Case Study: Think Trunk Cables Don't Need Testing? MultiFiber Pro Shows One Installation Contractor They Certainly Do

Case Study: Think Trunk Cables Don't Need Testing? MultiFiber Pro Shows One Installation Contractor They Certainly Do

At a Glance:

CUSTOMER:

Installation Contractor for IT Infrastructure

INDUSTRY:

IT Infrastructure

LOCATION:

U.S. East Coast

Challenge:

Issues with trunk cables can often sneak into an installation After all, this cable is generally pre-tested and certified, so it must be fine. That common perception was certainly shared by one East Coast-based installation contractor, who nevertheless was experiencing persistent issues with a particular project. In fact, the problem was so intractable that despite repeatedly examining, cleaning and re-testing the links with their OTDR unit, installers were unable to isolate the issue. And as a result, they were watching job profitability vanish in a haze of additional man-hours.

Result:

The company was put in touch with Fluke Networks, and quickly learned that, although the installers had the best fiber testing tools on the market, they weren't the right ones. Moreover, it turned out that "pre-tested and certified" didn't actually provide the guarantee they thought. Fluke Networks showed the contractor how the company's MultiFiber Pro can rapidly troubleshoot the thorniest fiber trunk issues.

Product:

MultiFiber™ Pro Optical Power Meter

Customer

MPO (Multi-Fiber Push On) fiber trunks are the backbone for today's high-speed data networking, and the 10 Gbps, 40 Gbps and 100 Gbps speeds these trunks enable are the fastest growing segment in the industry. That means the people who can install, test and troubleshoot these types of connections are in high demand. And conversely those contractors need to speed efficiently through one installation project and be ready to move to the next.

Challenges

Yet one such installation contractor found its progress grinding to a halt around a particularly thorny problem with an MPO deployment. The company was in the midst of an installation comprised of two MPO fiber cassettes and a pre-tested and certified MPO trunk cable. And it wasn't going well.

The manufacturer of the equipment they were using required that pass-fail limits be derived from the company's link loss calculator and then input into test tools such as a Fluke Networks DTX CableAnalyzer as a custom limit. And these custom limits are tight; stricter even than the traditional TIA-568-C industry standard. Total budgets of only 1.40 dB are common for two cassette links.

And unfortunately the installation contractor was struggling to get under this budget for one portion of a particular job. The installers repeatedly examined, cleaned and re-tested the fibers without being able to solve the issue. As a result, the profitability for that particular job was vanishing with each additional hour of testing, driving the company to reach out to its distributor, which in turn put in a call to Fluke Networks.

Solution

Fluke Networks worked with the company to identify two issues that were stalling the project. The first was a counter-intuitive issue with the cable itself. It was "pre-tested" – but what did that actually mean?

Pre-tested cable should be a significant time saver for any installer: it's already terminated, tested and certified, making it "good to go" for installation. Only it's not, not really. Pre-tested cable is only guaranteed as it exists in the manufacturing facility. From there it must be shipped, stored, bent, pulled and otherwise manhandled throughout the process from factory to installation. All of which introduces a wide range of opportunities for contamination or damage that can lead to performance degradation for even the best pre-certified cable. Proper testing of pre-tested cables after installation is the only way to guarantee performance in any live application.

The second challenge was the location of the issue: the cassette. It turns out that – despite the fact that the installer was using the de factor cable test tool on the market, the Fluke Networks DTX CableAnalyzer – the tool was unable to "see" the issue. And that's because the only way to isolate the trunk cable from the cassette is with the MultiFiber Pro Optical Power Meter from Fluke Networks.

MultiFiber Pro is the only fiber tester that can test MPO fiber trunks without the use of a fan-out cords, eliminates the complexity of polarity issues, and make cassettes easier to test in the field. Whether it is using 10 Gbps pre-tested and terminated fiber trunks or planning for next-generation 40/100 Gbps performance, data centers are standardizing on an MPO connector solution, and those connections need testing with the MultiFiber Pro.

Typical data center fiber installation means time-consuming, error-prone and imprecise MPO validation. Once you throw polarity of all 12 fiber connections into the mix, this becomes almost a hit-and-miss manual affair. And, if you migrate from 10 Gbps to 40/100 Gbps on the same cable? You need to test and validate performance all over again.

MultiFiber Pro is 90 percent faster than the single fiber testing method because it measures power loss and validates polarity on 12 fibers in a single connector – one connector, one test, all twelve fibers – reducing test time from weeks to days.

Results

The problem for this particular installer turned out to actually be fairly simple: the breakout fiber between the LC and MPO connectors is so short that it falls into what is known as the event dead zone for an Optical Time-Domain Reflectometer (OTDR) tool… any OTDR tool, including the DTX CableAnalyzer. In short, the breakout link "disappears" and looks to be a single connection as far as the tool is concerned, making it technically impossible for an OTDR to isolate problems that occur within the cassette.

Once the installer had a MultiFiber Pro on hand, they were able to immediately determine that the trunk cables themselves, despite being pre-tested, were not in fact meeting specification.

Moreover, the company now has a method for quickly and reliably testing MPO fiber trunks in the field. It takes an average of 6.5 minutes to set up and test each of the 12 fibers in an MPO trunk according to research by Fluke Networks. The MultiFiber Pro reduces that time to approximately 20 seconds (14 seconds for set up, 6 seconds for testing). For an average data center with 1,600 MPO trunks, the MultiFiber Pro tester can save contractors more than 155 hours of labor and $17,000 USD in costs, assuming an average burdened labor rate of $55 USD.

Taken together, the MultiFiber Pro not only solved the installation contractor's immediate problem for that particular job, but will provide significant savings and improved efficiency on every MPO installation going forward.