Creating Virtual Machines

Overview

In this Section, you will explore the Virtual Machine instance options and create several VMs with different characteristics.

Objectives

In this lab, you explore the available options for VMs and see the differences between locations.

In this section, you learn how to perform the following tasks:

- Create several standard VMs
- Create advanced VMs

Task 1: Create a utility virtual machine

Create a VM

1. In the GCP Console, on the **Navigation menu** (), click **Compute Engine** > **VM instances**.
2. Click **Create**.
3. For **Name**, type a name for your instance. Hover over the question mark icon for advice about what constitutes a properly formed name.
4. For **Region** and **Zone** select **us-central1** and **us-central1-c** respectively.
5. For **Machine type**, examine the options.

Notice that the menu lists the number of vCPUs, the amount of memory, and a symbolic name such as *n1-standard-1*. The symbolic name is the parameter you would use to select the machine type if you were creating a VM using the gcloud command. Notice to the right of the zone and machine type that there is a per-month estimated cost.

1. Click **Details** to the right of the **Machine type** list to see the breakdown of estimated costs.
2. For **Machine type**, click **4 vCPUs (n1-standard-4)**. How did the cost change?
3. For **Machine type,** click **micro (1 shared vCPU)**. The micro type is a shared tenant VM that is inexpensive.
4. Leave the remaining settings as their defaults, and click **Create**. Wait until the new VM is created.
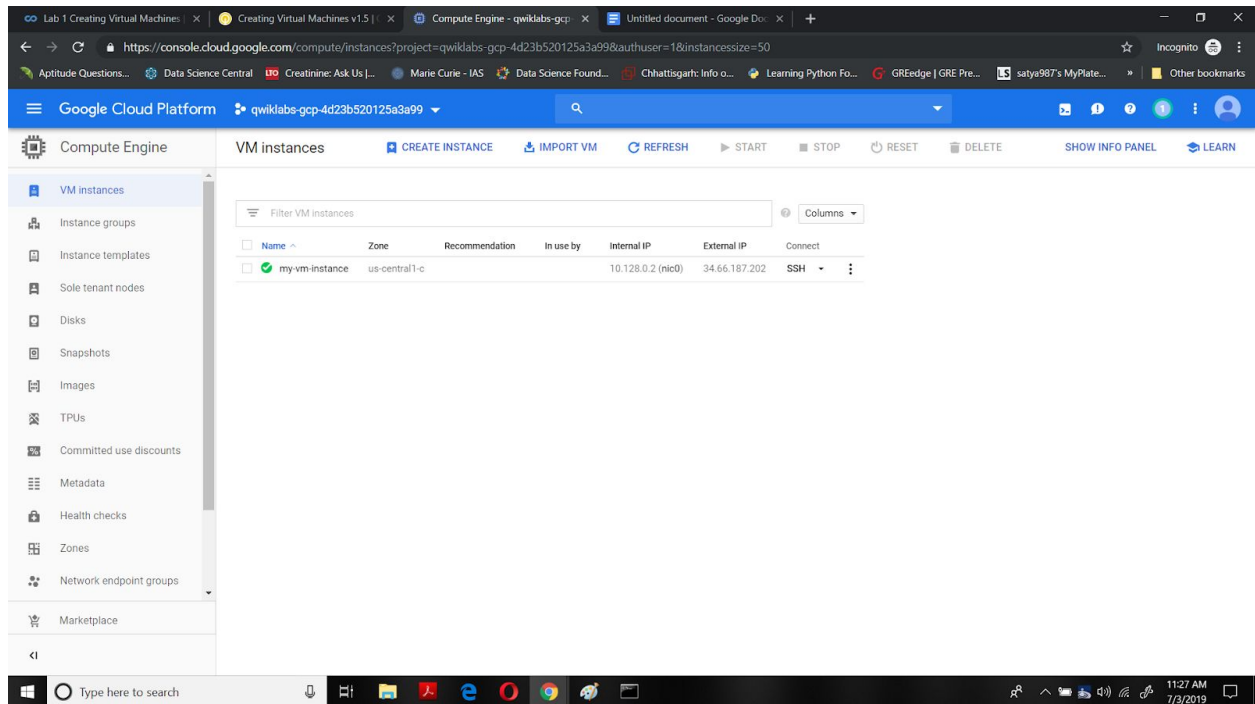
Explore the VM details

1. On the **VM instances** page, click on the name of your VM.

2. Locate **CPU platform** and note the value. Click **Edit**.

Notice that you can't change the machine type, the CPU platform, or the zone.

You can add network tags and allow specific network traffic from the internet through firewalls.

Some properties of a VM are integral to the VM, are established when the VM is created, and cannot be changed. Other properties can be edited. You can add additional disks and you can also determine whether the boot disk is deleted when the instance is deleted. Normally the boot disk defaults to being deleted

automatically when the instance is deleted. But sometimes you will want to override this behavior. This feature is very important because you cannot create an image from a boot disk when it is attached to a running instance. So you would need to disable **Delete boot disk when instance is deleted** to enable creating a system image from the boot disk.

1. Examine **Availability policies**.

You can't convert a non-preemptible instance into a preemptible one. This choice must be made at VM creation. A preemptible instance can be interrupted at any time and is available at a lower cost.

If a VM is stopped for any reason, (for example an outage or a hardware failure) the automatic restart feature will start it back up. Is this the behavior you want? Are your applications idempotent (written to handle a second startup properly)?

During host maintenance, the VM is set for live migration. However, you can have the VM terminated instead of migrated.

If you make changes, they can sometimes take several minutes to be implemented, especially if they involve networking changes like adding firewalls or changing the external IP.

1. Click **Cancel**.

Explore the VM logs

1. On the **VM instance details** page for your VM, click **Stackdriver Logging**.

Notice that you have now navigated to the Stackdriver Logging page.

This is a structured log view. At the top you can filter by using the pull-down menus, and there is a search box for searching based on labels or text.
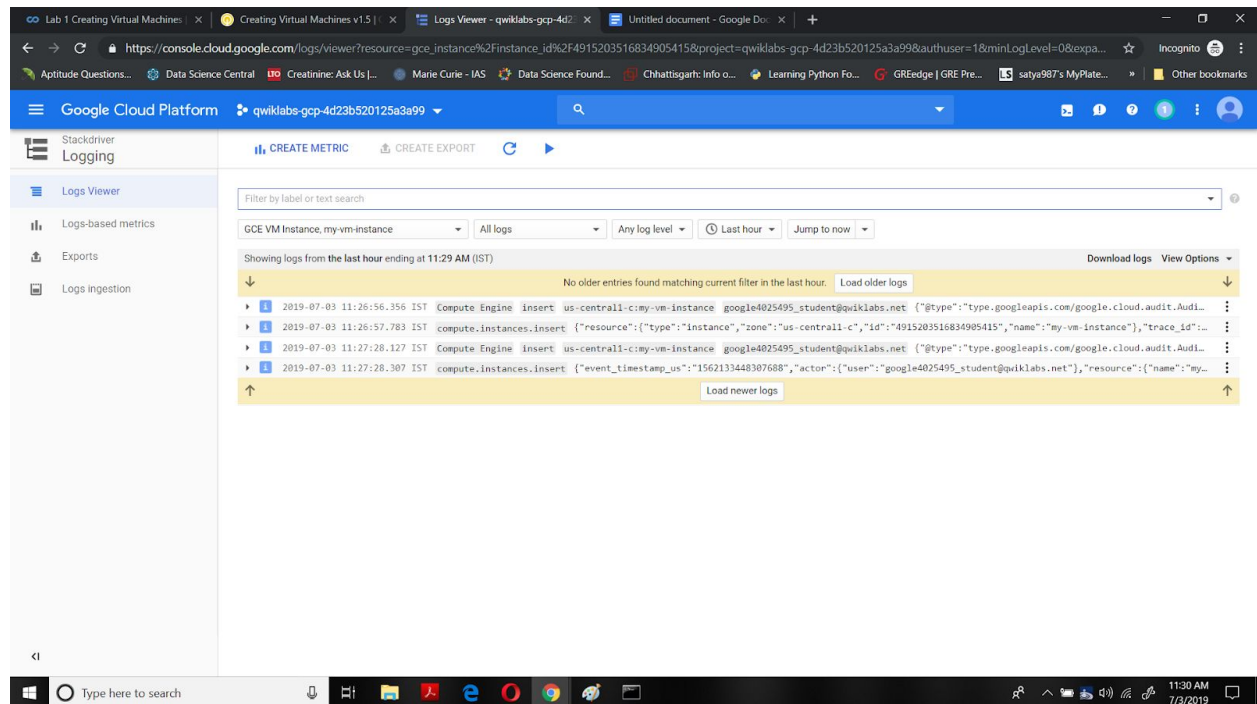
1. Click the small triangle to the left of one of the lines to see the kind of information it contains.
2. On the far right, click **View Options** > **Expand All**.

Task 2: Create a Windows virtual machine

Create a VM

1. On the **Navigation menu** ( ), click **Compute Engine** > **VM instances**.

2. Click **Create instance**.

3. Specify the following, and leave the remaining settings as their defaults:

Property	Value (type value or select option as specified)
Name	Type a name for your VM
Region	europe-west2
Zone	europe-west2-a
Machine type	2 vCPUs (7.5 GB of memory, n1-standard-2)
Boot disk	Change
OS images:	Windows Server 2016 Datacenter Core
Boot disk type:	SSD persistent disk
Size (GB):	100

1. Click **Select**.

2. For **Firewall**, enable **Allow HTTP traffic** and **Allow HTTPS traffic**.

3. Click **Create**.

When the VM is running, notice that the connection option in the far right column is RDP, not SSH. RDP is the Remote Desktop Protocol. You would need the RDP client installed on your local machine to connect to the Windows desktop.

Note: Installing an RDP client on your local machine is outside the scope of this lab and of the class. For this reason, you will not be connecting to the Windows VM during this lab. However, you will step through the usual procedures up to the point of requiring the RDP client.

Instructions for connecting to Windows VMs are here:

https://cloud.google.com/compute/docs/instances/windows/connecting-to-windows-instance

Set the password for the VM

1. Click on the name of your Windows VM to access the **VM instance details**.
2. You don't have a valid password for this Windows VM: you cannot log in to the Windows VM without a password. Click **Set Windows password**.
3. Click **Set**.
4. Copy the provided password, and click **CLOSE**.

You will **not** connect to the Windows VM during this lab. However, the process would look something like the following (depending on the RDP client you installed). The RDP client shown can be installed for Chrome here:

https://chrome.google.com/webstore/detail/chrome-rdp-for-google-clo/mpbbnannobiobpnfblimoapbephgifkm?hl=en-US

On the **VM instances** page, you would click **RDP** for your Windows VM and connect with the password copied earlier.

Task 3: Create a custom virtual machine

Create a VM

1. On the **Navigation menu** (), click **Compute Engine** > **VM instances**.
2. Click **Create instance**.
3. Specify the following, and leave the remaining settings as their defaults:

Property	Value (type value or select option as specified)
Name	Type a name for your VM
Region	us-west1
Zone	us-west1-b
Machine type	Customize
Cores	6 vCPU
Memory	32 GB

1. Click **Create**.
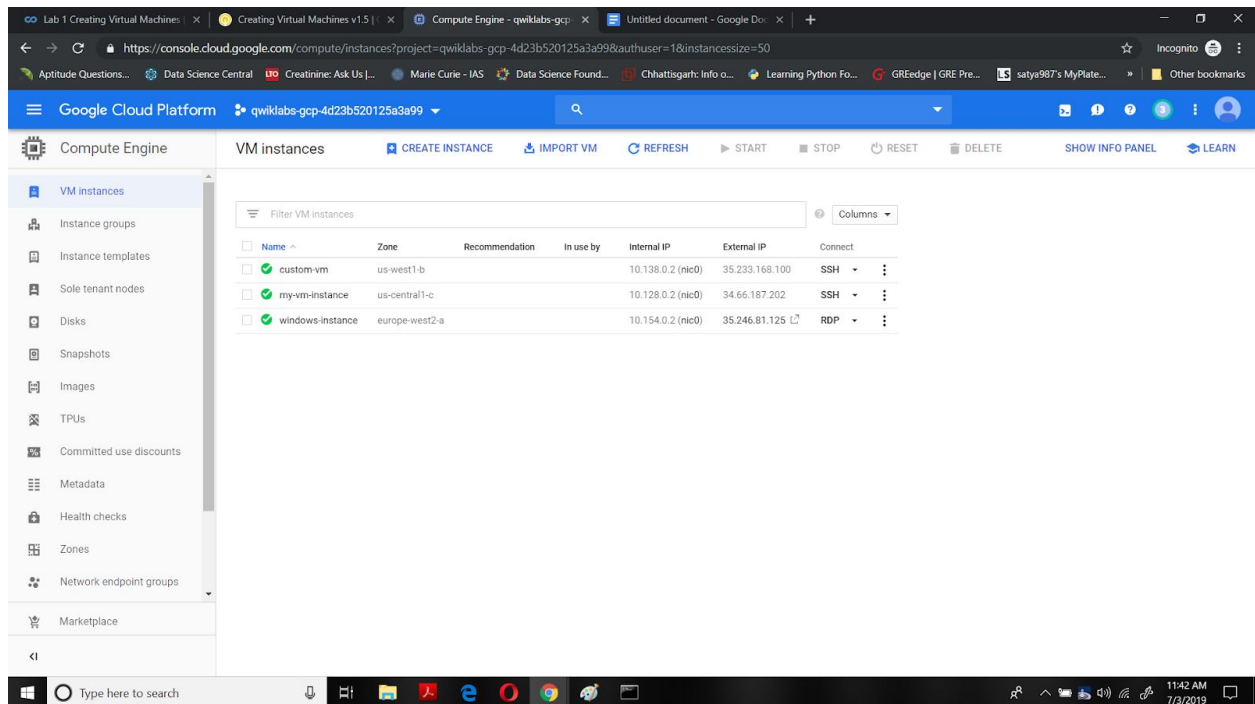
Connect via SSH to your custom VM

1. For the custom VM you just created, click **SSH**.
2. To see information about unused and used memory and swap space on your custom VM, run the following command:

```
free
```

1. To see details about the RAM installed on your VM, run the following command:
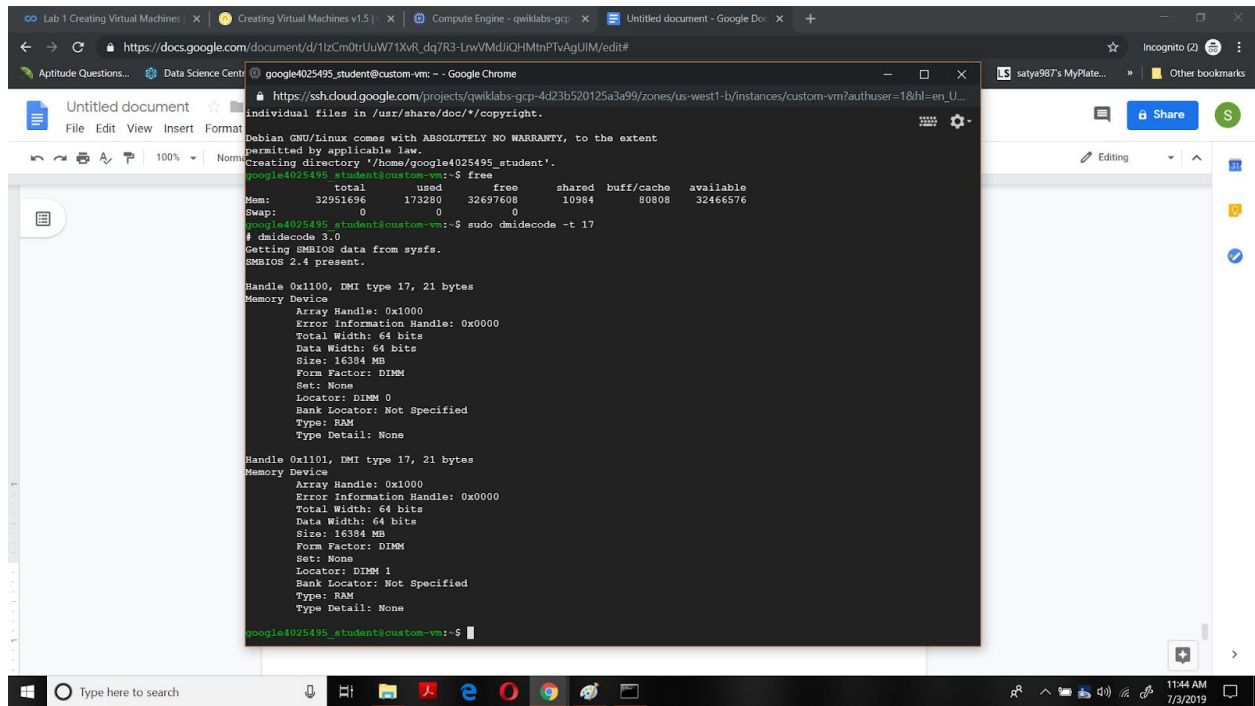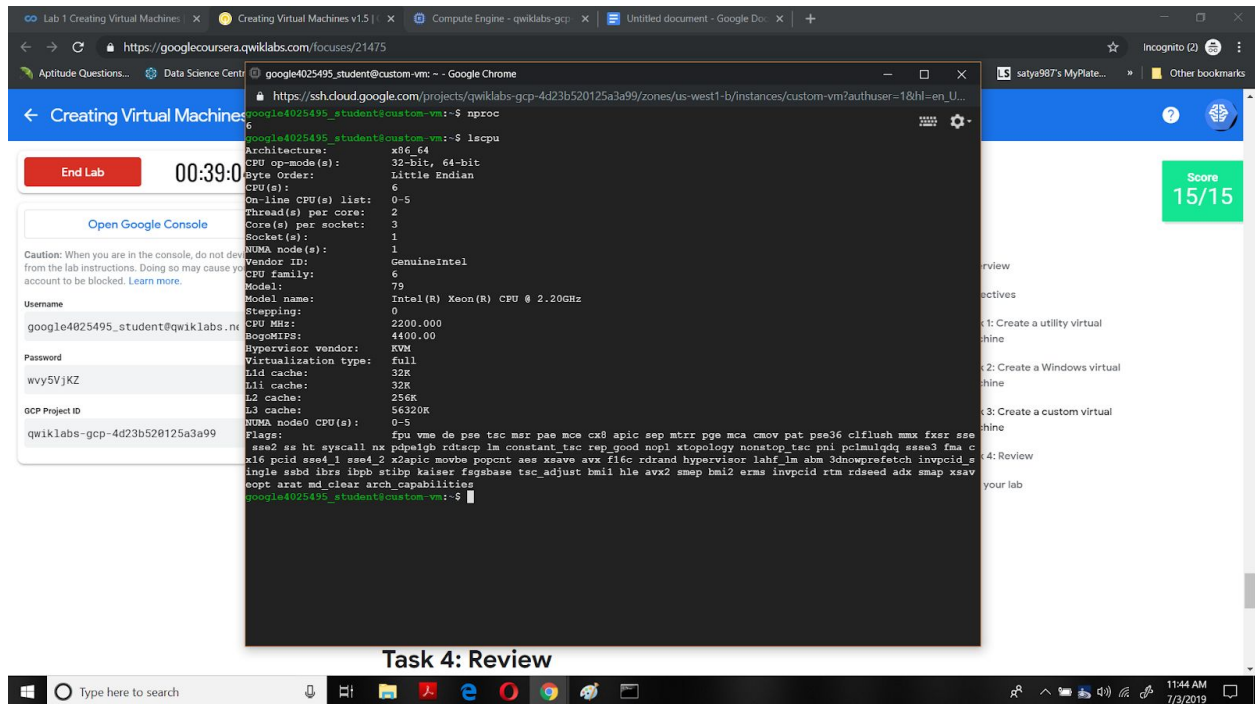
```
sudo dmidecode -t 17
```

Terminal content:

```
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Creating directory '/home/google4025495_student'.
google4025495_student@custom-vm:~$ free
              total        used        free      shared  buff/cache   available
Mem:       32951696      173280    32697608       10984       80808    32466576
Swap:             0           0           0
google4025495_student@custom-vm:~$ sudo dmidecode -t 17
# dmidecode 3.0
Getting SMBIOS data from sysfs.
SMBIOS 2.4 present.

Handle 0x1100, DMI type 17, 21 bytes
Memory Device
        Array Handle: 0x1000
        Error Information Handle: 0x0000
        Total Width: 64 bits
        Data Width: 64 bits
        Size: 16384 MB
        Form Factor: DIMM
        Set: None
        Locator: DIMM 0
        Bank Locator: Not Specified
        Type: RAM
        Type Detail: None

Handle 0x1101, DMI type 17, 21 bytes
Memory Device
        Array Handle: 0x1000
        Error Information Handle: 0x0000
        Total Width: 64 bits
        Data Width: 64 bits
        Size: 16384 MB
        Form Factor: DIMM
        Set: None
        Locator: DIMM 1
        Bank Locator: Not Specified
        Type: RAM
        Type Detail: None

google4025495_student@custom-vm:~$
```

1. To verify the number of processors, run the following command:

`nproc`

1. To see details about the CPUs installed on your VM, run the following command:

`lscpu`

1. To exit the SSH terminal, run the following command:

Exit