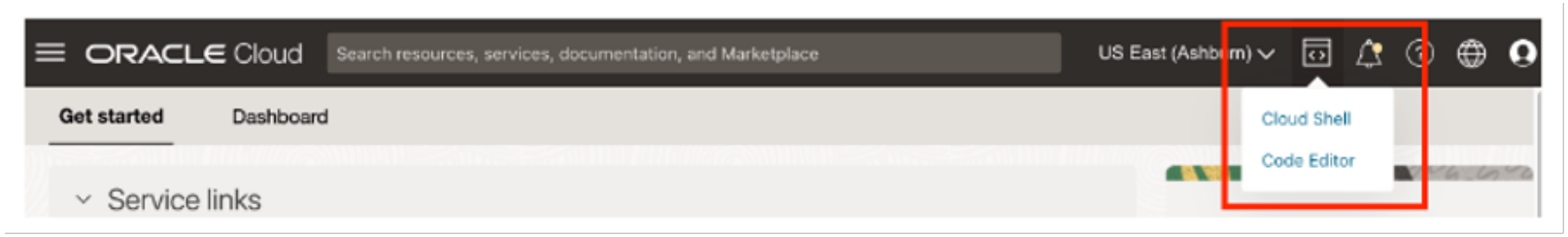
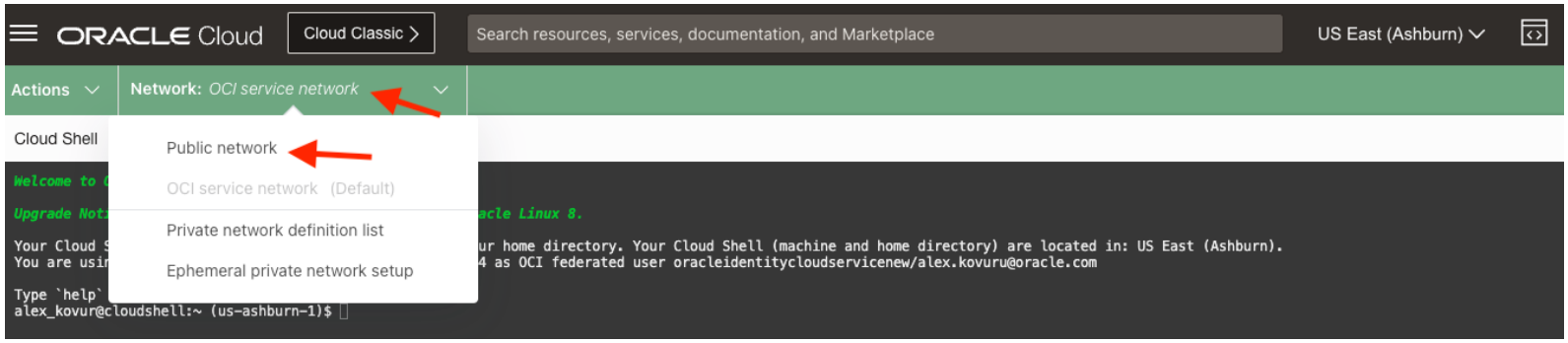
Data Safe-Reg-Automation Instructions

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)

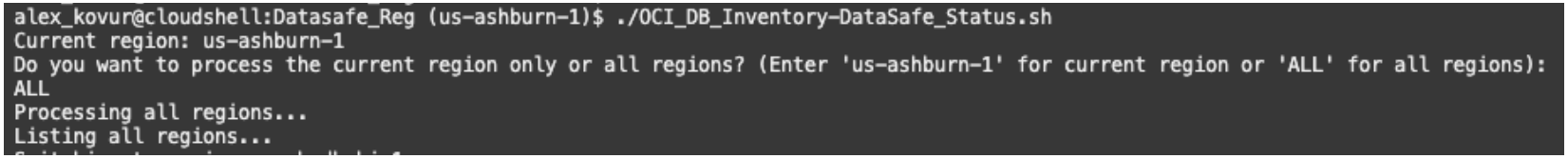
```
user@cloudshell:~ (us-ashburn-1)$ mkdir Datasafe_Reg
user@cloudshell:~ (us-ashburn-1)$ mv OCI_DB_Inventory-DataSafe_Status.sh Datasafe_Reg/
user@cloudshell:~ (us-ashburn-1)$ mv Data_safe_registration.sh Datasafe_Reg/
user@cloudshell:~ (us-ashburn-1)$ mv Activate_Audit_Trails.sh Datasafe_Reg/
user@cloudshell:~ (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.



- 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 with Oracle Data Safe across the regions. It processes data from the CSV files generated in **Step 1**, handling both cloud and on-premises databases. The script outputs a consolidated file, Datasafe_TargetDBs.csv, for streamlined management of registered databases.

Prerequisites: Before proceeding with registration, ensure the following prerequisites are met:

- **Connectivity Options**: Verify and update the input CSV file with the appropriate connectivity option:

    - **Private Endpoint** (for Oracle Cloud databases).
    - **On-Premises Connector** (for on-premises databases).
- **Data Safe Service Account**: Ensure that the Data Safe service account is created and the required privileges are granted. Verify and update the input CSV file with service account details.

Cloud Shell

```
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,
```

If Prerequisites Are Not Met : If any of the prerequisites are missing, complete the following steps:

- Set up the required **connectivity option** for the database. Run the Connectivity_Option_Creation.sh script and choose the option to create Private endpoints or the on-premises connectors by updating the input csv files. More information **Connectivity Options for Target Databases.**

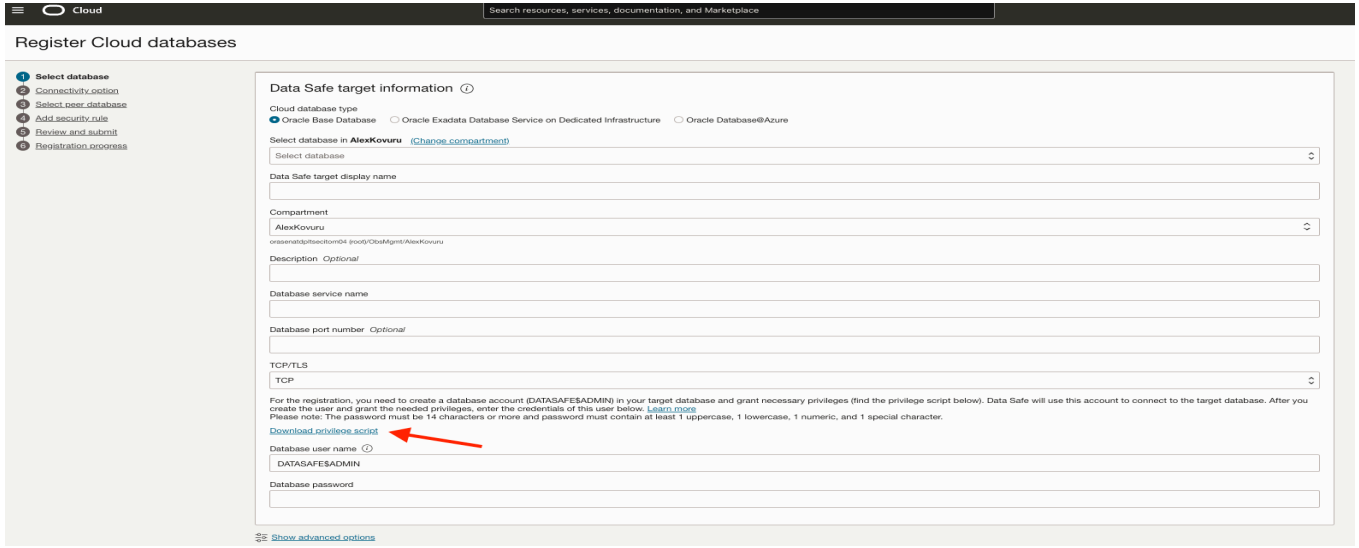
  Cloud Shell

  ```
  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
  ```

- Create the **Data safe Service Account** : Run the DataSafe_Service_Account_Creation.sh script to establish and configure the Data Safe service account. This step is **optional** for Autonomous Databases, as the DS$ADMIN account is created by default for Oracle Data Safe. However, for non-Autonomous Databases, such as Exadata, Base, and on-premises databases, it is **mandatory**. For more information refer to the Data Safe Service Account Guide.

  Preparation:

  - Retrieve the datasafe_privileges.sql script from Oracle Data Safe console in OCI.



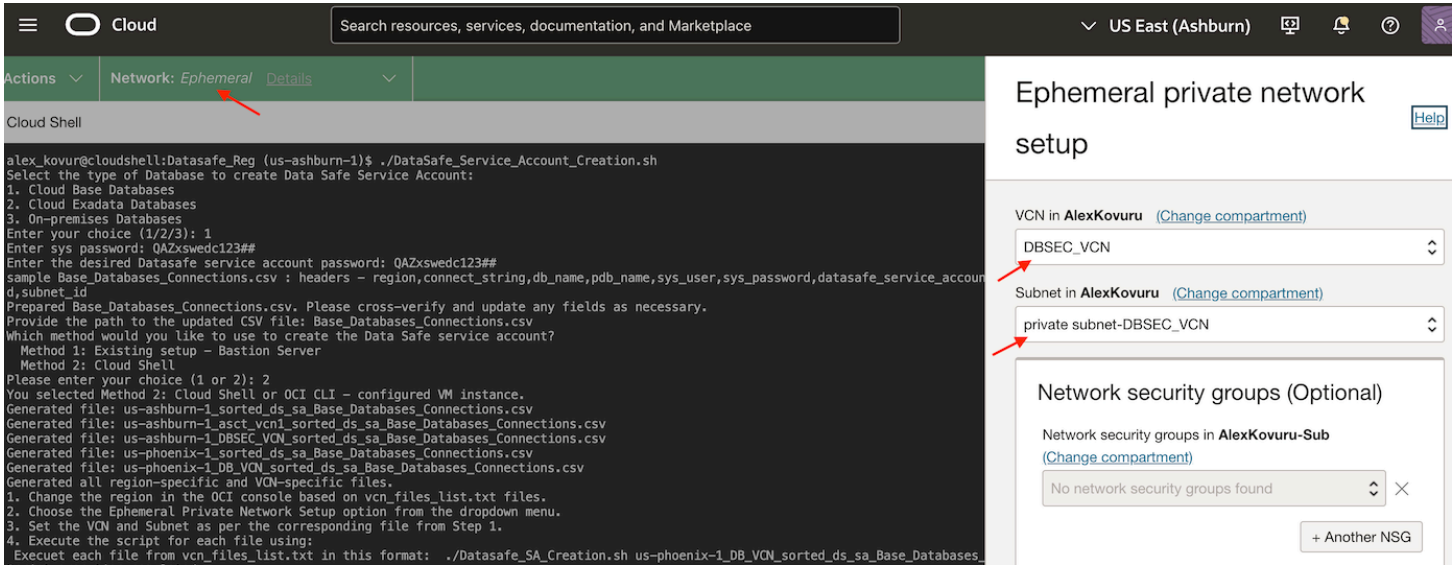
- Provide SYS and Data Safe service account credentials when prompted.

Execution:

- The DataSafe_Service_Account_Creation.sh script will generate a sub-script, Datasafe_SA_Creation.sh, based on the selected execution option.
- This accommodates scenarios where multiple databases are spread across various regions, compartments, and private VCN subnets.

Execution Options:

- **Bastion Server:**
  - Ensure network access to databases and install a SQL client (e.g., sqlplus).
  - Run: ./ Datasafe_SA_Creation.sh <input_file>
- **Cloud Shell:**
  - Configure Cloud Shell for VCN and subnet access via **Ephemeral Private Network Setup** in the OCI console.
  - For each VCN, ensure the network is configured appropriately based on the corresponding input files.
  - Ensure that only VCNs, subnets, and Network Security Groups (NSGs) within your home region are configured.
  - If access to subnets in regions outside your home region is required, configure peering to enable connectivity from the private network.
  - Run for each VCN: ./ Datasafe_SA_Creation.sh <vc_file>



Once the prerequisites are fulfilled, proceed with the Data_safe_registration.sh script to register your databases.

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.