Cisco | Networking Academy®
Mind Wide Open™

Lab 3.1.2 Creating a Logical Network Diagram

Objectives

- Use router and switch commands to obtain information about an existing network.
- Use Cisco Network Assistant to obtain information about an existing network.
- Develop a logical network diagram.

640-802 CCNA Exam Objectives

This lab contains skills that relate to the following CCNA exam objectives:

- Describe the purpose and functions of various network devices.
- Interpret network diagrams.
- Determine the path between two hosts across a network.
- Verify network status and switch operation using basic utilities (including: ping, traceroute, Telnet, SSH, arp, ipconfig), and `show` and `debug` commands.
- Interpret the output of various `show` and `debug` commands to verify the operational status of a Cisco switched network.
- Verify device configuration and network connectivity using ping, traceroute, Telnet, SSH, or other utilities.
- Verify router hardware and software operation using `show` and `debug` commands.

Expected Results and Success Criteria

Before starting this lab, read through the tasks that you are expected to perform. What do you expect the result of performing these tasks will be?

_____

_____

_____

What are the benefits of a logical network diagram to a network administrator?

_____

_____

_____

What are possible actions a network administrator could take if the monitoring highlighted issues?

_____

_____

_____

Background / Preparation

In this lab, you have the task of documenting an enterprise network. However, you do not have physical access to the devices, cabling information, or other documentation.

You will first discover as much information as possible by telnetting from an administrator PC into the network devices and using router and switch commands. The Telnet access password for all devices is **cisco** and the password to enter privileged EXEC mode is **class**. You will record this information and use it to draw a logical topology diagram of the network.

You will then use the network management and monitoring program Cisco Network Assistant to display the topology graphically. This program is required to be installed on each PC used in this lab. Cisco Network Assistant is a program provided free and can be downloaded from http://www.cisco.com. See your instructor if this program is not available in the lab.

Task 1: Use Cisco IOS Commands to Obtain Information about the Network

Step 1: Discover and document the first device

NOTE: If the PCs used in this lab are also connected to your Academy LAN or to the Internet, ensure that you record the cable connections and TCP/IP settings so that these can be restored at the conclusion of the lab.

a. Your instructor will advise you as to which PC is configured for Administrator access to the network. Access this Admin PC and issue the **ipconfig** command from the command prompt to discover the default gateway.

b. Telnet from the command prompt (or use a terminal program such as HyperTerminal or TeraTerm) to the IP address of the gateway device and enter privileged EXEC mode using the passwords given above.

c. Issue Cisco IOS commands, such as those shown here as well as others you choose to use, to learn about the device.

```
show running-config
show ip route
show interfaces
show ip interface brief
show version
```

Record this information in the first Device Table at the end of this lab.

d. Issue Cisco IOS commands such as those shown here to discover information about connected devices.

```
show cdp neighbors
show cdp neighbors detail
```

It may take a few minutes for the network to converge. If you do not see any neighboring devices initially, repeat the command until you do.

Document the information you gather in the appropriate Device Tables.

e. Close the Telnet session by issuing the **exit** command.

Step 2: Discover the remaining devices

a. Telnet to the IP address of a device connected to the first device interrogated, and repeat the process in Step 1. Document this new device in an appropriate Device Table.

b. Repeat this process until all devices in the network are discovered and documented.

As you work through the network devices, record the details of each and sketch a diagram of the network devices and their interconnections.

When IP address information has been recorded, what other commands could be used to confirm connectivity and trace interconnections between devices?

_____

_____

Can a connectivity trace be relied upon to return details of all the pathways between devices? Give reasons for your response.

_____

_____

_____

Task 2: Use Cisco Network Assistant to Obtain Information about the Network

Step 1: Launch Cisco Network Assistant

a. Launch the Cisco Network Assistant program on the PC connected to the network.

b. Network devices can be accessed for monitoring and information gathering. From the **Applications** menu, click **Connect**.

c. In the Connect dialog box, select the **Connect To:** option and enter the default gateway of the Admin PC in the field, as shown.
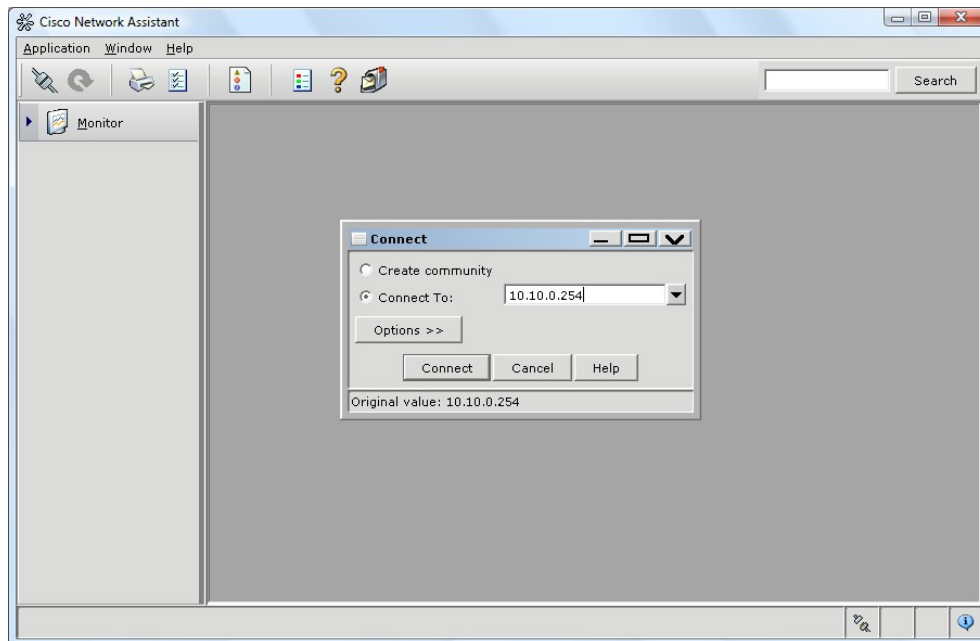
Step 2: Record the network topology

a. Record the displayed topology. The display will look similar to this sample.
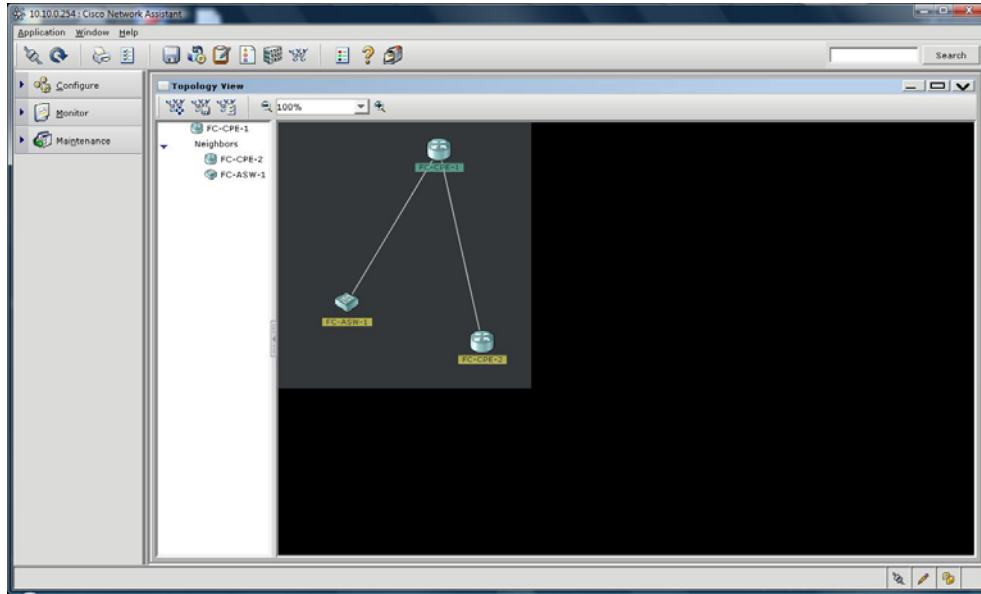
Cisco Networking Assistant can display the properties of each device.
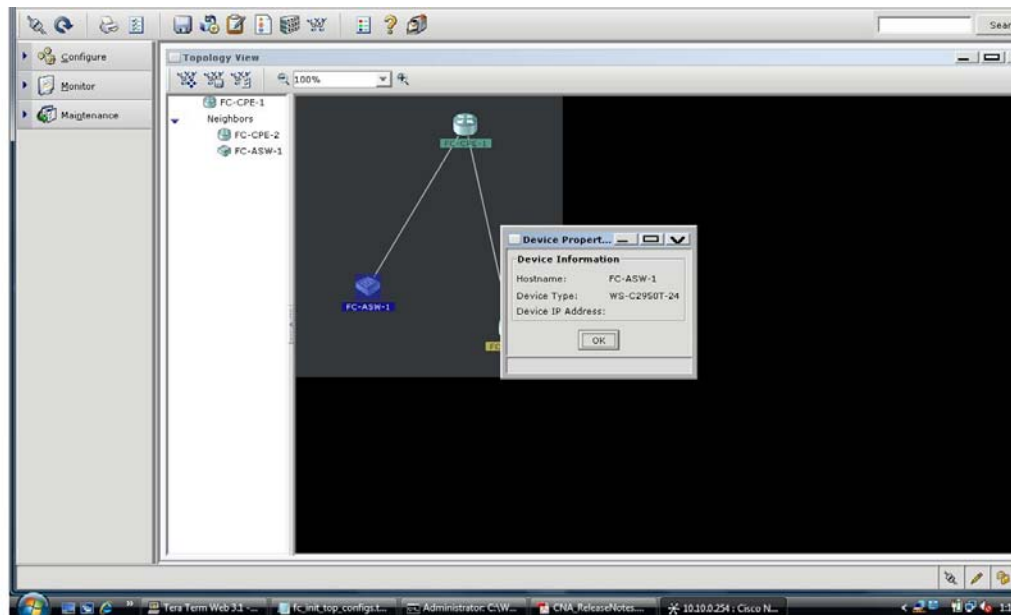
b. Continue to connect to each known device. Record the topology displayed and compare it with the diagram that you created from the results of Task 1.

Step 3: Collate the network information

Assemble your completed network Device Tables and Topology Diagrams into your FilmCompany case study portfolio for use in later labs.

Step 4: Clean up

Erase the configurations and reload the routers and switches. Disconnect and store the cabling. For PC hosts that are normally connected to other networks (such as the school LAN or to the Internet), reconnect the appropriate cabling and restore the TCP/IP settings.

Task 3: Reflection

a. These techniques were used to discover and document an enterprise LAN. Would the same techniques work for an enterprise network that included WAN links?

_____

_____

_____

b. Could these techniques be used in a network that included routers and switches from a manufacturer other than Cisco? Why or why not?

_____

_____

_____

Device Tables:

Router
Hostname _____

Model _____ IOS version _____

Interface	IP Address	Subnet Mask	Connects to Device	Connects to Interface

Router
Hostname _____

Model _____ IOS version _____

Interface	IP Address	Subnet Mask	Connects to Device	Connects to Interface

Router

Hostname _____

Model _____ IOS version _____

Interface	IP Address	Subnet Mask	Connects to Device	Connects to Interface

Router

Hostname _____

Model _____ IOS version _____

Interface	IP Address	Subnet Mask	Connects to Device	Connects to Interface

Switch

Hostname _____

Model _____ IOS version _____

IP Address _____ Subnet Mask _____

Default Gateway _____

Trunk Ports	Connects to Device	Connects to Interface
Active Access Ports	**VLAN Number**	**VLAN Name**

Switch

Hostname _____

Model _____ IOS version _____

IP Address _____ Subnet Mask _____

Default Gateway _____

Trunk Ports	Connects to Device	Connects to Interface

Active Access Ports	VLAN Number	VLAN Name

Switch

Hostname _____

Model _____ IOS version _____

IP Address _____ Subnet Mask _____

Default Gateway _____

Trunk Ports	Connects to Device	Connects to Interface

Active Access Ports	VLAN Number	VLAN Name

Switch

Hostname _____

Model _____ IOS version _____

IP Address _____ Subnet Mask _____

Default Gateway _____

Trunk Ports	Connects to Device	Connects to Interface
Active Access Ports	**VLAN Number**	**VLAN Name**

Switch

Hostname _____

Model _____ IOS version _____

IP Address _____ Subnet Mask _____

Default Gateway _____

Trunk Ports	Connects to Device	Connects to Interface
Active Access Ports	**VLAN Number**	**VLAN Name**

Network Diagram

Use this page to sketch a logical network topology diagram based on the information that you tabulated and noted in Tasks 1 and 2.