# Lab 2 – GCP VM Installs

Bowers, Winter 2021

Due 01/31/2021 at 11:59pm

For this lab we are going to work with Google Cloud to set up a micro-instance of a virtual machine. **Please read this guide carefully and follow along**. There will be homework questions. seeded throughout this document asking you to take a screenshot here or there, report information, etc. and you won’t be able to go back to it without starting over.

You can create as many VMs as you want, but keep in mind that your account will be charged for each moment a VM is online. **NOTE that you should never put your personal credit card information into the site. This is 100% free for you.**

The reason we’re using a micro-instance is that it is free to your account, as long as you don’t send/receive too much data.

## Account Setup

You should have received an email forwarded from myself containing information for signing up for Google Cloud. Your OU email is required for the first form, as that will send you the coupon. This is what that first email should look like:

Graphical user interface, text, application, email

Description automatically generated

From your OU email, click on the “Student Coupon Retrieval Link.” Go through the steps and you should receive a second email in your OU email.

In your second email, click on the link to redeem the coupon. You should **hopefully** see this dialog message:

Graphical user interface, text, letter

Description automatically generated

If you don’t get this dialog message, that’s fine. Either way, **make sure that you switch your account at the coupon redemption page to be your personal account, NOT YOUR OU ACCOUNT.**

Graphical user interface, text, application, chat or text message, email

Description automatically generated

**Make sure your personal Gmail account is active, NOT YOUR OU account.** Then fill out the GCP credit application. Make sure to copy over the coupon code included in the second email.

Graphical user interface, text, application, email

Description automatically generated

You might see a dialog message like this if you’ve never used GCP before. Agree to the terms of service and click Continue. It might take a minute, but now you should see the dashboard:

Graphical user interface, application

Description automatically generated

**If you see the dialog message at the top saying you have a free trial for $300 of credits, click Dismiss**. If you click this, you may become ineligible for the $50 in educational credits that I’ve already received for you. If you run out of money, I can request more for you, however it may take time for Google to process the request.

Okay, now you should have a billing account. You can access this at <http://cloud.google.com> now whenever you want to see how many credits you have left. You can also click the “Billing” link in the left pane from the screenshot above. Google Cloud itself is really outside the scope of this lab, however I’d recommend reading up on its capabilities (there are a LOT of really cool things you can do with it).

Your billing account page should look like this, except you’ll see $50 instead of $100:

Graphical user interface, application, email

Description automatically generated

All of your Projects in GCP will be linked to this billing account. This is how cloud computing works.

Now we need to create a Project for the class. The project will contain all VMs related to the class (so, one Project will contain both the Windows and Ubuntu VMs). Click the GCP logo on the top left to bring you to the home page, or navigate to <https://console.cloud.google.com>.

Graphical user interface, text, application, email

Description automatically generated

You should see a “My First Project” dropdown menu at the top, in the blue bar. Click on it.

Graphical user interface, text, application, email

Description automatically generated

Click on the “NEW PROJECT” in the top right corner of the dialog box.

Graphical user interface, text, application, email

Description automatically generated

For the Project name, name your project **<LastName>-CSI3670-W2021**, where <LastName> is your last name without the angle brackets. Leave the organization alone. Click “Create.”

You’ll be navigated back to your home page. In the top blue bar, choose your newly created project.

Graphical user interface, application

Description automatically generated

## VM Setup

Now, you will create **two** VMs. The first will be a microinstance (similar to last semester if you had me for CSI 3660). The second will be Windows Server, to play with as a dev/test environment.

**Ubuntu VM Creation**

In the menu on the left of your homepage, click on Compute Engine.

Graphical user interface, application

Description automatically generated

It may take a few moments for the Compute Engine to initialize. Once it is done, click the Create button.

Graphical user interface, application, Word

Description automatically generated

You’ll be taken to the VM creation page. By default it looks like this:

Graphical user interface, application, email

Description automatically generated

Name your VM **<lastname>-csi3670-microinstance-1**. The region and zone should be us-central as shown, as this will affect the billing. You can play around with the machine type, location, etc. and see how it affects the cost changes on the right (but don’t click Create yet). The beefier the machine, the more expensive. We’re going to use a smaller model and keep things free.

Choose **N1** for the Series option and **f1-micro** for the Machine type. Note that now, to the right, you should see a dialog message that says “Your first 744 hours of f1-micro instance usage are free this month.” **If you do not use these options, you will be billed extra.**

Leave the Confidential VM service and Container options unchecked. For the Boot disk option, click Change. Under the Public images tab, choose Ubuntu for the Operating system and Ubuntu 20.10 for the Version. Change the Size to be 30GB and leave the Boot disk type as Standard persistent disk.

Graphical user interface, text, application, email

Description automatically generated

Once you have the same configurations, click Select at the bottom. Check the Allow HTTP and HTTPS traffic options. Your microinstance should look like the screenshot below (obviously with a different name):

Graphical user interface, application, email

Description automatically generated

Click Create at the bottom. The VM instance creation will take a few minutes. Once it’s done, you’ll see a green checkmark.

Graphical user interface, application

Description automatically generated

Once it’s ready and you see a green checkmark, you can open the instance by clicking its name and looking at the details and monitoring tabs.

Go back to the VM instances screen (like the screenshot above) and click on the SSH at the right. Google Cloud makes SSH ridiculously easy to do in the browser. This will pop open an SSH window. Depending on your browser settings, it may see it as a popup window and try to block it. Once you allow the window to be opened, you might see something similar to this:

A picture containing text

Description automatically generated

Click Connect. This may take some time, but once the connection is established, you should see a screen similar to this:

Text

Description automatically generated

Yay! You are now in your Linux virtual machine. Now we should make sure our machine is up to date and install Apache. This is something that should be done fairly regularly to make sure things like security updates are applied to your software.

In the terminal run (without the dollar sign, I use the dollar sign to indicate that you should type a command into the shell):

$ sudo apt update && sudo apt upgrade

When prompted, type **y** and hit enter to accept. Once it’s complete, type:

$ sudo apt-get install apache2

Again, type y and hit enter to accept.

Now it’s time to put together the actual lab assignment. Create a Word document (Word is free for students, see the syllabus on Moodle if you don’t have it installed yet) and type your name at the top.

In a browser, type http:// followed by the external IP address of your GCP microinstance. You should see the Apache default page. Take a screenshot of this page, **including the IP address in your browser**, and paste the screenshot in the Word document beneath your name. See the screenshot on the next page for something similar.

That’s it! You’re done with your Ubuntu VM for now. Now, navigate back to the VM instances page in GCP Compute Engine. Check the box next to your VM instance and click the Stop (square) button at the top.

Graphical user interface, application

Description automatically generated

**This step is important, since you will be billed while your VM is on or suspended.** Make sure that when you click stop, your VM is in a safe state to be shut down (otherwise, use Suspend). If prompted with a dialog box to Stop VM instance, click Stop. Once the VM successfully shuts down, you should see it grayed out. You’ll need to power it back on when you want to use it next.

**Graphical user interface, application

Description automatically generated**

Graphical user interface, text, application, letter

Description automatically generated

## Windows GCP VM Creation

Click on the Create instance icon (the blue icon at the left with the + sign).

Graphical user interface, application

Description automatically generated

Go through the same process as your Ubuntu VM. Change the name to be <lastname>-csi3670-windows or something similar to distinguish between your Ubuntu VM. Choose the same region and zone. Give it an **n1-standard-1 (1vCPU, 3.75GB memory)**. If we used the same machine configuration as we did for Ubuntu, we don’t meet the Microsoft suggestion for performance and would probably run into issues. For the Operating System, choose Windows Server. For the Version, choose Windows Server 2019 Datacenter. For the size, you can stick with 50GB. Allow the HTTP and HTTPS traffic and click Create.

**BECAUSE THIS IS NOT THE FREE TYPE OF VM LIKE YOUR UBUNTU MICROINSTANCE, MAKE SURE YOU ALWAYS ALWAYS ALWAYS TURN OFF YOUR WINDOWS VM WHEN YOU ARE DONE**. Otherwise your billing will be crazy. Once your VM is created, click the RDP icon to launch a Remote Desktop session.

Graphical user interface, text, application

Description automatically generated

You may get a dialog box like this:

Graphical user interface, text, application, email

Description automatically generated

Either download the RDP file or install the Chrome extension (<https://chrome.google.com/webstore/detail/chrome-remote-desktop/inomeogfingihgjfjlpeplalcfajhgai?hl=en>). If you’re on Mac or Linux, look up how to connect via Remote Desktop.

Personally, I use a MacBook. I downloaded Microsoft Remote Desktop. Then, in GCP, I downloaded the RDP file. When I opened Microsoft Remote Desktop, I navigated to the Settings dropdown menu, chose the option to Import from RDP file, and navigated to where the RDP file from my GCP microinstance downloaded. From there, I was able to open it. I also needed to go into System Preferences to enable remote connections for Microsoft Remote Desktop through my firewall settings. I also had to click the down-arrow next to RDP in the VM instances page to set my default password for my account.

Once you have access to the remote desktop, open up Windows Server. **Take a screenshot to demonstrate that you installed Windows Server correctly and are able to access the Desktop interface.** Paste this screenshot underneath the Ubuntu screenshot in your Word document.

Upload your Word document with the screenshots to Moodle.