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Research Report 1: Managing My Network

What did you do?

For this project, I will be designing my home network. To determine reach, range, and responsiveness, I first reviewed the three R model per lecture. For reach, I put together all the physical connections, hardware, who was using the network, and location of the network. For range, I put together what the network was mainly being used for and when it was being used by discussing with the users of the network. For responsiveness, I collected data over a couple of days on how well the system responds to specific requests, whether that be everyone using the network for something or just one person, and reliability. I tested the Internet speed using the mobile app for my Wi-Fi.

Gathering the users of the network was not difficult, as the network is secured with a password and is used by three main people. This excludes when visitors are present and using the network for a temporary time. I received information from each user, including myself, on how they use the network. I used this data to create specifications on availability, capacity, and the area covered.

As it pertains to network needs, I went around the home and wrote down equipment used, including all wired and wireless connections. With the specific Wi-Fi I used for the home network, I went to the app on my mobile device to confirm connections and how many connections were showing at that moment. I also researched what the specific terms and conditions of service were for my specific Wi-Fi provider. I did this by searching on Google, I did at first try and find the information on my account but was unsuccessful with that route.

What are the results?

After gathering the specifications regarding the ‘reach’ portion of the three R model, the router is basically the only physical connection in the home network. Hardware includes the router, cables, one printer, four laptops, four TVs, ring doorbell, three mobile devices, one google home speaker, two monitors, keyboard, and a mouse. Three main people use the network, which includes me and two roommates. Occasionally, we have visitors who also use the network, but since the network is secured with a password, we are aware of who is on. After gathering the specific data regarding the ‘range’ portion of the three R model, the network is being used for streaming services, internet use, video calls, work from home, and email. The network is being used throughout the day starting with a user working from home until around 4, another user getting home around that time and starting other work tasks on their laptop, and another user getting home later in the day and using the internet browser for homework. All users are also on their mobile devices for the most part, using social media, streaming, and video calling. After gathering data regarding ‘responsiveness’, it appears that the Wi-Fi will sometimes stop working throughout the day, this happens around once or twice a week. When all users are using a device pertaining to the network, the responsiveness does not slow. The results of testing the Internet

download speed on my mobile app for the Wi-Fi provider is consistently around 870 Mbps, which is the current plan speed.

The service provider selected for my home network is Optimum. The mobile app has provided many tools to use when it comes to connections, internet speed, troubleshooting, installing an extender if needed, and managing router settings. I used the app to confirm how many connections there are and currently there are six, sometimes it will get up to eleven connections. I was not aware of the specific documentation similar to an SLA, but after researching my specific provider information, I found the 'Residential General Terms and Conditions of Service'. The website can be found here:

https://www.optimum.com/terms-of-service/residential

A highlight of the document was the equipment and software section. It states that the equipment needed and provided for the service is provided by the provider and remains the property of the provider. Also, repairs are made by the provider for their equipment. There is also a separate documentation going into further detail regarding the service level and network provided by Optimum:

https://www.optimum.com/terms-of-service/residential/internet

The document discusses "bi-direction direct access to the internet" but not specifically intended to protect from hacking, etc. Another important point discussed is how the Internet speed will depend on different things such as "computer equipment, Internet congestion, the performance of network servers and routers" and more.

What did you learn?

I learned that to design a network, whether that be for your home or business, you first need to define your specific goals of the network and what it will mainly be used for, along with the user requirements. Before putting this report together, there was less I knew about my own home network. The three R model was pertinent to the report because I feel like I was able to answer most of questions just by figuring those three points out. Reach, range, and responsiveness played a huge role in how well my network managing and if there are any changes I need to make in the near future, such as responsiveness due to multiple users working from home and multiple users attending courses in which the homework is done at home with internet access.

There were tools within my service provider app that I had no idea existed. It was easier to see which connections existed and how many devices there were total on the network. Currently, it appears the internet download speed is up to par with my specific service, but I want to try and see what it is like when the service is working slow, as I had mentioned this happens around once or twice a week while I am working from home.

Overall, the design process was designing my current home network, but I would like to see changes to it and am able to implement these changes by knowing where they specifically need to be made. My current service provider was one I had already had, but looking into the

documentation on service levels helps in a better understanding when it comes to comparing different service providers.