



Packet PowerTM

Power Made Visible



- 90% of data centers will run out of electrical power within 3 years
- 50% of energy in data centers is wasted at a cost of \$3 billion per year
- Power is the most rapidly growing data center cost

Packet Power for Data Centers

More servers. More power per server. More costly power. This "perfect storm" has made energy management a major challenge for IT executives. Yet you can only manage what you can measure. Packet Power gives you the information you need to lower electrical costs and extend the life of your data center.

The Packet Power system works in any size facility, from a remote closet to a data center holding tens of thousands of devices, and easily supports multiple facilities. Energy usage information can be viewed in a variety of ways, including by application, line of business, customer or technology platform. By placing "facilities" information in a business context, Packet Power gives insight into what is driving growth in energy consumption so you can focus your energy management efforts on the greatest opportunities for conservation and accurately predict your future power needs.

Packet Power is extremely simple to deploy. Our smart power cables provide billing-quality energy monitoring and communicate instantly with each other via a secure, wireless mesh network. Our intuitive software allows you to easily customize information gathering and reporting to meet the needs of your business. The resulting data are transmitted to our secure servers for analysis and reporting accessible via the web or e-mail. Data can also be integrated into your existing operations management and billing systems.

Packet Power is designed to provide billing-quality energy consumption information at the lowest possible level of granularity *without disruption to your power distribution infrastructure*. It also captures temperature and can quickly create a facility heat map.

Packet Power is the simplest and most cost effective way of truly understanding your power. Contact us to get the information you need to effectively manage power in your data center.

Packet Power

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Benefits

- Extend the useful life of power-constrained data centers
- Correctly allocate energy costs
- Quantify savings from energy reduction efforts such as virtualization
- Track progress on energy conservation initiatives

Features

- Energy consumption captured at device level
- True billing-quality data
- Support for 1,000's of devices
- Business-based view of IT energy consumption, costs and environmental impact

The Packet Power Solution

- Secure information utility
- Collects data wirelessly from thousands of devices for analysis and reporting
- Unique smart power cables
 - ◆ Capture detailed energy data across time including peaks and sags
 - ◆ Communicate via a secure wireless mesh network
 - ◆ Deploy at device and rack level
 - ◆ Available in 110 to 240 volts, 10 to 60 amps, single- or three-phase power, and most NEMA and IEC connector types
- Gateway servers transmit data to cloud-based storage and analysis service
- Management console allows simple, flexible deployment by your team.
- Easily customized reports available via email or Web or import data into existing management applications.



Packet Power™

Technical Specifications



Energy and Temperature Monitoring

The Packet Power solution provides billing-quality data on energy consumption as well as power quality and environmental conditions. Detailed data on current, voltage and phase are recorded every few seconds and tracked across time, including spikes and sags. Temperature is tracked and reported at both the power cable and rack levels.

Operating Environment

Packet Power's solution is designed to monitor power for all devices in an enterprise data center. Monitoring can be done at the device level, the rack level or in any combination. Packet Power cables support all configurations from 110 to 240 VAC, 10 to 60 A, single- and three-phase, with a variety of standard connector types. Temperature monitoring is supported from 10 to 50 degrees Celsius and is reported in either Celsius or Fahrenheit.

Communications

The smart power cables form a self-configuring wireless mesh network with each cable seeking out and communicating with other cables. Then simply by inserting a miniature dongle into a USB port, any server can be turned into a gateway that aggregates data from the mesh and communicates it to the analysis and reporting service.

Wireless Network Specifications

- Proprietary encrypted frequency-hopping protocol
- Effectively invisible to other networks
- Completely self-configuring

Wireless IP Gateways

- IP connectivity via 3G cellular network or standard port 80
- Automatically adapt to the addition of new gateways
- Support thousands of devices per gateway

Data Security, Analysis and Reporting

All data transmissions between cables and the analysis and reporting service are encrypted. Data is stored and analyzed on a secure commercial cloud computing platform with high availability and extensive data backup provisions. Each smart cable is associated with a specific customer and its information is only accessible only to that customer. Energy usage can be tracked in many ways, including: device, circuit, rack, application, customer and facility. Access to energy consumption data is available in several formats via email, web and web services.

Registrations

FCC completed, Product safety certification expected in late 2009.

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Summary

- Easily and rapidly deploys in any combination of device and rack level.
- Wide range of IEC and NEMA connector types
- Supports multiple data center facilities including virtual data centers
- Detailed energy and temperature monitoring

Solution Components

- Advanced energy monitors embedded in power cables record true power in real time
- True power measurement for billing accuracy
- Fail-safe design ensures continuous power flow
- High precision temperature monitoring

Smart Cables



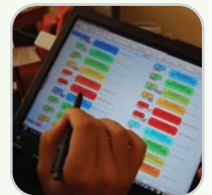
- USB dongle transforms any PC into a communication gateway
- Gateways gather data from thousands of power cables via a mesh radio network
- Energy usage data is transmitted to analysis service

USB Gateway



- Power Manager application easily configures system
- Power cables are mapped to physical layout for reporting by facility
- Powerful tagging feature allows reporting by circuit, application, customer, etc.
- Intuitive touchpad interface
- Barcode tagging makes installing and tracking smart power cables fast, easy and secure

Power Manager



- Detailed reports show trends in energy usage and temperature across time
- All data also available in XML format for use in billing and operations management systems

Analysis & Reporting

