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# **Network Solutions Designed for the Enterprise**

## **Future-Flexible. Cost Effective. Extended Reach.**

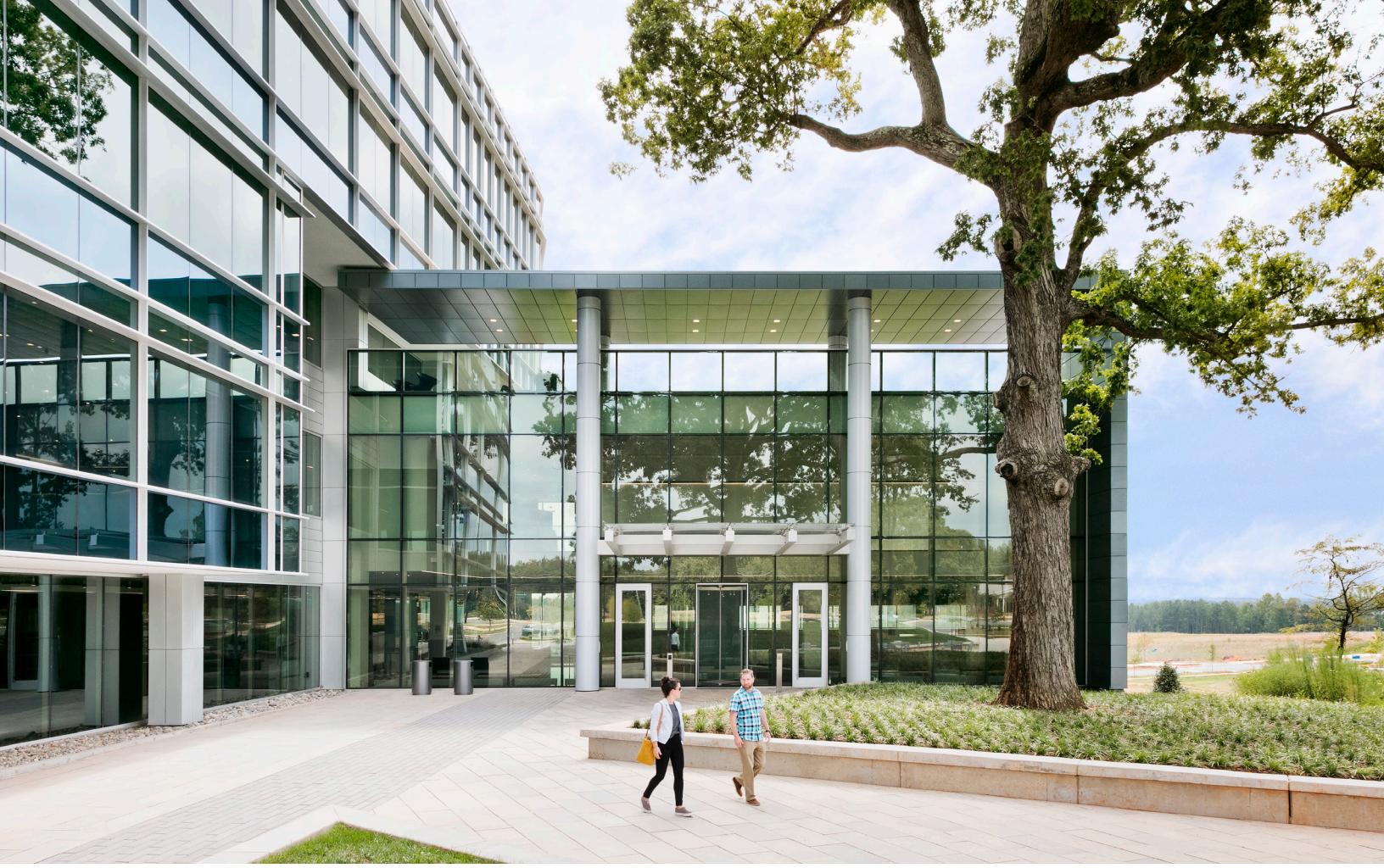
### **The Network Architecture Your Business Needs**

As employees, residents, guests, patients, and students bring more devices into a space, they also bring a new level of connectivity demands. Building owners need networks that can keep up with increasing technology requirements.

Whether you are planning for the next generation of Wi-Fi or adding IP devices like audio/visual, security cameras, building management, or IoT, Corning's solutions are built specifically for the needs of your enterprise.

This guide highlights the best practices for a smart technology strategy – one that can go the distance, adapt as network requirements change, and scale as technology plans grow.





## Best Practices for a Smarter Technology Strategy

### 1. Enable Remote Applications with Extended Reach Connectivity Solutions

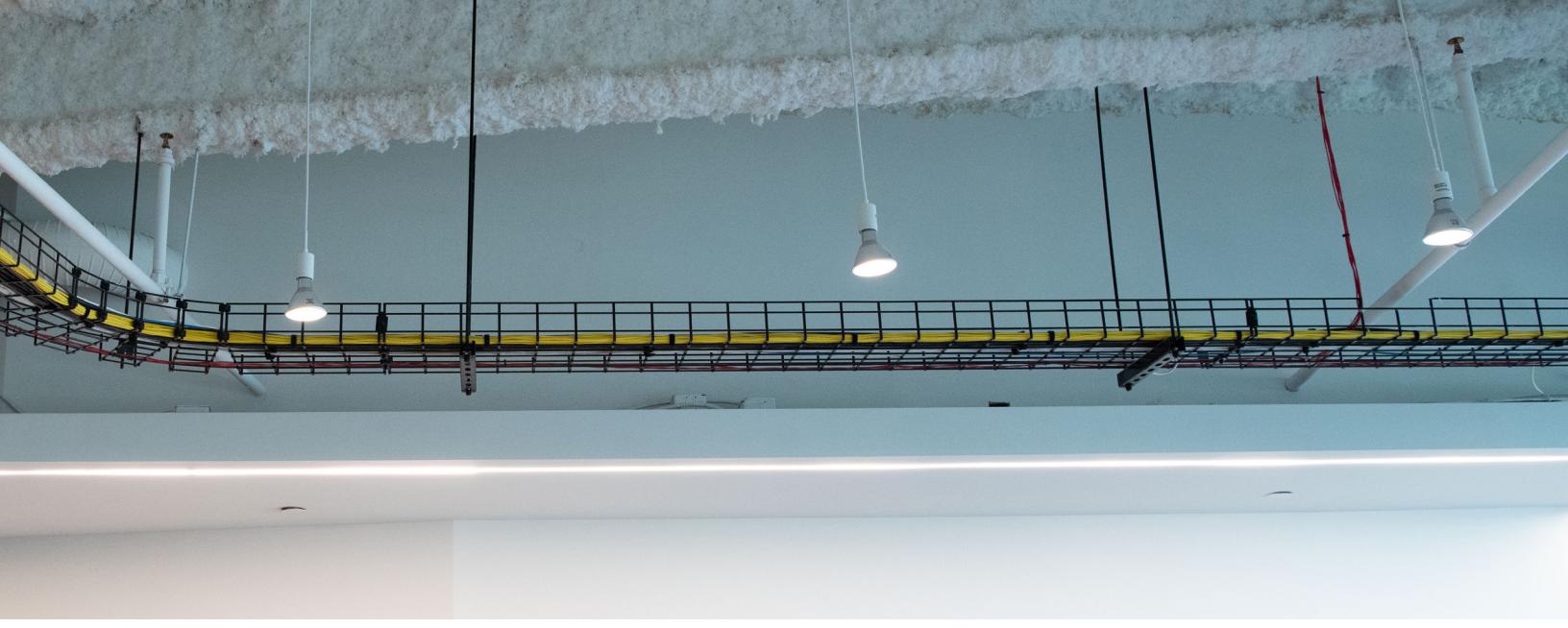
Today's technology demands are testing the limits of legacy Category cable networks. Without long-reach solutions, building owners are faced with space constraints, limited local power, and unplanned connectivity needs that drive up network complexity and deployment costs. Corning's in-building network solutions extend the reach of the network to deliver unlimited data and Class 2 power out to the very edge of the network.

### 2. Stay Ahead of Future Technology Needs with a Flexible, Adaptable Network

With new technologies emerging at an unprecedented rate, networks that can accommodate these ever-increasing technological demands can help businesses evolve as their technology needs change. Corning's flexible solutions help transform your technology program into a strategic asset.

### 3. Expand Technology Plans with Scalable, Future-Ready Connectivity

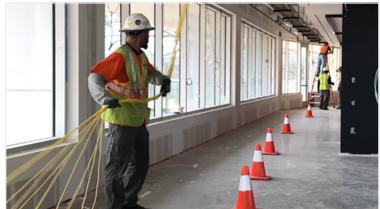
Smart technology strategies are built on future-ready infrastructure. Building owners who deploy unlimited bandwidth and power to the edge can seamlessly add new technologies to their networks. Unlike legacy Category cable networks, Corning's solutions can help building owners protect their technology investment by eliminating routine rip-and-replace infrastructure upgrades.



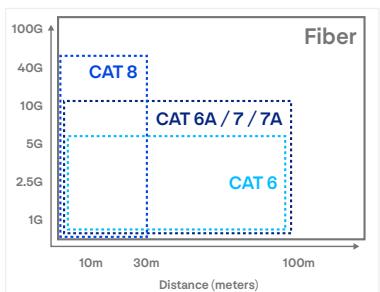
Legacy Category Cable Network



Replaced with ActiFi Cable



ActiFi Cable Reel-in-a-Box Deployment



Overcome bandwidth and distance limitations with fiber

## ActiFi® Hybrid Cable

Achieve ultimate flexibility by bringing together the future-ready bandwidth capabilities of Single Mode optical fiber and the powering capabilities of copper with Corning's ActiFi hybrid cable. The hybrid cable has both fiber and copper conductors under the same cable jacket to deliver data and power to the very edge of your network.

### Advantages

#### 1. Save Pathway Space

Legacy Category cable networks rely on routine rip-and-replace upgrade cycles and single-purpose infrastructure, which leads to crowded pathways and complexity. ActiFi hybrid cable streamlines your infrastructure onto a single cable allowing you to overcome space constraints.

#### 2. Protect Your Technology Investment

With a future-ready cable, your business can protect your infrastructure investment by leaving your ActiFi hybrid cable in place during your next technology refresh. Put your technology funds to smarter use by avoiding costly routine rip-and-replace Category cable upgrades.

#### 3. Speed Up Your Deployment

Keep your project schedule on track by saving time with your network deployment. ActiFi cable eliminates the need to pull separate cables for data and power, which saves you valuable time. [Watch](#) how this installer deployed 11 ActiFi cables at once with Reel-in-a-Box.

#### 4. Stay Ahead of Future Technology Needs

Increasing Wi-Fi demands are challenging building owners to design their networks with future-ready infrastructure, like ActiFi hybrid cable. Learn why the next generation of technologies will require optical fiber with this 3-minute read: [Enabling a Wireless World](#).

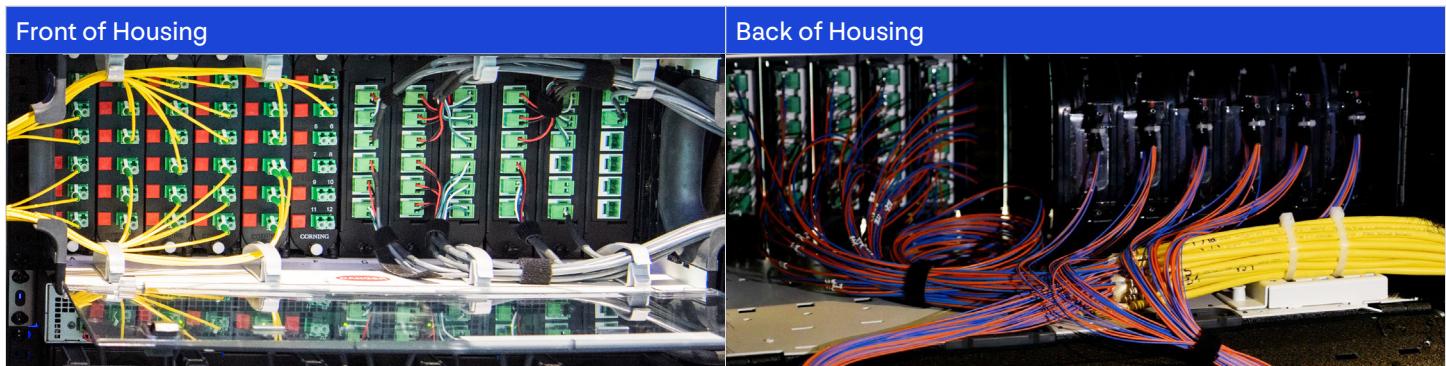
## Applications

ActiFi® cable is a Class-3 hybrid cable that supports low voltage (Class 2, 57 VDC/100 V) as well as bulk power solutions. Because ActiFi cable can reach distances over 2,000 feet, this cabling choice is also ideal for long-reach or remote applications, such as security cameras in a parking area or outdoor campus-wide Wi-Fi.

ActiFi cable can support devices directly or via a connection to an edge device, such as a media converter or software-defined access node (SDAN). ActiFi cable is compatible with Corning's Intelligent Power Solutions, 10G HPoE Media Converter, Software-Defined LAN (SD-LAN) portfolio, Small Cell, and Distributed Antenna Solutions (DAS).

## ActiFi Cable Management

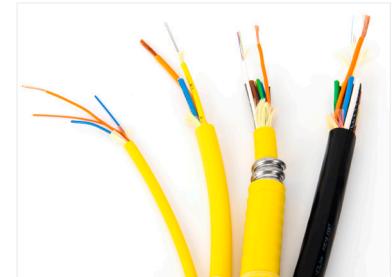
ActiFi cable is also compatible with Corning's structured cabling, hardware, and housing portfolios, including CCH and EDGE™ solutions. An example below shows how CCH cassettes and housings easily manage ActiFi hybrid cable. Flexible keystone adapters accept both fiber and power connector types.



## Key Specs

Find the right cable for your project with Corning's broad portfolio of ActiFi composite cable. A few key specs are highlighted below. For a complete list of offerings, please visit our [ActiFi Cable Ordering Guide](#).

Highlights	
Configurations	1-24 fibers and 2-12 copper conductors
Copper Conductors	20-12AWG
Environments	Indoor, Indoor/Outdoor FREEDM® cable
Jacket Ratings	Riser, Plenum, Armored, or Non-Armored
Deployment Options	Bulk cable or Reel-in-a-Box (500 feet/box or 1,000 feet/box)



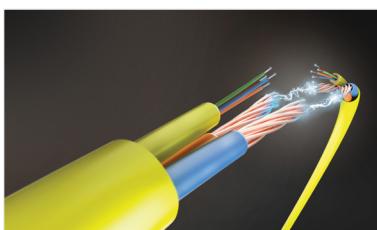
Contact your local Corning Sales Engineer for a complimentary sample box of ActiFi cables.



Consolidated power distribution at a single location



Learn more from our expert Steve Letke



Remote Power Overview



Use Cases: Security & Wi-Fi

## Intelligent, Remote Power Solutions

Overcome PoE distance limitations of legacy Category networks by Injecting DC power into your network. Corning's expanded portfolio of high-density, Class 2 remote power solutions support intelligent power aggregation at the edge to deliver up to 700 W of power. Our power solutions are compatible with Corning's ActiFi® hybrid cable, connectivity, hardware, and actives portfolio.

Corning recommends that all designs using the Corning Remote Power Solution comply with the latest editions of the NEC of the NFPA, OSHA, and all applicable local and state codes.

### Advantages

#### 1. Solve for Increasing Power Requirements

As buildings get smarter, they demand more power from our networks. Deliver up to 700 W of power to the edge to support small to medium power loads such as IP devices and smart lighting.

#### 2. Reduce Deployment Cost

Eliminate costly local power outlets and telecommunication rooms by delivering DC power across distance of 2,000 feet or more.

#### 3. Save Space

Our new intelligent power solutions deliver up to 167% greater port density to help you solve for more power with a smaller footprint.

#### 4. Gain Flexibility

Our new power supplies are a half-rack unit wide and can be stacked side by side, wall-mounted, or installed inside an enclosure. With an ambient temperature range of -30°C to 65°C, these solutions can be deployed in various locations.

#### 5. Simplify Power Management

With intelligence built in, this new power solution can be managed to allow current/voltage monitoring, faults monitoring, ports on/off control, prioritization, and optimization.

## Go the Distance

Extend the reach of your network beyond the 100-meter distance limitation of legacy Category networks. Enable remote applications at distances of 2,000 feet or more with Corning's Intelligent Power Solutions and ActiFi hybrid cable.

Use this distance table to build the right end-to-end network for your project based on the specific power requirements at the edge. Contact your local Corning Sales Engineer for assistance.

### ActiFi® Hybrid Cable Distances 1 Pair | Low Voltage (56 VDC)

	30 Watts	60 Watts	75 Watts
AWG20	527 ft	263 ft	211 ft
AWG18	839 ft	419 ft	335 ft
AWG16	1,334 ft	667 ft	533 ft
AWG14	>2,000 ft	1,061 ft	848 ft
AWG12	>2,000 ft	1,687 ft	1,349 ft

NOTE: table assumes delivering 48 VDC at PSE

## Key Specs

Corning's expanded portfolio of Intelligent Power Solutions includes new power supplies, power aggregators, step down converters, hardware, and accessories.

### Highlights

New Power Supplies	Achieve ultimate port density to deliver more power with less space.	1 port (127 mm tall, 50 mm wide, 105 mm deep) 16 port (1.5 RU tall, half RU wide)
Aggregators	Aggregate multiple 56 V Class 2 inputs to provide more power (up to 700 W of power to a single device) and redundancy at the edge.	2:1 or 8:1
Step Down Converter	Add this device to support both 56 V and 24 V loads from the same power supply.	x1 output or x2 output
Accessories	Gain deployment flexibility with various mounting options.	DIN rail mounting Rack shelves Cable management



1 Port Corning Intelligent Power Supply (CIP)



16-Port Corning Intelligent Power Supply (CIP)



2:1 Aggregator, 8:1 Aggregator



Step Down Converter x2 outputs



## Unmanaged Networks with Extended Reach

Security cameras across a parking area, blanket Wi-Fi throughout a campus, and access controls around a perimeter are just a few examples of technologies that test the 100-meter distance limitation of Category cable networks. These network limitations lead to maxed-out pathways, space constraints, and costly local power outlets. Enabling these seemingly simple devices often takes a network deployment that can be quite complex. Corning's portfolio of unmanaged, long-reach solutions can provide the cost-effective, "set it and forget it" connectivity you need at the edge. We provide two solutions: 10G HPoE Media Converters and an end-to-end Touchless Networking Solution.

### 10G 90 W HPoE Media Converter

Corning's all-in-one, 1-port, industrial grade media converter solution, delivers up to 90 W of High Power over Ethernet (HPoE) and supports a diverse range of data speeds from 100MB to 10GB, effectively extending networks beyond 2,000 feet. It integrates with Corning's fiber, power, hardware, and connectivity solutions and is interoperable with existing switches. New built-in intelligence enhances troubleshooting and monitoring, offering a cost-effective solution that reduces network deployment costs and utilizes fewer materials for a lower carbon footprint.

#### Key Specs

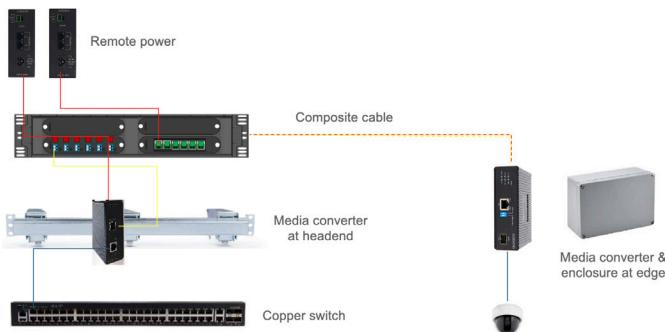
- Supports 90 W PoE++ (HPoE) and is backwards compatible to support PoE, PoE+, PoE++ (60 W)/802.3bt.
- Supports 10G speeds and is backwards compatible to support 1G or 2.5G speeds.
- Allows for deployment flexibility with DIN-rail mounting and small form factor.
- Interoperable with existing copper or fiber switches.
- Features 1G or 10G Auto Negotiation SFP+ port, Link Status.
- Direction and Watchdog Features to auto-reset devices.

Ordering Information	
1LAN-FMC-10G-U	Media Converter
1LAN-FMC-DINBRACKET	DIN Rail Bracket
1LAN-SDAN-DIN1160	DIN Rail
1LAN-D600-FMC-KIT	Mounting kit for 1LAN-FMC-10G into 1LAN-D600-ENC-3 enclosure
1LAN-D600-ENC-3	NEMA4 Enclosure
1LAN-SFPP-10G-BXD-I-U	BiDi SFP+ 1330nm-TX/1270nm-RX
1LAN-SFPP-10G-BXU-I-U	BiDi SFP+ 1270nm-TX/1330nm-RX
1LAN-SFPP-10LR-U	10Gb/s SFP+ SMF

## Long-Reach Fiber Media Converter Deployment Examples

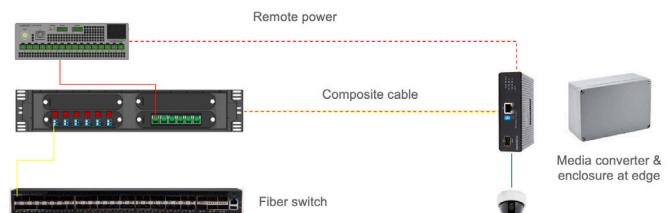
### Scenario 1:

Leverage an Existing Copper Switch



### Scenario 2:

Leverage an Existing Fiber Switch



## Touchless Networking Solution

Corning Touchless Networking is self-provisioning and leverages the benefits of a fiber- and power-deep architecture to enable simple, unmanaged applications in hard-to-reach places.

Touchless Networking is ideal for projects with phased budgets or future technology needs because it can seamlessly upgrade to a fully-managed, software-defined LAN (SD-LAN) solution without ripping and replacing the network. Simply activate the platform-as-a-service to turn this “set it and forget it” network into a fully-managed SD-LAN solution that can adapt to more complex networks like WLAN (multiple SSIDs) or audio/visual applications.

## Case Study

A sports stadium needed to connect 48 remote, outdoor security cameras but had limited local power options. They leveraged Touchless Networking and saved 50% on their network deployment cost compared to a legacy Category network. With this future-ready capability in place, they can seamlessly upgrade to a fully-managed SD-LAN solution to add day-two applications such as outdoor Wi-Fi.

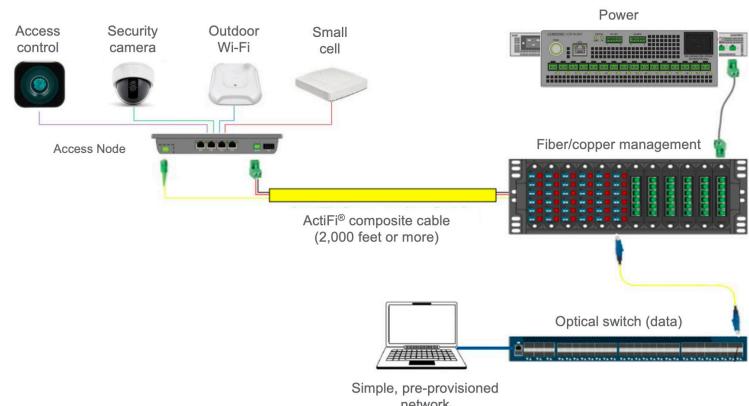
## Resources

Learn more by visiting the [solution overview](#) to find use cases, kitted offerings, and ordering information. Or, check out [this 5-minute video](#) with expert Ron Wells as he explains Touchless Networking in more detail.



Touchless Networking Edge Kit 3-port SDAN in outdoor enclosure

## Fiber to the Edge Deployment Example

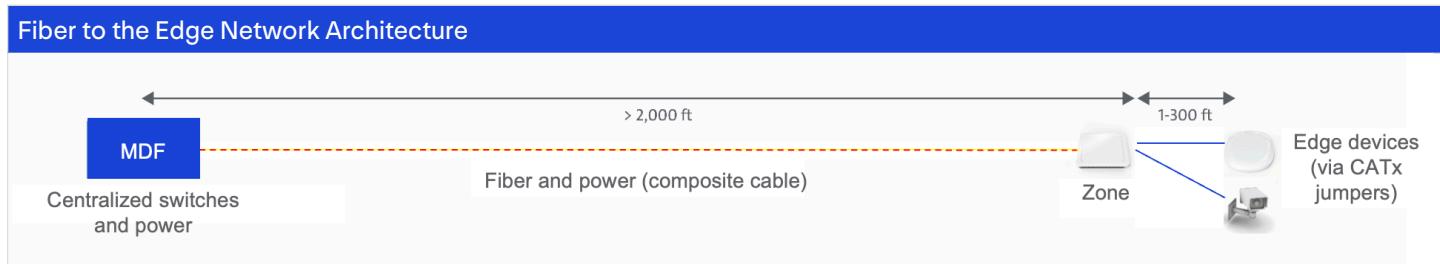




## Fully-Managed, Future-Flexible Networks

For ultimate flexibility and visibility to the edge of your network, Corning's Fully-Managed Software-Defined LAN (SD-LAN) Solution is built on the future-ready foundation and long-reach capabilities of our ActiFi® hybrid cable and Intelligent Power Solutions. As technology plans grow and evolve, network demands become more complex. We designed our SD-LAN solution specifically for the needs of the enterprise.

Our fully-managed SD-LAN solution can be integrated by our approved Everon® Partners. Contact your local Sales Engineer to help you design and integrate your Corning solution.



## Advantages

### 1. Adapt as Network Requirements Change

Corning's flexible SD-LAN solution supports two transport technologies within the same platform – point-to-multipoint (PON/GPON/XGSPON) and point-to-point (Active Ethernet), allowing for maximum adaptability as technology needs change.

### 2. Scale and Expand Your Tech Strategy

With a future-ready infrastructure in place, your enterprise can seamlessly scale to add more devices as your technology strategy evolves without having to pull additional cable.

### 3. Extend Your Network Reach to Save Space and Cost

Deliver connectivity beyond 2,000 feet or more. Reclaim revenue-generating space by reducing telecommunication rooms and technology funds by reducing TR build-out and maintenance costs.

### 4. Simplify Network Management

Maximize your time with a “single pane of glass” orchestration platform that allows for template-based provisioning, remote troubleshooting, and visibility to the very edge of the network. Contact your local Corning Sales Engineer for a demo of our [Advanced Orchestration and Management Platform](#).

## End-to-End Solution

Innovation is in our DNA. From the day we introduced the first viable low-loss optical fiber in 1970, we have built on this innovation by expanding our in-building network expertise. In addition to our broad portfolio of cable, connectivity, hardware, and intelligent power, Corning also specializes in network actives and software, including:

- Whitebox appliances (1G/10G/40G Optical Switching Fabrics and PoE, PoE+, and PoE++) with a full SFP portfolio
- Intelligent software-defined access nodes for optical to Ethernet conversion and PoE
- Advanced Software-Defined Network Orchestration Software

## Applications and Case Studies

Enterprises from [hospitality](#), [education](#), [senior living](#), multi-family, manufacturing, [smart buildings](#), and beyond can make the most of their technology investment with a fully-managed SD-LAN solution. To learn more about how to transform your technology program, check out this 3-minute read: [4 Considerations for a Smarter Network](#).

Case Study	Size	Applications	Network Savings*
Medium Office	51,000 sq ft 70 employees	Wi-Fi, Security Cameras, Sound Masking, Voice, Cellular, Displays	34%
Large Office	180,000 sq ft 800 employees	Wi-Fi, Security Cameras, Sound Masking, A/V, Cellular, 4K Displays	29%
Education Campus	14 buildings 2,000 drops	Wi-Fi, Voice, Data, A/V, Security Cameras	48%
Senior Living	24 floors	Resident Wi-Fi, VoIP Phones, IPTV, Security	29%
Small Hotel	109 rooms	Wi-Fi in each room, IPTV, VoIP Phones	12%
Large Hotel	513 rooms	Wi-Fi in each room, IPTV, VoIP Phones	10%

\*Compared with cost of legacy category cable deployment.



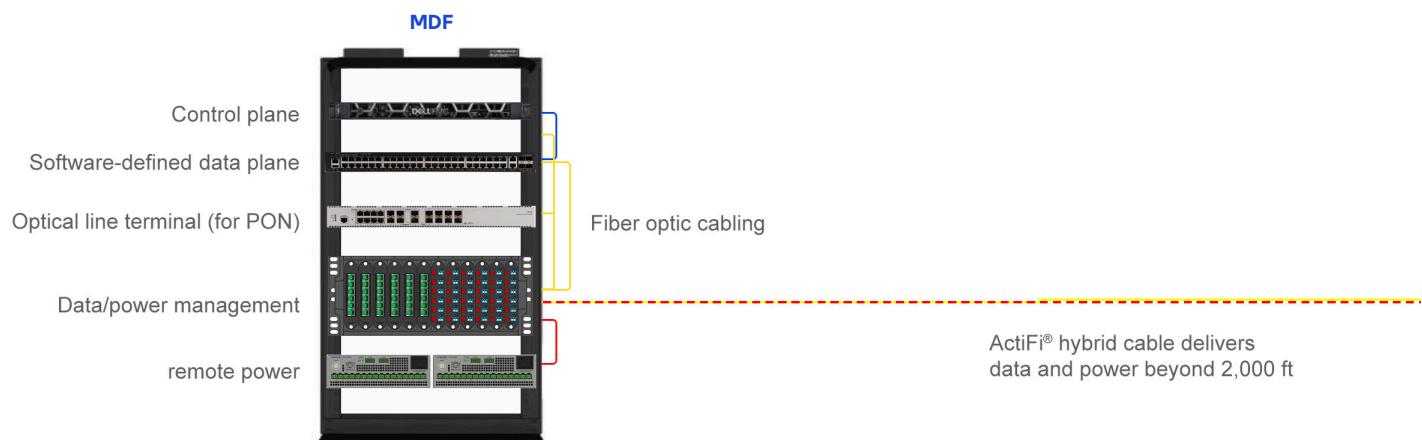
SDAN deployment examples from left to right: SDAN mounted in base of light pole, concealed behind wall face plate, installed on rack tray, deployed above ceiling to feed security camera, and hidden behind TV mount to deliver triple-play.

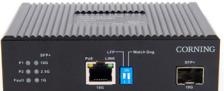


## SD-LAN Family Spec Sheet

Control Planes (Servers)	Part Number	Description					
	1LAN-SRV-STANDARD	1U RACK SERVER, 6C/12T CPU, VMware, VIRTUAL APPS, 64GB					
	1LAN-SRV-XL	1U RACK SERVER – Full Depth, (2) 12C/24T CPUs, VMware, VIRTUAL APPS, 128GB > 600 SDANs					

Data Planes (SDDP)	Part Number	SFP+	QSFP+	GPON	POE	POE Budget	Redundant Power
	1LAN-SDDP-48P-U	48	6	-	-	-	Y
	1LAN-SDDP-24POE	4	-	-	(24) 30 W (8) 60 W	960 W	Y
	1LAN-SDDP-48POE	4	-	-	(48) 30 W (8) 60 W	1650 W	Y
	1LAN-SDOLT-G81	2	-	8	-	-	Y



Access Nodes (SDAN) and Media Converters (FMC)	Part Number	GE Ports	10GE Ports	PoE	PoE Budget	Notes
	1LAN-SDAN-8011	1	N/A	Yes, 60 W	60 W	SC APC Optical Connector
	1LAN-SDAN-8293	3	N/A	Yes, 30 W	30 W	SC APC Optical Connector
	1LAN-SDAN-IW4P-U	4	N/A	Yes, 60 W	60 W	SC APC Optical Connector
	1LAN-SDAN-7290	4	N/A	Yes, 30 W	60 W	SC APC Optical Connector
	1LAN-SDAN-7298-U	8	N/A	Yes, 60 W	140 W	SC APC Optical Connector
	1LAN-SDAN-7691	5	1	Yes, 60 W	140 W	SFP+ Interface SC APC for PON LC UPC for Active Ethernet
	1LAN-FMC-10G -U	1	1	Yes, 90 W	90 W	Media Converter SFP+ Interface LC UPC for 1G/10G Transceiver

ActiFi® hybrid cable delivers data and power beyond 2,000 ft.



SDAN converts optical to Ethernet and delivers PoE to end devices.

Transceivers	Part Number	Media	Rate	Max Range	Notes
	1LAN-SFP-1GCU	Cu	1Gb/s	100 m	RJ-45
	1LAN-SFP-1GB-LXLH	SMF	10Gb/s	10 km	LC UPC Duplex
	1LAN-SFP-4305BC-U	SMF, bi-di	1Gb/s	10 km	LC UPC Simplex
	1LAN-SFP-3405BC-U	SMF, bi-di	1Gb/s	10 km	LC UPC Simplex
	1LAN-SFPP-10LR-U	SMF	10Gb/s	10 km	LC UPC Duplex
	1LAN-SFPP-10SR-U	MMF	10Gb/s	300 m	LC UPC Duplex
	1LAN-SFPP-10G-BXU-I-U	SMF, bi-di	10Gb/s	10 km	LC UPC Simplex
	1LAN-SFPP-10G-BXD-I-U	SMF, bi-di	10Gb/s	10 km	LC UPC Simplex
	1LAN-SFP-GPON	SMF	1.244Gb/s 2.488Gb/s	20 km	SC UPC – Used with 1LAN-SDOLT-G81
	1LAN-SFPP-10G-OLT	SMF	10Gb/s	20 km	SC UPC – Used with 1LAN-SDDP-48P-U
	1LAN-SFPP-10G-LTF7225	SMF	10Gb/s	20 km	SC APC – Used with 1LAN-SDAN-7691
	1LAN-SFPP-10G-LTF7225-U	SMF	10Gb/s	20 km	SC APC – Used with 1LAN-SDAN-7691-U

Power	Part Number	Description
	CIP-16-56V-U/CIP-32-56V-U	Intelligent Power Supply Unit (16 ports, 56 V)
	CIP-01-56V	Intelligent Power Supply Unit (1 port, 56 V)
	CIP-AGG-2-U	Aggregator: Two Class-2 inputs, Single Class-1 output
	CIP-AGG-8-U	Aggregator: Eight Class-2 inputs, Single Class-1 output

Accessories	Part Number	Description
	1LAN-SDAN-SMCRD	Surface-Mount Cradle (8293 series)
	1LAN-SDAN-FST0004	Fiber Slack Tray (729x series)
	1LAN-SDAN-PWRSUP2-U	Software-Defined Access Node Local Power Supply Output – 54 VDC @ 81 Watts (1,3,4 port SDANs)
	1LAN-SDAN-PWRSUP160	Software-Defined Access Node Local Power Supply Output – 54 VDC @ 150 Watts (5,8 port SDANs)
	1LAN-D600-ENC-3	Outdoor enclosure for SDAN family (81XX, 82XX)
	1LAN-D600-ENC-8	Outdoor enclosure for SDAN family (729X, 769X)
	1LAN-PLS-A32LCA	1x32 PLC Splitter, 19-in rack, LC APC
	1LAN-PLS-A32SCA	1x32 PLC Splitter, 19-in rack, SC APC
	1LAN-D600-CCP2-WH	Power Keystone Adapter(connector style)
	1LAN-D920CC-6	Keystone CCH Panel
	PCBL-1T1-18-2M PCBL-1T2-18-2M PCBL-1T4-22-2M	1 PAIR (1:1) POWER cable 2 PAIR (1:2) POWER Cross CONNECT Cable 4 PAIR (1:4) POWER Cross CONNECT Cable
	CIP-19SHELF-1.5U	CIP 19-in Rack Shelf – 16 Port/1.5 RU



## Network Solutions Designed for the Enterprise

Whether you face space constraints, require long-reach applications, or need to refresh your technology plans, Corning's in-building network solutions are built to help you design the network you need.

Built on the foundation of fiber-to-the-edge network architecture, Corning's end-to-end solutions deliver future-flexible data and power to the very edge of your network. This guide will help you choose the networking solution that best fits your project and show you how to seamlessly upgrade your network as technology plans change without having to routinely rip and replace your network infrastructure.

Learn more by visiting the [Next-Gen LAN Knowledge Center](#)

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