Future Proof
Enhanced performance Signature Core™ Fiber Optic Cabling System provides even greater assurance that links initially installed to carry 10 Gb Ethernet and 8 Gb Fibre Channel will not fail when they are re-deployed and used to transport 40/100 Gb Ethernet and 16/32 Gb Fibre Channel in the future. In fact, these links will surpass the standards due to the modal and chromatic dispersion compensation that has been engineered into the fiber.

Panduit Laboratories
Panduit Laboratories bring together a cross-functional team of Panduit research engineers, scientists, and application experts, who work with strategic global alliance partners and leading research and development organizations. Together, we analyze and resolve complex industry challenges and associated customer needs with test-in-class testing, analysis, and prototyping equipment, using the most advanced technologies available. These methods give customers assurance that our solutions are innovative, leading edge, and designed to exceed performance expectations and value.

With regards to our fiber optics, Panduit Labs focuses on delivering leading-edge optical fiber solutions that meet the bandwidth and reliability demands of today’s deployments and provide a migration path to the applications of tomorrow. In addition to fundamental research, Panduit Labs participates in various standards setting bodies, such as, the Institute of Electrical and Electronics Engineers (IEEE), Telecommunications Industry Association (TIA), Fibre Channel Industry Association (FCIA), and the Ethernet Alliance (EA). Panduit Labs continues to contribute many new developments and enhancements to standards setting bodies, such as the Institute of Electrical and Electronics Engineers (IEEE), Telecommunications Industry Association (TIA), Fibre Channel Industry Association (FCIA), and the Ethernet Alliance (EA). Panduit Labs contributes to the development of standards that meet the bandwidth and reliability demands of today’s deployments and provide a migration path to the applications of tomorrow. In addition to fundamental research, Panduit Labs participates in various standards setting bodies, such as, the Institute of Electrical and Electronics Engineers (IEEE), Telecommunications Industry Association (TIA), Fibre Channel Industry Association (FCIA), and the Ethernet Alliance (EA). Panduit Labs continues to contribute many new developments and enhancements to standards setting bodies, such as the Institute of Electrical and Electronics Engineers (IEEE), Telecommunications Industry Association (TIA), Fibre Channel Industry Association (FCIA), and the Ethernet Alliance (EA).

Panduit’s High Speed Data Transport Solutions (HSDT)
Panduit’s High Speed Data Transport solutions allow deployment of complex architectures with maximum throughput performance for improved managed and low operating costs. Panduit leverages High Speed Data Transport solutions to deliver:

• Secure and reliable data transmission to enable diverse, mission critical applications
• Flexible, scalable, modular systems with the capability to expand quickly as next generation applications evolve
• Investigated and published leading research into the hazards of mixing bend-insensitive multimode fiber and standard single-mode fiber

Panduit Laboratories has emerged as a leader in fiber optic cable and connectivity research, design, and development. Within the Panduit ® Signature Core™ Fiber Optic Cabling System is the latest innovation to emerge, research at Panduit Laboratories continues to expand the horizon of end-to-end fiber optic innovations.

Panduit’s High-Speed Data Transport solutions allow deployment of complex architectures with maximum throughput performance for improved managed and low operating costs. Panduit leverages High-Speed Data Transport solutions to deliver:

• Maximum infrastructure design flexibility for data center architectures
• Flexible, scalable, modular systems with the capability to expand quickly as next generation applications evolve
• Secure and reliable data transmission to enable diverse, mission critical applications

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 widest range of solutions, from data centers and intelligent buildings to manufacturing operations, to help you build a smarter, unified business ecosystem.

Technology Leadership
Panduit develops innovative physical infrastructure solutions that meet the rapidly changing needs of our clients, from technologies and software to advisory services. This commitment is supported by investment in advanced research, solution-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 partners – distributors, and certified architects, consultants, engineers, designers, systems 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, DMS, 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 world-wide. 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, provide prompt responses to your inquiries and immediate delivery to any worldwide destination.

Sustainability
With a commitment to environmental sustainability, Panduit develops and implements solutions that protect, explain, 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™ approach to enable creation of critical building systems to drive energy efficiency and improving operational performance.
Extend Your Reach with Signature Core™ Fiber Optic Cabling System

Taking advantage of Signature Core Fiber's Extra Reach

What Signature Core™ System Can Do For You

• Saves capital expenditures - Allows using multimode fiber in some applications that may have required singlemode fiber in the past.
• Flexibility - Increases design options and reduces cost over the life of the network by allowing for a more efficient implementation of data center architectures that you need to support your business.
• Scalability - Allows migration to 40Gb, 100Gb Ethernet and 16/32 Gb Fibre Channel, ensuring consistent performance and reliability of critical systems.

As virtualization, consolidation, and innovation initiatives continue to be adopted, so do the demands placed on the physical infrastructure. Next-generation networking architectures deliver enhanced performance characteristics and capabilities to help reduce the risks associated with availability, reliability, and agility. Panduit's Signature Core Fiber Optic Cabling System and connectivity solutions deliver unrivaled performance and reliability through a revolutionary advancement in multimode fiber and connectivity technology.

Signature Core™

Signature Core™ is an innovative technology utilizing 50 micron Multimode Fiber, represents the culmination of six years of diligent work by Panduit Laboratories’ research team into the characteristics and behavior of multimode fiber, continuing Panduit’s leadership by providing industry-leading research. Seeking to understand the poor correlation between fiber bandwidth and system performance in much of today's low-cost multimode fiber, Panduit Laboratories discovered the impact of chromatic dispersion on system performance. This is a type of signal distortion that occurs because of the characteristics of the light source, specifically, the Vertical Cavity Surface Emitting Laser (VCSEL) used within optical modules and how the light is coupled into the fiber. Multimode fiber may be designed to minimize the total signal distortion of the fiber and light source combination. By comparing high performance and cost-sensitive for the chromatic dispersion effect, the Signature Core Fiber Optic Cabling System achieves higher system performance, extended reach, and additional bandwidth.

This ultra high performance laser-optimized modal and chromatic dispersion compensated multimode fiber with low loss 10G and single fiber connectivity solutions. This delivers the ability to design in flexibility, verified optical performance and signal integrity far beyond the requirements for 10G/40Gb Ethernet, and 16 and 10 Gb Fibre Channel, ensuring consistent performance and reliability of critical systems.

Panduit's Unified Physical Infrastructure (UPI)

Panduit provides flexible and focused solutions for the physical infrastructure that allow operational and financial advantages, enabling businesses to effectively deploy and maintain a physical infrastructure that matches the demands of the mission-critical applications and industry standards.

Panduit has developed the industry's most comprehensive and flexible approach to unified Physical Infrastructure and can help enterprises to build a smarter, unified business foundation.

Visit www.panduit.com/datacenter

Saving Data Center Capital Expense

The Panduit® Signature Core™ Fiber Optic Cabling System can save data center owners significant capital expenditures. Signature Core Fiber's extended reach means that multimode fiber can now be used in applications where singlemode fiber must be used today. For example, several rows of servers may be located very far from the Main Distribution Area (MDA), beyond the fiber reach of conventional multimode fiber. In one application over 400 fiber optic ports were implemented using the Signature Core™ Fiber Optic Cabling System rather than with single mode fiber, resulting in a savings of more than $280,000.

New Data Center Architectures

Fabric-based two-tiered networks represent the next technological advancement in network architecture. They offer a number of benefits to an organization over that of a traditional three-tiered architecture. These architectural benefits include; a single management view for the data center, a network that allows for higher density, consistent low latency, linear scale-out property, and reduced power/floor footprint.

A characteristic of a two-tiered network is the physical area that the switch fabric can cover is limited to the length of the links that connect the leaf switches to the spine switches. For 40 Gb-Ethernet, that is a radius of 180m when using OM4 multimode fiber. For some data centers, this reach is too short. By using the Panduit® Signature Core™ Fiber Optic Cabling System the span of a two-tiered architecture can be increased by a minimum of 25%.

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For example, if the data center is large enough, one may have to use singlemode fiber links to connect servers to the Local Area Network (LAN) or the Storage Area Network (SAN). To avoid that expense, one could architect the data center so that those servers that need SAN connectivity are located closer to the MDA, however identifying those servers is complicated. Another choice would be to use SAN switches in those locations that are beyond the reach of typical multimode fiber to avoid the expense of installing singlemode fiber, however that destroys the concept of standardized ports.

With Signature Core Fiber’s extra reach, the enterprise architecture teams can implement the architecture that meets their business needs at the lowest cost.

Flexibility

The reach of various types of media is one factor in the decision process of which architecture to implement. For example, if the data center is large enough, one may have to use singlemode fiber links to connect servers to the Local Area Network (LAN) or the Storage Area Network (SAN). To avoid that expense, one could architect the data center so that those servers that need SAN connectivity are located closer to the MDA, however identifying those servers is complicated. Another choice would be to use SAN switches in those locations that are beyond the reach of typical multimode fiber to avoid the expense of installing singlemode fiber; however that destroys the concept of standardized ports.

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Fabric Based Data Center Network Architecture

Taking advantage of Signature Core Fiber's Extra Reach

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Enhanced performance Signature Core® Fiber Optic Cabling System provides even greater assurance that links initially installed to carry 10 Gb Ethernet and 8 Gb Fibre Channel will not fail when they are re-deployed and used to transport 40/100 Gb Ethernet and 16/32 Gb Fibre Channel in the future. In fact, these links will surpass the standards due to the modal and chromatic dispersion compensation that has been engineered into the fiber.

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With regards to our fiber optics, Panduit Labs focuses on delivering leading-edge fiber optic solutions that meet the bandwidth and reliability demands of today’s deployments and provide a migration path to the applications of tomorrow. In addition to fundamental research, Panduit Labs participates in various standards setting bodies, such as, the Institute of Electrical and Electronics Engineers (IEEE), Telecommunications Industry Association (TIA), Fibre Channel Industry Association (FCIA), and the Ethernet Alliance (EA). Panduit Labs continues to contribute many new developments and improvements to the standards that our solutions are designed to exceed.

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Build a smarter, unified business foundation. Physical Infrastructure and can help enterprises to comprehensive and holistic approach to a Unified operations to next generation intelligent buildings.

Panduit provides flexible, end-to-end solutions for the physical infrastructure that store, transport, and transmit data and support the digital transformation. Panduit solutions span the core systems necessary to industry and customized by application, Panduit provides flexible, end-to-end solutions for the physical infrastructure that you need to support your business.

Tailored by Panduit provides flexible, end-to-end solutions for the physical infrastructure that you need to support your business.

As virtualization, consolidation, and renegotiation initiatives continue to be adopted, so do the demands placed on the physical infrastructure. Next-generation networking architectures deliver enhanced performance characteristics and capabilities to help reduce the risks associated with availability, reliability, and agility. Panduit’s Signature Core® Fiber Optic Cabling System and connectivity solutions deliver unmatched performance and reliability through a revolutionary advancement in multimode fiber and connectivity technology.

Signature Core™ Signature Core®’s Laser-Optimized 50 Micron Multimode Fiber, represents the culmination of six years of diligent work by Panduit Laboratories’ research team into the characteristics and behavior of multimode fiber, continuing Panduit’s leadership by providing industry-leading research. Seeking to understand the poor correlation between fiber bandwidth and system performance in much of today’s laser-optimized multimode fiber, Panduit Laboratories discovered the impact of chromatic dispersion on system performance. This is a type of signal distortion that occurs because of the characteristics of the light source, specifically, the Vertical Cavity Surface Emitting Laser (VCSEL) used within optical modules and Vertical Cavity Surface Emitting Laser (VCSEL) used within optical modules. By compensating for the chromatic dispersion effect, the Signature Core™ Fiber Optic Cabling System achieves higher system performance, extended reach, and additional headroom.

Taking advantage of Signature Core Fiber’s Extra Reach

Saving Data Center Capital Expense

The Panduit® Signature Core® Fiber Optic Cabling System can save data center owners significant capital expenditures. Signature Core® Fiber’s extended reach means that multimode fiber can now be used in applications where singlemode fiber must be used today. For example, several cases of servers may be located very far from the Main Distribution Area (MDA), beyond the reach of conventional multimode fiber. In one application over 400 fiber optic ports were implemented using the Signature Core® Fiber Optic Cabling System rather than with single mode fiber, resulting in a savings of more than $3,000,000.

New Data Center Architectures

Fabric-based two-tiered networks represent the next technological advancement in network architecture. These offer a number of benefits to an organization over that of a traditional three-tiered architecture. These architectural benefits include; a single management view for the data center, a network that allows for higher bandwidth, consistent low latency, linear scale-out property, and reduced power/floor footprint.

A characteristic of a two-tiered network is the physical area that the switch fabric can cover is limited by the length of the links that connect the leaf switches to the spine switches. For 40 Gb-Ethernet, that is a radius of 180m 150m when using OM4 multimode fiber. For some data centers, this reach is too short. By using the Panduit® Signature Core™ Fiber Optic Cabling System the span of a two-tiered architecture can be increased by a minimum of 20%.

Fabric Based Data Center Network Architecture

Taking advantage of Signature Core Fiber’s Extra Reach

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Extend Your Reach with Signature Core™ Fiber Optic Cabling System

The Panduit® Signature Core™ Fiber Optic Cabling System integrates ultra high performance laser-optimized, modal and dispersion compensated multimode fiber with low loss MTP® and single fiber connectivity solutions. This delivers the enhancements in design flexibility, verified optical performance and signal integrity far beyond the requirements for 10G/40G/100-Gb Ethernet, and 16 and 10-Ge Fibre Channel, ensuring consistent performance and reliability of critical systems.

As virtualization, consolidation, and convergence initiatives continue to develop, so does the demand placed on the physical infrastructure. Next-generation networking architectures deliver enhanced performance characteristics and capabilities to help the risks associated with availability, reliability, and agility. Panduit’s Signature Core™ Fiber Optic Cabling System and connectivity solutions deliver unmatched performance and reliability through a revolutionary advancement in multimode fiber and connectivity technology.

Signature Core™

Signature Core™ Signature Core® Laser-Optimized 50 Micron Multimode Fiber, represents the culmination of over six years of diligent work by Panduit Laboratories’ research team into the characteristics and behavior of multimode fiber, confirming Panduit’s thought leadership by providing industry-leading research. Seeking to understand the poor correlation between fiber bandwidth and system performance in much of today’s laser-optimized multimode fiber, Panduit Laboratories discovered the impact of chromatic dispersion on system performance. This is a type of signal distortion that occurs because of the characteristics of the light source, specifically, the Vertical-Cavity Surface Emitting Laser (VCSL), used within optical modules and how light is coupled into the fiber. Multimode fiber may be designed to minimize the total signal distortion of the fiber and light source combination. By comparison, for the chromatic dispersion effect, the Signature Core™ Fiber Optic Cabling System achieves higher system performance, extended reach, and additional bandwidths.

Taking advantage of Signature Core Fiber’s Extra Reach

Saving Data Center Capital Expense

The Panduit® Signature Core™ Fiber Optic Cabling System can save data center owners significant capital expenditures. Signature Core Fiber’s extended reach means that multimode fiber can now be used in applications where singlemode fiber must be used today. For example, several rows of servers may be located very far from the Main Distribution Area (MDA), beyond the 150m reach of conventional multimode fiber. In one application over 400 fiber optic ports were implemented using the Signature Core™ Fiber Optic Cabling System rather than with single mode fiber, resulting in a savings of more than $280,000.

New Data Center Architectures

Fabric-based two-tiered networks represent the next technological advancement in network architecture. This offers many benefits to an organization over that of a traditional three-tiered architecture. These architectural benefits include; a single management view for the data center, a network that allows for higher bandwidth, consistent low latency, linear scale-out property, and reduced power consumption.

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Fabric Based Data Center Network Architecture

Flexible

The reach of various types of media is one factor in the decision process of which architecture to implement. For example, if the data center is large enough, one may have to use singlemode fiber links to connect servers to the Local Area Network (LAN) or the Storage Area Network (SAN). To avoid that expense, one could anchor the data center so that those servers that need SAN connectivity are located closest to the MDA, however identifying those servers is complicated. Another choice would be to use SAN switches in those locations that are beyond the reach of typical multimode fiber to avoid the expense of installing singlemode fiber; however that defeats the concept of standardized ports.

With Signature Core™ Fiber’s extra reach, the enterprise architecture teams can implement the architecture that meets their business needs at the lowest cost.
Future Proof
Enhanced performance Signature Core™ Fiber Optic Cabling System provides even greater assurance that links initially installed to carry 10 Gb Ethernet and 8 Gb Fibre Channel will not fail when they are re-deployed and used to transport 40/100 Gb Ethernet and 16/32 Gb Fibre Channel in the future. It is clear that Panduit will support the standards due to the modest and administratively dispersion compensation that has been engineered into the fiber.

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• Correlated the relationship between Differential Mode Delay (DMD) and Equal Error Rate (EER)
• Key contributor to include OM4 multimode optical fiber in the IEEE’s 802.3ba 40/100 Gb Ethernet standard
• Investigated and published leading research into the hazards of mixing bend-insensitive multimode fiber with standard multimode fiber
• The Extended performance Signature Core™ Fiber Optic Cabling System is the latest innovation to emerge, researchers at Panduit Laboratories has emerged as a leader in fiber optic cable and connectivity research, design, and development.

Panduit’s High Speed Data Transport Solutions (HSDT) Panduit solutions allow deployment of complex architectures with maximum throughput performance for improved management and low operating costs. Panduit leverages High Speed Data Transport solutions to deliver:

• Maximum infrastructure design flexibility for data center architectures
• Flexible, scalable, modular systems with the capability to expand quickly as next generation applications evolve
• Secure and reliable data transmission to enable diverse, mission critical applications

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

Partner Ecosystem
Panduit’s world class team of partners offers a comprehensive portfolio of services that span the lifecycle of your business. From planning and design to delivery, maintenance, and operation. Panduit partners – distributors, and certified engineers, design, and consulting services deliver the combination of technology with strategic expertise to solve your toughest challenges.

Strategic Alliances
Panduit cultivates long-term strategic alliances with industry leaders, including Cisco Systems, 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 services worldwide. 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 responses to your inquiries and streamlined delivery to any worldwide destination.

Sustainability
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