



# Packet Power<sup>®</sup>

## Know Your Power



- 64% of data centers will run out of electrical power within 2 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 providing insight into what is driving growth in energy consumption. Real-time mapping of temperature data makes it easy to see hot spots and show heat and power distribution across a facility.

Packet Power is extremely simple to deploy. Our Smart Power Cables accurately monitor energy usage and communicate instantly with each other via our secure Data Mesh wireless 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 directly into your existing operations management and billing systems.

Temperature is measured by each cable. Temperature can also be measured at as many as six points per cabinet using our Environmental Node which tracks humidity as well. Temperature data are displayed in real time on a facility map.

Packet Power offers 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
- Deploy quickly and at a fraction of the cost of smart PDUs or branch circuit monitoring

### Features

- Energy consumption captured at device level
- Map facility heat and power usage in real time
- Support for 1,000's of devices
- Business-based view of IT energy consumption, costs and environmental impact

### The Packet Power<sup>®</sup> Solution

- Seamless solution incorporating monitoring hardware, wireless network, data analysis and reporting
- Proprietary Smart Power Cables
  - ◆ Capture detailed power data by phase
  - ◆ Share information via a wireless network
  - ◆ Deploy at the end device level and/or higher
  - ◆ Available in 10 amp to 100 amp sizes and certified for use North America, the EU, Australia and South Africa
- Wireless Environmental Nodes monitor temperature and humidity
- Energy Analysis System
  - ◆ Cloud-based service eliminates need for local servers
  - ◆ Secure data analysis, reporting and storage
  - ◆ Application software makes it easy to tailor how energy usage is analyzed and reported
  - ◆ Access data via Web portals, reports or from other applications
- Data Hub application allows for fully local installation with SNMP interface.



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## 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.

- Current, voltage and power by phase with averages as well as min/max with timestamp
- Total energy used (and generated if applicable)
- Frequency and power quality
- Temperature and relative humidity

### Operating Environment

Monitoring can be done at the device level, the circuit level, or in any combination. The smart power cables support all configurations from 110 to 240 VAC, 10 to 100 A, single- and three-phase, 50 to 60 Hz, with a wide variety of standard connector types. Temperature monitoring is supported from 10 to 50 degrees Celsius and is reported in either Celsius or Fahrenheit. Indoor use only.

### Communications

The Smart Power Cables automatically create our self-configuring Data Mesh wireless network. Inserting our USB dongle into a server creates a network gateway that aggregates data from the mesh and communicates it to the analysis and reporting service.

#### Data Mesh Wireless Network Specifications

- Proprietary encrypted 900 mHz frequency-hopping protocol
- Effectively invisible to other networks

#### Wireless IP Gateways

- IP connectivity via cellular network or outbound port 80
- Automatically adapt to incorporate new cables and gateways
- Support thousands of devices each

### Data Security, Analysis and Reporting

Security is enforced across the system, with the ability to full encrypt all aspects of data transmission. 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 accessible only to that customer. Access to energy consumption data is available in several formats via email, web and web services. Our Data Hub offering is used to accomplish entirely local deployments of the monitoring products with no information stored in the cloud.

#### Registrations

"S" model products meet electrical safety and radio standards and are certified for use in North America, the European Union, Australia and South Africa. Certification of the remaining products is expected in mid-2010.

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### Summary

- Wireless "plug and play" design easily and rapidly deploys for monitoring at any combination of device and circuit level.
- Wide range of IEC, NEMA and other connectors
- Provides accurate monitoring in small or large facilities and at single or multiple locations

### Solution Components

- Advanced energy monitors embedded in power cables record true power in real time
- High precision temperature monitoring
- Fail-safe design ensures continuous power flow
- Wireless network protocol works well in difficult data center environment

#### Smart Power Cables



- USB dongle transforms any PC into a communication gateway
- Gateways gather data from thousands of power cables and Environmental Nodes via a mesh radio network and transmit data for analysis.

#### Data Mesh Wireless Network



- Easily define how power is monitored and reported
- Power cables can be mapped to a physical layout for real-time heat and power maps
- Powerful tagging feature makes cost allocation easy
- Real-time alarm capability
- Intuitive interface suitable for technical and non-technical users

#### Application Software



- Access data in detailed reports showing trends across time or via real-time Web portals
- Program-to-program access in XML and SNMP formats at both cloud and local levels

#### Analysis & Reporting

