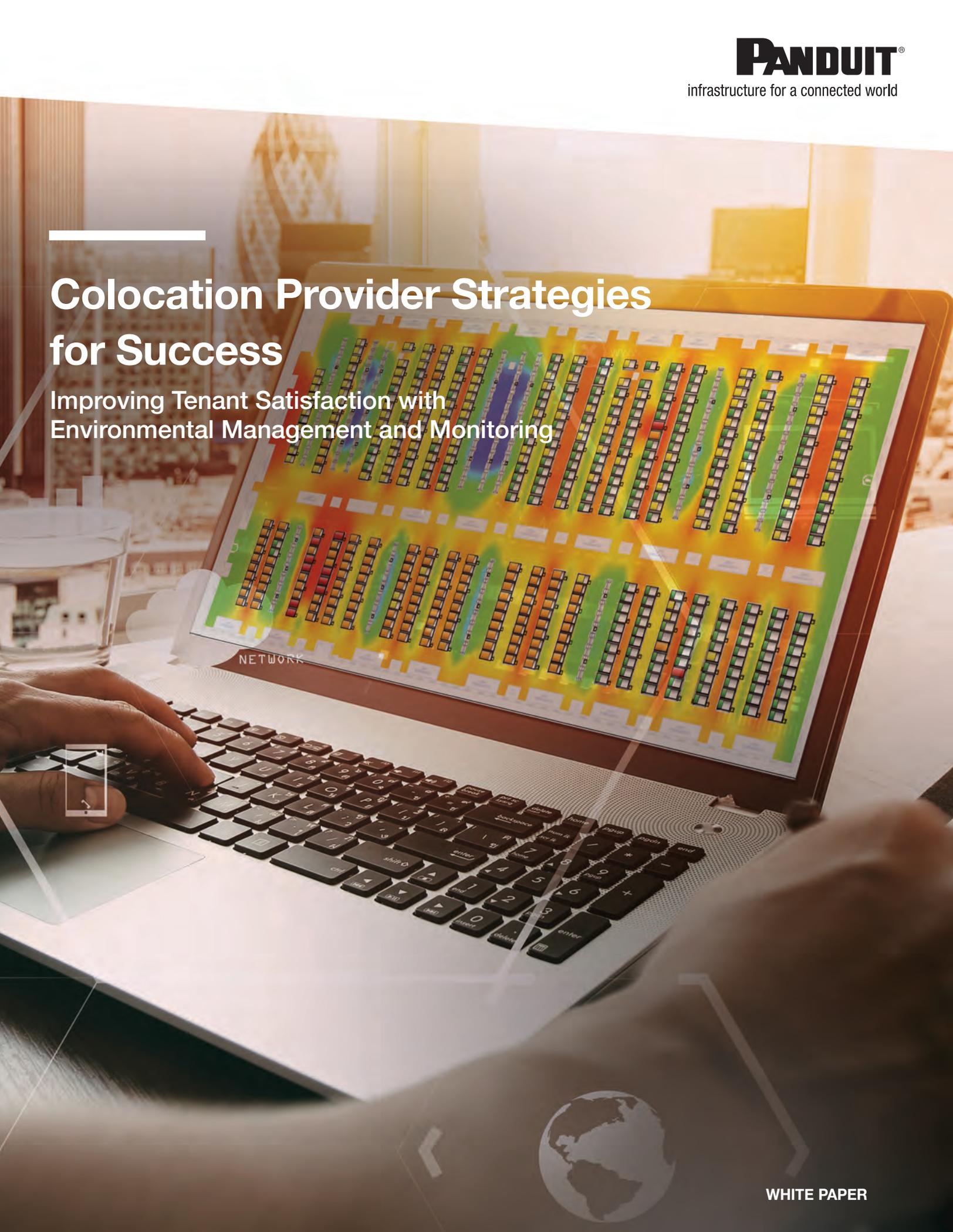

Colocation Provider Strategies for Success

Improving Tenant Satisfaction with
Environmental Management and Monitoring



Colocation Provider Strategies for Success

While cloud, big data, social media, and mobile technologies have created new opportunities for companies to better serve customers and improve collaboration among employees, they have also created new pressures on servers, storage and networks – as well as the data center infrastructure on which they rely.

As a result, many organizations outsource their data center needs to colocation providers, freeing them up to focus on creating future opportunities as opposed to wrestling with IT operations. By working with a colocation provider, these organizations can also avoid the up-front costs of building or expanding their own data center, as well as leverage the newer technologies that early-adopting colocation providers can deliver.

Colocation is a competitive business, and the most successful providers are constantly seeking new ways to deliver a unique tenant experience while moving their own businesses forward. This white paper explains how colocation providers can utilize a robust data center environmental monitoring and management system to improve the tenant experience by maximizing the efficiency of their physical infrastructure and stabilize costs. It's an intelligent edge that can make a difference to the amount of success a colocation provider can achieve.



Why Environmental Management and Monitoring Matters

Any time data center equipment is moved or a device is added, the balance of power, cooling, space, and connectivity is altered. In a data center that is well designed and correctly monitored, it's much easier to make adjustments to boost efficiency, meet tenant SLAs, and improve tenant satisfaction.

A robust data center environmental monitoring and management system will give visibility to detailed information about power usage, cooling, connectivity, rack security, cabling, bandwidth and power delivery that can enable the real-time responses that are needed to continually maintain optimal performance of the physical layer.

5 Essentials of a Monitoring and Management Solution

Monitoring and management systems are available as software or as an appliance, and the most dependable systems collect standardized information from data center resources and deliver it to administrators through a graphical user interface. A solutions provider can furnish a modular system as a series of software components and add to it as data center resources expand.

The 5 essentials of a comprehensive environmental monitoring and management system are:



Space and cabinet utilization – The cabinets that contain switches, servers, and storage devices must be populated not only for maximum use, but also for electrical power and cooling that can be managed effectively. The system should indicate the power and cooling load per cabinet, as well as the space utilized in the cabinet.



Stranded capacity recovery – Gaining complete understanding of current capacity will provide guidance on how to properly arrange infrastructure to be most effective. Oftentimes, space, power, cooling, and connectivity are not used to their fullest potential, but a data center administrator may be unaware of the inefficiencies. When you know what cooling, space, and connectivity resources you have, you can make better use of them. Sometimes inefficiencies are suspected, but action is not taken to recover unused resources due to the belief that the return is not worth the investment. However, any accurate ROI calculator will show the cost and benefit of improvements, such as a new containment system.



5 Essentials of a Monitoring and Management Solution (continued)



Future planning – As a tenant’s business strategies change, so must their infrastructure. A well-designed monitoring system that provides complete and accurate information on power, cooling, and connectivity will indicate where it is possible to add equipment in the future and how the supporting infrastructure should be changed to accommodate it.



Virtual machines – By indicating levels of power, space, and cooling, a monitoring system can specify the server location on which a virtual machine can most efficiently be run, allowing the VM to be moved to that location.



Cabinet security – A robust monitoring system allows colocation providers and tenants to remotely monitor and control access to cabinets to allow technicians to install and/or conduct routine software service upgrades on network, server, and storage equipment.

How Intelligent Hardware Helps

Information is most valuable when it’s actionable. Pairing an environmental monitoring system with intelligent hardware creates a fully optimized environment and can help control costs.

The interaction between a monitoring system and a thermal management system, for instance, can result in significant cost savings for cooling. Because different pieces of equipment have different thermal characteristics, it’s vital that a thermal management system and a corresponding monitoring system reflect that. Also, by capturing detailed information about the way Cisco switches breathe, data center administrators can optimally place equipment, such as in-cabinet ducting, blanking panels, and shades, as well as cool boots, to contain and direct airflow.

Another example is the ability of a monitoring system to track connectivity ports to see if they are in use can pay significant dividends when it comes to data center flexibility and expandability. Knowledge of these port locations and their availability enables a data center administrator to quickly and efficiently deploy assets such as servers and storage devices.

Levels of Environmental Monitoring and Management in the Data Center

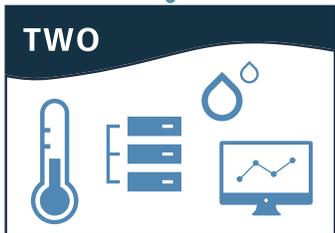
Different environmental monitoring and management systems provide a wide range of actionable information, starting with the most basic and advancing to highly detailed data that allows a high degree of control.

By understanding the current level of your data center monitoring and management, you can create a roadmap for future enhancements. This information helps you make proactive decisions around resource allocation and where improvements need to be made.

Below illustrates what each level of monitoring achieves:

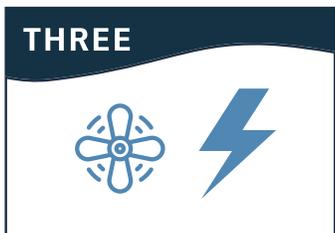


Level 1 – Basic information about the amount of resources you have available, such as the cooling capacity you have and how much you’re using. With basic information you can set alarm thresholds and alert notifications to reduce the risk of unplanned downtime.



Level 2 – More detailed information, in context. You can monitor power loads to quickly find underutilized rack power and determine the optimal placement of equipment. At this level, you utilize:

- Live color imaging depicting data points such as temperature, humidity, and sub-floor pressure, overlaid on a floor plan. This enables managers to spot problems quickly.
- Monitoring, which provides you the information needed to adjust and react to utilization trends, as well as to plan accordingly. For example, poor placement of blanking panels may create hotspots. If you can monitor conditions, you are able to take steps to avoid failure due to overheating before it occurs. You may also compare the performance of your tenants’ space to ASHRAE guidelines.



Level 3 – Still more detailed information, with a focus on enabling immediate action often with the aid of automation. You can see the location of each piece of equipment on the map and specific information about different vendors’ gear. You are also able to closely monitor and automatically control infrastructure components to enable the highest level of efficiency.

- Cooling – Automatically increase or decrease fan speed to reach a desired temperature.
- Assets and connectivity – Integrate work order management to automate operational moves, adds, and changes, as well as the resulting documentation.
- Power – Perform comprehensive power chain monitoring across facilities.



Environmental Monitoring and Management at Work

Planning that is based on insufficient information can result in unnecessary purchases and a need to increase prices, which can compromise tenant satisfaction and retention.

A robust environmental and monitoring system creates a meaningful, long-lasting impact by providing essential information on which to make informed decisions about current and future operational needs. Panduit’s SynapSense® Wireless Monitoring and Cooling Control Solution leverages actionable data for maximum efficiency. Here's how Panduit helped a Wall Street investment bank:

Case Study: Wall Street Investment Bank

SynapSense® Solution Deployed:

- Environmental Monitoring and Optimization Services
- 5X higher pressure than before floor rebalancing using SynapSense® System
- Savings and Payback Exceeding Preliminary Estimate

Projected Savings & ROI Analysis	Projected	Actual
Annual Energy Savings (MWh)	258	302
Fan Energy (MWh)	168	209
Chiller Energy (MWh)	90	93
Carbon Abatement (Metric Tons)	135	158.1
PUE Baseline (1.65)	1.57	1.56
Project Cost	\$70,500	\$70,500
Annual Energy Savings	\$28,412	\$33,263
Maximum NYSERDA Incentive	\$36,161	\$48,382
Capped NYSERDA Incentive	\$35,268	\$35,268
Simple Payback (Months)	14.9	12.7

Conclusion

Data center modernization is becoming increasingly crucial to individual organizations. Businesses are seeking colocation providers to avoid construction costs, better control budgets, and respond to current and future business strategies.

Partnering with an infrastructure solutions provider that also drives innovation in dynamic intelligent systems helps ensure a high level of performance, resulting in colocation providers' ability to attract and retain more tenants. This performance elevation is achieved by focusing on:



Cooling – Stranded cooling capacity leads to hotspots and thermally induced downtime. Overcooling, intended to ensure equipment safety, is expensive and wasteful.



Power – Underutilized power/stranded power capacity is due to lack of consumption visibility. Without visibility, it is difficult to provide accurate evidence of carbon footprint and energy consumption for “green” credentials.



Space – Inefficient utilization and even asset loss due to poor asset tracking can slow deployment and hamper the effectiveness of well managed rack space.



Connectivity – Lack of connectivity tracking can affect equipment deployment. Disconnections and unauthorized changes cause risk to operations.

Deploying a strong environmental monitoring and management system from the right solutions provider will supply unique visibility and information that allows colocation providers to do more with existing data center investments and subsequently maximize their tenants' data center performance – avoiding unnecessary costs. With intelligent hardware deployed, the monitoring system receives detailed real-time information so it can respond to the recommendations from the monitoring system.

A full-featured environmental monitoring and management system will allow any company to support their business more efficiently and quickly embrace new technologies. Any organization with this ability can worry less about their IT and focus more on innovation and new business initiatives that can help gain and maintain a competitive edge.



Since 1955, Panduit's culture of curiosity and passion for problem solving have enabled more meaningful connections between companies' business goals and their marketplace success. Panduit creates leading-edge physical, electrical, and network infrastructure solutions for enterprise-wide environments, from the data center to the telecom room, from the desktop to the plant floor. Headquartered in Tinley Park, IL, USA and operating in 112 global locations, Panduit's proven reputation for quality and technology leadership, coupled with a robust partner ecosystem, help support, sustain, and empower business growth in a connected world.

For more information

Visit us at www.panduit.com

**Contact Panduit North America Customer Service by email: cs@panduit.com
or by phone: 800.777.3300**

THE INFORMATION CONTAINED IN THIS WHITE PAPER IS INTENDED AS A GUIDE FOR USE BY PERSONS HAVING TECHNICAL SKILL AT THEIR OWN DISCRETION AND RISK. BEFORE USING ANY PANDUIT PRODUCT, THE BUYER MUST DETERMINE THE SUITABILITY OF THE PRODUCT FOR HIS/HER INTENDED USE AND BUYER ASSUMES ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH. PANDUIT DISCLAIMS ANY LIABILITY ARISING FROM ANY INFORMATION CONTAINED HEREIN OR FOR ABSENCE OF THE SAME.

All Panduit products are subject to the terms, conditions, and limitations of its then current Limited Product Warranty, which can be found at www.panduit.com/warranty.

PANDUIT US/CANADA
Phone: 800.777.3300

PANDUIT EUROPE LTD.
London, UK
cs-emea@panduit.com
Phone: 44.20.8601.7200

PANDUIT SINGAPORE PTE. LTD.
Republic of Singapore
cs-ap@panduit.com
Phone: 65.6305.7575

PANDUIT JAPAN
Tokyo, Japan
cs-japan@panduit.com
Phone: 81.3.6863.6000

PANDUIT LATIN AMERICA
Guadalajara, Mexico
cs-la@panduit.com
Phone: 52.33.3777.6000

PANDUIT AUSTRALIA PTY. LTD.
Victoria, Australia
cs-aus@panduit.com
Phone: 61.3.9794.9020