

[End Lab](#)

00:39:45

External IP address

130.211.235.155



username

student-01-3a75c4e04dbe

[Download PEM](#)[Download PPK](#)

Score

50/50

Use Logs to Help You Track Down an Issue in Linux

1 hour

1 Credit

 Rate Lab

Introduction

In this lab, you'll use logs to help you troubleshoot and track down an issue. As an IT Support Specialist, it's crucial that you know how to troubleshoot and "follow the cookie crumbs." There are five different issues that you'll need to resolve, using the skills you've learned so far in this course.

[Introduction](#)[Accessing the virtual machine](#)[Viewing logs on Linux](#)[Conclusion](#)[End your lab](#)

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.

WARNING - If it's your **second** attempt of this lab: go back to Coursera and retry this lab by hitting the "**Open Tool button**" in order to get the full score for this attempt.

The scenario

Your computer is having some issues, and you can't seem to figure out what's wrong. Argh! Dig through the logs to figure out how to fix these issues.

You'll use logs to identify issues on a Linux VM, which you'll then fix using the knowledge you've gained from the other labs that you've completed.

What you should already know

This lab focuses on looking at logs that indicate issues that need to be fixed. These issues can be resolved using the skills you've gained in previous labs, so detailed instructions won't be included here. You're on your own...but you've got this!

Here are the concepts you need to be familiar with before taking this lab:

- Updating software that's out-of-date
- Finding and deleting files
- Modifying file permissions
- Finding and terminating specific processes

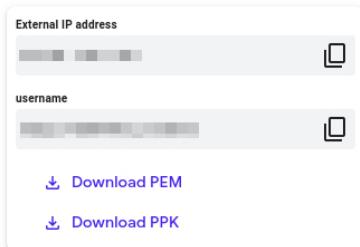
Start the lab

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:



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**.

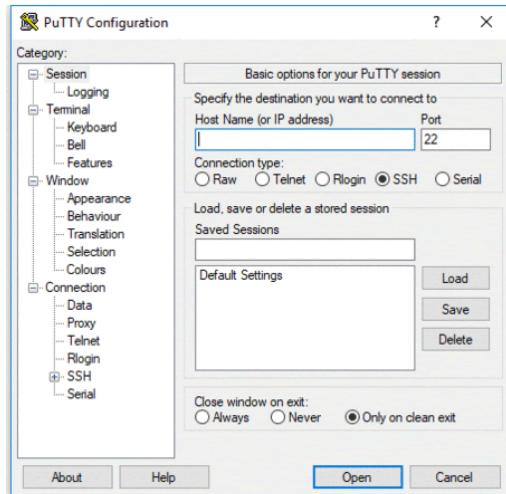
[Download PEM](#)

[Download PPK](#) ←

Connect to your VM using SSH and PuTTY

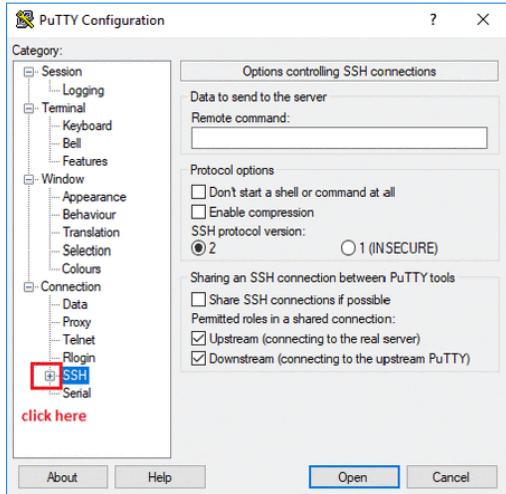
1. You can download Putty from [here](#)
2. In the **Host Name (or IP address)** box, enter `username@external_ip_address`.

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

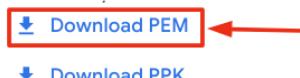
If PuTTY fails to connect to your Linux VM, verify that:

- 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
```

```
$ ssh -l 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:ivrzBd4aUtrfUh0AwZnDoyloqPErh931olvxtN8.
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.
Linux instance 4.9.0-9-amd64 #1 SMP Debian 4.9.108-1+deb9u2 (2019-05-13) x86_64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
student@qwikLABS-XXXXX:~$
```

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!

Viewing logs on Linux

On Linux machines, logs are stored in the `/var/log` directory. There are lots of log files in this directory, and you can view them with this command:

```
ls /var/log
```

```
jcpstaging7084_student@linux-instance:~$ ls /var/log
apt      btmp     cloud-init-output.log  dpkg.log   kern.log    lxd      syslog      wtmp
auth.log  cloud-init.log  dist-upgrade   fsck      lastlog    ntpstats  unattended-upgrades
jcpstaging7084_student@linux-instance:~$
```

We're interested in `syslog` for the moment. The logs on Linux can be viewed like any text file; you can use the command below to view the contents of `syslog`:

```
cat /var/log/syslog
```

The log contents are super long, so you'll have to scroll through the logs to look for the five entries that are relevant to this lab. The logs are entered chronologically, and the logs that you'll need to fix should be timestamped around the time that the lab started. For convenience, all of the log entries you need to fix contain the phrase "Qwiklab Error". Knowing this, you could also filter out the relevant logs using the `grep` command.

We'll walk through addressing one of the log's issues, then the other four will be up to you!

Low disk space!

Here's the log entry we will be dealing with first:

```
Oct 16 10:07:53 linux-instance root: Qwiklab Error: Disk space is super low, fix it!
```

This error indicates that your computer is running out of memory due to a super large file. Unfortunately, it doesn't indicate which file is causing the problem, so you'll need to find it. Luckily, Linux has an easy way to find the largest files on your file system. The `du` command can be used to list all files in a directory (recursively through subdirectories, too), which you can sort by size to find the largest files. By piping the output of `du` (using the "`|`" symbol) to the `sort` command, you can sort the output by file size. The "`-n`" and "`-r`" flags tell `sort` to treat the string output on each line as a number (the file size), and to sort in reverse order so that the largest files are listed first. By piping the output of this into the `head` command, you can print out only the top few results (you can specify how many to output by adding "`-n [NUMBER]`" to the end of the command).

The command below uses `du`, `sort`, and `head` to show the top five largest files, starting from your `/home` directory:

```
sudo du -a /home | sort -n -r | head -n 5
```

```
jcpstaging7084_student@linux-instance:~$ sudo du -a /home | sort -n -r | head -n 5
5244284 /home
5244228 /home/lab
5242888 /home/lab/storage
5242884 /home/lab/storage/ultra_mega_large.txt
1328   /home/lab/downloads
```

You can see that the largest file in your home directory is

/home/lab/storage/ultra_mega_large.txt, at about 5GB. This isn't an important file, but it's taking up a lot of space, so you can delete it to fix the disk space error:

```
sudo rm /home/lab/storage/ultra_mega_large.txt
```

Now that the large file is gone, this log's issue has been dealt with. You can see that the log entry is still present in the log file; logs aren't deleted once the errors that caused them are resolved.

The remaining log entries

The rest of the logs involve issues that you have already successfully fixed in earlier labs in this course. Refer back to those lessons and labs to refresh yourself on the required steps, if you're stuck:

- Updating software that's out-of-date (Week 3 Labs)
- Finding and deleting files (Week 1 Labs)
- Modifying file permissions (Week 2 Labs)
- Finding and terminating specific processes (Week 5 Labs)

If you'd like to check your steps along the way, refer to your score in the top right of the lab. Click the score and run each step to check individually as you go. Good luck!

Note: Please make sure that you are running the commands using **sudo**. The purpose of sudo is to execute the command given to it with root privileges.

Conclusion

Excellent job! You've successfully used logs to track down and fix issues on a Linux machine.

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.