

Solution Engineer Assisted Workshop Day

Lab 02 – Compute and Basic Networking

V1.2

ORACLE LAB BOOK | JANURARY 2019





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Overview

Compute services provides you a virtual machine to deploy applications etc. In this lab you will go through provisioning a compute services uses Oracle Provided image.



Pre-Requisites

1. Oracle Cloud Infrastructure account credentials (User, Password, and Tenant)
2. SSH Keys generated for compute SSH access.
3. User access to you must have the Compute_Operations role.

Sign into tenancy:

Access the Tenancy Welcome Email using this link:

<http://10.136.208.135/shares/export/nas/pcm/ocm#O/t#TWelcome.html>

Where #O is the OCC and #T is the tenancy.

Pre-Requisite 2-1: Set up Basic Networking

Overview

Upload SSH key

1. Clicked in the **Network** tab. Click **Add SSH Public Key**.

ORACLE Cloud My Services

Compute Classic Site: 500027470 - us1 Visualization

Instances **Network** Storage Orchestration Images

SSH Public Keys

2 SSH keys 2 enabled 1 used

You can use SSH keys to enable secure access to instances. [Learn more...](#)

Search... Category: All Show: All Add SSH Public Key

Name	Status	Key Value	Instance
jc-mac-key	Enabled	ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQDX28e...	
labkey	Enabled	ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQDB3x3...	akTest1

Name	Status	Key Value	Instance
jc-mac-key	Enabled	ssh-rsa AAAAB3NzaC1yc2EAAAADAQ...	
labkey	Enabled	ssh-rsa AAAAB3NzaC1yc2EAAAADAQ...	akTest1
Rocio_pubkey	Enabled	ssh-rsa AAAAB3NzaC1yc2EAAAADAQ...	

- Upload either the SSH key provided in Lab 0
- Or Upload the SSH key you generated.

Easy command to copy ssh keys:

```
pbcopy < [file directory]/<private_key>.pub
```

example:

```
pbcopy < ~/.ssh/id_rsa.pub
```

Practice 2-2: Basic Network Configuration

1. **[View only]** Under the "Shared Network" click on "Security Applications"
 - There are a number of applications already defined. For this exercise we will use the ssh application as this is how we will authenticate to the VM.
2. **[View Only]** Under the "Shared Network" click on "Security IP Lists"
 - Security can be applied either by IP address or by linking VMs into a security List. We will use both approaches for this VM. The source identified as coming from the "public-internet". i.e. Anyone can log onto this VM from any IP address.
3. **[View Only]** Under the "Shared Network" click on "Security Lists"
 - A VM can be linked to one or more security list and then access restrictions applied to all VMs in the list at once. In our scenario we will simply use the default list for our VMs.
4. Under the "Shared Network" click on the "Security Rules" and then click on "Create Security Rule" Fill in the details as follows:
 - a. **Name:** <YOUR INITIALS>-ssh-access
 - b. **Status :** Enabled
 - c. **Security Application :** ssh
 - d. **Source:** Select Security IP List and from the drop list choose public-internet
 - e. **Destination:** Select Security List and from the drop list choose default.

Create Security Rule

Enter the name of your security rule. The rule is enabled by default, but you can disable it until you are ready to use it. You must specify the security application and the source and destination security lists or security IP lists to which the security rule will apply. [Learn more](#).

Name

Status

Security Application

Source ☐ Security List
☒ Security IP List

Destination ☒ Security List
☐ Security IP List

Description

Create **Cancel**

Practice 2-3: Initial Creation of VM

1. Click on the **Instances** tab. Click on create instance button. Click **Customize**

The screenshot shows the Oracle Cloud My Services interface. At the top, there's a navigation bar with 'ORACLE Cloud My Services', 'Dashboard', 'Users', and a notification bell. Below this is a blue header for 'Compute Classic' with a site selector 'Site: 610640135 - uscom-central-1' and a 'Visualization' button. The main content area has tabs for 'Instances', 'Network', 'Storage', 'Orchestrations', and 'Images'. The 'Instances' tab is active, showing a summary of 2 instances, 2 OCPUs, 22.5GB memory, and 643GB volume size in use. Below this is a table of instances:


Name	Status	OCPUs	Memory	Volumes	Public IP	Private IP
aInstance_201901282137	Running	1	7.5 GB	12 GB	129.150.116.244	10.134.67.82
Integration102094QSdb/d...	Running	1	15 GB	631 GB	129.150.205.141	10.28.227.206

2. Under Images choose Oracle Linux 7.2 UEKR4 (OL_7.2_UEKR4_x86_64). Click next

The screenshot shows the 'Create Instance' wizard in the Oracle Cloud console. The 'Image' step is selected in the progress bar. The 'Instance Cost' is shown as \$63.75/month. The 'Image' section lists available operating systems:

- OL_7.2_UEKR4_x86_64** (Description: Oracle Linux 7.2 UEKR4) - **Selected**
- OL_5.11_UEKR2_i386** (Description: Oracle Linux 5.11 UEKR2 i386) - **Select**

3. Under shape choose oc3 – General Purpose 1 OCPU. Click Next

 Create Instance

CancelReview and Create

Instance Cost: **\$63.75** /month
Estimate in USD, final cost may vary based on actual usage.

<

ImageShapeInstanceNetworkStorageReview

>

Shape

Select a shape (OCPU and memory) for your instance. [Learn more...](#)

Category	Name	OCPUs	Memory	GPUs
General Purpose	oc3	1	7.5 GB	
General Purpose	oc4	2	15 GB	
General Purpose	oc5	4	30 GB	

4. Under Instance.

- Name: <you initials>-workshop
- Label: <your initials>-workshop
- SSH keys: <pick the key you created earlier

Instance

Enter the required details to create your instance. [Learn more...](#)

? Placement

Auto

? Name*

rs-workshop

? Label*

rs-workshop

Description

Compute workshop website

? Tags

website x

? SSH Keys

rs-workshop x


Add SSH Public Key

? Custom Attributes

5. Under Network. Provide theses information. Click next:

- DNS Hostname Prefix:** <your initials>-workshop
- Network Options:** Deselect IP network to leave only Shared Network
- Security Lists:** default (Select by clicking the cursor into the box and then select the default from the dropdown list).

Instance Cost: **\$63.75** /month
Estimate in USD, final cost may vary based on actual usage.



Network

Configure network settings. [Learn more...](#)

DNS Hostname Prefix

Network Options

☐ IP Network ☒ Shared Network

Shared Network Options

Public IP Address

Auto Generated

Security Lists*

default x

Create Security List

6. Storage. No Changes here. Default size is 12GB.


- Note: If you want to turn this instance into a template, you need to select the hamburger menu and remove the persistent disk otherwise, you cannot take snapshot on it.

Create Instance

Cancel

Review and Create


Instance Cost: **\$63.75** /month
Estimate in USD, final cost may vary based on actual usage.



Storage

You can attach existing storage volumes, or create and attach a storage volume to the instance. A persistent boot volume is created and used to boot your instance by default. You can specify a different boot disk, or remove the persistent boot disk and boot from a nonpersistent boot disk instead. You can also attach additional storage volumes to an instance after the instance is created.

Attach Existing Volume Add New Volume

Name	Disk #	Size	Type	Delete On Termination	Boot Drive	
rs-workshop_storage	1	12 GB	storage/default	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

7. Review the instance creation then click Create.

Review your settings for the new instance.



You are permitted to use resources above your subscription rate at additional cost. [More...](#)

Image OL_7.2_UEKR4_x86_64 (OL_7.2_UEKR4_x86_64-18.3.6-20180824-091119)

Shape oc3 (OCPUs: 1; Memory: 7.5 GB)

Placement Auto

Name rs-workshop

Label rs-workshop

Description Compute workshop website

Tags website

DNS Hostname Prefix

Public IP Address Auto Generated

Security Lists default

SSH Keys rs-workshop

Storage rs-workshop_storage

8. You can see the progress by clicking on the Orchestrations tab and then clicking on the refresh icon (beside the "Upload Orchestration" button) or by clicking on refresh on the Instances tab to see the VM being created.

Compute Classic Site: 610640135 - uscom-central-1 Visualization

Instances Network Storage **Orchestrations** Images

Orchestrations

As of 9:48:56 AM

4

orchestrations

3

ready

An orchestration defines the attributes and interdependencies of a collection of compute, networking, and storage resources. After building an orchestration (in a JSON-formatted file) and adding it to the service, you can trigger the creation and removal of all the resources defined in the orchestration with a single step. [Learn more...](#)

Search...


Category: All

Show: All

Create Orchestration

Upload Orchestration

	Name	Description	Status	Time	Resources
	v2 alnstance_201901282137		Ready	Jan 29, 2019 7:55:36 AM	
	v1 APAAS/eyetracker/databag		Ready	Nov 14, 2018 2:08:47 ...	
	v1 APAAS/eyetracker/tresources		Ready	Nov 14, 2018 2:40:38 ...	
	v2 rs-workshop	Compute workshop website	Stopped	Jan 29, 2019 9:48:22 AM	

- 
9. From the instances page the "public" ip address of the VM is shown. Use this to ssh onto the VM as the OPC user.

Linux/Mac users

```
$ ssh -i <path to private key> opc@<Public IP address>
```

Windows users

```
$ setup putty config for ssh key access.
```

Note: If you are in VCN to the virtual OSC ssh might not work because of the proxy. Test using SGD instead.

Practice 2-4: Instance and Storage Snapshot

Overview

Snapshots are a good way of freezing storage and an instance in time. This is good for development and test allowing you to create a golden master that you can easily clone. It also adds a new level of security by freezing your boot disk with packages that you want and locks out malware that requires reboot. It does add a new layer of thought that is needed in that any package or root file customization requires a new golden image with a new snapshot.

Tasks

1. Continue from the previous practice, select the hamburger menu next to the newly create instance and select Create Snapshot


The screenshot shows the Oracle Cloud Console 'Instances' page. The 'Summary' section indicates 2 instances, 2 OCPUs, 15GB memory, and 13GB volume size in use. Below this, a table lists instances:

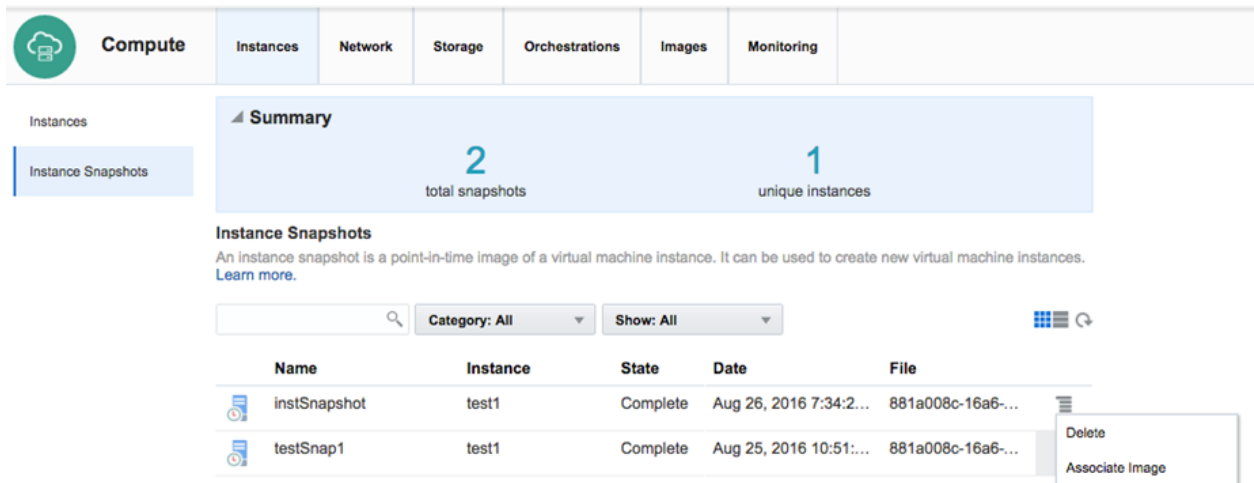
Name	Status	OCPUs	Memory	Volumes	Public IP	Private IP
prsJEOS	Running	1	7.5 GB	13 GB	140.86.12.235	10.196.148.22
test1	Running	1	7.5 GB	None	140.86.14.192	10.196.148.6

A context menu is open for the 'test1' instance, showing options: View, Reboot, and Create Snapshot.

2. Enter the name of the snapshot <YOUR INITIALS>snap, e.g. akSnap, the create button

The 'Create Instance Snapshot' dialog box is shown. It prompts the user to 'Enter a name for the instance snapshot.' The 'Name' field is filled with 'instSnapshot' and the 'Instance' field is filled with 'test1'. The 'Create' button is highlighted.



3. Select Instance Snapshot category on the left pane of the Instance page to see the newly created snapshot, wait till it State show complete by selecting the refresh button .
4. We can create a bootable image from this snapshot by clicking on the menu for the snapshot and Associate Image with this snapshot. This allows us to create an instance from our image by selecting Associate Image on the pop menu from the snapshot.





Summary

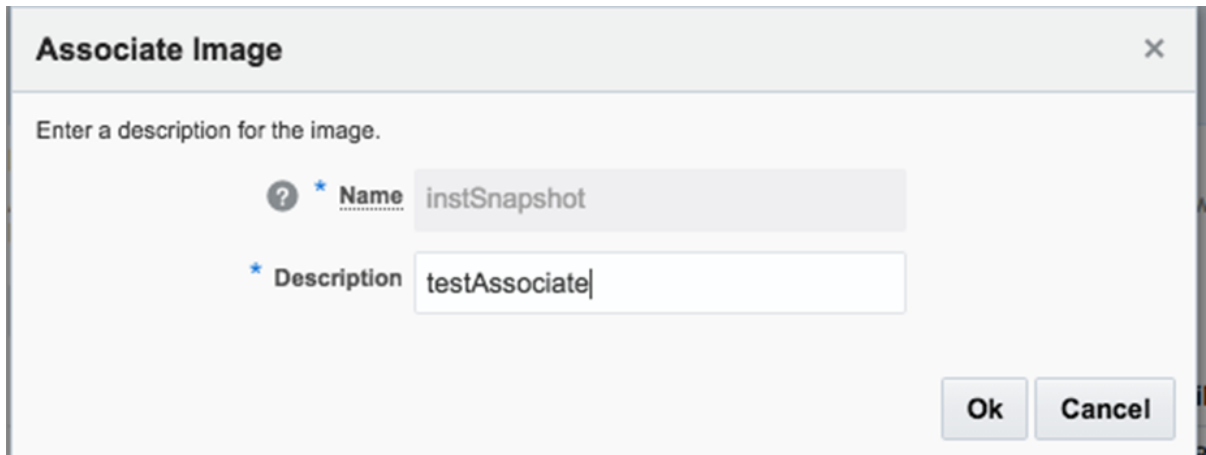
2 total snapshots 1 unique instances

Instance Snapshots
An instance snapshot is a point-in-time image of a virtual machine instance. It can be used to create new virtual machine instances. [Learn more.](#)

Search: Category: All Show: All  


	Name	Instance	State	Date	File	
	instSnapshot	test1	Complete	Aug 26, 2016 7:34:2...	881a008c-16a6-...	<div> Delete Associate Image </div>
	testSnap1	test1	Complete	Aug 25, 2016 10:51:...	881a008c-16a6-...	

5. Enter a name for the image to be associated, <YOUR INITIALS>Associate, e.g. akAssociate



Associate Image ×

Enter a description for the image.

 **Name**

Description

Ok **Cancel**

6. Select Image tab, Create Instance popup menu on the newly create image, then follow the same steps as creating a new instance, remember to remove the persistent boot disk if you want to create clone base on the new clone.



Compute

Instances

Network

Storage

Orchestrations

Images

Monitoring

Summary

8
images

86.47GB
compressed size

673GB
uncompressed size

Private Images

A private image is a template of a virtual hard disk with an installed operating system. Upload your private images to Oracle Storage Cloud Service, associate the images with Oracle Compute Cloud Service, and use the images to launch instances. [Learn more](#).

Category: All

Upload Image

Associate Image

Name	Description	Compressed Size	Uncompressed Size	
instSnapshot	testAssociate	663.48 MB	3 GB	
Microsoft_Windows_Server_...	Microsoft_Windows_Server_2008_R2	2.8 GB	25 GB	<div>Create Instance Update Delete</div>
Microsoft_Windows_Server_...	Microsoft_Windows_Server_2012_R2	5.15 GB	25 GB	
Oracle_F... Business Suite 10...	Oracle_F... Business Suite 10... Front-End...	22.3 GB	450 GB	



Practice 2-5: Creating and Attaching Block Volumes

A **storage volume** is a virtual disk that provides persistent block storage space for instances in Compute Classic.

You can use storage volumes to store data and applications. You can also associate a storage volume with a machine image and then, while creating an instance, you can specify that volume as a persistent boot disk for the instance.

- Capacity ranges from 1 GB to 2 TB, in increments of 1GB. You can attach one or more storage volumes to an instance wither while creating the instance or later, while the instance is running.
- Attach up to 10 storage volumes.
- Cannot detach a storage volume that was attached during instance creation. Otherwise detached storage volumes retain the data stored and isn't lost.

Task: Creating Block Volume

1. In the Compute Classic console click the **Storage** tab. Click **Create Storage Volume**.
2. Enter the required information:
 - a. Name: Name for the storage volume. Use <Name Initials>-storage
 - b. Deselect Boot Image. We'll be creating a normal storage for this lab not a Boot Image.
 - c. Size: Enter the size in GB of the storage volume. Allowed range is 1 GB to 2 TB. Enter 4 GB.
* If you intend to use this storage volume as a boot disk, then the size must be at least 5% higher than the boot image disk size.
 - d. Select a storage property: Standard
Based on your latency and IOPS requirements, select one of the following storage properties.

Storage Property	Latency	Throughput
storage/default	Standard	Standard
storage/latency	Low	High
storage/ssd/gpl	Lowest	Highest
 - e. Click **Create**
3. While the new storage volume is being created, the **Status** field for the storage volume shows **Initializing**.
When the storage volume is ready, the **Status** field changes to **Online**.



Task: Attaching Block Volume

1. Identify the storage volume that you want to attach. From the menu icon menu, select Attach Instance. Select the instance to which you want to attach the volume.
2. The **Attach as Disk #** field is filled automatically with the next available index at which the volume can be attached. You can leave this field at the automatically selected disk number or enter a higher number up to 10.

The disk number that you specify here determines the device name. The disk attached at index 1 is named `/dev/xvdb`, the disk at index 2 is `/dev/xvdc`, the disk at index 3 is `/dev/xvdd`, and so on.

Make a note of the disk number. You'll need it later when you mount the storage volume on the instance.

3. Click **Attach**.

Task: Mounting Block Volume

1. Log into your instances created previously.
 - a. `ssh -I <path to key> opc@<ip address>`
2. List the devices available on your instance:
 - a. **ls /dev/xvd***
 - b. Device names start from /dev/xvdb and are determined by the index number that you assigned when you attached the storage volumes. For example, if you attached a storage volume at index 1, the volume gets the device name, /dev/xvdb. The storage volume at index 2 would be /dev/xvdc, the storage volume at index 3 would be /dev/xvdd, and so on.
 - c. OR use command: **lsblk** to see all the block volumes
3. Identify the device name corresponding to the disk number that you want to mount.
 - a. For example, if you want to mount the storage volume that you had attached at index 3, the device name would be /dev/xvdd.
4. When mounting a storage volume for the first time, after formatting the storage volume, use a tool such as mkfs to create a file system on the storage volume. For example, to create an ext3 file system on /dev/xvdd, run the following command:
 - a. `sudo mkfs -t ext3 /dev/xvdd`
5. Create a mount point on your instance. For example, to create the mount point /mnt/store, run the following command:
 - a. `sudo mkdir /mnt/store`
6. Mount the storage volume on the mount point that you created on your instance. For example, to mount the device /dev/xvdd at the /mnt/store directory, run the following command:
 - a. `sudo mount /dev/xvdd /mnt/store`
7. To make the mount persistent across instance restarts, edit the /etc/fstab file and add the mount as an entry in that file.
 - a.
8. List the devices available on your instance and their mount points:
 - a. `sudo df -hT`
9. Congratulation! You attached a block volume.