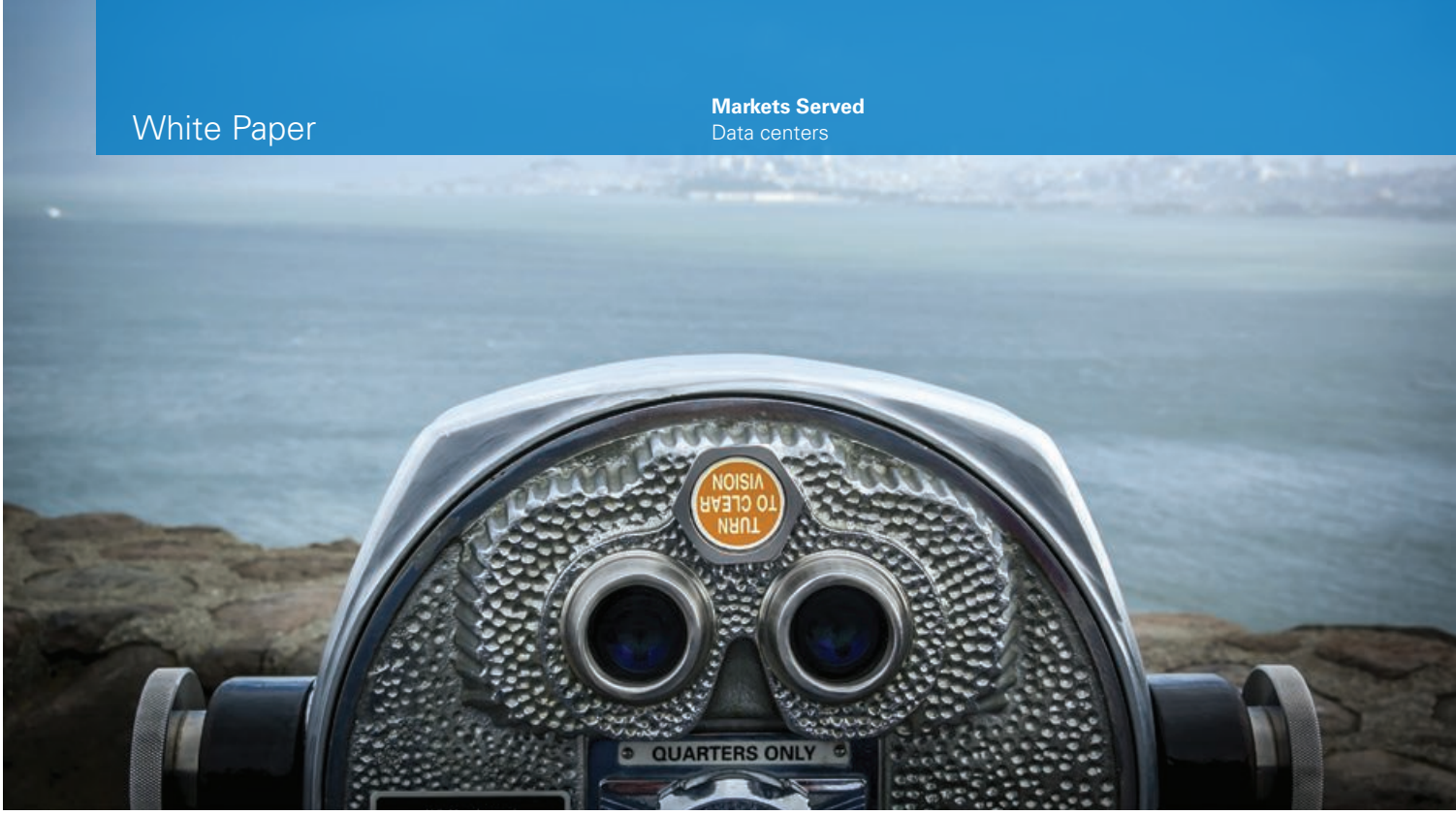
White Paper

Markets Served
Data centers



Five key requirements for next-generation power monitoring

Harness better insights to maximize availability and business value

As today's organizations become more digitized, they grow fundamentally reliant on their power infrastructures. IT environments have also grown more complex and interconnected, making effective monitoring and management of the power infrastructure more difficult—and more critical. This paper shows how these demands are fueling the need to move to a next-generation power monitoring service. It offers a detailed look at the specific attributes that differentiate these services—and reveals why they're so critical to businesses.

Powering Business Worldwide

Criticality of data center power infrastructure

Through the confluence of business trends, including cloud services, social channels, the Internet of Things and mobile innovation, an application economy has emerged. Today, almost every aspect of business is in some way reliant on data-driven applications—and these applications depend on the underpinning data center power infrastructure to stay up and running.

Because the IT infrastructure is so critical to operations, downtime can be disastrous and costly. According to Eaton's 2014 U.S. Blackout Tracker[1] report, there were 3,634 outages in 2014, which affected 14.2 million people. These outages may be annoying for us as consumers, but they can quickly lead to massive losses for businesses. In the U.S., power interruptions cost the economy US$96 billion annually.[2] One retailer incurred a US$4.8 million loss in profit and repair expenses due to two power failures.[3]

Uninterruptible power supplies (UPSs) and power management equipment like power distribution units (PDUs) are more sophisticated and reliable than ever, helping to sidestep downtime. The complex environments in which these systems operate make it critical to have effective, proactive management and maintenance in place.

Why? Because when outages occur, the fire drills associated with investigation and remediation are a significant drain on resources. Just one issue may mean many staff members from multiple teams will have to spend significant time troubleshooting, coordinating, making calls and so on. Further, they'll have to put their other, more strategic efforts on hold to address the issue.

Unscheduled events can also result in substantial unplanned costs. For example, colocation data center providers may quickly breach their service level agreements, incurring up-front penalties and potentially long-term customer defections. Quite simply, if an organization doesn't manage its power infrastructure effectively, customers may quickly move to a vendor that does.

1. 2. 3. 4. 5.

Five key requirements for next-generation power monitoring services

Employing the manual, reactive power monitoring approaches of the past isn't sustainable in today's fast-paced, interconnected environments. In many organizations, administrators are still working with a number of point monitoring tools—tools that are designed to monitor a specific technology or layer in the technology stack. Consequently, administrators have to manually generate and sift through cryptic monitoring data, maintain multiple tools and contend with conflicting or confusing alarms —making monitoring too time consuming and costly. At the same time, these internally sourced approaches increasingly fail to deliver the accurate insights needed to help ensure 100 percent uptime.

It is for these reasons that organizations should leverage next-generation power monitoring services with the following five requirements in mind.

1. Combine remote monitoring and diagnosis with value-added services

Whether an organization is managing a single power unit down the hall or a globally distributed network of expansive data centers, it is critical to employ continuous monitoring and automated, immediate alerting and routing, so appropriate team members are informed in a timely manner.

The reality is that monitoring has been employed for quite some time. In fact, the problem is that most data center staff members have too much data; what they lack is targeted, timely and useful insights. Instead of having staff rely on manual, reactive monitoring efforts, organizations need to leverage real-time monitoring combined with experienced technicians to track information and follow up when required. Effective monitoring solutions are also critical for first responders. When coupled with a service organization that has proven experience, training, safety records and response times, these solutions are invaluable.

2. Deliver data-driven insights and predictive analytics

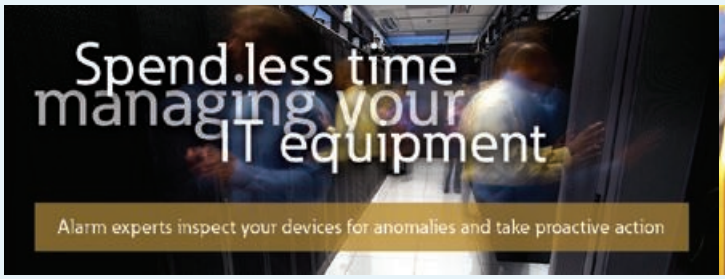
The evolution toward next-generation power monitoring services can perhaps best be viewed by comparing it to the evolution of auto repairs. In the past, when a car broke down or encountered issues, the attending mechanic would need to go through a process of trial and error—replacing parts, testing functionality and repeating these efforts until the issue was resolved. Today, however, many cars are equipped with an array of sensors. When mechanics can leverage this breadth of data and intelligent diagnostic tools, they can perform faster, more cost effective repairs.

Further, many vehicle manufacturers are using technology to help preempt issues completely. For example, GM now offers predictive maintenance technology in some of its vehicles. Pairing the vehicle's Internet connectivity and extensive sensors, data is fed into big data analytics programs that can determine whether a component failure is imminent, and, if so, issue a notification to the driver.[4]

In the world of data center power, similar advancements are taking place. By combining comprehensive diagnostic data, effective capture and analytics, advanced workflows and domain expertise, next-generation power monitoring services will enable maintenance, troubleshooting and repairs to be much more data-driven. These services will offer richer data on specific devices and enable more effective comparisons between a particular unit and averages of an entire fleet.

Field technicians can also be armed with complete details before they arrive at the site. Rather than undertaking a lengthy trial-and-error process, they can start remediating with a detailed understanding of the issue and even arrive on site with the right parts and equipment—the first time.

As in the automotive industry, power monitoring will begin to move from reactive to proactive models via predictive analytics. Through these capabilities, administrators will be able to accurately predict component failures in power equipment days or weeks before they actually occur. For example, an administrator can be alerted to a potential issue through battery health indicators, reducing the risk of outage due to battery failure.



3. Provide asset management capabilities

Next-generation power monitoring services deliver comprehensive asset management capabilities. This requires tracking comprehensive data about a particular asset like a UPS, which includes such details as battery date code, battery model and type, firmware version, service history, capacitors and so on. This granular detail should be easily accessible to administrators to facilitate inspection, reporting and remediation.

This kind of information can also be extremely useful. When an administrator can track data like battery date codes and service history, they can provide much faster and more efficient planning and analysis. For example, they may see that a battery is five years old. That means it may be reaching the end of its useful life, and so will need to be replaced soon.

As next-generation power monitoring services continue to evolve, they'll also enable central, efficient management of an organization's entire power infrastructure, including UPSs, PDUs and other power systems from multiple vendors.

SAMPLE SCENARIO:

The value of proactive monitoring

Within 18 months of making a significant investment and deploying a new UPS and batteries, a data center manager noticed a load loss. After going through diagnostic data, he found that every weekend the UPS and batteries were subjected to excessively high temperatures. It was only then that he realized that climate control settings in the data center were being overridden on Saturdays and Sundays by the building's temperature controls. Since he found out after the failure, the organization had to incur the cost of prematurely replacing more than US$10,000 worth of batteries.

With proactive, next-generation power monitoring services, the data center manager would have received alerts the first weekend, indicating that temperatures were running high, so he could take appropriate action—long before any equipment was damaged.

4. Provide intuitive, convenient and visual reporting

Next-generation power monitoring services need to deliver timely, focused insights to the people who need them. To do that, monitoring services should feature these components:

- Intuitive dashboards that provide at-a-glance insights into system status, as well as easy access to device-level details.
- Web portals that provide on-demand access to reporting and alerts.
- Mobile applications that enable the delivery of alerts to administrators' preferred mobile devices, so team members can stay on top of system status, wherever they happen to be located.

5. Offer simple SaaS delivery

The more up-front cost and deployment time associated with a solution, the longer it will take for the business to see the return on its investment. To maximize the return on their next-generation power monitoring investments, it is critical that organizations leverage solutions based on software-as-a-service (SaaS) delivery models.

This eliminates the cost and effort associated with licensing, installing and wiring on-premises monitoring infrastructures—or with hiring a vendor's professional services team to make all this happen. By leveraging SaaS offerings, organizations can shift capital expenses to operating expenses and pay-as-you-go models. Further, these monitoring services should include features like easy, self-service, wizard-driven installation.

The payoff of next-generation power monitoring services

A lot rides on an organization's power structure. Unplanned events and outages can have a devastating impact on a business, posing the risk of missed SLAs, lost productivity, financial penalties, brand damage and lost customers.

To optimize power infrastructure, IT teams need a robust next-generation monitoring service—one that delivers a holistic approach comprised of monitoring and reporting software, services and on-site technical support. By leveraging a next-generation power monitoring service, IT can realize:

- Improved reliability by gaining the critical insights needed to spot troubling trends and address them before issues and outages arise.
- Faster repairs by equipping technicians with the timely, detailed insights needed to more quickly detect and address issues.
- Enhanced staff focus on strategic initiatives by enabling them to avoid the distraction of manual monitoring—and the fire drills associated with outages and issues.

Eaton's PredictPulse™: Next-generation power monitoring

Eaton's PredictPulse is a monitoring and management service for Eaton UPS products. On a 24x7 basis, Eaton's expert staff analyzes data transmitted by connected UPSs and takes action when needed to pre-empt or respond to any issues. Through the service, customers leverage an on-demand monitoring solution with an online dashboard, so they don't have to install special software or hardware on site.

Eaton's service offerings are used every day by Fortune 500 organizations. Over the course of 35 years, Eaton has remotely monitored thousands of UPS devices.

About Eaton

Eaton is a power management company with 2014 sales of $22.6 billion. Eaton provides energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. Eaton has approximately 102,000 employees and sells products to customers in more than 175 countries.

[1] Eaton, "2014 USA Blackout Tracker Annual Report", http://electricalsector.eaton.com/forms/BlackoutTrackerAnnualReport

[2] Lloyd's, "Emerging Risk Report—2015," Business Blackout: The insurance implications of a cyber attack on the US power grid, http://www.lloyds.com/~/media/files/news%20and%20insight/risk%20insight/2015/business%20blackout/business%20blackout20150708.pdf

[3] Crain's Chicago Business, "The price of failure: Data-center power outage cost Sears $2.2M in profit," June 04, 2013, John Pletz, http://www.chicagobusiness.com/article/20130604/BLOGS11/130609948/the-price-of-failure-data-center-power-outage-cost-sears-2-2m-in-profit

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