High Speed
Data Transport
Solutions

PANDUIT®

building a smarter,
  unified business foundation
Connect. Manage. Automate.
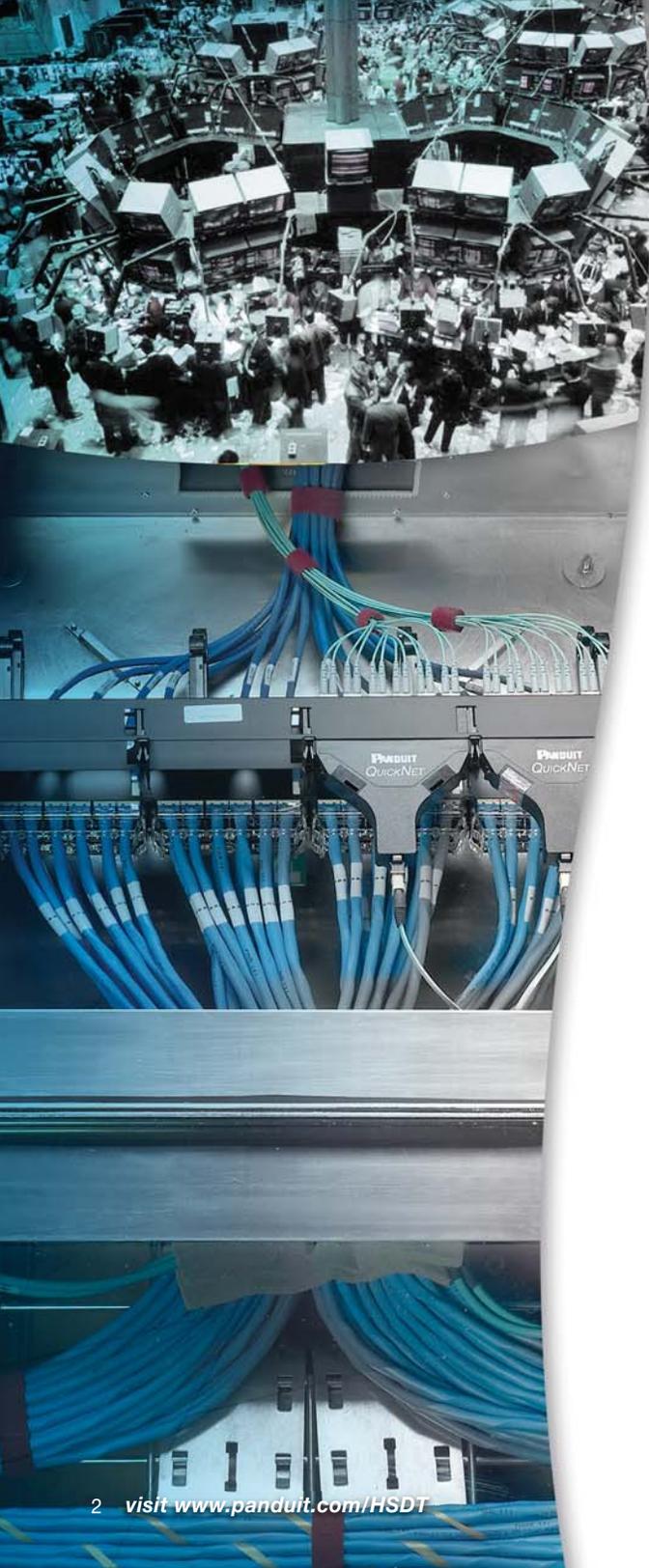
Data Center Optimization

Enhance Performance. Overcome Challenges.

While High Speed Data Transport Solutions benefit a range of applications, including building management and industrial manufacturing, the mission-critical data center represents significant opportunity for improved business operations. As more businesses are adopting consolidation, virtualization, and automation of their IT infrastructure assets to drive business results, a silo-based approach to designing, deploying, and managing the physical infrastructure is becoming increasingly inadequate.

A unified approach to physical and logical systems architecture is required for solutions to fully address the need for availability, agility, integration, and security. The introduction of innovative infrastructure solutions for data centers is necessary to enable converged data applications, greater bandwidth capacities, and realize greater energy and space efficiencies.

Based on the principles of the Unified Physical Infrastructure[SM] (UPI) vision, Panduit's High Speed Data Transport Solutions deliver maximum flexibility during planning, designing, commissioning, and operation of the data center that is both protocol and media agnostic. Interoperable and scalable, these solutions include copper and fiber cabling systems that address the needs for network throughput, latency, thermal management, power consumption, and operational efficiency. Through deep physical infrastructure expertise, Panduit delivers technology leadership with consultative guidance to maximize the impact of the infrastructure throughout the data center lifecycle.

Due to the complexities associated with storage, network, and server technology, and the subsequent demands they place on the physical infrastructure, next-generation systems must address both the physical and logical layers to maximize business benefits and provide a seamless migration path for tomorrow's high speed data transport needs.

Leverage Your Data Center

To Maximize Business Results While Reducing Risk

Today's data centers have become far more than information processing sites. Evolving network requirements to process, manage and store ever-increasing volumes of data heighten the need for integrated, high-speed media. Data centers must be equipped to accommodate a broad array of rapidly changing demands:

- Higher bandwidth requirements
- Advanced applications and related architectures
- Availability of real-time data and services delivery
- Optimized energy and space consumption
- Effective thermal management
- Compliance with industry standards

When managing a data center, it is easy to overlook interdependencies across systems that can create risk – the potential for risk increases with consolidation of multiple systems and convergence of new technologies. For example, virtualization of multiple applications lowers the overall operating cost, but increases the risk to network availability by consolidating over fewer units. Network risk management can be achieved by specifying a cabling system with verified bandwidth to ensure the physical infrastructure does not become the bottleneck for high-speed data transmission.

Panduit solutions allow deployment of complex architectures with maximum throughput performance for improved management and low operating costs. As part of the Unified Physical Infrastructure℠ approach, Panduit leverages High Speed Data Transport Solutions to deliver:

- Maximum infrastructure design flexibility that is both protocol and media agnostic to support a wide array of data center architectures with unmatched network performance
- Flexible, scalable, modular systems with the capability to expand quickly as business needs evolve while providing a migration path to next generation application demands
- Secure and reliable data transmission to enable diverse, mission critical applications
- Maximized real estate utilization and thermal management through high density physical infrastructure solutions combined with leading data center reference architectures that also contribute to green initiatives and energy efficiencies

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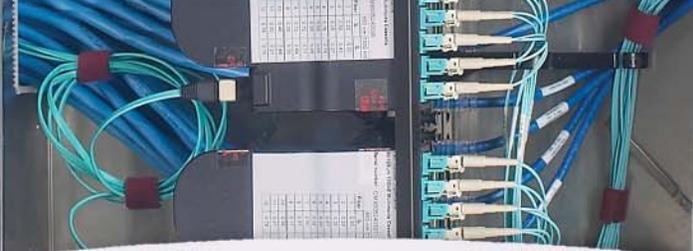
Key Benefits

- Leverage real-time information to enhance visibility, security, safety and compliance across the enterprise
- Reduce infrastructure and systems complexities while increasing functionality and manageability of mission-critical capabilities
- Achieve flexibility through deployment of a platform-agnostic, open standards-based architecture
- Improve productivity and customer satisfaction by delivering higher levels of availability and reliability
- Converge and optimize critical systems, leveraging and reusing existing assets/investments for maximum ROI
- Drive tangible infrastructure and business process improvements while reducing operational costs and mitigating risk
- Create a sustainable infrastructure for securing energy efficiencies and establishing global best practices

Unified Physical Infrastructure

communication   computing   control   power   security

Panduit's Unified Physical Infrastructure: A Guiding Vision

For a Smarter, Unified Business Foundation

The growing interdependence of systems and applications, and the increased demands that they place on physical infrastructures, requires the integration of traditionally disparate and proprietary systems. This trend is dramatically changing infrastructure design, management strategies and effective synchronization of critical systems, opening the door for seamless convergence and interoperability of all core business systems.

Panduit provides flexible, end-to-end solutions for the physical infrastructure that drive operational and financial advantages, allowing businesses to minimize risk and heighten agility. Tailored by industry and customized by application, Panduit solutions span the core systems necessary to transform a business, from data center to facility operations to next generation intelligent buildings.

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.

Panduit's High-Speed Data Transport Solutions

Industry Leading, Integrated Copper and Fiber Technologies

Panduit understands today's vital business and technology challenges and how they impact data centers. With best-in-class physical infrastructure solutions, Panduit provides the broadest offering of end-to-end High Speed Data Transport Solutions to enable InfiniBand, FCoE, and 40/100 Gig. Designed for data center and high-density/high speed applications, Panduit solutions are backed by comprehensive research and development programs to ensure high network performance, systems reliability, energy efficiencies and seamless integration.

Panduit employs a consultative approach with our customers that is aligned with our partner ecosystem and technology alliances to determine current and future requirements for the best media selection. Most networks require a mixed physical infrastructure with the optimal cabling media striking a balance between bandwidth, flexibility and scalability. An integrated solution includes long-reach fiber moving data at 10 Gb/s across the backbone and between campuses, copper/fiber connecting core and distribution switching and copper connecting 10 Gb/s between servers and switches.

Panduit Laboratories' extensive research in high speed data transmission results in complementary copper and fiber technologies that deliver maximum bandwidth, unmatched reliability, and design flexibility. Depending on the application, Panduit's Copper and Fiber Cabling Systems are deployed independently or in combination to deliver operational and financial advantages while mitigating risk. These systems are available in many form factors, for example, pre-terminated cabling systems are ideal for quick network deployment, eliminating the time and cost associated with field testing. Keyed cabling systems provide an additional level of physical security for improved risk management. These robust, scalable solutions offer quick deployment for building new or updating existing data centers and offer a migration path for future applications.

Unified Physical Infrastructure

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# Next Generation 40/100 Gig Performance

Expertise to a Seamless Migration Path

Bandwidth requirements for computing and core networking applications are continuing to grow at exponential rates, which necessitate the need for next-generation technology to support both 40 and 100 Gig applications. Virtualization, high performance computing clusters, storage area networks and I/O consolidation all currently show significant growth of 10 Gig deployment projected over the next five years. Future bandwidth projections for server and computing applications indicate that there will be a significant market demand for a 40 Gb/s Ethernet interface. Likewise, core networking applications have demonstrated the need for 100 Gig Ethernet cabling systems.

To support the changing and fast-growing bandwidth demands of business critical data centers and service providers, the IEEE 802.3ba task force is actively developing a standard to support 40 Gig and 100 Gig Ethernet data rates. For short in rack links less than 10m, copper QSFP twin axial cabling is expected to be a cost-effective media choice. For short reach channel links less than 100m, laser optimized OM3 multimode fiber is expected to be the fiber media choice. Through extensive Panduit research it was determined and verified that a 125m link distance could be achieved with next generation OM4 fiber, providing increased design flexibility. Panduit is confident that the development of these new copper and fiber cabling systems will lead to faster market acceptance of 40/100 Gig Ethernet.

With application expertise, extensive research and development, and active participation in the IEEE task force and other standards bodies, Panduit has become the trusted category leader in high speed data transport enabling optimized physical infrastructure. Through this comprehensive, holistic approach to High Speed Data Transport Solutions, Panduit helps take the guesswork out of data center planning and deployment to deliver confidence and proven results.

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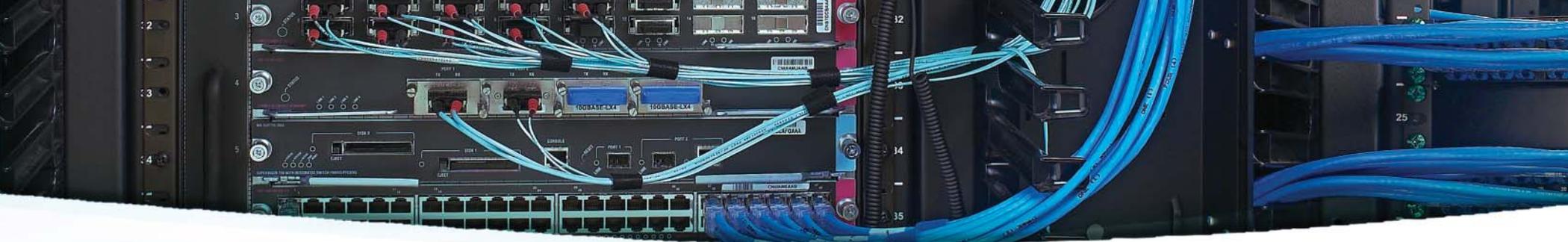
Panduit's High-Speed Copper Cabling Systems

The deployment of high speed cabling systems has been increasing rapidly as data centers enable their physical infrastructure with 10 Gb/s capacity to support server virtualization, I/O consolidation, switch-up links for parallel processing, and convergence of back-bone links applications. However, customers still have concerns regarding the robustness and overall reliability of these cabling systems.

By fully understanding data center architecture and protocols, Panduit Laboratories have addressed innovative copper cabling systems for high bandwidth applications. These highly reliable and scalable infrastructure solutions increase network availability, mitigate risk, and minimize power consumption.

Category 6A Transport System – This system utilizes patent pending matrix technology in the cable and patch cords and advanced connector compensation techniques to achieve channel bandwidth performance above industry standard requirements. The cabling system significantly reduces cost of ownership by eliminating the need for field testing, improving energy efficiencies with better airflow management and allowing for the implementation of advanced PoE applications. The complete system offers both reliable 10GbE performance and the highest density infrastructure solution in the market.

SFP+ Transport System – This system is used to connect servers to top of rack access switches. The switches are then uplinked to the aggregation and core switches with Panduit OM3 fiber. This high speed data transport capability is ideal as server virtualization becomes more prevalent in data center environments. With multiple virtual machines, server I/O consolidation topology requires 10 Gb/s interconnects between servers. By incorporating 10 Gig™ SFP+ direct attach passive copper cable assemblies into the physical infrastructure, this allows businesses to achieve 10 Gigabit performance port to port without additional signal processing or conversion providing a low power, low latency 10 Gb/s server interconnect option for top of rack switching applications.

InfiniBand Transport System – This system is ideal for High Performance Computing (HPC) applications. Constructed with high performance 5 GHz twin axial cable, each assembly is 100% performance tested and complies with the InfiniBand Trade Organization (IBTA) specification ensuring reliable deployment. Panduit InfiniBand cable assemblies facilitate improved cable management and proper airflow for high speed data cluster applications. Furthermore, the low insertion loss allows longer reaches, enabling cost-effective design and deployment of an efficient server cluster.

Panduit's High Speed Fiber Optic Cabling Systems

Panduit's comprehensive fiber optic system includes a full line of innovative, high performance products designed to meet the demands of today's requirements, and provide the capacity to accommodate tomorrow's applications. These systems offer the industry's highest patch-field density and superior cable management to deliver unmatched network design and layout flexibility. Beyond the Glass™ Design Excellence enables cost-effective fiber solutions that deliver reliable channel performance with data integrity and security for optimum network performance.

Panduit fiber optic cabling is manufactured utilizing the highest tolerance ceramic ferrules, under strict machine polishing processing control. Panduit fiber optic connectors offer a longer life cycle with improved network reliability and low mated pair loss. Fundamental to attaining both mechanical and optical performance is Panduit's best-in-class engineering and fiber termination processes that deliver repeatable end face geometry to assure optical performance.

OM3 Fiber Optic Transport System – This system features the highest quality laser optimized OM3 fiber to support network transmission speeds up to 10 Gb/s, for link lengths up to 300m with an 850nm source per the IEEE 802.3ae 10 GbE standard. With industry-leading optical performance and signal integrity, this system delivers network reliability to enable enterprise application availability.

OM4 Fiber Optic Transport System – This system integrates multi-fiber low loss MTP and single fiber connectivity solutions with premium grade high performance laser optimized multimode fiber (with a minimum EMB of 5000 MHz·km) to deliver consistent performance and reliability of critical systems at an extended reach of 550m. This system delivers unmatched reliability and scalability to enable enterprise application availability and agility. Integrated cutting edge fiber technology and comprehensive pre-testing ensures ultra high performance and seamless integration of 10 Gb/s Ethernet and 8 Gb/s Fiber Channel network capabilities and beyond, to minimize physical infrastructure risk.

The Panduit Difference

Realize Benefits Across the Enterprise.

Panduit provides the ability to align the physical infrastructure to the logical systems infrastructure by creating reference architectures that are mapped to industry-wide best practices.

All of Panduit's solutions meet or surpass rigorous quality management standards to assure compliance with industry requirements. Our unique, robust partner eco-system, combined with our lifecycle services, offer innovative modeling, predictable execution, and operational excellence.

As thought leaders in both fiber and copper cabling systems, Panduit provides a consultative approach to determine the best media selection for current and future applications in mission critical enterprise applications. Panduit's technology leadership provides customers with a seamless migration to tomorrow's high speed data transport needs. Panduit's High Speed Data Transport Systems are integrated with our Cabinet Systems, Thermal Management Systems, and Infrastructure Management Software as part of our comprehensive Data Center Solutions.

As the only vendor in the industry with a fully integrated physical infrastructure solution portfolio, Panduit enables enterprises to Connect, Manage, and Automate all communication, computing, control, power, and security systems. This comprehensive approach to infrastructure design, deployment, and management allows benefits to be realized across the entire enterprise.

PANDUIT®

Real-World Solutions to Ensure the Success of Our Customers

With a proven reputation for excellence and technology innovation, a robust ecosystem of global partners, and long-term alliances with top industry leaders, Panduit is a valuable, trusted partner offering strategic vision and real-world solutions to ensure the success of our customers.

Innovative Technology Leadership

Panduit is an industry leader in developing innovative technology solutions that meet the rapidly evolving needs of our customers around the world. Our commitment to continued leadership is supported by significant ongoing investment, dedicated manufacturing facilities, strategic technology alliances, and collaborative R&D with other industry leaders.

Global Business & Commitment

Panduit's on-going commitment to excellence and our technology alliances with key industry leaders such as Cisco Systems, EMC, Emerson, IBM, etc., enables our highly skilled and knowledgeable global sales, systems engineering, and technical support teams to engage with critical customer challenges that range from initial problem determination all the way to resolution. Local specialists, trained to global standards and competencies, provide consistent regional support that brings value to local business. Our global value chain, which combines manufacturing, distribution, and service, provides prompt responses to customer-related issues, and streamlines procurement and delivery to any global destination.

Best-in-Class Partner Ecosystem

Panduit employs a consultative approach to identify customer needs and engage appropriate partners in a collaborative fashion to serve our customers. Panduit's robust ecosystem of architects, consultants, engineers, designers, systems integrators, contractors, and distributors offer a full portfolio of lifecycle services. Our partners are trained on relevant services to Plan & Design, Build & Deploy, and Maintain & Operate to deliver predictable and measurable results.

Worldwide Alliances

Panduit has established long-term strategic alliances with top global industry leaders such as Cisco Systems, EMC, HP, IBM, Liebert, and Rockwell Automation to develop and integrate innovative, holistic solutions for our customers. We continually invest in relationships and resources for solving customers' greatest business challenges.

Eco-Sustainability & Global Citizenship

With a long-standing commitment to environmental excellence, Panduit continually develops and implements solutions designed to protect, replenish and restore the world in which we live and operate. This commitment is demonstrated by Panduit's LEED-certified new world headquarters and future green building plans using it's own revolutionary Unified Physical Infrastructure^{SM} vision to enable convergence of critical systems for driving sustainability.

*Optimize Your
Data Center Performance.
Call or visit us online,
and we can show you how:*

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