

[End Lab](#)

00:48:48

External IP address

35.224.120.0



username

student-00-a010e400232e

[Download PEM](#)[Download PPK](#)Score
50/50

Software Packages and File Archives on Linux

1 hour

1 Credit

Rate Lab

Introduction

This lab focuses on installing and removing software in Linux, and working with zipped files. You'll be installing a text editor called Atom, and extracting/unextracting .tar files. You'll also use **apt** to install/uninstall programs.

Head's up: You'll experience a delay as the labs initially load (particularly for Windows labs). So, please **wait a couple of minutes for the labs to load**. Please also make sure to access the labs **directly through Coursera** and not in the Qwiklabs catalog. If you access the labs through the Qwiklabs catalog, you will **not** receive a grade. (As you know, a passing grade is required to matriculate through the course.) The grade is calculated when the lab is complete, so be sure to hit "**End Lab**" when you're done!

You'll have 60 minutes to complete this lab.

Introduction

[Accessing the virtual machine](#)[Installing Atom](#)[Extracting an archive](#)[Archiving files](#)[Installing 7-Zip](#)[Uninstalling GIMP](#)[Conclusion](#)[End your lab](#)

Start the lab

You'll need to start the lab before you can access the materials in the virtual machine OS. To do this, click the green "Start Lab" button at the top of the screen.

Note: For this lab you are going to access the **Linux VM** through your **local SSH Client**, and not use the **Google Console** (**Open GCP Console** button is not available for this lab).

[Start Lab](#)

After you click the "Start Lab" button, you will see all the SSH connection details on the left-hand side of your screen. You should have a screen that looks like this:

External IP address

[REDACTED]

username

[REDACTED]

[Download PEM](#)

[Download PPK](#)

Accessing the virtual machine

Please find one of the three relevant options below based on your device's operating system.

Note: Working with Qwiklabs may be similar to the work you'd perform as an **IT Support Specialist**; you'll be interfacing with a cutting-edge technology that requires multiple steps to access, and perhaps healthy doses of patience and persistence(!). You'll also be using **SSH** to enter the labs -- a critical skill in IT Support that you'll be able to practice through the labs.

Option 1: Windows Users: Connecting to your VM

In this section, you will use the PuTTY Secure Shell (SSH) client and your VM's External IP address to connect.

Download your PPK key file

You can download the VM's private key file in the PuTTY-compatible **PPK** format from the Qwiklabs Start Lab page. Click on [Download PPK](#).

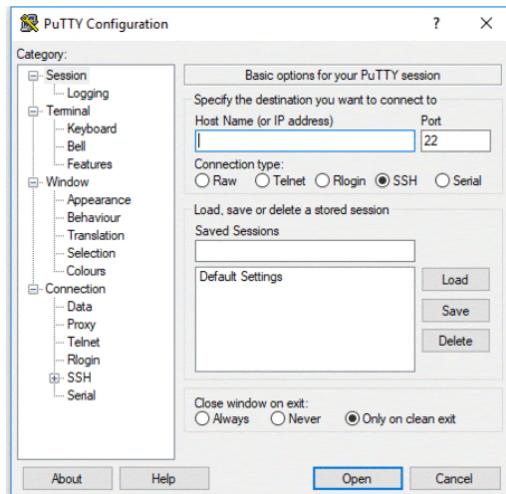
[Download PEM](#)

[Download PPK](#)

Connect to your VM using SSH and PuTTY

1. You can download Putty from [here](#)
2. In the **Host Name (or IP address)** box, enter `username@external_ip_address`.

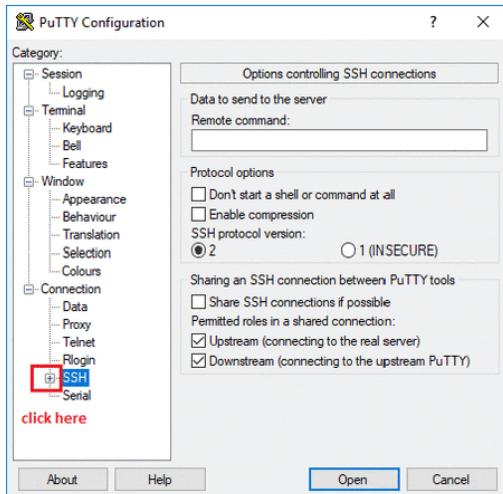
Note: Replace `username` and `external_ip_address` with values provided in the lab.



3. In the **Category** list, expand **SSH**.

4. Click **Auth** (don't expand it).
5. In the **Private key file for authentication** box, browse to the PPK file that you downloaded and double-click it.
6. Click on the **Open** button.

Note: PPK file is to be imported into PuTTY tool using the Browse option available in it. It should not be opened directly but only to be used in PuTTY.



7. Click **Yes** when prompted to allow a first connection to this remote SSH server. Because you are using a key pair for authentication, you will not be prompted for a password.

Common issues

If PuTTY fails to connect to your Linux VM, verify that:

- You entered <username>@<external ip address> in PuTTY.
- You downloaded the fresh new PPK file for this lab from Qwiklabs.
- You are using the downloaded PPK file in PuTTY.

Option 2: OSX and Linux users: Connecting to your VM via SSH

Download your VM's private key file.

You can download the private key file in PEM format from the Qwiklabs Start Lab page. Click on **Download PEM**.



Connect to the VM using the local Terminal application

A **terminal** is a program which provides a **text-based interface for typing commands**. Here you will use your terminal as an SSH client to connect with lab provided Linux VM.

1. Open the Terminal application.

- To open the terminal in Linux use the shortcut key **Ctrl+Alt+t**.
- To open terminal in **Mac (OSX)** enter **cmd + space** and search for **terminal**.

2. Enter the following commands.

Note: Substitute the **path/filename** for the **PEM** file you downloaded, **username** and **External IP Address**.

You will most likely find the PEM file in **Downloads**. If you have not changed the download settings of your system, then the path of the PEM key will be
~/Downloads/qwikLABS-XXXXX.pem

```
chmod 600 ~/Downloads/qwikLABS-XXXXX.pem
```

```
ssh -i ~/Downloads/qwikLABS-XXXXX.pem username@External Ip Address
```

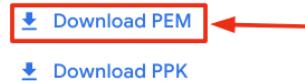
```
laptop:~ $ ssh -i ~/Downloads/qwikLABS-L923-42090.pem gcpstaggeduitt370_student@35.239.106.192
The authenticity of host '35.239.106.192 (35.239.106.192)' can't be established.
ECDSA key fingerprint is SHA256:vrzBdaYutrufh6Aw2n0zoy1oqPETHf931olvxtIM8.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '35.239.106.192' (ECDSA) to the list of known hosts.
laptop:~ $ gcpstaggeduitt370_student@35.239.106.192:~$ 
```

Option 3: Chrome OS users: Connecting to your VM via SSH

Note: Make sure you are not in **Incognito/Private mode** while launching the application.

Download your VM's private key file.

You can download the private key file in PEM format from the Qwiklabs Start Lab page. Click on **Download PEM**.



Connect to your VM

1. Add Secure Shell from [here](#) to your Chrome browser.
2. Open the Secure Shell app and click on **[New Connection]**.



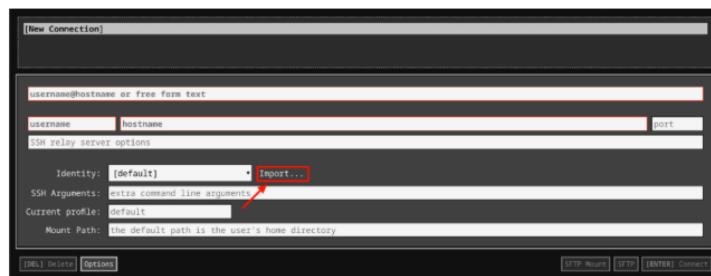
3. In the **username** section, enter the username given in the Connection Details Panel of the lab. And for the **hostname** section, enter the external IP of your VM instance that is mentioned in the Connection Details Panel of the lab.



4. In the **Identity** section, import the downloaded PEM key by clicking on the **Import...** button beside the field. Choose your PEM key and click on the **OPEN** button.

Note: If the key is still not available after importing it, refresh the application, and select it from the **Identity** drop-down menu.

5. Once your key is uploaded, click on the **[ENTER] Connect** button below.



6. For any prompts, type **yes** to continue.

7. You have now successfully connected to your Linux VM.

You're now ready to continue with the lab!

Installing Atom

First, use dpkg to install a text editor, called Atom. A .deb file is located at "/home/qwiklab/downloads/atom-amd64.deb", which you can install using this command:

```
sudo dpkg -i /home/qwiklab/downloads/atom-amd64.deb
```

You'll see some errors after this command, but that's okay! The atom package has some dependencies that aren't installed on your machine yet, and dpkg is just warning you that they need to be installed:

```
root@eddie:~# sudo dpkg -i /home/qwiklab/downloads/atom-amd64.deb
(Reading database ... 66613 files and directories currently installed.)
Preparing to unpack .../downloads/atom-amd64.deb ...
Unpacking atom (1.21.0) ...
dpkg: dependency problems prevent configuration of atom:
 atom depends on gconf2; however:
  Package gconf2 is not installed.
 atom depends on gconf-service; however:
  Package gconf-service is not installed.
 atom depends on libnotify4; however:
  Package libnotify4 is not installed.
 atom depends on libxtst6; however:
  Package libxtst6 is not installed.
 atom depends on libnss3; however:
  Package libnss3 is not installed.
 atom depends on gvfs-bin; however:
  Package gvfs-bin is not installed.
 atom depends on xdg-utils; however:
  Package xdg-utils is not installed.

dpkg: error processing package atom (--install):
```

```
dependency problems - leaving unconfigured
Processing triggers for mime-support (3.59ubuntu1) ...
Errors were encountered while processing:
 atom
gcpstaging7120_student@linux-instance:~$
```

You can remedy this by using **apt** to fix the missing dependencies, using this command:

```
sudo apt install -f
```

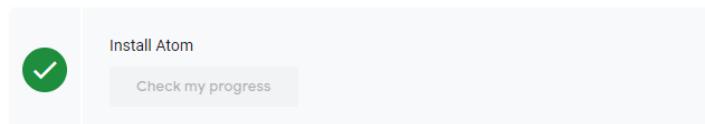
You'll be prompted to confirm your decision to continue with the operation by typing "Y" (for "Yes"), midway through the process.

Now Atom is successfully installed, which you can verify using dpkg:

```
dpkg -s atom
```

```
gcpstaging7120_student@linux-instance:/home/qwiklab/extract_me$ dpkg -s atom
Package: atom
Status: install ok installed
Priority: optional
Section: devel
Installed-Size: 456200
Maintainer: GitHub <atom@github.com>
Architecture: amd64
Version: 1.21.0
```

Click Check my progress to verify the objective.



Extracting an archive

Next, you will extract a .tar archive. The archive "extract_me.tar" is located in "/home/qwiklab/downloads/". Move to that directory, using this command:

```
cd /home/qwiklab/downloads
```

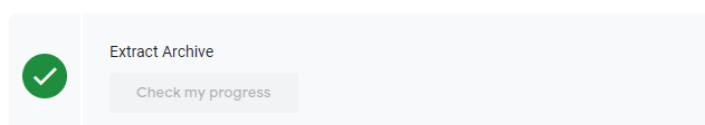
You can use the Linux tar command to extract it using this command:

```
sudo tar -xvf extract_me.tar
```

The contents of the archive (the file named "great_job") are then extracted:

```
gcpstaging7120_student@linux-instance:$ sudo tar -xvf /home/qwiklab/downloads/extract_me.tar
/home/qwiklab/extract_me/
/home/qwiklab/extract_me/great_job
gcpstaging7120_student@linux-instance:$
```

Click Check my progress to verify the objective.



Archiving files

First, move back to the original directory:

```
cd ~
```

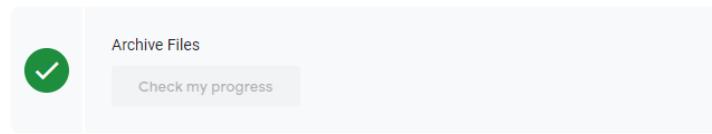
You can also use the tar command to do the reverse operation, creating an archive. There are three files in your /home/qwiklab/documents folder named "Earth", "Mercury", and "Venus". Use tar to archive them into the file "Planets.tar" using this command (one line):

```
tar -cvf Planets.tar /home/qwiklab/documents/Earth  
/home/qwiklab/documents/Mercury /home/qwiklab/documents/Venus
```

"Planets.tar" will then be added to your current directory, and will contain the three planet files:

```
[root@staging7120 student@linux-instance]~$ tar -cvf Planets.tar /home/qwiklab/documents/Earth /home/qwiklab/documents/Mercury /home/qwiklab/documents/Venus  
tar: Removing leading '/' from member names  
/home/qwiklab/documents/Earth  
/home/qwiklab/documents/Mercury  
/home/qwiklab/documents/Venus  
[root@staging7120 student@linux-instance]~$ ls  
Planets.tar  
[root@staging7120 student@linux-instance]~$ [ ]
```

Click Check my progress to verify the objective.



Installing 7-Zip

You can also install programs on Linux, using **apt** too, which handles dependencies for you to simplify the installation process. You can install the program 7-Zip, using **apt**, with a simple one-line command:

```
sudo apt install p7zip-full
```

When it's finished, 7-Zip will be installed:

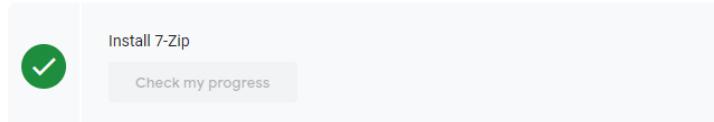
```
[root@staging7120 student@linux-instance]~$ sudo apt-get install p7zip-full  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
Suggested packages:  
  p7zip-rar  
The following NEW packages will be installed:  
  p7zip-full  
0 upgraded, 1 newly installed, 0 to remove and 168 not upgraded.  
Need to get 919 kB of archives.  
After this operation, 3,959 kB of additional disk space will be used.  
Get:1 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial/universe amd64 p7zip-full amd64 9.20.1-dfsg.1-4.2 [919 kB]  
Fetched 919 kB in 0s (3,359 kB/s)  
Selecting previously unselected package p7zip-full.  
(Reading database ... 87236 files and directories currently installed.)  
Preparing to unpack .../p7zip-full_9.20.1-dfsg.1-4.2_amd64.deb ...  
Unpacking p7zip-full (9.20.1-dfsg.1-4.2) ...  
Processing triggers for man-db (2.7.5-1) ...  
Setting up p7zip-full (9.20.1-dfsg.1-4.2) ...  
[root@staging7120 student@linux-instance]~$ [ ]
```

You can verify the installation using dpkg, with this command:

```
dpkg -s p7zip-full
```

```
gcpstaging7120_student@linux-instance:~$ dpkg -s p7zip-full
Package: p7zip-full
Status: install ok installed
Priority: optional
Section: utils
Installed-Size: 3866
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Architecture: amd64
Source: p7zip
Version: 9.20.1~dfsg.1-4.2
```

Click Check my progress to verify the objective.



Uninstalling GIMP

Uninstallation can also be handled by **apt** by using "remove" instead of "install" as the argument. GIMP, an image-editing program, is already installed on your machine. Uninstall it now, using **apt** with this command:

```
sudo apt remove gimp
```

You'll be prompted to confirm your decision midway through the uninstallation process. Confirm this by typing "Y" (for "Yes"). Then, GIMP will be uninstalled:

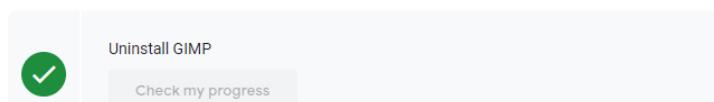
```
gcpstaging7120_student@linux-instance:~$ sudo apt-get remove gimp
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  ghostscript gimp-data gfonts libaal libamdm2.4.1 libasound2 libasound2-data libasyncns0
  libbabl-0.1-0 libblas-common libblas3 libcaca0 libccm2.4.1 libccolam2.9.1 libcholmod3.0.6
  libcolamd2.9.1 libcupsfilters1 libcupsimage2 libflac0 libgegl-0.3-0 libgfortran3 libgimp2.0
  libgmp1 libgs9-common libgs9-0.35 libilmbase12 libjasper1 libjbig2dec0 liblapack3
  libmm2 libogg0 libopenexr22 libpaper-utils libpaper1 libpoppler-glib0 libpoppler50 libpulse0
  libquadmath0 libraw15 libred11.2debian1 libstdc++6 libsuiteparseconfig4.4.6 libumfpack5.7.1
  libvorbis0a libvorbisenc2 libwmf0.2-7 poppler-data python-cairo python-gobject-2 python-gtk2
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  gimp
0 upgraded, 0 newly installed, 1 to remove and 168 not upgraded.
After this operation, 16.0 MB disk space will be freed.
Do you want to continue? [Y/n] Y
(Reading database ... 87300 files and directories currently installed.)
Removing gimp (2.8.16-1ubuntu1.1) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for desktop-file-utils (0.22-1ubuntu5.1) ...
Processing triggers for mime-support (3.59ubuntu1) ...
gcpstaging7120_student@linux-instance:~$
```

You can verify this using **dpkg** (like before) with this command:

```
dpkg -s gimp
```

```
gcpstaging7120_student@linux-instance:~$ dpkg -s gimp
Package: gimp
Status: deinstall ok config-files
Priority: optional
Section: graphics
Installed-Size: 15618
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Architecture: amd64
Version: 2.8.16-1ubuntu1.1
```

Click Check my progress to verify the objective.



Conclusion

Congrats! You've successfully installed and uninstalled programs on Linux, and archived and unarchived .tar files.

End your lab

When you have completed your lab, click **End Lab**. Qwiklabs removes the resources you've used and cleans the account for you.

You will be given an opportunity to rate the lab experience. Select the applicable number of stars, type a comment, and then click **Submit**.

The number of stars indicates the following:

- 1 star = Very dissatisfied
- 2 stars = Dissatisfied
- 3 stars = Neutral
- 4 stars = Satisfied
- 5 stars = Very satisfied

You can close the dialog box if you don't want to provide feedback.

For feedback, suggestions, or corrections, please use the **Support** tab.

 Chat