Make the *Right* Connections

Each segment of a fiber network has its own challenges and requirements, and each demands its own type of closure.

By Wendy Sutton / *CommScope*

As demand for bandwidth continues to increase, the migration to all-fiber networks will dominate network deployment decisions.

Although fiber was used originally in just trunk networks, the ever-increasing demand for bandwidth soon made it the future-proof carrier in feeder, distribution and drop parts of access networks for both business and residential customers. Looking forward, the bandwidth and latency requirements for 5G and the internet of things will further increase the number of fibers and optical passive devices in access networks, as will the convergence of wireless backhaul and wireline access networks. The lifestyles and economies of today and the future will strongly rely on this next-generation fiber communications utility grid.

Commscope fiber closures for FTTH and other applications

A critical component of successful fiber networks in the outside plant is the fiber splice closure. Used to connect fiber cables, such closures serve two functions:

1. Organizing the overlength of exposed fiber strands and optical connections
2. Protecting fiber strands from the external environment.

However, use of the closures is not a one-size-fits-all proposition. Each part of the network has specific challenges and requirements. Making the wrong closure choice impacts cost, labor needs, quality of service and network migration readiness.

Trunk: As the main link between large, central offices, a trunk segment must, above all, remain reliable. Directly impacting a broad audience, closures in the trunk connect equipment over a long distance, utilizing cables with a high volume of fibers accessed by only highly skilled technicians. In principle, this is an "install and forget" situation, and re-accessing the closures is exceptional. Fibers are often mass spliced and organized in the most compact way possible.

Feeder: Branching out from central offices toward large business customers and thousands of end users, feeder cables are accessed more frequently than those in the trunk segment. In the 1990s, when fiber was being rolled out in the feeder segment, service providers needed a solution to avoid interrupting service for large business customers

that had point-to-point connections in metropolitan rings. To address this challenge, the industry introduced fiber organizers, which allow technicians to work on individual fibers without disrupting other fibers.

Today, the use of fiber organizers is recommended by the standardization body ITU-T. The fiber closures deployed at these points must allow for frequent, transient-free access and ensure compatibility with disparate infrastructures, both aboveground and underground. A successful connection organizes fibers to individual customers separately, preventing work on one fiber from impacting surrounding ones.

Distribution: The feeder network connects to fiber distribution hubs (FDHs) – street cabinets or closures – and can be installed underground or aboveground. From FDHs, fiber cables branch off to multiple end users into the distribution network.

> The type of fiber closure needed depends on how often it will be re-opened – and by whom.

Flexibility is a paramount concern in this segment, allowing the addition of new development areas while accommodating demographic changes during the lifetime of the network. Distribution networks are often installed aboveground, necessitating an aesthetically pleasing look.

Drop: The end point of the distribution network requires a special closure, often referred to as an optical terminal, which connects a drop cable to the customer. These terminals provide plug-and-play simplicity, ensuring easy installations by crews that are in most instances less specialized in optical fiber connections than those working in other segments of the network. Quick customer provisioning and network testing is of utmost importance to control costs and manage customer demands.

As networks grow increasingly complex, deploying the right closures increases network efficiency and productivity. In a world that demands speed and action, it's nice to know your network will be ready to combat any demands placed on it. ❖

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