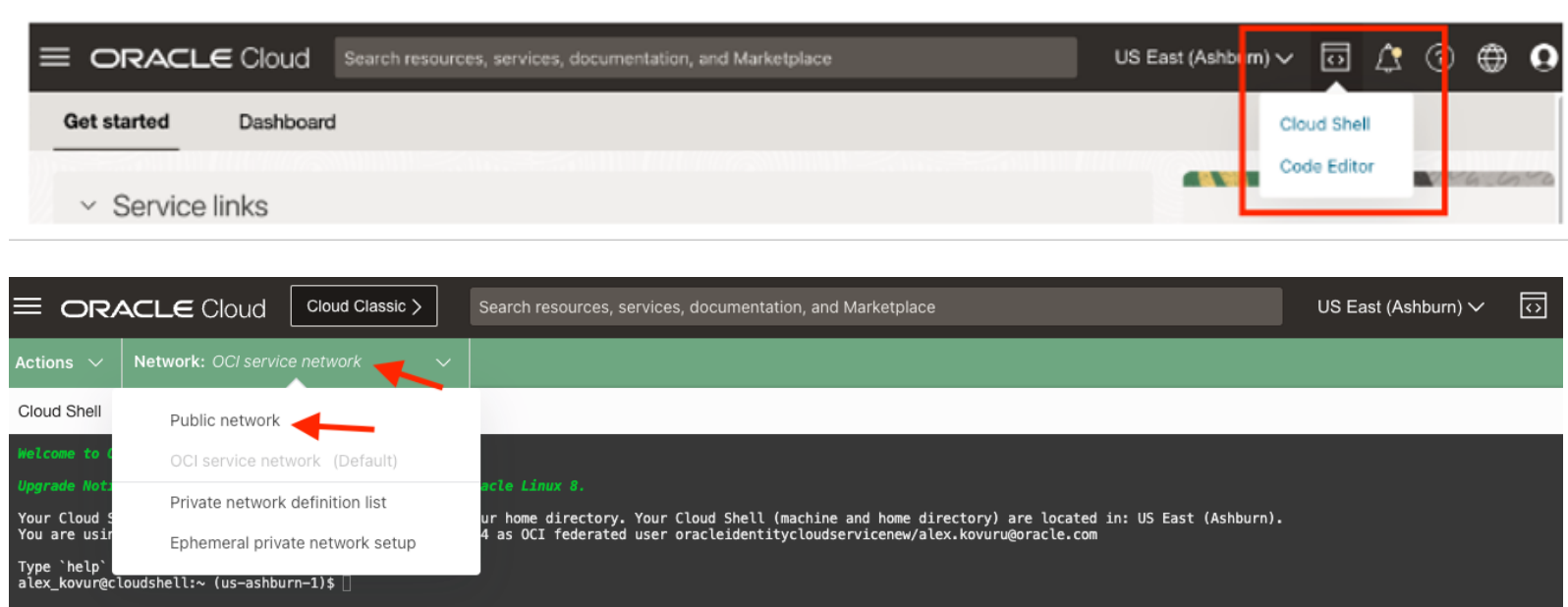


Data Safe-Reg-Automation Instructions

Prerequisites: The scripts can be run in a CLI-configured VM instance or from within OCI Cloud Shell.

1. **OCI Command Line Interface (CLI):** The OCI CLI allows you to execute commands and automate tasks within Oracle Cloud Infrastructure (OCI). Install the CLI by following the guide at [OCI CLI Installation](#).
2. **OCI Cloud Shell:** The CLI is pre-configured in OCI Cloud Shell. Access Cloud Shell by logging into the OCI Console and selecting Cloud Shell from the dropdown menu. Note that the CLI will execute commands in the currently selected region by default (OCI Service Network). If you want to run across regions then switch to public.



Instructions:

Step 1 - Open the OCI Cloud Shell

Step 2 - Upload the below scripts into your Cloud Shell root directory

OCI_DB_Inventory-DataSafe_Status.sh

Data_safe_registration.sh

Activate_Audit_Trails.sh

Step 3 - Inside Cloud Shell execute the following commands (in green text below)

```

user@cloudshell:~ (us-ashburn-1)$ mkdir Datasafe_Reg
user@cloudshell:~ (us-ashburn-1)$ mv OCI_DB_Inventory-DataSafe_Status.sh Datasafe_Reg/
user@cloudshell:~ (us-ashburn-1)$ mv Data_safe_registration.sh Datasafe_Reg/
user@cloudshell:~ (us-ashburn-1)$ mv Enable_Audit_and_Assesment_Schedules.sh Datasafe_Reg/
user@cloudshell:~ (us-ashburn-1)$ cd Datasafe_Reg
user@cloudshell:~ (us-ashburn-1)$ ./OCI_DB_Inventory-DataSafe_Status.sh
user@cloudshell:~ (us-ashburn-1)$ ./Data_safe_registration.sh
user@cloudshell:~ (us-ashburn-1)$ ./Connectivity_Option_Creation.sh (Optional - Prerequisite task)
user@cloudshell:~ (us-ashburn-1)$ ./DataSafe_Service_Account_Creation.sh (Optional Prerequisite task)
user@cloudshell:~ (us-ashburn-1)$ ./Activate_Audit_Trails.sh

```

Note: Script execution may take around 5 minutes depending on the number of databases. Upon completion, CSV files will be generated for reference.

Script Breakdown and Functionality:

Step 1: Discovering All DBaaS Databases

The OCI_DB_Inventory-DataSafe_Status.sh script scans all subscribed regions to list all DBaaS databases (Autonomous, Base, and Exadata). It will prompt you to choose the current region or all regions for scanning.

```

alex_kovur@cloudshell:Datasafe_Reg (us-ashburn-1)$ ./OCI_DB_Inventory-DataSafe_Status.sh
Current region: us-ashburn-1
Do you want to process the current region only or all regions? (Enter 'us-ashburn-1' for current region or 'ALL' for all regions):
ALL
Processing all regions...
Listing all regions...

```

- The script generates CSV files that provide a complete database inventory, essential for the registration step.
- To discover on-premises databases, use the nmap command with an IP range as shown below:
`$ nmap -sV -p 1521 129.**.**.0/24 -oG - | grep '/open/' | awk 'BEGIN { FS="[/]"; print "Server,Service,Version" }/open/ { print $2 "," $8 "," $13 }'`

Step 2: Automating Database Registration

The Data_safe_registration.sh script automates the registration of unmonitored databases, using data from the CSV files generated in Step 1. This step covers cloud and on-premises databases, registering them with Oracle Data Safe and creating a consolidated output, Datasafe_TargetDBs.csv, for easy management.

```
alex_kovur@cloudshell:Datasafe_Reg (us-ashburn-1)$ ./Data_safe_registration.sh
What type of Databases do you want to register in Data Safe?
Choose from the following types:
- 1. Oracle Autonomous Databases
- 2. Oracle Exadata Databases
- 3. Oracle Base Databases
Enter the number corresponding to the database type: 3
You selected Oracle Base Databases.
Oracle_Base_Databases.csv - Sample CSV Format: region,DB_NAME,dbsystem-id,PDB_Name,serviceName,listenerPort,
```

Prerequisites for Database Registration:

1. **CSV Updates:** Update generated CSVs with connectivity and service account details.
2. **Connectivity Options for Target Databases:** More information [Connectivity Options for Target Databases](#).
 - **Private Endpoints:** For OCI databases within the VCN, existing private endpoints are populated automatically.
 - **On-Premises Connectors:** For databases outside OCI, specify the compartment and database details such as IP address and service name.

Cloud Shell

```
alex_kovur@cloudshell:~ (us-ashburn-1)$ ./Connectivity_Option_Creation.sh
Select the connectivity option to create:
1. Private Endpoints
2. On-premises Connectors
Enter choice (1 or 2): 1
Preparing All_region_Create_PE.csv for creating Private Endpoints...
All_region_Create_PE.csv file has been created.
sample file All_Regions_Private_Endpoints.csv : headers - region,compartment_name,pe_name,vcn_name,subnet_name,compartment_id,vcn_id,subnet_id
Enter the file path for All_Regions_Private_Endpoints.csv - Please update all fields as necessary: All_region_Create_PE.csv
```

3. **Data Safe Service Account Creation:** Run the `DataSafe_Service_Account_Creation.sh` script to establish a Data Safe service account with the required privileges in each database. In Autonomous Databases, a database account named `DS$ADMIN` is created by default specifically for Oracle Data Safe. For non-Autonomous Databases, to grant or revoke roles for the Oracle Data Safe service account, you need to run a SQL privileges script called `datasafe_privileges.sql`. This Oracle-provided script contains the necessary privileges and can be downloaded from Oracle Data Safe in Oracle Cloud Infrastructure.

To run the script:

- Download the `datasafe_privileges.sql` script and upload it to Cloud Shell.
- Update the CSV file with the SYS user credentials.

For more details, refer to the [Data Safe Service Account Guide](#).

Cloud

Search resources, services, documentation, and Marketplace

Register Cloud databases

1 Select database

2 Connectivity option

3 Select peer database

4 Add security rule

5 Review and submit

6 Registration progress

Data Safe target information

Cloud database type

☒ Oracle Base Database
 ☐ Oracle Exadata Database Service on Dedicated Infrastructure
 ☐ Oracle Database@Azure

Select database in AlexKovuru (Change compartment)

Select database

Data Safe target display name

Compartment

AlexKovuru

oracemat@exatombdb (root@OciMgmt/AlexKovuru)

Description Optional

Database service name

Database port number Optional

TCP/TLS

TCP

For the registration, you need to create a database account (DATASAFE\$ADMIN) in your target database and grant necessary privileges (find the privilege script below). Data Safe will use this account to connect to the target database. After you create the user and grant the needed privileges, enter the credentials of this user below. [Learn more](#)

Please note: The password must be 14 characters or more and password must contain at least 1 uppercase, 1 lowercase, 1 numeric, and 1 special character.

[Download privilege script](#)

Database user name

DATASAFE\$ADMIN

Database password

Show advanced options

Cloud Shell

```
alex_kovur@cloudshell:~ (us-ashburn-1)$ ./Connectivity_Option_Creation.sh
Select the connectivity option to create:
1. Private Endpoints
2. On-premises Connectors
Enter choice (1 or 2): 1
Preparing All_region_Create_PE.csv for creating Private Endpoints...
All_region_Create_PE.csv file has been created.
sample file All_Regions_Private_Endpoints.csv : headers - region,compartment_name,pe_name,vcn_name,subnet_name,compartment_id,vcn_id,subnet_id
Enter the file path for All_Regions_Private_Endpoints.csv - Please update all fields as necessary: All_region_Create_PE.csv
```

Step 3: Audit collection Activation

The Activate_Audit_Trails.sh script enables audit log collection for each registered database, allowing for specified start dates. It generates a All_Regions_Target_DBs_Audit_Trails_Status.csv file, detailing each database's audit trail status.

Cloud Shell

```
alex_kovur@cloudshell:~ (us-ashburn-1)$ ./Activate_Audit_Trails.sh
Datasafe_TargetDBs.csv - Sample CSV Format: region,compartment_name,Compartment_ID,Target_DB_Name, Target_DB_ID
Please provide the path to your CSV file: Datasafe_TargetDBs.csv
Enter Audit Trail collection Start Time (YYYY-MM-DD): 2024-10-30
Audit Trail collection Start Time accepted.
Generated file: us-ashburn-1_sorted_Datasafe_TargetDBs.csv
Generated file: us-phoenix-1_sorted_Datasafe_TargetDBs.csv
Region-specific CSV files:
-rw-r--r--. 1 alex_kovur oci 221 Nov 17 17:31 us-ashburn-1_sorted_Datasafe_TargetDBs.csv
-rw-r--r--. 1 alex_kovur oci 214 Nov 17 17:31 us-phoenix-1_sorted_Datasafe_TargetDBs.csv
Current OCI region: us-ashburn-1
Processing CSV file for the current region: us-ashburn-1_sorted_Datasafe_TargetDBs.csv
```

Final Notes

- **Run Time:** Approximately 5 minutes, depending on the number of databases.
- **Generated Outputs:** Upon completion, a series of CSV files are generated. These files provide a detailed summary of database registration, and audit trails statuses across regions.