



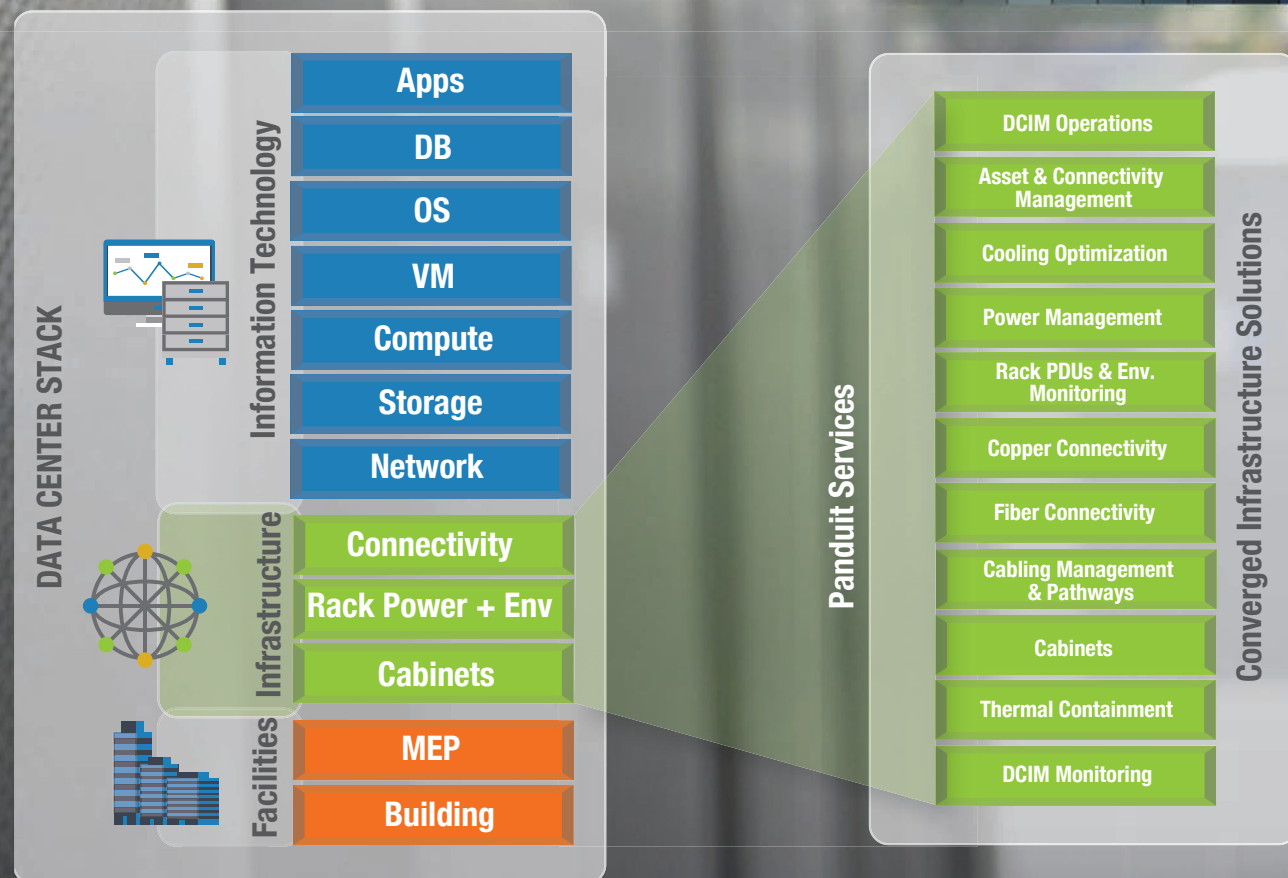
Converged Infrastructure Solutions

Building a Data Center for the Future

PANDUIT[®]

- ❑ Traffic in data centers is growing at an unprecedented rate, with network traffic growing at 25+% and enterprise storage at 50+% annually,¹ underscoring the need to design purpose-built and turnkey data centers that can respond to these challenges and business requirements quickly.

Introduction



Panduit offers unique value by delivering a comprehensive and reliable infrastructure that bridges the gap between the traditional Facility and IT stacks to ensure seamless physical to logical convergence.

Organizations face a variety of challenges around their data centers, from carefully and purposefully designing, procuring and implementing the right IT and facilities to controlling costs and conserving energy usage through control center operations. With the variety of responsibilities in play, many struggle to deploy a data center—whether on-site or in a hosted or co-located facility—that addresses every need.

Today this requires multiple vendors, forcing data center operators to take on the difficult task of overseeing often-costly integration to ensure interoperability. This piecemeal approach is further complicated by challenges related to data center support, management, operational inefficiencies and an increased potential for service-level agreement (SLA) failures.

What's more, the rate of changing business demands and the explosive growth of the amounts of data being transmitted today (see sidebar) require that data centers be "purpose-built," based on business direction and long-term growth projections. This calls for an architecture that enables fast and efficient scalability, whether to meet capacity needs or to migrate to higher data speeds. The pressure to sustain this pace is putting increasing strain on both IT and Facilities.

Panduit Converged Infrastructure Solutions deliver a complete family of data center hardware, software, and services that are modular, pre-tested and proven to work together, allowing IT and Facilities stakeholders to stay ahead of demands, minimize required resources and expenses and reduce total cost of ownership. This approach helps to:

- Build or refine data centers to address changing IT and business demands
- Simplify and accelerate data center design and deployment of physical to logical convergence
- Reduce total cost of ownership by increasing operational efficiencies
- Minimize integration issues
- Rely on a primary vendor backed by a large eco-system of world-class partners

“We have a customer-centered engineering approach that drives the design and implementation of our solutions. The Panduit Cooling Optimization solution is an excellent example of this approach and enables us to provide agile, transparent and customer-centered engineering with exceptional results.”

– Amaya Suarez, Vice President of Data Center Systems, CyrusOne

How Does It “Stack” Up?

Proven Design Benefits

- Simplified optimization
- Proven reference designs
- Migration paths for future architectures
- Expedited designs via in-house design tools and expertise

Trusted Source Benefits

- Single vendor and contract management
- Global logistics, manufacturing and pricing
- Environmentally sound and LEAN manufacturing, LEED HQs facility and Green Grid
- Increased vendor accountability for supply chain needs, pricing and quality

Designed and built as an interoperable end-to-end solution, Panduit Converged Infrastructure Solutions facilitate faster implementation by streamlining the process of designing, specifying, installing, and managing the increasingly complex physical infrastructure necessary to optimize your data center.

Proven Designs

Given the enormous expense of operating data centers, organizations must design and deploy an architecture that is built to meet future needs, which requires both the scalability to meet changing business demands and optimization of IT investments. Panduit Converged Infrastructure Solutions address both, delivering value throughout the data center lifecycle.

World-class quality testing by both Panduit and alliance partners such as CISCO, EMC² and VCE have proven to significantly reduce infrastructure risk.

Trusted Source

By eliminating or reducing the complexity of engaging multiple vendors, organizations can dramatically improve procurement speed and time-to-market.

- ❖ Organizations can lower operational expenses, including reduced cooling energy costs by up to 50 percent, via cooling optimization and power management.



Accelerated Deployment

By deploying a comprehensive, yet complementary, suite of hardware and software, supported by an expert services team who understands them intimately, installation can be executed quickly, efficiently and with quality assurance.

Optimized Operations

Panduit offers a suite of solutions that are purpose-built for interoperability, facilitating data centers that are optimized for capacity, efficiency, resilience and security. The Converged Infrastructure Solutions approach works equally well for existing data centers, by applying intelligence to the operations to identify opportunities for improvement. An example is in-line metering to monitor power consumption. This not only helps to create new operating efficiencies, it helps to measure—and verify—actual power consumption, a growing compliance demand for today’s high-performance data centers.

By simplifying each of these stages of data center management, organizations are able to address the entire lifecycle and identify opportunities for operational efficiencies that can then be incorporated into the design, which in turn influences procurement and deployment, on an ongoing basis. The result is a framework for continuous improvement throughout the data center lifecycle.

Accelerated Deployment Benefits

- Engineered to ensure component interoperability
- Improved efficiencies
- On-site project management services

Optimized Operations Benefits

- Improve visibility into resource capacities
- Improved reliability management
- Reclaim stranded capacity and improve data center ROI
- Create new efficiencies through operational analytics



“The most important, yet often overlooked, part of the network is the physical infrastructure. You can install the latest and greatest Cisco technology, but without the right infrastructure, you are taking a risk.”

— Roy Lanier, (Retired) Chief Technology Officer, Laredo Independent School District

Panduit Services

Panduit Services

By tapping into Panduit Services, you have access to best-in-class reference architectures and designs to further accelerate and simplify data center design and deployment, as well as expert consultation to help you continuously optimize your data center operations.

Panduit Services include:

- Data Center Design
- Data Center Assessments
- Computational Fluid Dynamic (CFD) Analysis
- Hardware and Software Implementation Services
- Cooling Optimization Services
- Ongoing Support and Maintenance Services

Through Panduit Services, you can also tap into the expertise of Panduit's extensive partner ecosystem, ensuring you access to reliable, responsive support no matter where you are located around the world.

- ❑ Panduit's Thermal Assessment and Optimization Service can reduce your operating expenses between 10 and 30 percent and maximize IT equipment capacity by employing advanced modeling techniques to identify hot spots, improper equipment layout and other issues that reduce cooling efficiency.

Physical Infrastructure Solutions

Physical Infrastructure Solutions

Panduit offers the complete range of equipment you need to build a robust and reliable data center infrastructure, and to address challenges around power, cooling, assets and connectivity. Our tested and proven physical infrastructure solutions deliver the assurance of support for all active equipment, seamless scalability for networking, computing or storage capacity and improved thermal efficiencies.

For example, to operate at maximum uptime you need efficient, fail-proof cabling and underlying infrastructure. As your business needs grow, you also need a way to seamlessly migrate to higher data rate speeds (40G/100G or beyond). Panduit's architecture provides the products and services needed to support uptime requirements for the most complex environments, including those that employ software-defined networking, application-centric infrastructures and two-tier network providers.

Panduit Physical Infrastructure Solutions include:

- Modular cabinets for serviceability and flexibility for moves, adds and changes
- Seamless migration path for higher data rates and next-generation network architectures (fiber and copper connectivity)
- Passive airflow remediation product suite (thermal management, cooling control and containment)
- Pre-configured cabinets, including plug-and-play solutions and POD containment designs
- Security and remote operational capabilities

- Pre-configured cabinet solutions can reduce time-to-production by up to 80 percent.

Data Center Infrastructure Management Solutions

Panduit Data Center Infrastructure Management (DCIM) solutions—used by some of the largest vendors in the industry—are designed to add intelligence to the data center, using dynamic solutions to derive actionable information about equipment locations, connectivity points, power usage and power capacity. Armed with this information, organizations can identify areas for ongoing optimization of data center operations.

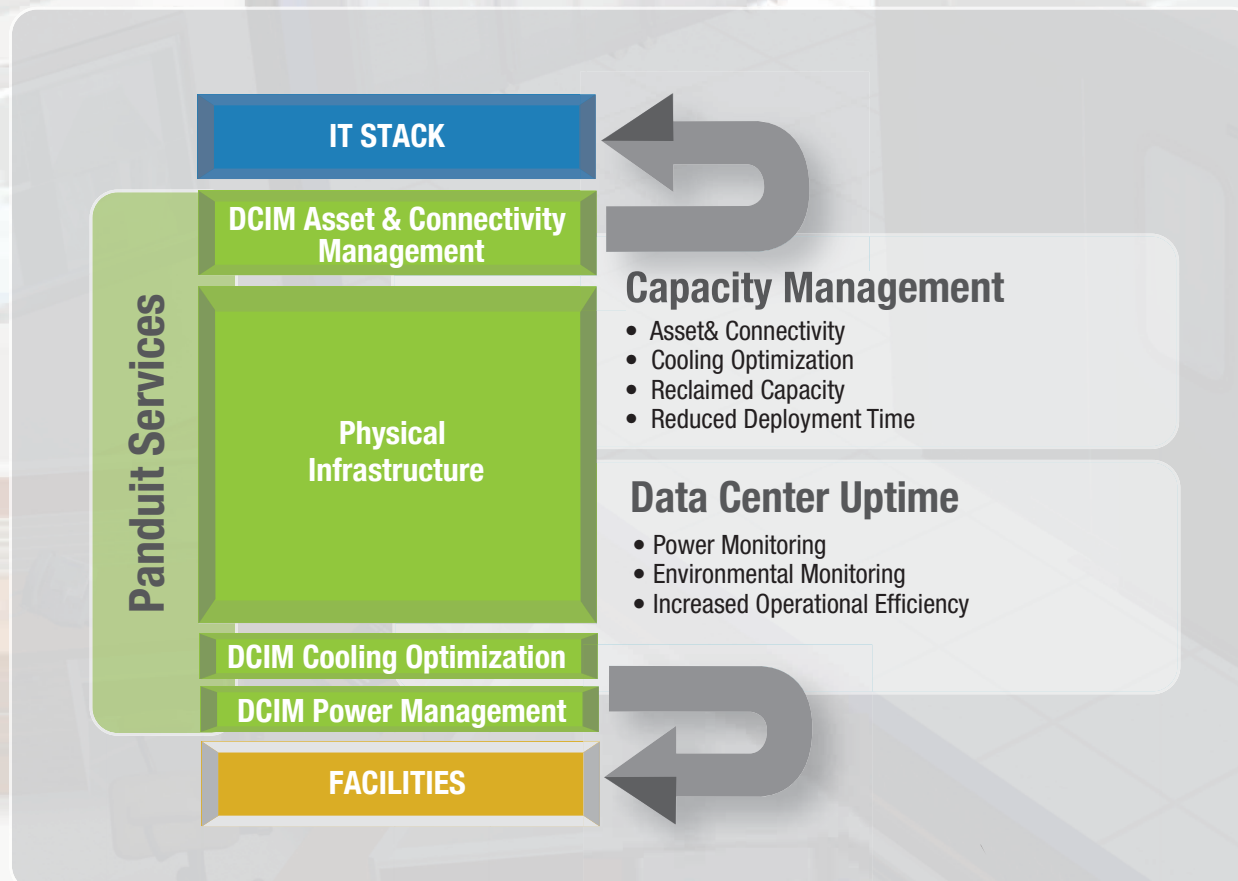
DCIM solutions serve as a “bookend,” working cohesively together at each end of the physical infrastructure. At one end, Panduit DCIM solutions bridge the IT stack by delivering visibility into asset and connectivity management to help streamline capacity management efforts, as well as accelerate work order management tasks. At the other end, Panduit DCIM bridges the facilities stack by monitoring power usage and cooling efficiencies to help drive operational effectiveness and data center uptime. (See diagram on left)

DCIM software solutions include:

- A DCIM software suite, available separately or bundled, that includes individual modules for:
 - Power management
 - Thermal management and cooling optimization
 - Asset and connectivity management

Intelligent hardware offerings that include:

- Monitored rack PDUs that provide management down to the outlet level
- Environmental monitoring, including wireless nodes that use a mesh network that is self-configurable, self-healing and non-invasive
- Intelligent patch panels that offer port-level connectivity traceability
- Pre-configured cabinets that offer DCIM plug-and-play benefits for day-one interoperability and performance
- Security and remote operations





PANDUIT

WHY PANDUIT?

Learn more about Panduit Infrastructure Solutions:
www.panduit.com/en/solutions/data-center-solutions

Quantifiable Results

Panduit Converged Infrastructure Solutions provide:

- Savings of up to 50% on cooling costs
- Space savings through the HD Flex™ Fiber Cabling System
- Equipment optimization through the elimination of dark fiber
- Faster data migrations
- Optimal capacity utilization of assets, cooling and power

Accelerated and Simplified Design and Deployment

Panduit enables organizations to optimize data centers to address both organizational and IT needs, with a complete breadth of pre-tested, interoperable hardware, software and services needed to accelerate and simplify the design and deployment cycle—even enabling customers to order under a single part number. Our unique approach enables us to simplify the convergence of heavy equipment in a facility with IT equipment, from power to chillers to uninterruptible power supplies (UPSs) to active equipment, including servers, switches and storage.

We do this by working closely with a strong and established partner value chain of industry leading technology companies, distributors and system integrators who are expert in achieving seamless integration and deployment.

Built for Evolving Technology Needs

Panduit is dedicated to close collaboration with clients as a trusted advisor to understand current and future data center needs and to carefully design or refine a data center that is ready to scale up as your business needs change, giving you the assurance of access to a migration pathway that is available for your organization when you need it.

Lower TCO through Capacity Optimization

From power and cooling to computing capacity and space, the costs of operating a data center can be exorbitant. Panduit is adept at working with clients to optimize data center operations, increase usage of active equipment, reduce overall power and cooling costs (up to 50 percent), avoid overprovisioning—and ultimately reduce TCO by:

- Effectively managing power usage
- Optimizing cooling usage
- Minimizing space requirements/dollars-per-square-foot
- Minimizing cable requirements
- Realizing efficiencies through best-practice reference architectures and designs

Greater Reliability

For all data centers—but especially hosting and colocation facilities—the core value proposition is around uptime, which demands a bulletproof physical infrastructure. Because Panduit's broad portfolio of industry leading data center products have been pre-tested, validated and are purpose-built for interoperability, we can provide both the reliability you need to meet customer SLAs and the assurance that equipment will function at peak performance at deployment—with no disruption to your current infrastructure.

Single-Vendor Accountability and Support

A data center infrastructure that relies on multiple vendors introduces risk and complexities. It also brings challenges around maintaining security and minimizing errors, as more people will require access to your physical infrastructure at deployment and beyond. Panduit's proven, integrated architecture enables you to rely on a single vendor and global support—no matter where your data center is located.

Vast Partner Ecosystem

Through our relationships with industry leading partners like CISCO, EMC² and VCE, Panduit has applied best-in-class reference architectures to pre-validate all our data center products, helping you further accelerate and simplify across the data center lifecycle.

Trust the Industry Leader in Data Center Solutions

Unlike other providers, Panduit not only offers end-to-end solutions across the entire data center physical infrastructure, we also apply decades of experience, knowledge, and product design to every element of the data center. By implementing Panduit's proven and tested Converged Infrastructure Solutions, you can rely on simplified and accelerated design, procurement, deployment and operations of the data center you need to meet the demands of today and the future—all from a single vendor.

¹Source: Cisco ²Source: Intel ³Source: 451 Research, Datacenter Market Sizing Model, Q4 2014
⁴Source: 2013 Cost of Data Center Downtime Study, Ponemon Institute



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