

## Connected Building Solutions Portfolio

### Panduit's Wide Range of Connected Building Solutions

Panduit connected building solutions converge building system networks into a common IT infrastructure for increased efficiencies, safety and sustainability. High speed data networks, IP Telephony, building systems, WiFi and Power over Ethernet (PoE) devices are becoming more prevalent as building owners, developers, and tenants realize the benefits of structured cabling deployment and other innovations. Panduit connected building solutions leverage best-in-class network connectivity to extend the reach of the IP-based network to all building system devices to deliver:

**Reduced capital and operational expenses** – converged networks are physically available where and when needed, and provide more efficient moves, adds, and changes

**Improved visibility of key operational data** – converged networks allow for continuous monitoring of building systems, enhanced security and increased productivity of maintenance and repair

**Green, energy efficient buildings** – networks enable Enhanced Commissioning and Energy Performance for a sustainable rated building

This Connected Building Solutions Portfolio Guide will describe three major infrastructures and range of hardware, software and services to achieve the benefits above.

#### Unified Physical Infrastructure



communication



computing



control



power



security

# Connected Building Solutions

## The Connected Building

Almost every building system (HVAC, lighting, security, and communications) uses some form of IT networking for management and control. The technologies for connecting, managing, and automating building systems include servers for hosting management software and controllers for floor level settings. Components can include a wide variety of endpoint devices (such as lighting, variable air volume [VAV] boxes, surveillance cameras, and interactive lobby kiosks) as well as required network infrastructure (cabling, switches, connectors, and related protocols).



Panduit World Headquarters under construction

Connected Building Solutions from Panduit realize Unified Physical Infrastructure<sup>SM</sup> design principles in the form of an intelligent infrastructure that extends throughout a property to both connect technology components and bridge stakeholder needs. These solutions enable linked facility and network systems to be built directly into the building fabric, generating and sharing data over a unified intelligent infrastructure to enhance building efficiency and effectiveness. The completed infrastructure enables building owners and property managers to reduce occupancy costs and enhance workplace experiences for their tenants or employees, and ultimately manage property resources more efficiently.

Panduit has developed the industry's most comprehensive and holistic approach to a Unified Physical Infrastructure and can help enterprises align, converge and optimize critical systems – communication, computing, control, power and security – to build a smarter, unified business foundation.

This approach enables the use of an open standards-based, service-oriented architecture framework and is designed to deliver tangible infrastructure and business process improvements for increased functionality, interoperability and manageability of mission critical operations across the enterprise.

## Connected Building Cost Efficiency Matrix

Goal	Benefit	Efficiency Gain*
<b>CapEx Savings</b>		
<b>Aggregate all low voltage and fiber optic cabling requirements</b>	Enhanced reliability, building system efficiency, convergence	Reduce cabling cost by up to 10% by converging networks at design phase to reduce number of networks, cables, and associated contractors
	Reduced materials cost (less connectivity, baskets, conduit, etc.)	
	Fewer siloed systems to install	
	Eliminate multiple levels of (sub)contractor markup/reduced supervision requirements	
<b>Use PoE to reduce need for higher voltage power installation</b>	Increased pricing leverage/simplified contract management	Reduce outlet requirements by up to 25%
	Reduce installation cost by eliminating additional AC outlets	
<b>Use zone enclosures to reduce control systems footprint</b>	Optimize connected building real estate	Reduce required space by up to 67%
<b>OpEx Savings</b>		
<b>Manage energy use</b>	Networked lighting controls, energy system sub-metering optimize energy consumption	Achieve energy savings up to 25%
	Continuous commissioning and optimized performance configuration for HVAC	
	Support sustainability initiatives	
<b>Reduce maintenance costs</b>	Intelligent fault detection extends life of systems	Achieve maintenance savings up to 10%
	Real-time information sharing improves systems diagnostics and reporting	
<b>Optimize staffing</b>	Fewer expert technicians required to operate/maintain open (i.e. non-proprietary) systems	Increase staff productivity up to 25-30%
	Centralized/remote management enables efficient oversight of multiple properties by same staff	
<b>Enable future reconfigurations</b>	New applications utilize converged network backbone	Reduce reconfiguration costs up to 20%
	Less abandoned cabling to remove	
	Zone enclosures improve ease of patching/reconfiguration	

\*Estimates based on Panduit World Headquarters business case; other results may vary based upon user data.

## Panduit World Headquarters – Realizing the UPI Vision

Panduit's Unified Physical Infrastructure<sup>SM</sup> approach is a revolutionary new way to help businesses change the way they think about their physical infrastructure.

Panduit's new world headquarters is being built to accommodate current growth and demonstrates "whole building/whole site" sustainability in design and construction. The World Headquarters is designed to achieve LEED Gold designation, and to function as an active "green" proof of concept.

## Connected Building Infrastructure

The connected building infrastructure enables building owners and property managers to reduce occupancy costs and enhance workplace experiences for their tenants or employees, and ultimately manage property resources more efficiently and cost effectively. This can be implemented in several ways including the following:

### Connected Building Data Center (CBDC)

The Connected Building Data Center leverages TIA-942 best practices to organize previously disparate building systems' servers and related equipment in an efficient footprint. The IP network will be as flexible and scalable as the physical infrastructure and accommodate nearly all logical connectivity between controllers, management servers and across building systems.



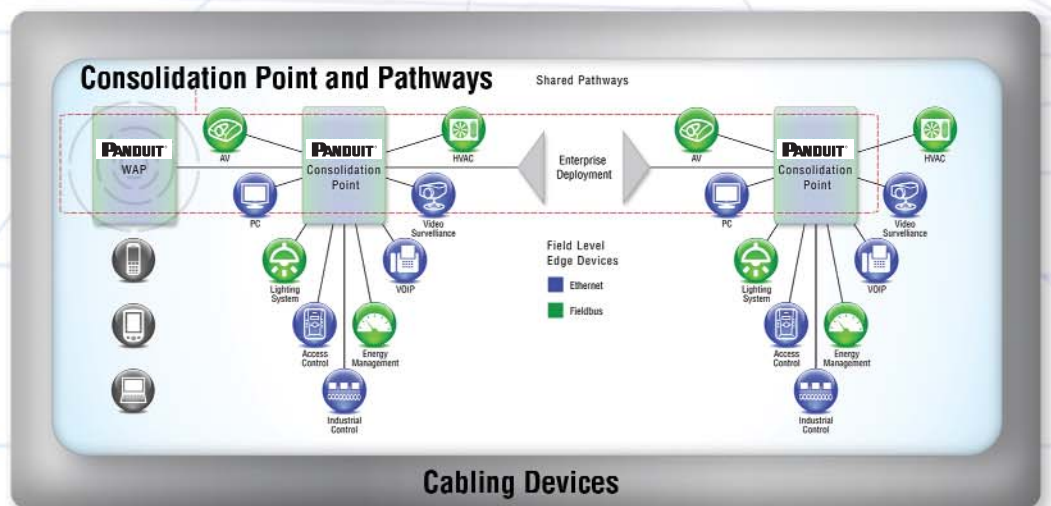
### Telecommunications Rooms (TR)

Telecommunications Rooms enable the integration of control systems with the IT network and provides a secure environment and consolidation of all physical network connectivity. The TR provides space for IP Distribution Layer Switches. An IP network will be as flexible and scalable as the physical infrastructure and accommodate all physical connectivity between controllers, management servers and across building systems.



### Cabling Devices

Building systems are converged within a common pathway and then terminated within zone enclosures distributed throughout the building. Zone enclosures are network consolidation points, allowing all cables to be managed and patched in a single enclosure. Connected building architectures provide a platform for secure, scalable and interoperable systems throughout an enterprise and represent the "last mile" of connectivity to the devices within the building system infrastructure.



### Connect. Manage. Automate.

The growing interdependence of building system technologies and applications requires the integration of many traditionally disparate and proprietary systems. The UPI approach to physical infrastructure design helps stakeholders manage the risk within the physical infrastructure by intelligently converging physical and logical systems to build a smarter, unified business foundation. Contact Panduit for common sense convergence for your next new construction or retrofit project.

# Connected Building Solutions








## Connected Building Solutions Cross Reference








Panduit Connected Building Solutions leverage common IT infrastructures for increased efficiencies, security and sustainability. The Panduit Products listed below are found in a Connected Building Data Center (CBDC), Telecommunications Room (TR) or in Shared Pathways to deliver a robust, scalable physical infrastructure enabling the integration of a broad range of connected building applications to meet current and future requirements.

As a leading technology developer and provider, the Panduit solution is strategically aligned with the Cisco Connected Real Estate (CCRE) initiative to maximize the benefits of a converged networking environment.



Panduit is a Solutions Enabler Partner for IP Communications within the Cisco Technology Developer Program.

Panduit Connected Building Product Category	Connected Building Data Center (CBDC)	Telecom Room (TR)	Shared Pathways
 Copper Cabling Systems	✓	✓	✓
 Fiber Optic Cabling Systems	✓	✓	
 PanZone® Zone Cabling		✓	✓
 Wireless Solutions	✓	✓	✓
 Power Over Ethernet (PoE)		✓	✓
 Cable Management Accessories	✓	✓	✓
 Physical Infrastructure Management Solution	✓	✓	

Panduit Connected Building Product Category	Connected Building Data Center (CBDC)	Telecom Room (TR)	Shared Pathways
 PanWay® Surface Raceway			✓
 Labeling and Identification	✓	✓	
 FiberRunner® Routing System	✓		✓
 QuickNet™ Cabling System	✓		✓
 Cabinets, Racks and Cable Management	✓	✓	
 StructuredGround™ Grounding System	✓	✓	
 Panduit Global Professional Services	✓	✓	✓

For more information on Panduit Connected Building Solutions, visit us on the web at: [www.panduit.com/Solutions/cbs](http://www.panduit.com/Solutions/cbs)

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