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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

Part 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 , Security, WAN Emulation

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

- (4) IPC-PT (HomeDesktop) , Laptop-PT (HomeLaptop) , Printer-PT (Inkjet) , TabletPC-PT

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

- WRT 300N (WRS)
CABLE-MODEM-PT (MODEM)

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

- (6) Laptop, Server, Printer, IP Phone, Tablet, Smart device

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

- (12) Console, Copper Straight-Through, Copper Cross Over, Single Mode Fiber, Multi Mode Fiber, Phone, Coxial, Serial DCE, Serial DTE, Octal, IoT Custom Cable, USB

Part 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. Perform an internet search if needed. - The client-server model is a network setup where one computer, called the server, provides services or resources to other computers called clients. The clients send requests to the server, and the server processes those requests and sends back the needed data, such as a webpage or file. This model is efficient because it centralizes resources and allows multiple clients to access services at the same time.

b. List at least two functions of intermediary devices.

-Intermediary devices like routers and switches help forward data to the correct destination and manage network traffic efficiently.

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

- Two criteria for choosing a network media type are distance (how far the data needs to travel) and speed (the required data transfer rate).

Part 3: Compare and contrast LANs and WANs.

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

- A LAN (Local Area Network) is a network that covers a small, localized area such as a home, office, or school. It connects devices like computers and printers within that area. An example of a LAN is the Wi-Fi network in a house. A WAN (Wide Area Network) covers a large geographic area and connects multiple LANs across cities or countries. The best example of a WAN is the internet.

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

- (2) Cloud Internet, Cloud PT Intranet

c. How many LANs do you see?

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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.

-The internet is like a huge web that connects computers and networks all over the world so they can share information. In real life, it's very complex, with millions of networks, servers, and routers all working together. Packet Tracer makes it simple, but the real internet has many layers and backup paths to keep everything running smoothly.

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

- Home users usually connect to the internet using Wi-Fi through a wireless router, cable or fiber-optic connections, DSL lines, or even mobile data from their phones.

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

- Businesses often connect to the internet using fiber-optic connections, leased lines, broadband, or VPNs for secure access. These methods give companies fast, reliable, and secure connections so employees can share files, run applications, and communicate with clients efficiently.

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?

- 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?

- 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.