# 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, 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)?

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 client can be a client, server, or both. A "server" is providing some kind of service such as dhcp, dns, file sharing, and a client is receiving the service. If at any point the client decides to provide similar services it is a server at that point in time. For example, if a client decides to become a backup for emails and provides email services to another client.

b.  List at least two functions of intermediary devices.

Different intermediary devices can do different things including forwarding/transmit traffic, allow/deny permissions, vlan forwarding, QOS classification and marking, some can do l3 routing, some do NAT/PAT, and many other things depending on the device.

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   c.   List at least two criteria for choosing a network media type.
        Distance, Speed, Cost, Type of device(Home-Coaxial, Wifi, Switch/Router, Phone), Use Case(Home/Commercial), and the Number of Devices are concerns when picking a network media type.

## Step 3: Compare and contrast LANs and WANs.

   a.   Explain the difference between a LAN and a WAN. Give examples of each.
        LAN is used for small areas such as a private home connection. They are fast, but require cable space.

   b.   In the Packet Tracer network, how many WANs do you see?
        Two are cloud WANs. The rest are small private networks.

   c.   How many LANs do you see?
        There are 3 LANS including Home Office, Branch, and Central Office. These are small private networks.

   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.

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

It's mostly cable, wifi, phones usually use cellular to, some opt for satellite(starlink, ATT) in the past there were dial-ups.

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

   High speed cables, Ethernet, dedicated lines, and other similar ways to a home user.

## 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?   IP Address, Routing, MAC Addrress. Yes(statically), Yes(use ping or traceroute)

   •   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?   IP, Routing, MAC, no deny, vlan access, up state, dns

   •   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.

   Packet Tracer captures traffic through the air. It is often a tool for hackers. Plan text can be really bad so encryption is important.