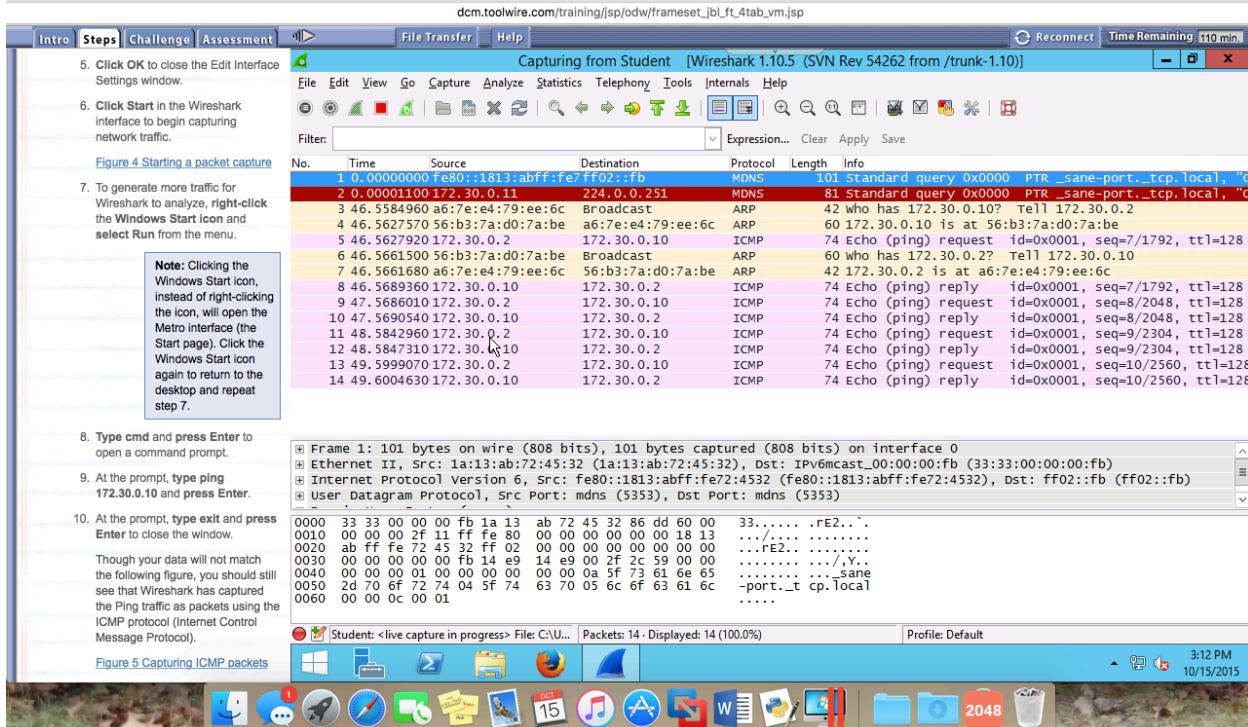
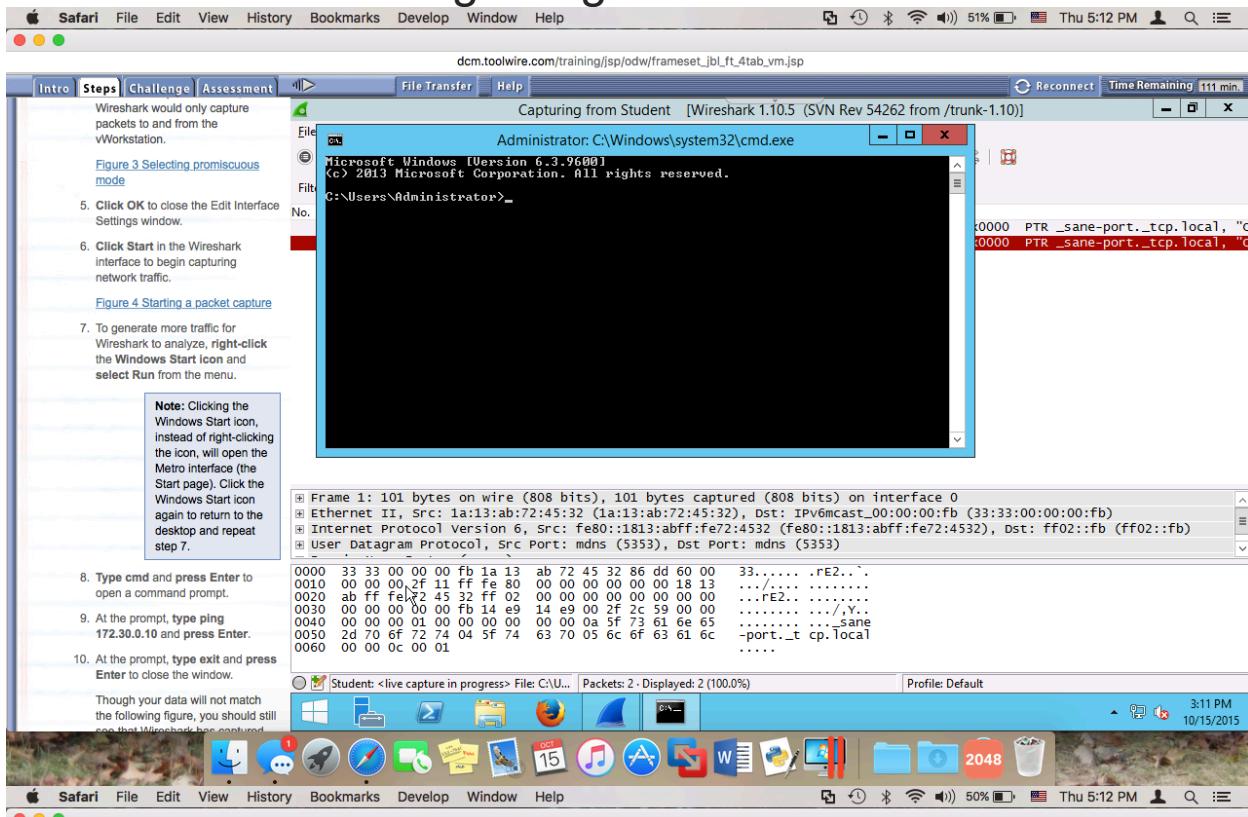


Lab 6

Performing Reconnaissance and Probing using Common Tools



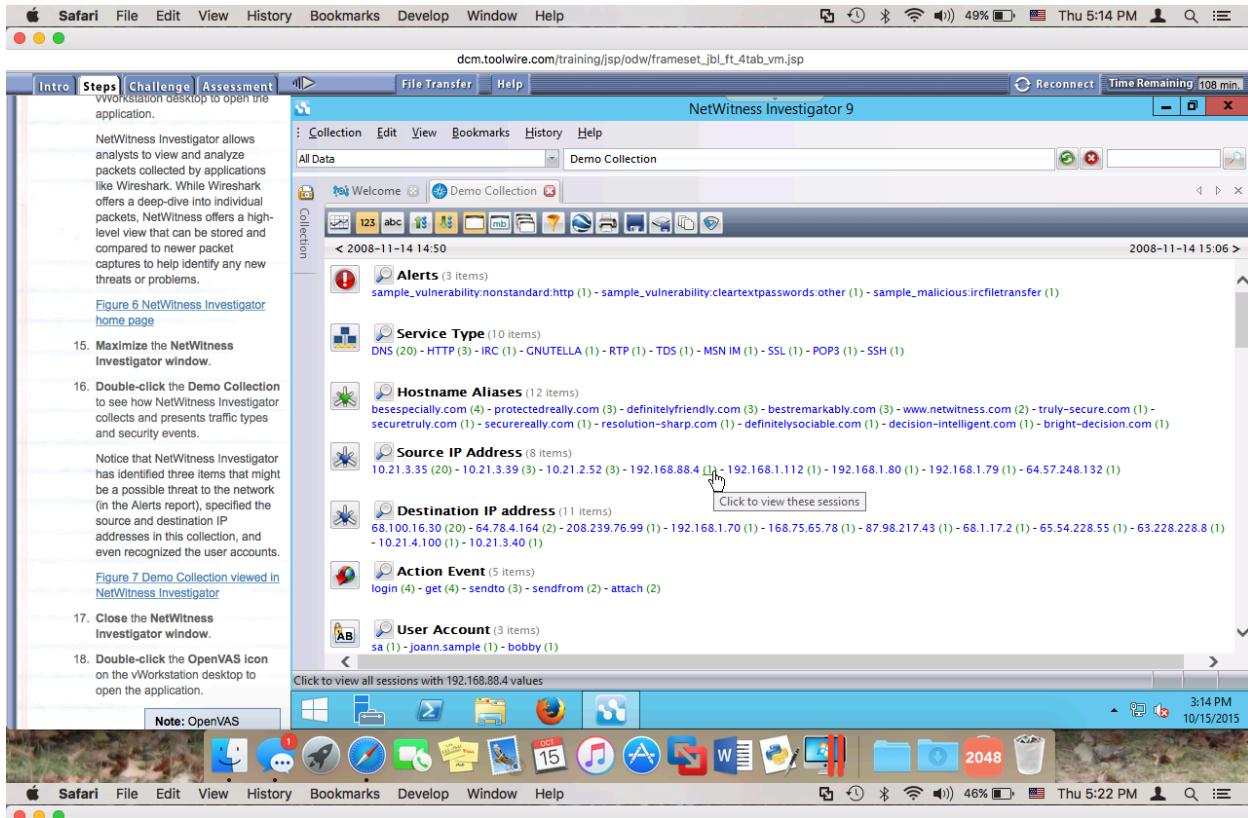


Figure 7 Demo Collection viewed in NetWitness Investigator

15. Maximize the NetWitness Investigator window.
16. Double-click the Demo Collection to see how NetWitness Investigator collects and presents traffic types and security events.

Notice that NetWitness Investigator has identified three items that might be a possible threat to the network (in the Alerts report), specified the source and destination IP addresses in this collection, and even recognized the user accounts.

Figure 7 Demo Collection viewed in NetWitness Investigator

17. Close the NetWitness Investigator window.
18. Double-click the OpenVAS icon on the vWorkstation desktop to open the application.

Note: OpenVAS

19. If prompted with a security certificate warning, click Continue to this website (not recommended) to continue.
20. When prompted, type the following credentials and click Login to open the Greenbone Security Assistant window.

- Username: openvasadmin
- Password: pass

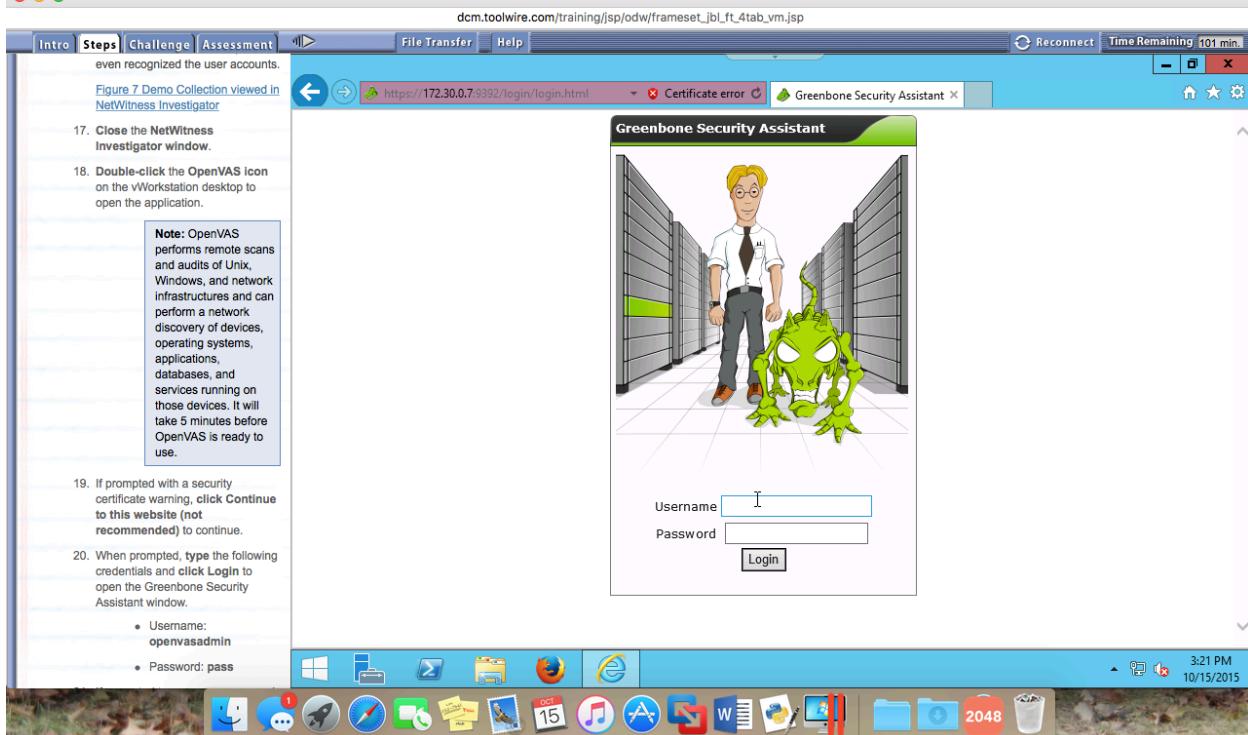


Figure 7 Demo Collection viewed in NetWitness Investigator

17. Close the NetWitness Investigator window.
18. Double-click the OpenVAS icon on the vWorkstation desktop to open the application.

Note: OpenVAS performs remote scans and audits of Unix, Windows, and network infrastructures and can perform a network discovery of devices, operating systems, applications, databases, and services running on those devices. It will take 5 minutes before OpenVAS is ready to use.

19. If prompted with a security certificate warning, click Continue to this website (not recommended) to continue.
20. When prompted, type the following credentials and click Login to open the Greenbone Security Assistant window.

- Username: openvasadmin
- Password: pass

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Intro Steps Challenge Assessment

to this website (not recommended) to continue.

- When prompted, type the following credentials and click Login to open the Greenbone Security Assistant window.
 - Username: openvasadmin
 - Password: pass
- If prompted to save your password, click Not for this site.
- Maximize the Greenbone Security Assistant window.
- Figure 8 Greenbone Security Assistant
- In the IP address or hostname box at the right of the window, type 172.30.0.10 and click Start Scan to run a basic security scan.
- Click the Refresh button in the Filter toolbar to see the progress of the scan.

Note: When the scan is finished, the table below the Filter tool will show a Done button next to the name of the scan: Immediate scan of 172.30.0.10. Until that finished report populates the table, continue to periodically click the Refresh button. The scan will take about 4 minutes to complete.

Greenbone Security Assistant

Scan Management Asset Management SecInfo Management Configuration Extras Administration Help

Tasks (total: 0) Filter: apply_overrides=1 first=1 rows=10 sort=name

Name	Status	Total	Reports	Trend	Actions
(Applied filter: apply_overrides=1 first=1 rows=10 sort=name)					

Welcome dear new user!

To explore this powerful application and to have a quick start for doing things the first time, I am here to assist you with some hints and short-cuts.

I will appear automatically in areas where you have created no or only a few objects. And disappear when you have more than 3 objects. You can call me with this icon  any time later on.

For more detailed information on functionality, please try the integrated help system.

Quick start: Immediately scan an IP address

IP address or hostname:

Start Scan

For this short-cut I will do the following for you:

- Create a new Target with default Port List Configuration
- Create a new Task using this target with default Scan Configuration
- Start this scan task right away
- Switch the view to reload every 30 seconds so you can lean back and watch the scan progress

3:22 PM 10/15/2015

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Reconnect Time Remaining 99 min.

Intro Steps Challenge Assessment

to this website (not recommended) to continue.

- If prompted to save your password, click Not for this site.
- Maximize the Greenbone Security Assistant window.
- Figure 8 Greenbone Security Assistant
- In the IP address or hostname box at the right of the window, type 172.30.0.10 and click Start Scan to run a basic security scan.
- Click the Refresh button in the Filter toolbar to see the progress of the scan.

Note: When the scan is finished, the table below the Filter tool will show a Done button next to the name of the scan: Immediate scan of 172.30.0.10. Until that finished report populates the table, continue to periodically click the Refresh button. The scan will take about 4 minutes to complete.

Figure 9 Refreshing the scan

- When the scan is done, click the Immediate scan of IP 172.30.0.10 link to view the results of your scan.

The report summary appears at the bottom of the window. Notice that host OpenVAS stores the date and

Greenbone Security Assistant

Scan Management Asset Management SecInfo Management Configuration Extras Administration Help

Tasks 1 - 1 of 1 (total: 1) Filter: apply_overrides=1 first=1 rows=10 sort=name

Name	Status	Total	Reports	Trend	Actions
Immediate scan of IP 172.30.0.10	Done	1	Oct 15 2015	Medium	    
(Applied filter: apply_overrides=1 first=1 rows=10 sort=name)					

Welcome dear new user!

To explore this powerful application and to have a quick start for doing things the first time, I am here to assist you with some hints and short-cuts.

I will appear automatically in areas where you have created no or only a few objects. And disappear when you have more than 3 objects. You can call me with this icon  any time later on.

Quick start: Immediately scan an IP address

IP address or hostname:

Start Scan

For this short-cut I will do the following for you:

- Create a new Target with default Port List Configuration
- Create a new Task using this target with default Scan Configuration
- Start this scan task right away

3:56 PM 10/15/2015

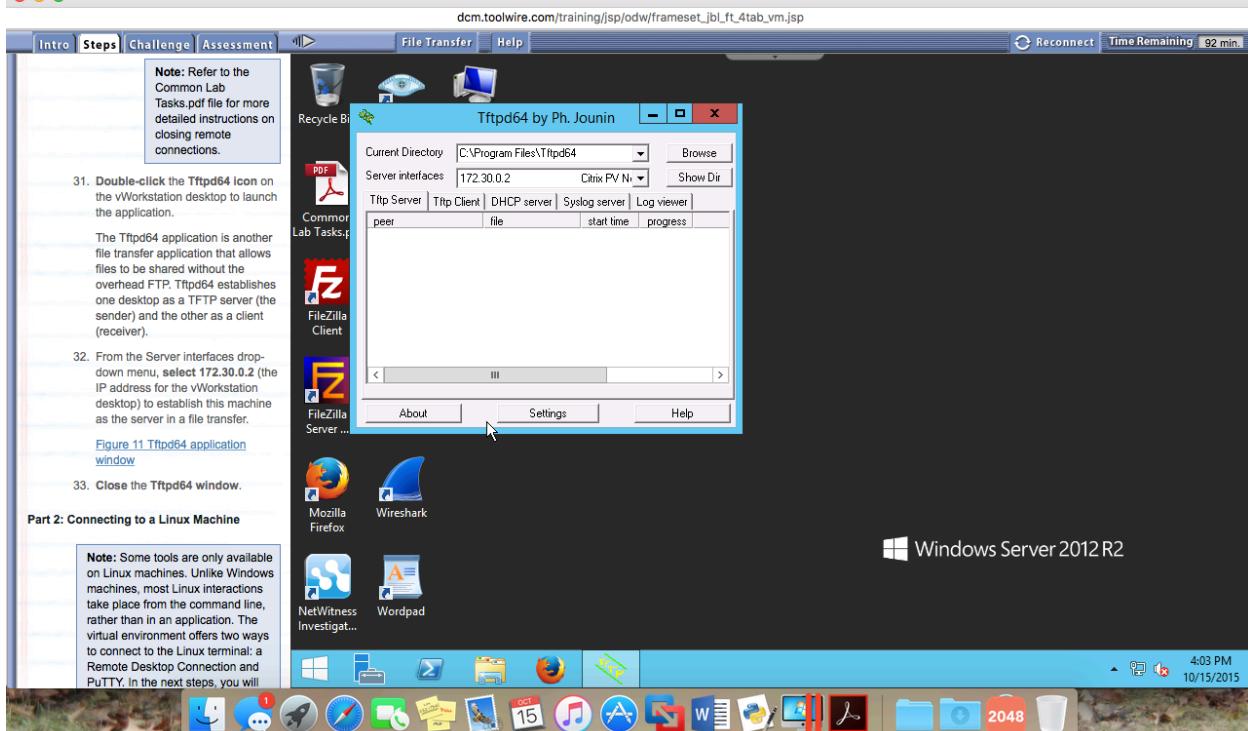
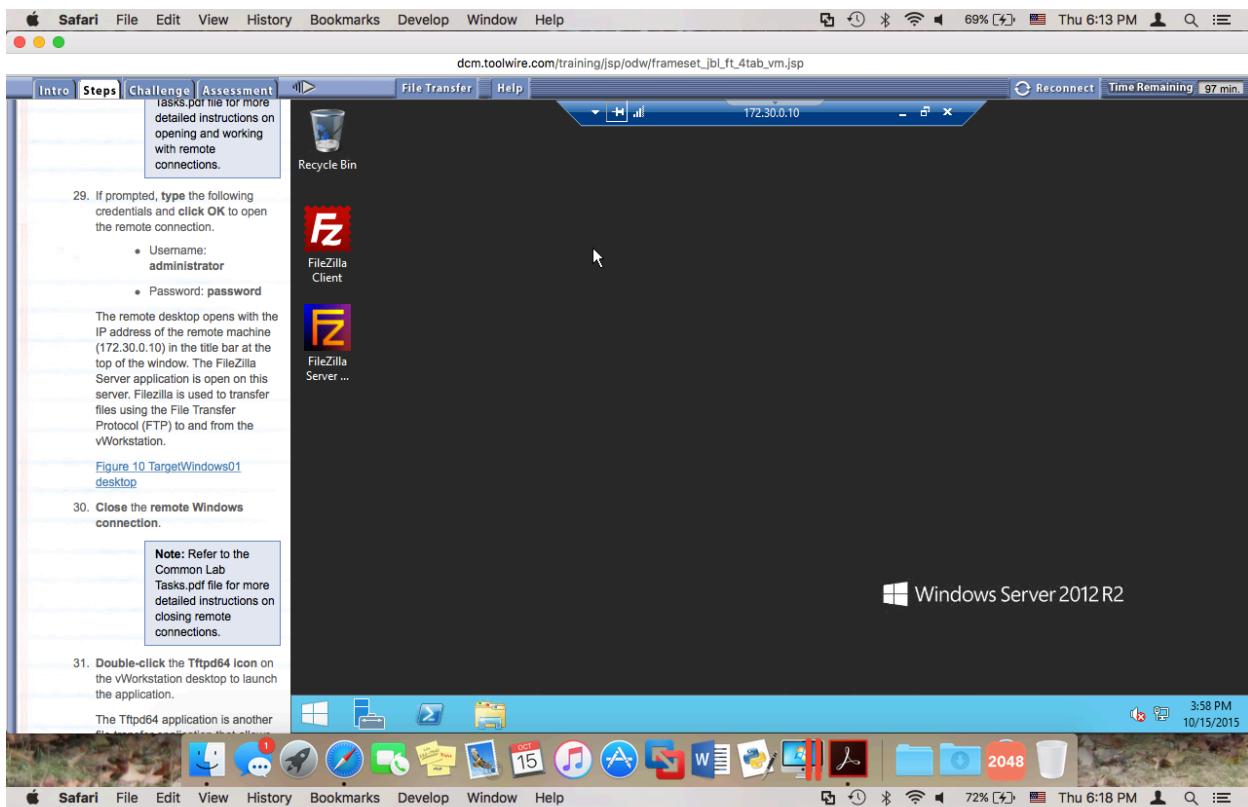


Figure 12 The TargetLinux01 desktop

4. Click Applications >Accessories and select Terminal to open a command shell.

Many Linux commands require super user access and cannot be performed by the student account.

5. At the prompt, type su (superuser) and press Enter.

6. When prompted for a password, type toor and press Enter.

You are now logged into the Linux Debian machine with super user access. The command prompt has changed to root@TargetLinux01:/home/student#.

Figure 13 Linux command shell

7. At the prompt, type ls and press Enter to see a list of the directories in the student's home folder.

8. At the prompt, type exit and press Enter to leave superuser access.

9. At the prompt, type exit and press Enter to close the terminal shell.

10. Close the remote Linux connection.

11. Close the RDP folder.

Note: Refer to the lab notes for more information.

Figure 14 PuTTY application window

14. If necessary, click the SSH radio button and click Open to start the connection.

Figure 15 PuTTY Security Alert

Note: PuTTY may display an alert message giving you an opportunity to abandon a connection to an unknown, or unsafe, machine. Click Yes to dismiss the message and continue the lab steps.

15. At the login prompt, type the following credentials. Press Enter after each entry.

- Login: cisco
- Password: cisco

Once successfully logged in, the command prompt, 172.16.8.5/LanSwitch1>, is displayed.

Figure 16 PuTTY terminal console

Note: In the next steps, you will use the Cisco IOS (Internetwork Operating System) show command to

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Intro Steps Challenge Assessment

enabled ports;

- **Show IP ARP:** This command displays the address resolution table of MAC-layer addresses to assigned IP host addresses;
- **Show IP route:** This command displays the IP routing protocol used, the IP routes and network numbers visible to the switch/router, and the physical interface that an IP packet traverses based on the IP routes and IP networks seen (Cisco routers only);
- **Show VLAN:** This command displays the VLANs configured within the LAN Switch 1 and LAN Switch 2 devices only;
- **Show switch VLAN:** This command displays the VLANs configured within the ASA devices only.

16. At the command prompt, type **show interface**, the first Cisco IOS show command the following table and press Enter.

Review the output for this

File Transfer Help

172.16.8.5 - PuTTY

```

login as: cisco
cisco@172.16.8.5's password:
172.16.8.5/LanSwitch1 > ls
Ambiguous or Invalid command. Please try again.
172.16.8.5/LanSwitch1 > show interface
Ambiguous or Invalid command. Please try again.
172.16.8.5/LanSwitch1 > show interface
Vlan1 is administratively down, line protocol is down
  Hardware is EtherSVI, address is 001d.46cf.6d40 (bia 001d.46cf.6d40)
  Internet address is 172.16.8.5/24
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts (0 IP multicast)
    0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 2 interface resets
    0 output buffer failures, 0 output buffers swapped out
Vlan100 is up, line protocol is up
  Hardware is EtherSVI, address is 001d.46cf.6d41 (bia 001d.46cf.6d41)
  Internet address is 172.16.8.5/24
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:37:31, output 00:37:31, output hang never

```

Windows Taskbar

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Intro Steps Challenge Assessment

show ip interface	Interface names, interface up or down, IP address, subnet mask, address
show vlan	VLAN name, VLAN status
show ip arp	IP address, MAC-layer hardware address, interface name(s)

17. Repeat step 15 for each of the show commands in the table.

18. At the prompt, type **quit** and press Enter to close the terminal console.

Part 3: Using Zenmap to Perform Basic Reconnaissance

Note: In the next steps, you will use Zenmap to perform a targeted IP subnetwork Intense Scan which will identify what hosts are available on the network, what services (application name and version) those hosts are offering, what operating systems (and OS versions) they are running, and what type of packet filters or firewalls are in use.

- Double-click the Nmap-Zenmap GUI icon on the vWorkstation desktop to open the application.

The Zenmap window opens with

File Transfer Help

172.16.8.5 - PuTTY

VLAN Name	Status	Ports
1 default	active	Fa0/23, Fa0/24, Gi0/1, Gi0/2
100 Norfolk	active	Fa0/1, Fa0/8, Fa0/21
200 Tampa	active	Fa0/2, Fa0/6, Fa0/7
300 Indy	active	Fa0/3, Fa0/9, Fa0/10, Fa0/11
400 Seattle	active	Fa0/4, Fa0/13, Fa0/14, Fa0/15
500 WestCovina	active	Fa0/5, Fa0/18, Fa0/19, Fa0/20
1002 fddi-default	act/unsup	
1003 token-ring-default	act/unsup	
1004 fdnet-default	act/unsup	
1005 trnet-default	act/unsup	

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1 enet	100001	1500	-	-	-	-	0	0	0
100 enet	100100	1500	-	-	-	-	0	0	0
200 enet	100200	1500	-	-	-	-	0	0	0
300 enet	100300	1500	-	-	-	-	0	0	0
400 enet	100400	1500	-	-	-	-	0	0	0
500 enet	100500	1500	-	-	-	-	0	0	0
1002 fddi	101002	1500	-	-	-	-	0	0	0
1003 tr	101003	1500	-	-	-	-	0	0	0
1004 fdnet	101004	1500	-	-	-	ieee	0	0	0
1005 trnet	101005	1500	-	-	-	ibm	0	0	0

Remote SPAN VLANs

Primary	Secondary	Type	Ports
172.16.8.5/LanSwitch1	>		

Windows Taskbar

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Intro Steps Challenge Assessment

show ip interface	Interface names, interface up or down, IP address, subnet mask address
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- Double-click the Nmap-Zenmap GUI icon on the vWorkstation desktop to open the application.

The Zenmap window opens with

```
172.16.8.5 -> show ip arp
Protocol Address Age (min) Hardware Addr Type Interface
Internet 172.16.8.5 - 00:0d:46:cf:6d:41 ARPA Vlan100
Internet 172.16.8.1 57 00:0d:46:dc:13:e0 ARPA Vlan100
172.16.8.5 ->
```

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Intro Steps Challenge Assessment

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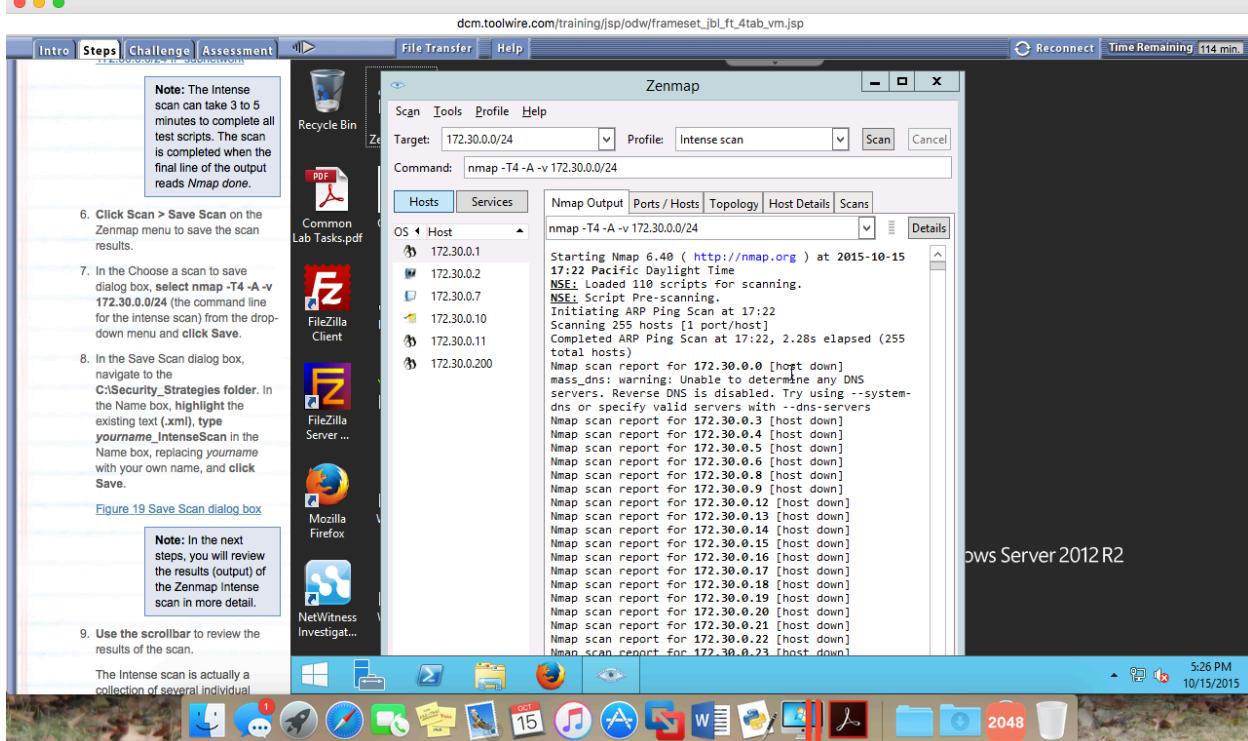
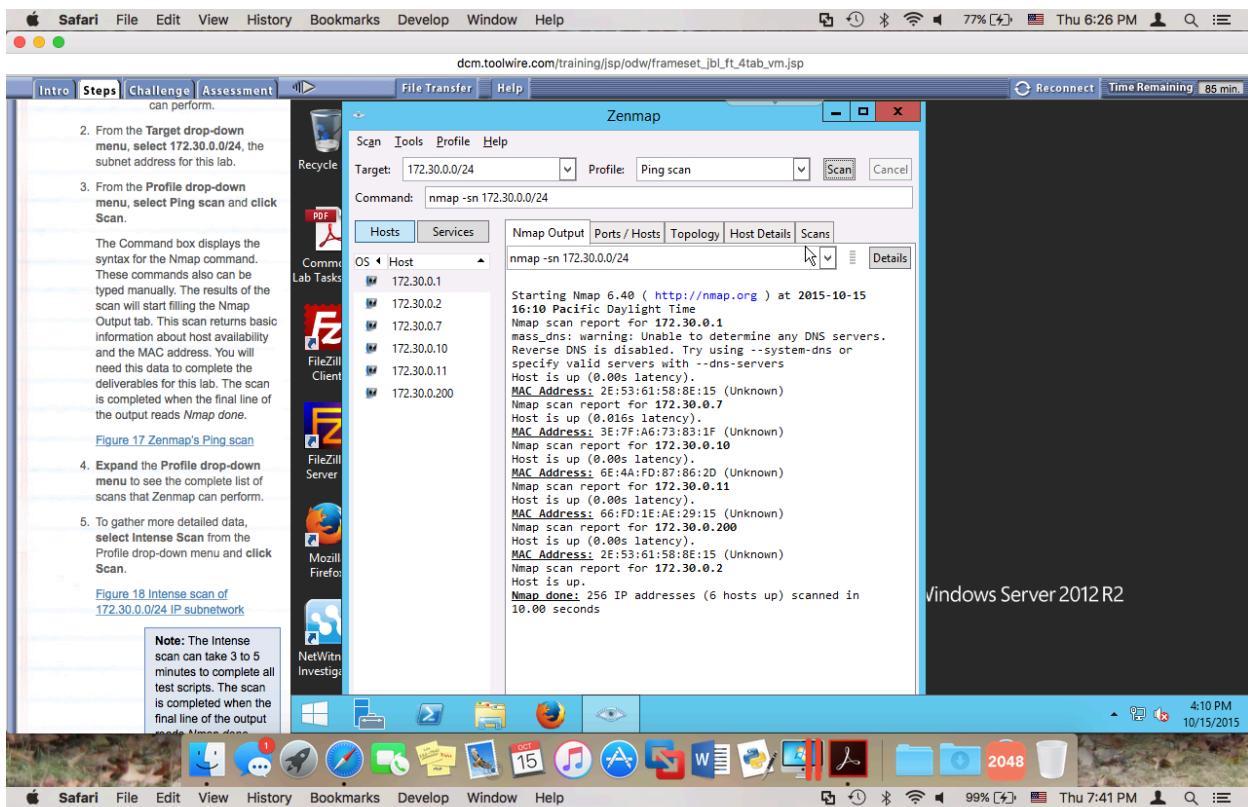
- Double-click the Nmap-Zenmap GUI icon on the vWorkstation desktop to open the application.

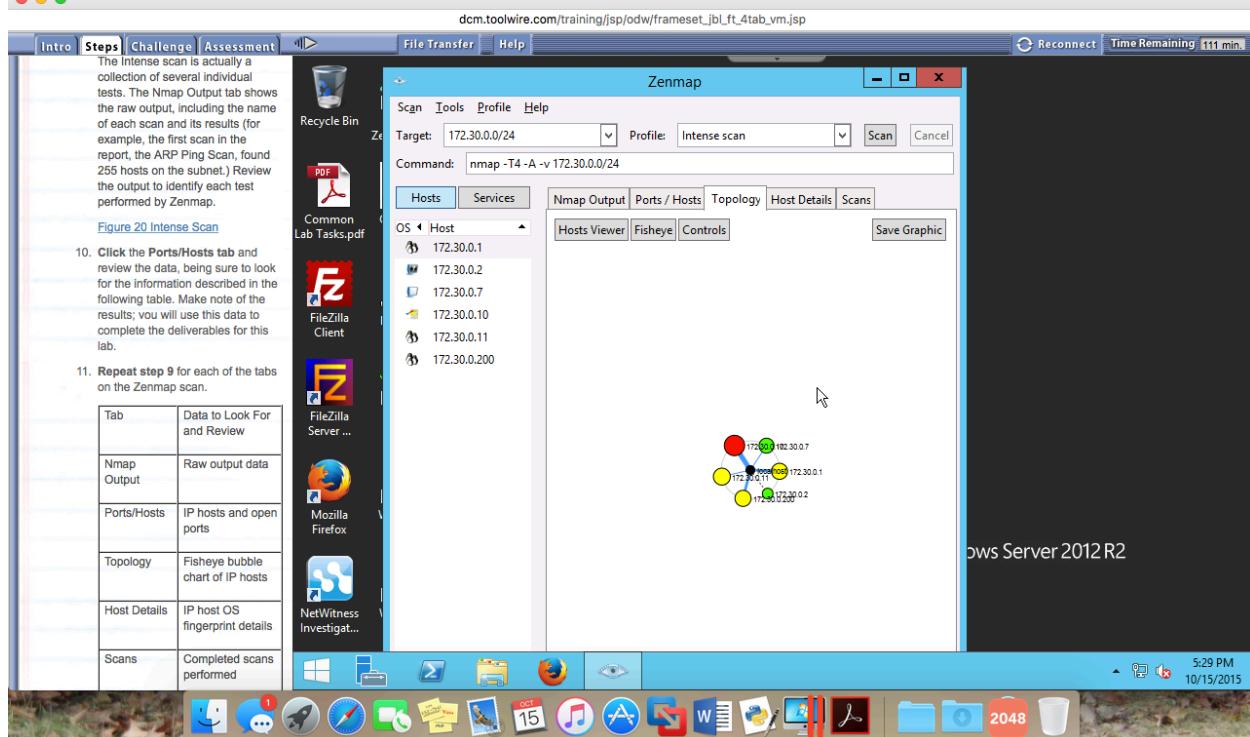
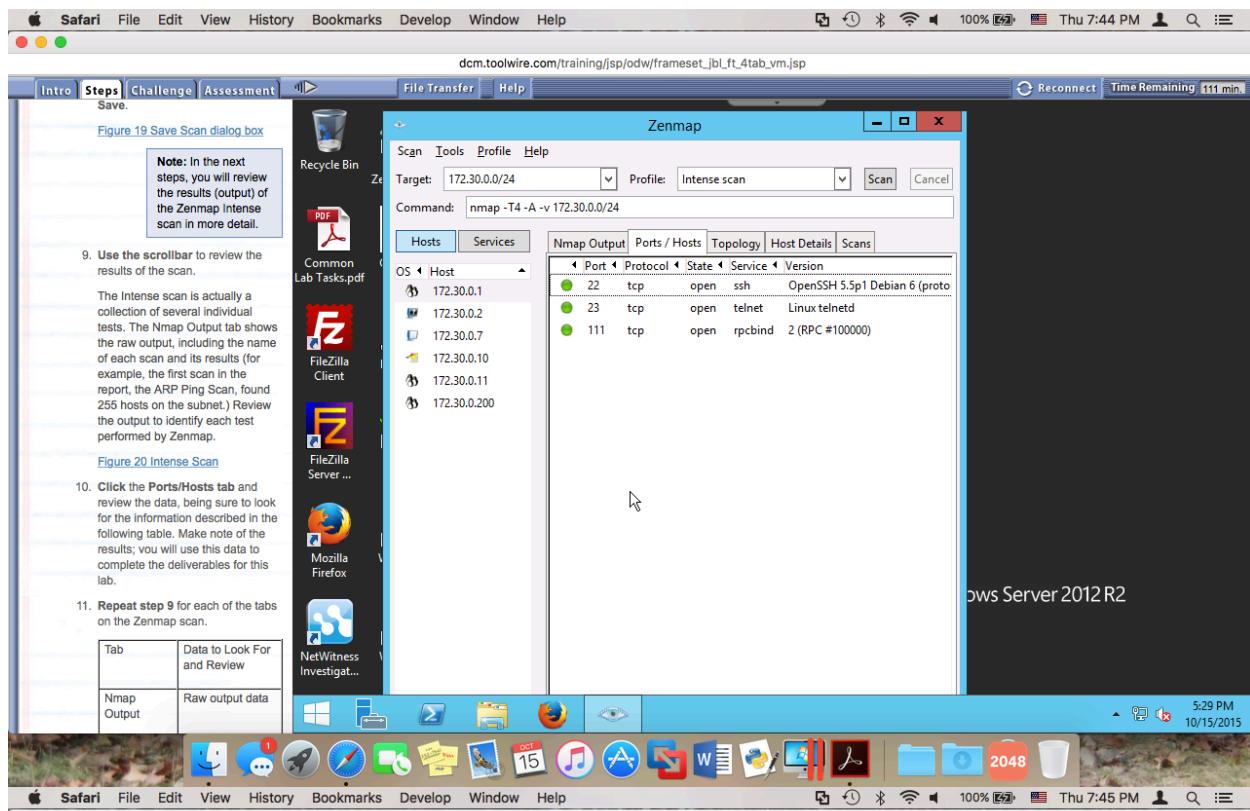
The Zenmap window opens with

```
172.16.8.5 -> show ip arp
Protocol Address Age (min) Hardware Addr Type Interface
Internet 172.16.8.5 - 00:0d:46:cf:6d:41 ARPA Vlan100
Internet 172.16.8.1 57 00:0d:46:dc:13:e0 ARPA Vlan100
172.16.8.5 -> show ip interface
Vlan1 is administratively down, line protocol is down
  Internet protocol processing disabled
Vlan100 is up, line protocol is up
  Internet address is 172.16.8.5/24
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound access list is not set
  Proxy ARP is enabled
  Local Proxy ARP is disabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables are always sent
  ICMP mask replies are never sent
  IP fast switching is disabled
  IP CEF switching is disabled
  IP Null turbo vector
  IP multicast fast switching is disabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are None
  Router Discovery is disabled
  IP output packet accounting is disabled
  IP access violation accounting is disabled
  TCP/IP header compression is disabled
```

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The Intense scan is actually a collection of several individual tests. The Nmap Output tab shows the raw output, including the name of each scan and its results (for example, the first scan in the report, the ARP Ping Scan, found 256 hosts on the subnet.) Review the output to identify each test performed by Zenmap.

Figure 20 Intense Scan

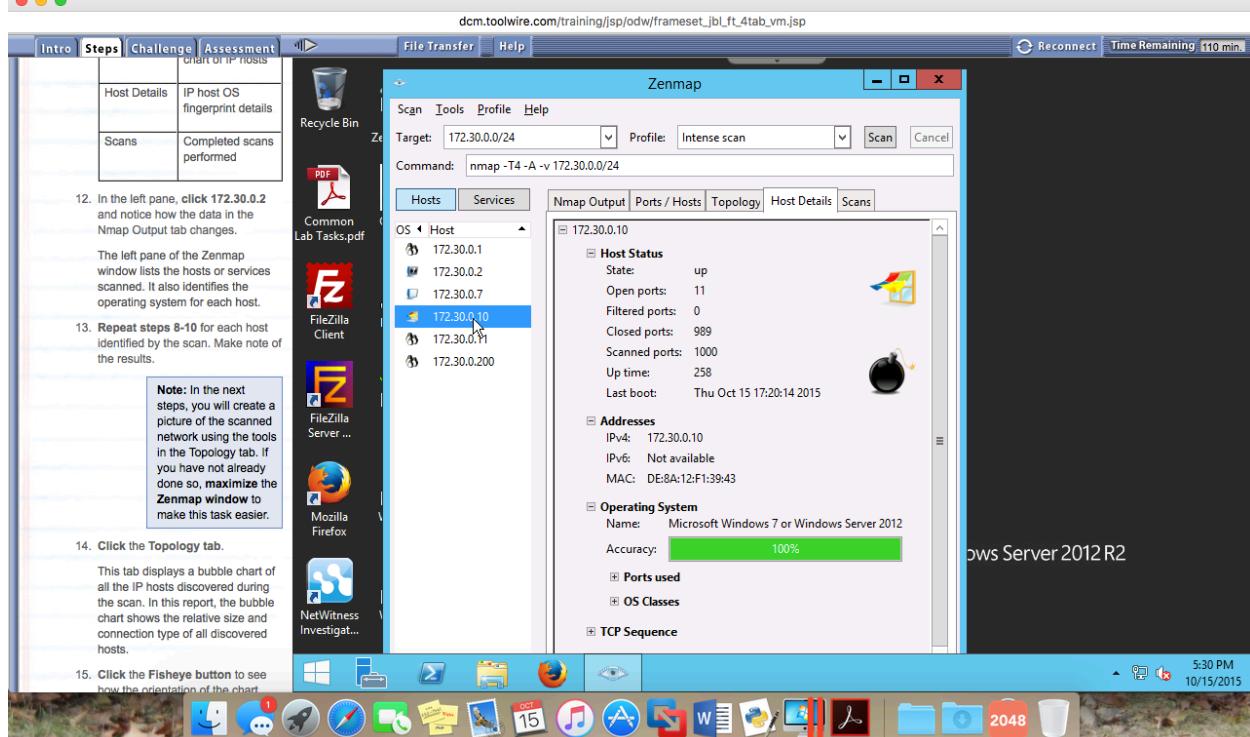
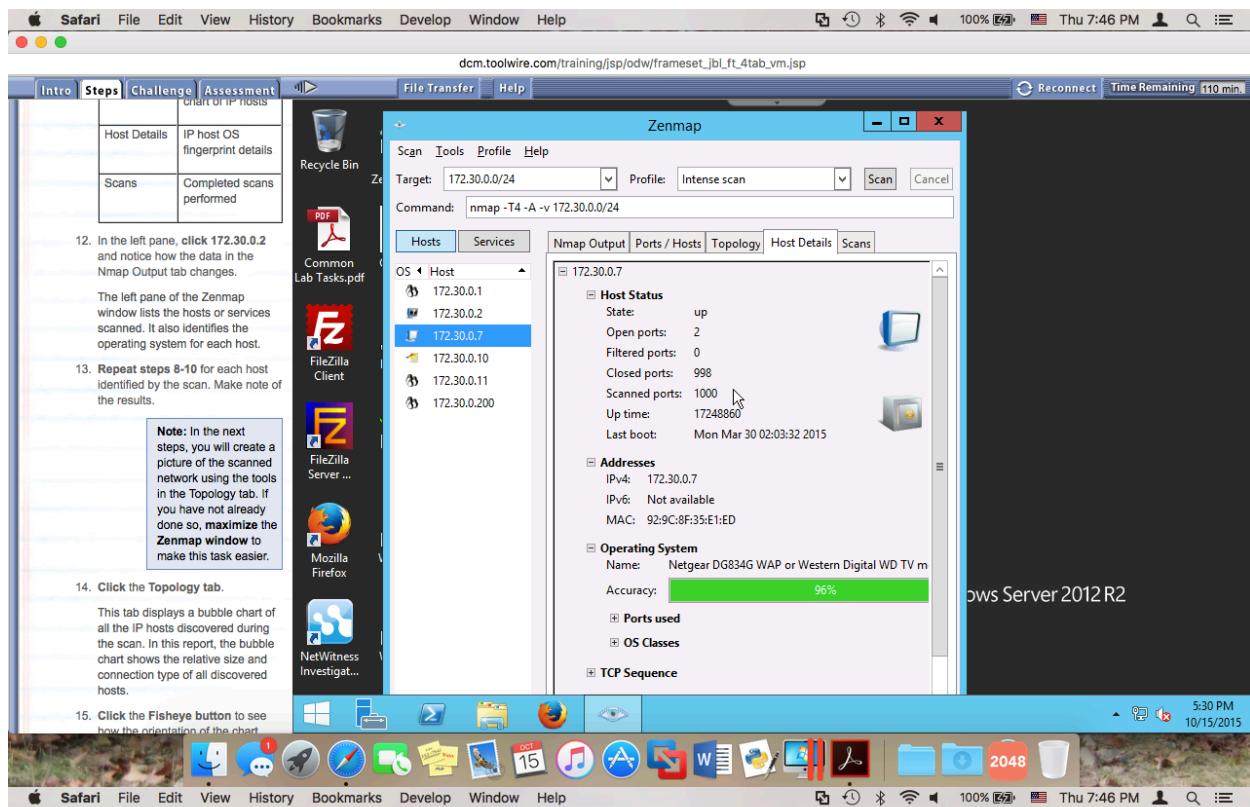
- Click the Ports/Hosts tab and review the data, being sure to look for the information described in the following table. Make note of the results; you will use this data to complete the deliverables for this lab.
- Repeat step 9 for each of the tabs on the Zenmap scan.

Tab	Data to Look For and Review
Nmap Output	Raw output data
Ports/Hosts	IP hosts and open ports
Topology	Fisheye bubble chart of IP hosts
Host Details	IP host OS fingerprint details
Scans	Completed scans performed

- In the left pane, click 172.30.0.2 and notice how the data in the Nmap Output tab changes.
- The left pane of the Zenmap window lists the hosts or services scanned. It also identifies the operating system for each host.
- Repeat steps 8-10 for each host identified by the scan. Make note of the results.

Note: In the next steps, you will create a picture of the scanned network using the tools in the Topology tab. If you have not already done so, maximize the Zenmap window to make this task easier.

- Click the Topology tab.
- This tab displays a bubble chart of all the IP hosts discovered during the scan. In this report, the bubble chart shows the relative size and connection type of all discovered hosts.
- Click the Fisheye button to see how the orientation of the chart.



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Reconnect Time Remaining 110 min.

Intro Steps Challenge Assessment

Host Details IP host OS fingerprint details

Scans Completed scans performed

12. In the left pane, click 172.30.0.2 and notice how the data in the Nmap Output tab changes.

The left pane of the Zenmap window lists the hosts or services scanned. It also identifies the operating system for each host.

13. Repeat steps 8-10 for each host identified by the scan. Make note of the results.

Note: In the next steps, you will create a picture of the scanned network using the tools in the Topology tab. If you have not already done so, maximize the Zenmap window to make this task easier.

14. Click the Topology tab.

This tab displays a bubble chart of all the IP hosts discovered during the scan. In this report, the bubble chart shows the relative size and connection type of all discovered hosts.

15. Click the Fisheye button to see how the orientation of the chart.

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Reconnect Time Remaining 109 min.

Intro Steps Challenge Assessment

Host Details IP host OS fingerprint details

Scans Completed scans performed

12. In the left pane, click 172.30.0.2 and notice how the data in the Nmap Output tab changes.

The left pane of the Zenmap window lists the hosts or services scanned. It also identifies the operating system for each host.

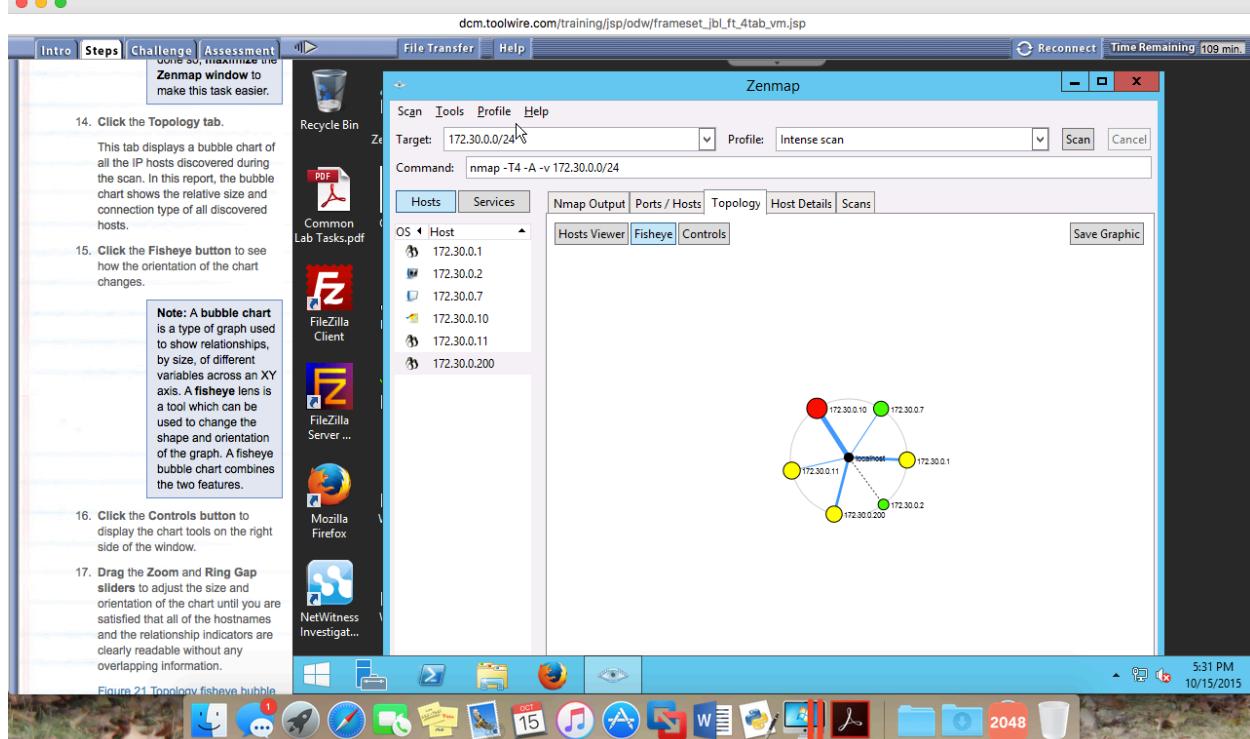
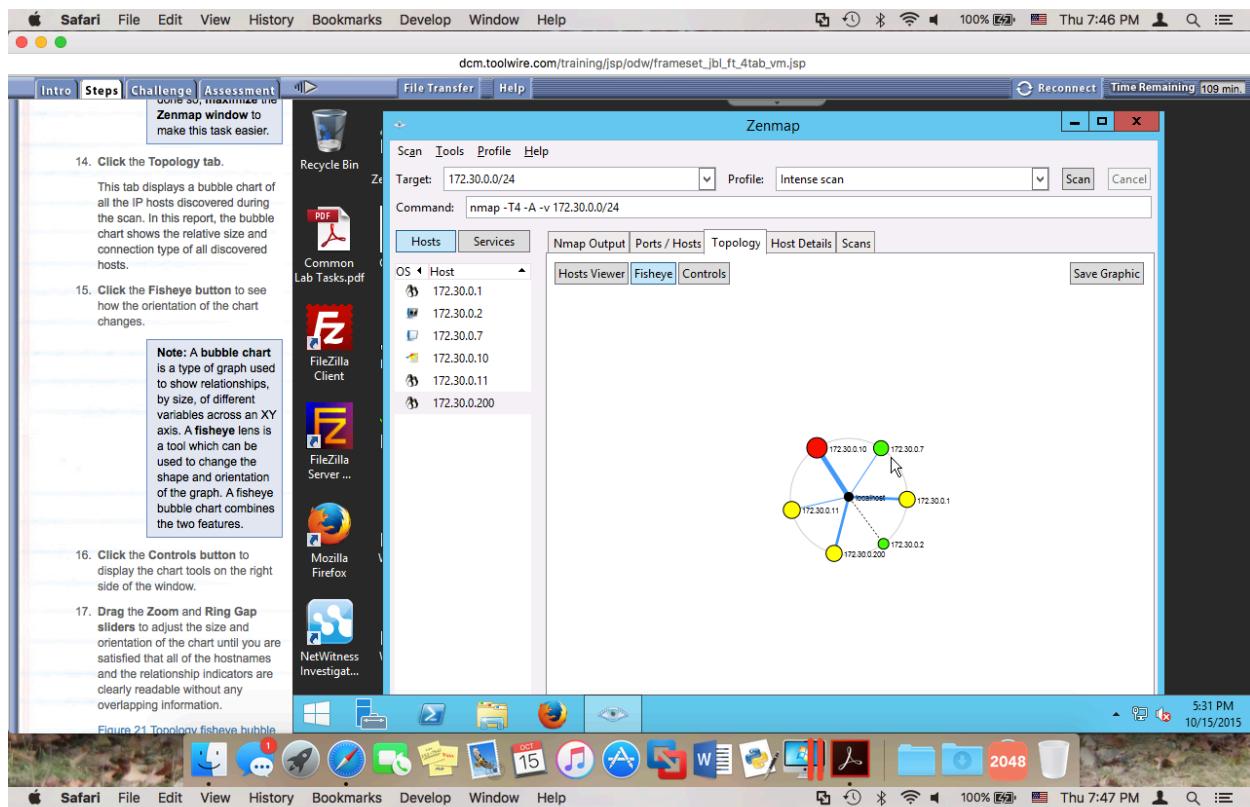
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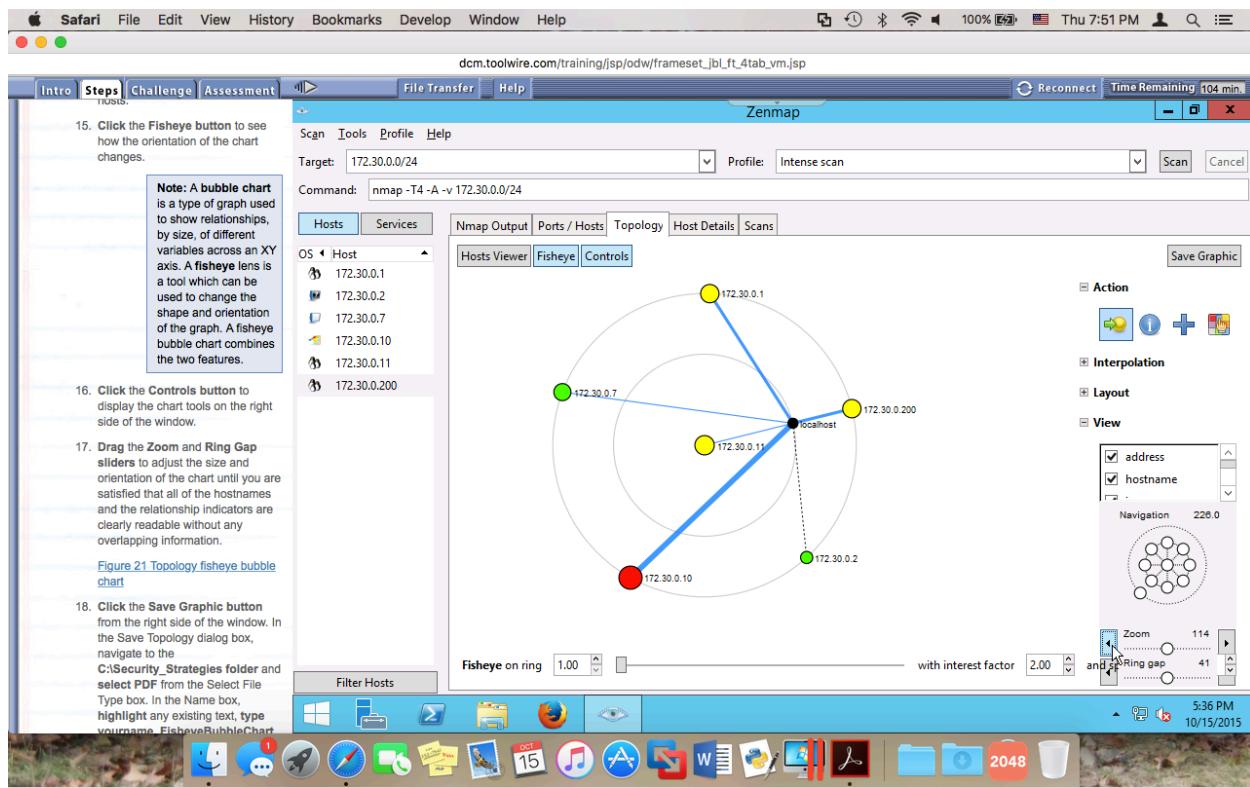
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Completed on Thursday, October 15, 2015, 7:01 PM
Time taken 7 mins 39 secs
Points 16.00/20.00
Grade 8.00 out of 10.00 (80%)

Question 1
 To be effective, hackers and cybercriminals:
 Select one:
 a. need to understand everything about how networks work and how networks are vulnerable to attack.
 b. only need to know one vulnerability, or how to use one automated tool that attacks that vulnerability. ✓
 c. must have a comprehensive knowledge of networks and networking protocols.
 d. need to find and exploit as many vulnerabilities as possible, as soon as possible.

Question 2
 During which phase of a hacker's five-step approach does the hacker scan a network to identify IP hosts, open ports, and services enabled on servers and workstations?