

# Physical Infrastructure Management Solutions

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



## Physical Infrastructure Challenges Require Innovative Solutions

### The Need for In-Depth Physical Infrastructure Visibility.

With increased scrutiny on an organization's ability to be agile and responsive while at the same time reducing CAPEX and OPEX related expenses, data center infrastructure management is becoming progressively more important. As technologies continue to advance, system-wide consolidation and convergence of underutilized assets helps to improve efficiencies and conserve scarce resources in the data center and throughout the building. Additional factors that are driving the need for advanced physical to logical systems visibility include power, cooling, and space challenges which impact provisioning, uptime, and costs. Faster identification and resolution of network problems and security threats is then essential to achieving optimal availability and agility in the data center and managing business risk.

Maintaining network security has traditionally meant restricting points of network access (both wired and wireless) and protecting the network infrastructure from data corruption, viruses or physical damage. Additionally, new industry standards, Information Technology Infrastructure Library (ITIL) and Information Technology Service Management (ITSM) process requirements, and regulations are forcing organizations to improve strategies for safer and more secure data transmission. All while user access to mission critical applications must remain uninterrupted.

Organizations will continue to face these and other stringent demands. Due to the complexities of these demands on network infrastructures, a unified approach to physical and logical systems architecture is imperative to pave the way for innovative solutions that address requirements for reduced risk, lower costs, increased agility, and enhanced sustainability.

# Maximize Your Physical Infrastructure Resources

## Overcome Challenges. Optimize Resources.

Organizations have the opportunity to ensure their physical infrastructure is adequate to support mission-critical applications into more valuable assets by addressing a range of rapidly changing needs:

- Automated documentation of dynamic environments
- System agility/responsiveness
- Space limitations
- Greater performance requirements
- Enhanced systems security
- Sustainability
- Reclamation of underutilized resources
- Real-time data and service delivery

As consolidation and convergence continue at rapid rates, the potential for business risk increases proportionately. For example, environments with frequent moves, adds, and changes require accurate and timely documentation to support tracking the allocation and utilization of critical IT assets to mitigate costs associated with tracking down lost or misplaced assets.

This collection and consolidation of IT asset attributes, including location, connectivity, power and environmental information is critical in order to maximize utilization of IT resources and support accelerated root-cause diagnosis during downtime and maintain real-time views into current and future capacity allocation. Data center infrastructure management solutions provide your team with the visibility required to anticipate and prevent failure against service level agreements (SLAs) by providing you with accurate and timely physical infrastructure information to effectively manage your environment. It also provides visibility into historical trends and predictive analytics required to efficiently utilize scarce data center resources and optimize operations.

A unified approach to infrastructure architecture offers organizations distinct business advantages:

- Accurate and dynamic representation of your IT assets across the full lifecycle through automated documentation and processes in support of ITIL and ITSM initiatives
- Greater visibility, tracking, and control of critical systems that identify, monitor, and report on physical layer information
- A scalable, enterprise-class platform that enables flexibility of deployment with a modular-based approach to solving data center physical layer visibility challenges
- Process-driven integration with asset management, network management and service desk platforms providing single-pane-of-glass visibility and control
- Access to real-time information of connectivity, power usage, environmental conditions, and space utilization



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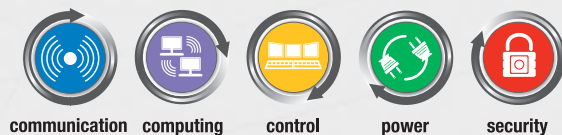
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## Key Benefits

- 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
- 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



## 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 a 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.

# Empower Your Enterprise with End-to-End Data Center Infrastructure Management and Visibility

## Panduit's Physical Infrastructure Management System

As converging data center and building systems technologies continue to evolve and become more complex, so too are the demands that they place on physical infrastructures. Today's networks are the backbone of organizations, automating business operations and processes to provide security and deliver greater service to customers.

In response, organizations are increasingly adopting a formal service management approach and mindset. A unified, intelligent, integrated software and hardware approach involves defining mission-critical business services, mapping the IT (e.g., servers, switches, software applications) and facilities (e.g., power, cooling, cabling) components that support them, and effectively monitoring and managing these components and systems. In this way SLAs can be assured, resource utilization can be optimized, compliance can be simplified, and operations can be made more cost-efficient and sustainable.

Panduit's unique and robust Physical Infrastructure Management System combines industry leading software and intelligent hardware to empower enterprises to meet current and future requirements for:

**Asset Tracking, Allocation, and Utilization:** Accurate documentation of IT asset location minimizes lost assets and accelerates the process of server provisioning and decommissioning with on- and off-network asset tracking, minimizing the expenses associated with frequent asset inventory audits and lost/misplaced equipment.

**Convergence:** With built-in resources that visually monitor, map, and automate network and data center infrastructure operations maintaining control of converging systems and applications has become much easier to manage.

**Security and Reliability:** Real-time monitoring of patch field connectivity, power utilization, and environmental conditions allows for administrators to be notified of unauthorized changes, operational disruptions, or security risks.

**Operational Efficiency:** Scalability and modularity of systems enable cost-effective growth as business and market needs continue to change. With access to real-time and historical data, you are able to more effectively make decisions to drive better resource utilization of IT assets, power and cooling resources, and data center space.

**Capacity Planning:** In order to effectively and efficiently manage your data center operations, your team needs access to aggregated data around available power, space, cooling, and IT asset information to predict limitations that will impact your business. Predictive tools that holistically provide visibility and analytics are rapidly becoming a must-have for data center managers.



Unified Physical Infrastructure



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## Panduit's Physical Infrastructure Management System

### Physical Infrastructure Manager™ (PIM™) Software Platform

Panduit's Physical Infrastructure Manager™ (PIM™) Software Platform is a data center infrastructure management tool for tracking the allocation and utilization of critical IT assets and their related attributes, including location, connectivity, power and environmental information, in order to maximize utilization of IT resources and support real-time views into current and future capacity allocation.

This software works seamlessly with Panduit's PanView iQ™ (PViQ™) System Hardware as well as select third-party hardware devices to support management of both existing and new data center and extended enterprise environments. This visibility enables organizations to monitor and catalog complete network performance for enhanced control. When you combine the capabilities of PIM™ Software Platform with network management systems software for bi-directional process integration, you have a complete end-to-end physical to logical view of your entire supported infrastructure that improves business service management. Additionally, the PIM™ Software Platform empowers your team with:

- Access to vital real-time physical layer information anytime, from anywhere in the world
- Documentation and event logs to support compliance with industry standards and audits
- A flexible and scalable solution to support existing and new data center/enterprise environments
- Reporting and analytics to help optimize your data center's performance and compliance with service level agreements

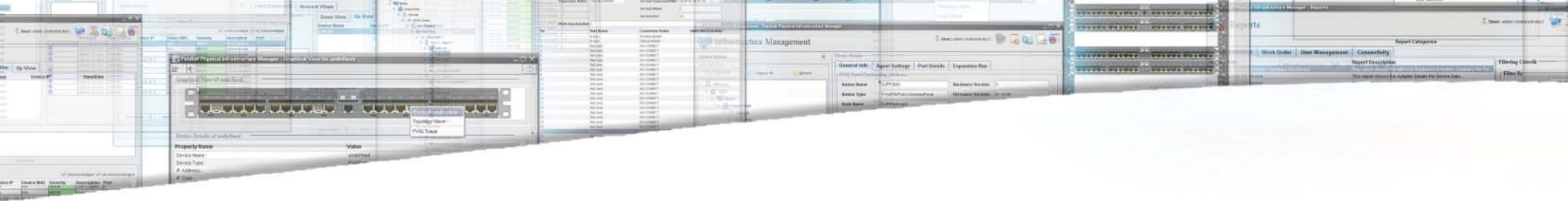


#### Increase Reliability

- Centralized monitoring of IT assets, management of their related attributes, and improved visibility and execution of moves, adds, and changes (MACs) in remote facilities
- Consolidated views of critical IT asset attributes to support real-time views into current and future capacity allocation
- Streamlined record retrieval of network configurations or infrastructure operations through automated documentation
- Improved troubleshooting and resolution of connectivity issues, power disruptions, and temperature concerns through real-time identification and alerts to IT administrators

#### Lower Costs

- Improved operational efficiencies through visualization of physical and logical infrastructure resources
- Reduced capital costs using asset tracking to find and reclaim available cabinet/rack space and underutilized network devices
- Improved access to centralized, accurate data and relevant analytics required to create predictive capacity planning scenarios to drive improved use of available resources
- Scalable, modular solution that offers cost-effective growth as business needs evolve
- Lowered cost of server provisioning through earlier tracking and planning for physical deployment of the assets utilizing a centralized repository and integration with work order management systems



# Physical Infrastructure Management System Components

## PanView iQ (PViQ™) System Hardware.

Panduit's PanView iQ (PViQ™) System Hardware combines industry-leading innovation of intelligent cabinet appliances with complete system management through the PIM™ Software Platform. This combination of active patch panels, cabling, power outlet units, and environmental sensors provides a complete data center solution, that enables a continuous, local, and remote visibility of connectivity, power usage asset tracking and utilization, and environment conditions within a data center...in real-time.

Leveraging the full breadth of Panduit's physical infrastructure expertise and unified approach, Panduit's PViQ™ System Hardware is designed to seamlessly interoperate to deliver real-time monitoring and management of relevant information.

**PViQ™ Patch Panels** – PViQ™ Patch Panels have been developed with functionality, scalability and consideration for rack space. The innovative patch panel design provides opportunities for phased installations that allow an organization to install passive connectivity now and upgrade to a fully managed system at a later time. Available in flat and angled solutions for UTP and STP copper connectivity, as well as tray-based configurations for fiber connectivity. This hardware works with the PIM™ Software Platform Connectivity Module.

**PViQ™ Intelligent Modules** – Two module types that can sense connections and/or disconnections from each port and relay status information back to the PIM™ Platform database. The PViQ™ Panel Manager consolidates patch field scanning and management functions into a single, removable module. It contains an embedded web interface for remote management and access to connectivity information. The PViQ™ Expansion Module cost-effectively expands the scanning and management capabilities of the panel manager to additional patch panels.

**PViQ™ Copper and Fiber Patch Cords (Interconnect and Cross-Connect)** – Interconnect patch cords support connectivity from non-PViQ™ enabled ports (switches, servers, etc.) to a PViQ™ Patch Panel and are offered in basic and enhanced versions. The enhanced version improves accuracy of patching and tracing through LEDs integrated directly into the patch cord plug. Cross-connect patch cords manage and map the patch field between two PViQ™ Patch Panels.



## 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.

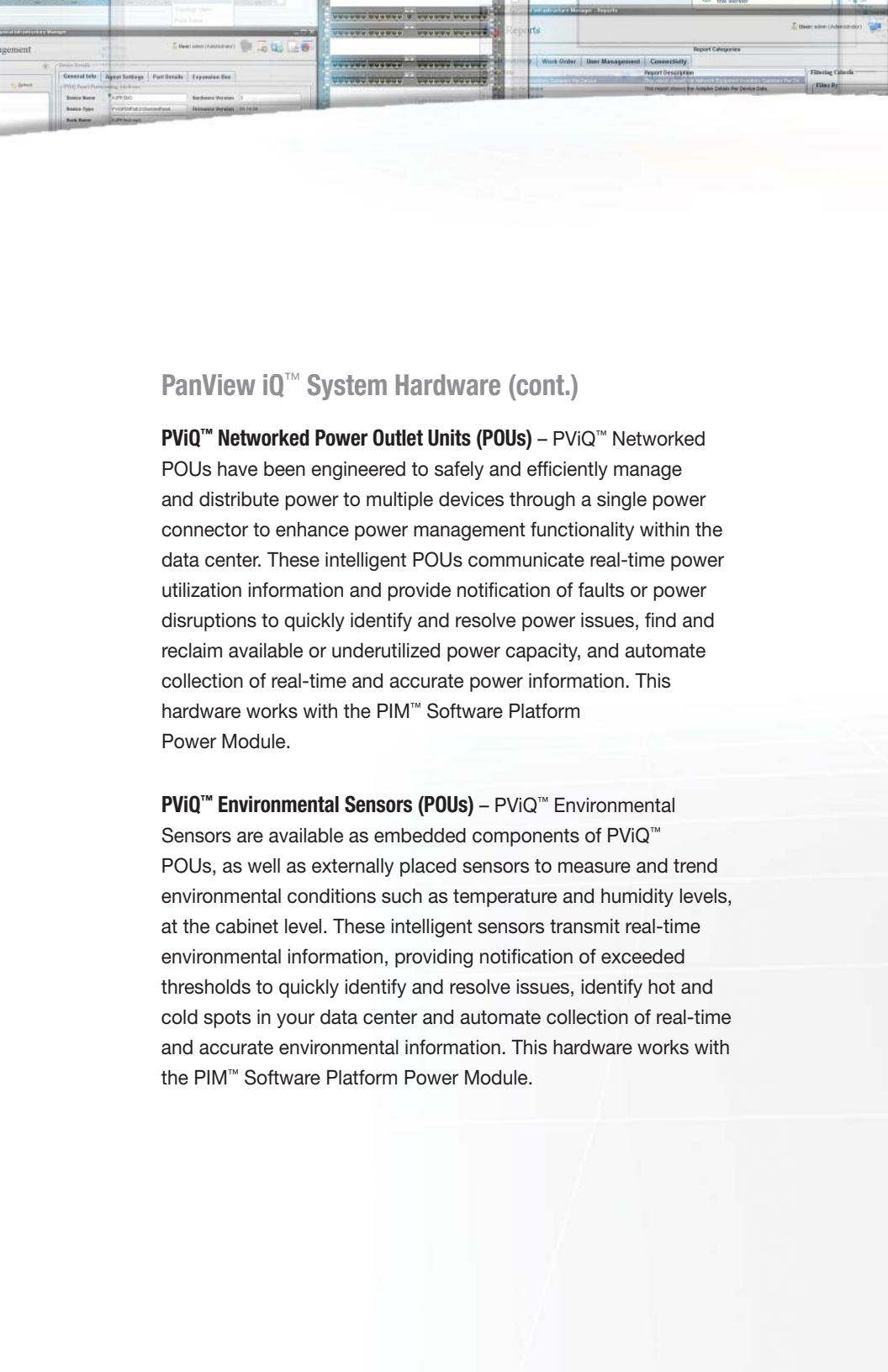
All of Panduit's solutions meet or surpass rigorous quality management standards to assure compliance with industry requirements. Our unique, robust partner ecosystem combined with our lifecycle services offers innovative modeling, predictable execution, and operational excellence.

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.



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## PanView iQ™ System Hardware (cont.)

**PViQ™ Networked Power Outlet Units (POUs)** – PViQ™ Networked POUs have been engineered to safely and efficiently manage and distribute power to multiple devices through a single power connector to enhance power management functionality within the data center. These intelligent POUs communicate real-time power utilization information and provide notification of faults or power disruptions to quickly identify and resolve power issues, find and reclaim available or underutilized power capacity, and automate collection of real-time and accurate power information. This hardware works with the PIM™ Software Platform Power Module.

**PViQ™ Environmental Sensors (POUs)** – PViQ™ Environmental Sensors are available as embedded components of PViQ™ POUs, as well as externally placed sensors to measure and trend environmental conditions such as temperature and humidity levels, at the cabinet level. These intelligent sensors transmit real-time environmental information, providing notification of exceeded thresholds to quickly identify and resolve issues, identify hot and cold spots in your data center and automate collection of real-time and accurate environmental information. This hardware works with the PIM™ Software Platform Power Module.

## 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 ongoing commitment to excellence and our technology alliances with key industry leaders such as Cisco Systems, EMC, Emerson, and IBM 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 our 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 sustainable building plans using its own revolutionary Unified Physical Infrastructure<sup>SM</sup> vision to enable convergence of critical systems for driving energy efficiency.



**Enhance Your  
Physical Infrastructure.  
Call or visit us online,  
and we can tell you how:**

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