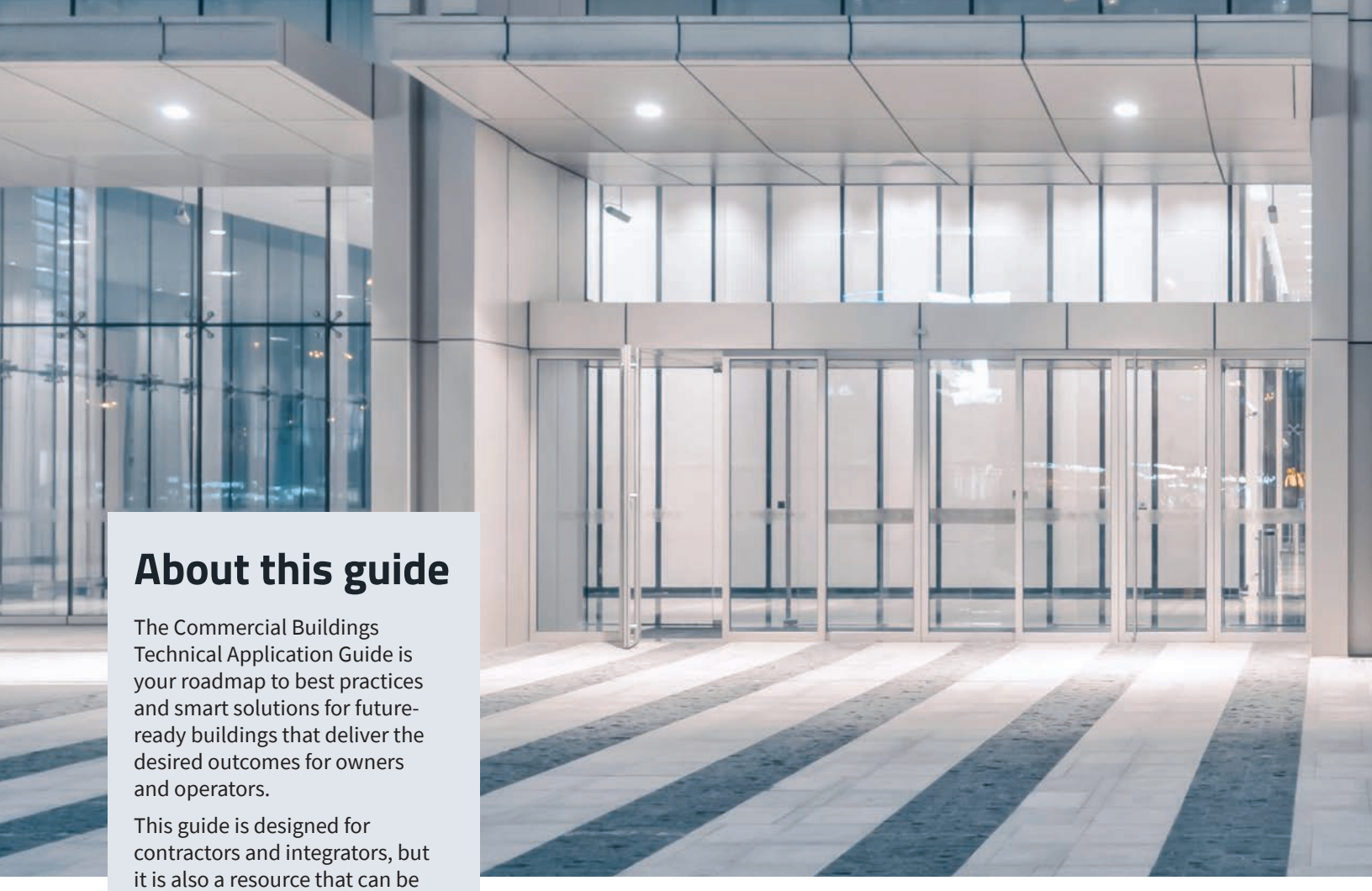
wesco

Commercial Buildings Technical Application Guide



About this guide

The Commercial Buildings Technical Application Guide is your roadmap to best practices and smart solutions for future-ready buildings that deliver the desired outcomes for owners and operators.

This guide is designed for contractors and integrators, but it is also a resource that can be shared with end-user customers to illustrate the importance of sustainability initiatives, infrastructure and technology within their facilities.

Wesco is uniquely positioned to develop this guide based on our unparalleled expertise and experience in the commercial building industry across network infrastructure, communications and networking, lighting, security, A/V and safety, as well as services that include advisory collaboration, installation enhancement, project deployment and supply chain management. Our insights into the industry along with partnerships with over 50,000 suppliers give us the ability to provide the guidance and best practices needed to build, modernize and maintain a world-class commercial building.

CONTENTS

The State of Commercial Buildings and Parking Facilities

Commercial buildings must unceasingly advance to meet user demands and the growing volume of technology needed to provide state-of-the-art functionality and technological benefits. The commercial building market is growing steadily, along with the size of individual buildings, directly increasing the need for always-on, full-coverage connectivity to service IoT devices as well as managing energy consumption.

Beyond the commercial building itself, many of the elements of a smart building have now extended to the parking facility. Parking facilities have evolved from simple concrete structures needing only to consider the distance from a building's entrance, to requiring safety, security, access control, sustainable lighting, communications, IoT enablement and electrification for electric vehicle (EV) charging. These expectations make technology integrations a necessary consideration when designing a parking facility's infrastructure.

A well-planned parking facility incorporates the infrastructure for these technologies and provides a smart environment in which employees and visitors can confidently leave vehicles to enter and exit commercial buildings. When thoughtfully implemented, these upgrades can improve safety and security, increase revenue through pay-to-park designations and public use parameters, and reduce costs with sustainable solutions, resulting in a better customer experience and a net benefit for the owner or operator.

3 Key Aspects for Future-Ready Commercial Buildings and Parking Facilities

We will focus on three elements of the commercial building and associated parking facilities that must be considered to ensure a future-ready, IoT-enabled smart building: **sustainability initiatives, infrastructure and technology.** All three of these elements work together and build upon each other to create smarter outcomes for building owners, occupants and visitors.

Due to rapidly changing demands around connectivity, data usage, health and safety needs, as well as concern for Environmental, Social and Governance (ESG) commitments, commercial building owners must have future-forward sustainability initiatives to meet their customers' expectations. These initiatives establish sustainable business goals and a plan to achieve them.

Once the sustainability initiatives are set, designing a well-planned infrastructure layer is perhaps the most critical step for a successful, future-ready smart building. The infrastructure in a smart building must be efficient, robust and reliable in order to support the technology and applications needed today, while ensuring reliable performance and scalability for the digital innovations of tomorrow.

With a future-ready infrastructure layer in place, owners can then implement the technologies and systems on that infrastructure to achieve those sustainability initiatives through improved building efficiency. Although keeping pace with technology and enabling IoT can be a challenge, it's the most effective way to increase a commercial building's efficiencies while providing a healthier and safer indoor environment for occupants.

Efficiency takes on many forms and functions; it offers cost reduction on utilities, maintenance and operations, while simplifying operational processes and automations to provide for increased productivity and labor savings. Ultimately, each of these three key aspects leads to greater operational and budgetary efficiencies.

Planning for Sustainability

Comprehensive Strategies for Building Sustainability

The World Green Building Council defines a green building as one that "in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment; preserve precious natural resources and improve our quality of life."

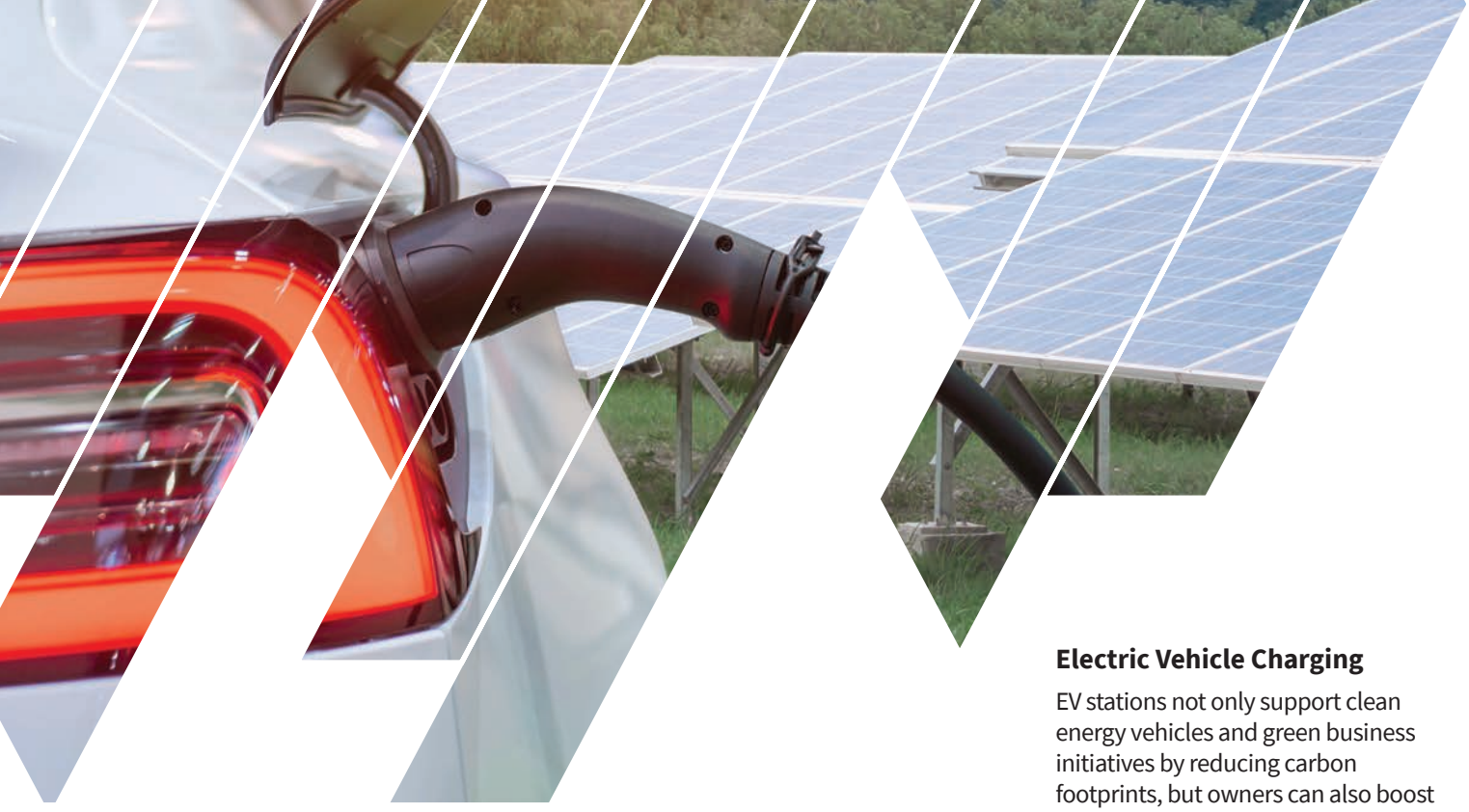
As we will see, sustainability is an outcome delivered by the efficiencies from a future-ready infrastructure and new technologies from IoT enablement. But sustainability initiatives are also considered a leading factor to commercial building owners for both the cost-saving benefits and as an environmental necessity.

Sustainability initiatives must be planned for to promote a healthier built environment, but they also create a positive position for investors, tenants and occupants who place an emphasis on green initiatives.

Sustainability initiatives will vary for every commercial building owner and operator. But no matter where they are in the sustainability journey, it's imperative to define sustainability strategies for a successful transition into a true smart building.

Effective sustainability strategies can generate transformational benefits for commercial building owners and operators by:

- Improving margins by lowering OPEX
- Improving operational performance
- Deepening engagement with customers, suppliers and partners
- Improving corporate reputation
- Meeting or surpassing regulatory compliance goals



Sustainability is no longer a buzzword, it's an opportunity to lower costs, innovate, build more resilient operations and make a positive impact. From the board room to the plant floor, companies are rethinking how they impact people, society and the world by achieving sustainability goals.

Green Energy Sustainability

Green energy has become a priority for investors and businesses, and with commercial buildings consuming 35 percent of electricity in the U.S., while generating 16 percent of all U.S. carbon dioxide emissions, buildings are a prime target for ESG initiatives (Energy.gov).

Whether commercial building green energy initiatives revolve around minimizing carbon footprints, creating more predictable and resilient energy, lowering energy cost, or scaling a deployment globally, designing and implementing solutions with future-ready infrastructure and the latest technologies will help to meet goals today and into the future.

With each technology innovation, commercial buildings become increasingly more digitally driven, and at the core of this digitalization is energy and the need for more reliable, resilient and sustainable power like solar, battery energy storage and micro-grids, smart metering and energy optimization in commercial and industrial environments.

Green Energy for Parking Facilities

Parking facilities are often overlooked as a means of achieving sustainable energy solutions for environmental stewardship.

Solar power generation via panels and canopies within parking facilities is an ideal environment for these solutions as land is repurposed without degrading the biological value. A well-lit parking structure is a necessity for both safety and security. LED lighting provides lower power consumption while delivering intelligence and management capabilities beyond traditional lighting.

Electric Vehicle Charging

EV stations not only support clean energy vehicles and green business initiatives by reducing carbon footprints, but owners can also boost occupancy rates, increase revenue and attract new clients by providing EV charging.

Workplace Sustainability

Workplace sustainability focuses on the indoor environment, and how it can be improved for employee productivity, satisfaction, and health and safety.

Within warehouses and manufacturing facilities, downtime from absentee rates costs businesses in real dollars. The Centers for Disease Control and Prevention (CDC) reports that productivity losses linked to absenteeism cost employers billions of dollars. Disinfection solutions can be used to disinfect tools, machines, and high touch areas to lower the spread of pathogens. HVAC and air handling disinfection can be incorporated to improve air quality to keep environments of any size fresh and sanitary.

Air Quality

Improved air quality can help provide protections for employees, customers and visitors by reducing exposure to indoor particles, allergens and pollutants so we are

all breathing healthier air in commercial buildings. Leveraging the latest in UV disinfection and Air Disinfection Biosecurity (ADB) offers a cost-effective way to go beyond traditional disinfection to help ensure a safer and healthier indoor environment.

UV Disinfection

Ultraviolet offers a non-toxic and safe way to reduce a wide range of harmful bacteria and viruses throughout any space. UV disinfection lighting has undergone extensive testing for efficacy and safety and is regulated by the Environmental Protection Agency, the Food and Drug Administration, as well as the Occupational Safety and Health Administration.

Unlike traditional cleaning products, bacteria do not build immunity to UV. Fixtures can easily be added to current lighting systems, adding an additional layer of cleaning and are programmable to customize running times for maximum cleaning. HVAC disinfection systems ensure both interior and exterior air circulated through the building has been treated to reduce viruses and bacteria.

Air Disinfection Biosecurity (ADB)

Air Disinfection Biosecurity (ADB) is a state-of-the-art, certified, non-thermal plasma technology which uses ambient air as a vehicle to inactivate microbial contaminants in the air and on surfaces in occupied and unoccupied spaces. ADB reinforces safety in common areas without impacting staffing or traffic flow.

ADB technology can be integrated into existing HVAC air handling systems or can be used as a standalone unit for individual rooms. The ADB technology and disinfection process is a proven technology that has been thoroughly vetted with over 100 scientific studies performed by leading international authorities in countries worldwide.

SOLUTIONS IN ACTION

Ultraviolet disinfection and Air Disinfection Biosecurity (ADB) are not solutions just learned about during the pandemic. Wesco has been working with these technologies for many years. We understand the safety profiles of ultraviolet light and how to incorporate it into your facility to maximize pathogen mitigation.

Better indoor air quality benefits include: improved comfort, efficiency, safety, boosted productivity and better overall health. Most office buildings have air pollutants without suitable ventilation to address the issue. Due to the pandemic and awareness of the importance of air quality, many facility owners are investing in air quality improvement products like UV and ADB. These technologies help to decrease the spread of airborne illnesses and can also help reduce your energy bill costs, a win-win for everyone.

Planning a Future-Ready Infrastructure

Technology and data are driving the need for a more robust and resilient infrastructure with more power, higher bandwidth and extended distances within buildings and their parking facilities. As IoT increases and a higher number of devices are introduced to the commercial building environment, businesses are combining disparate building systems into a converged infrastructure. Converged infrastructures work to optimize building systems, operations and maintenance.

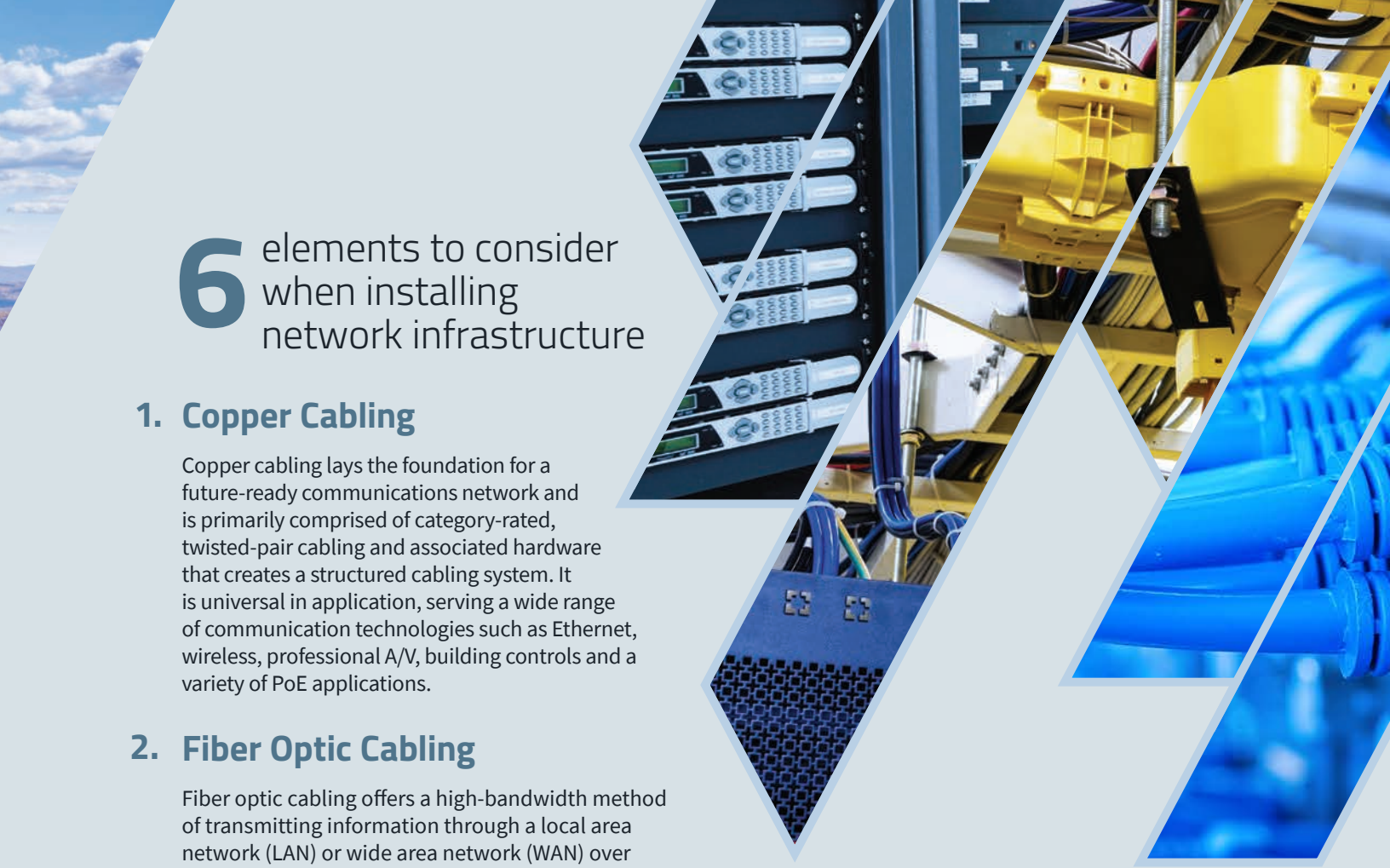
Always-on connectivity is required to provide the benefits of smart buildings and IoT enablement, and without a future-ready infrastructure, a building simply cannot operate at maximum efficiency.

This makes the relatively small increase in upfront infrastructure investment an obvious decision for building owners. To have an infrastructure capable of supporting these escalating bandwidth needs throughout multiple generations of technology – without having to upgrade the cabling infrastructure in the middle of its lifecycle – provides large cost savings down the line.

Network Infrastructure

The foundational element for all connectivity, and the essential component to IoT enablement, IT/OT convergence and the ability to provide a future-ready smart building, comes from the network infrastructure. The infrastructure chosen will determine whether it will stand the test of time and outlive technology refreshes, or if it will need a rip and replace every 3-5 years.

Network infrastructure is made up of internetworking hardware and structured cabling that enables network connectivity, communication, operations and management of an enterprise network to provide the communications pathways, spaces and transmission links between users, processes, applications and services. The network infrastructure is an interconnected building system supporting multiple subsystems and technology applications for internal and external communications.



6 elements to consider when installing network infrastructure

1. Copper Cabling

Copper cabling lays the foundation for a future-ready communications network and is primarily comprised of category-rated, twisted-pair cabling and associated hardware that creates a structured cabling system. It is universal in application, serving a wide range of communication technologies such as Ethernet, wireless, professional A/V, building controls and a variety of PoE applications.

2. Fiber Optic Cabling

Fiber optic cabling offers a high-bandwidth method of transmitting information through a local area network (LAN) or wide area network (WAN) over extended distances by sending pulses of light through an optical fiber. The fiber optic cabling system is primarily comprised of field-terminated and pre-terminated optical fiber and associated hardware as part of a structured cabling system within a building, campus or large geographic area.

3. Racks and Enclosures

Designed to protect critical network infrastructure from damage while optimizing space, racks and enclosures are the frames, cabinets and housings supporting multiple technical spaces and environments. The cabinet needs to be designed for security, density, connectivity, administration, power and airflow.

4. Power and Thermal Management

Simplifying component considerations begins by encompassing a total solution architecture with emphasis on delivery, reliability, efficiency and intelligence while addressing cost reduction throughout. Power and thermal management solutions provide for every component in the power chain to deliver for a variety of business needs.

5. Cable Management and Pathways

Providing a blueprint for distribution systems, which allows networks to expand and evolve, a variety of routing, raceway and conveyance systems are available for distributing, supporting and protecting network infrastructure cabling. The type of system and the installation method depend on the media being supported and the environment it will traverse.

6. Wireless Networks

Reliable wireless networks are designed to grow along increasing device traffic and evolving standards. A collaborative network allows for extension of wireless capabilities for employees, customers and visitors. Supporting both corporate-owned and guest devices is not only crucial and essential, it is an expectation in every commercial building.

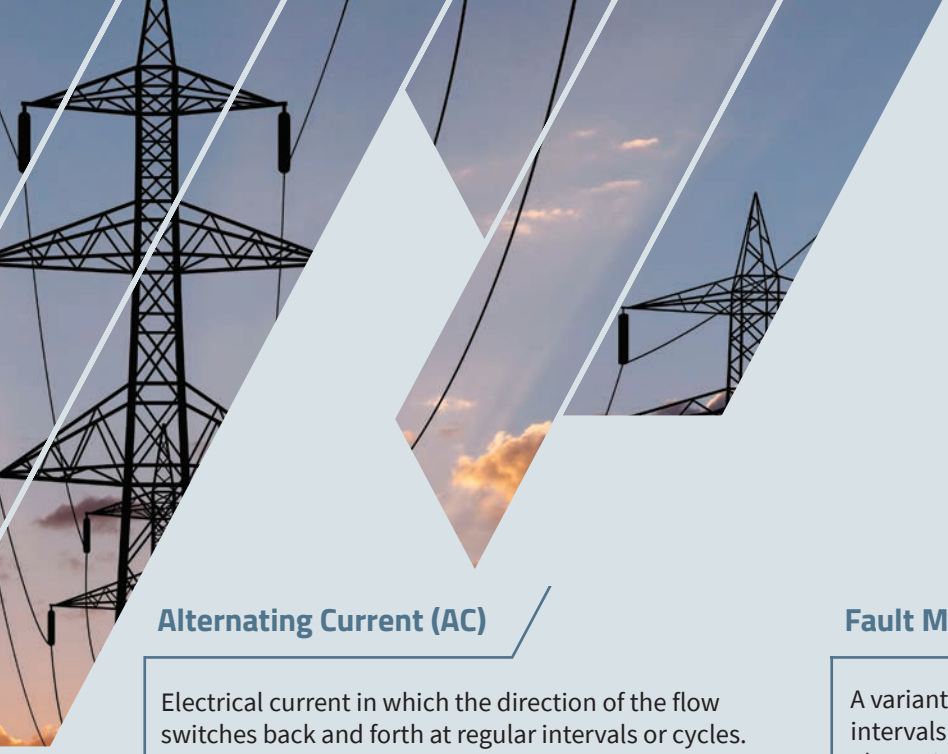
Power Delivery Infrastructure

Powering a facility with efficiency in mind, as well as addressing the effectiveness of the chosen design architecture, is integral to every technology and application operating in the building. We've put together a Building Power Selections Chart that examines power sources like alternating current (AC) and direct current (DC), and remote power choices from Power over Ethernet (PoE) to copper and fiber, along with the associated standards and classifications.

Direct Current (DC)

Electrical current which flows consistently in one direction. The current that flows in a flashlight or another appliance running on batteries is and example of direct current. Integrated circuits in most electronic circuits or devices require a DC power supply.

DC Powering Method	Class 2 Low-Voltage Remote Powering	Power-Over-Ethernet (PoE)	Single-Pair Ethernet (SPE)
Standards	NFPA70 (National Electrical Code)	IEEE 802.3af IEEE 802.3at IEEE 802.3bt	IEEE 802.3cg
Maximum DC Voltage	60 VDC	57 VDC 57 VDC 57 VDC	55 VDC
Maximum Device Power (Watts)	100W	12.95W 25.5W 71.0W	52.0W
Wiring Method	100-ohm Balanced 4-Pair Twisted Pair Cabling (8C4P), CL2, CL3	100-ohm Balanced 4-Pair Twisted-Pair Cabling (8C4P)	100-ohm Balanced Single Twisted-Pair Cabling
Benefits	Easy and safe to install as Class 2 circuits are limited energy	Easy and safe to install as PoE is considered a Class 2 Circuit. Ubiquotous connectivity Converged data and power infrastructure	Easy and safe to install as SPE is considered Class 2 Circuit
Considerations	100W maximum power limits device support	71W maximum power limits device support	71W maximum power limits device support. Technology not widely deployed



Alternating Current (AC)

Electrical current in which the direction of the flow switches back and forth at regular intervals or cycles. Current flowing through power lines and into commercial buildings is alternating current.

AC Powering Method	Class 2 Low-Voltage Remote Powering
Standards	NFPA70 (National Electrical Code)
Maximum DC Voltage	30VAC
Maximum Device Power (Watts)	100W
Wiring Method	100-ohm Balanced 4-Pair Twisted Pair Cabling (8C4P), CL2, CL3
Benefits	Easy and safe to install as Class 2 circuits are limited energy
Considerations	100W maximum power limits device support. Disparate data and power Infrastructure

Fault Managed Power (FMP)

A variant of DC systems where current is pulsed in intervals to deliver power to FMP device nodes, with almost immediate shut off when a fault is detected to prevent shock, fire and damage.

Powering Method	Class 4 Remote Powering
Standards	NFPA70 (National Electrical Code)
Maximum DC Voltage	450VDC
Maximum Device Power (Watts)	2000W
Wiring Method	UL 1400-2 Cabling
Benefits	Easy and safe to install as Class 4 circuits are fault managed and considered safe to touch
Considerations	System components and cabling need to comply with UL 1400-1 and UL 1400-2. Technology not widely deployed

Power over Ethernet (PoE)

PoE can help improve operational efficiency by reducing power consumption (plug load) during periods of low usage, allowing each port on the switch to power down when devices are not in use. PoE can also determine the length of cable and adjust power usage. PoE is itself a technology solution that will lessen waste of power that would normally go unused providing electrical cost savings.

TECHNOLOGY

A Common Platform for Smart Buildings

Within the commercial building, technological advances and IoT enablement improve operations of environmental controls, lighting, safety and security – all with positive implications on sustainability initiatives. And the development of the connected ceiling has led to an entire ecosystem directly above our heads that enables not just lighting, but access points and a multitude of devices.

Connectivity Technologies

Wireless networks are critical to the technology and efficiency of commercial buildings and parking facilities. Depending on need, there are numerous areas of connectivity to be understood and implemented.

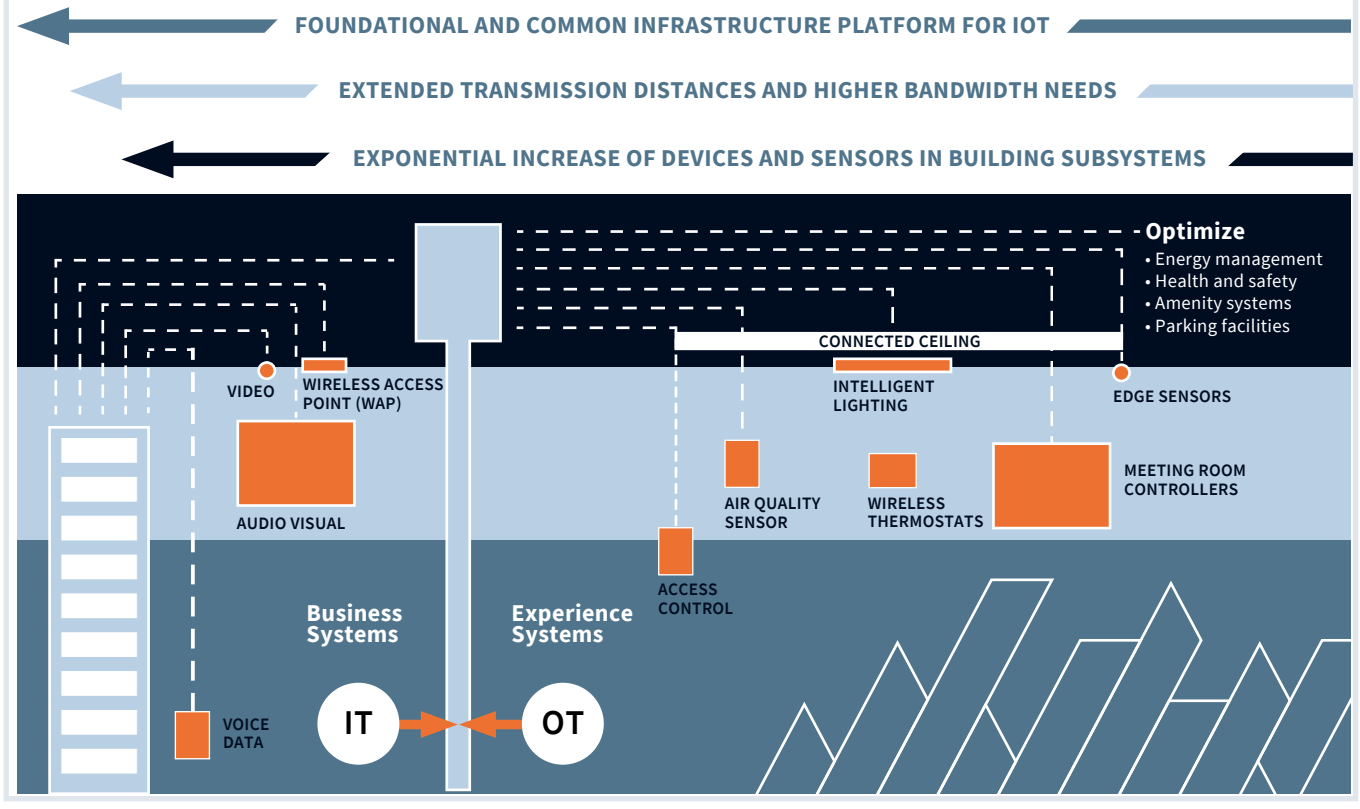
Cellular Networks

Next generation mobile cellular networks offer greater bandwidth and lower latency, allowing for higher download speeds, faster connections and the ability to connect to more devices. With the potential for speeds up to 10GBs, as an alternative to traditional terrestrial service provider infrastructure and as a platform for enabling new IoT applications that depend on less latency and higher speeds.

Cell Signal Repeaters and Amplifiers

Repeaters capture the wireless signal from the nearest cellular tower using a donor antenna, generally from your building's rooftop. That signal is then amplified and routed via cabling to antennas throughout the building, which helps sustain communications. Repeaters are available in a variety of options, as they boost and distribute signals covering multiple frequencies. Repeaters and amplifiers provide a cost-effective solution for smaller buildings or locations within a building and ease of installation with no carrier coordination required, simply register the device.

A COMMON PLATFORM FOR IT/OT CONVERGENCE AND IOT SYSTEMS



Building Wi-Fi Selector

The Wi-Fi Selector chart provides a comparison of available generations and advancements.

Traditional Name	802.11n	802.11ac	802.11ax	802.11be
Wi-Fi Alliance Certification Mark				TBD
Bands	2.4 or 5 GHz	5 GHz only	2.4 GHz and 5 GHz Compatible with 6 GHz range	2.4, 5, and 6GHz
Data Rates (Theoretical Maximum)	576 Mbps	6933 Mbps	9607.8 Mbps	> 10 Gbps
Spatial Streams	4	8 (theoretically unlikely to exceed 4)	8	TBS
Beamforming	Yes	Yes	Yes	Yes
Cabling Requirements	Category 6A	Category 6A	Category 6A	2x Category 6A
PoE Requirements (Full Featured Access Point)	No restrictions with 802.3af PoE	No restrictions with 802.3at PoE++	Yes	Yes
PoE Requirements (Enhanced Featured Access Point)	—	—	No restrictions with 802.3bt PoE++	2x Category 6A

Selector Chart provided by Panduit

Cellular Distributed Antenna Systems (DAS)

There are single carrier, multicarrier and public safety systems that address DAS requirements and provide cellular connectivity in a building for increased wireless network capacity and elimination of dead zones and wireless coverage gaps.

Fixed Wireless Access

This technology provides wireless broadband using radio links between two fixed points. It is an alternate method of providing connectivity to commercial buildings while eliminating the need for physical connections like phone lines, cable or fiber. Typically, point-to-point and point-to-multipoint wireless technology is considered a fixed wireless access that provides quick deployment of network connectivity, high speed connections to areas underserved by terrestrial infrastructure and connectivity solutions where wired infrastructure is impractical or too costly.

IoT and Wireless Gateways

Physical objects that are embedded with sensors, processing ability, software and other technologies require IoT enablement and wireless gateways to exchange data with linked devices and systems over the internet or other communications networks. These devices can be connected via copper or fiber cable, fixed wireless access, NFC (near field communications), Wi-Fi, cellular or private LTE/CBRS.

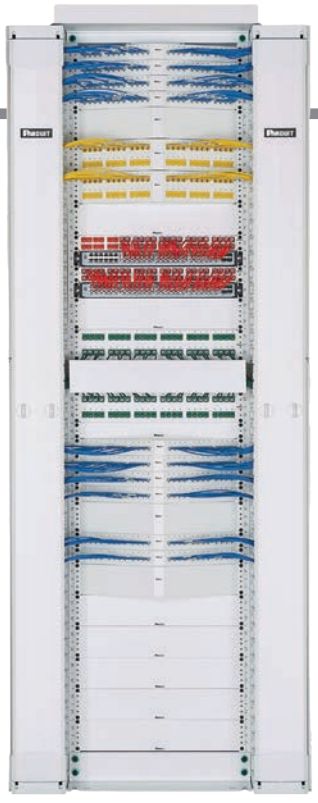
IoT and wireless gateways provide real-time monitoring of connected devices, remote control and manipulation of mechanical and electrical systems and data to automate and help make decisions without human intervention.

SOLUTIONS IN ACTION

Enterprise Network Infrastructure that Means Business

- High quality communications cabling systems connect and power devices for future-ready buildings
- Strong wireless platforms to support Wi-Fi and cellular communication
- Space-saving cable management and connectivity systems prepare telecom rooms for digital growth

PANDUIT®



Energy-Saving Technologies

Implementing energy-saving technologies on a building's converged network that work together across nearly every aspect of building operations will improve overall building efficiency, reduce emissions and manage energy usage.

Smart Building Controls

An IoT-capable networked control system increases energy-savings while enabling asset tracking, wayfinding, improved occupant experience, remote access and environmental monitoring.

Smart Metering

Smart meters enable data-driven decisions, better planning, reduced downtime and fewer inefficiencies.

Solar Solutions

A solar installation reduces current electricity costs and provides clean energy into the future at a predictable and stable rate.

LED Lighting:

Combining the benefits of a PoE infrastructure along with LED lighting can provide even higher levels of efficiency. Building with or converting existing lighting to LED fixtures will not only produce results in perceived light levels due to the improved quality of the brighter, whiter light source, but LED products can also result in energy reductions.

Implementation of a lighting management and daylighting strategy can also improve the results of energy-saving initiatives. Lighting controls range from simple dimmers to full building light management systems and implementation of a daylighting strategy with daylight sensors and other daylighting products.

BENEFITS OF LED LIGHTING

Reduce Energy Consumption

Rapid Return on Investment

Lower Operations and Maintenance Costs

Improve Site Safety

Increase Productivity

Integrate with Building Management Systems

Security Technologies

Security is evolving from simple camera products to intelligent and integrated security solutions like touchless access, advanced mechanical door hardware, physical security, access control and video surveillance.

The physical security market is shifting from proprietary to integrated systems, which makes choosing the right security equipment a growing challenge. The continual sophistication of physical security through technologies such as AI and IoT means that physical security – which has historically been managed by facilities – now requires IT involvement as it moves to the smart and intelligent edge. And this makes data analytics critical to preemptively and predictably address problems before they happen.

Access Control

Access control is a fundamental segment of an integrated security system that extends beyond the building to the perimeter, gate or fencing to protect facilities, assets, intellectual property and people by incorporating mechanical, electronic and logical access to provide a complete and secure solution.

SOLUTIONS IN ACTION

Johnson Controls Commercial Intrusion Solutions

- Two panels in one
- Anyone can be a pro
- PowerG range and encryption
- Addressable loops
- Communicators built-in
- Everything you need

Johnson Controls

- Hybrid Commercial Intrusion Panel
  - Hardwired (Traditional & Addressable)
  - Wireless (Z Wave & PowerG)
- IQ Installer Mobile Interface for fast and easy installation
- 2 Panels, Combined (DSC PowerSeries NEO & Qolsys IQ Panel 4)

Intrusion Detection

New open standards that drive interoperability have transformed the traditional intrusion panel into a conduit for greater integration. Additional sensors continue to be introduced to provide functionality beyond security, making intrusion a fully integrated system that improves efficiency, alerts and automation.

Perimeter Protection for Parking

Many parking lots and structures are secured facilities that are required to protect people, vehicles and revenue. A secure perimeter layer integrating access control, security gates and IP cameras, paired with communications technologies such as digital signage, intercoms, paging and emergency phones can all help secure the parking facility and provide a safe environment for all.

SOLUTIONS IN ACTION

Security You Can Trust – Safety You Can See

Security, safety and privacy are issues that everyone has a fundamental right to. Indicator locks from ASSA ABLOY Group brands Corbin Russwin and SARGENT allow your privacy to become more visible by displaying the locked/unlocked status of a room.

Indicators can be used in a variety of applications including restrooms, nursing rooms, quiet rooms, classrooms, etc. When you need to guarantee your privacy, safety and peace of mind, look no further than status indicators by Corbin Russwin and SARGENT.

ASSA ABLOY
Opening Solutions

Video Management and Analytics

Video management and analytics software are critical to investigation and incident response. Not only do these systems provide intelligence for proactive and predictive security, but they also provide new functionalities — such as people counting and operational monitoring — which move system costs to an operational expense that provides ongoing ROI.

Video Surveillance

Advancements in camera technology, processing power improvements and widespread deployments of network-based systems have expanded the use of video surveillance and analytics for business intelligence and operational monitoring (Visual Intelligence). As the technology becomes more cost-effective, organizations are leveraging it to gather actionable data, address compliance, liability and efficiency issues, and realize a greater return on investment.

SOLUTIONS IN ACTION

Audio Made Smart and Easy

From audio and video solutions for outdoor environments in most climates, to discrete indoor applications that require a less intrusive design - pairing audio and network video from Axis Communications has never been easier.

AXIS COMMUNICATIONS

A Future-Ready Solution: Going Beyond Current Infrastructure Standards

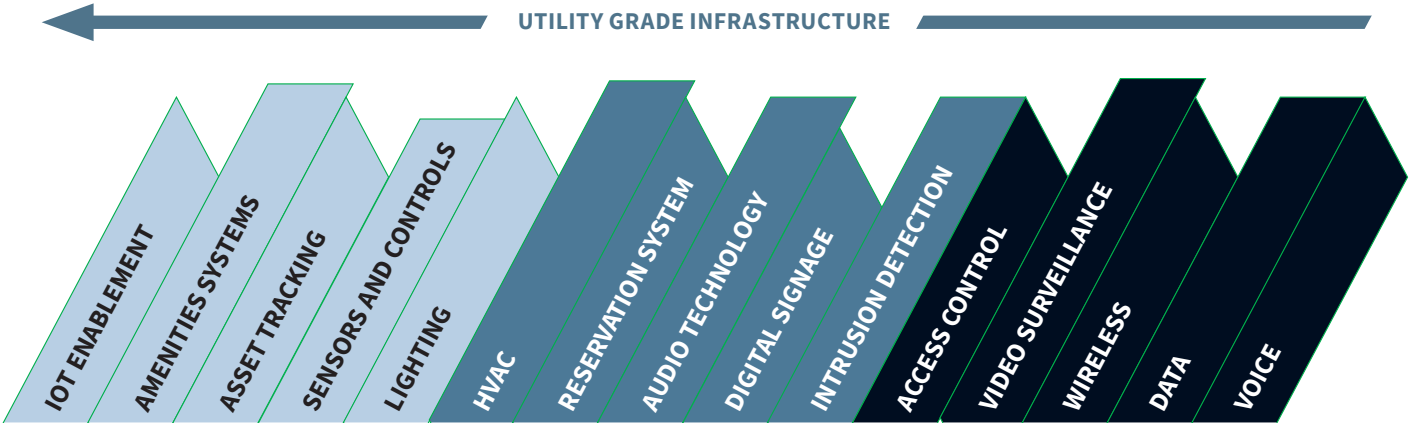
Future-readiness may be summed up as the ability to prepare for what could be coming, without the knowledge of what that might actually entail. In the early days of the cellular phone, no one could have dreamed of the vast numbers of abilities and applications that are now standard. The same is true for commercial buildings. No one could foresee the emergence and demand for healthier indoor environments or a distributed workforce with newly created needs for virtual and on-site collaboration. IT/OT convergence, IoT enablement and digital transformation may well be in their infancy, with new requirements appearing seemingly on a daily basis.

Current needs are already putting enormous strain on network infrastructure, and we have reached a tipping point where we must look for more cost-effective models that will support future applications and can be managed over a common building platform.

The current standards for infrastructure are a minimal requirement, and we are moving beyond them. In a recent whitepaper, the Communications Cable and Connectivity Association (CCCA), points out the definite need for extended distance measurements and standards for the market. And this is certainly where the industry needs to be in order to address future-readiness requirements and avoid costly rip and replace scenarios.

Wesco's Utility Grade Infrastructure Assurance Program (UTG)

Utility Grade Infrastructure is Wesco's award-winning technology assurance program and rating system that measures beyond standards performance of cabling solutions to provide guaranteed results for the infrastructure supporting building subsystems, technologies and applications. Utility Grade Infrastructure is validating additional performance within existing cabling systems for increased bandwidth, advanced power delivery with extended distance capabilities and superior bundling. Developed for IoT deployments, as well as a common platform for entire commercial building projects that demand a high-performance infrastructure to deliver what's needed to maintain that always-on, converged network.



The UTG Advantage

Attributes and Applications	Utility Grade Infrastructure UTG10	Utility Grade Infrastructure UTG20	UTG Advantage
	Optimizing Operational Technology Performance	Optimizing High-Performance Applications	
Standards and Verification			
Industry standards	Exceeds ANSI/TIA and UL verified	Exceeds ANSI/TIA and UL verified	Delivers beyond standards and UL verified performance
Test method	UTG Framework 2.0	UTG Framework 2.0 with **Bear Attack**	
Transmission Distance			
Maximum horizontal distance at 10 Mbps	185m (606 ft.)	185m (606 ft.)	Supports extended transmission distances (potential savings on square footage and construction costs)
Maximum horizontal distance at 100 Mbps	150m (492 ft.)	150m (492 ft.)	
Maximum horizontal distance at 1 Gbps	100m (328 ft.)	100m (328 ft.)	
Maximum horizontal distance at 10 Gbps	37-50m (121-164 ft.)	100m (328 ft.)	
Bandwidth and Speed			
Maximum data transmission speed	10 Gbps at 37-50m (121-164 ft.)	10 Gbps at 100m (328 ft.)	Delivers higher bandwidth capabilities
Maximum bandwidth	425 MHz	500-625 MHz	
Applications			
Video surveillance			
1080p HD	150-185m (492-606 ft.)	150-185m (492-606 ft.)	Supports higher frames per second (FPS) and lower compression
4K UHD	150-185m (492-606 ft.)	150-185m (492-606 ft.)	
PoE			
Type 1 - 15.4W	185m (606 ft.)	185m (606 ft.)	Increases PoE applications distances and offers superior cable bundle performance
Type 2 - 30W	150m (492 ft.)	150m (492 ft.)	
Type 3 - 60W	100m (328 ft.)	100m (328 ft.)	
Type 4 - 100W	100m (328 ft.)	100m (328 ft.)	
Max bundle size (0.5 amps) at 45°C ambient	72 cables	90 cables	
HDBaseT			
1080p HD	80-100m (262-328 ft.)	100m (328 ft.)	Supports 4k UHD streaming at extended distances
4K UHD	80-100m (262-328 ft.)	100m (328 ft.)	
PoH	80-100m (262-328 ft.)	100m (328 ft.)	
Wireless			
Wi-Fi (IEEE 802.11ac)	10 Gbps at 37-50m (121-164 ft.)	10 Gbps at 100m (328 ft.)	Supports next-generation Wi-Fi technology
Wi-Fi (IEEE 802.11ax)	10 Gbps at 37-50m (121-164 ft.)	10 Gbps at 100m (328 ft.)	
Mechanical			
Installation flexibility	Flex Force Level 1, 2, 3	Flex Force Level 1, 2, 3	Simplifies installation for integrators

Figures above are based on verified independent testing from UL. Actual performance may vary based on a number of factors. For final parameters of the extended applications assurance warranty, please consult manufacturer specifications on UTG-rated solutions.

Collaborative Solutions for Commercial Buildings and Parking Facilities

The comprehensive solutions needed to address the most important areas within commercial buildings is made possible through partnerships with world-class suppliers and relationships with the top contractors, integrators and installers across the industries we serve. We don't do anything alone or in a vacuum, with industry-leading brands, an unmatched services portfolio and deep industry expertise, we provide seamless end-to-end support from concept, to design, to deployment.

Wesco is committed to leading and driving socio-economic growth through minority-owned enterprises in our distribution business – including those owned by women, aboriginal people, people with disabilities, veterans and LGBTQ people.

The Wesco Advantage

As a leading tech-enabled supply chain solutions provider, we are your strategic partner in sourcing and inventory management. As a leader in global logistics, we deliver product wherever and whenever needed with customs and compliance expertise.

The advantages and benefits of working with Wesco and our extensive partner ecosystem is what sets us apart from the competition – we help you save money, reduce costs and mitigate risk with our product enhancement services and digital capabilities.

Increase Profitability

Completing projects on time and on budget is your top priority. Our dedicated teams can help improve installation and project readiness to benefit your bottom line. Leveraging flexible service models, we can reduce CAPEX while addressing compliance and local standards.

Improve Productivity

With the right supply chain partner, you can free employees to focus on business-critical functions. Benefit from our expertise and experience by utilizing our entire value chain.

Mitigate Risk

Protect your most important assets – employees, customers and processes. With access to the world's most respected and trusted product brands and Wesco's supply chain expertise, we can help strengthen your supply chain resiliency.

Wesco Business Segments

Wesco provides best-in-class products and innovative solutions to meet customer needs for commercial and industrial businesses, contractors, government agencies, institutions, telecommunications providers and utilities.

Communications & Security Solutions (CSS)

For more than 100 years, we have partnered with leading manufacturers to deliver comprehensive solutions that provide 24/7 connectivity and enable security and safety in commercial buildings, data centers and parking facilities around the world.

Electrical & Electronic Solutions (EES)

We are a leading distributor of electrical products and services. From automation and control to relays, sensors, and switches, we have the products and solutions to meet all of our customers' electrical needs.

Utility & Broadband Solutions (UBS)

We serve a diverse customer portfolio in the utility, broadband and industrial segments, with the broadest product offering in the industry, all while helping customers optimize their network deliverables for subscribers and minimize operational expense.

COMPREHENSIVE PORTFOLIO

Wesco Services

Drive efficiency and profitability with innovative and customizable services. With a portfolio that includes advisory services, supply chain management, logistics and transportation, procurement, warehousing and inventory management, as well as kitting and labeling, limited assembly of products and installation enhancement.

Advisory Services

Engage our experts on an array of value-added and billable advisory services to support every industry we serve, helping channel partners and customers with technology, infrastructure and sustainability solutions.

Installation Enhancement Services

Wesco will help keep projects running on time and manufacturing facilities running smoothly by ensuring products are optimized for use.

Project Deployment Services

Wesco can prepare a coordinated, customized program to help secure jobsite materials, prevent loss, improve efficiency, reduce jobsite waste and ensure that supplies are available, keeping you well-stocked and your project on time and within budget.

Supply Chain Services

Strengthen your operational resiliency and drive cost improvements in direct and indirect spend through supply chain assurance with Wesco.

Integrated Supply

Wesco can design, implement and manage your purchasing and inventory program, consolidating your supply base into a single-source solution to deliver documented savings and improved supply chain performance.

Global Technology and Support Services

Our technical specialists and expert engineers help you harness information for data-driven intelligence and better business outcomes. Our team has expertise in connected devices and IoT, network infrastructure, sensors, wireless, cloud and edge computing, broadband, 5G and wireless.

Areas of expertise:

- IoT advisory service
- Digital solutions advisory service
- Technology roadmap and specification development
- Solution and application engineering
- Proof of concept (POC) testing
- Application drawings
- Codes and standards interpretation
- Installation recommendations and technology testing
- Education and training

Enter with Ideas, Leave with Innovations

Only the Wesco Innovation Center brings it all together for you

- See live customized demos
- Connect with Wesco technical subject matter experts
- Test solutions in our labs before implementation
- Experience 3D touchscreen interaction
- Get hands-on with displays of the latest products
- Share ideas using the most advanced A/V technology in the world
- Recharge in our café with espresso, lattes, cappuccino and cold beverages

Most importantly, the entire experience is tailored to your specific needs.

Scan to take a virtual tour

Watch a short video that takes you inside the Wesco Innovation Center

ESSENTIALS AT A GLANCE

Location

2301 Patriot Boulevard,
Glenview, IL 60026

Purpose

Brings together highly-tailored technology, the latest product options and industry expertise so you can design and test solutions before implementation

Personnel

Technical subject matter experts on-site

Applications

- Electrification
- Automation and IoT
- Green Energy and Grid Modernization
- 24/7 Connectivity and Security

We Help Life Run Smoothly

As a leading provider of business-to-business distribution, logistics services and supply chain solutions, Wesco is ready and able to help you navigate business complexities.

$21+ Billion
2022 net sales

Operations in 50+ Countries
to serve you wherever you are

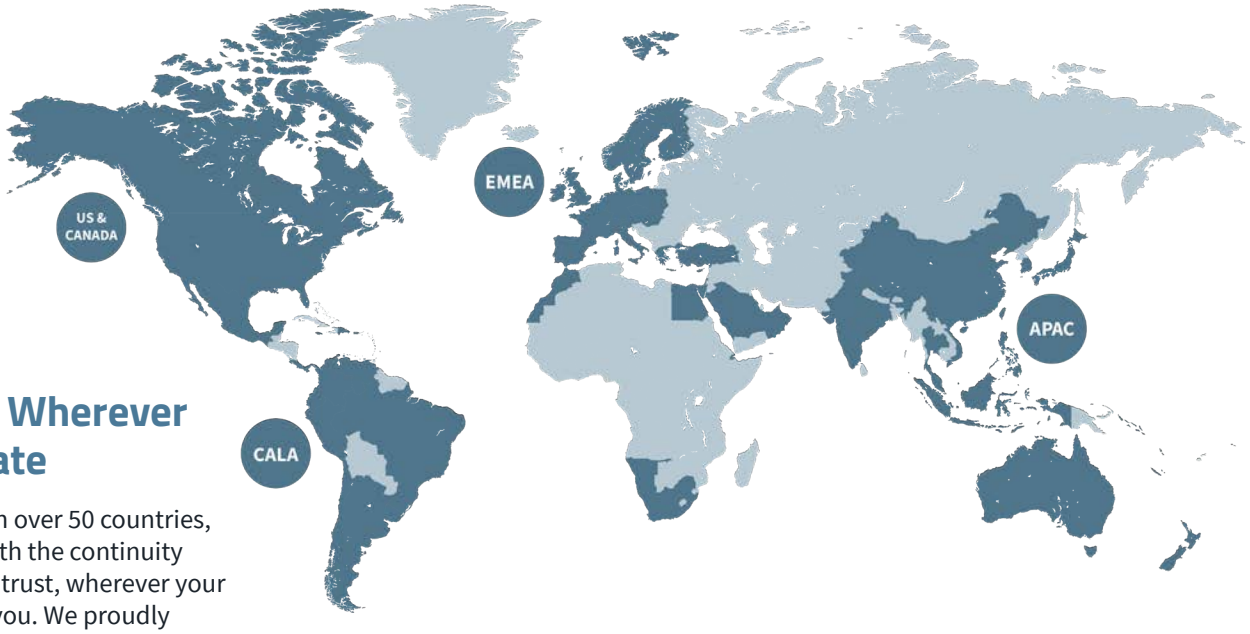
3 Strategic Business Units
with dedicated focus and expertise

Environmental, Social & Governance
corporate focus and commitment

Digital Investments
to build for the future

Fortune 500® Corporation
to lead through challenging supply chain and economic conditions (#181)

We serve those who drive productivity and progress, meeting business challenges with innovation and solutions that keep our world running and advancing.
For 100 years, our combination of scale and local expertise has provided focus and speed to transform the way you do business and, in turn, the way people work and live.



Expertise Wherever You Operate

With locations in over 50 countries, we serve you with the continuity and quality you trust, wherever your business takes you. We proudly support approximately 150,000 customers worldwide.

As your partner, you gain access to our broad portfolio of nearly 1.5 million products from approximately 50,000 suppliers.

Partnerships with the Industry's Premier Brands

AIPHONE
ALARM LOCK
ALGO
ASSA ABLOY Opening Solutions
COMMSCOPE®
comnet by acre
CORNING
CRESTRON
legrand® | AV
LENCORE COMFORT. PRIVACY. PRODUCTIVITY.
LG Business Solutions
Liberty
Nice
OBERON A division of Chatsworth Products
OCC OPTICAL CABLE CORPORATION
PANDUIT®


ATLONA
a PANDUIT company


AXIS
COMMUNICATIONS


BELDEN


CAMDEN
DOOR CONTROLS


DITEK
Surge Protection


HID


Honeywell
FIRE SOLUTIONS


Johnson
Controls


milestone


NAPCO


nCompass
Enabled by Legrand® and Superior Essex®


NEXTIVITY


peerless-AV®


Prysmian
Group


SHARP


wesco

Wesco.com

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