

## Energy Savings in the Data Center Starts with Power Monitoring

As global competition intensifies, companies are increasingly turning to technology to help turn mountain of data into a competitive edge. With soaring energy prices and the need for round-the-clock data center services, enterprises need to find ways to increase energy efficiency and reduce costs. In addition, escalating power consumption by large data centers and the population in general means additional power is not always available to expand computing services. While power is becoming the most significant cost in running a data center, most data center managers lack the tools to accurately measure power consumption. All of these factors, along with a growing concern for environmental stewardship, are forcing the need for better power monitoring technologies.

### Why It's Important to Monitor Power

**You need to measure it before you can fix it.** Analysts continue to rank energy efficiency as the number one concern of data center owners and operators. However, the truth is, you simply can't improve something, especially energy efficiency, if you're not measuring it. According to Energy Star, energy efficiency projects often pay for themselves in energy savings, but if you don't know how much energy you're using, and how much it costs, it is very difficult to justify new technologies and best practices or assess the savings of those new methods. Without a baseline, and then continued measurements, it is impossible to determine where to optimize, to evaluate the results of the optimizations, or to show the improvements to management, government agencies, or customers. In addition, you need to be able to identify energy consumption peaks and lows, and determine how they relate to operations or key internal and external events such as marketing campaigns, accounting cycles, or changing weather patterns to enable you to adequately plan for these events.

A number of organizations, including The Green Grid and the Uptime Institute, are working to develop standards to help companies become more energy efficient. The Green Grid's Power Usage Effectiveness (PUE) metric is becoming a standard for data center energy efficiency, however, PUE cannot be reasonably determined if energy consumption cannot be measured. Measuring at the device plug (after all of the power conversion, switching, and conditioning performed) is the best way to calculate PUE. The Uptime Institute's Site Infrastructure Power Overhead Multiplier (SI-POM) and IT Hardware Power Overhead Multiplier (H-POM) metrics also require IT equipment power to be measured after all of the conversion, switching, and conditioning, is performed. Finally, measuring at the device plug is sometimes the only way to accurately measure power usage in a data center, particularly if the data center shares power with other areas in the building.

By measuring power usage, you can:

- Identify current power costs and set a baseline
- Identify potential cost savings and set goals
- Implement efficiency improvement projects
- Continuously measure to determine success

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