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In this lab, I assessed the different link speeds on cisco routers for the different interfaces to identify what type of cable, its length, and its speed, should be used. Take, for example, if I wanted to run on the Gigabit interface from 1/0 on Router 2 to 100 meters away on SW1 at interface 0/2, I would have to use a Category 5e cable at the minimum. Likewise, if I wanted this Gigabit link between the 2 devices to be 10 gigabits (10G), I’d have to use Cat 6e at a minimum if I wanted it to go anywhere above 55 meters, which is what Cat 6 is limited to. Cat 7 is another popular option, as sometimes, Cat 6e doesn’t have very good performance at 100 meters and 10 Gigabits per second. Cat 6e still has better power of ethernet performance than Cat 6, though. Again, I’d recommend all companies transition to fiber if it’s possible because of the performance and ‘strength of connection integrity’ it brings.

Given this network Map:

A diagram of a computer network

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Here are each of the information on the interfaces of Router 2, where I found the link speed in Kbit/sec for each interface to determine what maximum cable could be used (all routers/switches are different- you might need to upgrade them if the new PCs/Servers demand more bandwidth or other requirements in the connection). This information can also be used to troubleshoot physical and software issues on different devices on the network:

A screenshot of a computer program

AI-generated content may be incorrect.

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A screenshot of a computer program

AI-generated content may be incorrect.

Was able to access a Wireless Local Area Network (WLAN) controller and configure Access Points (APs) on the network too. I utilized the tool ‘Netspot inspector’ to check the area the APs/WLAN Controller will operate within for other networks, ordered by the signal strength of each.

The WLAN Controller had a tab for rogue APs, or rather, APs that are available in that area but no connected to the WLAN- something you should look out for when configuring them. A few Fortinet Wireless APs were configured on the controller along with SSID, security type, and channels. The channels had to be selected for each AP/Antenna depending on their location- i.e. the sources of EMI/RFI, other APs- so that the channels differ from the others on the network and don’t cause problems. Reflections, refractions, and absorptions must be watched for- including devices like Cordless Phones, One-way radios, and microwaves (A+ Core 1 Exam tested in a hands-on environment how to place APs/routers in a room properly given sources of interference).

I also learned that Ethernet Copper cable speeds cap out at around 40gbps with Cat 8, then fiber is required to use at speeds like 100gbps. Single-Mode-Fiber Cables, suitable for long distances, it typically the color yellow. Multi-Mode-Fiber Cables, on the other hand, usually are orange, aqua, or lime green. 🡨 Not in Network+ Exam, but something discovered in-the-field or in Training

