Bigger Isn't Always Better.

Using Micro-Technology to take fiber to new environments, more effectively and less expensively.

By Cindy Olson

The need for bandwidth speed is upon us and increasing every day. Today's wireless device users are hungrily consuming bandwidth at a rate never experienced before. Then there's video streaming along with countless devices and applications burning up the bandwidth and capacity. And every service provider is feeling the pressure as their networks are overloaded, speeds are moving at a turtle's pace and frustrated customers are complaining.

According to the latest report from Cisco VNI Global Mobile Data Traffic Forecast, global mobile data traffic grew 81 percent in 2013 – but networks have not kept up with this pace**.** What's more, mobile network connection speeds more than doubled in 2013 with no end in sight. The need for service providers to satisfy all the wireless technologies and mobile devices along the endless use of applications, high speed internet, video streaming, etc., is becoming increasingly challenging. The countless bandwidth burning devices and apps that are being developed and released almost every day is driving an explosion that demands increased capacity in every type of network.

Additionally, as anyone involved in the Telecom industry already knows, "wireless" communications involves plenty of "wires" or fiber bandwidth and infrastructure to support the explosion in demand. These dynamics are forever shifting the process of how fiber networks are being deployed, maintained and expanded - and it points squarely that these additions and increases must be simpler and easier to deploy and maintain. While this may be a seemingly straightforward statement it's anything but a straightforward problem. Service providers across the country are searching for simple solutions and they are left struggling with all the complex choices among the various products, technologies and installation methods available. There are dozens and dozens of trade articles and white papers written on traditional fiber installations vs. air blown fiber installations along with costs associated and these articles have accompanying financials marketed to back-up the method preferred. This has made the choices and decisions all the more difficult for any service provider considering expanding their network. Service providers are hungering for simpler easier choices – where do they start?

What's in it for you – the Service Provider

As mentioned earlier, there is an astounding amount of products and technologies offered in our industry today for deploying fiber cable. Some of these are proprietary in nature and are even patented. Some require a significant upfront investment in highly specialized equipment and in-depth training. Some are disruptive to deploy such as open trenching or boring. Many of these options offer and include a 25 year extended end-to-end warranty or promise a simple resulting architecture and deferred costs. While all of this can seem attractive in one way or another, depending on what is required, the hook with most of these offerings is the commitment from you, the service provider. In order to be the recipient of any of the above, end-to-end warranties require that end-to-end infrastructure be purchased from this company too. Many don't realize this includes all the fiber connectivity such as junction boxes, enclosures, panels, frames, wall boxes, hubs, cabinets, pedestals, jumpers, cable assemblies, even the fiber cable itself before a warranty can be granted and issued.

Additionally, the service provider's installation crew must be fully trained and certified by the warranty company. Is this really saving anything, cost-wise or time-wise? How do you verify this until after it is too late? How can a service provider make economically sound decisions on which direction they should go and realistically plan fiber deployments without adversely effecting the bottom-line?   And once started, if the results are less than expected, what options are there?

For service providers, an easier cost effective method to deploy and install fiber infrastructure appears to be more difficult due to the dizzying array of choices. While some technologies are very viable for certain optimum conditions like greenfield applications, the trend experts from both traditional fiber installation methods and the air blown fiber methods would like to have you think that only two options exist for installing and deploying fiber. There is another solution that is simple, easy and cost effective and it's been taking the industry by storm.

The Need for Micro-Technology in Fiber

The third method that is easy, cost effective and adaptable to fiber deployment in all conditions is micro-technology. Bigger isn't always better. Because of the latest advancements in micro-technology, fiber cable has made big strides in alleviating and accommodating the ever increasing demands for bandwidth. Micro-technology fiber and duct is quickly becoming the obvious choice for even the most complex fiber deployments because of how easy and cost effectively it is installed and maintained.

Moreover, service providers must keep pace with the demand for more capacity in order to satisfy their customers' needs and increase their revenue by deploying new fiber and accompanying bandwidth. Typically this will create new installation and routing obstacles that must be overcome. Conduits and ducts are filling up fast and the existing paths are becoming unavailable at a pace never seen in the industry before. The race is on to use any leftover space remaining.

One big challenge is how to get the fiber into these spaces. Many times any remaining space in a conduit cannot be utilized by traditional installation methods with traditional fiber. Think about a duct filled almost full of cable going straight up the side of a cell tower. A thick OSP fiber cable is the last thing the tower owner will allow. Unfortunately, air blown fiber and associated specialized equipment is already limited where it can be deployed, it has a very expensive upfront cost and it is not an option when the existing conduit pathway is even partially filled. All this cabling and congestion makes it very difficult for technicians and installers to gain access to existing fiber and even harder to install new fiber. Then add the building owners, city planners and engineers who have been asked repeatedly for access. Many now take a position and are not willing to allow any new open trenching or disruptive construction for more pathways and ducts in their buildings, streets and sidewalks. Open trenching and digging up streets again and again to install more conduits is becoming increasingly tricky and frowned upon as the streets get over populated with yet more conduit and pipe routes. This epidemic has even caught the FCC's attention. Under FCC consideration is the possibility of mandatory sharing of ducts and conduits if there are empty tubes left behind after the deployment is complete. The outcome has yet to be determined; however this points to the epidemic proportions reached in the realm of conduits and ducts.

Bigger isn't always better. Using Micro Duct and Micro Fiber Effectively

All this news can weigh heavily on service providers until it is discovered there is an easier way. Micro fiber cable and microducts are a cost effective and easy way to expand service providers' networks. Microduct and micro distribution fiber cable save significantly on costs, installation time and restoration while also saving precious space even in nearly full conduits and ductwork without interrupting the existing fiber already there. Around corners and over pipes, pushable/pullable fiber technology offers the flexibility and adaptability that service providers are searching for to increase capacity in wireless towers, high rise buildings, housing developments and neighborhoods. When used in conjunction with microducts it provides a very rugged solution that can be deployed just about anywhere with little to no disruption including pushed up an antenna tower, hung aerial on a strand of wire or micro-trenched into the ground. Micro cable and microduct can be deployed under almost any condition in almost any type

path with no expensive specialized equipment. With fiber counts from a single strand in 3mm OD for desktop or single family home deployments to 24 fibers in a micro-sized 4.5mm OD fiber cable for MDU, customer premise or data centers, micro cable is ready for a wide range of deployment scenarios. With microduct technology, open trenching to plow in traditional OSP fiber can be a thing of the past, as microducts can be micro-trenched in streets and alleys with little impact to the infrastructure.

New Environments for Micro-Technology

Micro fiber and microduct technology are innovative and revolutionary alternatives for service providers in today's demanding environment. With the ability to reach new environments and meet rugged standards with minimal impact, these technologies have given service providers the means to solve critical space constraints and cable routing challenges while offering significant labor and cost savings.

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