



WAVETRAX™

Make the right connection
on your end-to-end cable
management solution

INTRODUCTION

End users are demanding more from the network—more bandwidth, faster downloads, denser coverage areas, better reliability.

As smartphones and mobile devices become more powerful and endlessly functional, users spend more time downloading, uploading, posting, searching, sharing content and streaming video. Our inter-connections to technology continue to increase, causing the signals from wireless providers to become congested. Connection speeds slow down and service becomes less reliable.

A recent GSMA report, which represents the interests of mobile operators worldwide, estimated 600 to 800 MHz of additional spectrum need to be available for mobile broadband use by 2020.

Wireless providers have no choice but to expand the spectrum, investing in their networks to deliver up to 5G and the gigabit internet. They're bulking up their fiber networks, building greenfield centers and retrofitting legacy architecture with more cable and newer, faster, more port dense equipment.

All that cable must be carefully organized, routed and protected ... no easy task given the space limitations in today's network facilities both new and old.

BUILDING A FIBER OPTIC RACEWAY

Most fiber optic networks have been designed to accommodate today's—or in most cases yesterday's— network needs, never mind tomorrow's. However, network providers and technicians must be planning for expansion, preparing their step into the 5G and gigabit internet realm.

Their nagging question is:

How will it all fit into what I have to work with?

They must:

- Route cable around and through complex overhead or underfloor environments
- Install and reconfigure components quickly
- Provide flexibility for growth
- Keep total cost of ownership low
- Provide superior cable protection throughout the route

Planning a cable-management system is critical to servicing and troubleshooting large network installations. A well-organized architecture helps simplify connections to network equipment, plan routing of cables and jumpers for ease of ordering and management, streamline tracing of cables and ensure seamless ongoing performance.

More than 20 years ago, Telect designed its cable management products with the user in mind. We focused on rapid installation, configuration flexibility, full compatibility, low cost of ownership, product quality and a total integrated, compliant solution that encompasses horizontal and vertical as a complete system.

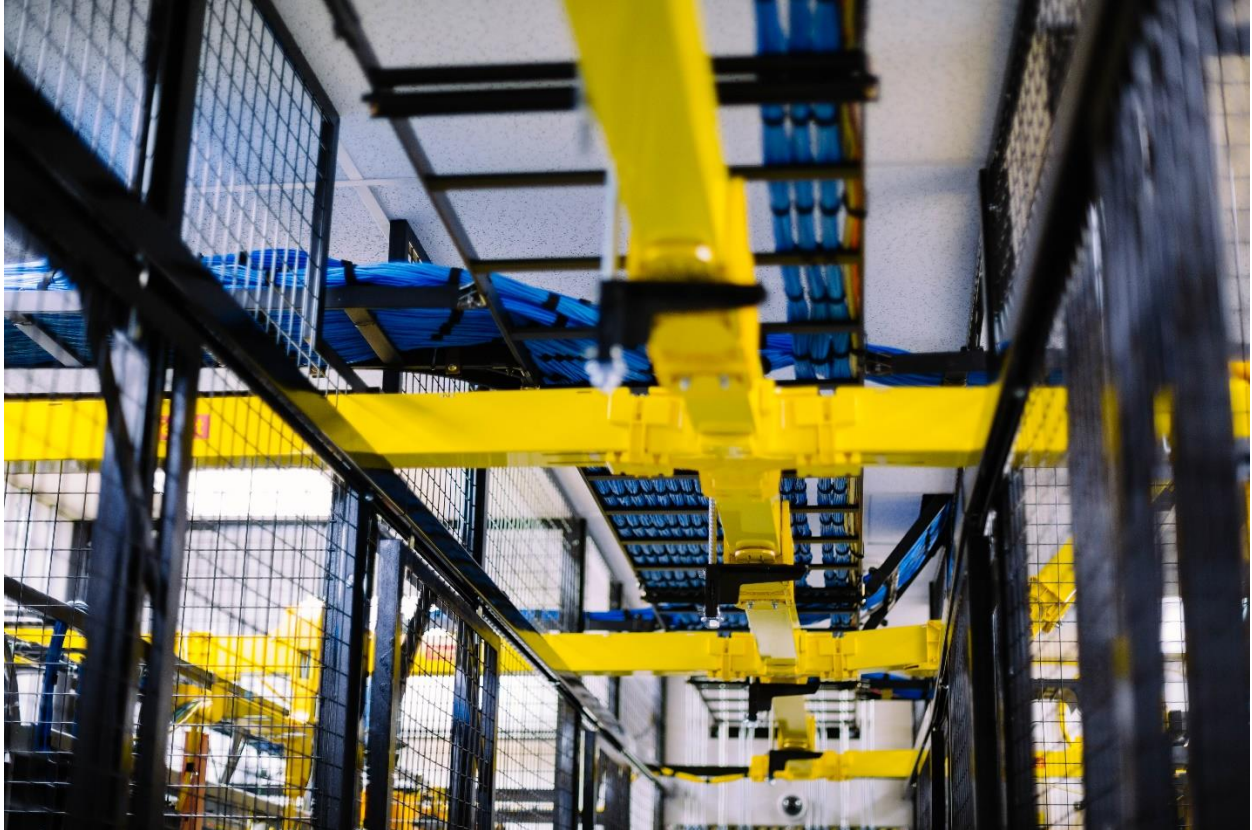
The Telect optical cable-management system, WaveTrax™, gives network technicians an end-to-end solution designed to deliver reliable fiber optic network performance.

WaveTrax is a robust overhead raceway system that can be assembled and installed quickly, uses articulating accessories, requires few tools and quickly connects to other systems with patented adapter fittings.

Used in tandem with other industry-leading fiber products from Telect, organizations can accommodate their exponentially increasing density needs.

A GOOD CABLE MANAGEMENT SYSTEM CAN:

- ✓ Improve signal quality
- ✓ Mitigate cable damage
- ✓ Open up access for maintenance
- ✓ Optimize air flow for proper cooling
- ✓ Help plan for growth



All products feature a modular design that allows the installer to snap together the components for quick and easy installation. Few tools are required to design a rugged, protective routing channel for any inside plant application.

Customer testimonials reveal a WaveTrax installation is 20% faster than its two competitors in the market.

Using the WaveTrax fiber raceway, network technicians can manage, route and protect fiber cables both horizontally and vertically throughout an entire network. The complementary CableLinks system of articulating, snap-together parts offer flexibility for drops and protectively navigating cable around obstacles and areas that typically would offer little or no protection with other products.

WaveTrax troughs and components help network technicians design raceways with long, straight runs of high-volume cable, while the CableLinks system lets them snake cable protectively over and around obstacles, such as racks, congested corners, HVAC ducts, power raceways and architectural element.

Joined together, the two systems can meet any cable-management challenge that may arise in the raceway design.

CASE STUDY: MAKING RETROFITS EASY

Many cable raceway designers and installers are familiar with the old-fashioned way to add a new run: wrapping the fiber in fish paper and lacing to the frame above. Then they must cut into the trough to connect an intersection or off-ramp and add a new trough, down-spout or competitor's trough.

No matter how carefully you handle the fiber, you're still putting it at risk.

The WaveTrax Express™ Off-Ramp offers an easier, modular exit that snaps onto the side of an existing four-, six or 12-inch trough. It ratchets into place, eliminating the need for sawing into the trough and bolstering the cut with nuts and bolts.

"Without a doubt, it makes a retrofit easier, especially with intricate fiber patching," says Mike Antonucci, a Project Manager with LCN Communications in Abington, PA.

LCN solves fiber optic network planning and design challenges for businesses and large data centers in Pennsylvania, New Jersey and the surrounding tri-state area.

Antonucci estimates the Express™ line, which includes the off-ramp and interchange transitions, saves his contractors about 50 percent of their installation time on retrofits.

And time means money.

Installers charge an average of \$100 an hour and that fee can start to add up when they're tasked with tying up cable, sawing into troughs, and unbolting and bolting parts together.

"Everything about WaveTrax is easier to work with than the competitors' products," Antonucci says.

"After we used a couple of piece on a retrofit, a big national account paid us to rip out the competitor's product and replace it all with WaveTrax."

The raceway components are made to snap together, he adds, creating an ease of use.

THE BENEFITS OF WAVETRAX:

- ✓ Full line of simple, intuitive components, including troughs, elbows, cross and T fittings, off-ramps and articulating links; all in various standard sizes
- ✓ Uncomplicated configuration and support
- ✓ Some components require no tools for attachment
- ✓ Lowers total cost of ownership—competitive pricing, easier to install, more configurable and adaptable than the competition
- ✓ Custom-configured solutions designed by Telect engineers
- ✓ Directional fittings meet most network configurations
- ✓ Privately held company willing to invest in product development
- ✓ Competitive adapters allow improvements to installed raceway systems

When building a new system, the WaveTrax end-to-end solution has saved Antonucci's contractors 30 percent of installation time.

He also compliments the system's esthetics.

"A lot of customers say it just looks better," he says. "After we've installed a (competitive) system, the customer often stands back and says it looks better. All the silver with the nuts and bolts on the brackets it's just unattractive.

"It isn't as neat and clean as the WaveTrax system."

THE PARTS OF AN END-TO-END SOLUTION

WaveTrax is a trough-based system that provides superior protection for fiber optic cable.

Snap-open lids on the top of the trough protect fiber yet enable easy access to the cables.

The end-to-end solution is built to handle high volumes of cable, up to 64 pounds per foot. It is durable enough to withstand the rugged environments in today's central offices, data centers, colocations and telco hotels.

Troughs

Six-foot-troughs are the primary carrier of your fiber optic cable. They support up to 175 pounds (79.5 kg) each and can be cut to size. Each channel section should be supported at each end by the FastLock™ Coupler.

WaveTrax troughs come in two-, four-, six- and 12-inch widths. The 12- and eight-inch widths are ideal for routing and protecting high volumes of cable in the overhead vertical while the thinner components are best for protecting cable to and from distribution bays. Troughs in 16- and 24-inch will be available soon.

FastLock™ Coupler

The FastLock coupler rigidly and smoothly connects multiple components together. The bottom piece notches securely into place on straight sections and the top piece snaps into place quickly.

Telect supplies the notching tool required to fit the coupler.



FastLock coupler

Express **Off-Ramps**

The Express Off-Ramp is one of the reasons installers can accomplish retrofits and expansions so easily.

Rather than saw into the trough when they need to drop fiber into equipment and racks, they snap the modular component into place over the top of existing trough and ratchet the bracket for a secure fit.



Express Off-Ramp

Overpass

Installers can build a parallel run by mounting two troughs, side by side, and installing the Express Overpass to route fiber from one trough to the other.

Interchange

The Express Interchange allows technicians to add a row of equipment and distribute fiber from existing trough.



Intersection

Transitions

A transition is any part that adds to the channel's path and attaches to a channel or other components with a coupler. Each transition—T, L or intersection—is designed with two locking pins and teeth that allow a coupler, end cap or trumpet to snap on easily and firmly.

Competitive Adapters

Telect designed competitive adapters to allow seamless moves from FiberGuide™ or FiberRunner™ to WaveTrax. The competitive brackets attach to legacy architecture with a minimum number of tools required and without cutting into trough.

CABLELINKS MAKE THE RIGHT CONNECTION

Vertical cable management must be compact and versatile, while still effectively routing cable and creating no impact on access to the equipment in the rack.

Telect CableLinks™—specifically components as small as two inches—can route cable up or down the rails of the rack.

This articulating link cable-management system can move your fiber optic cable around obstacles, guide it into tight spots or direct runs to several types of equipment. The links pivot and rotate both horizontally and vertically to provide optimal flexibility.



Cables can be guided from racked equipment into the links or from overhead trough and cable drops to equipment in the rack. Individual components affix to the equipment rack with a single fastener or bracket and can be curved in a chain to fit a variety of environments. Simple lift-up gates and gaps in the links provide access points for cable to enter and exit the cable-management path.

The flexibility enables complete configurability of the cable-management solution, while using simple, repeatable installation processes for efficiency.

Compared to flexible tubing and slotted ducts, CableLinks have several direct advantages.

Individual links can be articulated 25 degrees off center both horizontally and vertically to create a cable channel that can easily negotiate the most crowded work environments.

This patented design allows installers to turn cable management paths in any direction; the path holds its shape until they change it again.

Four links can make a 90-degree turn in any direction, then continue straight or undertake additional turns as required.

For on-frame cable management, link systems combine the protection and manageability of slotted duct and adds the flexibility of split tube.

The links feature rounded edges, eliminating a point of failure that's common with split tube or slotted duct.

Compared to split tube, cable access is improved significantly with a link-based system.

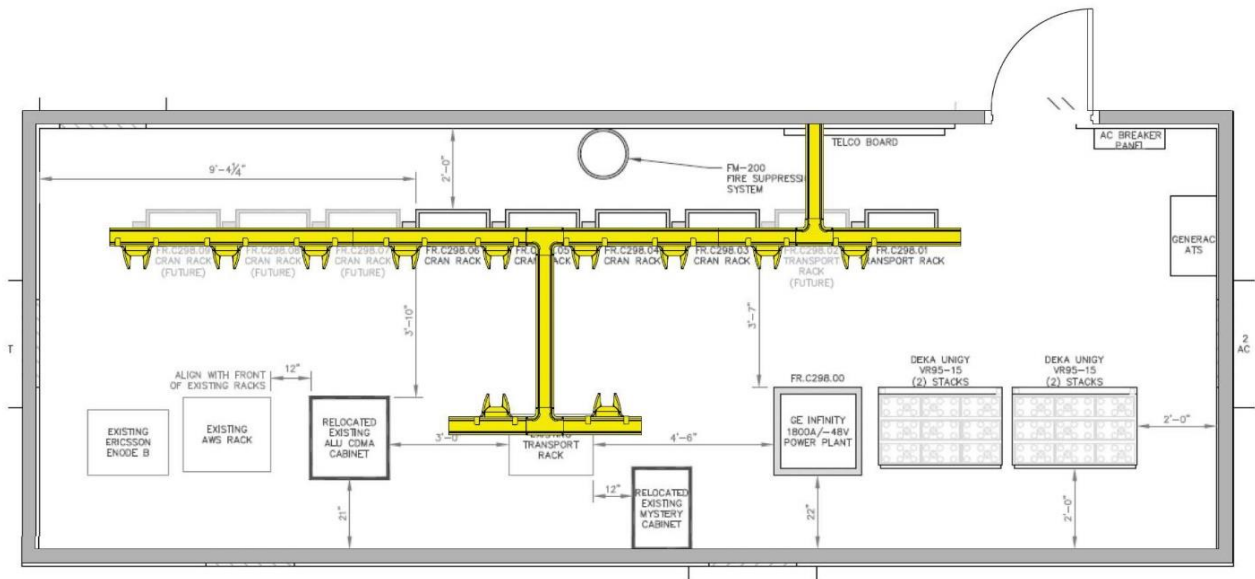
Slotted duct, meanwhile, features a rigid design, eliminating the flexibility that is a significant advantage for cable-management links.

WE CUSTOM CONFIGURE YOUR SOLUTION

Telect understands every network facility is different and so is each cable-management solution. Our engineering team is available to develop a WaveTrax solution that's custom configured for an individual central office or data center.

Included in the cost of a WaveTrax buildout, Telect provides the service to any size of application, from small cell huts to large COs.

Network technicians send our engineers their required configuration and we respond in 24 to 48 hours with drawings of an overhead layout and a full inventory of the materials required.



THE LAST WORD

The best cable-management systems are simple to assemble, helping to minimize the time and cost associated with installation. WaveTrax and CableLinks snap together for the quickest assembly—and enable simple modification if requirements change in the future.

Snap-fit links require no cutting of components to fit space and, because of the CableLinks system's ability to flexibly curve a chain of links, racks don't have to be perfectly aligned with overhead cable drops.

A variety of sizes also helps simplify installation by providing multiple component options to fit the specifics of the application.

The high-grade materials ensure long-term performance, while also making installation and assembly go faster—saving 20% of time on new installations and 50% on retrofits. Solid component design means fewer supporting elements are required, reducing overall costs.

All components meet material industry standards, such as UL 94V-0 ratings for fire-retardant plastic. NEBS and RoHS are other notable standards that Telect meets.

Technicians and installers don't need to carry around heavy tool belts when they're working with WaveTrax and CableLinks. The end-to-end solution from Telect simplifies overhead cable management with smooth, snap-together connections.

Communications service providers can respond to unprecedented fiber demands by easily growing their fiber ducting systems. Telect products enable accelerated network growth by reducing installation time for new builds and expansion and reducing total cost of ownership.

WaveTrax is the most comprehensive cable-management system built by a company you can trust for its customer service. Telect listens to your pain and comes up with the right solution.

The end-to-end solution for cable management

