Packet Tracer - Network Representation

Objectives

The network model in this activity incorporates many of the technologies that you will master in your CCNA studies. It represents a simplified version of how a small to medium-sized business network might look. Feel free to explore the network on your own. When you are ready, proceed through the following steps and answer the questions.

Note: It is not important that you understand everything you see and do in this activity. Feel free to explore the network on your own. If you wish to proceed more systematically, follow the steps below. Answer the questions to the best of your ability.

Instructions

Step 1: Identify common components of a network as represented in Packet Tracer.

The icon toolbar at the bottom left hand corner has various categories of networking components. You should see categories that correspond to intermediary devices, end devices, and media. The **Connections** category (with the lightning bolt icon) represents the networking media supported by Packet Tracer. There is also an **End Devices** category and two categories specific to Packet Tracer: **Custom Made Devices** and **Multiuser Connection**.

List the intermediary device categories.

- Routers, Switches, Hubs, Wireless Devices, Wan Emulation, Security

Without entering into the internet cloud or intranet cloud, how many icons in the topology represent endpoint devices (only one connection leading to them)?

- 15

Without counting the two clouds, how many icons in the topology represent intermediary devices (multiple connections leading to them)?

- 11

How many end devices are **not** desktop computers?

- 8

How many different types of media connections are used in this network topology?

- 4

Step 2: Explain the purpose of the devices.

a. In Packet Tracer, only the Server-PT device can act as a server. Desktop or Laptop PCs cannot act as a server. Based on your studies so far, explain the client-server model.

- A server and a client are involved in a relationship. When a client sends a request for information to a server, the server will respond with the requested information if the client is authorized.

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b. List at least two functions of intermediary devices.

- transmit and retransmit communication signals.
- If a link fails, send data through alternative routes.

c. List at least two criteria for choosing a network media type.

- Maximum distance a signal can be successfully sent using a medium.
- How much will the media and installation cost.

Step 3: Compare and contrast LANs and WANs.

a. Explain the difference between a LAN and a WAN. Give examples of each.

- a small, constrained area with a network of computers that often numbers less than ten. A SOHO, or small office home office, network would be the most typical example of a LAN.
- A WAN connects various LANs across a wide geographic area, such as numerous enterprises spread over numerous cities.

b. In the Packet Tracer network, how many WANs do you see?

- 2

c. How many LANs do you see?

- 3

d. The internet in this Packet Tracer network is overly simplified and does not represent the structure and form of the real internet. Briefly describe the internet.

- Millions of interconnected networks make up the worldwide mesh network that is the internet. It is not owned or managed by any one person or entity.

e. What are some of the common ways a home user connects to the internet?

- The three most popular methods in use today are a fiber optic link, a cable connection, and a satellite connection.

f. What are some common methods that businesses use to connect to the internet in your area?

- connecting to your router via a lengthy fiber-optic cable

Challenge Question

Now that you have had an opportunity to explore the network represented in this Packet Tracer activity, you may have picked up a few skills that you would like to try out. Or maybe you would like the opportunity to explore this network in more detail. Realizing that most of what you see and experience in Packet Tracer is currently beyond your skill level, here are some challenges you might want to attempt. Do not worry if you cannot do them all. You will be a Packet Tracer master user and network designer soon enough.

- Add an end device to the topology and connect it to one of the LANs with a media connection. What else does this device need to send data to other end users? Can you provide the information? Is there a way to verify that you correctly connected the device?

- You can choose a device from the "End Devices" section of the device list and drag it into the workspace to add an end device to the topology. Then, you must use a media connection, such as a copper straight-through cable, to connect it to one of the LANs.

  The new device requires an IP address, subnet mask, and default gateway in order to transfer data to other end users. By choosing the device and selecting the "Config" tab, you can customize these parameters. The IP address, subnet mask, and default gateway can then be configured from there.

  You might attempt to ping another device on the network to ensure that you connected the device properly. The device is correctly connected if the ping is successful.

- Add a new intermediary device to one of the networks and connect it to one of the LANs or WANs with a media connection. What else does this device need to serve as an intermediary to other devices in the network?

- You can choose a device from the "Switches and Hubs" or "Routers" part of the device list and drag it into the workspace to add a new intermediary device to one of the networks. Then, you must use a media connection, such as a copper straight-through cable or a serial cable, to link it to one of the LANs or WANs.

  The new device must be set up with an IP address, subnet mask, and default gateway in order to act as a bridge to other network devices. In order to allow communication between several networks, you might also need to configure routing protocols if the device is a router.

- Open a new instance of Packet Tracer. Create a new network with at least two LANs connected by a WAN. Connect all the devices. Investigate the original Packet Tracer activity to see what else you might need to do to make your new network functional. Record your thoughts and save your Packet Tracer file. You may want to revisit your network later after you have mastered a few more skills.

- Open a new Packet Tracer instance and drag devices onto the workspace to build the topology of a new network with numerous LANs connected by a WAN. Media connections, such as copper straight-through cables or serial cables, can be used to link the devices.

  You may need to set up IP addresses, subnet masks, default gateways, and routing protocols for each device in order to get the new network up and running. To find out what equipment and configurations were used in the pre-existing network, consult the original Packet Tracer activity.

  By attempting to interact between devices on various LANs connected by the WAN after configuring the devices, you can test the network. If there is successful communication, the network has been set up correctly.