Project Background

- 400GB/s of data is too large to be transmitted
- The idea is to transmit 1gbps so it will be manageable for majority of network testing.
- Moreover, provide the ability to do testing remotely by connecting the system computers to the device via a Wi-Fi card.

Objectives

- Design a plug that transmits converts a 1GB/s input stream rather than a 400GB/s
- Produce a cost-effective solution
- Implement ethernet protocols to determine relevant data
- Use Wi-Fi for functional testing
- Implement an adaptor from high-speed host interfaces to low-speed interfaces

Problem

Juniper Networks has multiple servers that need to communicate with each other, and currently they are physically wired together, thus requiring an engineer to be present. They have tasked us with creating a remote solution that allows for seamless network switching and testing.

System Design

The design is compromised of a system that provides a solution where servers at Juniper Networks connect and communicate wirelessly over Wi-Fi. This design transmits the data over a <1GB/s input stream. This design also includes the ability to connect and communicate remotely with the engineers in Juniper for remote controlling and testing. It is very low cost, effective and has very few dependencies.

System Overview

For the project, we have produced and implemented a design that we believe will be successful in our objective of transmitting the test data for two database servers over Wi-Fi instead of the way this was previously accomplished, which was through physical wires that required an engineer present to edit. The design required some effort to get the raspberry pi to recognize the network card because we needed to recompile the Raspberry Pi 4. Due to unforeseen circumstances we were unable to acquire a switch that was capable for testing. The most that we could test is plugging the device into itself and running it, but that doesn’t completely validate our design. We would have wanted to continue with our project by testing our plug in various settings in order to validate our design deliverables.