

# Improving Education with Enterprise Solutions



**PANDUIT®**

building a smarter,  
unified business foundation  
Connect. Manage. Automate.



## Panduit Unified Physical Infrastructure (UPI): a Guiding Approach

A unified approach to physical and logical systems architecture is imperative for solutions to fully address the need for availability, agility, integration, and security.

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.

**Mitigate Risk** – Efficient physical infrastructure management enables seamless integration to reduce risks that can occur throughout core systems.

**Lower Cost** – Panduit physical infrastructure solutions drive financial advantages to reduce energy and occupancy costs, and help secure competitive advantage.

**Increase Agility** – A high level of integration within the physical infrastructure enables flexibility and improved business agility.

**Enhance Sustainability** – UPI-based solution offerings enable organizations to meet sustainability goals by driving resource and energy efficiencies across the physical infrastructure.

### Unified Physical Infrastructure



communication computing control power security

## Great Expectations

Constantly changing technology is reshaping the way we all work, play, communicate, and educate. A new generation of students, more intimately familiar with computing, multimedia tools, and distance learning expect more from their education environment than just books and chalkboards. Gone are the days when a cart-mounted TV and video unit were considered “multi-media” tools. Today's students expect high-tech learning institutions and, in addition, the ability to learn from the comfort of their own home.

New applications allow teachers, professors, and instructors to provide a more dynamic and effective learning experience, improve teaching techniques, and ultimately raise test scores and graduation rates. In a fast-paced society, presenting students with literally hundreds of educational choices daily, it is important for schools, colleges, and universities to take advantage of new applications to stay competitive, and keep students' attention.

By adopting new technologies, such as converged networks, wireless applications and connected buildings systems, educational institutions can broaden the range of tools available in the classroom, improve network access and security for remote students, consolidate information, and maintain student records across an entire campus, all at a reduced operating cost. From using smartphones and tablets, to taking class attendance, to managing a centrally distributed audio-video program, convergence and deployment of wireless offers a whole new spectrum of services and benefits.

A significant challenge in the education market is designing a physical infrastructure on a tight budget not only for today's student, but for future generations to come. This task can be more complex than most enterprise applications. Not only must the system support the everyday administrative functions of a large and often spread-out campus, it also must provide on-demand curriculum material to a wide variety of audiences. Balancing the "cost versus performance" issues on a tight budget can be difficult. Budgets may limit the available solutions and potentially affect the flexibility, quality, and reliability of the network. Cost savings associated with installation, management, and maintenance are important, but how do you do this without compromising reliability, flexibility, safety, and security?

*Enhanced Learning Experience*

*Manage Budgets*

*Increase Sustainability*



## 1 Copper Cabling Systems (see page 6)

- Keyed Connectivity
- Shielded Copper Cabling System
- QuickNet™ Copper Cabling System



## 2 Fiber Optic Cabling Systems (see page 6)

- Keyed LC Fiber Optic system
- OptiCam® Fiber Optic Connectors
- QuickNet™ Fiber Cabling System



## 3 Cabinet Systems (see page 7)

- Net-Access™ N-Type Cabinets
- Net-Access™ S-Type Cabinets



## 4 Racks and Cable Management (see page 7)

- PatchRunner™ High Capacity Vertical Cable Management System
- NetRunner™ High Capacity Vertical Cable Managers
- NetManager™ High Capacity Horizontal Cable Managers
- 2 and 4 Post Open Equipment Racks



## 5 StructuredGround™ Grounding System (see page 8)

# Comprehensive Enterprise Solutions for Education

Technology, combined with customer collaboration, is the driving force behind solutions development at Panduit. We apply the latest research and development technologies with application expertise and strategic alliances to help educational institutions manage risk within the physical infrastructure.



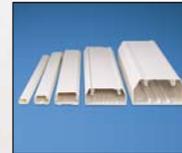
With converged and interoperable technologies, Panduit solutions enable sustainability, resulting in reduced capital and operational expenses.



## 6 PanZone® Zone Cabling System

(see page 8)

- In-Ceiling
- Underfloor
- Raised Floor
- Wireless



## 7 Raceway and Routing Systems

(see page 8 – 9)

- PanWay® Raceway Systems
- FiberRunner® Cable Routing System
- GridRunner™ Underfloor Cable Routing System
- Wyr-Grid® Overhead Cable Tray System



## 8 Network Infrastructure Security

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- Copper and Fiber Lock-In Devices
- Copper and Fiber Blockout Devices
- USB Blockout Devices



## 9 Identification and Labeling System

(see page 9)

- Turn-Tell® Labels
- Network ID Labels
- Outlet ID Labels



# Enterprise Solutions for Complex Education Campuses

Panduit Enterprise Solutions can help you address top of mind issues within your institution. Whether you are on a tight budget or have time constraints, are concerned with physical and network security, or are looking to deploy wireless and converged networks, Panduit has a solution tailored to fit your needs while enhancing the reliability of your network.

Panduit Enterprise Solutions provide the industry's most comprehensive and holistic portfolio of products and services to build an intelligent physical infrastructure. Innovative design features address the unique requirements of schools, colleges, and universities by providing easy installation, reduced maintenance costs, and improved network reliability and flexibility. Our solutions are designed to optimize logical to physical solutions, focusing on ease and speed of installation which is crucial with stringent time constraints, and ultimately reduces labor costs. With an extensive supply chain, Panduit can provide solutions when and where you need them, helping to ensure the job is completed on budget and on time.

Physical and network security are often the number one concerns for educational institutions. To provide a safe teaching and learning environment, systems need to be able to prevent access to potentially dangerous equipment or hazards on campus, for example electrical circuits and power units. Network security and protection are also necessary to guard against vandalism or abuse to network system components. Panduit offers keyed copper and fiber connectivity solutions to mitigate unauthorized access to the campus network. Protecting network access points with these tamper-resistant features reduce downtime and repair costs, producing a faster return on investment. In addition to network security Panduit offers grounding systems to protect students and staff as well as electrical equipment.

Distance learning is an increasing trend as the number of adult students rises. As curriculum and student needs change from semester to semester, it is often necessary to change the physical or virtual layout or function of a classroom. A converged and wireless network environment that allows teachers and IT staff to accommodate these needs without major disruptions will provide short-term and long-term cost savings. In addition, the life span of the network can be extended, as network upgrades or re-configurations can be accomplished with limited duplication and minimal investment.

## The Panduit Difference

Panduit is a world-class developer and provider of end-to-end solutions for the physical infrastructure that drive operational and financial advantages, delivering the best value for education.

**Quality:** Panduit solutions meet or surpass rigorous quality management standards to assure compliance with industry requirements, including UL, EIA/TIA, RoHS.

**Performance:** Our products are designed to not only meet industry standards, but to surpass those standards.

**Innovation:** Our ongoing commitment to innovation is highlighted by our significant annual investment in Research and Development.

**Service and Support:** With operations in more than 112 countries, including manufacturing and warehousing facilities, distribution, and customer service and support, Panduit has a true global footprint designed to seamlessly manage multi-site projects around the world.



## Copper Cabling Systems

Complete end-to-end Category 6A, 6 and 5e solutions (jack modules, patch cords, cables, and couplers) are designed to support emerging technologies, including Voice over IP, HD video, Power over Ethernet, and desktop virtualization.

All components are integrated and 100% factory tested, greatly expanding network lifetime and performance.

## Fiber Optic Cabling Systems

Panduit Fiber Optic Systems meet today's requirements and provide a migration path for tomorrow's applications. These advanced fiber optic systems for both singlemode and multimode applications provide complete solutions for today's high data rate Fibre Channel and Ethernet applications, and support future readiness for 40 Gb/s and 100 Gb/s data rates, maximizing physical infrastructure performance, modularity, and scalability.

### Keyed Connectivity

The Panduit Keyed Copper Cabling System facilitates secure, modular end-to-end connectivity for all Category 6A, 6, 5e cabling and interconnect elements in the enterprise. Color specific keys, with positive and negative keying, mechanically and visually distinguish connections to prevent unintentional insertion into unlike keyed and non-keyed ports.



### Shielded Copper Cabling System

Shielded components minimize signal emissions, reducing the possibility of interception of sensitive data. They also protect against Radio Frequency Interference (RFI), commonly emitted from WLANs, cell phones, or radios, which can cause alien crosstalk.



### QuickNet™ Copper Cabling System

The Panduit® QuickNet™ Copper Cabling System provides a custom, pre-terminated cabling solution that is fast and simple to install. The system enables quick network deployment, increased reliability, and lower total cost of ownership as compared to field terminated solutions.



### Keyed LC Fiber Optic System

The Panduit Keyed LC Fiber Optic System provides the strictest keying integrity available to prevent unauthorized access and ensure network security. Color specific keys, with positive and negative keying, mechanically and visually distinguish connections to prevent unintentional insertion into unlike keyed and non-keyed ports.



### OptiCam® Fiber Optic Connectors

Panduit® OptiCam® Fiber Optic Connectors offer a patented re-termination capability which provides yield rates approaching 100%. The factory pre-polished fiber stub endface eliminates time-consuming filed polishing to reduce installation costs and labor. The innovative OptiCam® Technology features a dual cam design that secures both fiber and buffer in one action to ensure consistent termination results while reducing termination time.



### QuickNet™ Fiber Cabling System

The Panduit® QuickNet™ Fiber Cabling System delivers performance, scalability and reliability for high-density network applications. This end-to-end pre-terminated solution enables quick deployment of up to 96 fiber connections in a single rack space with superior cable access and management capabilities. The QuickNet™ Fiber Cabling System exceeds 10 Gigabit Ethernet standards and is 100% tested.



## Net-Access™ N-Type Cabinets

Panduit® Net-Access™ N-Type Cabinets have been designed to properly manage the cabling and thermal requirements for network switches and combine the aesthetics and security of a cabinet with the accessibility of an open rack. They deliver superior cable pathway accessibility and improved thermal management in a fully integrated, electrically bonded cabinet.



## Net-Access™ S-Type Cabinets

Panduit® Net-Access™ S-Type Cabinets are engineered to provide a best in class server cabinet solution. The extended depth supports deeper server and equipment and provides room in the rear of the cabinet for power outlet unit (POU) management. For high density applications often found in colleges or universities, vertical exhaust duct (VED) or cold aisle containment provides optimized cooling management.



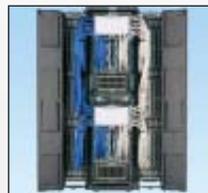
## Power Outlet Units (POUs)

Power Outlet Units (POUs) provide improved energy efficiency, optimized power capacity and increased uptime. Our POUs are designed to integrate seamlessly into Panduit cabinets to optimize space utilization, and are available in multiple voltages, amperages and outlet configurations to satisfy power requirements globally.



## PatchRunner™ High Capacity Vertical Cable Management System

The Panduit Cable Management Rack System manages high density network equipment and patch panels in up to half the number of racks required by traditional cable management systems. Modular design and compatibility with all Panduit networking products provide a comprehensive and aesthetically pleasing infrastructure solution with the flexibility to facilitate system upgrades.



## NetRunner™ High Capacity Vertical Cable Manager and NetManager™ Horizontal Cable Manager

This system is an efficient way to manage copper, fiber optic, coax cables and patch cords on any EIA 19" rack. Cable management fingers organize patch cords, simplifying moves, adds, and changes, while the integral bend radius control and "closed" dual hinged cover design protects patch cables in the pathway.



## 2 and 4 Post Open Equipment Racks

These racks provide a reliable foundation for mounting telecommunication and data center equipment. These racks can be used to manage high performance copper and fiber patch cables. These modular rack systems are compatible with Panduit horizontal and vertical cable managers.



## Cabinet Systems

Panduit Cabinet Systems for switch, server, and storage equipment applications significantly reduce total cost of ownership by increasing network availability, mitigating risk, and minimizing power consumption. Modular design and compatibility with all Panduit networking products provide a comprehensive and aesthetically pleasing infrastructure solution with the flexibility to facilitate system upgrades now and in the future.

## Racks and Cable Management

As the demand for system performance increases, it is essential to maintain system reliability and scalability through effective cable management. Panduit continues to deliver end-to-end solutions that manage, protect and showcase your network, lowering your cost of ownership.

## StructuredGround™ Grounding System

The telecommunications grounding and bonding system provides a visually verifiable, dedicated grounding path to maintain system performance, improve network reliability, and protect network equipment and personnel.

## PanZone® Zone Cabling System

Zone enclosures serve as a main distribution point for open office architecture applications, wireless deployments and network integration of building automation systems.

## Raceway and Routing Systems

We offer the most complete line of raceway and routing systems for voice, data, video and power cabling. All include a full complement of fittings that are designed to maintain proper bend radius control for protection of cabling.

## Grounding and Bonding

The innovative system is engineered with paint-piercing hardware and pre-terminated jumpers to guarantee quality and speed of installation. A comprehensive offering is available for a variety of grounding applications including: racks, cabinets, enclosures, pathways, access floors, busbars, armored cables, and shielded cabling.



## In-Ceiling, Underfloor, Raised Floor, Wireless Zone Enclosures

Our complete line of zone cabling products provides a flexible and scalable platform for data communications and integration of current and emerging technologies. A variety of options are available including, in-ceiling, underfloor, raised floor, wireless, building automation systems, and wall mount consolidation points.



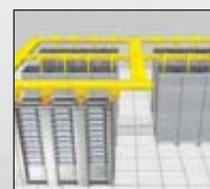
## PanWay® Raceway Systems

Surface raceway products provide maximum flexibility for routing, protecting and concealing high performance copper, voice, video, fiber-optic and electrical wiring within any enterprise environment. Products are tamper resistant, offering increased safety benefits, discouraging unauthorized access, and protecting sensitive cabling from accidental damage, and physical contact with electrical wiring.



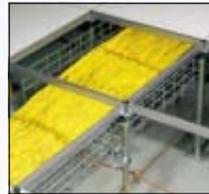
## FiberRunner® Cable Routing System

The FiberRunner® Cable Routing System consist of channels, fittings and brackets designed to segregate, route and protect fiber optic and high performance copper cabling. Typical applications include data centers and Telco Central Offices where cable is routed from distribution areas to equipment cabinets or racks.



## GridRunner™ Underfloor Cable Routing System

This system consists of wire basket pathways designed to route and manage network data and power cabling beneath the raised floor in a data center. It supports high cable capacities, protects cables from damage to improve network performance, and is fully electrically bonded to facilitate proper grounding.



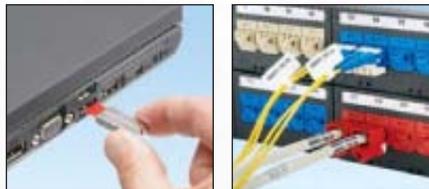
## Wyr-Grid® Overhead Cable Tray System

This cable tray system is designed to route and manage copper data cables, fiber optic cables, or power cables. Innovative features provide quick, easy assembly for reduced installation costs and faster deployment.



## Copper and Fiber Lock-In and Blockout Devices, USB Blockout Devices

The innovative design of the blockout device snaps into jacks/ports and is released with a removal tool, ensuring the safety and security of the network infrastructure. The versatile design of the lock-in device is compatible with most existing patch cords, faceplates, patch panels, IP cameras and other IP devices. It is also compatible with VoIP phones to help prevent unauthorized tampering with connectivity to ensure E911 continuity. Devices are available for copper, fiber and USB applications.



## Turn-Tell® Labels, Network Identification Labels and Outlet Identification Labels

Turn-Tell® Labels provide a unique identification solution to meet the application needs of structured cabling infrastructures. The labels are unique because they can rotate on the wire/cable after installation to allow visibility from any angle, as well as ease of repositioning. Network Identification and Outlet Identification Labels can be printed on both laser and ink jet printers, and are designed to provide maximum aesthetic quality and appearance.



## Raceway and Routing Systems (continued)

## Network Infrastructure Security

Network accessories prevent unauthorized access to existing network infrastructure from the data center to the workstation. These devices save time and money associated with network downtime, data security breaches, infrastructure repair, and hardware replacement due to theft.

## Identification and Labeling Systems

Our comprehensive line of labeling systems and printers are designed to fit specific needs, allowing you to create custom markers quickly and economically. Panduit identification solutions include computer printable labels and supplies, software, and a wide range of printers including hand-held/portable printers and desktop printers.

For more information on these and other product systems such as Work Area Outlets, Cable Ties and Accessories, visit us at [www.panduit.com](http://www.panduit.com).

## Real-World Solutions

*With a proven reputation for excellence and innovation, Panduit and our partners work with you to overcome challenges and implement real-world solutions that create a competitive business advantage. Panduit offers the broadest range of solutions, from data centers and intelligent buildings to manufacturing operations, to help you build a **smarter, unified business foundation**.*



### Technology Leadership

Panduit develops innovative physical infrastructure solutions that meet the rapidly changing needs of our clients, from hardware and software to advisory services. This commitment is supported by investment in advanced research, solutions-focused product development, world-class manufacturing, and collaboration with customers at the forefront of technology.



### Partner Ecosystem

Our best-in-class partner ecosystem offers a comprehensive portfolio of services that span the project lifecycle, from planning and design to delivery, deployment, maintenance, and operation. Panduit business partners – distributors, and certified architects, consultants, engineers, designers, system integrators, and contractors – are qualified to help you achieve your objectives and realize predictable and measurable results.



### Strategic Alliances

Panduit cultivates long-term strategic alliances with industry leaders, including Cisco Systems, EMC, IBM, and Rockwell Automation, to develop, optimize, and validate solutions for our customers. This investment in people and resources helps solve our customers' greatest business challenges.



### Global Business Commitment

Panduit is committed to delivering a consistently high level of quality and service the world over. With a presence in more than 100 countries, local Panduit sales representatives and technical specialists offer guidance and support that bring value to your business. Our global supply chain, which includes manufacturing, customer service, logistics, and distribution partners, provides prompt response to your inquiries and streamlines delivery to any worldwide destination.



### Sustainability

With a commitment to environmental sustainability, Panduit develops and implements solutions that protect, replenish, and restore the world in which we live. This commitment is demonstrated by Panduit's LEED Gold certified World Headquarters, leveraging the Unified Physical Infrastructure<sup>SM</sup> approach to enable convergence of critical building systems to drive energy efficiency and ongoing operational improvement.

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