

Designing for Flexibility and Future-Proofing Networks

Case Study: Increasing Bandwidth With Fiber Constraints

Summary

Customer

- Commercial Telecommunications

Challenge

- Fiber constraints
- Need to connect 5 locations, each requiring 10Gb of dedicated bandwidth

Solution

- A DWDM solution, designed with flexibility and room to grow

Result

- Established flexible and resilient network connections between sites

Equipment Used

- 40km DWDM 10g Ethernet transceivers, ITU Channels 20-27
- Fiber Jumpers
- "Passive DWDM, 1 RU 19" Rack Mount Mux, 16 Channel, 100 GHz, starting channel

Addressing Oncoming Traffic

Designing networks is similar to the challenges civil engineers encounter when designing roads, bridges, and highways. In both scenarios, the ability to foresee and plan for the future is critical. Both require significant investments and will, at some point, be put to the test with high traffic and the need to adapt to unforeseen technology advancements.

One of our customers found themselves in a common fiber constrained situation, needing to increase bandwidth on a single strand of fiber. The customer had five local maintenance offices to connect, each requiring high speed voice and data functionalities and at least 10Gb of dedicated broadband. There was no room for error or equipment failure. Without modification, they had the equivalent of a two-lane highway at rush hour and some serious end user road rage.

Getting the Green Light

A wise soul once said, "You don't make money sitting in traffic." While this is certainly true on the highway, fiber constraints and data-related traffic jams result in dissatisfied customers and lost revenue, too. Our customer knew they had to quickly open up additional lanes fast, without the help of new fiber.

Integra's team of engineers proposed and designed a solution using 16-channel DWDM mux and demux passive filters that would instantly increase capacity, and leave plenty of room for future growth.

Similar to an HOV lane, this was the perfect solution to provide immediate relief without the costly investment of laying new roads (fiber). The customer was able to utilize eight send, and eight receive channels on a single dark fiber.

"It's always beneficial when a customer involves Integra Engineering in the planning process. In instances such as this, we are able to propose optics investments with the future in mind."

- Product Engineer, Integra Optics

Additionally, two filters were installed at each of the intermediary offices, providing flexibility to use each channel for local delivery or to jumper the wavelength across and continue down the chain to other sites.

The solution also used express ports to allow for flexible channel expansion without even taking the used channels out of service.

Life in the Fast Lane

Once the solution was implemented, the customer was able to establish flexible connections between each site, as well as from each of their sites to the main office.

Their implementation protected them from outages at the satellite offices that would have occurred during preventative or corrective maintenance.

Furthermore, they now have the flexibility to adapt to future technology advances and have assurance that their upfront investment was money well spent.

