tags							
	OCID:fjweaa Show Copy	Co	empartment: oacdr					
AVAILABLE	Created: Tue, Mar 15, 2022, 10:18:02 UTC							
Resources	Route Rules Traffic within the VCN is handled by the VCN's local routing by default. Intra-VCN routing	g allows you more control over roul	ing between subnets. <u>Learn more</u>					
Route Rules (2)	Add Route Rules Edit Remove							
	Destination	Target Type	Target	Route Type	Description			
	0.0,0,00 NAT Gateway-cacvon Static							
	All IAD Services In Oracle Services Network	Service Gateway	Service Gateway-oacvon	Static	:			
	0 Selected				Showing 2 Items < 1 of 1 >			

Create an OAC Instance in the Public or Private Subnet of the VCN

Tenancies with IDCS

Follow instructions in the blog to create an OAC instance with the respective IDCS stripe for identity management: <u>How</u> to create OAC instances on OCI Native using multiple stripes or instances of IDCS.

- 1. Sign in to the OCI Console.
- 2. Select the required IDCS stripe.
- 3. Enter a Username and Password for the IDCS stripe. The user must have the policies required to create an OAC instance.
- 4. Navigate to Analytics & Al → Analytics Cloud → Create Instance.

Tenancies with IAM Identity Domain

In the previous section, we created an IAM identity domain on the OCI home region, for example Ashburn.

- 1. Sign in to the OCI Console.
- 2. Select the required identity domain.
- 3. Enter a Username and Password for the identity domain. The user must have the policies required to create an OAC instance.
- 4. Navigate to Analytics & Al → Analytics Cloud → Create Instance.

Create Analytics Instance	
Name	
OACASH	
Must be unique, start with a letter and contain only alphanumeric characters.	
Description Optional	
OAC in Ashburn Region	
Create in Compartment	
oacdr	
caseceal (roct)/oacdr	
Capacity	
Capacity Type	
OCPU	Users
Number of OCPUs you want to deploy for your service.	Number of users expected to use this service.
OCPU Count	
1 (Non-production)	
Scalability. Not scalable. Suitable only for trial or test purposes.	
License and Edition	
License	
License Included	Bring Your Own License (BYOL)
Subscribe to a new Analytics Cloud software license and the Analytics Cloud service.	Bring my organization's middleware software license to the Analytics Cloud service. Learn More
Edition	
Enterprise Edition	Professional Edition
Deploy an instance with enterprise modeling, reporting, and data visualization. Learn More	Deploy an instance with data visualization. Learn More
Se Hide advanced options	
Network Access	
Access Type	
Public Access your instance from anywhere	
O Private	
Access your instance from a Virtual Cloud Network only	
Configure Access Control	
Data Encryption	
Create <u>Cancel</u>	

This example creates a public OAC instance. You can also create an OAC instance with a private endpoint.

On the Oracle Cloud Infrastructure Console Disaster Recovery Region (Phoenix)

- Use the existing compartment in the home region
- Create a VCN for an OAC instance with a private endpoint
- Configure access control
- Define route rules
- Create an OAC instance in the public or private subnet of the VCN

Create a Compartment

Use the *existing* compartment, for example **oacdr**, created in the Ashburn region.

- 1. Sign in to the OCI Console as an administrator on the home region. For example, Ashburn.
- 2. Change the region to the DR region. For example, Phoenix.
- 3. Navigate to Identity & Security → Compartments → Select already created Compartment. For example, oacdr.
- 4. Manage the policies for the compartment as per your security requirements.

Tenancies that have IDCS for identity management:



https://docs.oracle.com/en-us/iaas/Content/Identity/Concepts/policies.htm

Tenancies that have IAM Identity Domains for Identity Management:

https://docs.oracle.com/en-us/iaas/Content/Identity/policieshow/how-policies-work.htm

Create a VCN for the OAC Instance with a Private Endpoint

- 1. Sign in to the OCI Console as an administrator on the home region. For example, Ashburn.
- 2. Change the region to the DR region. For example, Phoenix.
- 3. Navigate to Networking → Virtual Cloud Networks → Select the Compartment (for example, oacdr) → Start VCN Wizard → Create VCN with Internet Connectivity.

Create a VCN	with Internet Connectivity	
Configuration Review and Create	Configuration	
	Resource availability checked successfully.	Close
	Basic Information	
	VCN Name (i)	
	oacvcn	
	Compartment (i)	
	oacdr	0
	oaseceal (root)/oacdr	
	Configure VCN and Subnets	
	VCN CIDR Block	
	172.0.0.0/16	
	If you plan to peer this VCN with another VCN, the VCNs must not have overlapping CIDRs. Learn more,	
	Public Subnet CIDR Block	
	172.0.0.0/24	
	The subnet CIDR blocks must not overlap.	
	Private Subnet CIDR Block ①	
	172.0.1.0/24	
	The subnet CIDR blocks must not overlap.	
	DNS Resolution	
	✓ Use DNS hostnames in this VCN	
	Required for instance hostname assignment if you plan to use VCN DNS or a third-party DNS. This choice cannot be changed after the VCN is created. Learn more,	
	Se Show Tagging Options	

Note: When you create a VCN for a private OAC instance, ensure that the CIDR of the VCN doesn't match the VCN on the home region.

Subnets in oacdr Compartment						
Create Subnet						
Name	State	IPv4 CIDR Block	IPv6 Prefixes	Subnet Access	Created	
Private Subnet-oacvcn	Available	172.0.1.0/24	-	Private (Regional)	Sue, Nov 30, 2022, 14 StinS UTC	
Public Subnet-oacvon	Available	172.0.0.0/24	-	Public (Regional)	Sun, Nov 30, 2023, 14:58:44 UTC	
					Showing 2 Items	



Configure Access Control for OAC with a Private Endpoint

Add an ingress rule to access port 443 from a public subnet where the load balancer will be set up.

Networking » Virtual Cloud Networks » oecvori » Security List Details										
	Security List for Private Subnet-oacvcn									
	Instance traffic is controlled by firewall rules on each Instance in addition to this Security List									
	Move	Move resource Add Tags Terminate								
	Se	curity List Infor	mation Tags							
AVAILABLE	OCID: _Bidagag Show Coox Compartment: oadr Created: Tue, Mar 15, 2022, 10:18:02 UTC									
Resources	Ingress Rules									
Ingress Rules (5)	Ad	d Ingress Rules	Edit Remove							
Egress Rules (1)		Stateless 🔻	Source	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allows	Description	
		No	172.0.0.0/16	TCP	All	22		TCP traffic for ports: 22 SSH Remote L ogin Protocol		:
		No	0.0.0.0/0	ICMP			3, 4	ICMP traffic for: 3, 4 Destination Unreac hable: Fragmentation Needed and Don't Fragment was Set		:
		No	172.0.0.0/16	ICMP			3	ICMP traffic for: 3 Destination Unreacha ble		:
		No	172.0.0.0/24	TCP	All	443		TCP traffic for ports: 443 HTTPS	Ingress from LB Pub SN	:
	0 Se	lected							Showing II Items	<1 of 1 $>$

Note: Security rules are required on a private subnet if you create the OAC instance with a private endpoint.

Add Route Rules for OAC with a Private Endpoint

Add a route rule for a private subnet for NAT Gateway and Service Gateway (exists if you create the VCN using the wizard).

Networking » Virtual Cloud Networks » cacvon » Route Table Details							
	Route Table for Private Subnet-oacvcn						
	Move resource Add Tags Terminate						
	Route Table Information Tags						
AVAILABLE	OCID:fyweaa <u>Show Goog</u> Compartment: oscdr Created: Tue, Mar 15, 2022, 10:18:02 UTC						
Resources	Route Rules Traffic within the VCN is handled by the VCN's local routing by default. Intra-VCN routing allows you more control over routing between subnets. Learn more						
Route Rules (2)	Add Route Rules Edit. Remove						
	Destination	Target Type	Target	Route Type	Description		
	0.0.0.00	NAT Gateway	NAT Gateway-oacvcn	Static	:		
	All IAD Services In Oracle Services Network	Service Gateway	Service Gateway-oacvon	Static	:		
	0 Selected				Showing 2 ltems \langle 1 of 1 \rangle		

Create an OAC Instance in the Public or Private Subnet of the VCN

Tenancies with IDCS

Follow instructions in the blog to create an OAC instance with the respective IDCS stripe for identity management: How to create OAC instances on OCI Native using multiple stripes or instances of IDCS.

- 1. Sign in to the OCI Console.
- 2. Select the required IDCS stripe.
- 20 Disaster Recovery Configuration for Oracle Analytics Cloud / version 1.0 Copyright © 2024, Oracle and/or its affiliates / Public



- 3. Enter a Username and Password for the IDCS stripe. The user must have the policies required to create an OAC instance.
- 4. Navigate to Analytics & Al \rightarrow Analytics Cloud \rightarrow Create Instance.

Tenancies with IAM Identity Domain

In the previous section, we created an IAM identity domain on the OCI DR region, for example Phoenix.

- 1. Sign in to the OCI Console.
- 2. Select the required identity domain.
- 3. Enter a Username and Password for the identity domain. The user must have the policies required to create an OAC instance.
- 4. Navigate to Analytics & Al → Analytics Cloud → Create Instance.

	US West (Phoenix) ∽
Create Analytics Instance	
Name	
ОАСРНХ	
Must be unique, start with a letter and contain only alphanumeric characters.	
Description Optional	
OAC in Phoenix Region	
Create in Compartment	
oacdr	
oaseccal (root)/cacdr	
Capacity	
Capacity Type	
OCPU	Users
Number of OCPUs you want to deploy for your service.	 Number of users expected to use this service.
OCPU Count	
1 (Non-production)	
Scalability: Not scalable. Suitable only for trial or test purposes.	
License and Edition	
License	
License Included	Bring Your Own License (BYOL)
	Bring my organization's middleware software license to the Analytics Cloud service. Learn More
Edition	
Enterprise Edition	Professional Edition
	Deploy an instance with data visualization. Learn More
Deploy an instance with enterprise modeling, reporting, and data visualization. <u>Cean instance</u>	Deploy all instance with data visualization.
E Hide advanced options	
Network Access	
Access Type Public	
Access your instance from anywhere	
Private Access your instance from a Virtual Cloud Network only	
Configure Access Control	
Configure Access Control	
Data Encryption	
Create Cancel	

This example creates a public OAC instance. You can also create an OAC instance with a private endpoint.



Network Configuration

Earlier, we provided an example of how to create security rules within a private subnet when creating the VCN and its associated subnets.

Additional security rules may be required to access on-premises resources, servers, or data sources that are configured on the VCN or subnets of both regions.

Ensure that you create identical security rules on both the home region (Ashburn VCN's subnets) and DR region (Phoenix VCN's subnets) environments. This ensures that OAC instances across both regions can access identical resources, servers, and data sources on Oracle Cloud, on premises, or on the Internet.

Note: This document doesn't provide detailed instructions for configuring security rules.

Maximizing Data Source Consistency and Availability

Use the same data sources for the OAC instances in the home region and the DR region.

On-Premises Data Source

You can connect OAC to on-premises data sources using a PAC or Data Gatway.

Ensure the primary and DR OAC instances are configured to the same on-premises data sources.

Ensure the OAC instances in the home region and DR region can connect to the on-premises data source with the same connection string using Site-to-Site VPN or FastConnect.

Oracle Autonomous Data Warehouse as a Data Source

Create an Oracle ADW instance in the home region and configure a*utomatic failover* with a remote standby database using Autonomous Data Guard.

The home region ADW should failover to the DR region's standby ADW.

Refer to the documentation and blogs below for more information.

Documentation

Autonomous Data Guard with Cross-Region Standby

Using Standby Databases with Autonomous Database for Disaster Recovery

Shared: Using Standby Databases with Autonomous Database for Disaster Recovery

Blogs

Announcing Autonomous Data Guard

Cross-Region Autonomous Data Guard - Your complete Autonomous Database disaster recovery solution

Your OAC instance uses an ADW wallet to connect to ADW. You can either use the instance wallet or the region wallet.

- Before 15th November 2022, the wallet file consists of the primary and standby ADW connection.
- From 15th November 2022, the wallet from the respective ADW instance has the respective connection details with the respective hostname. Hence, you must download the wallet from the primary and standby ADW instances.



Oracle Autonomous Database on Shared Exadata Infrastructure

ALERT: Update to connection strings for databases with Autonomous Data Guard enabled.

Hello, 🖓

You are receiving this email regarding an upcoming change that affects your Oracle Autonomous Database ADW19C in tenancy region ashburn.

As you have enabled Cross-Region Autonomous Data Guard on one or more of your Autonomous Database instances, please note that after **15th Nov 2022** the database connection string provided in your database (in the downloadable wallet or retrieved from the database console or API) will no longer contain the host names of both the Primary and remote Standby databases. The Primary database connection string will contain only the Primary database hostname; similarly the remote Standby database connection string will contain only the remote database.

This change does not affect databases with Autonomous Data Guard disabled.

How will this affect my service?

After **15th Nov 2022**, the wallet and connection string of your database, with cross-region Autonomous Data Guard enabled, will only contain the hostname of the current database from which the wallet or connection string was downloaded. Using this single-hostname connection string will no longer automatically attempt to connect to a second database hostname (since there isn't one), if the database with the first hostname is unavailable.

If your application currently uses a single wallet or connection string to connect to the Primary and remote Standby databases, Oracle recommends connecting to the database from your application running in the Primary region with the wallet or connection string downloaded from the Primary (source) database. Similarly, connect from your application running in the remote region with a wallet or connection string downloaded from the Primary (source) database. Similarly, connect from your application running in the remote region with a wallet or connection string downloaded from the remote Standby database. If your application tier only runs in a single region, we recommend using the Primary database's wallet or connection when connecting to the Primary region database, and swapping in the wallet or connection string out with that from the remote database when connecting to the remote region database.

Post this update, if your connecting application requires a single connection string containing both the Primary and remote Standby database hostnames, you may construct this manually. You may also continue to use your downloaded database wallet or connection string retrieved before **15th Nov 2022**, which contains the hostname of both the Primary and Standby database.

Example connection strings for databases with Cross-Region Autonomous Data Guard enabled

Note: You may view your database connection strings on the database console by clicking the "DB Connection" button or by viewing the tnsnames.ora file in your downloaded wallet.

Current behavior before 15th Nov 2022

Mutual TLS connection string retrieved via the Primary database console contains both Primary and remote Standby database hostnames:

"(description_list= (failover=on) (load_balance=off) (description=

(retry_count=15)(retry_delay=3)(address=(protocol=tcps)(port=1522)

(host=adb.us-ashburn-1.oraclecloud.com))

(connect_data=(service_name=example1_adwfinance_high...oraclecloud.com))(security=(ssl_server_cert_dn="CN=adwc.uscomeast-1.oraclecloud.com, OU=Oracle BMCS US, O=Oracle Corporation, L=Redwood City, ST=California, C=US")))

(description= (retry_count=15)(retry_delay=3)(address=(protocol=tcps)(port=1522)

(host=adb.us-phoenix-1.oraclecloud.com))

(connect_data=(service_name=example2_adwfinance_high....oraclecloud.com))(security=(ssl_server_cert_dn="CN=adwc.uscomeast-1.oraclecloud.com, OU=Oracle BMCS US, O=Oracle Corporation, L=Redwood City, ST=California, C=US"))))"

New behavior after 15th Nov 2022

Mutual TLS connection string retrieved via the Primary database console contains only Primary database hostname:

"(description_list= (failover=on) (load_balance=off) (description=

(retry_count=15)(retry_delay=3)(address=(protocol=tcps)(port=1522)

(host=adb.us-ashburn-1.oraclecloud.com))

(connect_data=(service_name=example1_adwfinance_high...oraclecloud.com))(security=(ssl_server_cert_dn="CN=adwc.uscomeast-1.oraclecloud.com, OU=Oracle BMCS US, O=Oracle Corporation, L=Redwood City, ST=California, C=US"))))"

Mutual TLS connection string retrieved via the remote database console contains only remote Standby database hostname:

"(description_list= (failover=on) (load_balance=off) (description=

(retry_count=15)(retry_delay=3)(address=(protocol=tcps)(port=1522)

(host=adb.us-phoenix-1.oraclecloud.com))

(connect_data=(service_name=example2_adwfinance_high....oraclecloud.com))(security=(ssl_server_cert_dn="CN=adwc.uscomeast-1.oraclecloud.com, OU=Oracle BMCS US, O=Oracle Corporation, L=Redwood City, ST=California, C=US"))))"

How can I contact Oracle with further questions regarding this announcement?

If you have general questions about preparing for this change, please contact us through the <u>Autonomous Database customer forum</u> or create a Service Request (SR) on <u>My Oracle Support</u>.

Due to the alert shown above, it's necessary to upload the standby ADW wallet to all Oracle ADW Database connections when the OAC DR instance points to the standby ADW instance.

Test Environment

Region	Ashburn	Phoenix
Autonomous Database (ADW) – Sales db		
	ADW-19c	ADW-19c_Remote
ADW database service		
	adw_low (from wallet)	adw_low (from wallet)

Create a Connection to ADW in OAC Using a Wallet

1. In OAC, upload the wallet, enter the **Username** and **Password**, select **System connection**, and click **Save**.

ଳ	adw19c_low Connection	Save Close
Genera	ıl	
Access		Oracle Autonomous Data Warehouse
		* Connection Name adw19c_low
		Description
		* Client Credentials 🗸 Drop .zip file here Select
		* Username reporting
		* Password
		* Service Name dnv4ftfe9ck9ath_adw19c_low.adb.oraclecloud.com
		System connection
		Object ID 'syst Copy

- 2. Click Copy to copy an Object ID that you can paste into your RPD.
- 3. In Model Administration Tool, for ADW connection pools, check the **Use Data Connection** option and paste the **Object ID** that you just copied.

Connection Pool - ADW	19c	_ 🗆 ×
General Connection Sc	ripts XML Write Back Misce	llaneous
		Desisters
Name: ADW19c		Permissions
Call interface:	Default (Oracle Call Interface (OC	l)) 🔽
Maximum connections:	10 🛨	
Require fully qualifie	ed table names	
Data source name:	adw19c_low	
Shared logon		
User name:	reporting Passv	word:
Enable connection	pooling	
Timeout:	5	(minutes)
Use multithreaded of		
Parameters support		
Isolation level:	Default	_
Use Data Connectio		Connection
Object ID: Description:	'system'.'adw19c_low'	
		_
		v
	ОК	Cancel Help

See <u>Connect to a Data Source Using a Data Connection</u>.

	onnection	v		Save Close
General				
Access			151.1	
			Oracle Autonomous Data Warehouse	
		* Connection Name	adw19c_low	
		Description		
		* Client Credentials	✓ Drop .zip file here	Select
		* Username	reporting	
		* Password		
		* Service Name	dnv4ftfe9ck9ath_adw19c_low.adb.oraclecloud.com	
			System connection	
		Object ID	'syst Copy	
1				

After the ADW switchover completes, update the wallet with the Phoenix ADW wallet and save the connection.

When you fallback to the OAC Ashburn instance, upload the wallet with the Ashburn ADW wallet (at the **Client Credentials** section for all the ADW connections), and save the connections on the Ashburn OAC instance.

Upload or replace the respective ADW wallets using the **Console** \rightarrow **Connections** page in OAC. The wallet you upload here is used by semantic models (Data Modeler and RPD connection pools). Click either **Upload Wallet** to upload a wallet for the first time or **Replace Wallet** to update an existing one.

Click **Browse** and select the wallet file (cwallet.sso) from the unzipped ADW wallet folder.

← @	Connections				RB
			Create Connectio	on O	:
Туре	Name 🗘	Description \$	Connect As	Upload Wa	illet 💮
No Connec	tions To Display			Delete Wal	let

ADW Wallet-less TLS Connection

For more details, see Securely Connecting to Autonomous DB Without a Wallet (Using TLS).

After restoring the primary OAC instance snapshot to the DR OAC instance, you need to modify the ADW wallet-less (TLS) connection string with the Phoenix ADW wallet-less (TLS) connection string.

ADW_WL_S	i .	Save
General Access		Oracle Autonomous Data Warehouse
	* Connection Name	ADW_WL_S
	Description	
	Encryption Type	TLS
	* Connection String	(description= (retry_count=15)(retry_delay=3)(address= (protocol=tcps)(port=1522)(host=4.adb.us-ashburn- 1.oraclecloud.com))(connect_data= (service_name=2_adwash_low.adb.oraclecloud.com)) (security=(ssl_server_dn_match=no)))
	* Username	admin
	* Password	
		System connection
	Object ID	'syst Copy

Similarly, change the connection string after fallback from the DR OAC instance to the primary OAC instance.

Oracle Database Cloud Service as a Data Source

Create a primary Oracle Database on the Oracle Cloud home region while configuring Data Guard to the database. Create a Peer DB System as a standby database in the DR region.

Using the Data Guard, replicate the primary database to the standby database and manage the failover too.

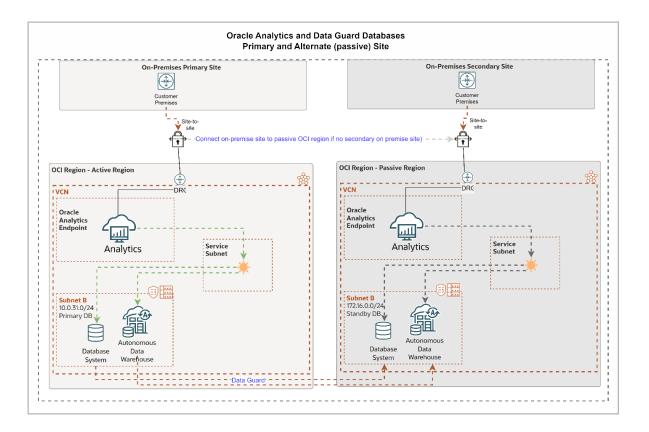
Refer to the following documentation and blogs for more information.

Use Oracle Data Guard on a DB System

Enable Oracle Data Guard on a DB System

https://docs.oracle.com/en-us/iaas/releasenotes/changes/83baf0ae-4352-41db-94eb-d0cb4d0058c5/

ORACLE



Oracle DBCS Already Configured with Different Hostnames and Service Names

While configuring the primary Oracle Database in the home region and the standby Oracle Database in the DR region, the hostnames and service names may differ. In such cases, the same connection string can't be used, which may require updating the connection string in the RPD or semantic model and the self-service data connections after restoring the snapshot and data files between the primary OAC instance and the DR OAC instance.

Example:

Primary Oracle Database Connection Details

- Hostname: oadb.sub12345678.oavcn.oraclevcn.com
- Port: 1521
- Servicename: PDB1.sub12345678.oavcn.oraclevcn.com
- Connection String: oadb.sub12345678.oavcn.oraclevcn.com:1521/PDB1.sub12345678.oavcn.oraclevcn.com

Standby Oracle Database Connection Details

- Hostname: oadbdr.sub87654321.dbvcn.oraclevcn.com
- Port: 1521
- Servicename: PDB1.sub87654321.dbvcn.oraclevcn.com
- Connection String: oadbdr.sub87654321.dbvcn.oraclevcn.com:1521/PDB1.sub87654321.dbvcn.oraclevcn.com



Test Environment

Region	Ashburn	Phoenix
Hostname	testdb-ash.oci.ash.oraclevcn.com	testdb-phx.oci.phx.oraclevcn.com
SCAN	testdb-ash-	testdb-phx-scan.oci.phx.oraclevcn.com
	scan.oci.ash.oraclevcn.com	
Peer Databases –	db_unique_name: testdb_iad	db_unique_name: testdb_phx1nx
DBCS (HR db)	instances: testdb1,testdb2	instances: testdb1,testdb2
DBCS database	pdb1.mydomain.com	pdb1.mydomain.com
service		

We recommend that you use a custom domain, such as **mydomain.com**, that is different from the DB_DOMAIN defined in the database so that the SERVICE_NAME is the same in both regions. If the domain is not specified in the srvctl command, the DB_DOMAIN is added automatically.

On the Primary DBCS Server:

srvctl add service -db testdb_iad -service "pdb1.mydomain.com" \
-preferred "testdb1,testdb2" -pdb testpdb -notification TRUE \
-drain_timeout 300 -stopoption IMMEDIATE -role PRIMARY

On the Standby DBCS Server:

srvctl add service -db testdb_phx1nx -service "pdb1.mydomain.com" \
-preferred "testdb1,testdb2" -pdb testpdb -notification TRUE \
-drain_timeout 300 -stopoption IMMEDIATE -role PRIMARY

Use the Recommended DBCS Connection String for OAC to Enable Failover

JDBC URL Format Recommended for Connecting to DataGuard (Doc ID 2303116.1)

Application Checklist for Continuous Availability

```
(DESCRIPTION=(CONNECT_TIMEOUT=90)(RETRY_COUNT=3)(RETRY_DELAY=3)(TRANSPORT_CONNECT_TIMEOUT=3)(ADD
RESS_LIST=(LOAD_BALANCE=on)(ADDRESS=(PROTOCOL=tcp)(HOST=primary-scan)
(PORT=1521)))(ADDRESS_LIST=(LOAD_BALANCE=on)(ADDRESS=(protocol=tcp) (host=secondary-scan)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME = pdb1.mydomain.com)))
```

Test Using SQL*Plus:

sqlplus

```
username/password@"(DESCRIPTION=(CONNECT_TIMEOUT=90)(RETRY_COUNT=3)(RETRY_DELAY=3)(TRANSPORT_CON
NECT_TIMEOUT=3)(ADDRESS_LIST=(LOAD_BALANCE=on)(ADDRESS=(PROTOCOL=tcp)(HOST=primary-scan)
(PORT=1521)))(ADDRESS_LIST=(LOAD_BALANCE=on)(ADDRESS=(protocol=tcp) (host=secondary-
scan)(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME = pdb1.mydomain.com)))"
```



Provide the DBCS Connection String in the RPD DSN

Connection Pool - HR(te	stdb)			_ 🗆 🗙
General Connection Sc	ripts XML	Write Back	Miscellaneous	
Name: HR(testdb)				Permissions
Call interface:	Default (O	racle Call Interf	ace (OCI))	•
Maximum connections:	10 ÷			
Require fully qualifie	d table name	es		
Data source name:	(DESCRIP	TION =(CONN	ECT_TIMEOUT=	90)(RETRY_C
Shared logon				
User name:	reporting		Password:	
Enable connection	pooling			
Timeout:	5		(mi	nutes) 🔻
Use multithreaded c	onnections			
Parameters supporte	ed			
Isolation level:	Default			•
Use Data Connectio	n	🗌 Use	Console Connecti	on
Object ID:				
Description:				
1				<u> </u>
		ОК	Cancel	Help

The above connection string uses a common Service Name as we configured a custom domain but still uses a different SCAN address.

Alternatively, create a private zone in DNS. Creating a private zone in DNS simplifies the connection string to a single scan name. DNS will resolve the private zone scan name to the DBCS scan name based on the region. Be sure to add the private zone and DBCS scan to the PAC.

Networking → DNS Management → Zones (choose private tab) → Create Zone (for example ceal.com)

Add CNAME for **testdb-scan.ceal.com** and map to the real scan name (note this will be different for each region based on the original scan name).



DNS - ceal.com						
Move resource Add tags Delete						
Zone Information Tags						
Zone Scope: Private Zone Type: Primary				Created: Fri, Dec 23, 2022, 16.09.02 UTC OCID:g7cewq Show Copy		
Private View: <u>CEALLG-VCN</u> Nameservers: vcn-dns.oraclevcn.com.				Compartment: cealig Protected: No (
Records Publish Changes						
Add Record Actions -					Qs	Search
Domain 🔺	TTL	Туре	RDATA		Protected	State
ceal.com	86400	NS	vcn-dns.oraclevcn.com.		Yes	Protected
ceal.com	86400	SOA	vcn-dns.oraclevcn.com. hostmaster.ora	racle.com. 2 3600 3600 3600 10	Yes	Protected
testdb-scan.ceal.com	300	CNAME	testdb-scan.su'	oraclevcn.com.	No	Unmodified
0 Selected					Showing 3	3 Items $<$ Page 1 $>$

- 1. Create a private zone (for example, ceal.com) in the VCN Private View for the home region and DR region.
- 2. Add an "A-Record" in the private zone for **testdb.ceal.com** mapped to the primary Oracle Database IP address.
- 3. Repeat the same for the DR region (testdb.ceal.com == Secondary Oracle Database IP address).
- 4. If you have a SCAN address such as **testdb-ash-scan.oci.ash.oraclevcn.com**, create a CNAME record and map the **testdb-scan.ceal.com** to **testdb-ash-scan.oci.ash.oraclevcn.com**.
- Repeat the same for the DR region. For example, if you have a SCAN address such as testdb-phxscan.oci.phx.oraclevcn.com, create a CNAME record, and map the testdb-scan.ceal.com to testdb-phxscan.oci.phx.oraclevcn.com.

After this workaround, we have the same connection string for the primary and standby Oracle Databases:

- testdb.ceal.com:1521/pdb1.mydomain.com
- testdb-scan.ceal.com:1521/pdb1.mydomain.com

Update the Connection String in the RPD to Reflect the Private Zone Scan Name

(DESCRIPTION=(CONNECT_TIMEOUT=90) (RETRY_COUNT=3) (RETRY_DELAY=3) (TRANSPORT_CONNECT_TIMEOUT=3) (ADDRESS_LIST=(LOAD_BALANCE=on) (ADDRESS=(PROTOCOL=tcp) (HOST=testdb-scan.ceal.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME = pdb1.mydomain.com)))

Add the Private Zone to the PAC

Private Access Channel Details					
Networking Information	ı		Egress IP Add	dresses	
IP Address: <u>Copy</u>			IP Address:	Copy	
Virtual Cloud Network: CEALLG-VCI	N		IP Address	Copy	
Subnet: Private Subnet-CEALLG-VCN	l				
Access Control: Not Configured Edit					
					C
Private Sources					
Edit Private Sources					
Source Type	Allowed Destination		Description		
DNS Zone	ceallgvcn.oraclevcn.com		-		
DNS Zone	ceal.com		-		
SCAN Host	oasdb-scan.su'	oraclevcn.com:1521	oaspdb		
SCAN Host	testdb-scan.sub ^r	aclevcn.com:1521	testdb		
SCAN Host	testdb-phx-scar	phoenixvcn.oraclevcn.com:1521	testdb-phx		
SCAN Host	testdb-scan.ceal.com:1521		-		
				Showing 6 Items	1 of 1 >

After snapshot migration, this workaround prevents you from needing to modify connection pools or connections in the RPD and OAC.

Create Oracle DBCS with the Same Hostnames and Service Names

Another option is to create a VCN with the same name in both OCI regions or utilize an existing VCN with the same name in both OCI regions. Additionally, it's necessary to manually create a subnet with the same DNS label to ensure consistent service name resolution across the DR environment.

For example, the domain name can be **ceal.oasvcn.oraclevcn.com**.

- 1. Sign in to the OCI Console.
- Navigate to Networking → Virtual Cloud Networks → Select Compartment (for example, oasmp) → Create a VCN or use Existing VCN (for example, oasvcn) → Subnets.

E ORACLE Cloud	Cloud Classic >	Search resources, service	es, documentation, an	d Marketplace			US East (Ashburn) 🗸	5 🇘 C	•
Networking » Virtual Cloud Network	s » Virtual Cloud Network I	Details							
	oasvcn								
VCN	Move resource	Add Tags Delete							
VGR	VCN Inform	ation Tags							
	Compartmen	nt: oasmp			OCID:ynyypq S	Show Copy			
	Created: Wee	d, Mar 2, 2022, 19:10:06	UTC		DNS Resolver: oa	isvon			
AVAILABLE	IPv4 CIDR BI	lock: 10.0.0.0/16			Default Route Tab	ble: Default Route Table for oas	wen		
	IPv6 Prefix: /	No Value			DNS Domain Nam	ne: oasvcn.oraclevcn.com			
Resources	Subnets	in oasmp C	ompartmer	nt					
Subnets (3)	Create Subne	ət							
CIDR Blocks/Prefixes (1)	Name		State	IPv4 CIDR Block	IPv6 Prefixes	Subnet Access	Created		•
Route Tables (2)	Private Subnet-	-oasvcn2	Available	10.0.2.0/24	-	Private (Regional)	Wed, Nov 30, 2022, 01:39:1	9 UTC	
Internet Gateways (1)	Public Subnet-o	pasven	Available	10.0.0/24	-	Public (Regional)	Wed, Mar 2, 2022, 19:10:09	UTC	- <u></u>
Dynamic Routing Gateways Attachments (1)	Private Subnet-	-oasvcn	Available	10.0.1.0/24		Private (Regional)	Wed, Mar 2, 2022, 19:10:08	UTC	:
Network Security Groups (1)									

3. Create a private subnet. See the sample screenshot.



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Create Subnet	
Name	i
Private Subnet-oasvcn3	
Create In Compartment	
oasmp	0
oaseceal (root)/oasmp	
Subnet Type	
Regional (Recommended)	Availability Domain-specific
Instances in the subnet can be created in any availability domain in the region. Useful for high availability.	Instances in the subnet can only be created in one availability domain in the region.
IPv4 CIDR Block	
IPv4 CIDR Block	
10.0.3.0/24	
Specified IP addresses: 10.0.3.0-10.0.3.255 (256 IP addresses)	
IPv6 Prefixes	
Maximum amount of 3 IPv6 prefixes per Subnet. IP ranges of the IPv6 prefixes must not overlap. Learn more.	
Route Table Compartment in oasmp (Change Compartment)	
Route Table for Private Subnet-oasvon	\$
Subnet Access	
Private Subnet	Public Subnet
Prohibit public IP addresses for Instances in this Subnet	Allow public IP addresses for Instances in this Subnet
DNS Resolution	
Vise DNS hostnames in this SUBNET () Allows assignment of DNS hostname when launching an Instance	
DNS Label	
CRBI Only letters and numbers, starting with a letter. 15 characters max.	
DNS Domain Name Read-Only	
-suis-sauer-sasyon stavayon total	
Dhcp Options Compartment in oasmp (Change Compartment)	
Default DHCP Options for easyon	\$
Security Lists	
You can associate up to 5 network security lists with the subnet.	
Security List Compartment in oasmp (Change Compartment)	
Security List for Private Subnet-oasvon	
Create Subret Cancel	

4. Similarly, in the DR region in the same compartment, create the same VCN (for example, **oasvcn**) and create a private subnet with the same DNS Label (for example, **ceal**).

ORACLE Cloud	Cloud Classic >	ch resources, services	, documentation, and Ma	rketplace	US East (Ashburn) 🗸	\bigcirc	(?)	0
Networking » Virtual Cloud Network	s » oasvcn » Subnet Details								
	Private Su	onet-oasvo	n2						
	Edit Move reso	Irce Add Tags	Terminate						
S	Subnet Informa	ion Tags							
	OCID:cjtydq S	now <u>Copy</u>		Compartment: oa	smp				
AVAILABLE	IPv4 CIDR Block			_	e: ceal.oasvcn.oraclevcn.com	Hide C	<u>opy</u>		
	IPv6 Prefix: No V	alue c Address: 00:00:17	7:2D:DD:EA	Subnet Access: P	rivate Subnet	n			
	Subnet Type: Re				e Table for Private Subnet-oas				

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ORACLE Cloud	Cloud Classic > Search resources, services, docum	nentation, and Marketplace	US West (Phoenix) 🗸	¢ ?	۲	0
Networking » Virtual Cloud Network	s » oasvon » Subnet Details					
	Private Subnet-oasvcn2					
	Edit Move resource Add Tags Termi	nate				
S	Subnet Information Tags					
	OCID:bxszyq Show Copy	Compartment: o	asmp			
AVAILABLE	IPv4 CIDR Block: 172.0.2.0/24	DNS Domain Na Subnet Access:	ne: ceal.oasvcn.oraclevcn.com <u>Hide</u>	<u>Copy</u>		
	Virtual Router Mac Address: 00:00:17:0B:46	L L	Default DHCP Options for oasvon			
	Subnet Type: Regional	Route Table: Route	te Table for Private Subnet-oasvon			
					C	

Create the primary Oracle Database on this VCN and the private subnet.

When configuring the Data Guard, we recommend that you create the standby Oracle Database with the same VCN name and private subnet as the primary Oracle Database.

Connection strings for this example:

oadb.ceal.oasvcn.oraclevcn.com:1521/PDB1.ceal.oasvcn.oraclevcn.com

oadbdr.ceal.oasvcn.oraclevcn.com:1521/PDB1.ceal.oasvcn.oraclevcn.com

Since the hostnames of the primary and standby databases will not match, we recommend using the following workaround to address this issue:

- 1. Create a private zone (for example, ceal.oracle.com) in the VCN private view for the home and DR regions.
- 2. Add an "A-Record" in the private zone for oadb.ceal.oracle.com mapped to the primary Oracle Database IP address.
- 3. Repeat for the DR region.
- 4. If you have multiple nodes and so have a SCAN address such as oadb-scan.ceal.oasvcn.oraclevcn.com, create a CNAME record and map oadb-scan.ceal.oracle.com to oadb-scan.ceal.oasvcn.oraclevcn.com.
- 5. Repeat for the DR region.

By applying the workaround, you obtain the same connection string for both the primary and standby Oracle databases, as shown in this example:

oadb.ceal.oracle.com:1521/PDB1.ceal.oasvcn.oraclevcn.com

oadb.ceal.oracle.com:1521/PDB1.ceal.oasvcn.oraclevcn.com

After snapshot migration, this workaround prevents you from needing to modify connection pools or connections in the RPD and OAC.



PAC and RDG Configuration to Connect to Data Sources

This section outlines how to access the same data sources from the OAC instances in both regions. This document doesn't describe how to configure PAC or RDG.

Private Access Channel (PAC)

See Connect to Private Data Sources Through a Private Access Channel.

Allowlist the PAC egress IP addresses at the on-premises firewall for both OAC instances.

Remote Data Gateway (RDG)

See Connect to On-premise Data Sources Using Data Gateway.

Install the Data Gateway agent on the on-premises server and register the agent with the home region, for example the Ashburn OAC instance.

← 😫 Remote Data Connect	ivity				۲
Remote Data Gateway Bnable Data Gateway				Unassigned Jobs Add Age	nt 🚺
Agent	Host	Status	Created Date	Last Seen Time	Action
WindowsCl2 fc0 Be7	WindowsCI2	Connected	10005+0231.44	2/17/21 #194448 108	:

Similarly, install the Data Gateway agent on the on-premises server and register the agent with the DR region, for example the Phoenix OAC instance.

← 😫 Remote Data Connectivit	ty				۲
Remote Data Gateway Enable Data Gateway				Unassigned Jobs A	dd Agent 🚺
Agent	Host	Status	Created Date	Last Seen Time	Action
WindowsphxCl 87 891	WindowsphxCl	Connected	MIND OCTOD IN	3/19/13 # 11111 14	:

When you restore the snapshot of the primary OAC instance on the DR OAC instance, the Data Gateway agents of both the primary and DR instances will appear on the remote data connectivity page of the DR OAC instance.

The DR OAC instance displays the status of its Data Gateway agent as 'Connected' and the status of the primary instance's data gateway agent as 'Not Authenticated.'



ty				•
			Unassigned Jobs Add Ag	ent 🚺
Host	Status	Created Date	Last Seen Time	Action
WindowsphxCl	Connected	1010204102.0094	10103-0120990	:
WindowsCI2	Not Authenticated	SPOTA CONTACT.	020141000094	:
	Host WindowsphxCl	Host Status WindowsphxCl Connected	Host Status Created Date WindowsphxCI Connected	Host Status Created Date Last Seen Time WindowsphxCI Connected

If needed, the OAC administrator can delete any unnecessary Data Gateway agents. Having both Data Gateway agents in an OAC instance is not an issue, as only the region-specific Data Gateway agent is connected at any given time.

Create Object Storage Buckets in Each OCI Region

See Set Up an Oracle Cloud Storage Bucket for Snapshots.

Create Policies in the Compartment to Access the Buckets

Since the compartment is not regional, create policies for the compartment in the tenancy.

- 1. Create a compartment or use an existing compartment.
- 2. Create policies for the compartment.
 - a. Log in to the OCI Console.
 - b. Navigate to **Identity & Security → Policies → Select the Compartment → Create Policy**.
 - c. Add the policies shown:
 - Allow group Administrators to manage objects in compartment oacdr
 - Allow group Administrators to manage buckets in compartment oacdr
 - Allow service objectstorage-us-ashburn-1 to manage object-family in compartment oacdr
 - Allow service objectstorage-us-phoenix-1 to manage object-family in compartment oacdr



Create Policy
Name
AllowBucketAccess
No spaces. Only letters, numerals, hyphens, periods, or underscores.
Description
Allow Bucket Access Policies
Compartment
oacdr
oaseceal (root)/oacdr
Policy Builder Show manual editor
Allow group Administrators to manage objects in compartment oacdr Allow group Administrators to manage buckets in compartment oacdr Allow service objectstorage-us-ashburn-1 to manage object-family in compartment oacdr Allow service objectstorage-us-phoenix-1 to manage object-family in compartment oacdr

Create a Bucket in the Compartment Where the Policies are Set Up

On the OCI Home Region (Ashburn)

Create a bucket in the home region (for example Ashburn), and enable the **Replication of the Bucket to the Destination Region** as the DR region (for example, Phoenix).

1. Create an object storage bucket in the home region to store snapshots from the home region OAC instance.

X ORACLE Cloud	Cloud Classic > Search resources, serv	ices, documentation, and Marketplace
Q Search	🔟 Storage	
Home Compute Storage Networking	Block Storage Block Volumes Block Volume Backups Block Volume Replicas Volume Groups	Object Storage & Archive Storage Buckets

2. Create a bucket with a name such as **SnapshotsPrimary**.



	d Classic > Search resources				US East (Ashburn) 🗸	$\overline{\mathbf{O}}$	Δ	?	۲	0
Object Storage & Archive	Buckets in oacc	Create Bucket							He	<u>elp</u>
Storage Buckets List scope	Object Storage provides unlimi Create Bucket Name	Bucket Name SnapshotsPrimary Default Storage Tier Standard								
Compartment oacdr	EXCPACE-workship	Archive The default storage tier for a bucket can or Enable Auto-Tiering Automatically move infrequently acce	nly be specified during creation. Once se ussed objects from the Standard tier to le			s. <u>Learn m</u>	iore abou	<u>t storage</u>	tiers	
Service logs Manage logs Resources: 2 (4 total logs) © Logs enabled: 0 Logs not enabled: 4		Emit Object Events	object is uploaded, an existing object is tate changes using the <u>Events Service</u> ,	overwritten, or when an obje	ect is deleted. <u>Learn more</u>					
Tag filters add clear		Uncommitted Multipart Upload Create a lifecycle rule to automatically Encryption	ds Cleanup y delete uncommitted multipart uploads o	older than 7 days. <u>Learn mo</u>	re					
na ng men sapper		 Encrypt using Oracle managed Leaves all encrypton-related matters to Encrypt using customer-manag Requires a valid key from a vault that y Tags Add tags to organize your resource 	o Oracle. jed keys ou have access to. <u>Learn more</u>	,						
		Tag namespace None (add a free-form tag)	Tag key	-	Tag value			Add ta)

3. Create another bucket in the home region for the backup of the DR region. For example, a bucket with a name such as **SnapshotsDR-Backup**.

	Classic > Search resource			US East (Ashburn) 🗸	\bigcirc	Ĺ,	?	٢	0
Object Storage & Archive	Buckets in oac	Create Bucket						Н	<u>lelp</u>
Storage	Object Storage provides unli	Bucket Name							Î
Buckets	Create Bucket	SnapshotsDR-Backup							J
List scope	Name	Oefault Storage Tier Standard							
Compartment	CLACIFIC Exceptions		specified during creation. Once set, you cannot change	the storage tier in which a bucket re	sides. Lea	rn more :	about sto	rage	
oacdr 🗘	SnapshotsPrimary	tiers Enable Auto-Tiering							
	ShapshotsPrimary	•	objects from the Standard tier to less expensive storage	Learn more					
Service logs Manage logs		Enable Object Versioning Create an object version when a new object	t is uploaded, an existing object is overwritten, or when	an object is deleted. Learn more					
Resources: 3 (6 total logs) ① Logs enabled: 0 Logs not enabled: 6		Emit Object Events Create automation based on object state c	nances using the Events Service.						
Tag filters add clear		Uncommitted Multipart Uploads Cl	eanup						
no tag filters applied		Create a lifecycle rule to automatically dele	te uncommitted multipart uploads older than 7 days. Le	am more					
		 Encrypt using Oracle managed keys Leaves all encryption-related matters to Orac 							
		 Encrypt using customer-managed k Requires a valid key from a vault that you ha 							
		Tags Add tags to organize your resources.	What can I do with tagging?						
		Tag namespace	Tag key	Tag value				6	a
		None (add a free-form tag)	•					׼	
							Add tag	9	-
	No-11-	Create Cancel							

This is required if you need to create a snapshot at the DR OAC instance and restore it at the primary OAC instance during fallback.

On the OCI Disaster Recovery Region (Phoenix)

Create another bucket in the DR region (for example, Phoenix), and enable the **Replication of the Bucket to the Destination Region** as the home region (for example, Ashburn).



1.

Create an object storage bucket in the DR region to store snapshots from the DR region OAC instance.

X ORACLE Cloud	Cloud Classic > Search resources, ser	
Q Search	III Storage	
Home Compute Storage Networking	Block Storage Block Volumes Block Volume Backups Block Volume Replicas Volume Groups	Object Storage & Archive Storage Buckets

2.

Create a bucket with a name such as **SnapshotsDR**.

	d Classic > Search resour	rces, services, documentation, and Marketpla	ace	US West (Phoenix) 🗸	ō 🇘	@ €	₿ 0
Object Storage & Archive	Buckets in oa	Create Bucket					<u>Help</u>
Storage Buckets	Object Storage provides up Create Bucket	Bucket Name SnapshotsDR					
List scope	Name	Default Storage Tier Standard Archive					
Compartment Oacdr Coaseceal (root)/oacdr		The default storage tier for a bucket can only be spectiers Enable Auto-Tiering	ified during creation. Once set, you cannot change	the storage tier in which a bucket r	esides. <u>Learn m</u>	ore about stora	ige
Service logs Manage logs			ats from the Standard tier to less expensive storage	. Learn more			
Resources: 2 (4 total logs) Logs enabled: 0 Logs not enabled: 4		Create an object version when a new object is u Emit Object Events Create automation based on object state chang	ploaded, an existing object is overwritten, or when es using the <u>Events Service</u> .	an object is deleted. <u>Learn more</u>			
Tag filters add clear		Uncommitted Multipart Uploads Clean Create a lifecycle rule to automatically delete ur	up ccommitted multipart uploads older than 7 days. Le	am more			
no tag filters applied		Encryption Encrypt using Oracle managed keys Leaves all encryption-related matters to Oracle.					
		 Encrypt using customer-managed keys Requires a valid key from a vault that you have ar Tags 					
		Add tags to organize your resources. What Tag namespace	<u>at can I do with tagging?</u> Tag key	Tag value			
		None (add a free-form tag)				×	
		Create				Add too	-
	NE SHERE						

3. Create another bucket in the DR region for the backup of the home region bucket. For example, a bucket with a name such as **SnapshotsPrimary-Backup**.

	d Classic > Search resource	es, services, documentation, and Market	place	US West (Phoenix) 🗸		\$ 0	۲	0
Object Storage & Archive	Buckets in oac	Create Bucket					Н	elp
Storage	Object Storage provides unli	Bucket Name						^
Buckets	Create Bucket	SnapshotsPrimary-Backup Default Storage Tier						
List scope	Name	Standard Archive						
Compartment	SnapshotsDR		specified during creation. Once set, you cannot change	the storage tier in which a bucket re	esides. <u>Learn</u>	more about	storage	
(root)/oacdr		Enable Auto-Tiering Automatically move infrequently accessed o	bjects from the Standard tier to less expensive storage.	Learn more				
Service logs Manage logs		Enable Object Versioning Create an object version when a new object	is uploaded, an existing object is overwritten, or when a	an object is deleted. Learn more				
Resources: 3 (6 total logs) Logs enabled: 0 Logs not enabled: 6		Emit Object Events Create automation based on object state ch						
Tag filters add i clear		Uncommitted Multipart Uploads Cle						
no tag filters applied		Encryption	e uncommitted multipart upidads older than 7 days. Lee	in nore				
		 Encrypt using Oracle managed keys Leaves all encryption-related matters to Oracl 	e.					
		 Encrypt using customer-managed kee Requires a valid key from a vault that you hav 						
		Tags Add tags to organize your resources. ⊻	Vhat can I do with tagging?					
		Tag namespace None (add a free-form tag)	Tag key	Tag value			×	•
		,	<u> </u>				Ŀ	
		Create Cancel				Add 1	ag	•

Enable Replication

On the OCI Home Region (Ashburn)

1. Create the replication policy for the bucket created in the home region.

	ud Classic >							US East (Ashburn) 🗸	\Box	Δ (2 🕀	0
Object Storage + Bucket Details + Replicat	Snapsho Edit Visibility		Re-encrypt Add ta	ags Delete								
B	Compartme Created: Mo ETag: db88e OCID:Imtr Usage Approximat Approximat Uncommitte	al :: idseylbmv0mm	rbade145595 cts (j) pproximate Count: (-		Features Default Storage Tier: Sk Visibility: Private Encryption Key: Oracle Auto-Tiering: © Disable Emit Object ¥ents: © D Object Versioning: © D	managed key <u>Assign</u> d Edit (i) Disabled <u>Edit</u> (i)					
Resources	Replicat	tion Policy										
Objects	Create Polic	ev 🛛										
Metrics	Name	Destination Region		Destination Buck	et	Replication Status	Created	Last Replicated ()				
Pre-Authenticated Requests					N	items found.						
Work Requests												
Lifecycle Policy Rules Replication Policy Retention Rules												
Uncommitted Multipart Uploads												
Logs							//EN			13		

- 2. Select the destination region as the DR region and the destination bucket as "**SnapshotsPrimary-Backup**".
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	ic > Search resources, services, do	kumentation, and Marketplace US East (Ashburn) 🗸 🗔 🎊 ⊘	• 9
Object Storage > Bucket Details > Replication Polic	ay and a second s	Create Replication Policy	Help
B B G Na c c c r t t c d U U A F t U U	ApshotsPrimary Visibility Move Resource Re- ucket Information Tags Seneral Amespace: (Issylform/Onn ompartment: Badgi compartment: Badgi tag: db88a8bb-d2H-4801-6808-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4804-b7844 citity:db88a8bb-d2H-4	Name Replication, 2, DR, Region Replication, 2, DR, Region US West (Phoenix) Destination Bucket in Decodr (Change Compartment) SnapahotsPrimary-Backup Replication overwrites ary ubject in the destination bucket that has the same name as an object in the source bucket. Objects uploaded to a source bucket before poly creation are not replicated	0 0
	plication Policy		
Matrice	reate Policy		
Pre-Authenticated Requests	ne Destination Region		
Work Requests			
Lifecycle Policy Rules			
Replication Policy			
Retention Rules			
Uncommitted Multipart Uploads			
Logs		Create Cance	

The replication policy is enabled.

	Cloud Classic > Search resource	ces, services, documentatio	n, and Marketplace			US East (Ashburn) 🗸	0 ¢ (0
Otject Storage > Bucket Details > Rep	lication Policy SnapshotsPrima Edit Visibility Move Resou	ary ree Re-encrypt Ad Tags a 2444 99 UTC hade-hader Thoda opy t: 0 objects (2)	d tags Delete	Visibility: Priv Encryption Ko Auto-Tiering: Emit Object E Object Versio	e Tier: Standard				
	Uncommitted Multipart Up Uncommitted Multipart Up Replication Poli	iloads Approximate Size:	. 0						
Dessures	Create Policy	Destination Region	Destination Bucket	Replication Status	Created	Last Replicat	ed (i)		
Objects	Replication_2_DR_Region	US West (Phoenix)	SnapshotsPrimary-Backup	Active	Mare, Mar 28, 2023, 22-28-27		12 () 1826, 2013 11 211 UT	c :	5

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On the OCI Disaster Recovery Region (Phoenix)

1. Create the replication policy for the bucket created in the DR region.

	oud Classic >				. I	JS West (Phoenix) 🗸	$\overline{\mathbf{O}}$	1 🤄) 🕀	0
Chject Storage > Bucket Details > Replic	Snapsł Edit Visibility	rotsDR 7 Move Resource Re-encrypt Add t formation Tags	tags Detete				J.			
В	Compartin Created: ? ETag: 5db OCID:hj Usage Approxim Approxim Uncommi	ze: idseylbmv0mm hent: caadr don, Mar 20, 2023, 21:15:02 UTC 17.084-83664-2070-bd48-e15088fc1840 xisefq Show Copy		Features Default Storage Tier: Standard Visibility: Private Encryption Key: Oracle managed k Auto-Tiering: © Disabled Ed Emit Object Events: © Disabled E Object Versioning: © Disabled Ec) Edit (i)					
Resources	Replica Create Po	ation Policy								
Metrics	Name	Destination Region	Destination Bucket	Replication Status	Created	Last Replicated	D			
Pre-Authenticated Requests Work Requests		No items found.								1
Unit Requests Lifecycle Policy Rules Replication Policy Retention Rules Uncommitted Multipart Uploads Logs										₽

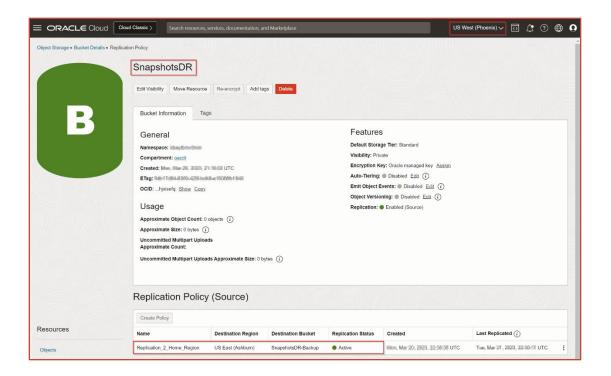
2. Select the destination region as the home region and the destination bucket as "SnapshotsDR-Backup".

	currentation, and Marketplace US West (Phoenix) 🗸 🖸 🎊 ⊘ (⊕ 9
Object Storage > Bucket Details > Replication Policy	Create Replication Policy	Help
SnapshotsDR Edit Visibility Move Resource Re-	Name Replication_2_Home_Region	
Bucket Information Tags	US East (Ashburn) Destination Bucket in oacdr (<u>Change Compartment</u>)	0
General Manespace: :dseyfbruðum Compartment: caad: Created: Mon, Mar 20, 2023, 21:15:02 i Erag: :ds/17884-38084-20:1648-e1508 COID:	SnpahotsDR-Backup Reptation overwrites ary dysct in the destination bucket that has the same name as an object in the source bucket. Objects uploaded to a source bucket before policy creation are not replicated.	•
Resources Replication Policy		
Objects Create Policy Metrics		
Pre-Authenticated Requests		
Work Requests		
Lifecycle Policy Rules		
Replication Policy Retention Rules		
Uncommitted Multipart Uploads		
Logs	Create Cancol	

The replication policy is enabled.

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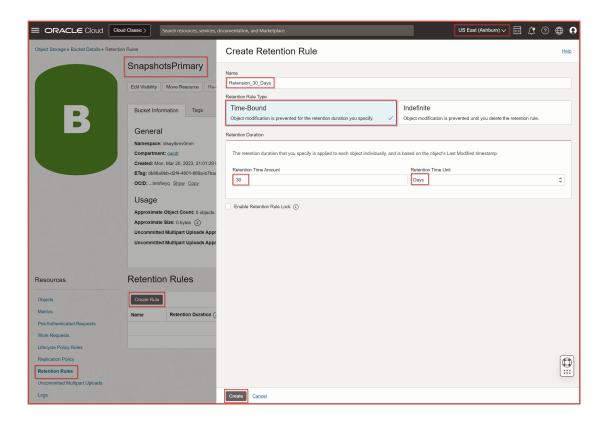
Create Retention Rule

To ensure that backup files are held for a specific period, create a retention rule (for example, 30 days). This retention rule keeps the backup files for 30 days, after which the system automatically deletes them.

On the OCI Home Region (Ashburn)

Create a retention rule that keeps backup files for 30 days, and then archives them using lifecycle policy rules.

- 1. Log in to the OCI Console.
- 2. Select the home region. For example, US East (Ashburn).
- 3. Navigate to Storage → Buckets → Select the Compartment → Select the bucket created for OAC home region snapshots (SnapshotsPrimary).
- 4. In the Resources Section, click **Retention Rules** → **Create Rule**.
- 5. Create a Time-Bound rule for 30 days.



On the OCI Disaster Recovery Region (Phoenix)

Create a retention rule that keeps backup files for 30 days.

- 1. Log in to the OCI Console.
- 2. Select the DR region. For example, US West (Phoenix).
- 3. Navigate to Storage → Buckets → Select the Compartment → Select the Bucket created for OAC DR region snapshots (SnapshotsDR).
- 4. In the Resources Section, click **Retention Rules** \rightarrow **Create Rule**.

5.

Create a Time-Bound rule for 30 days.

	oud Classic > Search resources, services, d	ocumentation, and Marketplace	US West (Phoenix) 🗸 👩 🎊 🧿	• •
Object Storage > Bucket Details > Retent	tion Rules	Create Retention Rule		Help
B	SnapshotsDR Edit Viability Move Resource Re- Bucket Information Tags Denetal Manespace: IdouyldmvOrm Compartment: cadd Compartment: cadd Co	Name Retension 30_Days Retension 30_Days Retension Rule Type Time-Bound Diject modification is prevented for the retention duration you specify. Retension Duration The retention Duration that you specify is applied to each object individually, and is Retension Duration The retention Time Amount 30 Enable Retention Rule Lock ()	Indefinite Deject modification is prevented until you delete the retention rule. based on the object's Last Modified timestamp. Retention Time Unit Days	\$
Resources Objects Metrics Pre-Authenticated Requests Work Requests	Retention Rules Crowns Rule Name Retention Duration (
Lifecycle Policy Rules Replication Policy Retention Rules Uncommitted Multipart Uploads				
Logs		Create Cancel		

Create a Folder in Each Bucket

After enabling replication and retention policies, create a folder (for example, **OAC**) in the buckets **SnapshotsPrimary** and **SnapshotsDR**.

Resources	Objects
Objects	Upload More Actions 🔻
Metrics	Name
Pre-Authenticated Requests	
Work Requests	
Lifecycle Policy Rules	

Create Pre-Authenticated Requests for Each Bucket

Go to the **SnapshotsPrimary** bucket in the Ashburn region, create a pre-authenticated request for the bucket, and copy the URL.

	Search resources, services, docu	mentation, and Marketplace	0	US East (Ashburn) 🗸 👩 🎊 🧿 🤅	⊕ 9
Object Storage > Bucket Details > Pre-Au	thenticated Requests	Create Pre-Authenticated Re	quest		<u>Help</u>
	Retention rules are active If you have active retention rules, the <i>i</i> the retention rule is deleted. <u>Learn mo</u>	Name PAR-SnapshotsPrimary Pre-Authenticated Request Target			
	SnapshotsPrimary	Bucket Create a pre-authenticated request that applies to	Object Create a pre-authenticated request that applies to	Objects with prefix Create a pre-authenticated request that applies to	,
	Edit Visibility Move Resource Re-encr	Access Type	a specific object.	all objects with a specific prefix.	
	Bucket Information Tags	Permit object reads Permit object writes Permit object reads and writes 1			
	General Namespace: idseylbmv0mm Compartment: <u>oacdr</u>	Enable Object Listing Let users let the objects in the bucket.			
	Created: Mon, Mar 20, 2023, 21:01:29 UTC ETag: 2ab291cd-e1d0-45b6-b36b-7d2b617 OCID:Imtrfwyq Show Copy	Expiration Dec 31, 2023 03:15 UTC			
	Usage				
	Approximate Object Count: 1 objects (i) Approximate Size: 0 bytes (i)				
	Uncommitted Multipart Uploads Approxir Uncommitted Multipart Uploads Approxir				
	Dro Authenticated Degr				
Objects	Pre-Authenticated Reques				
Metrics Pre-Authenticated Requests 2	Name Status				
Work Requests		0			
Destantes Bates		Create Pre-Authenticated Request			
Pre-Authen	ticated Request	Details			
		2 0 0000			
Name Read-only					

Name <i>Read-only</i> PAR-SnapshotsPrimary	
Pre-Authenticated Request URL Read-only https://objectstorage.us-ashburn-1.oraclecloud.com/p/IK_xv5Oea23TIn_1Ceb_nIgi0BV5VXE5rfGWxwgV171AMNqGUy34]
Ocopy this URL for your records. It will not be shown again.	
Close	

Copy the **Pre-Authenticated Request URL** and save it for use in automation scripts.

Repeat the same steps for the **SnapshotsDR** bucket in the Phoenix region and save the URL.

Generate the API Key Pair

In the OCI Console, generate the key pair and add it to the API Keys for the user who will run the migration scripts.

- 1. Log in to the OCI Console
- 2. Navigate to **Identity and Security > Users >** Select the required user.
- 3. Navigate to API Keys > Click on Add API Key > Generate the API key pair > Download the private and public keys.
- 4. Click **Add** to add the public key to the selected user's API key list.

	d Olassio > Search resources, services, documentation, and Marketplace		US East (Ashburn) 🗸 🕢 🌐 <table-cell></table-cell>
Identity + Users + User Details + API Keys			
	oracleidentityclo Add API Key	Hele	
U	Andrew Andrew		
ACTIVE	0 000ownow Boxe Date Creved: Wex Jie 11, 2023 Michtlacter atthemission Email: -		
	Capabilities		
	Local password: No API keys: Yes	SMTP credentials: Yes Customer secret keys: Yes	
	Auth tokens: You Stele: Contournation (Sci)	OAuth 2.0 Client Credentials: Yes Database Passwords: Yes	
Resources	API Keys		
Groups	Add APLKey O		
API Keys 0	Fingerprint	Created	
Auth Tokens	The Street Carl of Land Tan Walk Free Tan Davids	Thu, Apr 13, 2023, 13:38:30 UTC	į
Customer Secret Keys Database Passwords	Bit will 27 year follow (10 10) 42 12 all de calified 80 all	Thu, Apr 13, 2023, 17:23:41 UTC	@
OAuth 2.0 Client Credentials			Displaying 2 API Keys
SMTP Credentials			

5. Copy the user's **Configuration File Preview** and save the content for use with the migration scripts.

Configuration File Preview	Help
Note: This configuration file snippet includes the basic authentication information you'll need to use the contents of the text box into your ~/.oci/config file and update the key_file parameter with the file path to profile in your config profile, you'll need to perform some additional steps. Learn more Select API Key Fingerprint	•
98/9115/d5aecile/91/58/2ac0/70/70/28/045/91	\$
Configuration File Preview Read-only	
[DEFAULT] user=ocid1.user.oc1aa fingerprint=9 tenancy=ocid1.tenancy.oc1aa region=us-ashburn-1 key_file= <path keyfile="" private="" to="" your=""> # TODO Paste the contents of the text box into your -/ oc/config file.</path>	<u>Copy</u>
Close	

6. Similarly, generate the key pair for the same user in the DR OCI region, for example Phoenix. Download the private and public keys, copy the user's **Configuration File Preview** and save it for migration scripts.

	Classic > Search n	esources, services, documentation, and Marketplace		1 US West (Phoenix) ↓ 🐼	1 🗘 💿 🌐 🖸
Identity > Users > User Details > API Keys	0				
	oracleidenti	Configuration File Preview	Help		
(U)	eacadmin 3 Edit User Edit Use	Note: This configuration file snippet includes the basic authentication information you'll need to use the SDI developer tool. Paste the contents of the text tox into your -/.coicoring file and update the key_file parame private key. If you already have a Default profile in your config profile, you'll need to perform some addition Select PJI Key Fingerprint	ater with the file path to your		
ACTIVE	Oser information OCID:ceunos §2 Created: Wed, Jan Multi-factor authen Email: - Capabilities Local passwort: N- API keys: Yes Auth tokens: Yes - Vere Confounation file	Configuration File Preview Read-only [FEFAULT] user coold user coll.aaa seasa show a show a final y major Holman model mana noa fingerprint 13 a show to final seasa file of the show a show a file of the show a show a file ten ancy-coold ten ancy coll.aaa show a file of the show a show a file of the show a show a file ten ancy-coold ten ancy coll.aaa show a file of the show a show a file of the show a show a file ten ancy-coold ten ancy coll.aaa show a file of the show a show a file of the show a show a file of the show a s			
Resources	API Keys				
Groups	Add API Key 6				
Auth Tokens	Fingerprint		Created Thu, Apr 13, 2023, 13:38:30 UT	rc	

Synchronize Content Across Both Oracle Analytics Cloud Instances

You use a snapshot and the Data Migration utility to migrate content between the OAC instances.

Snapshot Artifacts

Snapshots contains the following artifacts:

- Catalog and its objects with permissions and properties
- Semantic model (RPD)
- Application roles and memberships
- Data files
- Data sets
- Object storage information
- Data visualization workbooks
- Data visualization projects
- Connections and their permissions, security, and so on.

For more information see:

Migrate Oracle Analytics Cloud Using Snapshots

Export and Import Snapshots

Tutorial on Snapshots



Create and Export a Snapshot

Create the snapshot.

♦ ⇒ 0		uanalytics.ocp.oraclecloud.com/ui/dv/?pageid=snapshots Doub 🛞 Doub Audytes He 🛞 Heps??RDLD2HDL 🖉 16.8.2.111 🛞 16.8.8	10 * *				🖻 🏚 📬 🕏	□ 😩 :
← 🙆 Sn 2 of 40 snap	napshots						Create Snapshot	W
E of to onep	Name ≎	Description 0	Created By 🗘	Size 0	Created On 0	Status		
Ó	Charts2	Includes Catalog Content, Data, File-based Data, Configuration and Setting	www.taghavencha.raci@artacle.com	776 KB	11282822, 418:54 PM			
Ø	ChartsSnap	Includes Catalog Content, Data, File-based Data, Configuration and Setting	veera regneveraira ranĝonacie.com	763 KB	110000022, 4:15:43 PM			

Export the snapshot.

←	回 Snapshots				VK
2 0	f 40 snapshots used		Create Snapshot	Ģ	:
	Name 🗘	Description	Status		
Ø	Charts2	Includes Catalog Content, Data, 4444 agreed. 776 KB 1010000 and 1410 and 1410			:
Ø	ChartsSnap	Includes Catalog Content, Data, 763 KB	A I	Restore	
			E	Edit Name	
				Export	Ð
				Delete	

Export the snapshot to your local file system.

~	ම Snap	hots									VK
2 c	f 40 snapsho	ts used							Create Snapshot	Ģ	:
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Ø	Chart	32	Includes Catalog Co	ontent, Data,	veen.reghenerd	775.68	1020/2022.0	6485419	м		
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			Snapshot	Charts2							
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			Created On	1/20/2023, 9-4	ES4 PM						
			Export Snapshot To Local File System Oracle Cloud Stor	-	tails						
			* Snapshot Pas	sword			0				
			* Confirm pas	sword							
						Cancel	Export				

Or, export the snapshot to Oracle Cloud storage.

← @ Snapshots					VK
2 of 40 snapshots used					Create Snapshot O :
Name 🗘	Description 0	Cr	eated By 🗘 Siz	e 🗘 Created On 🗘	Status
Charts2	Includes Catalog C	ontent, Data, 🦏	enraphivend	HID H/30/2022 9:48:54 F	nd.
ChartsSnap	Export Snapshot		← → Storage	Container Details	
	Snapshot	Charts2			
	Description	Includes Catalog Cont Settings, Jobs, Data F Plug-ins and Extensio	lo the bucket on Oracle	cket for the snapshot, and the k Cloud Infrastructure Object St	eys and OCIDs required to access orage. Learn more
		Credentials, Machine Shared Folders, Data	Le Bucket Mana	OACSnapshots	
	Created By	mena saghanwalta ra	* OCI Region	us-ashburn-1	
	Created On	11,010,01020, 904854 P	* OCI Tenancy Id	ocid1.tenancv.oc1a	a Toimatiwowindowimilo/kowag5ty
	Export Snapshot To O Local File System		* OCI User Id		
	Oracle Cloud Sto	rage Storage Details	-		dir7k2h-milanigikg101kitorialygelkg
			* Key Fingerprint	70:0::215155:09:519579:28	50:82-4::5178:56
	* Snapshot Pa	ssword	* Private Key	snapshotprivatekey.pem	Select
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Export Snapshot		← → Save	Snapshot As		
Export Snapshot Snapshot Charts	52	← → Save	Snapshot As	_	
Snapshot Charts Description Includ	es Catalog Contei		Snapshot As	5	0
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Snapshot Charts Description Includ Settin Plug-i Created By Created On Created On Export Snapshot To Local File System () Oracle Cloud Storage	es Catalog Conte gs, Jobs, Data Flo ns and Extension ntials, Machine Le d Folders, Data Se 1900 - 1916 Storage Details	Storage Containe	r: OACSnapshots	5	Cancel

Click **Export** on the main Export Snapshot dialog.

	OACSnapshots Edit Visibility Move Resource Re-en Bucket Information Tags	crypt Add Tags Delate		
В	General Namespace: idseylbmv0mm Compartment: gaod Created: Sum, Nore 30, 2002; 15:44:24 UT ETag:: boatStadSdod=4t a=atto-460ad08 OCID:yc7xtdpq Show Coav Usage Approximate Object Count: 0 objects (Approximate Size: 0 bytos (I)) Uncommitted Multipart Uploads Approx	Defai Visib SCM:: Auto SCM:: Emit Object 0 uploeds ()	atures uit Storage Tier: Standard litty: Private yption Key: Oracle managed key <u>Assign</u> -Tiering: © Disabled <u>Edit</u> () Object Events: © Disabled <u>Edit</u> () et Versioning: © Disabled <u>Edit</u> ()	
Objects	Objects Upload More Actions			Q Search by prefix
Metrics	Name	Last Modified	Size	
Pre-Authenticated Requests Work Requests Lifecycle Policy Rules	20221120161854.bar	Sun, Nov 20, 2022, 17, 1845 UTC	776.22 KiB	Standard

During content replication across OCI regions, the snapshot created in the home region OAC instance doesn't migrate data files to the DR region OAC instance. For more information, see <u>Migrate File-based Data</u>.

Install JDK 1.8.0_361

The Data Migration utility requires Java 1.8.0+. Download the latest Java 1.8 361 updates from:

https://www.oracle.com/in/java/technologies/javase/javase8u211-later-archive-downloads.html

https://download.oracle.com/otn/java/jdk/8u361-b09/0ae14417abb444ebb02b9815e2103550/jdk-8u361-linux-x64.tar.gz

Download and Run the Data Migration Utility

Use the Data Migration utility to back up data files from the home region OAC instance and restore them on the DR region OAC instance.

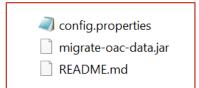
To obtain the Data Migration utility, go to the OAC home page and navigate to **Console > Snapshots > Migrate > Download Data Migration Utility**.

		ics.ocp.oraclecloud.com/ui/dv/?pageid=snapshots - 🛞 Drain Avdysia Ha 🛞 Nap.(?008.02990 🛞 18.00.111 🔗 18.80.111 - ;	•		ić · ·	2 🐴 🕸 🖬 🏦 E
← l© Sn	apshots					VB
2 of 40 snap	shots used				Create	Snapshot O 🗄
	Name 🗘	Description 0	Created By 🗘	Size 🗘	Created On 🗘 Status	Import Snapshot
Ø	Charts2	Includes Catalog Content, Data, File-based Data, Configuration and Setting	veens raghavenchs raciĝaracis com	776 KB	11(00(0022, 4:18:54 PM	Show Restore History
Ó	ChartsSnap	Includes Catalog Content, Data, File-based Data, Configuration and Setting	reens.rephavendra.raci@oracia.com	763 KB	11/28/2822, 4:15:43 PM	Replace Data Model
					Download BI EE 11g Migration Utility Uploed and Restore BI EE 11g Migration Bundle Download Data Migration Utility	Migrate



$\leftarrow \rightarrow$	C a oacash-identification m-ia.analytics.ocp.oraclec	loud.com/ui/dv/?pageid=snapshots		₫ ✿	0 2 2 8 9 5	🖸 🛪 🕸 🖬 🧕	havel :
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Ø	ChartsSnap	Includes Catalog Content, Data, File-based Data,	veers.regherendra.reagto	763 KB	1,00,0000, 9:45:43 PM		
		Data Migration Utility Download the data migration utility if yo uploaded on one Oracle Analytics enviro Downloading Data Migration Utility	u want to migrate data files nment to another.				

You download the **migrate-oac-data.zip** file to your local file system, and then copy it to a Windows/Linux/Mac OS machine, where you can unzip it.



There are two options when you run the Data Migration utility:

- **Option 1:** Migrate data files stored in your source environment directly to the target in a single step. For this option, you configure the section [MigrateData] in the config.properties file.
- Option 2: Download data files from your source OAC instance to your local environment and subsequently upload the data files to the target OAC instance. For this option, you configure sections [DownloadDataFiles] and [UploadDataFragments] in the config.properties file.

Option 1: Migrate data files directly from the source to the target in a single step

Utilize this option when the OAC instances in the home and DR regions are both active.

Import and restore the snapshot on the DR OAC instance and migrate the data files using the Data Migration utility.



/u01/app/jdk/bin/java -jar migrate-oac-data.jar -m -config config.properties

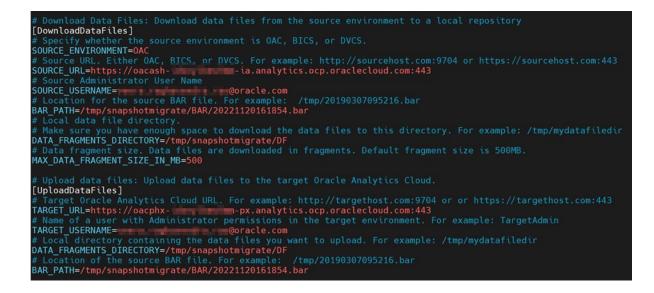
Restore the snapshot on the DR OAC instance to complete the migration.

Option 2: Download data files from the source and upload to the target in two steps

Utilize this option when the primary OAC instance in the home region is active and the OAC instance in the DR region is paused and only made active when needed.

Import and restore the snapshot on the DR OAC instance and migrate the data files using the Data Migration utility.





Download the Data Files

/u01/app/jdk/bin/java -jar migrate-oac-data.jar -d -config config.properties

Upload the Data Files

/u01/app/jdk/bin/java -jar migrate-oac-data.jar -u -config config.properties

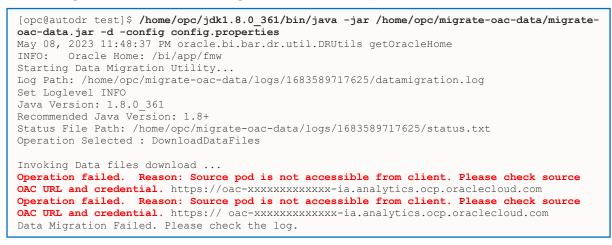
Restore the snapshot on the DR OAC instance to complete the migration.

- 1. Sign into your target OAC instance.
- 2. To expose the data files in OAC, you must restore the snapshot you used to migrate the rest of your content for a second time. This time, you must select the **Custom** restore option.
 - a) Open the Console and click **Snapshots**.
 - b) Select the snapshot containing your data files and click **Restore**.
 - c) Select the **Custom** restore option.
 - d) Select the option File-based data. Deselect all other options.
 - e) Click Restore.
- 3. Verify that your data files are available.



Network Perimeters - Impact on the Data Migration Utility

Data file migration fails with the following errors when network perimeters are enabled for IDCS or IAM Domain.



For example, if the OAC instance and the Data Migration utility instances are in public or private OCI subnets as shown in the table; you must allowlist the required IP CIDR ranges shown here.

Data Migration Utility Compute in Public or Private Subnet	OAC in Public or Private Subnet	Allowed IP Addresses for Network Perimeters
Public	Public	Public IP address of the Data Migration utility compute
Public	Private	240.0.0/4
Private	Public	240.0.0/4
Private	Private	240.0.0/4

See Public IP Ranges and Gateway IPs for Oracle Analytics Cloud Instances.

Automate Snapshot and Data File Back Up

You can also use REST APIs to manage and migrate snapshots.

- Manage Snapshots Using REST APIs
- <u>REST API for Oracle Analytics Cloud</u>

Prerequisites for Using OAC REST APIs to Automate Snapshots

- OAC BI Service Administrator Username and Password
- Create a confidential applications for source and target OAC instances in IDCS or IAM Domain
- Use a refresh token to generate OAuth token
- Configure an OCI object storage bucket for each source and target OAC instance (*described above*)
- Configure a pre-authenticated request URL for each bucket (described above)
- Generate an OCI API key pair (described above)



- Install JDK 1.8.0+ latest version (*described above*)
- OAC Data Migration utility (described above)
- Oracle-provided OAC instance DNS names for the source and target
- IDCS or IAM Domain URL

Create a Confidential Application for the Data Migration Utility

See Creating Confidential Application in IDCS and Creating Confidential Application in IAM Domain.

For the Source OAC Instance

- 1. Log in as an administrator to the IDCS Console or IAM Domain Administrator to the OCI Console and navigate to the IAM Domain where the OAC instance exists.
- 2. Click the left navigation bar, select **Applications** \rightarrow Click **Add** \rightarrow Select **Confidential Application**.

9									
ů		Applicatio	ons						
44		Select All	Id 3 CRemove S Activate	Ø Deactivate					
Ô	Applications 2	Add Angelia			×				
•		Add Applic	ation		~				
Ħ									
<u>th</u>			App Catalog	Add an application from the Application Catalog.					
₿			SAML Application						
Ŷ			SAME Application	Create an application that supports SAML for Single Sign On.					
			Mobile Application	Create a mobile/single-page application that uses OAuth 2.0. These applications cannot maintain the confidentiality of their client secret.					
			Confidential Application	Create a web-server/server-side application that uses OAuth 2.0. These apps typically run on a server and can maintain the confidentiality of their client secret.					
			Enterprise Application	Create a web application that is protected by the App Gateway.					
			AnnGatowayDocker						

3. Enter **Name** and **Description** \rightarrow click **Next**.

	entity Cloud Service					License Type :: Standard ?
Add Confident	ial Applicat	tion				
Cancel	1 Details	Client	3 Resources	Web Tier Policy	Authorization	Next >
App Details						
		* Name PrimaryOAC	DRClient			
	D	escription DR Client fo	r Primary OAC			
				li		
	Applic	ation Icon	>			
		Upload				

- 4. Select **Configure this application as a client now option** → **Select Allowed Grant Types**.
- 55 Disaster Recovery Configuration for Oracle Analytics Cloud / version 1.0 Copyright © 2024, Oracle and/or its affiliates / Public

	Dashboard	ORACLE [®] Identity Cloud Service License Type :: Standard ?
ů	Users	Add Confidential Application
42		
ଚ	Applications	< Back 2 3 4 5 Next >
•	Oracle Cloud Services	Details Client Resources Web Tier Policy Authorization
		Configure this application as a client now Skip for later
<u>11.</u>	Reports	Authorization
\$	Settings 🗸 🗸	Allowed Grant Types Z Resource Owner C Client Credentials J JWT Assertion SAML2 Assertion R Refresh Token Authorization Code Implicit Device Code
Ŷ		TLS Client Authentication
		Allow non-HTTPS URLs

5. OAC supports multiple grant types for REST APIs. Select all the above options as the **Allowed Grant Types** but use **Refresh Token** for this example as the Grant Type. You can also select the required Grant Type only.

6. Add the scope for the confidential application.

7. Select the Oracle Analytics Cloud (source) instance as the scope.

	Security Trusted Client *	^t Certificate bidrclientalias Import	
Allowed Ope	erations 🔲 Introspect 🗆	On behalf Of	
ID Token Encryption Ale	norithm None	*	
Bypass (Select Scope		×
Allowed Client IP .	This is a list of Resource	ces for this tenant. Select a resource to add one or more so	copes.
Talaa lamaa Dalia.	Select All	- 2	-
Token Issuance Policy ①	•	ANALYTICSINST_OAC585	>
Resources O	•	ANALYTICSINST_oacash-idseylbmv0mm-ia	>
Resources	•	ANALYTICSINST_oacphx-idseylbmv0mm-px	>
+ Add Scope	•	ANALYTICSINST_oactechtalk-idseylbmv0mm-ia	>
Resource No data to display.	•	ANALYTICSINST_oaxcealfaw02-idseylbmv0mm-ia	>
Grant the client access	Page 1 of 1 (1-37)	of 37 items) $K < 1 > H$	
+ Add			Add
App Roles		Protected	
No data to display.			

8. Copy the Scope URL after adding the source OAC instance (for automation input variable).

+ Add Scope		
Resource	Protected	Scope
ANALYTICSINST_oacash-idseylbmv0mm-ia	No	https://atuuhumjkkrbkpsj3l6w4ny5pvfrykra.analytics.ocp.oraclecloud.comurn:opc:resource:consume
•		
irant the client access to Identity Cloud Se	ervice Admin	APIs
	ervice Admin	APIs

9. Don't grant any **App Roles** for the confidential application.

Grant the client acces	s to Identity Cloud Service Admin APIs		
+ Add			
App Roles		Protected	
No data to display.			

- 10. Click **Next** multiple times to reach finish, then click **Finish**.
- 11. The Client ID and Client Secret displays. Copy these values to use later.

	entity Cloud Service	License Type :: Standard ?
Applications > PrimaryOACDRClien	t	
Primary DR Client for Prin	/OACDRClient	Activate X Remove
Details Configuration W	eb Tier Policy Users Groups	Generate Access Token Save
	Application Added × Below is the new Client ID and Client Secret for your application. This information also appears on the Configuration tab in the Details section for the application. Client ID 41a6chibada 74cilladitacintbetCli092 Client Secret addrifted 000140140014001400140014001400140014004 Close Close	

Convert the ClientID:ClientSecret to base64 encoded value (for the automation script input variable):

echo -n "ClientIDValue:ClientSecretValue" | base64 -w 0

- 12. Click Close.
- 13. Click Activate.

For the Target OAC Instance

Repeat steps 1-14 for the target OAC instance.

While creating the confidential application, select the target OAC instance as the scope.

Resource	Protected	Scope
ANALYTICSINST_oacphx-idseylbmv0mm-px	No	https://ufbko4nygzlxvjzoelltsv3te6z4rqfq.analytics.ocp.oraclecloud.comurn:opc:resource:consumer:all

Copy the Scope URL after adding the target OAC instance (for automation script input variable).

If you use the same IDCS or IAM Domain for both OAC instances, you must add the DR OAC instance as another scope to the same confidential application created for the source OAC instance.

Configuration Attributes Required to Run OAC REST API Commands

To run OAC REST API commands, you must provide the following attributes from the OAuth client:

- ClientId The OAuth client ID used to access the IDCS identity store.
- ClientSecret The OAuth Client Secret (password) used to generate access tokens.
- Scope Scope of the confidential application.
- IDCS URL The IDCS or IAM Domain URL to get a token.

Sample Configuration Data

Client ID: eea4xxxxxxxxxxxxxxxxxxxxxxxxxxx33db

Client Secret: 6xxxxxx6-0xx2-4xx9-axxb-0xxxxxxxxa

Scope: https://<xxxxxxxxxxxxxxxxxxxxxx.analytics.ocp.oraclecloud.comurn:opc:resource:consumer::all

IDCS URL: https://idcs-f5xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx03.identity.oraclecloud.com

Get the Refresh Token

- 1. Log in to the IDCS Admin Console or OCI Console for IAM Identity Domain.
- 2. In the IDCS Console, navigate to **Applications > Confidential Application**.
- In the OCI Console for IAM Identity Domain, navigate to Identity & Security > Domains > Required Domain > Applications > Confidential Application.
- 4. Navigate to the **Details** tab and click **Generate Access Token**.
- 5. Select Available Scopes and Include Refresh Token.
- 6. Extract the refresh token value from the downloaded **tokens.tok** file.



٩	Dashboard		License Type :: Standard ?
ů		Applications > ConfApp4OAC	
		ConfApp4OAC	
Θ	Applications	Confidential Application for Oracle Analytics Cloud	O Deactivate X Remove
-		Details Configuration Web Tier Policy Users Groups	0
Ħ			Generate Access Token Save
<u>11.</u>		App Details	
¢		Application Type Generate Token	×
Ŷ		* Name Description Application Icon Customized Scopes Customized Scopes Customized Scopes Customized Scopes Customized Scopes	Download Token
		Upload	



Make a note of the refresh token value.

IDCS REST API Commands to Generate the Refresh Token

Generate the base64 encoded clientID and clientSecret

```
echo -n "eea4xxxxxxxxxxxxxxxxxxxxxxxxxxxxx33db:6xxxxxx6-0xx2-4xx9-axxb-0xxxxxxxxxa" | base64
-w 0
```

Generate the refresh token

This approach needs the **Resource Owner** and **Refresh Token** grant types to be selected in the confidential application.



Capture the refresh token value from the output

......

{"access_token":"eyJ4NXQjUzI1NiI6IkttM1VBWEttaHpHa0pxeDFnQldrZ1RF0FVJU0VtYklEdVpJUGdYVVUtb1EiLCJ
4NXQi0iJ1S0h3cXp6M1c2S3czcWU3NnE5UFdXbTRQS3ciLCJraWQi0iJTSUd0SU5HX0tFWSIsImFsZyI6IlJTMjU2In0......

Repeat the confidential application creation steps for the DR OAC instance in the DR IDCS stripe or in the DR region IAM identity domain. Add the scope as the DR OAC instance, and note the scope of the DR OAC instance. Also, get the refresh token value for the DR OAC instance as the target refresh token.

In the automation script folder, save the source refresh token value in the source_refreshToken.txt file.

Save the *target refresh token* value in the **targetRefreshToken.txt** file in the automation script folder.

Saving the refresh token in the text files is a one-time task.

Ensure that the **Refresh Token Expiration** value exceeds the frequency of the REST API script execution.

For example, if you set the Refresh Token Expiration to 86,400 seconds, this is equivalent to 24 hrs. In this case, automation scripts must be executed daily with an interval *less than 24 hour* so that the refresh token is valid for the subsequent script execution.

The automation process renews the refresh token, uses the new refresh token while running the scripts, and saves the new refresh token to the **source_refreshToken.txt** and **targetRefreshToken.txt** files, respectively, so that the new token is valid for the next 24 hrs.

۹	Dashboard	= ORACLE	" Identity Cloud Service					
ù		Oracle Cloud Services > ANA	LYTICSINST_oa					
44		\sim	ANALYTICSINST_oa	la				
ଚ			pplication for ANALYTICSINST_oa	C				
•	Oracle Cloud Services	Details Configuration	Web Tier Policy Application Roles Group	s Users				
H								
<u>th</u>		General Information						
¢		Client Configura	tion					
9		Resources						
			ication APIs that need to be OA Access Token Expiration 100 Is Refresh Token Allowed Refresh Token Expiration 86.400 * Primary Audience https://arpl. Secondary Audiences	v A seconds				
			Secondary Audience					Protected
			https://oaa.analytics.ocp.oracle	cloud.com				Yes
			Scopes Add					
			Scope		Protected	Description	Requires Consen	it
			um:opc:resource:consumer::all		Yes	All scopes.	false	

Note: The Access Token Expiration is 100 seconds, which may be sufficient. If a long-running script fails due to the access token expiry, you can increase the value accordingly.

Even though we use a confidential application and its grant types, the token expiry values are from the OAC application created in IDCS or IAM identity domain.



Download Automation Scripts

Ensure that JDK 1.8.0_361 and the Data Migration utility are available on the Linux machine where the automation scripts will run.

Download the script <u>createSnapshot.sh</u>. This script creates a snapshot and data files backup and stores the backup in Object Storage as a zip file.

Download the script <u>registerSnapshot.sh</u>. This script downloads the backup zip file, registers the snapshot, and restores it with the data files at the target OAC instance.

Configure SMTP Mail Servers

For mail server configuration, see Set Up an Email Server to Deliver Reports.

OCI mail server configuration requires that you allowlist the OCI data center IP ranges and Gateway IPs on your firewall to allow incoming emails from OCI. See <u>Allowlisting IP Range and Gateway IPs</u>.

- Scenario 1: You intend to utilize the same corporate SMTP server for mail server configuration on the primary and DR OAC instances. In this case, we recommended that you take note of the SMTP mail server configuration used in your primary OAC instance and use the same configuration information to set up the mail server on the DR OAC instance.
- Scenario 2: You intend to utilize the same OCI SMTP server for mail server configuration on the primary and DR OAC instances. In this case, we recommended that you take note of the OCI SMTP mail server configuration used in your primary OAC instance and use the same configuration information to set up the mail server on the DR OAC instance.
- Scenario 3: You intend to utilize the respective OCI region's SMTP server for mail server configuration on the respective OAC instance in the DR environment. The primary OAC instance on the OCI home region should use the home region SMTP server for mail server configuration in your primary OAC instance, The DR OAC instance on the OCI DR region should use the DR region SMTP server for mail server configuration in your DR OAC instance.

In all three scenarios, the mail server configuration for the DR OAC instance is overwritten with the mail server configuration of the primary OAC instance when the primary OAC instance snapshot is restored on the DR OAC instance.

In scenario 3, you must modify the mail server configuration of the DR OAC instance with the DR region's SMTP server details after restoring the snapshot.

Similarly, when falling back from the DR OAC instance to the primary OAC instance, you must modify the mail server configuration of the primary OAC instance with the primary OAC data region's SMTP server details after restoring the snapshot from the DR instance to the primary instance.



← 🛛 Mail Settings		۲
		Test
	Configure the mail server.	
* SMTP Server	smtp.email.us-ashburn-1.oci.oraclecloud.cor	
* Port	587 ~ ^	
* Display name of sender	Ashburn_OAC	
* E-mail address of sender		
	 Authenticated 	
* Username	ocid1.user.oc1	
* Password		
Connection Security	STARTTLS 🗸	
TLS Certificate	Default Certificate 🗸	

In scenarios 1 and 2, both OAC instances are configured with the same SMTP server details. This means that you don't need to modify the mail server configuration after restoring a snapshot, as the configuration remains the same, even after overwriting.

Understand Snapshot Migration Exclusions

Several items aren't included in a snapshot:

- Virus scanner configuration Record the virus scanner configuration used in your source environment and use the same information to configure your virus scanner on the target. See <u>Configure a Virus Scanner</u>.
- Other snapshots saved in the source environment If required, export them from the source OAC instance and import them to the DR OAC instance.
- System settings Record the system settings used in your source environment and use the same information to configure your system settings on the target.
- Custom skins, CSS styles, and JavaScript Record the customization used in your source environment and use the same information to configure your customizations on the target.

Length of Time to Create a Snapshot

Snapshot creation time depends on the amount of content in your OAC instance, that is, the size of your semantic model (RPD), content catalog, application roles, and so on.

Automating snapshot creation and data file backup using OAC REST APIs and the Data Migration utility eliminates the dependency on the browser's download limit. Using this method, the backup zip file is uploaded to Oracle Cloud storage. When you run the automation script, record how long it takes for the OAC snapshot to be created and uploaded to the cloud storage.



Snapshot Backup Frequency

How often you need to take snapshot backups depends on the length of time it takes to create the snapshot and upload it to cloud storage. Based on this, you can plan how often you run the automation script and how many snapshots you retain in storage.

Calculating your snapshot backup frequency is critical as it determines the potential data loss between the primary OAC instance snapshot creation time and the occurrence of a disaster event. There's a risk of data loss, if an end-user creates objects in the OAC instance between snapshot backups and a disaster event.

As the OAC instance used for DR is a production instance, we recommend that users do not develop new content (such as analyses and data visualization projects) in this production instance. This helps minimize data loss during a disaster event.

If a user does save any custom or personally developed content in their My Folders, there's a risk of data loss during the backup and restoration of a snapshot on the DR OAC instance.

Update Data Source Connection Strings After Snapshot Restore

When you restore a primary OAC instance snapshot onto the DR OAC instance, there might be limitations to the data source connection strings and wallets used for Oracle Autonomous Data Warehouse (ADW) or Oracle Database Cloud Service (DBCS) data sources. As a result, you might need to modify the connection strings for semantic models (RPD) or self-service data connections in the DR OAC instance.

To mitigate these limitations, we suggest you implement any such connection string modifications before you release the DR OAC instance to business users.

Create the Same Vanity URL for Both Oracle Analytics Cloud Instances.

Set up the same DNS name and SSL/TLS Certificate for the OAC instances on both the primary and DR regions. See <u>Set Up a Vanity URL for Oracle Analytics Cloud on OCI Gen 2</u>.

Consider the following scenarios:

- Scenario 1: Your OAC instances are in public subnet. Configure the vanity URL and map the DNS name to the active OAC instance IP address.
- Scenario 2: Your OAC instances are in a private subnet and used within a corporate network (VPN). Configure the vanity URL and map the DNS name to the active OAC instance IP address.
- Scenario 3: Your OAC instances are in a private subnet and used within a corporate network (VPN) and on the internet. Create a public OCI load balancer as the front end for the OAC instances. Configure both the OAC vanity URL and OCI load balancer with the same DNS name and map the IP address of the active OAC instance load balancer to the DNS name.

Map the Vanity URL's DNS Name to the Active OAC Instance IP Address (Scenarios 1 and 2)

For Public OAC Access

If you want to provide public access to your OAC instance and your organization has an existing DNS domain, you can set up a vanity URL for both OAC instances and map the IP address of the active OAC instance to the DNS name in the domain's DNS management page. This allows users to always access the active OAC instance using the vanity URL.



This example uses the domain registrar GoDaddy.

3 GoDa	iddy 🗆 🏭 Doma	ains			\$ ج ۞	Vices Regionendro Roo		
Domains v Buy & Sell v DNS v Settings v Help v								
My Domains / Domain Settlings								
NS I	Managen	nent						
aloracie.co	511							
DNS F	Records							
DNS Reco	ords define how your	domain behaves, like showi	ng your website content and delivering your email.					
Delet	te Copy				Filter	Add		
	Туре 🕐	Name ⑦	Data 🕐	TTL (?)	Delete	Edit		
	A	@	Parked	600 seconds	Ū	2		
	А	analytics	132 228 30 145	1/2 Hour	Ū	2		
	NS	@	ns71.domaincontrol.com.	1 Hour	Can't delete	Can't edit		
	NS	@	ns72.domaincontrol.com.	1 Hour	Can't delete	Can't edit		
	CNAME	www	cealoracle.com.	1 Hour	Ū	_		
	CNAME	www _domainconnect	cealoracle.com. _domainconnect.gd.domaincontrol.com.	1 Hour 1 Hour	ت ش	<u>e</u>		

GoDaddy NameServers page:

Nameservers Using default nameservers	Change	
Nameservers 🗇		
ns71.domaincontrol.com		
ns72.domaincontrol.com		

In GoDaddy DNS Management, create an **A Record** mapping the OAC instance IP address to the required subdomain. For example, **analytics.cealoracle.com**.

In a disaster recovery situation, map the DR OAC instance IP address to the DNS name in the domain's (GoDaddy) DNS management page.

You can also manage your organization's domain using delegated zones in OCI. However, Oracle isn't a registrar, so you must obtain a domain if needed.

Note: You can't create the same public zone in multiple regions of OCI due to its public nature. Therefore, we recommend that you set up the public zone in the OCI DR region.

Get a Domain

For example, **oracleceal.com** from GoDaddy.

	dy III Domains	s			¢ ظ ()	ites Repairies A		
omains / Buy & Sell ~ DNS ~ Settings ~ Halp ~								
NS M	lanageme	ent						
DNS Records								
DNS Record	ls define how your do	omain behaves, <mark>li</mark> ke showing yo	our website content and delivering your email.		Filter 🗸	Add		
0.00								
	Туре ⑦	Name ⑦	Data ⑦	TTL (?)	Ū	0		
	Type ⑦ A	Name ⑦	Data 💮 Parked	TTL ⑦	Delete	Edit		
						_		
	A	@	Parked	600 seconds	Delete	Edit		
	A	e	Parked	600 seconds 1 Hour	Delete Can't delete	Edit Can't edit		
	A NS NS	© © ©	Parked ns71.domaincontrol.com. ns72.domaincontrol.com.	600 seconds 1 Hour 1 Hour	Delete Can't delete Can't delete	Edit Can't edit		

GoDaddy uses its own NameServers.

Nameservers	
Using default nameservers	Change
Nameservers (?)	
ns71.domaincontrol.com	
ns72.domaincontrol.com	

To delegate the domain, create a DNS zone in the OCI for that domain, and use the OCI nameservers at GoDaddy.

Create a Public Zone

In the OCI Console, navigate to **Networking** \rightarrow **DNS Management** \rightarrow **Zones** \rightarrow **Create Zone**.

Networking » DNS Management » Z	Cones			C	reate Public Zone		
DNS Management	Zones in oacd	Compartn	nent	U			
	A DNS zone holds the trusted			Cloud Infrastructure's			
Overview	Public Zones Priv	ate Zones			i) You can only view or manage a zone when working in the region where it w	as created. This	zone will not be visibl
Zones					Tou can only view of manage a zone when working in the region where it w	as created. This	zone will not be visibl
Traffic Management Steering Policies	Create Zone Dele	te			thod		
Private Views	Zone Name			•	Manual O Import		
HTTP Redirects	2010 Name			Zor	ne Name 🕡		
TSIG Keys					racleceal.com		
	0 Selected			Cre	ate in Compartment		
List Scope					acdr		
Compartment				oas	eceal (root)/oacdr		
oacdr	0			Zor	пе Туре 🚯		
oaseceal (root)/oacdr				P	rimary		
				25	Show Advanced Options		
					Chon Antonica Optimic		
Z	DNS - oracleceal.com Move Resource Add Tags Deb Zone Information Tags						
	Zone Scope: Public				Created: Sat, Mar 19, 2022, 04:04:34 UTC		
	Zone Type: Primary				OCID:		
CREATING	Serial: 1 Nameservers: ns1.p201.dns.oraclec				Compartment: oacdr		
	Nameservers: hs1.p201.ons.oraclec	ioua.net., nsz.pzvil.ans.	oraciecioud.net., ns3.	szu i. ons. oraciecioud.net., ns4.pzu	I ans oraclecloud net.		
Resources	Records Publish Changes						
Records	Add Record Actions -						2 Search
Filters	Domain	• TTL	Туре	RDATA		Protected	State
Status	oac oracleceal com	300	A	129.153.235.226		No	Created
Staged	oracleceal.com	86400	NS	ns1.p201.dns.oraclecloud.net.		Yes	Protected
Unstaged Protected	oracleceal.com	86400	NS	ns2 p201.dns.oraclecloud.net.		Yes	Protected
Show all	oracleceal.com	86400	NS	ns3 p201 dns oraclecloud net.		Yes	Protected
Record Type	oracleceal.com	86400	NS	ns4 p201.dns.oraclecloud.net.		Yes	Protected
Filter on rtype(s)	oracleceal.com	300	SOA	ns1.p201.dns.oraclecloud.net	hostmaster.oracleceal.com. 1 3600 600 604800 1800	Yes	Protected
	0 Selected						ing 6 Items < Page 1 >
						3101	a come (code ()

Obtain Name Server Hostnames of the OCI Public Zone

Add these Oracle name servers to your domain provider (for example GoDaddy).

Log in to the domain provider portal and change the name servers based on the DNS zone you created in OCI.

oracleceal.com	86400	NS	ns1.p201.dns.oraclecloud.net.
oracleceal.com	86400	NS	ns2.p201.dns.oraclecloud.net.
oracleceal.com	86400	NS	ns3.p201.dns.oraclecloud.net.
oracleceal.com	86400	NS	ns4.p201.dns.oraclecloud.net.
oracleceal.com	300	SOA	ns1.p201.dns.oraclecloud.net. hostmaster.oracleceal.com. 1 3600 600 604800 1800

GoDaddy III Domains				``````````````````````````````````````
Domains × Buy & Sell × DNS × Settings ×	Help ~			
My Domains / Domain Settings				
DNS Management				
oracleceal.com				
DNS Records				
DNS Records define how your domain behaves, like showi	ng your website content a	and delivering your email.		
Delete Copy				Filter V Add ····
			°.	
		∇°ς		
		C	34.°	
	We can't display	your DNS information beca	use your nameservers aren't managed by u	5.
	Manage you	r DNS here by changing ye	our nameservers to default nameservers.	_
Nameservers				
Using custom nameservers Change				
Nameservers (?)				
ns1.p201.dns.oraclecloud.net				
ns2.p201.dns.oraclecloud.net				
ns3.p201.dns.oraclecloud.net				
ns4.p201.dns.oraclecloud.net				
Add Record Actions -				
Add Record Actions				
Domain •	TTL	Туре	RDATA	
oac.oracleceal.com	300	A	128 163 236 228	
oracleceal.com	86400	NS	ns1.p201.dns.oraclecloud.net.	
oracleceal.com	86400	NS	ns2.p201.dns.oraclecloud.net.	
oracleceal.com	86400	NS	ns3.p201.dns.oraclecloud.net.	
oracleceal.com	86400	NS	ns4.p201.dns.oraclecloud.net.	
oracleceal.com	300	SOA	ns1.p201.dns.oraclecloud.net.	ostmaster.oracleceal.com. 1 3600 600 604800 1800

Once the domain is delegated to OCI, manage the DNS records from the OCI Console.

In GoDaddy DNS Management, create an **A Record** mapping the OAC instance IP address to the required sub domain. For example, **oac.oracleceal.com**.

In a disaster recovery situation, map the DR OAC instance IP address to the DNS name in the domain (GoDaddy) DNS management page.

Note: You can't create the same public zone in multiple regions of OCI due to its public nature. Therefore, we recommend that you set up the public zone in the OCI DR region.



For Private OAC Access

After setting up the vanity URL at both OAC instances, map the IP address of the active OAC instance to the DNS name in the on-premises DNS servers.

You can also create private zones in OCI DNS management. See Private DNS.

• **Private DNS zones**: Private DNS zones contain DNS data only accessible from within a VCN such as private IP addresses. A private DNS zone has similar capabilities to an internet DNS zone but responds only to clients that can reach it through a VCN. Each zone belongs to a single view.

Oracle Cloud Infrastructure (Region) On-Premises Location On-premises Network 10.0.1.0/24 Virtual Cloud Netwo Fast Connect VCN Subnet 10.0.0.0.0/24 Oraclevcn.com srv01 - A - 10.0.0.2 CPE ocizone.internal app1 - A - 10.0.0.2 app2 - A - 10.0.0.3 On-premises DNS Server 10.0.1.5 DRG Private DNS Private DNS **Resolver Listene** 10.0.0.4 888 VPN Connec ٠ App SRV SRV x.3

See the blog: OCI Private DNS - Common Scenarios.

Test the Vanity URL of the Active OAC instance:

https://oac.cealoracle.com/ui/dv

Create a Public OCI Load Balancer in Both OCI Regions (Scenario 3)

Create a public OCI load balancer and configure the OAC IP address as the backend of the load balancer.

- Use the Status Code 502 while configuring the Backend Set Health Check.
- Use the same certificate and private key generated and signed while configuring the vanity URL.

1. Log in to the OCI Console as an administrator.

2. Navigate to **Networking → Load Balancers**.

X ORACLE Cloud	Cloud Classic > Search resources, services, o		
Q Search	器 Networking		
Home	Overview	DNS management	IP management
	Virtual cloud networks	Overview	Overview
Compute		Zones	Reserved public IPs
Storage	Web Application Acceleration	Traffic management steering policies	BYOIP
Networking	☆ Load balancers	Private views	Public IP pools
Oracle Database	Content Delivery	HTTP redirects	Network Command Center

- 3. Select the compartment where you need to configure the load balancer.
- 4. Create a load balancer.



⁶⁸ Disaster Recovery Configuration for Oracle Analytics Cloud / version 1.0 Copyright © 2024, Oracle and/or its affiliates / Public

	d Classic > Search	resources, services, d	locumentation, and Mark	tetplace		US Eas	t (Ashburn) 🗸 👩 🎊 🕐 😧	
Networking Overview Virtual cloud networks		automated traffic dist	dr Compartn tribution from one entry p		ə from your virtual clor	ud network (VCN). They improve r	esource utilization, facilitate scaling, and help	
Web Application Acceleration	Name	Туре	State	IP address	Shape	Overall health	Created	
Content Delivery Network		No items found.						
DNS management							Showing 0 Items $<$ 1 of 1 $>$	
Customer connectivity								
IP management								
Network Command Center								
List scope Compartment oacdr								
(root)/oacdr			ZIIIA					

5. Select the load balancer type as **Load Balancer** and click **Create Load Balancer**.

Networking	Load ba	
Overview	Load balancers Select load balancer type	Help ey improve resource utilizatio
Virtual cloud networks Web Application Acceleration Load balancers Content Delivery Network DNS management Customer connectivity IP management Network Command Center	Create load Name Image: Control balancer Image: Contro balancer </td <td>S S</td>	S S
List scope Compartment oacdr C oeseceal (root/roedr Filters State	A load balancer improves resource utilization, facilitates scaling, and ensure high availability. You can configure multiple load balancing po and application-specific health checks to ensure that the load balance directs traffic only to healthy instances. Includes: advanced proxy features such as layer-7 routing and SSL termination.	licies

6. Create a public load balancer.

ORACLE Cloud	Cloud Classic > Search resources, services, documentation, ar	nd Marketplace	US East (Ashburn) 🗸
Create load balar	ncer		
 Add details Choose backends Configure listener Manage logging 	Add details A load balancer provides automated traffic distribution from one entre ensures that your services remain available by directing traffic only to Lead balancer name LB_4_OAC Choose visibility type <u> Public</u> You can use the assigned public IP address as a front end		
	for incoming traffic.	for internal incoming VCN traffic.	
	You can have an IP address from the pool automatically assigned to you.	You can provide either an existing reserved IP address, or create a new one by assigning a name and source IP pool.	

7. Select the **Flexible** shape.

E	Bandwidth		
	Shapes Pick the type and size of bandwidth shape for your load balancer. Learn more about load balancer shapes.		
	Flexible shapes Create a flexible shape size within the minimum and maximum size range you specify. Dynamic shapes		
	Choose from one of the available predefined shape sizes.	Oracle	
	Trecommends using the cost-efficient flexible load balancers.		
	10 Mbps 0 10 Mbps 8000) Mbps	
	Choose the maximum bandwidth Optional ()		
	mops) Mbps	

Note: The Dynamic shape will be retired soon.

Shapes		we have a balance above	
	ape for your load balancer. Learn more abo	utioau balancer snapes.	
 Flexible Shapes Create a flexible shape size within the minimum 	im and maximum size range you specify.		
• Dynamic Shapes Choose from one of the available predefined	shape sizes.		
Choose Total Bandwidth 🕢			
Micro	Small	Medium	Large
10 Mbps	100 Mbps	400 Mbps	8000 Mbps
0			

8. Select the network.

	Choose networking	
	Virtual cloud network in oacdr (<u>Change Compartment</u>) Oacven To create a public load balancer, specify a single regional subnet (recommended), or two availability domain-specific subnets in different availability domains. If backends have public IP addresses, configure a NAT gateway for connecting the public load balancers to its public IP address-based backends. Learn more about <u>configuring NAT gateway</u> .	0
	Subnet in oacdr (<u>Change Compartment</u>) Public Subnet-oacvcn (regional) Use network security groups to control traffic	•
Next Cancel	Show advanced options	

Click **Show Advanced Options** → **Security tab**. A Web Application Firewall (WAF) can be configured for securing OAC on Oracle Cloud. Configure WAF if you need extra protection.

Security	Management	Tagging	
----------	------------	---------	--

9. Click Next, and specify the load balancer policy as Weighted Round Robin.

Note: You can use other policies based on the type of configuration required for the usage.

E ORACLE Cloud	Cloud Classic > Search resources, servi	ices, documentation, and Marketplace		US East (Ashburn) 🗸
Create load balar	ncer			
 Add details Choose backends Configure listener Manage logging 	policy, a health check policy, and a list of bac Specify a load balancing policy Weighted round robin This policy distributes incoming traffic sequentially to each server in a back- end set list. Select backend servers <i>Optional</i> No backend servers selected. Click Add bac	kend servers (Compute instances). IP hash This policy ensures that requests from a particular client are always di- rected to the same backend server. kends to select resources from a list of avai	nt, you can choose Add more backends to add	

10. Since the OAC instance isn't listed when you select the backend, you can add the IP address of the OAC instance later. Also, you can skip the Health Check Policy with default values as this will be configured after the load balancer is configured.

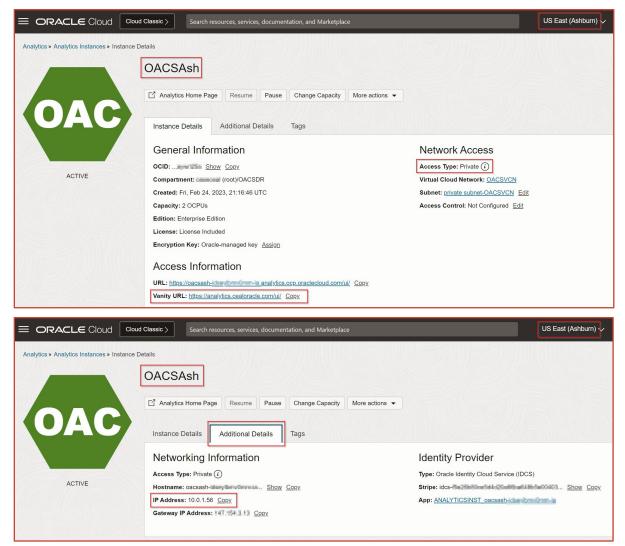
Click Next.

11. Configure the listener with the listener type as **HTTP**. You can update the load balancer later, with the listener type as **HTTPS**.

ORACLE Cloud	Cloud Classic > Search resources, services, documentation, an	d Marketplace		US East (Ashburn) 🗸
Create load balar	cer			
 Add details Choose backends Configure listener Manage logging 	Configure listener A listener is a logical entity that checks for incoming traffic on the loa you must configure at least one listener per traffic type. You can configure name Listener name Listener1 Specify the type of traffic your listener handles HTTPS Specify the type of traffic your listener monitors for ingress traffic 80 You can configure path route rules and custom header rule sets after request routing and managing rule sets.	igure additional listeners after you	TCP	
Previous Next Cancel				

12. Enable the Error Logs and Access Logs and click Submit.

Get the private OAC instance IP address to configure as the backend for the load balancer.



13. When the load balancer is created, add a certificate.

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Note: Use the well-known public CA signed certificate, private key, and the CA chain certificate that you used when you created the vanity URL for the private OAC instance.

Resources	Certificates
Metrics	Certificate resource
Smart check	Load balancer managed certificate
Logs (2)	Add certificate
Backend sets (1)	
Routing policies (0)	Name
Rule sets (0)	No items found.
Listeners (1)	Showing (
Cipher suites (5)	
Certificates (0)	
Resources	Certificates
	Certificate resource
Metrics	Load balancer managed certificate
Smart check	
Logs (2)	Add certificate
Backend sets (1)	Name
Routing policies (0)	analytics.cealoracle.com
Rule sets (0)	
Listeners (1)	

14. Add a hostname.

Resources	Hostnames	
Metrics	Create hostname	
Smart check	Name	Hostname
Logs (2)	No it	ems found.
Backend sets (1)		Show
Routing policies (0)		
Rule sets (0)		
Listeners (1)		
Cipher suites (5)		
Certificates (0)		
Hostnames (0)		
Resources	Hostnames	
	hostilanes	
Metrics	Create hostname	
Smart check	Name	Hostname
Logs (2)	analytics.cealoracle.com	analytics.cealoracle.com
Backend sets (1)		Show
Routing policies (0)		Show

15. Create a new backend set.

Resources	Backend sets	3					
Metrics	Create backend set						
Smart check	Name 🔺	Cipher suite	Traffic distribution policy	Number of backends	Drained	% of backends drained	Health
Logs (2) Backend sets (1)	bs lb 2023-0403-0446	-	Weighted round robin	0	0	0%	Incomplete :
Routing policies (0)						:	Showing 1 Item < 1 of 1 >

Select **Use SSL** since the OAC is SSL-enabled.

Use the certificate created in the previous steps.



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Configure the **Health Check** as shown in the screenshot.

ORACLE Cloud	Cloud Classic > Search resources, serv	vices, documentatic	on, and Marketplace			US East (Ashburn) 🗸	0 🗘 🖸	• •
	Update shape	Create	backend set					Help
ACTIVE	LB_4_OAC	Specify a set	of policies that define how the load	balancer routes ingress traffi	c to your backend	servers.		^
uurauuurass	Update shape Move resource	Name						
		OAC_Backe	endSet					
	Load balancer information	Traffic distribu						
	Load balancer info	Weighted ro	und robin					\$
	OCID: Show Copy	🔽 Use SSL						
MILE MILLAN	Created: Han Apr 3, 2021, Min 62	0						
	Shape: 400Mbps	Certificate	resource ancer managed certificate					0
101/10-10-10-10-10-10-10-10-10-10-10-10-10-1	IP address: 128.80.178.18 (public)							~
	Virtual cloud network: <u>oacvcn</u>	Certificate	name cealoracle.com	Verify peer certificate)			
	Subnet: Public Subnet-oacvcn	analytics.	cealoracle.com	~				
	Web application firewall: None Network security groups: None							
102 alle	Type: Load balancer		n persistence					
	Acceleration: None		cookie-based session persistence,	specify whether the cookie is	a denerated by you	r application server or by the load	balancer. Learn more	
	Traffic between this load balancer a lists and network security groups.	a about sess	sion persistence.		. gononanou 2, , ,			
000681.000006555	Learn more about load balancers a		session persistence application cookie persistence					
	Logs		load balancer cookie persistence					
	Error logs: Enabled							
	Access logs: Enabled	Health	abaak					
III amontal IIII IIII	Learn more about load ba ancer log							
WINE SUMMANNAN		Protocol	health check policy the load balance	er uses to confirm the healtr	Port Optional	ervers.		
Resources	Backend sets	HTTP		\$	443			
1000		Ensure your I	backend set's health check protocol matches		Ensure your backend s	et's health check port number matches the	backend's port number.	
Metrics	Create backend set	Interval in	milliseconds Optional		Timeout in millised	onds Optional		
Smart check	Name 🔺 Cipher su	10000			3000			
Logs (2)	be D. 2023-0423-0418					econds is recommended, otherwise the he	alth check might fail.	
Backend sets (1)	IL R. CONTROLLING		retries Optional		Status code Optic	nal		
Routing policies (0)		3			502			
Rule sets (0)		URL path (Response body re	gex Optional		
Listeners (1)		/public/d	v/ping					
Cipher suites (5)								*
Certificates (0)		Create back	end set Cancel					
Resources	Backend sets							
Metrics	Create backend set							
Smart check	Name - Cipher	r suite	Traffic distribution policy	Number of backends	Drained	% of backends drained	Health	
Logs (2)	bs_lb_2023-0403-0446 -		Weighted round robin	0	0	0%	A Incomplete	:
Backend sets (2)	oci-wid	ler-compatible-ssl-						D
Routing policies (0)		suite-v1	Weighted round robin	0	0	0%	A Incomplete	-

Showing 2 Items < 1 of

16. Add backends to the backend set.

Rule sets (0)

ers (1)



	oud Classic > Search resource	es, services, documentation,	and Marketplace			US East (Ashburn) 🗸	$\overline{\circ}$	1 🗘	•		
Networking • Load balancers • Load bala	And the set information of the set of the se	Delete		A Incomple Backer	ng						
Resources	Backends Add backends Actions	•			ng <u>oting health check failures</u> nds drain status	S	Qs	earch			
Backends (0)	IP address	Port	Weight	Offline	Backup	Drain status		Health			
	No items found.										
	0 Selected						Showing	0 Items	(1 of 1 >		

Note: The load balancer should be able to reach the private OAC instance.

Using the security list, configure the ingress rules to allow the load balancer to reach the OAC instance.

Note: If the load balancer and the private OAC instance are on different VCNs, you must set up local peering between the two VCNs using the Local Peering Gateway.

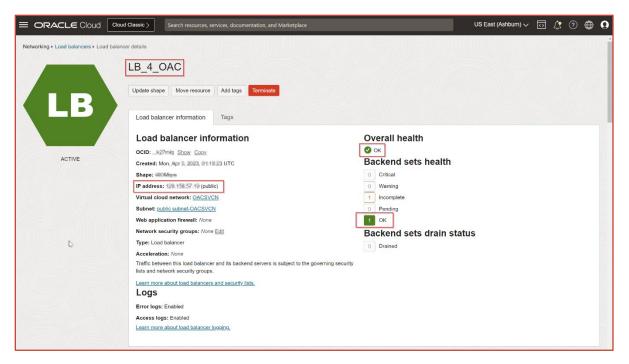
Add backends			<u>Help</u>
	c load balancers to its public IP address-based	ring IP addresses. If backends have public IP addresses, co backends. Learn more about <u>configuring NAT gateway</u> .	nfigure a NAT
IP address 10.0.1.56	Port 443	Weight 1	×

17. The Health should show **OK**.

Resources Backends										
Metrics	Add		Q Sea	rch						
Backends (1)		IP address	•	Port	Weight	Offline	Backup	Drain status		Health
		10.0.1.56		443	1	False	False			🔮 ок
	0 Sel	ected							Showing 1	I Item < 1 of 1 >

18. Overall health and backend set health should show **OK**.





19. After the load balancer is created, edit the listener and add the certificate, hostname, and the backend set.

Resources	Listeners								
Metrics	Create listener								
Smart check	Name	Protocol	Port	Cipher suite	Backend set	Routing policy	Path route set	Hostnames	Use SSL
Logs (2) Backend sets (2)	Listener1	HTTP	80		bs_lb_2023-0403- 0639	-	-	-	No Edit
Routing policies (0)								Showing 1	Item>
Rule sets (0) Listeners (1)									



ORACLE Cloud	Cloud Classic > Search resources, service	es, documentation, and Marketplace	US East (Ashburn) 🗸	0 ¢	0
	Load balancer information	Edit listener			Help
	Load balancer infor OCID: Show Conv Created: Mon, Sei 2021, 22 Shape: Show Conv Hadress: Sei Sei Sei Sei Sei Sei Sei Hadress: Sei	To allow your load balancer to accept ingress traffic, specify the protocol and port for your public IP Name Read-only Listener1 Protocol HTTPS Port Use SSL 443 Certificate resource Load balancer managed certificate Certificate name Verify peer certificate	address.		0
	Learn more about load talancers ar LOGS Error logs: Enabled	analytics.cealoracle.com			
	Access logs: Enabled Learn more about load balancer log	analytics.ceatoracle.com × Backend set			\$
Resources	Listeners	OAC_BackendSet Ensure your backend set's health check protocol matches the Islemer protocol.			\$
Metrics Smart check Logs (2)	Create listerur Name Protocol Listeruer1 HTTP	Idle timeout in seconds Optional 60 The default timeout for HTTPS is 60 seconds. Set the backends' keep alive value to at least 10 seconds greater than this value. There are no path or unit as is for this load balancer. <u>Create a path route set.</u> Durbles path or Unit as is			
Backend sets (2) Routing policies (0)		Routing policy Optional Select a routing policy			\$
Rule sets (0) Listeners (1) Cipher suites (5)		Rule sets There are no rule sets for this load balancer. <u>Create a rule set.</u>			
Certificates (0) Hostnames (1) Path route sets (0)		Show advanced options			
Work requests (5)		Save changes Cancel			

20. Delete the old backend set initially created with the load balancer.

Refer to Timeout Settings.

- 21. Allow internet traffic to the load balancer's public subnet.
 - Add an ingress rule to allow access from the internet (0.0.0.0/0) on port 443.

ORACLE Cloud	Applications > Sea	rch for resources, services, and d	ocumentation				US Eas	t (Ashbum) 🗸 📐 🎊	0
SL	Instance traffic is cont	rolled by firewall rules on each in Add Tags		s Security List					
AVAILABLE	Security List Info OCID:7ymmxq Created: Wed, Ma				Compartmer	st: oasmp			
Resources	Ingress Ru								
Ingress Rules (5) Egress Rules (5)	Add Ingress Rules	Edit Remove	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allows	Description	
	No No	0.0.0.0/0	тср	All	22		TCP traffic for ports: 22 SSH Remote Lo gin Protocol		1
	No No	0.0.0/0	ICMP			3, 4	ICMP traffic for: 3, 4 Destination Unreach able: Fragmentation Needed and Don't F ragment was Set		1
	No No	10.0.0/16	ICMP			3	ICMP traffic for: 3 Destination Unreachab le		1
	No No	0.0.0/0	TCP	All	3389		TCP traffic for ports: 3389	RDP	
	□ N0	0.0.0.0/0	TCP	All	443		TCP traffic for ports: 443 HTTPS	Load Balancer Public Access	l ü
	0 Selected							Showing 5 Items	< 1 of 1 >

22. Add an **A Record** in the domain provider's DNS management screen.



Load bal	ancers in OA	CSDR Co	mpartment		Commission of the	
Load balancers pr ensure high availa		tribution from one e	entry point to multiple servers reachable	e from your virtual o	cloud network (VCN). They i	mprove resource utilization, facilitate scaling, and help
Create load ba	lancer					
Name	Туре	State	IP address	Shape	Overall health	Created -
LB_4_OAC	Load balancer	Active	120 168 81 10 (public)	400Mbps	🕑 ок	Mon, Age 3, 2023, 61 /10/23 UTC
						Showing 1 Item $$ < 1 of 1 $$ >

Map the load balancer's public IP address to the DNS name in your DNS resolver and domain provider. For example, <u>https://analytics.cealoracle.com/ui</u>

Secure Oracle Analytics Cloud on Oracle Cloud by Enforcing OCI WAF

OCI's Web Application Firewall (WAF) is a cloud-based, PCI-compliant, global web application firewall service. By combining threat intelligence with consistent rule enforcement on Oracle Flexible Load Balancer, WAF strengthens and protects internet-facing web applications, API endpoints, and load balancers (public or private).

- Ensure that you have the required IAM policies to implement WAF. See <u>Required IAM Service Policy</u>.
- (Recommended) Use a separate compartment for your WAF policy to make management easier and more secure. See <u>Managing Compartments</u>.

Web application firewall policies encompass the overall configuration of your WAF service, including access rules, rate limiting rules, and protection rules. For information on how to implement access control and protection rules read the blog <u>Securing Oracle Analytics Server on Oracle Cloud by Enforcing OCI WAF on Flexible Load Balancers.</u>

Test End-to-End Connectivity with Network Path Analyzer

After configuring private access channel (PAC), Data Gateway (RDG), load balancer, and other supported scenarios for OAC, you can use the Network Path Analyzer to test end-to-end connectivity.

Use the Network Path Analyzer to:

- Troubleshoot routing and security misconfigurations causing connectivity issues.
- Validate that the logical network paths match your intent.
- Verify that the virtual network connectivity setup works as expected before sending traffic.

For more information about Network Path Analyzer, OAC, and OCI networking, read the blog <u>Speed up Network</u> <u>Troubleshooting with Oracle Cloud Network Path Analyzer for Oracle Analytics Cloud.</u>

ADW Switchover Using Data Guard

When a disaster occurs, switchover must be done in the DR region's standby ADW instance.

Note: Cross-region switchover from the primary database of an Autonomous Data Guard association isn't supported.

Perform the switchover operation on the standby database.

On the DR Region (Phoenix)

- 1. Log in to the OCI Console as an administrator.
- 2. Navigate to the ADW instance.

	Cloud Classic > Search	resources, services,	documentation, an	d Marketplace			USV	Vest (Phoenix) 🗸 👩 🎊 🤅	
Overview > Autonomous Database > Au	utonomous Databases								
Autonomous Database	Autonomous Database o Autonomous Databases	delivers fast perform	nance and requires	no database admir	nistration. It perfor	rms all routine database ma	aintenance tasks while the s	ystem is running, without human interve	ention.
Autonomous Database									
Dedicated infrastructure	Create Autonomous	Database							
	Display Name	State	Dedicated	Compute	Storage	Workload type	Disaster recovery	Created	•
Autonomous container database	ADW-ASH_Remote	Standby	No	2	1 TB	Data Warehouse	 Standby 	Thu, Feb 16, 2023, 15:59:46 UT	c :
Autonomous Exadata VM cluster								Displaying 1 Autonomous Database	< 1 of 1)
Exadata infrastructure									. ,

3. Click the **Switchover** option.

	Classic > Search resources, services, documentation, and Marketplace		US West (Phoenix) 🗸	\odot	۵	0	۲	0
Overview > Autonomous Database > Autono	ADW-ASH_Remote Standby	e actions 👻				0)		
	Autonomous Database information Tool configuration Tags							
	Database name: ADWASH	Infrastructure						
STANDBY	Workload type: Data Warehouse	Dedicated infrastructure: No						
100001000000000000000000000000000000000	Compartment: (root)/OACDR	Di la c						
	OCID: Show Copy	Disaster recovery 🕡						
	Created: Thu, Feb 18, 2023, 18 88-48 UTC	Role: Standby Switchover Update DR type						
	OCPU count: 2	Region: Remote						
	OCPU auto scaling: Enabled (i)							

4. Confirm the switchover.

Confirm switchover to peer					
Do you want to switchover to cross-region disaster recovery peer ADWASH now? Confirm the switchover to the peer database ADWASH					
Confirm switchover to peer					

5. The status of the ADW changes to **ROLE CHANGE IN PROGRESS**.

CRACLE Cloud Classic > Search resources, services, documentation, and Marketplace	US West (Phoenix) 🗸 👩 🌐 🧕
Overview > Autonomous Database > Autonomous Database details	
ADW-ASH_Remote standby	
Database actions Database connection Performance hub Manage scaling More a	actions 👻
Autonomous Database information Tool configuration Tags	
General information	Infrastructure
ROLE CHANGE IN PROGRESS Database name: ADVIASH Workload type: Data Warehouse	Dedicated infrastructure: No

6. The Phoenix ADW is now available, and the Role is **Primary**.

\equiv ORACLE Cloud (Cloud Classic > Search resources, services, documentation, and Marketplace	US West (Phoenix) 🗸 👩 🌐 Q
Overview > Autonomous Database >	Autonomous Database details	
	Detabase ADWASH available in US West (Phoenix) region. You can ewitch to source US East (Ashburn ADW-ASH_Remote Primary) region when the database is available. Switchover
ADV	Database actions Database connection Performance hub Manage scaling More actions •	
	Autonomous Database information Tool configuration Tags	
AVAILABLE	General information	
111/11/11/16	Database name: ADWASH Infrastr	ructure
NAN SUTTAIN BOIL	Workload type: Data Warehouse Dedicated	infrastructure: No
	Compartment: (root)/OACDR	
	OCID: Show Copy	er recovery ()
	Created: Thu, Feb 14, 2023, 14 de all UTC Role: Prima	ary Switchover
	OCPU count: 2 Region: Re	emote
22.000 = 22.000 000 EXIL	OCPU auto scaling: Enabled (i)	

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On the Home Region (Ashburn):

- 1. Log in to the OCI Console as an administrator.
- 2. Navigate to the ADW instance and check the status.

	Cloud Classic > Sear	ch resources, service	es, documentation,	and Marketplace			Ľ	JS East (Ashburn) 🗸	0 🗘	0	9 0
Overview > Autonomous Database > Au	itonomous Databases										
Autonomous Database	Autonomou	us Databa	ses in OA	CDR Con	npartmen	nt					
Autonomous Database	Autonomous Databas Autonomous Databas					orms all routine database r . <u>Learn more</u> .	naintenance tasks while th	e system is running, wit	hout human inte	rvention.	
Dedicated infrastructure	Create Autonomou	is Database									
	Display Name	State	Dedicated	Compute	Storage	Workload type	Disaster recovery	Created		•	
Autonomous container database	ADW-ASH	 Standby 	No	2	1 TB	Data Warehouse	 Standby 	Thu, Feb 16, 2	023, 04:37:13 U	лс	:
Autonomous Exadata VM cluster Exadata infrastructure								Displaying 1 Autono	mous Database	< 1 of	1 >

3. Fallback to the primary ADW on the home region can be performed using the switchover option followed by the same process.

	Classic > Search resources, services, do				US East (Ashburn) 🗸	0 🗘 🖸	•
Overview » Autonomous Database » Autono	mous Database details	571) 1) [[[[[[[[g III S				Î
	① Database ADWASH available in US V ADW-ASH Standby	Vest (Phoenix) region. You can switc	h to source US East (Ashburn	n) region when the database is ava	silable.	Switc	hover
ADW	Database actions Database connection	Performance hub Manage so	aling More actions 👻				
STANDBY	General information Database name: ADWASH Workload type: Data Warehouse			ructure infrastructure: No			
	Compartment: oaseceal2 (root)/OACDR OCID:hp25la <u>Show Copy</u> Created: Thu, Feb 16, 2023, 04:37:13 UTC)		er recovery (i) dby <u>Switchover</u> Update DR type			
	OCPU count: 2 OCPU auto scaling: Enabled (i)		Region: Pr	rimary			1

DBCS Switchover Using Data Guard

When a disaster occurs, a switchover must be done in the DR region's standby DBCS instance.

Perform the switchover operation on the standby database.

On the DR Region (Phoenix)

- 1. Log in to the OCI Console as an administrator.
- 2. Navigate to the DBCS instance.

0										
E ORACLE Cloud Clou	d Classic > Search resources, services, documentation, and h	Marketplace			US West (P	hoenix) 🗸 🛛	o (;	0	۲	0
Overview > Oracle Base Database > DB Sy	vstems									
Oracle Base Database	DB Systems in oasmp Compartm The DB system includes the hardware, storage software, and net Create DB system		ion required to run Oracle D	atabases in the Oracle clou	id. <u>Learn more</u> .					
Oracle Exadata Database Service on Dedicated	Display name	State	Availability domain	Shape	CPU core count	Created			•	
Infrastructure	db19rac-dr	Available	yBdo:PHX-AD-1	VM.Standard.E4.Flex	8	Tue, Dec 6	, 2022, 20	29:43 U	тс	:
Exadata VM clusters	db19phx	Available	yBdo:PHX-AD-1	VM.Standard.E4.Flex	4	Thu, Dec 1	, 2022, 19	:20:12 U	тс	:
Exadata vin clusters						Sho	wing 2 Iter	ms <	1 of 1	>

3. Navigate to Oracle Base Database > DB Systems > DB System Details > Database Detail > Data Guard Associations.

	Cloud Classic > Se	arch resources, service	es, documentatio	n, and Marketplace			US West (I	Phoenix) 🗸 🕟	\$?	•		
Overview > Oracle Base Database > DE	3 Systems > DB System I db19rac	Details > Database De	tails » Data Guar	d Associations								
	DB connection	Performance Hub	Manage encry	otion key Rotate Key N	lore actions 👻							
DB	Database info	rmation Tags										
	General i	nformation			Back	up						
	Lifecycle state	: Available				ic backup: Disable	(j) be					
AVAILABLE	OCID:44yhsa Created: Tue, E	a <u>Show</u> <u>Copy</u> Dec 6, 2022, 20:29:43	UTC		Data	Guard						
		: Disabled Standby ue name: db19rac ph	ville		Status: I	Enabled						
	Oracle SID Pre		xins		Encry	/ption						
	Database Arch	itecture: Container Da	atabase		Encryption Key: Oracle-managed key							
	Character Set: National Chara	AL32UTF8 cter Set: AL16UTF16			Associated Services							
	Version				Database Management: Not Enabled Enable 🖸 🕢							
		ion: 19.17.0.0.0 <u>View</u> vare image: <u>db19_ph</u> :	<u>s</u>									
Resources	Data Gua	rd Associat	ions									
Metrics	Enable Data Gu	lard										
Backups (0)	Peer database	Peer DB system	Peer role	Protection Mode	Transport type	Apply lag	Data Guard Type	Launched				
Data Guard Associations (1)	db19rac	db19rac	Primary	Maximum Performance		0 seconds	Mounted (Data Guard)	Tue, Dec 6, 2022	24-29-22 LITC			
Pluggable Databases (1)	UD I BIBC	<u>do totac</u>	Primary	waximum Performance	Async	o seconds	wounted (Data Guard)					
Work requests (0)								Showin	g 1 Item < 1	l of 1		

4. Click Failover.

	Cloud Classic > Se	earch resources, servi	ces, documenta	tion, and Marketplace			US West	Phoenix) \	- 🖸	\$ 0	•
Overview • Oracle Base Database • DE	3 Systems > DB System I db19rac DB connection Database info	Performance Hub	ails > Data Guard		iore actions 💌						
	General i	nformation			Backı	qu					
AVAILABLE	Lifecycle state				Automati	c backup: Disable	d 🕡				
, while lote	OCID:44yhsa Created: Tue, D	a <u>Show Copy</u> Dec 6, 2022, 20:29:43 L	лс		Data	Guard					
	Database Role				Status: E	nabled					_
	Database uniq	ue name: db19rac_ph	x1hs		Enon	ntion					
	Oracle SID Pre				Encry						
	Character Set:	itecture: Container Da	tabase		Encryptic	on Key: Oracle-ma	naged key				
		icter Set: AL16UTF16			Assoc	ciated Servi	ices				
	Version				Database	Management: No	ot Enabled Enable				
		ion: 19.17.0.0.0 <u>View</u> ware image: <u>db19_ph</u>									
Resources	Data Gua	rd Associat	ions								
100001000	Data daa							- [Failover		
Metrics	Enable Data Gu	lard							Edit Data	Guard Asso	iation
Backups (0)	Peer database	Peer DB system	Peer role	Protection Mode	Transport type	Apply lag	Data Guard Type	Lau	Conv Pee	r Database (
Data Guard Associations (1)	db19rac	db19rac	Primary	Maximum Performance	Async	0 seconds	Mounted (Data Guard)	Tue,			-
Pluggable Databases (1)										r DB System	
Terms of Use and Privacy Cookie Preference	ces						Copyright	D 2023, Orac	le and/or its	affiliates. All r	ghts reserve

5. Enter the administrator password.



Failover Database	Help
Are you sure you want to perform a manual failover of the database? Perform a failover only in the event of a catastrophic failure of the primary database, when there is no possibility of recovering the primary database e A failover might result in data loss depending on the protection mode in effect at the time of the primary database failure.	
OK Cancel	

6. The status of the peer database updates to **Standby**.

	d Classic > Sea						US West (I	Phoenix) 🗸	0,	1 🗘	•
Overview > Oracle Base Database > DB Sy DB Sy AvaiLABLE	db19rac D8 connection Database infor General in Lifecycle state: OCID:44yhea Created: Tue, D Database uniqu Oracle S1D Prefi Database Archit Character Set: / National Charac Version Database versic Database softw	Performance Hub mation Tags nformation Available Show Coav ec 6, 2022, 20:2943 L Primary te name: db 97rac_phx ix: None tecture: Container Date	Restore Cc JTC ths	d Associations	Data status: E Encry Encrypti Assoc	ic backup: Disabled Guard inabled /ption on Key: Oracle-man ciated Servic	aged key				
Metrics	Enable Data Gua		0113								
Backups (0)			Territoria.								
Data Guard Associations (1)	Peer database	Peer DB system	Peer role	Protection Mode	Transport type	Apply lag	Data Guard Type	Launched	13		
Pluggable Databases (1) Work requests (2)	db19rac	db19rac	Standby	Maximum Performance	Async	0 seconds	Mounted (Data Guard)			1:38:22 U1	

On the Home Region (Ashburn)

- 1. Log in to the OCI Console as an administrator.
- 2. Navigate to the DBCS instance and check the status.

	oud Classic > Search resources, services, documentation, and Ma	irketplace			US East (As	hbum) 🗸 👩 🗘 🛈 🌐	9 0
Overview » Oracle Base Database » DB	Systems						
Oracle Base Database	DB Systems in oasmp Compartme		ion required to run Oracle Data	bases in the Oracle cloue	I. <u>Learn more</u> .		
' Oracle Exadata Database Service on Dedicated Infrastructure	Create DB system Display name db19rac	State Available	Availability domain yBdo:US-ASHBURN-AD-1	Shape VM.Standard.E4.Flex	CPU core count	Created -	
Exadata VM clusters	db19 oadb19	Available Available	yBdo:US-ASHBURN-AD-3 yBdo:US-ASHBURN-AD-1	VM.Standard.E4.Flex VM.Standard.E4.Flex		Wed, Nov 30, 2022, 01:54:24 UTC Tue, Sep 27, 2022, 09:05:58 UTC	
Resources						Showing 3 Items < 1 of	1 >

- 3. Navigate to **Data Guard Associations**.
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	Cloud Classic > Se	earch resources, service	s, documentatio	n, and Marketplace			US East (A	Ashburn) 🗸 🗔 🗘	3 🗇 🕀 (
verview > Oracle Base Database > DE	s Systems > DB System Details > Database Details > Data Guard Associations db19rac DB connection Performance Hub Manage encryption key Rotate Key More actions •									
	Database information Tags General information				Back	Backup				
	Lifecycle state: Available				Automat	Automatic backup: Disabled (i)				
AVAILABLE	OCID:5d23hq Show Copy Created: Tue, Dec 6, 2022, 17:33:16 UTC Database Role: Standby					Data Guard				
	Database unique name: db19rac_ceal_ash				-	E				
	Oracle SID Prefix: None					Encryption				
	Database Architecture: Container Database Character Set: AL32UTF8				Encryptic	Encryption Key: Oracle-managed key				
	National Character Set: AL16UTF16				Asso	Associated Services				
		ion: 19.17.0.0.0 <u>View</u> ware image: <i>None</i>			Database	e Management: No	t Enabled <u>Enable</u> ⊡ੈ (j)			
esources	Data Guard Associations									
fetrics	Enable Data Guard									
Backups (31)	Peer database	Peer DB system	Peer role	Protection Mode	Transport type	Apply lag	Data Guard Type	Launched		
Data Guard Associations (1)	db19rac	db19rac-dr	Primary	Maximum Performance	Async	0 seconds	Mounted (Data Guard)	Tue, Dec 6, 2022, 20	:23:43 UTC	
luggable Databases (1)								Showing 1	Item < 1 of 1 >	

4. Fallback to the primary DBCS on home region can be performed using the Failover option, followed by the same process.

Fallback and Restore Limitations

In some OAC environments, end users only use the primary and DR OAC instances as consumers so there's no significant content development (analysis, dashboards, visualizations) in the production instance. In this case, you don't need to be concerned about losing data during a fallback from the DR OAC instance to the primary production OAC instance.

However, most OAC instances have some content development activity. In this case, you need to consider the loss of any objects created after a snapshot back up and any data loss resulting from the disaster event after restoring the OAC primary instance.

Fallback from Disaster Recovery OAC Instance to Primary OAC Instance using Snapshot Migration

In some disaster recovery situations, there are changes to artifacts (analyses, dashboards, visualization projects, catalog folder permissions, application roles and memberships, connections, datasets, and on) on the DR OAC instance. In such cases, we recommend that you create a snapshot and data files backup from the DR OAC instance and restore them to the primary OAC production instance.

You can use the automation scripts provided earlier in this document to complete this task (createSnapshot.sh and registerSnapshot.sh).

Subscribe to OCI Console Announcements

Customers can check the status of OCI from the <u>OCI Service Health Dashboard</u>. To ensure that you receive OCI console announcements that you consider relevant, create an announcement subscription. To subscribe to announcements, see <u>Subscribing to Announcements</u>.



From this dashboard, you can get status information about the services in your region. Notifications are delivered whenever OCI creates or resolves an incident.

For an overview, watch the video: Oracle Cloud Infrastructure Announcements: Overview.

Cost Considerations

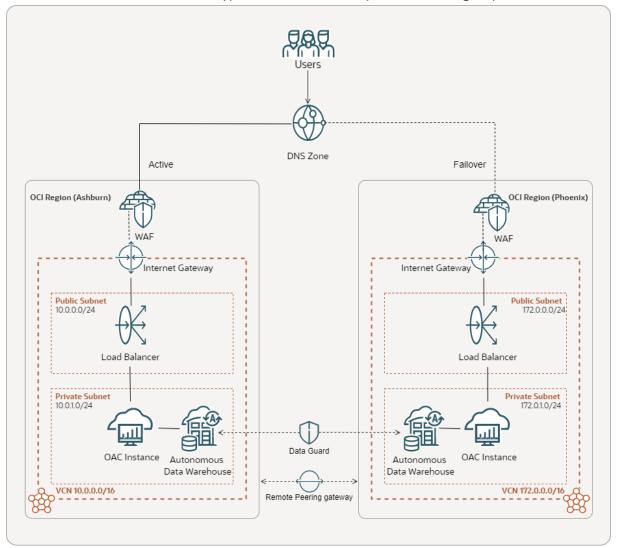
Since the DR OAC instance is a backup of the production instance, you might create the OAC instance with higher OCPUs, which might impact costs.

You can consider pausing the DR OAC instance and then resuming it on an as needed basis. For example, to run a DR drill and for a DR event.

You can automate pause and resume operations for OAC instances using the OCI CLI utility. See <u>How to Stop and</u> <u>Start an OAC Instance using OCI Command Line Interface (CLI)</u>.

Perform DR Drills

This section describes a DR drill for a typical OAC environment (shown in the diagram).



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A typical DR drill for OAC includes the following key steps:

- **Define the scope and objectives:** Clearly define the scope of the DR drill, including which OAC and OCI components will be included, what types of disasters or failure scenarios will be simulated, and what objectives need to be achieved during the drill.
- Validate user replication and synchronization: Since you need to synchronize users and groups from the primary IDCS or IAM domain to the DR IDCS or IAM domain during a DR event, validate that the mechanism is working as expected and can be used in case of a disaster.
- **Test back-up and recovery of OAC content:** Test the back-up and recovery of snapshots and data files using the automation scripts provided. If needed, extend the scripts to achieve your additional requirements.
- **Test failover and switchover of the database:** If you're using a DR solution, such as Oracle Active Data Guard, test the failover and switchover processes to ensure that they can be performed quickly and reliably in case of a disaster.
- **Test recovery of the OAC instance in the DR region:** Test the backup and recovery processes for your OAC environment by simulating a failure scenario, such as primary OAC instance unavailability. Ensure that you recover the dependant services (such as identity management), data sources, system settings, and snapshot of the DR OAC environment to a consistent state and that all your data is available and accurate.
- **Document results and lessons learned:** Document the results of the DR drill, including any issues, errors, or successes. Analyze the results and identify lessons learned and best practices to improve your DR strategy and processes for the future.

Conduct periodic DR drills to test whether the DR environment is consistent and operational if any disaster occurs.



Disaster Recovery Environment Set Up Checklist

One-Off Tasks

- □ Subscribe to OCI Console Announcements.
- □ Subscribe to a second OCI region to set up the DR environment.
- Create an IDCS stripe or IAM domain in the OCI DR region.
- Onboard users and groups into IDCS or IAM domain.
- Synchronize users and groups between the primary and DR IDCS or IAM domains.
- Configure the same external SSO identity providers in both the IDCS or IAM domains.
- Ensure the appropriate policies and roles are set up in the DR region.
- Create an OAC instance in both regions by logging in as the respective IDCS or IAM domain administrator.
- Create ADW or DBCS primary and standby instances using Data Guard.
- Set up FastConnect or Site-to-Site VPN if connecting to on-premises data sources.
- Establish connectivity to private data sources using PAC or RDG in both OAC instances.
- Upload and restore snapshot on both OAC instances.

□ As best practice, ensure end-users create connections and datasets, and grant Full Control access to BIServiceAdministrator.

- Update data source connections with the respective region data source connection string.
- □ Configure SMTP mail server on both OAC instances.
- □ Configure system settings on both OAC instances.
- Create the same vanity URL on both OAC instances.
- Configure OCI load balancers in both OCI regions for both OAC instances.
- □ Configure WAF for the load balancers in both OCI regions.
- □ Map the load balancer IP address of the active OAC instance to the vanity URL DNS name.
- Configure security rules and route tables to allow access within OCI regions.
- Allowlist the OCI server IP addresses and required ports at your organization's firewall.
- Create object storage in both OCI regions to store OAC snapshots.

Recurring Tasks

- Use Data Guard to switchover the standby ADW or DBCS as primary in the OCI DR region.
- Ensure on-premises data sources are available in the DR OAC instance.
- Start RDG for the DR OAC instance in the on-premises network.
- □ Start DR OAC instance in the DR region.
- □ Map the OCI load balancer IP address of the active OAC instance to the vanity URL DNS name.
- Run the automation scripts to restore the latest snapshot on the DR OAC instance.
- Upload the ADW region-specific wallet in self-service data connections and Console connections.



If you haven't maintained the same DBCS database connection string across the OCI regions, modify the selfservice data connections and RPD connection pool connection string to connect the DR region databases.

- Review and update the ADW wallet-less (TLS) connection strings in the DR OAC instance.
- Recreate datasets created from data flows by rerunning the data flow after migration to the DR OAC instance.
- Enable scheduled agents after restoring the snapshot.

□ If the DR OAC mail server isn't the same as the primary OAC mail server, review and update the mail server configuration.

- □ Verify all the systems settings after restoring the snapshot.
- □ Verify any customization configurations after restoring the snapshot.
- Test the DR OAC instance and release it for business users.

Roles and Responsibilities

OCI Administrator

- Subscribe to a secondary DR region
- Create OAC instances
- Create object storage for snapshots
- Create load balancers
- Create and maintain ADW and DBCS data sources instances
- Configure the primary and DR environments
- Configure OCI SMTP mail server

OAC Administrator

• Take regular backups of snapshots and data files and restore them

IDCS Administrator or IAM Domain Administrator

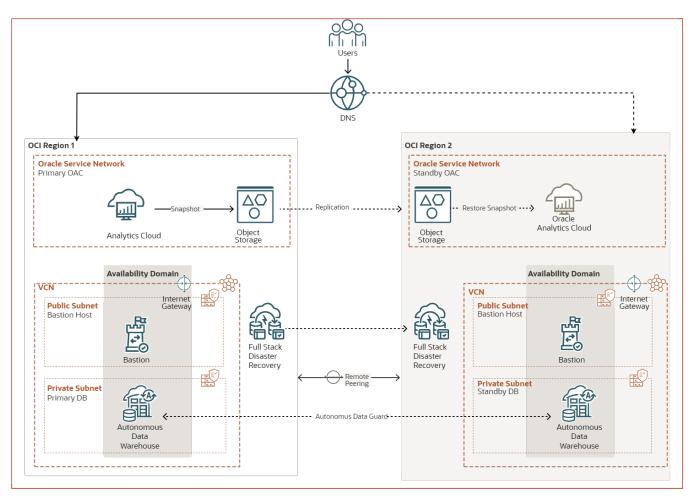
- Manage users and groups
- Configure identity management

Use Full Stack Disaster Recovery to Orchestrate OAC Disaster Recovery

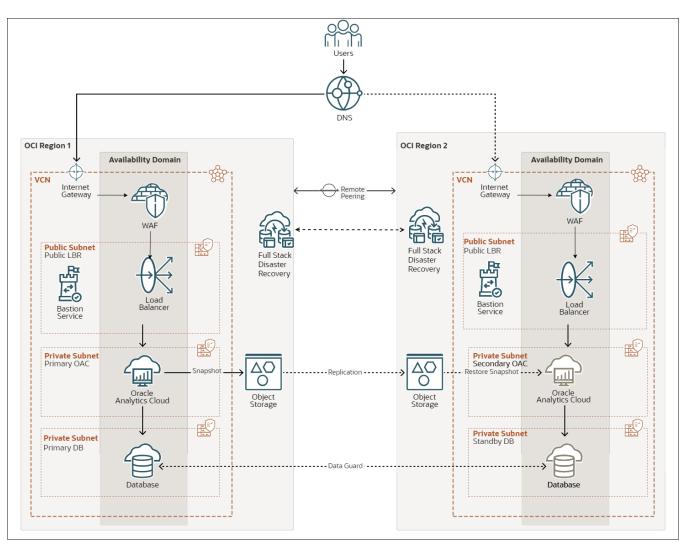
Oracle Analytics Cloud doesn't fall under the OCI feature Full Stack Disaster Recovery (FSDR). However, you can still use FSDR to orchestrate the automation scripts that you need to run to recover from a disaster event.

You use OCI CLI and OAC REST APIs to automate the steps performed during a DR drill and a disaster event. For details, see the next section, "Automation of the Disaster Recovery Environment set Up and DR Drill."

You can use these automation scripts, along with the other FSDR capabilities like switchover of ADW, DBCS, and Compute Instance creation, to manage the disaster recovery for OAC.



Architecture Diagram: Using FSDR for OAC Public Instances



Architecture Diagram: Using FSDR for OAC Private Instances

Automate Recovery for Oracle Analytics Cloud Using OCI Full Stack Disaster Recovery

To automate disaster recovery for OAC using OCI FSDR, follow the tutorial <u>Automate Recovery for Oracle Analytics</u> <u>Cloud Using OCI Full Stack Disaster Recovery</u>.

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