POWER ASSURE MONITORING SOFTWARE

TRACKS REAL-TIME COMPREHENSIVE DATA ABOUT POWER USAGE AND APPLICATIONS LOADS ACROSS YOUR DATA CENTER RESOURCES

BETTER VISIBILITY INTO POWER USAGE

As pressures mount to reduce your growing energy and cooling costs, the lack of visibility into power usage limits your ability to accurately benchmark for future business improvement efforts. Power Assure's hosted Monitoring Software allows insight into all aspects of power usage in your data center, from tracking capacity at the rack level to establishing the cost of power to be accurately assigned to each application, service, or department. You can drill into the details of one data center, or aggregate data from multiple sites for global comparisons. The result – better visibility into how power use impacts all aspects of your services or products.

MONITORING SOFTWARE MODULE

The Power Assure Monitoring software module tracks power consumption and cooling requirements at a granular level, including utility feeds, generators, power distribution units, power meters, and environmental sensors. In addition, these energy baseline measurement and audit features enable applications for financial incentives and rebates from utilities.

Power Assure P100 Energy Controller

The monitoring software resides on the Power Assure P100 Energy Controller provided and serviced by Power Assure. The P100 is easily rack mounted in your data center or lab environment, and is typically installed on your management network. A single 1U P100 controller handles up to 10,000 monitoring points. The customized, Web-based dashboard integrates and displays all facilities and IT information to provide easy power monitoring and management. The Power Assure software service can be hosted either at Power Assure's secure data center; or, if security requirements demand it, at your own facility with Power Assure providing management and support.

MEASURING POWER CONSUMPTION

Power Assure's real-time monitoring service tracks all individual meters throughout your data center and displays them in a single dashboard. We categorize power consumption into three components:

- IT Power – power required to run the servers, networking equipment and anything related to the IT infrastructure
- Mechanical Power – cooling and environmental controls
- Office Power – anything related to office equipment, typically calculated by subtracting the other two components from the total

Power Assure software collects this data using a variety of protocols depending on the type of meters you own. The more meters you have, the more granular the data we can capture and categorize.

SAAS AND ONSITE DEPLOYMENTS

Power Assure offers robust software as a service (SaaS) or onsite deployments with the following features:

- A shared reference database (SaaS only) that contains information on data center equipment (servers, cooling units, power distribution systems), utility data (service levels, alerts, availability, outages, demand response requests and time-of-day pricing details), and other relevant information (outside temperature, network information, and emergencies)
- A simulation engine for trying out various changes to see the affect before you make changes
- Per-customer archive and inventory that stores the historic configuration, operation, and energy consumption and savings data of the data centers for up to 36 months. Power Assure provides fully auditable data for utility rebates where available.

EASY UPGRADE TO DYNAMIC POWER MANAGEMENT

Through an online upgrade, your monitoring capabilities can be expanded to provide Dynamic Power Management (DPM). The DPM feature adjusts the number of servers operating in your data center – in real time – to optimize overall server utilization based on actual application load.

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POWER ASSURE MONITORING SOFTWARE SPECIFICATIONS

MONITORING SOFTWARE MODULE

ELEMENT	DESCRIPTION
Monitoring Frequency	Once per minute or as needed per runbook process
Protocol Support	Ethernet/IP, BACnetEthernet, BACnet/IP, Modbus, Modbus/TCP, SNMP, GE-SRTP, DF1, BACnetMSTP, BACnetPTP, JBus, ModbusASCII, ModbusDaniels, ModbusOmniflow, ModbusRTU, ModbusTek-Air, and MetasysN2 Open
Environmental Data Collection	Temperature (inside and outside) and humidity

CUSTOMER POWER MANAGEMENT DASHBOARD

ELEMENT	DESCRIPTION
Core Functionality	Displays and manages power consumption, PUE, temperature, application load, application capacity, servers, and racks
User Interface	Flash/Flex 3.0 with XML/HTTP request support, dynamic content loading, integrated overlay management, and Web services SOA - Soap/XML: Service abstraction available for easy UI integration using JSON, Flash, XUL, and .NET Real-time graphic monitoring Adobe Air standalone dashboard optional Mobile phone support on demand
Web Portal Access	Real-time reporting and information access HTTPS access supported IE, Firefox, Safari, Opera, and Chrome compatible Micro-browser support on demand
Languages Supported	SaaS Back-end and Flash front-end currently available in English. Other UI languages available on request

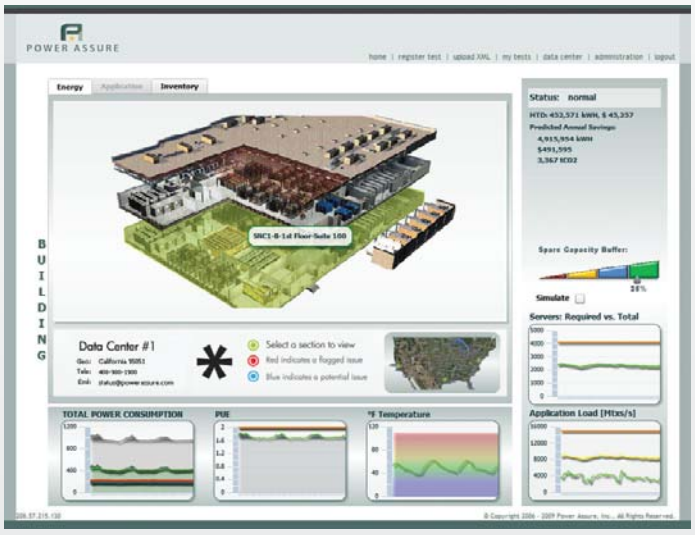

Figure 1. Customer Power Management Dashboard

P100 ENERGY CONTROLLER

ELEMENT	DESCRIPTION
Sizing Information	1U appliance can monitor up to 10,000 measurement points. Multiple appliances will be provided as needed.
Processors	2 Intel 5500 Series Processors
Chipset	Intel 5500/ICH10R
BIOS	32 Mb AMI SPI Flash ROM
Memory	8 GB
Drive	1 SATA hard drive
Network	2 Gigabit Ethernet ports
Physical	19-inch rack mountable Weight: 18 pounds Dimensions: 17.3 W x 1.7 H x 14.5 D inches
Cooling	Three 4-cm counter-rotating fans
Input Requirements	AC Input Voltage: 100-240 VAC Rated Input Current: 7A ~ 3A max (100-240V) Rated Input Frequency: 50 to 60 Hz

SAAS BACK-END

ELEMENT	DESCRIPTION
Process Models	Templates stored in central repository; can be shared and re-used; individual process models are stored for each customer's application
Process Model Execution	Self-healing management with re-distribution of tasks in case of temporary resource unavailability Automatic failover and automatic load balancing using multi-threaded modules Executed tasks logged centrally to create individual customer archives
Process Customization	Highly flexible and reusable. Process can include multiple applications, multiple resources, and people. Process can be nested, event-driven, and time-driven; can have sequential tasks, parallel tasks, loops, execution, and routing rules. Process can invoke scripts and applications, notify people (via pager and email), monitor events/systems, and trigger tasks/actions
Monitoring and Management Process Control	Modbus event handling: shutdown/startup/slowdown Load balancing services: add, remove, allocate, de-allocate servers Virtualization services: start, stop, migrate, monitor System management services: application status/load, system load, runbook execution
Utility Grid Status	Availability, alerts, and demand-response
Energy Pricing	Captured by utility company, zip code, and time-of-day
Data Archiving	Energy demand and savings measured each minute and stored for 36 months
User Administration	Login/access management with 10 user levels and grouping possibilities Branding support: customer header available
Multiple Company Support	Support for multiple isolated companies within one system and support for a hierarchy of companies enables hosting/colocation providers to provide compartmentalized access to their customers
Available Extensions	Ping; HTTP status check; HTTP application execution; network port scan; event listener; Telnet script execution; SQL command execution (primarily used for mySQL/DB2 certified); Windows Command Line script execution; remote Windows service calls; SNMP event handling; time management; email/pager notification
Platform O/S and Database Support	Windows 7 (in test), Vista, Win2k, Suse Linux 9.x/10.x/11.x, Apache, mySQL, DB2-certified for IBM eSeries, iSeries, and zSeries
Security	HTTPS, SSL, VPN

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