

## Objective 3

# Troubleshooting and Optimizing Home Internet

**GETTING  
STARTED**  
— WITH —  
**TECHNOLOGY**



### WHAT YOU NEED TO KNOW

Bandwidth refers to the maximum amount of data you can send or receive on an internet connection. This is typically measured in megabits per second. The more bandwidth you have, the faster you can send and receive data. This is why some will interchange the term bandwidth for speed.

If your network has only one device, there isn't a lot of data taking up "space" in the connection. But as more devices are added, a checkout que of sorts forms. If your data is behind someone else's data being sent or received, you might have a slow download compared to a single-device network. If the network's bandwidth is increased, devices can transmit data faster.

### HOW THIS HELPS YOU

It is important to understand the network's capabilities as well as the needs of the devices and users.

By understanding how bandwidth works, you will be able to troubleshoot your connection if you are experiencing slow internet speed.

### THINGS TO KEEP IN MIND

#### Age of Device

The age of any technology will likely impact its effectiveness and efficiency as time moves on. Most devices get slower and have more issues the older they get. But even newer devices, if connected to the same network as older ones, can be impacted by the pull from the aging machines.

#### Type of Device

The type of device can also affect the speed of a device on a network. Devices with Wi-Fi capabilities have antennas in them that help transmit signals, like a radio. Newer laptops often have three or more antennas, where a smart phone might only have one. Therefore, even some new devices are unable to take full advantage of the speed of a network because of lack of antennae or other hardware.

#### General Device Speeds

Consider the devices that will connect to the home network. Knowing a device's speed can help determine the type of coverage needed to successfully set up the network.

#### Wi-Fi is slower than wired connections

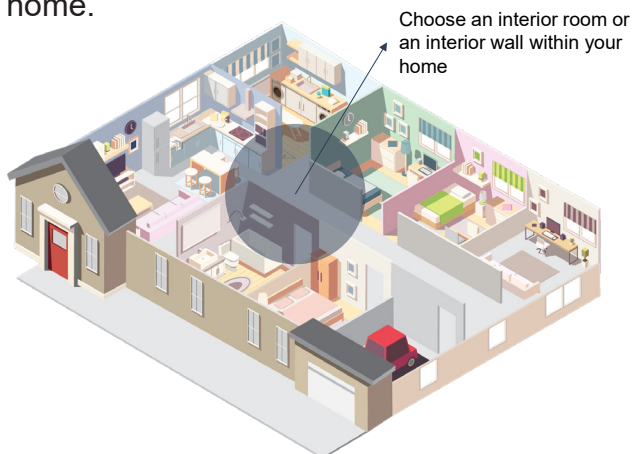
If you take a new laptop and use it on a wireless network, then take that same device and connect it through an ethernet cable, you will likely see an increase in upload and download speeds.

## BEST PRACTICES

Take a look at your Internet Service Provider's (ISP) various plans. Consider upgrading to a plan that has more advantageous options if you plan to have multiple devices connected and a television with streaming capabilities.

There are times when the home network doesn't function properly for reasons outside of your control. Incidents like power outages can impact a network regardless of the ISP, hardware, or location. When these events take the home network offline, consider your mobile phone as a potential workaround. Most mobile phones allow users to turn on a personal hotspot, which allows individuals the ability to connect another device to their phone's version of a network. Data rates may apply, understand your mobile carrier contract to ensure there are not unexpected fees.

If possible, consider moving the network wireless router towards the center of the home. This reduces the opportunity for outsiders to reach your network to cause harm or simply look for an open network. Centrally located routers also provide the most coverage for the home.



## NOTES

Make a list of devices that will be using bandwidth in your home. If you are experiencing a slow internet connection, it might be helpful to log off of a few devices to free up the bandwidth.

Devices that may take up bandwidth in your home include television, security cameras, tablets, phones and computers.

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