

# Guidelines for selecting a power and energy management system for DCIM

## Overview

Because data centers are mission-critical facilities at the heart of today's enterprises, the need to manage these complex operations has led to the development of Data Center Infrastructure Management (DCIM), a software tool that extends beyond traditional systems and network management approaches. DCIM leverages the integration of information technology (IT) and facility management disciplines to centralize monitoring, management, and intelligent capacity planning of critical systems that give data centers the ability to move from reactive to proactive management.

The deployment of a successful DCIM solution provides a comprehensive view of all of the resources within the data center. The promise of DCIM is to enable a common, real-time monitoring and management platform for all interdependent systems across IT and facility infrastructures.



A DCIM's monitoring component should provide a "dashboard" of sorts displaying an overview of all the data center equipment, giving you a customizable, graphic user interface depicting the status of your power, environmental, and subsystem components.

A key component of an effective, efficient DCIM installation is a power and energy management solution with the ability to monitor and manage critical power, environmental systems, and subsystems to maximize availability of the IT, communications, and other critical operations.

A data center's ability to operate reliably and efficiently is dependent on the underlying power distribution systems, IT and environmental equipment, safety and security systems, and building controls. Implementation of a power and energy management solution within DCIM is critical to successful and uninterrupted operations. With a power and energy management system that monitors all devices and trends all points, data center managers can easily access archived data, enabling them to make proactive decisions to ensure efficient, reliable performance. Implementing a system with a distributed, scalable architecture provides users with the ability to manage a single location data center or enterprise-wide facilities.

With an understanding of the elements of a comprehensive power and energy management solution and how they contribute to a highly efficient DCIM, data center managers can evaluate market offerings and make an informed decision on a solution that best meets their current and future needs.

## Power, environmental, and subsystem infrastructure

The IT infrastructure depends on uninterrupted power, precise environmental conditions, and subsystems in order to meet and maintain a high level of availability. A comprehensive power and energy management system connects a data center's vast array of devices and gives them the ability to communicate with each other, regardless of make or model.

These devices include:

- **Power components**  
Uninterruptible power supply, generators, switchgear, automatic transfer switches, utility feeds, static switches, branch circuit monitoring, power distribution units
- **Environmental components**  
Computer room air conditioners, chillers, pumps, condensers, temperature and humidity, chilled water systems
- **Sub-system components**  
Leak detection, fuel management, battery monitoring, security, fire suppression

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## Essential capabilities for proactive management

To ensure that the data gathered from monitoring can be used as a tool for power and energy management, data center managers should look for a system that has the following features and capabilities.

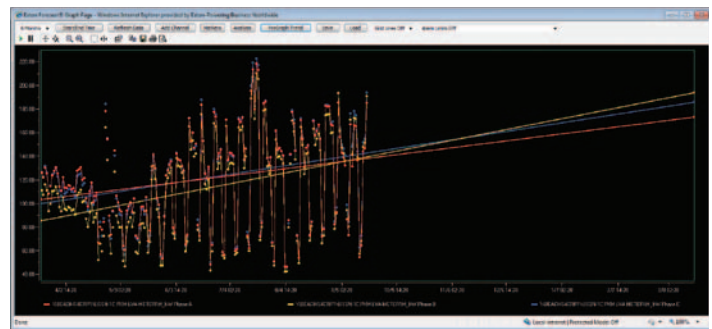
- A system with a distributed, scalable architecture so it can be tailored to manage a single location data center or enterprise-wide facilities and meet changing organizational needs
- High-performance trend analysis and forecasting tools to access archived data for assessing equipment performance through cause analysis, impact analysis, capacity planning, preventative maintenance assessments, and trending. A system that monitors and archives every point in the system once per second provides data centers with the ability to access data for trending every point within the system. The ability to access archived data is critical to ensuring that decisions can be made proactively. While many offerings have trending, they often require the user to go in and select the points for trending. In addition, they provide a trending block that, once filled, requires that something be eliminated
- Integrated power quality diagnostics including Six Sigma waveform analysis, harmonic analysis, phasor diagrams, and ITIC curves. Sequence of events recording to enable users to analyze the events that preceded a catastrophic event and make changes to prevent recurrence
- A system that has automated predictive capability so users can “see” up to 180 days in the future based on historical data and trends. This enables thresholds to be defined and situations to be remedied long before an actual critical alarm condition occurs
- An extensive, multi-vendor, device-driven library of interfaces to ensure that a multitude of different device types from different manufacturers can be monitored
- Dashboards that provide an overview of all the data center equipment to give users a customizable, graphic user interface depicting all of the power, environmental, and subsystem components. Simple point-and-click capability that enables users to easily navigate through equipment views to see specific devices, current status, and data readings
- Event notification and management with four alarm thresholds—from routine maintenance alerts, to system failure as well as handling instructions and escalation procedures for each
- Secure Web browser access and remote notification to enable easy system access without the need for additional client seat licenses

## Beyond the solution

Because a power and energy management system is at the heart of an efficient DCIM solution, it is paramount that it have a distributed, scalable architecture and provide comprehensive monitoring, trending, archiving, data analysis, sequence of event recording, as well as have an extensive, multi-vendor device-driven library to ensure that devices from numerous manufacturers can be monitored. However, there are additional critical elements that must be considered to ensure selection of an optimal power and energy management system.

Given that data centers in business sectors, such as financial institutions, health care, education, telecom, industrial, and government, must all be addressed according to industry guidelines as well as local laws and regulations, working with an experienced energy and power management solutions supplier is the key to implementing an effective system.

It is important to work with a supplier with extensive experience in providing a complete vendor-independent integration solution. Turnkey software and connectivity solutions developed in-house coupled with state-of-the-art project management, systems design, third-party device integration, testing, and customer application development services enable data center managers to quickly implement a solution that can address issues proactively as well as predictively to prevent downtime due to failure of mission-critical systems.



Example of a predictive graph showing the use of historical data and projecting possible future capacity issues. This type of functionality provides the means to automatically be alerted to a capacity problem based on historical data well in advance of an actual problem.

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