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Reflective Journal #3
06/09/2023

Over the course of the last 50 hours, I had the opportunity to work on a project that involved building a fiber optic ring network and ensuring seamless continuity from the hubsite. This method, known as path building, ensures that specific wavelengths are being picked up from one point in the network to another. This method is called pathbuilding. To build a path, you need to connect a fiber cable from one enclosure to the next. This process requires the use of an Optical Time Domain Reflectometer (OTDR), which sends out a particular wavelength to ensure continuity between points in the path. By verifying that the wavelength is being detected along the entire path, you can ensure that it has been built correctly. The ring path I worked on was a total of 44 kilometers in length.

When pathbuilding, you must be extremely methodical and careful since you are working on all live network cases-meaning that if you have an error, you can bring down entire networks and cause outages. Part of the network ring went through a complicated four mile section in which sixteen cases were not sending out any signals when measured using an optical fiber identifier. I attempted to find the correct fiber needed based on information and any data I could find. Without any data logs in the splice enclosures, it was impossible to determine the exact location of the network divergence that resulted in this issue. Given how after several days of searching through roughly 16 cases I did not find the continuity frequency and there being potentially hundreds of different network paths with there being no documentation, a new solution had to be devised. I spoke with a network designer at Cox Communications and we established a new route leading from the central hubsite that circumnavigated the problematic 4

mile area. The network designer needed some information that was not immediately available, and it took a few days to obtain.

During this time my team and I completed the primary network ring. Whenever we are building network rings we identify and build two, one as the primary and one as the redundancy to use in the event the primary suffers an outage. This portion was much more straightforward and it only took us a couple hours to complete the ring. Path building ultimately takes a combination of knowledge, skill, and problem solving to accomplish. Network infrastructure often fails to align exactly with plans, requiring collaborative problem-solving and teamwork to overcome obstacles.