

WTC Communications Speeds Fixed Wireless Installation and Maintenance with Plug-and-Play Products from Clearfield®

Background

WTC is a small, privately held company that started out as an incumbent local exchange carrier in Westport, Ontario in 1932. A variety of technologies including FTTH and DSL are used to reach broadband, video and voice subscribers. WTC has been delivering Fixed Wireless Broadband access in Rural Eastern Ontario for over 15 years, progressing through four generations of wireless access platforms. Along with continual upgrades to equipment, tower configurations have also been refined for ease of installation, maintenance and future upgrades. WTC's current systems are robust and can withstand extreme weather including frequent lightning storms.

"This tower layout has made designing and setting up new sites simple, predictable, repeatable and reliable. It is easy to scale up the fiber capacity in a couple of hours by dropping another MPO cable down the existing microduct and adding a couple more Clearview cassettes or an extra Flex Box on the tower. If the future brings remote radio units that utilize newer optical technologies, this system will allow WTC to scale up by simply plugging in off-the-shelf patch cables. WTC plans to continue to standardize on this design for the foreseeable future."

— Kevin Christy, Plant Operations Manager, WTC Communications

Deployment Driver

One of the challenges WTC faced in earlier deployments was protecting Ethernet drops from the top of the tower to the bottom from physical damage, lightning, noise and ESD. The tower cables themselves were also exposed and subject to physical damage from climbers, ice and other outside elements. WTC sought to transition these cables to a fiber solution. The fiber solution needed to be modular, as well as plug-and-play. Enter Clearfield. Through distribution partner Nexicom, Clearfield offered modular, craft-friendly products with plug-and-play connectivity, speeding installation and maintenance and allowing tower technicians to successfully perform their jobs with only a few minutes of training.



The Deployment Solution

For the past 5 years now, WTC has transitioned to an updated fiber solution on towers ranging from 90-160 feet. The fiber design, based on the tower top module concept, has been improved with more robust, armored, dedicated power cabling, DC Surge Protection and microduct fiber for all optical links from the bottom of the tower to the top.



The design uses three enclosures: a Clearfield YOURx™ Flex Box at the tower top along with active cabinets at both the base and top. A 4-conductor, armored Teck cable delivers DC power to the tower's top cabinet and Clearfield's FieldShield® Microduct provides a protected path for pre-connectorized MPO cables to run from the base cabinet to the YOURx Flex Box at the top. One or two 12-fiber MPO cables typically run between the base cabinet and the Flex Box, plugging into Clearfield's Clearview® Blue MPO Cassettes breaking out into 12 individual LC connectors at both ends. This configuration allows for easy plug-and-play fiber connectivity. Additionally, a short piece of FieldShield microduct

runs between the active and passive cabinets allowing the use of off-the-shelf LC patch cables to connect a hardened switch in the active cabinet to the Clearview Blue Cassette at the top of the tower.

GPS timing is combined with power and Ethernet from the hardened switch using injector modules inside the active tower top cabinet. Combined signals are then sent to the access points over one individual, short, outdoor C5E run per AP. The latest generation access points, as well as the microwave backhauls used by WTC, have SFP ports. This architecture allows the design to be further improved by bypassing the hardened switch and using short, rugged, outdoor fiber cables to connect the radios directly into the Clearview Blue Cassette housed inside the Flex Box. The improved design allows these higher bandwidth communication links to run directly off the core router in the base cabinet and further protects them from the risk of ESD by eliminating copper Ethernet all together.



In addition to the reliability WTC has found in this design, installation and maintenance are also simplified. Many of WTC's outside technicians are cross-trained in fiber and wireless, but not everyone who may be sent to climb a tower to repair or install equipment is an expert at splicing fiber, and these are mission critical connections. When researching a fiber solution, this was one of WTC's biggest concerns. This solution is comfortable to deploy, as everything is with plug-and-play. The FieldShield Fiber is small enough that a standard one size fits all MPO cable can be used for all towers and the excess slack can be easily stored. A few spare cables are kept on hand, as well as extra cassettes, in case of failure. A failure caused by physical damage is really the main concern with this design, but the FieldShield Microduct is so tough, physical damage has yet to happen in the WTC network. Were a failure to occur, any one of WTC's climbers could grab a handful of spares and with only a basic knowledge, replace any part of the system quickly and easily via plug-and-play connections. Installation is similar, which means WTC doesn't have to tie up a splicer or worry about taking an expensive fusion set up a tower to get things connected.

Results

"This tower layout has made designing and setting up new sites simple, predictable, repeatable and reliable," said Kevin Christy, Plant Operations Manager at WTC Communications. "It is easy to scale up the fiber capacity in a couple of hours by dropping another MPO cable down the existing microduct and adding a couple more Clearview Cassettes or an extra Flex Box on the tower. If the future brings remote radio units that utilize newer optical technologies, this system will allow WTC to scale up by simply plugging in off-the-shelf patch cables. WTC plans to continue to standardize on this design for the foreseeable future."

About Clearfield, Inc.

Clearfield, Inc. (NASDAQ: CLFD) designs, manufactures and distributes fiber optic management, protection and delivery products for communications networks. Our "fiber to anywhere" platform serves the unique requirements of leading incumbent local exchange carriers (traditional carriers), competitive local exchange carriers (alternative carriers), and MSO/cable TV companies, while also catering to the broadband needs of the utility/municipality, enterprise, data center and military markets. Headquartered in Minneapolis, MN, Clearfield deploys more than a million fiber ports each year. For more information, visit <https://www.seeclearfield.com> or @ClearfieldFiber