ORACLE

Usage and Cost to ADW Installation Guide

Version 23.03.01

Contents

1 Overview 3

1.1 Introduction 3

1.2 Main Features 3

1.3 How Usage Reports Work 3

1.4 OCI SDK Modules Included: 3

1.5 OCI APIs Used: 3

2 Installation 4

2.1 Prerequisite 4

2.1.1 Creating an SSH/RSA Key 4

2.1.2 Creating Dynamic Group 5

2.1.3 Creating Policy 6

2.1.4 Usage VM Access to the internet 7

2.1.5 Usage VM Access to the Autonomous Datawarehouse 7

2.2 Launching Your Usage2ADW Components 7

2.3 Connecting to your Usage2ADW Compute 13

2.4 Execute Application 13

2.5 Login to APEX Workspace 14

2.6 Create Additional End User Accounts 15

3 Change Autonomous Database to Private End Point 17

3.1 Change Autonomous Network Access 17

3.2 Update VM tnsnames to the private endpoint 18

4 Application Screenshots 19

4.1 Cost Reports 19

4.2 Rate Card 21

4.3 Usage Reports 22

1 Overview

1.1 Introduction

Usage2adw is a tool which uses the Python SDK to extract the usage and cost reports from your tenant and load it to Oracle Autonomous Database. Authentication to OCI by User or instance principals.

It uses Oracle Application Express (APEX) for Visualization and Reports.

Developed by Adi Z, February 2020 to March 2023 as open source

Located at GitHub - https://github.com/adizohar/usage_reports_to_adw

1.2 Main Features

- Load Usage Report to ADW
- Load Cost Reports to ADW
- Load Public Rates to ADW
- Report Usage Current State
- Report Usage Over Time
- Report Cost Analysis
- Report Cost Over Time
- Report Rate Card for Used Products

1.3 How Usage Reports Work

The usage report is automatically generated daily, and is stored in an Oracle-owned Object Storage bucket. It contains one row per each Oracle Cloud Infrastructure resource (such as instance, Object Storage bucket, VNIC) per hour along with consumption information, metadata, and tags. Usage reports generally contain 24 hours of usage data, although occasionally a usage report may contain late-arriving data that is older than 24 hours.

Usage reports are retained for one year.
The file name for each usage report is appended with an automatically incrementing numerical value.

More information can be found at
https://docs.cloud.oracle.com/en-us/iaas/Content/Billing/Concepts/usagereportsoverview.htm

1.4 OCI SDK Modules Included:

- oci.identity.IdentityClient
- oci.object_storage.ObjectStorageClient

1.5 OCI APIs Used:

- IdentityClient.list_compartments - Policy COMPARTMENT_INSPECT
- IdentityClient.get_tenancy - Policy TENANCY_INSPECT
- ObjectStorageClient.list_objects - Policy OBJECT_INSPECT
- ObjectStorageClient.get_object - Policy OBJECT_READ

2 Installation

2.1 Prerequisite

Deployment must be at Home Region

Make sure you have the following prerequisites before using Usage2ADW on Oracle Cloud Marketplace:

2.1.1 Creating an SSH/RSA Key

To work with the Oracle Cloud Infrastructure once the Usage2ADW Compute Node is built, you have to provide a SSH Public Key to allow you to login to the node.

In order to build your SSH keys, perform the following steps:

1. In a terminal window, generate the SSH key using the following command:

   ```
   $ ssh-keygen -t rsa -b 2048

   Generating public/private rsa key pair.
   ```

2. Enter the path to store this file. By default, this gets saved in your home directory under a hidden folder called .ssh. Change this default location, if required.

   ```
   Enter file in which to save the key (/home/opc/.ssh/id_rsa):<Return>
   ```

3. Enter a passphrase using your key

   ```
   Enter passphrase (empty for no passphrase): <passphrase>
   ```

4. Re-enter the passphrase to confirm it. <passphrase>

   ```
   Enter same passphrase again: <passphrase>
   ```

5. Check the results.

   The key fingerprint (a colon separated series of two digits hexadecimal values) is displayed. Check if the path to the key is correct. In the above example

   ```
   Your identification has been saved in /home/opc/.ssh/id_rsa.
   Your public key has been saved in /home/opc/.ssh/id_rsa.pub.
   ```

   You have now created a public and private key pair.

2.1.2 Creating Dynamic Group

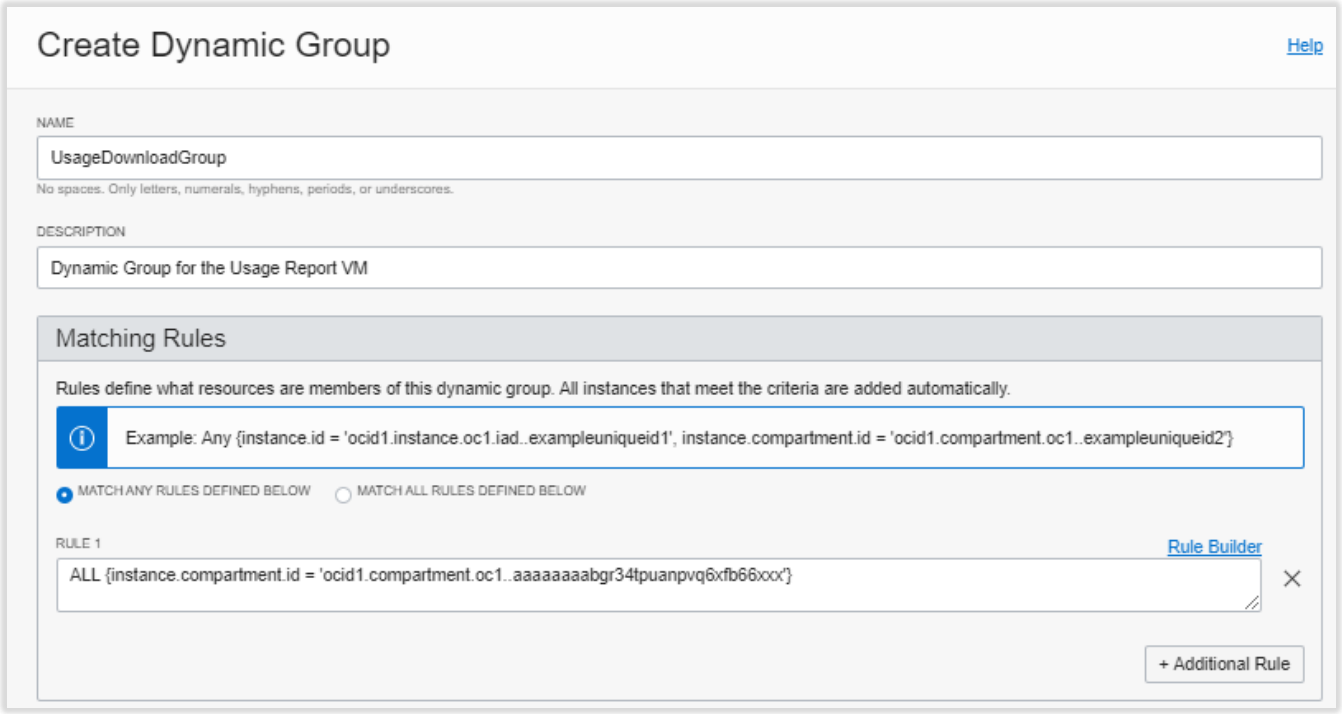
Resource Manager can create the Dynamic Group for you if you have Admin access, if not please create the dynamic group as described below:

During Usage2ADW Instance provisioning, instance required to access usage and cost files , compartment and tenancy information as long as the dynamic group and policies are created before deploying Usage2ADW on Marketplace and are set as mentioned below.

Please find your compartment id and fill the below (Compartment Id can be obtain at Identity -> Compartments)

```
ALL {instance.compartment.id = 'ocid1.compartment.oc1..aaaaaaaabgr34tpuanpvq6xfb66xxx'}
```

For more information, refer to Create Dynamic Groups and Policy.



2.1.3 Creating Policy

Resource Manager can create the Policy for you if you have Admin access, if not please create the Policy as described below:

Usage and Cost Report is at tenant level, therefore you will need to setup the policy at the root compartment:

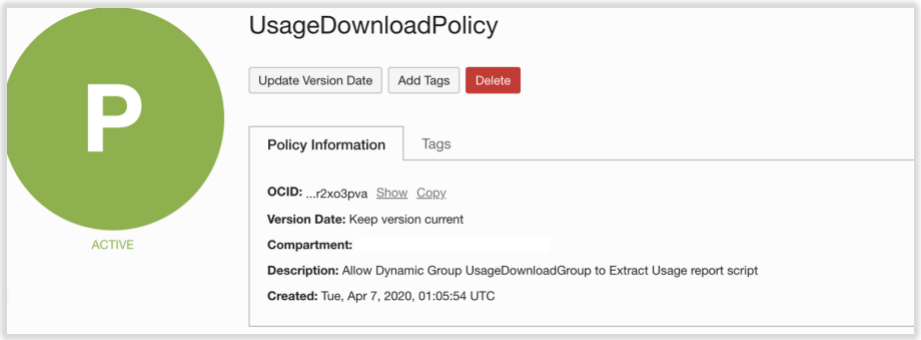
Obtain the compartment the application will be installed as {APPCOMP}

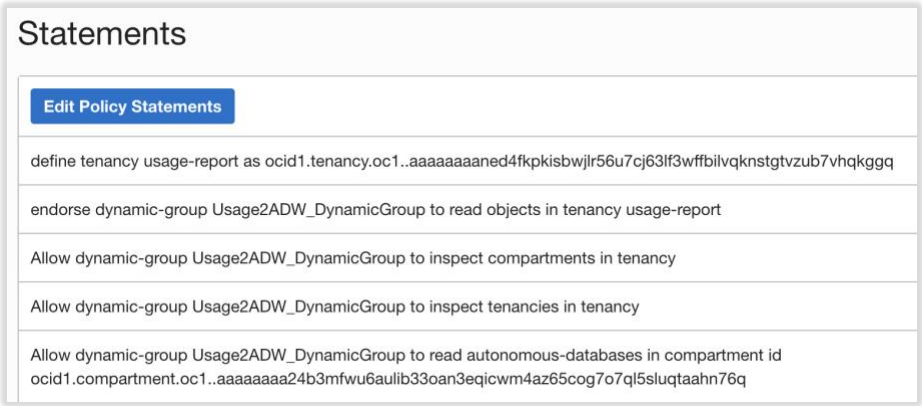
Browse to OCI Console, Identity, Policies
Choose Root Compartment
Create Policy:

- Name = UsageDownloadPolicy
- Desc = Allow Dynamic Group UsageDownloadGroup to Extract Usage reports
- Statements:

```
define tenancy usage-report as
ocid1.tenancy.oc1..aaaaaaaaned4fkpkisbwjlr56u7cj63lf3wffbilvqknstgtvzub7vhqkggq
endorse dynamic-group UsageDownloadGroup to read objects in tenancy usage-report
Allow dynamic-group UsageDownloadGroup to inspect compartments in tenancy
Allow dynamic-group UsageDownloadGroup to inspect tenancies in tenancy
Allow dynamic-group UsageDownloadGroup to read autonomous-databases in compartment {APPCOMP}
```

*** Please don't change the usage report tenant OCID, it is fixed.





2.1.4 Usage VM Access to the internet

Usage VM query the public rates in order to compile discounts, without ability to access the public rates the application won't be able to produce rate card discounts and the usage2adw.py will fail

2.1.5 Usage VM Access to the Autonomous Datawarehouse

Usage VM required access to the autonomous database which reside at Oracle Service Network, Service Gateway can be used or NAT/Internet Gateway.

2.2 Launching Your Usage2ADW Components

Follow the below procedure to launch your Usage2ADW instance:

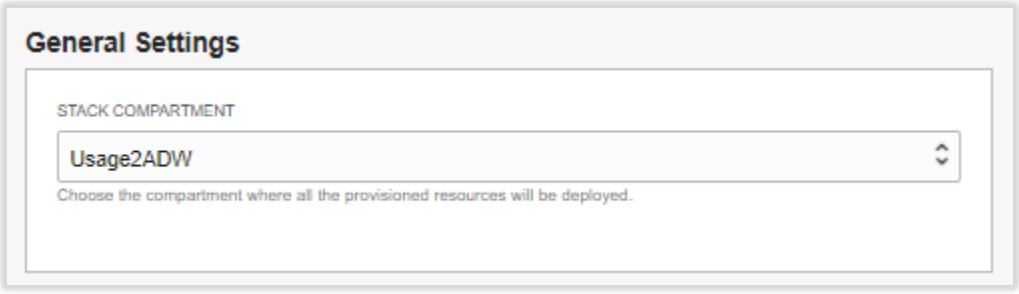
Once you click **Launch Stack**, you are navigated to the **Create Stack** page.

1. Fill in the required Stack information:
    - Name - Name of the Stack. It has a default name and provides a datetime stamp. You can edit this detail, if required.
    - Description - Description that you provide while creating the Stack.
    - Create In Compartment – It defaults to the compartment you have selected on the Usage2ADW for Oracle page.
    - Tags (optional) – Tags are a convenient way to assign a tracking mechanism but are not mandatory. You can assign a tag of your choice for easy tracking. You have to assign a tag for some environments for cost analysis purposes.
    - Click Next.

Fill in the required details to configure variables. This information is required to build the compute node and Autonomous Datawarehouse with Usage2ADW

1. General Settings -

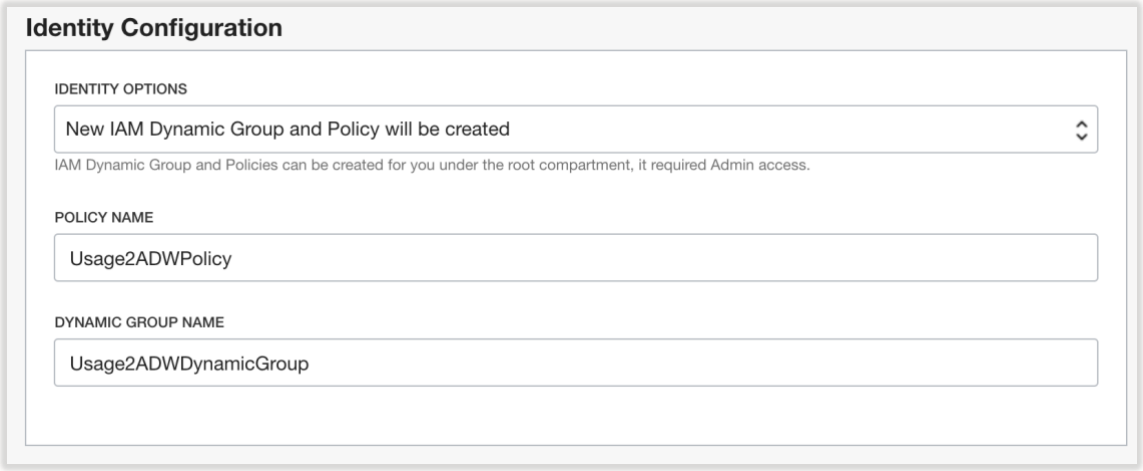
    Stack Compartment - Specifies the Compartment where the compute node , Autonomous Database and Network will be built. It is generally the location that you have access to build the compute node and autonomous database.



2. Identity Configuration -

   Identity Options - Denotes the Identity and Access options

   - New IAM Dynamic Group and Policy will be created - New Dynamic Group and Policy will be created – This option required Admin access
   - I have already created Dynamic Group and Policy per the documentation – Choose this option if you already created Dynamic group and.



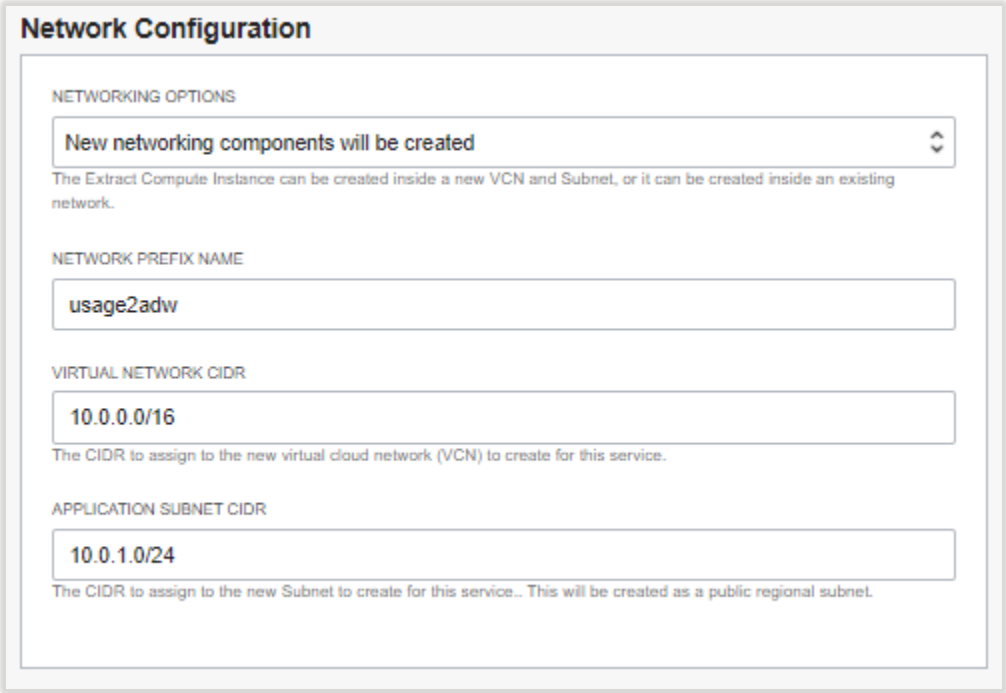
3. Network Configuration -

Networking Options - Denotes the networking options in which the Usage2ADW compute instance and all the associated network resources have to be created. Select between two available options:

- New networking components will be created - Select this option to have a new network (VCN) and subnet created and configured alongside this new Usaeg2ADW instance. Minimal inputs are required when you select this option.
- Existing networking components will be used - Select this option to use the existing network components and subnets.

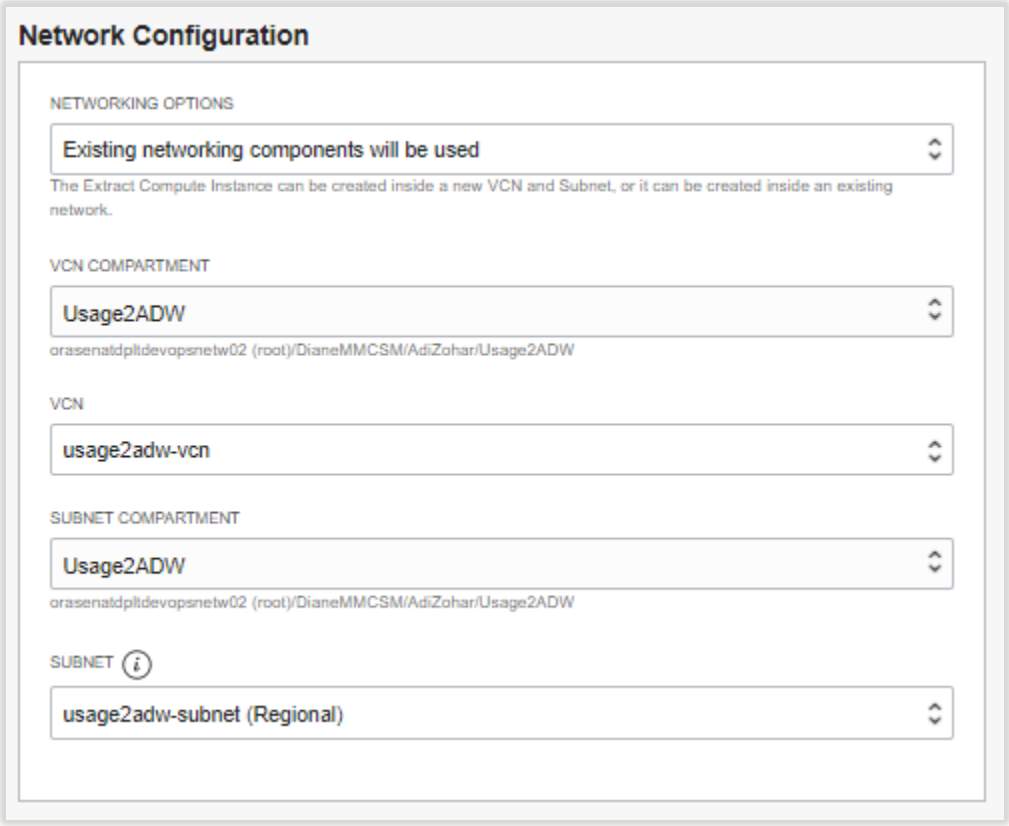
New networking components will be created -

- Network Prefix Name – Prefix name to be assigned to the network components
- Virtual Network CIDR - A single, contiguous Virtual Cloud Network (VCN) CIDR block for the VCN. For example: 10.0.0.0/16. You cannot change this value later.
- Application Subnet CIDR - A single, contiguous Subnet CIDR block subset of the VCN CIDR. For example: 10.0.1.0/24. You cannot change this value later.



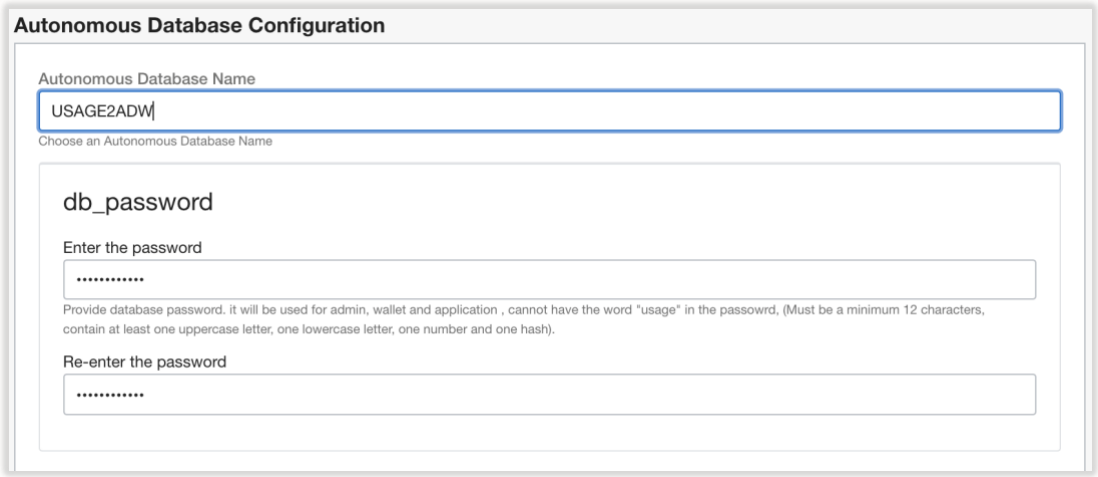
Existing networking components with be used -

- VCN Compartment - Specifies the VCN compartment where the compute node will be built. It is generally the location that you have access to build the compute node. From the Virtual cloud network compartment drop-down list, select the compartment where your VCN has been setup.
- VCN - A VCN is a software-defined network that you set up in the Oracle Cloud Infrastructure data centers in a particular region. Select the desired VCN for the newly created instance. From the Virtual cloud network drop-down list, choose your VCN.
- Subnet Compartment - Denotes the subnet compartment to use for the newly created instance if you are not creating a new network. From the Subnet Compartment drop-down list, select the compartment containing the subnet that you wish to use.
- Subnet - Existing subnet to use for the newly created instance if you are not creating a new network. From the Subnet drop-down list, select the subnet you wish to

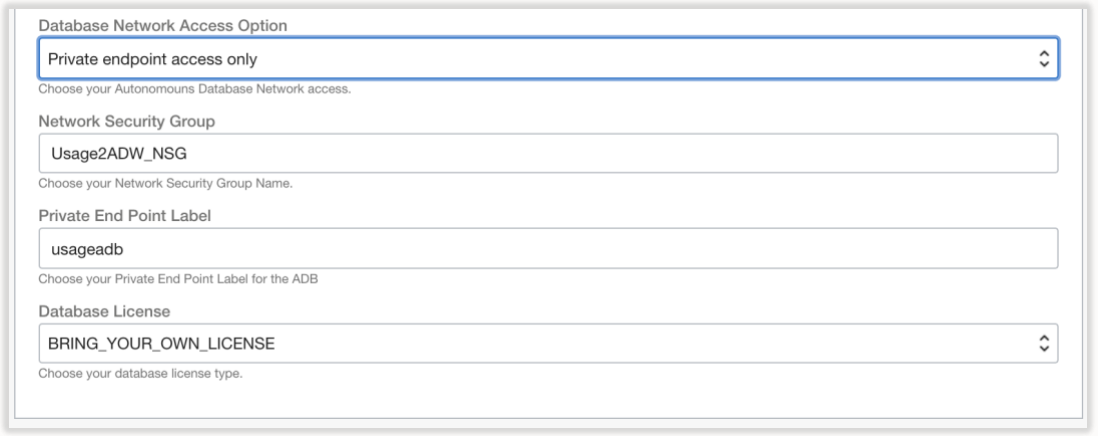


New Autonomous Database Settings -

- Autonomous database name – the name to be assigned to the Autonomous database
- DB Password – Must be a minimum 12 characters, contain at least one uppercase letter, one lowercase letter, one number, and # as special character allowed.
  Will be used for Admin, Wallet and Application



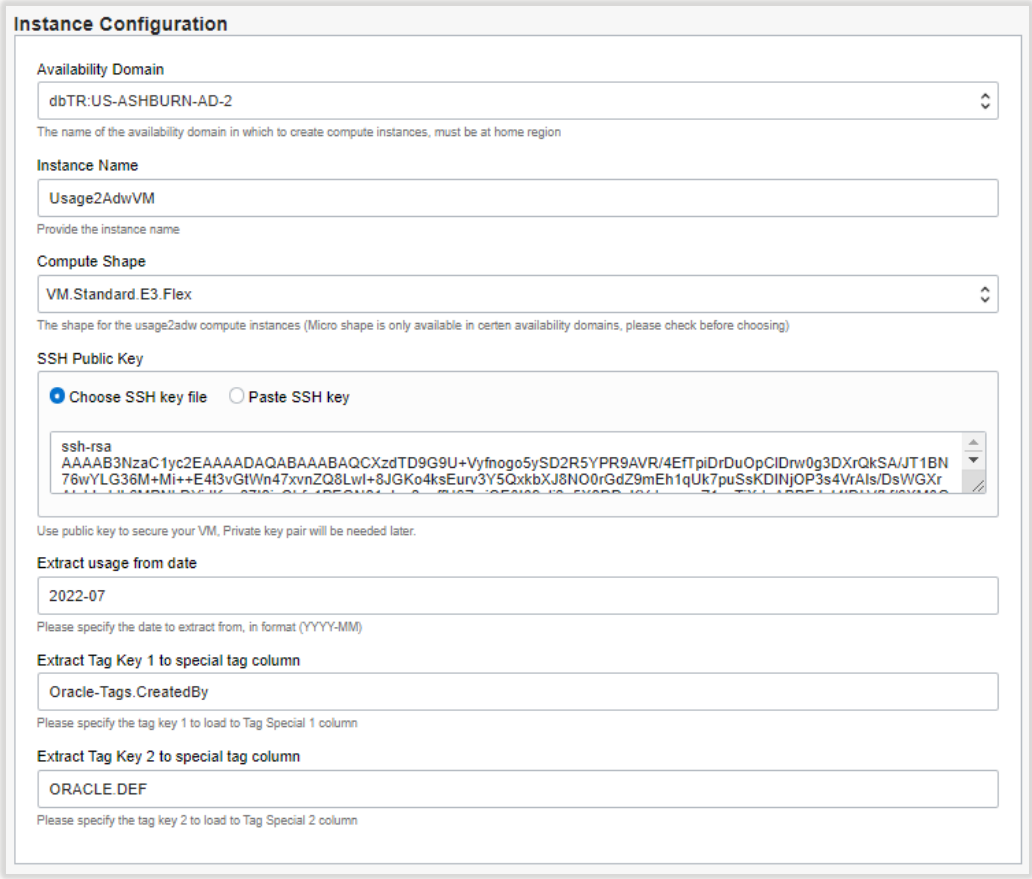
- Database Network Access Option –
  a. Secure Access from Everywhere
  b. Private endpoint access only



- Network Security Group Name – The network security group to create and assign to the autonomous database.
- Private End Point Label – The host name assigned to the autonomous database end point
- Database License – License Included or Bring your own license if you have
- Use Free Tier – You can use the Autonomous Free tier if not used before, it will be allocated 20GB of space which enough for only few months of usage

Instance Configuration -

- Availability Domain to deploy the instance
- Instance Name – the name of the compute instance
- Compute Shape – Compute Shape to deploy the instance
  Free Tier Shape (Micro) only available in certain availability domains, if you deploy and it failed for shape not found, please edit the stack , change the availability domain or shape and apply again
- SSH Public Key – The public key you generated at the prerequisite stage
- Extract Usage From Date – Load Data since which date with format of YYYY-MM (i.e. 2021-03)
- Extract Key 1 to special tag column – This allow to extract one Tag Key (Special) for Filtering/Reports
- Extract Key 2 to special tag column – This allow to extract one Tag Key (Special) for Filtering/Reports



2. Click Next.
3. On the Review page, review the information you provided and then click Create.
4. When you get a message, Provisioning Completed/Successful from the OCI console, the instance is created. However please note the rest of the Usage2ADW configuration happens in the background including extract of the usage which takes approximately 10 minutes to complete.
5. After approximately 5 minutes log into the compute node and examine the setup.log file

2.3 Connecting to your Usage2ADW Compute

Using the SSH key you provided, SSH to the linux machine from step
ssh opc@UsageVM

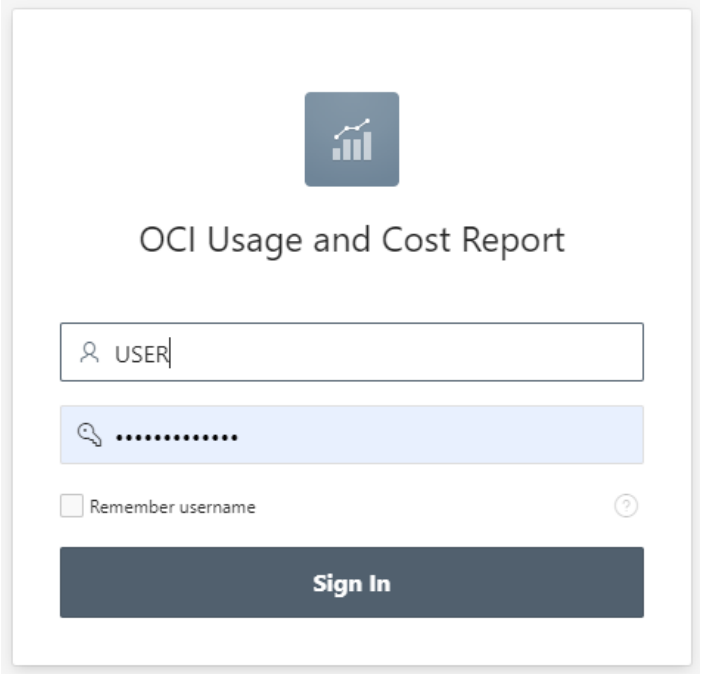
Please check the setup.log , if any error due to policy permission, please fix and rerun the script:
/home/opc/usage_reports_to_adw/setup/setup_usage2adw

2.4 Execute Application

Copy the Apex Application URL provided with the Stack
Should be similar to the below:

https://<workspace id>.adb.us-ashburn-1.oraclecloudapps.com/ords/f?p=100:LOGIN_DESKTOP::::::

User = USAGE
Password = Application Password
Bookmark the page for future use.

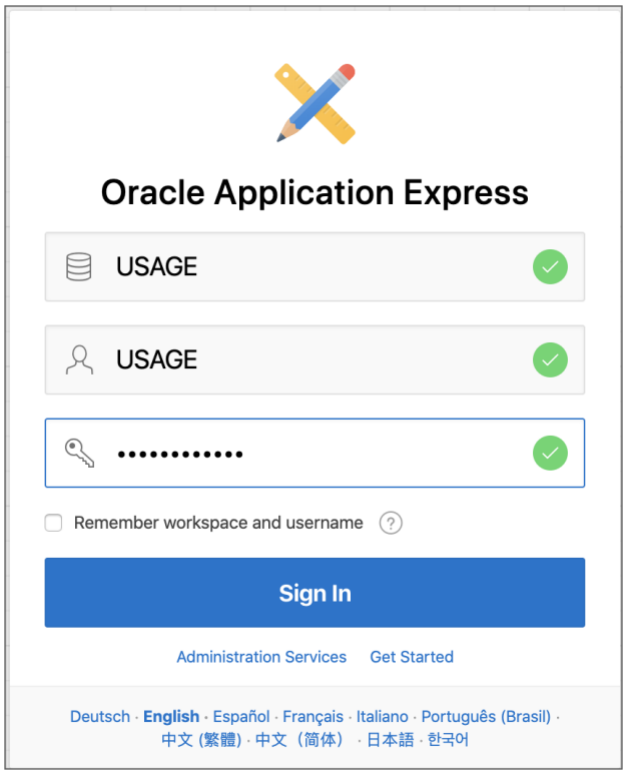


2.5 Login to APEX Workspace

Copy the Apex Application URL provided with the Stack – Apex Admin Workspace
Should be similar to the below:

https://<workspace id>.adb.us-ashburn-1.oraclecloudapps.com/ords/apex

Workspace = USAGE
User = USAGE
Password = Password you provided



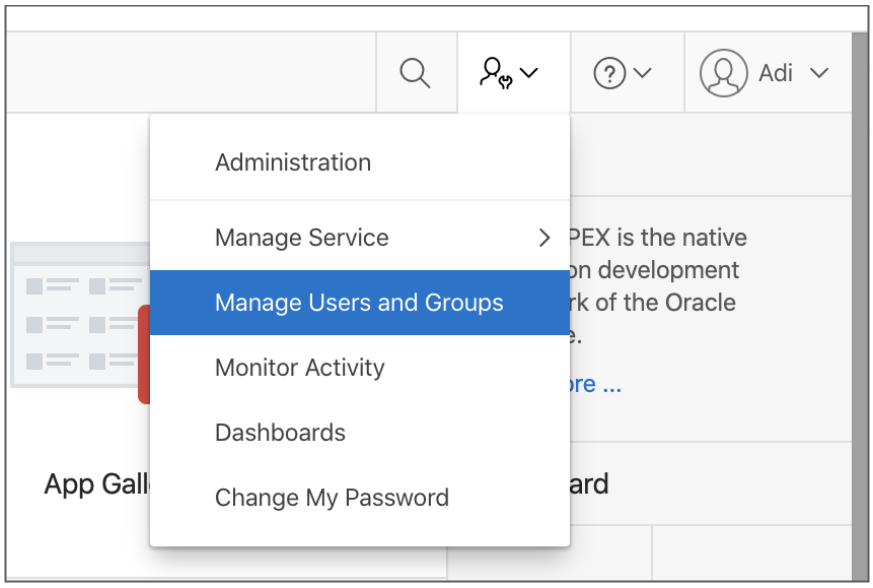
2.6 Create Additional End User Accounts

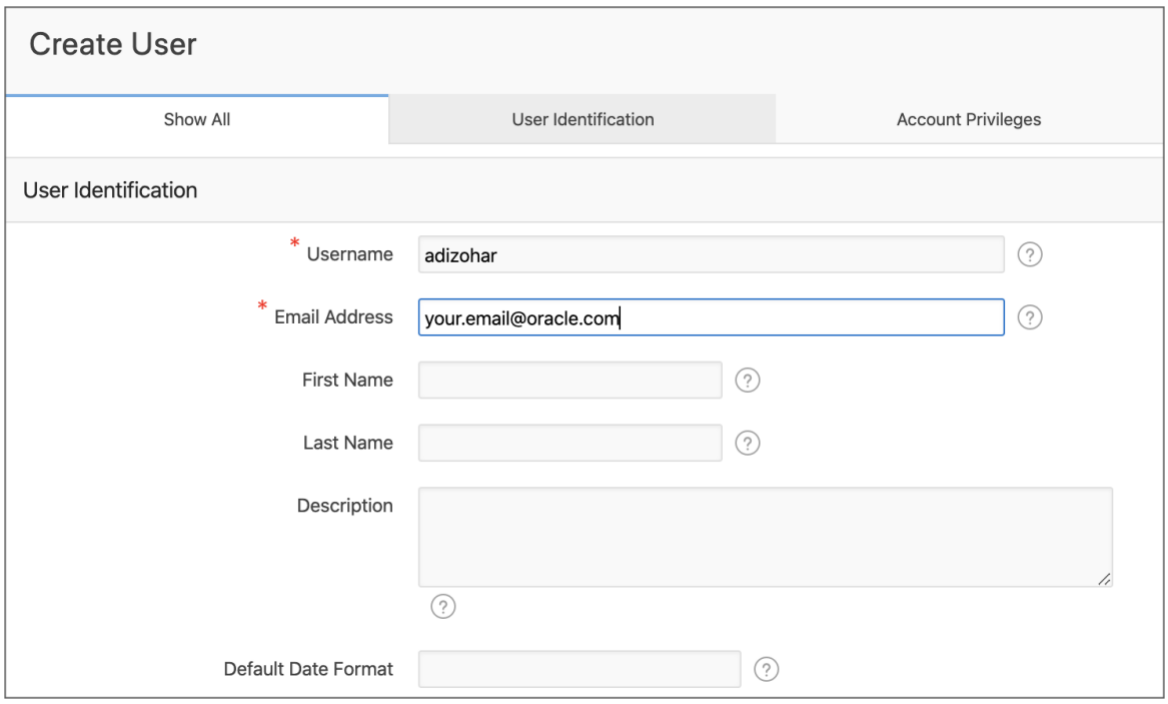
Top 3rd Right Menu -> Manage Users and Groups

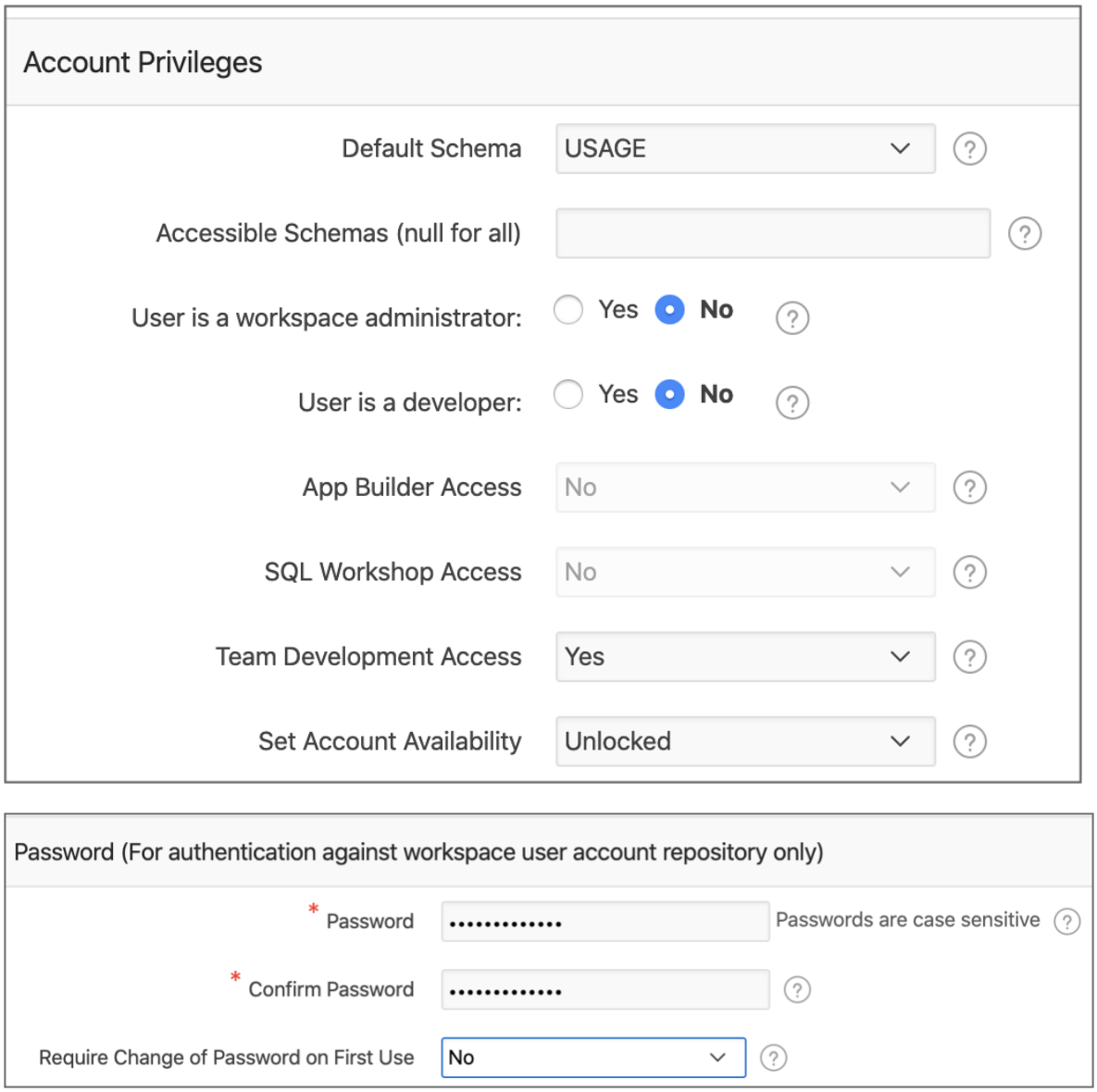
- Create User

Fill:

- Username
- Email
- Password
- Confirm Password
- Optional - Require to change passqword = No
- Apply Changes



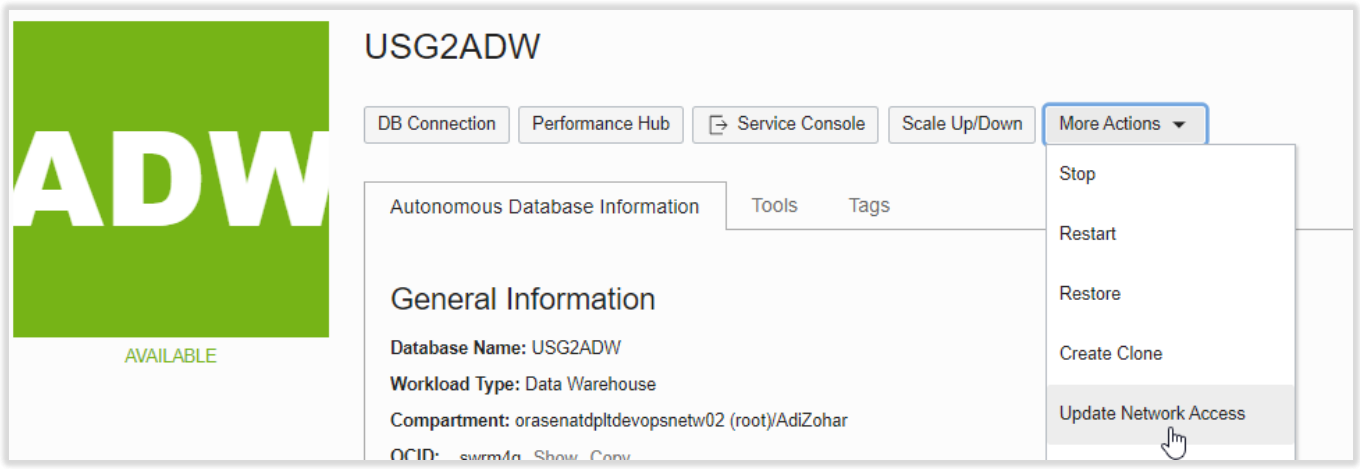



Account Privileges
Default Schema
USAGE
Accessible Schemas (null for all)
User is a workspace administrator:
Yes
No
User is a developer:
Yes
No
App Builder Access
No
SQL Workshop Access
No
Team Development Access
Yes
Set Account Availability
Unlocked

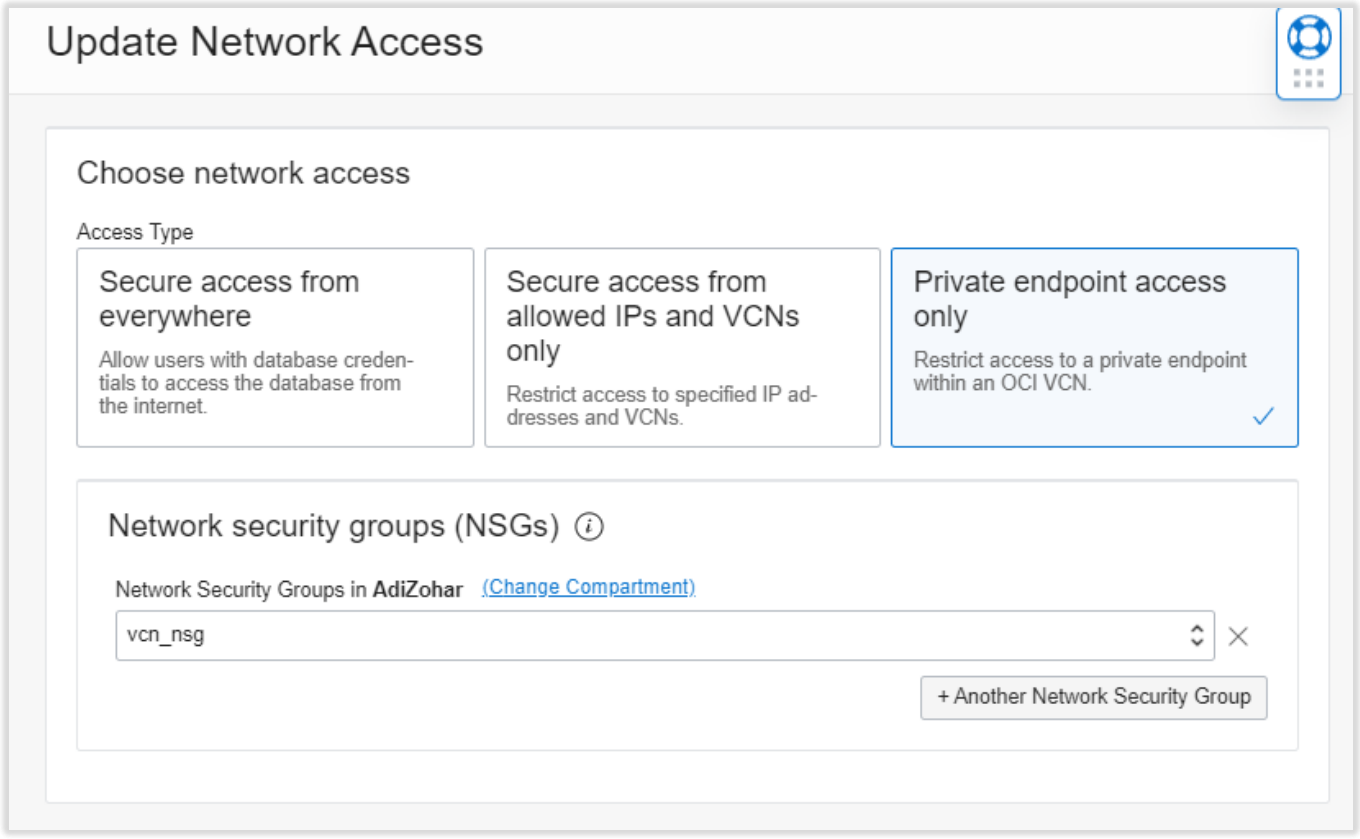
Password (For authentication against workspace user account repository only)
* Password
Passwords are case sensitive
* Confirm Password
Require Change of Password on First Use
No

3 Change Autonomous Database to Private End Point

3.1 Change Autonomous Network Access

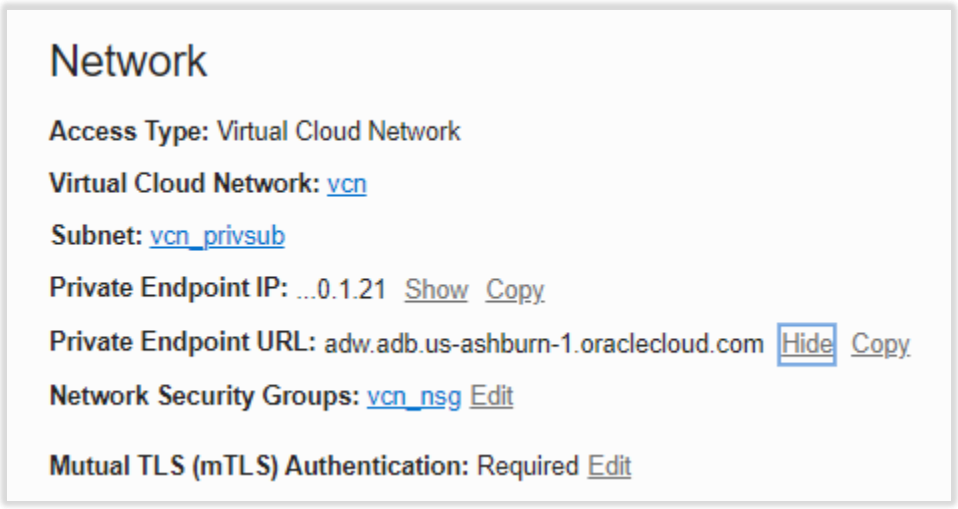


Update Network access to Private Endpoint Access Only, and choose network security group.
Make sure you allow port 1522/tcp inbound traffic



3.2 Update VM tnsnames to the private endpoint

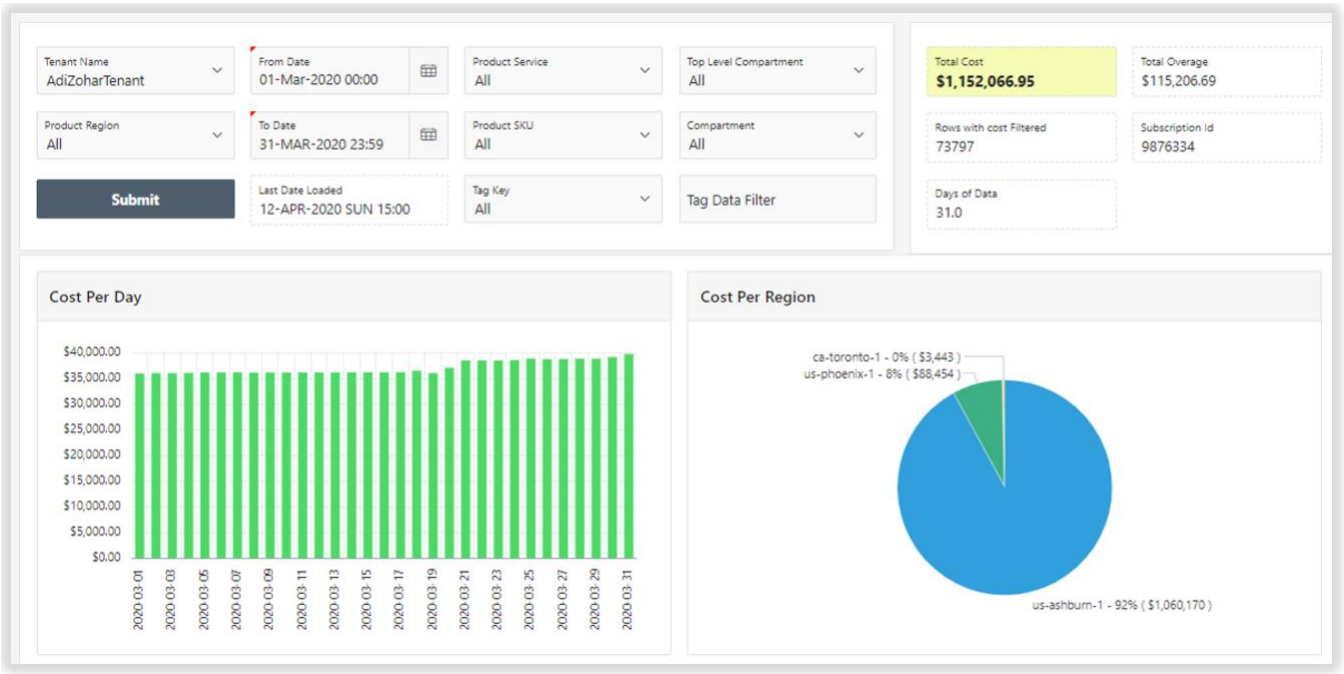
Find the private endpoint URL:

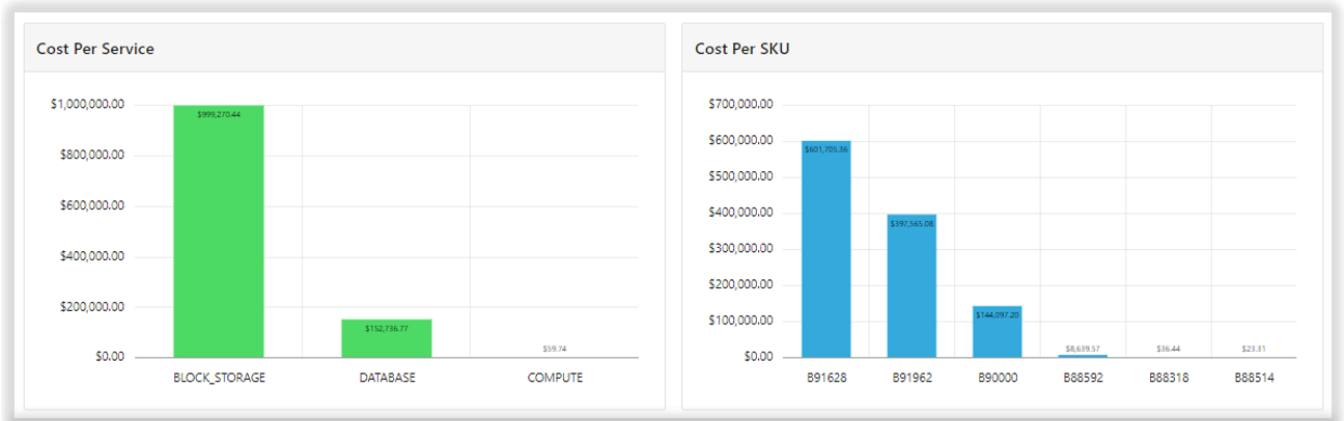


Login to the usage2adw virtual machine
cd ADWCUSG
edit tnsnames.ora and change the _low entry host to the private end point specify in the ADW page

4 Application Screenshots

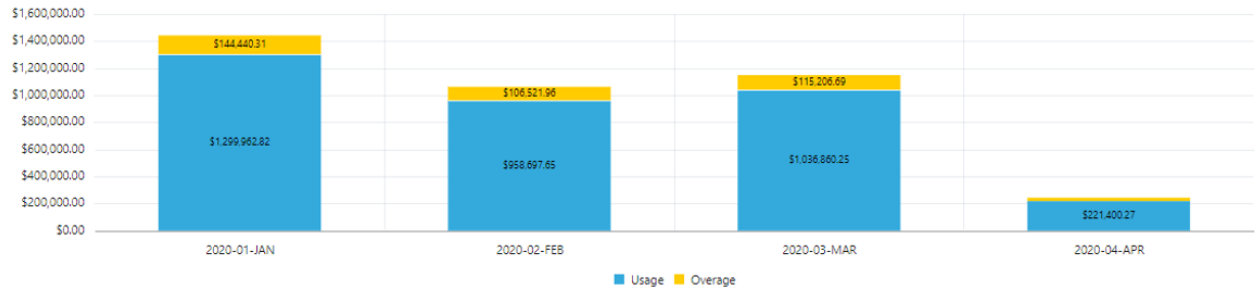
4.1 Cost Reports





Product	Cost Billing Unit	Rate	Total Quantity	Overage Cost	Total Cost
B88514 Virtual Machine Standard - X7	ONE HOURS	$0.0415	156.00	$2.33	$23.31
B88318 Windows OS	ONE HOURS	$0.0133	761.00	$3.64	$36.44
B88592 Database Exadata XP - Additional OCPUs	ONE HOURS	$0.4200	1,488.00	$224.99	$2,249.86
B88592 Database adwc - Additional OCPUs	ONE HOURS	$0.4200	4,226.00	$638.97	$6,389.71
B90000 Database Exadata Infrastructure - Half Rack - X7	ONE HOURS	$13.4409	2,978.00	$14,409.72	$144,097.20
B91962 Block Volume Performance Units	ONE GB MONTHS	$0.0011	100,395,222.38	$39,756.51	$397,565.08
B91628 Block Volume - Backup	ONE GB MONTHS	$0.0166	10,068,697.40	$60,170.54	$601,705.36
				$115,206.69	**$1,152,066.95**

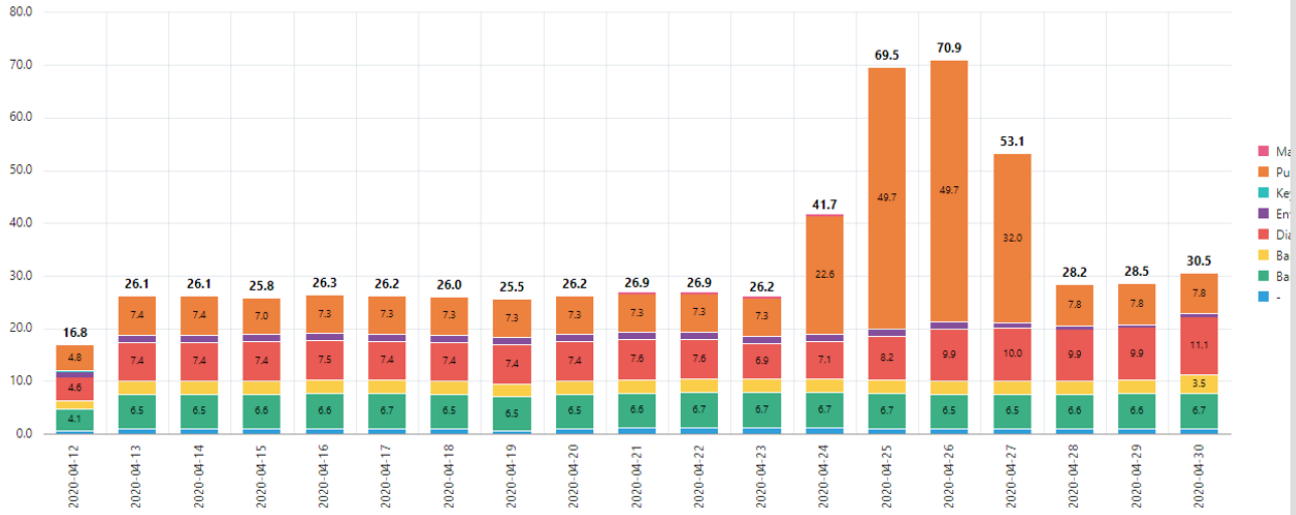
Cost Over Time



Monthly Report

SKU	Product Name	Total	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020
B88318	Windows OS	$647	$291	$70	$36	$250	$0	$0	$0	$0	$0	$0	$0	$0
B88514	Virtual Machine Standard - E2	$967	$0	$182	$23	$761	$0	$0	$0	$0	$0	$0	$0	$0
B88326	FastConnect 10 Gbps	$1,781	$1,525	$257	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
B88592	Database Exadata XP - Additional OCPUs	$21,351	$5,289	$6,030	$8,640	$1,393	$0	$0	$0	$0	$0	$0	$0	$0
B91536	Database Exadata Infrastructure - Half Rack - X8	$31,584	$31,551	$0	$0	$33	$0	$0	$0	$0	$0	$0	$0	$0
B90000	Database Exadata Infrastructure - Half Rack - X7	$543,147	$240,872	$139,017	$144,097	$19,161	$0	$0	$0	$0	$0	$0	$0	$0
B91962	Block Volume Performance Units	$1,315,786	$462,469	$365,536	$397,565	$90,216	$0	$0	$0	$0	$0	$0	$0	$0
B91628	Block Volume - Backup	$1,992,427	$702,407	$554,128	$601,705	$134,187	$0	$0	$0	$0	$0	$0	$0	$0
Report Total:		**$3,907,690**	**$1,444,403**	**$1,065,220**	**$1,152,067**	**$246,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

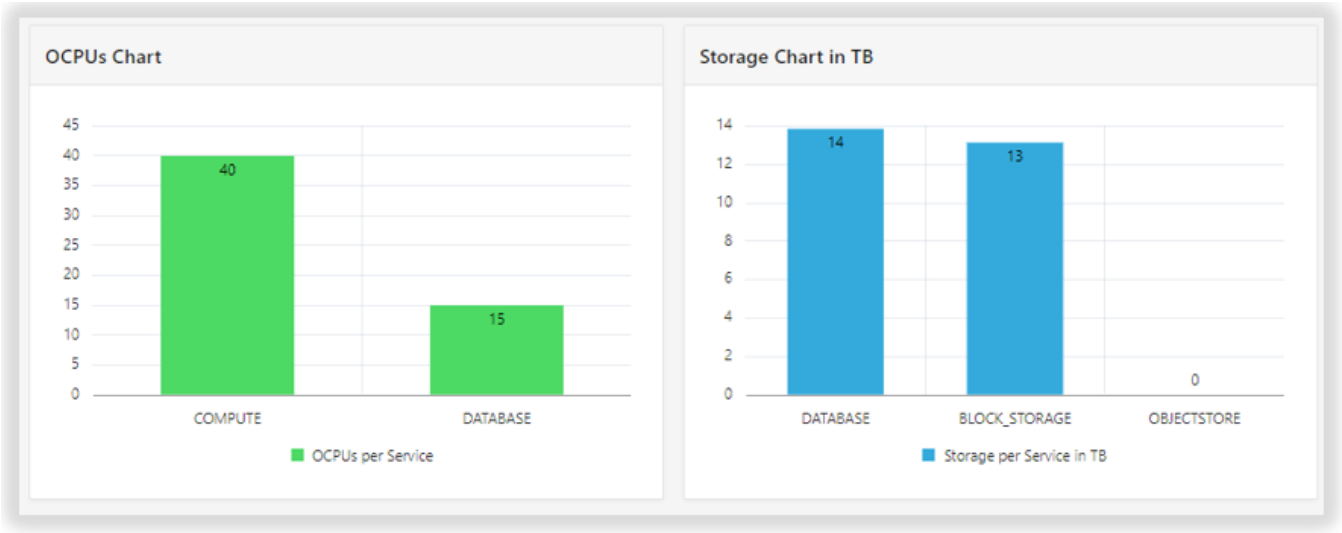
Cost By Top Compartment - Daily

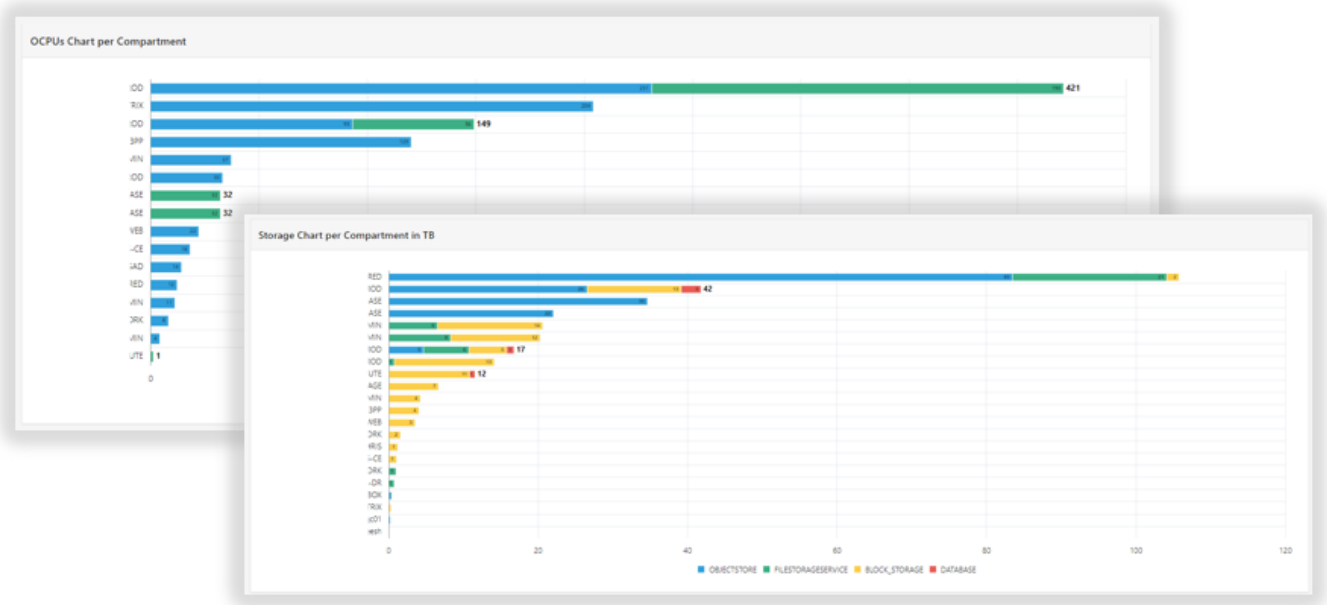


4.2 Rate Card

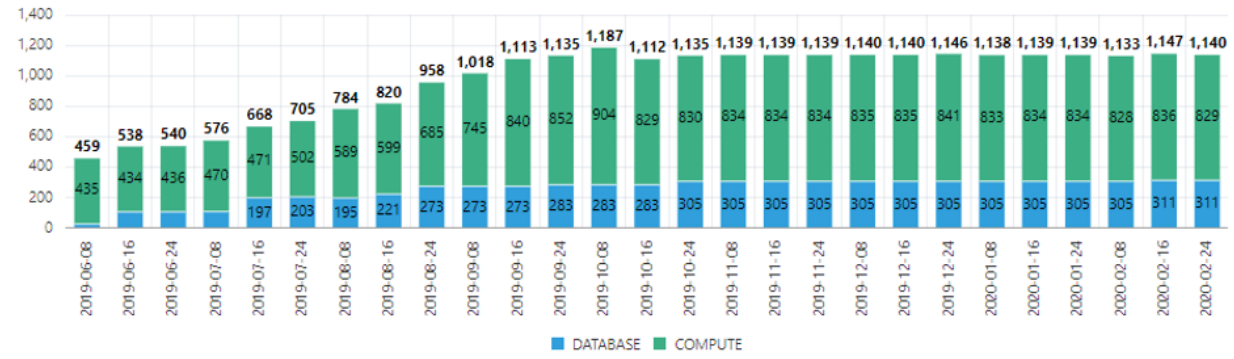
Sku	Product	Currency	Cost Price	Public Rate PayGo	% Discount PayGo	Public Rate Monthly Flex	% Discount Monthly Flex
B91633	Archive Storage	USD	0.0018	0.0026	30.80	0.0026	30.80
B88287	B88287 - Oracle Java Cloud Service - Enterprise - OCPU Per Hour	USD	0.2710	0.5807	53.30	0.3871	30.00
B88290	B88290 - Oracle Database Cloud Service - Enterprise Edition - General Purpose - OCPU Per Hour	USD	0.3763	0.8064	53.30	0.5376	30.00
B88299	B88299 - Oracle Data Integrator Cloud Service - OCPU Per Hour	USD	0.6775	1.4517	53.30	0.9678	30.00
B88399	B88399 - Oracle Java Cloud Service - Enterprise - BYOL - OCPU Per Hour	USD	0.1355	0.2903	53.30	0.1935	30.00
B88406	B88406 - Oracle Data Integrator Cloud Service - BYOL - OCPU Per Hour	USD	0.1355	0.2903	53.30	0.1935	30.00
B88407	B88407 - Oracle SOA Suite						
B88460	B88460 - Oracle SOA Suite						
B89162	B89162 - Oracle Managem						
B89631	B89631 - Oracle Analytics						
B89637	B89637 - Oracle Analytics						
B89640	B89640 - Oracle Integratio						
B88322	Block Volume	USD	0.0298	0.0425	29.90	0.0425	29.90
B91962	Block Volume - Performance Units	USD	0.0012	0.0017	29.40	0.0017	29.40
B91961	Block Volume - Storage	USD	0.0178	0.0255	30.20	0.0255	30.20
B90569	Database Cloud Service - Standard	USD	0.1882	0.4032	53.30	0.2688	30.00
B88523	Email Delivery	USD	0.0595	0.0850	30.00	0.0850	30.00
B91628	Object Storage - Storage	USD	0.0178	0.0255	30.20	0.0255	30.20
B89040	Oracle Autonomous Data Warehouse	USD	1.1761	2.5202	53.30	1.6801	30.00
B89041	Oracle Autonomous Data Warehouse - Exadata Storage	USD	103.6000	222.0000	53.30	148.0000	30.00

4.3 Usage Reports

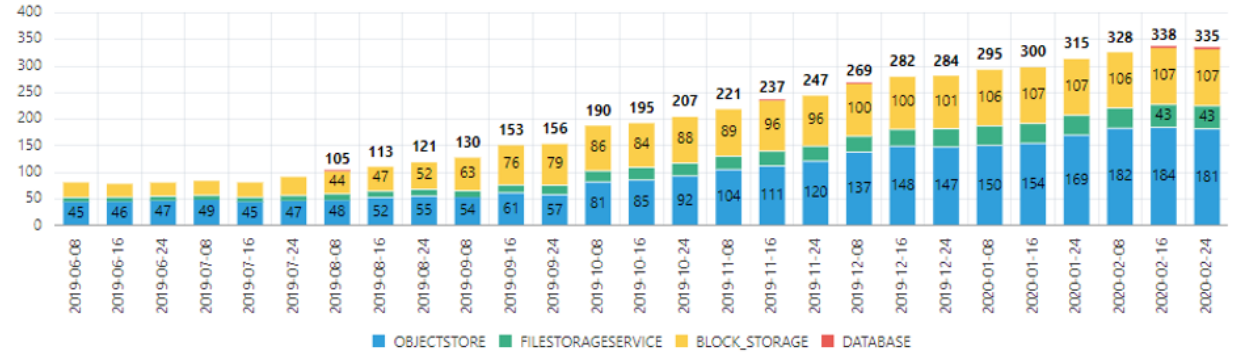




Daily OCPUs Chart



Daily Storage Chart in TB



Prd Compartment Name	Prd Region	Prd Service	Prd Resource	Usg Billed Quantity	Usg Consumed Units	Usg Consumed Measure	Usage Interval Start
AdiZohar	us-ashburn-1	BLOCK_STORAGE	PIC_OBJECT_STORAGE_TIERED	40	GB	STORAGE_SIZE	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	BLOCK_STORAGE	PIC_STANDARD_PERFORMANCE	932	GB	PERFORMANCE_UNITS	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	BLOCK_STORAGE	PIC_STANDARD_STORAGE	93	GB	STORAGE_SIZE	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	COMPUTE	PIC_COMPUTE_X7_VM_STANDARD	5	-	OCPUS	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	DATABASE	PIC_ADWC_COMPUTE_BYOL	1	-	OCPUS	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	DATABASE	PIC_ADWC_EXADATA_STORAGE	1	TB	STORAGE_SIZE	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	DATABASE	PIC_BLOCK_STORAGE_STANDARD	712	GB	STORAGE_SIZE	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	DATABASE	PIC_DATABASE_CLOUD_ALL_EDITION_BYOL	1	-	OCPUS	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	NETWORK	PIC_COMPUTE_OUTBOUND_DATA_TRANSFER	130,974	BYTES	DATA_TRANSFERRED	27-FEB-2020 14:00
AdiZohar	us-ashburn-1	OBJECTSTORE	PIC_OBJECT_STORAGE_TIERED	3	GB	STORAGE_SIZE	27-FEB-2020 14:00