Packet Tracer - WAN Concepts

# 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

## Investigate Consumer WAN Technologies for Home and Mobile Devices.

### Explore Consumer WAN Technologies.

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

* + - 1. Look at the two home networks.

#### Question:

What are the WAN technologies in use?

The home networks use cable and DSL WAN technologies.

* + - 1. 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.

#### Question:

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?

Coaxial media is used by the cable network to link the ISP and the Home Cable Network. The coaxial splitter device is connected to via the coaxial media. The DSL network is connected to the ISP using phone wire. The DSL modem is connected through the phone cable.

* + - 1. Click the DSL modem and open the Physical tab.

#### Questions:

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

Two ports are on the DSL modem. One is connected to the Telco's phone line. The other port has an Ethernet connection to the LAN at home.

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?

Coaxial cable is used to make the connection to the house. Since the cable contains both TV and digital data signals, a splitter is required. The media is divided by the splitter so that the video signal can be supplied to the TV and the data signal can be sent to the cable modem.

* + - 1. Look at the ports on the cable modem.

#### Questions:

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

Cable data transmissions are converted to Ethernet signals by the cable modem. It is linked to UTP wire from the Ethernet interface and coaxial cable from the splitter.

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

The internet interface is connected. The IP address was obtained via DHCP from the ISP network.

* + - 1. Look at the Smartphone.

#### Question:

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

There is a 198.51.100.100 IP address. The address had to be obtained via DHCP from the Telco network.

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.

### 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.

* + - 1. Look at the Connections menu.

#### Question:

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

Ethernet over serial, fibre, and both copper.

* + - 1. Open the physical view for the StoreNet switch.

#### Question:

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

The switch includes four modular ports and Gigabit Ethernet copper media ports. The modular ports are filled with three GLC-LH-SMD fibre optic Small Form-Factor Pluggable (SFP) modules. The switch can connect to fibre optic Ethernet networks thanks to these components.

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

Ethernet over fibre optic cables are used to connect the stores to the StoreNet switch. Due of the distance needed to travel to the stores, this was done. In actuality, a different supplier would offer this fibre optic service; nevertheless, for the purposes of this activity, it has been simplified.

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

The router connects to the ISP using a serial WAN connection.

## Explore Connectivity

#### Questions:

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?

Both networks' hosts can ping the webserver, but neither the Business WAN networks' hosts nor the Consumer WAN networks' hosts can ping the other's hosts.

Is this a good situation?

Yes, for security reasons, these networks shouldn't be directly accessible from outside.

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