



Fiber-optic connectivity solutions for wireless backhaul infrastructure

COMMSCOPE®

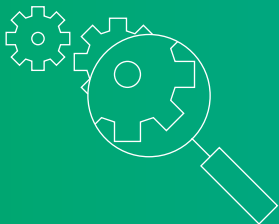
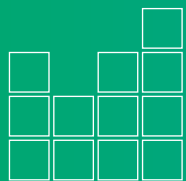
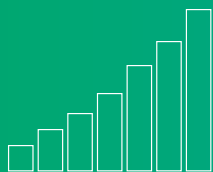
Explosive growth in mobile data traffic makes fiber the backhaul connectivity of choice

Data traffic in mobile networks continues to grow rapidly, with no signs of slowing down. Macrocells with LTE sectors generate multiple gigabits of traffic—to deliver streaming video and other high-data-demand services seamlessly.

Today, a typical cell site uses a distributed radio access network (D-RAN) architecture with a baseband unit (BBU) connected to a remote radio head (RRH) at the top of the tower. With D-RAN, traffic is carried over backhaul from the cell towers to the central office through either microwave antenna technology or fiber connectivity.



To keep pace with the demand for gigabits-per-second transmission capacity, mobile operators are increasingly using dedicated, direct fiber connectivity to build their backhaul networks. Here's why:



CAPACITY

Fiber can keep pace with growing backhaul requirements without the throughput and distance limitations of other technologies.

SCALABILITY

Capacity can be easily expanded through multiplexing wavelengths on existing strands or by pulling new strands through existing conduit.

RELIABILITY

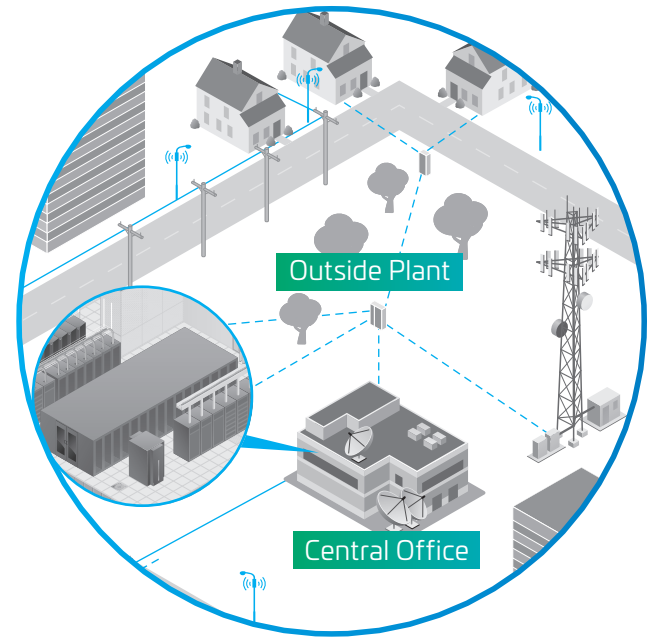
Fiber offers superior backhaul uptime, leading to increased subscriber satisfaction.

REDUNDANCY

Fiber can provide critical macrocell backup for the continuing flow of network traffic if the primary backhaul link fails.

Build your backhaul architecture with CommScope fiber connectivity solutions

CommScope offers a full range of innovative fiber connectivity solutions for wireless backhaul in both central office and outside plant environments, enabling operators to build their network infrastructure with greater flexibility and speed—at lower cost. Designed for superior environmental and optical performance, CommScope fiber solutions meet or exceed industry requirements for both indoor and outdoor backhaul applications.



Passive wavelength division multiplexing (WDM)

CommScope’s passive WDM modules increase bandwidth on existing fiber for better utilization—an immediate, easy and inexpensive alternative to deploying new fiber to increase network capacity. WDM combines and separates multiple wavelengths of light into and out of a single strand of fiber to create separate, independent data pathways that increase the data-carrying capacity of the fiber cable. The same WDM components can also be used to separate the wavelengths (de-multiplexing) at the remote location.

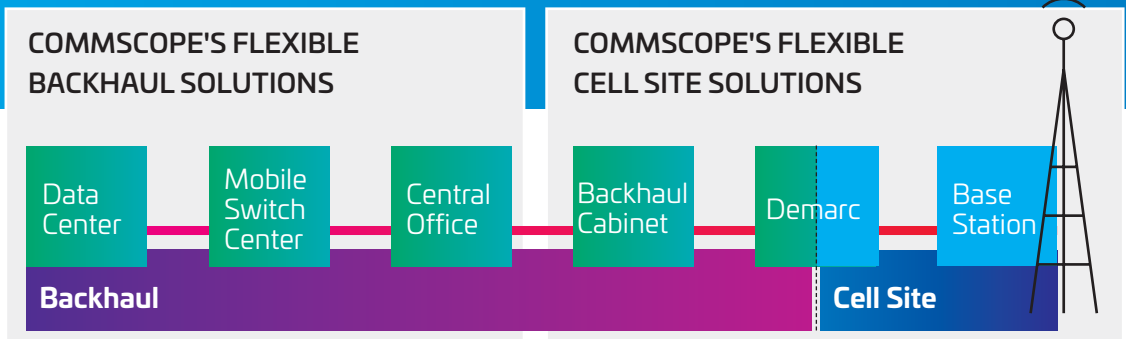


Key benefits of CommScope’s passive WDM solution include:

- Passive WDM can provide an instant fix to fiber shortage issues
- No power consumption
- Simple plug-and-play installation
- Compatible with existing equipment
- No permits or access for trenching or deploying new fiber required



CommScope offers both dense WDM (DWDM) and coarse WDM (CWDM) solutions, with the ability to migrate from CWDM to DWDM as needs grow. Our WDM modular packaging provides a robust, simple method for integrating these devices into existing telecom equipment.



Central Office Solutions

NG4ACCESS ODF PLATFORM



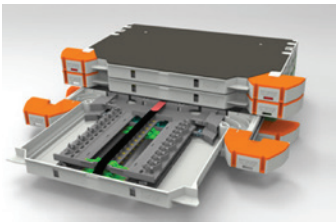
CommScope's NG4access optical distribution frame (ODF) addresses the cable management challenges of today's high-density environments while balancing industry-leading fiber termination density with circuit accessibility. From minimizing labor requirements to faster deployment and delivery, the NG4access ODF was designed to accommodate access trays, universal adapter packs, cabled modules, MPO and VAM modules, enabling operators to install fiber faster, more easily and less expensively.

RAPID FIBER PANEL™



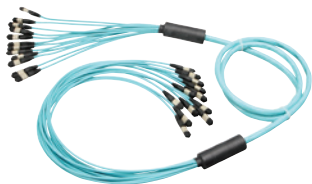
CommScope's innovative Rapid Fiber Panel (RFP) serves as a key distribution point between the electronic equipment and the ODF, offering unmatched savings in installation time, labor costs and performance. RFP incorporates CommScope's unique RapidReel™ fiber cable spool that allows the installer to pay out exactly the amount of cable needed for faster, more economical fiber deployment—plus, it provides built-in slack cable storage. The cable terminates to a multifiber push-on connector (MPO), which enables rapid plug-and-play connection.

FACT ODF SYSTEM



The FACT ODF system enables easy migration to new connectivity platforms and expansion of existing central offices with a no-tools, modular design that simplifies installation in a high-density environment. FACT modules support full-patch and/or splice-patch functions in a rack environment. Front-access trays can be configured with adapters, splicing and passive optical components, and are staggered for easy fiber routing and connector access. The standard FACT model integrates into an existing partially- or non-equipped FIST-GR2/3 frame or lineup.

MULTIFIBER CABLE ASSEMBLIES



Multifiber cables allow a one-time run of multiple fibers in a fiber raceway system, eliminating the expense of running individual patch cords for each service turn-up. Well suited for use in cross-connect applications (upjacketed on both ends), interconnect applications (upjacketed on active end), and high-density fiber environments, multifiber cables enhance the infrastructure of any network.

FIBERGUIDE® FIBER MANAGEMENT SYSTEM



The FiberGuide® fiber management system is designed to protect and route fiber-optic patch cords and multifiber cable assemblies between network elements and optical distribution frame areas. It is available in multiple sizes—from 2x2 to 4x24.

FIBER TRAFFIC ACCESS POINTS (TAPS)



A fiber TAP can be integrated into the fiber cabling infrastructure to enable network traffic monitoring from the physical layer (layer 1) and above in real time—without interrupting network service. A TAP module is a compact package of fiber-optic couplers or splitters that passively diverts a fixed percentage of light energy away from main transportation channels to monitor the traffic status without disrupting the main channel traffic. The TAP module splits the light energy from the input port into two output ports according to a designed split percentage—usually diverting from 10 to 50 percent to the TAP. Because TAPs continuously pass all traffic with zero latency while duplicating that exact same traffic to the monitor ports simultaneously, TAPs are one of the most efficient ways to monitor traffic and network link quality.

Outside Plant Solutions



FOSC 450 FIBER-OPTIC SPLICE CLOSURES

FOSC 450 fiber-optic splice closures utilize compressed gel cable sealing and incorporate craft-friendly features like hinging splice trays and a quick-release dome-to-base clamp for fast access to the splicing area. Five sizes are available, each handling a range of cable styles and sizes, including loose tube or central core tube with single or ribbon fibers.

VALUE-ADDED MODULES

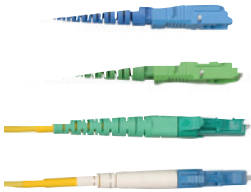
Value-added modules (VAMs) add important functionality to the optical transport system by enabling service providers to easily incorporate add-on optical components into the network.

- Optical monitoring modules offer an efficient way to troubleshoot and monitor network traffic. These modules can be placed anywhere there is a fiber drop—allowing monitoring at cell sites or other remote locations. Monitoring modules are relatively small, consume no power, and offer plug-and-play connectivity to the fiber.
- Fiber management trays (FMTs) provide flexibility and functionality to the optical transport system, enabling service providers to add WDM—splitting and monitoring modules to the network, with slide-out drawers for easy technician access.



FIBER CABLE ASSEMBLIES

CommScope fiber cable assemblies and accessories are designed to meet the demands of indoor/outdoor customer applications. From patch cords, multifiber assemblies, and connectors to adapters and attenuators, our fiber cable products exceed service provider requirements for today's high-speed networks.



Converged networks

With 5G on the horizon, dark fiber is being recognized as a strategic asset for providing backhaul links needed to support wireless cell densification. Driven by small cells, 5G cell density is projected to be four to six times that of 4G cell density. Since installing new fiber is expensive and time-consuming, some carriers are leveraging the extensive footprint and coverage of their existing FTTH networks—so-called “buried spectrum”—to provide lit and dark fiber services.

Using CommScope fiber backhaul connectivity solutions in converged networks, operators may use the same fiber strand but keep cell site traffic and residential GPON traffic on different wavelengths. Passive CWDM and DWDM modules can be placed at both ends of the fiber to combine and separate the different wavelengths. Or traffic can be kept on separate fiber strands with connectivity at the hubs and closures designed to route the traffic appropriately.

The future of RAN: Centralization before virtualization

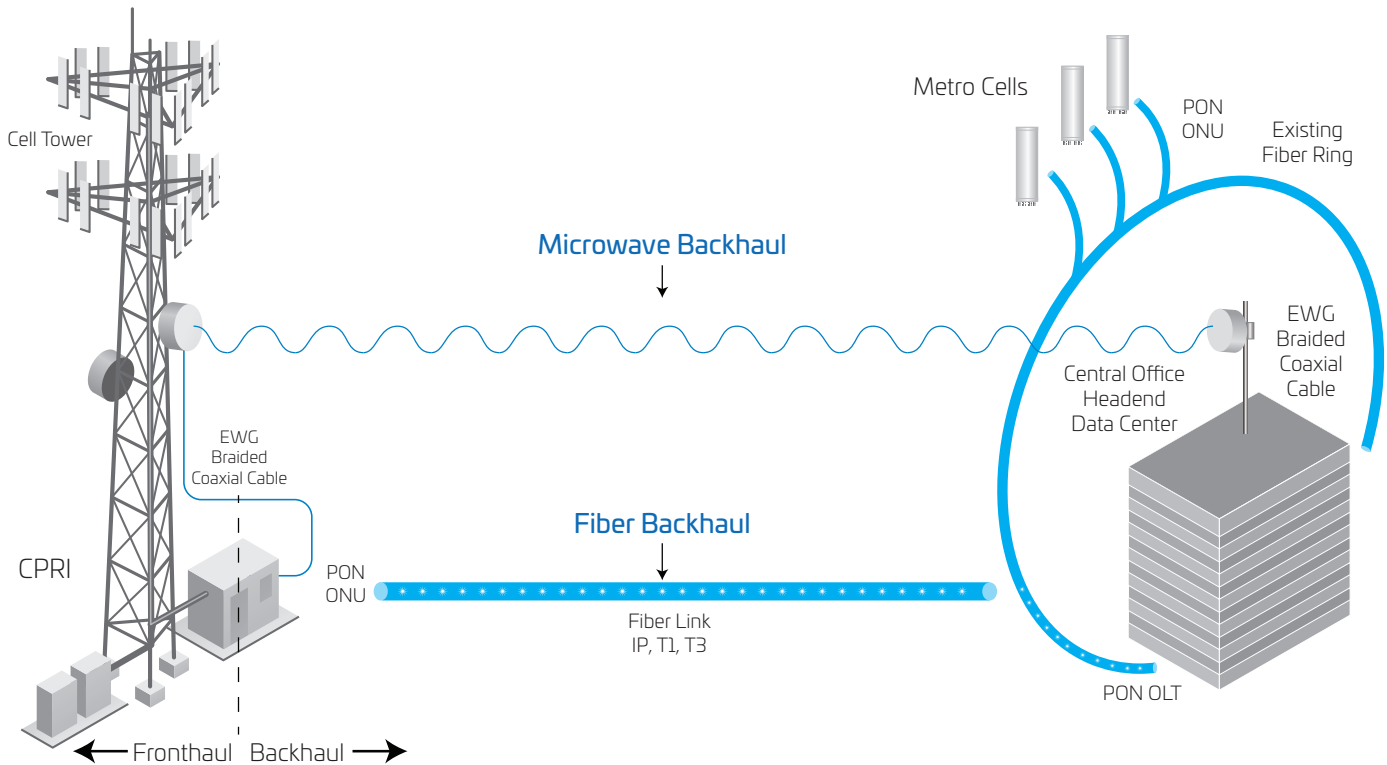
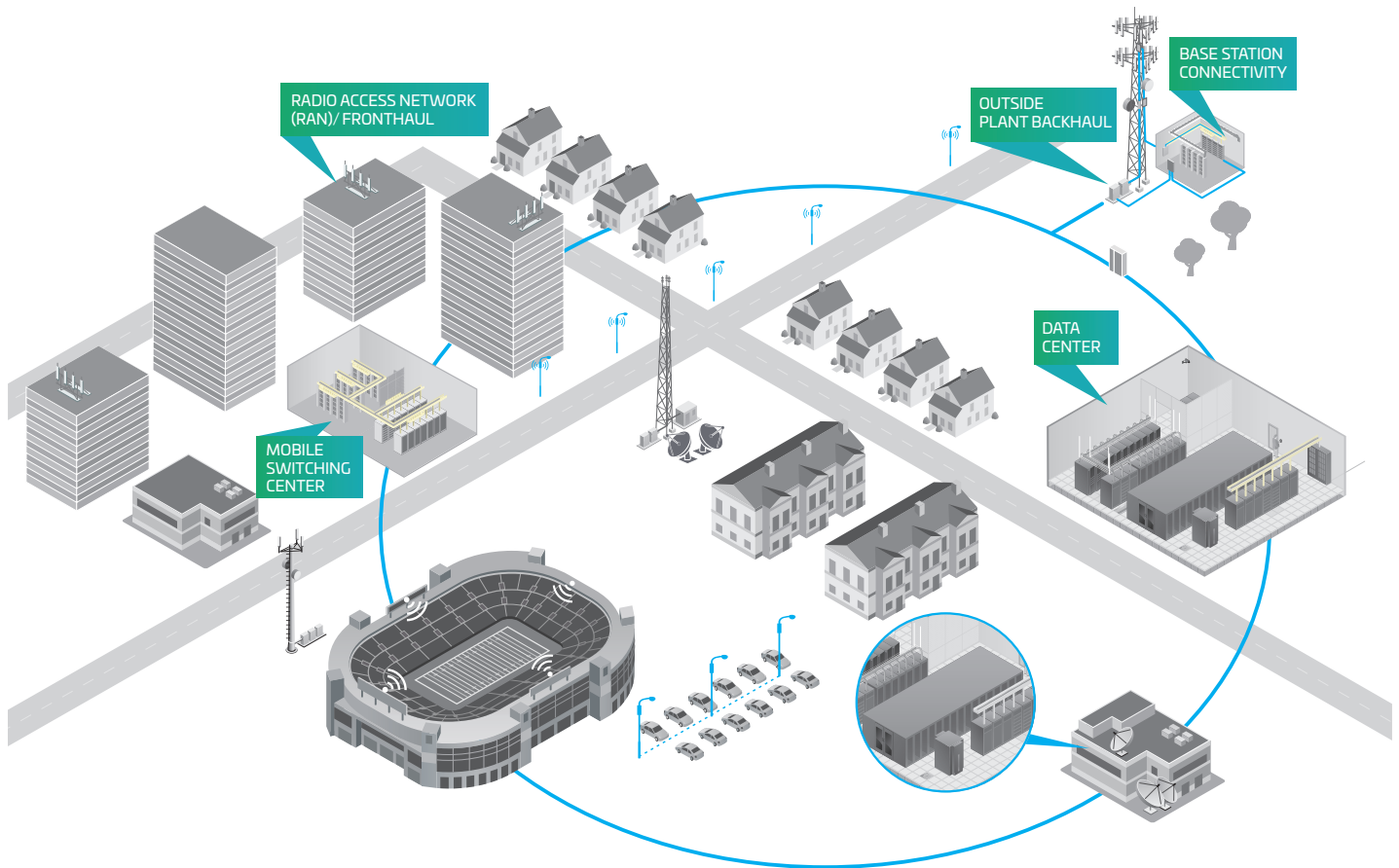
To reduce power usage and optimize space utilization at the tower, many operators are now transitioning to C-RAN (centralized RAN) architecture—and fiber is key to the transition.

With C-RAN, BBUs are moved away from the bottom of the tower to central offices or BBU pooling locations, which can be located many kilometers away. At the central office, the BBUs from multiple cell sites are pooled and connected to the RRH via front-haul connectivity (to carry data from the cell sites to the BBU pool) and backhaul (to

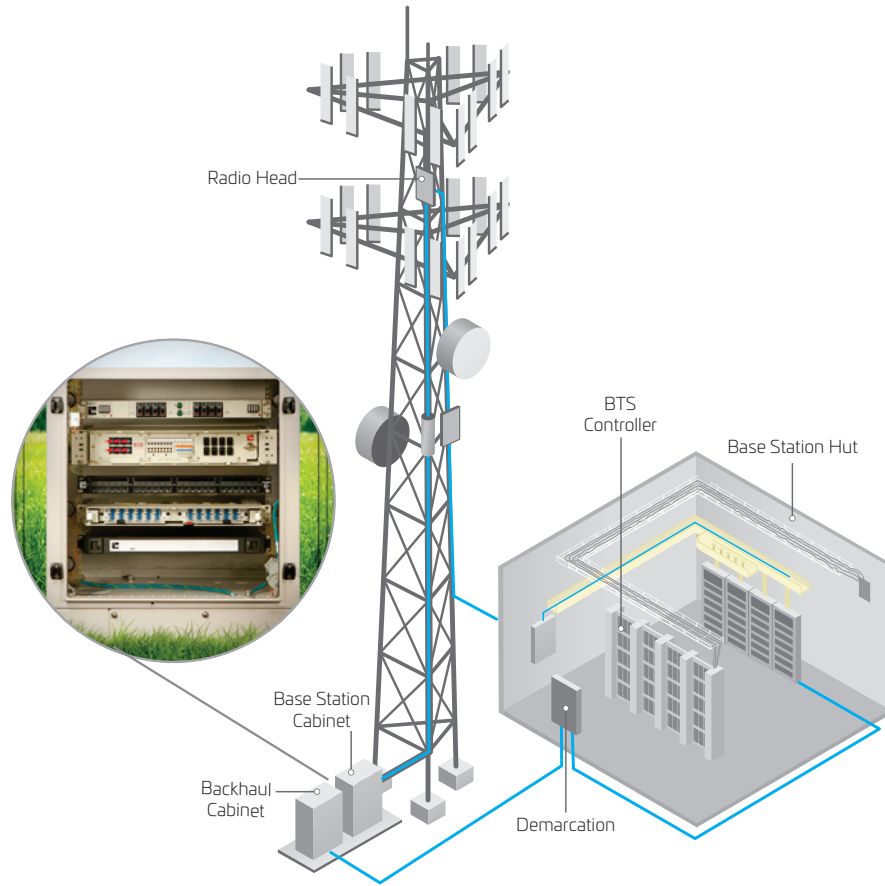
carry data from the BBUs back to the core network).

C-RAN offers an effective way to increase the capacity, reliability and flexibility of the network while lowering operational costs. It is also a necessary step along the path to cloud RAN, where the BBU functionality will become “virtualized”—allowing for great elasticity and scalability for future network requirements.

Metrocell Connectivity Solutions

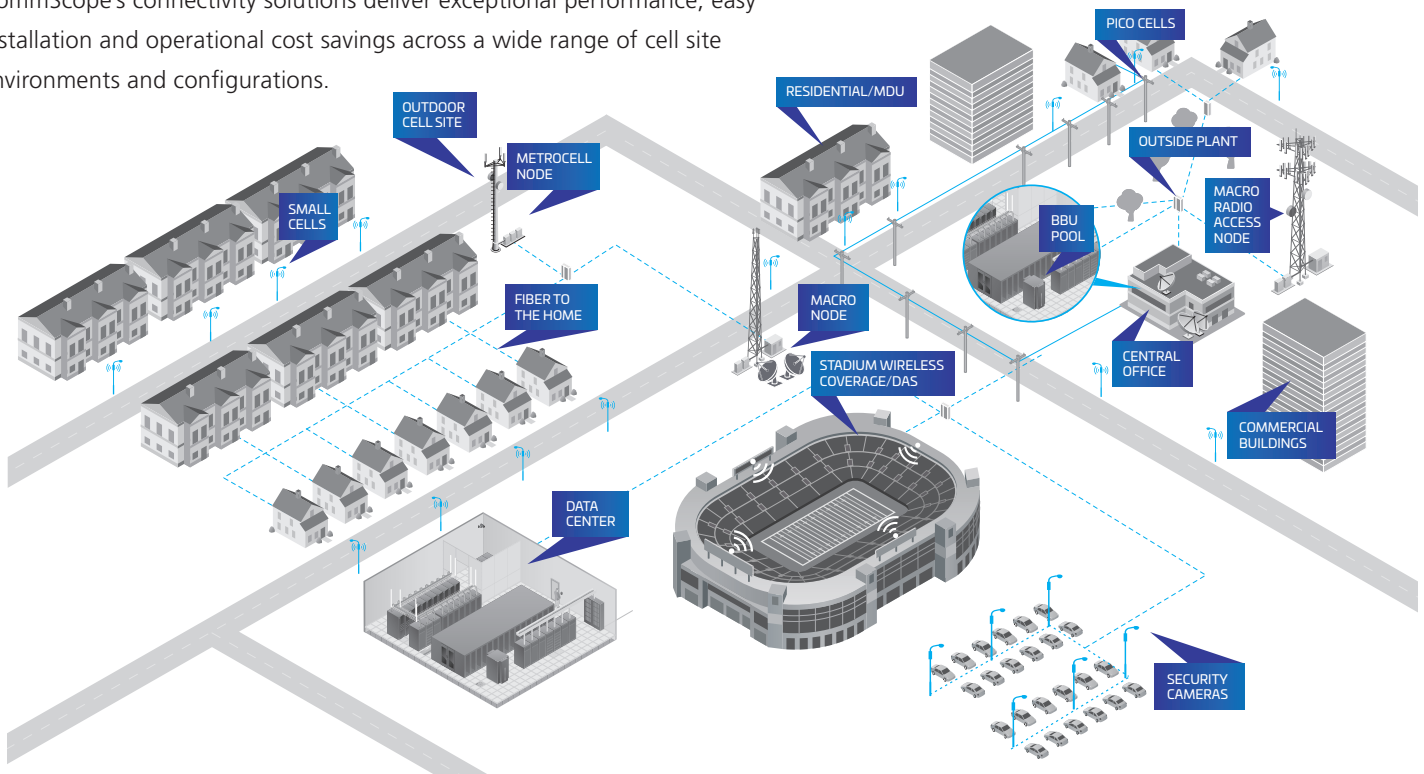


Macrocell Connectivity Solutions



Cell Site Solutions

CommScope's connectivity solutions deliver exceptional performance, easy installation and operational cost savings across a wide range of cell site environments and configurations.



CommScope pushes the boundaries of communications technology with game-changing ideas and ground-breaking discoveries that spark profound human achievement.

We collaborate with our customers and partners to design, create and build the world's most advanced networks. It is our passion and commitment to identify the next opportunity and realize a better tomorrow. Discover more at commscope.com

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