

## 4.12 Lab: Use ping and traceroute on Linux

Candidate: COMPTIA COMPTIA ()

Time Spent: 00:12

Score: 0%

### Task Summary

#### Required Actions

✗ Use **ping** on IT-Laptop [Show Details](#)

✗ Use **cat** to view the ifcfg-enp2s0 file

✗ Use **traceroute** on Office2

### Explanation

While completing this lab, use the following information:

Location	Name	IP Address
Office 1	Office1	192.168.0.30
Office 2	Office2	192.168.0.31
Support Office	Support	199.92.0.32
IT Administration	IT-Laptop	192.168.0.33
Router	Bldg A Router	192.168.0.5
Router	Bldg B CorpNet Router	198.28.56.1
ISP	External DNS Server	163.128.78.93 163.128.80.93

Complete this lab as follows:

1. From the IT-Laptop system, explore using the **ping** command.
  - a. Under IT Administration, select **IT-Laptop**.
  - b. From the Favorites bar, select **Terminal**.
  - c. At the prompt, type **ping -c4 192.168.0.30** and press **Enter** to ping Office1.  
You can successfully ping the IP address of Office1 from IT-Laptop. (Note that the -c4 tells the ping command to only send a count of four pings.)
  - d. Type **ping -c4 199.92.0.32** and press **Enter** to ping Support.  
You cannot ping Support from IT-Laptop because the IP address for Support is on a different network (Network 199.92.0.0 instead of Network 192.168.0.0). Devices on the same local network must have IP addresses in the same network range. If you want to communicate with Support, you need to change the IP address assigned to Support.
  - e. Type **ping -c4 192.168.0.5** and press **Enter** to ping the internal interface of Building A's router.

The ping is successful because IT-Laptop and the router's address (192.168.0.5) are on the same network.

- f. Type **ping -c4 163.128.78.93** and press **Enter** to ping the external DNS server.

This ping test fails. Although IT-Laptop and the ISP are on different networks (Networks 192.168.0.0 and 163.128.78.0, respectively), they should be able to communicate if IT-Laptop has a properly configured default gateway that will eventually lead to the correct destination.

2. From the IT-Laptop system, view its IP configuration settings.

- a. At the prompt, type **cd /etc/sysconfig/network-scripts** and press **Enter**.

- b. Type **ls** and press **Enter**.

Notice that there's a configuration file named *ifcfg-enp2s0*. This file contains the IP information on this system.

- c. Type **cat ifcfg-enp2s0** and press **Enter** to view the contents of this IP configuration file.

Notice that there's no GATEWAY address (192.168.0.5) set, explaining why the ping to the ISP in the previous step failed. There was no other computer to route the ping request to the correct destination.

3. From Office2, trace the path between Office2 and the internet router's interface.

- a. From the top left, select **Floor 1 Overview**.

- b. Under Office 2, select **Office2**.

- c. From the Favorites bar, select **Terminal**.

- d. At the prompt, type **traceroute 198.28.56.1** and press **Enter**.

Which addresses appear in the path between Office2 and the CorpNet router?

When you communicate with devices on other networks, the packets go to the default gateway first (the router between the two networks). In this example, that's the router for Building A, which has an IP address of 192.168.0.5. The packets are sent to the router interface on the same network as the sending host and then to the next hop in the path as necessary. In this case, there are two IP addresses listed in the traceroute output, but only one router (hop) between Office2 and the internet router. The last address in the traceroute output is the IP address for the internal NIC on the CorpNet router located in Building B.

- e. Type **traceroute 163.128.78.93** and press **Enter** to trace the path to one of the ISP's DNS servers.

How does this path differ from the path you discovered in the previous step?

When you trace the path between Office2 and the ISP's DNS server, the path has additional hops. The first lines in the traceroute output are the routers (hops) between Office2 and the DNS server. The last address in the traceroute output is the IP address of the DNS server.