Networking Academy
CISCO

Packet Tracer - WAN Concepts (Instructor Version)

Instructor Note: Red font color or gray highlights indicate text that appears in the instructor copy only.

7.6.1 Packet Tracer - WAN Concepts Answers

Objectives

In this activity, you will investigate various types of WANs by exploring a topology that uses diverse connectivity technologies.

- Describe different WAN connectivity options.

Background / Scenario

You will explore WAN technologies that are used to connect business and home users to data services.

Note: There is no scoring in this activity.

Instructions

Part 1: Investigate Consumer WAN Technologies for Home and Mobile Devices.

Step 1: Explore Consumer WAN Technologies.

In this step, you will explore three consumer WAN technologies and home networks.

a. Look at the two home networks.

What are the WAN technologies in use?

The home networks use cable and DSL WAN technologies.

b. Examine the connections used in the network topology by selecting the Connections icon (the orange lightning bolt) in the PT devices menu. Hover over the media icons to display their names in the white box at the bottom of the PT window.

What media is used to connect the two home networks to the ISP? What devices in the home networks are directly connected to the ISP?

The Cable network uses coaxial media to connect the Home Cable Network to the ISP. The coaxial media connects to the coaxial splitter device. Phone cable connects the DSL network to the ISP. The phone cable connects to the DSL modem.

c. Click the DSL modem and open the Physical tab.

What ports are available on the device and what is connected to them?

The DSL modem has two ports. One is connected to the phone line from the Telco. The other port is connected to the home LAN over Ethernet.

What is the purpose of the DSL modem?

It converts the telephone data network signals to Ethernet for the home network.

What is the type of connection between the ISP/Telco/Cable Company network and the Home Cable Network? Why is the splitter necessary?

The connection to the home is made with coaxial cable. The splitter is necessary because the cable carries both digital data and video signals. The splitter splits the media so that the data signal can be sent to the cable modem and the video signal to the TV.

d. Look at the ports on the cable modem.

What does the cable modem do? What connections does it have?

The cable modem converts the cable data signals to Ethernet signals. It is connected to coaxial cable from the splitter and UTP cable from the Ethernet interface.

Which port does the cable from the cable modem connect to on the home wireless router? Where did the interface IP address come from?

It connects to the internet interface. The IP address came from the ISP network over DHCP.

e. Look at the Smartphone.

What is its IP address? Where did the IP address come from?

The IP address is 198.51.100.100. The address must have come from the Telco network over DHCP.

What data service is the cellphone currently using (cellular data or Wi-Fi)?

The phone is currently using cellular data from the 3G/4G network.

Step 2: Explore the Business WAN

In this step you will explore the business WAN. The business is a retail tire store. It has a local headquarters where most of the business functions occur, and three stores that are connected to the business WAN.

a. Look at the Connections menu.

What different types of connections do you see in use in the Business network?

Ethernet over copper and fiber and also serial.

b. Open the physical view for the StoreNet switch.

What types of interfaces are present? You may need to zoom and scroll the view to see.

The switch has Gigabit Ethernet copper media ports and it has four modular ports. There are three GLC-LH-SMD fiber optic Small Form-Factor Pluggable (SFP) modules inserted into the modular ports. These modules enable the switch to connect to fiber optic Ethernet networks.

Which interfaces and media are used to connect the store networks to the Business Headquarters network? Why was this done?

The stores are connected to the StoreNet switch with Ethernet over fiber optic cables. This was done because of the distance required to reach the stores. In reality, another provider would provide this fiber optic service, but this has been simplified for the purposes of this activity.

What type of WAN service is used to connect the Business Headquarters router to the ISP?

The router uses a serial WAN connection to connect to the ISP.

Part 2: Explore Connectivity

Ping devices within the Business WAN and the Consumer WAN networks. Also ping between the networks and the between the networks and the web server. Can all hosts ping each other and the web server?

Hosts in both networks can ping the webserver, but hosts on the Business WAN networks cannot ping hosts on the Consumer WAN networks and vice versa.

Is this a good situation?

Yes, these networks should not be directly reachable from outside for security reasons.