0 Configuring the Environment

# Intro

We are using Google Cloud Platform for our labs.

So, you get to learn about cloud computing while using a cloud computing platform!

You may ask yourself sometime during this class why it is that we don't just install Cloudstack on multiple Google Cloud VMs. This would make good sense. But there are problems:

1. Google doesn't like having any VMs on its network that it doesn't create. This isn't an insurmountable problem, but it complicates our networking options for Cloudstack.
2. Google uses subnet 169.254.0.0, and so does Cloudstack. Again, with appropriate firewalling and other network configuration we might overcome this, but it isn't simple.

What we are going to do is create a single Google virtual machine which we will configure to give us a virtual network. We will then put all our Cloudstack VMs on that virtual network (running inside that Google virtual machine).

We will call the Google virtual machine: outernetwork1

For any of the VMs running INSIDE outernetwork1 to function at all smoothly, we are going to specify at EACH and EVERY level of virtual machine that it is running nested virtualization:

# Access Google Cloud Platform

We will assume you have handled the Week 0 issue of creating a project for the class and associating the project with a billing account. If not, got back to Week 0 and do that first.

Access Google Cloud Platform (GCP):

1. access your personal browser on your personal system
2. in the address bar type: console.cloud.google.com
3. on the blue GCP menu bar to the far right, note the user name by mousing over the round icon.
   1. if it is incorrect, click on the icon and select from the list of other possible logins
   2. use "add account" if the login you need is not in the list
4. on the blue GCP menu bar third from the left is a dropdown of available projects. Make sure you are in the right project

You will follow much this same pattern to access your project every time you work with GCP.

# Define the outernetwork1 VM

On the blue GCP menu bar, find the first icon on the left side (three horizontal lines called "the hamburger") and select it.

* 1. find Compute Engine
  2. find VM instances
  3. select "Create Instance" from one of the locations on the page

You will create a VM with the following specifications -- HOWEVER, please note that you are just setting up the line command via the menus.

Do NOT press CREATE at the bottom of the page.

Specs:

Name: outernetwork1

Region: us-west1 (Oregon) -- assuming you are in Bellingham, WA

Series: N2

Machine type: n2-standard-4 (4 vCPU, 16 GB memory)

Boot disk: Ubuntu / Ubuntu 18.04 (**x86/64 not the default ARM instance**)

40GB

Firewall: http/https

Advanced options:

Networking:

IP forwarding: <select this to enable it>

Do NOT press CREATE at the bottom of the page.

Press "Equivalent command line" and copy the results to a simple editor (like Notepad).

Add the following in your editor:

--enable-nested-virtualization

Cancel the Create Instance request you generated.

# Create outernetwork1 VM

On the blue GCP menu bar, find the icon that says "Activate Cloud Shell" when you hover over it with your mouse.

You might be prompted to grant some permissions. Say yes (or Authorize), if prompted.

Copy all the text from your editor that starts with "google compute instances create…" and ends with "--enable-nested-virtualization".

Paste that whole single line command into the Cloud Shell you just started and press enter.

Very shortly, you should get output that looks similar to this:

NAME: outernetwork1

ZONE: us-west1-b

MACHINE\_TYPE: n2-standard-4

PREEMPTIBLE:

INTERNAL\_IP: 10.138.0.2

EXTERNAL\_IP: 35.197.67.88

STATUS: RUNNING

There is a warning message regarding the resizing of our boot disk from 10GB to 40GB. But, happily, this is no problem for us.

Close the cloud shell window.

Refresh the VM instances table. You should see your running VM.