In-building wireless professional services

CommScope In-Building Licensed Wireless Professional Services

There's more to implementing a successful in-building licensed wireless solution than choosing the right distributed antenna system or small cells; it must be engineered, deployed, tested, optimized and maintained. It's a logistical and technical jigsaw puzzle that involves coordinating teams of contractors, engineers, technicians and installers; managing hundreds of tasks; and satisfying the diverse expectations of the project's stakeholders.

You need one partner with the project management experience, in-building wireless expertise and global resources to get it done on time and within budget—and be there afterwards to help you manage it.
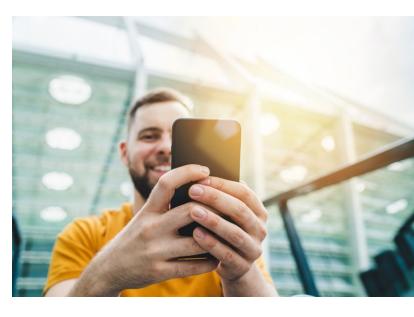
Meet the CommScope In-Building Licensed Wireless Professional Services group.

Total project management—complete peace of mind

One of the most trusted names in in-building DAS and small cell solutions is also a leading provider of the end-to-end services needed to engineer, deploy and maintain your in-building wireless

network. We do it every day for some of the world's most challenging venues—NFL Super Bowl stadiums, international airports, university campuses, major high-rises and more. We can do it for you.

The CommScope In-Building Licensed Wireless Professional Services team handles any or all aspects of your in-building wireless project:

design to customer acceptance, and every step in between. We coordinate efforts between you, building management, other carriers, and all subcontractors to keep the entire project moving forward. Once your network is up and running, we can provide the operational and maintenance support to keep it updated and optimized. Our services are available globally, with presence on six continents and professionals who speak the local language, ensuring that all the moving parts are seamlessly orchestrated by one very experienced and accountable point of contact

End-to-end project management services and support

Your CommScope project manager provides a single point of contact and total accountability. Many of our project managers have engineering degrees and Project Management Professional (PMP)

SALES SUPPORT	ENGINEERING SERVICES	PROJECT MANAGEMENT	OPERATION AND MAINTENANCE
· Product positioning and education · Rough order of magnitude (ROM) · BOM assistance and verification · Training and certification	· Site survey · Radio frequency design · Continuous wave testing · Benchmark testing · Commissioning · Optimization and acceptance testing	· Resource and construction management · Cross-functional coordination · Installation · Closeout documentation	· Cloud hosting and orchestration · KPI reporting · 24-7 Network Operations Center (NOC) monitoring · Proactive maintenance · Remote and on-site support · Network audit · Software update · Special event monitoring · Spares management

certifications. Start to finish, we manage the details and day-to-day interactions between everyone involved while providing regular updates to you and other stakeholders.

Our services and capabilities can be divided into four major disciplines: sales support, engineering services, project management, and operations and maintenance.

SALES SUPPORT

Rough order of magnitude (ROM)

A ROM is an estimate of the anticipated effort and cost needed to complete the project based on the project requirements. It includes key parameters such as square footage, participating carriers and coverage strength targets throughout the facility, as well as major hardware components.

BOM assistance and verification

Bill-of-materials assistance and verification is available through technical support, including cross-vendor equivalents, and ensures you always have the most up-to-date material ID.

Training and certification

Through our DAS and Small Cell Institute, CommScope offers classroom and eLearning courses on a wide range of topics, including installation, commissioning, operation and maintenance for individual product lines.

ENGINEERING SERVICES

Site survey

We analyze and document building floor plans, wall and ceiling construction materials and the impact of the neighboring macro RF environment. In the process, we identify potential antenna locations, cable pathways and construction obstacles

RF design

Our RF designs incorporate the site survey and the customer's current and anticipated in-building wireless requirements, and leverages industry-standard tools like iBwave. This enables us to verify signal dominance, integrate continuous wave test results and build accurate 3D models for any size space. We also work to ensure the final design is as affordable as possible.

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> CommScope RF designs include:
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> · An accurate 3D model of the facility
>
> · A list of potential locations for required equipment
>
> · Preliminary cable routing design
>
> · RF parameters, including: signal strength, signal quality and link budget calculations

Continuous wave (CW) testing

Using the selected antenna, location, and power levels (per the RF design), we measure signal strength, quality, and coverage, and check for sector overlaps. If needed, we then modify the antenna positioning and orientation to meet your performance requirements and those of the carrier. You receive full documentation of the test setup, procedure and results.

Benchmark testing

We measure the strength and quality of voice and data signals throughout the facility and in the immediate area to establish a baseline. Then we repeat the process post-installation to verify that the performance meets customer expectations with no coverage gaps.

Commissioning

We establish connectivity between all system components and the carrier's RF signal source. The power is balanced and the system parameters for each channel and frequency band are configured to ensure alarm-free operation. The system is then tested to ensure all equipment and connections are functioning properly and set to the proper levels.

Optimization and acceptance testing

We test and adjust the system to meet the requirements for capacity, coverage, connectivity, power levels, interference management, reporting and more. Power-balancing across sectors ensures minimal interference. Finally, we re-test voice and data signal

levels throughout the building to verify the performance meets the expectations of all stakeholders.

PROJECT MANAGEMENT

Resource and construction management

As project lead, CommScope procures and manages all necessary construction contractors; identifies, orders and tracks all required materials; and manages the project schedule.

Cross-functional coordination

We coordinate the communications, schedules, efforts and expectations among all parties involved: you, building management,

expectations among all parties involved: you, building management, participating carriers, construction contractors, installers and any other engaged project teams.

Installation

With our global network of certified installation partners, CommScope provides comprehensive installation services, which include installing head-end equipment, all remotes and antennas, cabling and related system elements. All work complies with customer requirements, local and national building codes and regulations, and industry best practices.

Closeout documentation

CommScope provides complete documentation of all physical system elements and locations, frequency bands, and system configuration parameters to those responsible for maintaining the new system.

OPERATION AND MAINTENANCE

Cloud hosting and orchestration services

We can provide host virtualized network management via public cloud to increase scalability, reliability, speed of integration, and cost efficiency. Using a hosted cloud infrastructure ensures high availability and security. 5G edge cloud workloads are orchestrated from the central cloud with CommScope subject matter experts available to help monitor and maintain the system for high reliability.

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KPI reporting

Customizable KPI reports are available through the CommScope network management system tools, enabling you to monitor and

benchmark network performance. KPIs are updated with every new release and can be auto-generated and shared on a customized schedule. Small-cell managed services customers can review and analyze individual KPIs in their KPI dashboard.

24-7 NOC monitoring

CommScope's Network Operations Center continuously monitors alarms, events and KPIs to ensure your network is running at peak performance and availability. Highly trained engineers following established protocols respond to all network events to meet your service-level agreements.

Proactive maintenance

Proactive maintenance includes KPI analysis, parameter audits, and software upgrades to stay out in front of any potential issues. CommScope personnel utilize tested and repeatable processes to ensure your network functions optimally.

Remote and on-site support

Web support portal and phone support are available 24-7-365 with access to an emergency after-hours support specialist. Less urgent issues can usually be resolved via our support portal or by phone. On-demand support for system configuration/best practices is also available. On-site support (for customers with remote support agreements) includes troubleshooting and/or replacement parts to resolve network issues as per the service-level agreement.

Network audit

Audit services help detect and document potential risks to system availability. The information they provide enable us to take corrective measures to prevent outages and ensure the best possible uptime. These services also accelerate and improve network planning to support the evolving demands of your network.

Software update

Automated software updates ensure all network elements are running on the latest software releases. This optional service includes a post-upgrade report with any recommendations to further optimize system performance. Software updates can be applied per network element, site-wide, or on a network-wide basis.

Special event monitoring

Special events monitoring is designed to protect critical infrastructure. It includes pre-checks to ensure the network is working optimally, recommendations for preventive maintenance, performance monitoring during the event, and regular updates on the network's status.

Spares management

CommScope provides a list of all spares and their quantities, then tracks stock levels and notifies you when replenishment is required. For small cell deployments, we'll maintain your purchased stock and supply required spares as per service-level agreements for any hardware faults.

Driven by progress.
Delivered by experience.

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For more information, please contact us at mobility-services@commscope.com.

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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Visit our website or contact your local CommScope representative for more information.

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