

Capabilities Brochure

Enterprise Data Center Solutions



Powering Business Worldwide



Turn to Eaton for

Your data center and the network that supports it form the backbone of your enterprise. If there's a problem with the power to your data center, every part of your enterprise can be affected.

Eaton solutions help you build a data center with targeted reliability, optimized efficiency and the ability to adapt to meet your most critical challenges—now and in the future. By viewing your data center as an integrated system, our experts can ensure interoperability that lowers your costs, reduces your risk and provides a safer environment throughout the life cycle of the data center. Eaton can influence the scope of the entire electrical system to ensure coordination on delivery, installation and commissioning. All of our products work together to ensure smooth operational processes.

Eaton's data center solutions help you manage your power and thermal management system as strategic assets that give you real business benefits.

Reliability

Eaton provides reliable distribution equipment, uninterruptible power systems (UPSs) and DC network power systems to ensure a steady flow of high-quality power—because an outage of just a few seconds can be catastrophic in a data center.

Efficiency

Eaton's three-phase, high-efficiency UPS products provide maximum savings through unrivaled power performance in efficiency, input current harmonic distortion, a transformerless design and power factor. Our airflow management and heat containment systems optimize the temperature in your data center and increase individual rack capacity as well as CRAC cooling efficiency.

Safety

Safety is important not only for equipment and data, but also for workers. Eaton engineers provide diagnostic arc flash studies, retrofit programs and employee training to assess guidelines, reduce fault current and duration, place people away from faults and prevent faults through predictive diagnostic tools and monitoring equipment.



effective, reliable, end-to-end data center solutions

Advanced, high-density blade equipment produces more heat to dissipate in less space. In both physical and virtual environments, power monitoring and management is essential, to maintain a clean and reliable power supply, and to manage costs more effectively. Additionally, scalability and speed to installation are vital and directly related to the increasing pressures on capital budgets, use of space and energy and the overriding requirement to ensure that every link in the system that supplies power to your data center is strong and reliable.

Eaton is a single-source provider, giving you a single point of contact throughout the life cycle of your data center. Our data center solutions provide a comprehensive portfolio of services, software and products that are developed to work together, providing consistent, effective management of your power system, physical and virtual, from end to end. Our products and services will support the infrastructure you have today and the one you are planning for in the future.

A global leader with a rich history

Eaton has built an electrical business that is a global leader in electrical control, power distribution, uninterruptible power supply and industrial automation products and services.

With over 100 years of expertise, Eaton has evolved from a leader and innovator in vehicle technologies to a leading power management company. Today, Eaton's global operations serve diverse markets and customers in more than 150 countries. Our products are certified and tested to work together, removing any potential risk. As we help customers to use energy more reliably, efficiently and safely, our values and strong culture of "doing business right" will continue to guide us toward building a more powerful tomorrow.

Manage your power system

From chip to grid, Eaton helps you measure and manage your power system with our extensive expertise and comprehensive portfolio. Our offering includes power distribution, power quality thermal management, full scale engineering and support services, and information management systems.

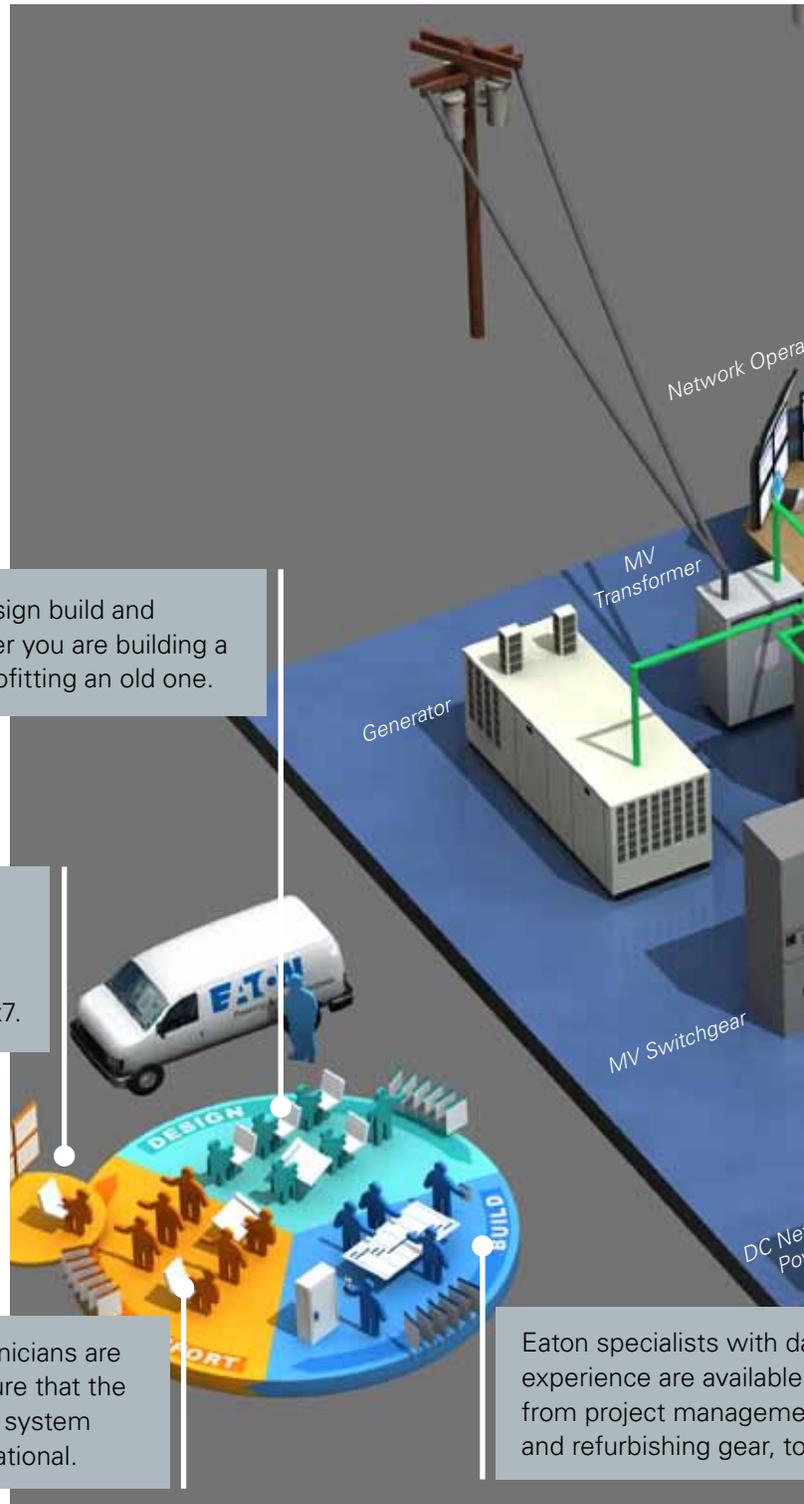
Whether you are in the process of designing a new data center or retrofitting a current one, Eaton has the engineering experts and solutions to help create an efficient, safe and reliable data center. Here's how.

Eaton provides design build and consulting, whether you are building a new facility or retrofitting an old one.

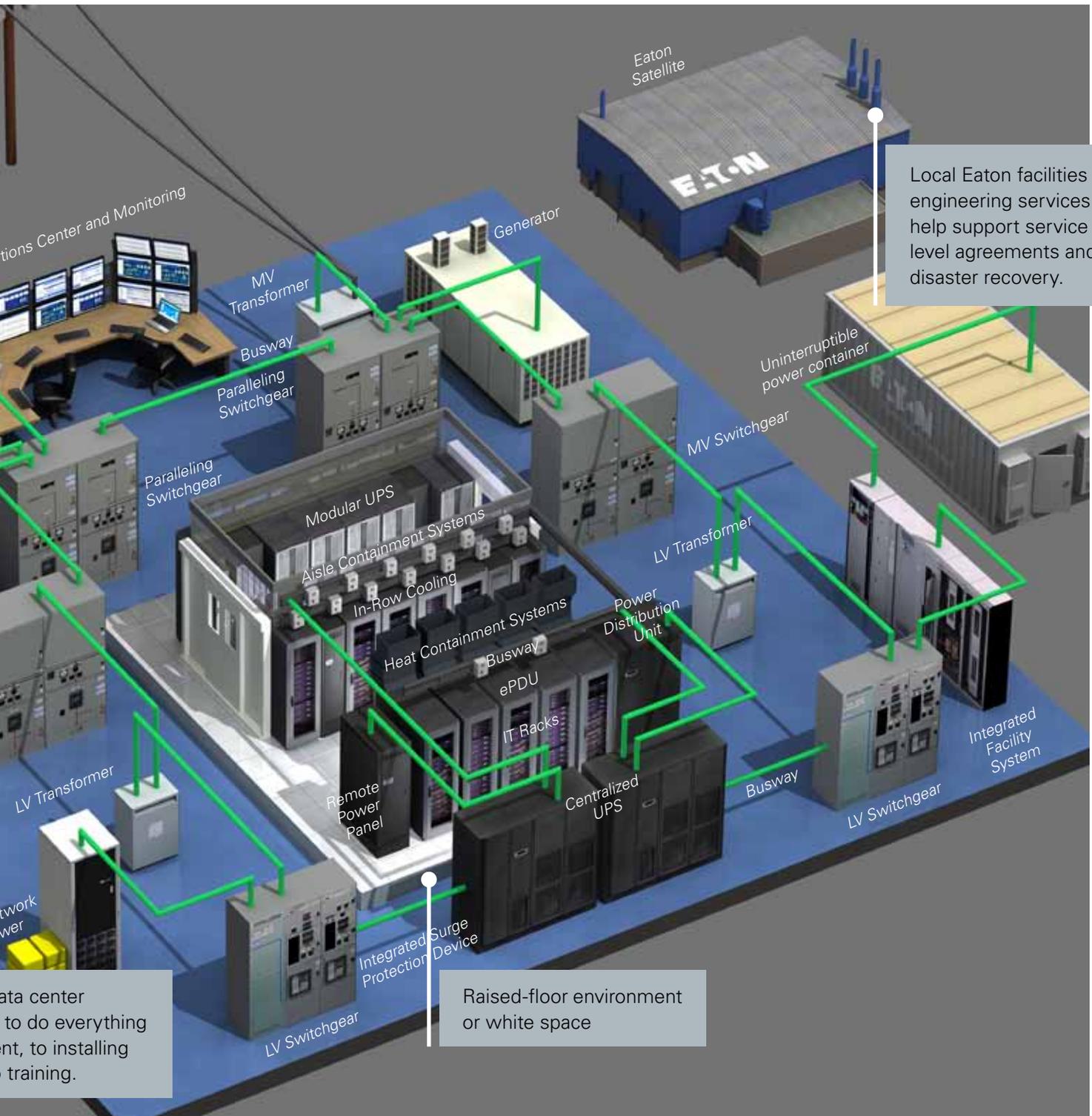
Eaton's Customer Reliability Center supports remote monitoring of vital equipment and dispatches technicians 24x7.

Eaton's engineers and technicians are available worldwide to ensure that the components of your power system keep your data center operational.

Eaton specialists with data center experience are available from project management and refurbishing gear, to



em from chip to grid



Design, build and planning services

Building and designing a new data center

Eaton helps assess your plan and provides engineering, installation and project management leadership for the build. Our experts help determine the best power solutions, while integrating cooling and software management systems.

Retrofitting a current data center

Data centers designed and constructed in the mid to late 1990s have components that are nearing their end of life and have substantially lower performing technology than what is available today, they were not designed to support today's rack power densities or virtual environments. With Eaton's expertise and products, we are able to retrofit your current design, while ensuring efficiency, cost and safety.

Eaton Electrical Services and Systems (EESS) offer solutions, including:

- Data center retro-commissioning
- Comprehensive monitoring of critical power, environmental, safety and security systems
- Metering solutions
- Arc Flash studies and training
- Power system evaluation
- Electrical equipment life extension solutions
- Field engineering, testing and maintenance services
- Energy and airflow efficiency solutions
- Computational Fluid Dynamics (CFD) analysis

Eaton's Large Systems Group

Eaton Large Systems Group, (LSG), has over 40 years of experience in building and designing large power solutions to meet a wide range of specifications and applications. Using innovative technology, reliable designs, and passionate people, Eaton can tailor a power solution for the specific needs of your facility. No matter the project location, or spread of your global operations, with Eaton schedules will be met, costs will be contained, and growth anticipated. Doing it right from the beginning can greatly reduce the future risks of costly power-related downtime and allow the flow of business to run uninterrupted. Simply the most reliable power solutions available, customized for your needs.



Data center project management

Reduce the risk of a complex construction project with an Eaton project manager. We coordinate schedules, interact with on-site teams, resolve systems integration issues and handle logistics.

Power audits

Find out how to get more out of your system with an on-site power audit. Our service engineers will evaluate your power system from substation through critical loads, and then offer recommendations for improving power quality, reducing operating costs and ensuring safety code compliance.

24x7 engineering and customer services

Your data center works around the clock and so do we. Our global team of over 1,200 service engineers is available to serve your needs 24x7. Additionally, our customer service center, located in Raleigh, N.C. is fully staffed and operational 24x7. When you call, we will answer.



Data center white space

Your data center is critical to the smooth operation of the entire enterprise. Eaton has equipment that helps you monitor and manage the reliable flow of high-quality power and airflow to your data center equipment, from rack to row to room.

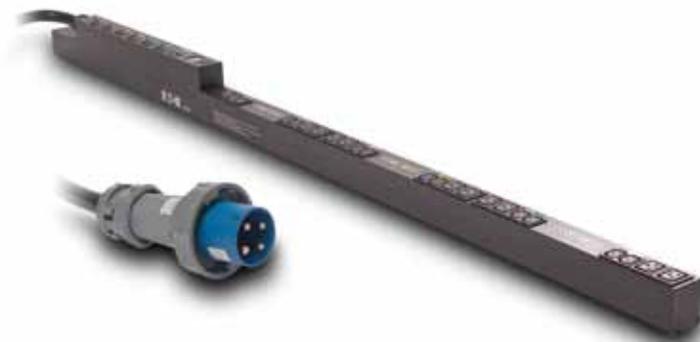
Use of alternate data center white space distribution voltages

One of the more rapidly adopted data center design practices has been distributing higher AC voltages, the most common being 400V three-phase power in the white space. This allows customers to achieve much higher levels of efficiency by shrinking electrical conduit sizes and eliminating transformers in PDUs. Eaton is fully aligned with our customers who are looking to achieve higher efficiency, by offering UPSs, ePDUs and RPPs.



Airflow management solutions

Eaton's Airflow Management Solutions (AMS) not only lower data center energy demands, but also helps you save on energy costs. Eaton offers a wide range of partial and total containment solutions that accommodate hot aisle containment, cold aisle containment and rack-based heat containment.



Managed rack power distribution - Eaton ePDUs

Eaton offers two leading technologies for power distribution management at the rack enclosure level, Advanced Monitored and Managed ePDUs. Both technologies offer outlet-level monitoring of power usage in kilowatt hours. They monitor critical factors such as voltage, current and power factor in high accuracy.

This level of monitoring provides the granularity to understand your energy consumption. Specifically, it can reveal where extra capacity resides and allows you to assign power usage by piece of equipment.

Eaton also offers a number of other technologies to fit any data center need, including basic, hotswap, switched and automatic transfer switch.



Pow-R-Flex Busway

Eaton's busway offers electrical distribution solutions that are flexible, energy efficient and provide cost savings. This busway offers a preferred means of connecting electrical equipment to maximize busway performance in power distribution systems and can be used over a range of applications.

Data center white space



Racks and enclosures

Eaton's racks and enclosures enable you to store, cool, power manage and secure your critical IT equipment. We offer customized solutions with a versatile array of accessories and options to make airflow management, cable management and power delivery easy and efficient.



Remote Power Panel (RPP)

The compact design of our RPP offers a customizable and scalable solution for expanding your data center power distribution efficiently and cost-effectively. We also provide a full line of accessories, including monitoring, branch circuit monitoring and cables.



Power Distribution Unit (PDU)

Eaton PDUs can be configured to meet your specific needs for isolation, voltage transformation, harmonic reduction and voltage regulation. Additionally, built-in monitoring and diagnostics will warn of potential threats to critical equipment.



Static transfer switch (STS)

Eaton STS units are designed to enhance our line of advanced backup power management solutions, adding an increased level of power quality, flexibility, availability and reliability to create the best UPS power protection infrastructure.



Rackmount UPS

Eaton offers industry leading efficient and reliable UPS solutions that protect your network and server environment. We offer scalable solutions ranging from 500 VA up to 60 kW.



DC power solutions

A complete line of DC power solutions, with optional integrated distribution and battery, offers secure power to customer equipment, VoIP and data networks, PoE, IP routers, PABX and outdoor power plants.



In-row cooling

Eaton offers in-row and end-of-row cooling solutions that will support a variety of configurations, including open or contained aisle configurations. Ideal for hot spot cooling in small to large data centers, this solution can be installed in 12" or 24" cabinet widths and is available via chilled water or direct expansion cooling methods.



White space services

Eaton offers a wide range of services within the white space, including blanking panels for a cost-effective solution for optimizing air circulation within an enclosure, Computational Fluid Dynamics (CFD) modeling services, giving you a way to compare and substantiate which design decisions maximize your data center flexibility, scalability and resilience and aisle containment testing to improve energy performance. To further address the effectiveness of cooling your data center we offer data center cooling assessments.

Facilities

During normal power interruption, power control and switching equipment automatically transfer the load circuits to the emergency power source. Once the normal power source has been restored, the process is automatically reversed. Eaton has a full line of medium voltage and low voltage power control and switching equipment that are known for their quality and durability, during the harshest of operating conditions.



Arc-resistant switchgear

Eaton's low-voltage arc-resistant switchgear protects operating and maintenance personnel from dangerous arcing faults by redirecting or channeling the arc energy out the top of the switchgear, regardless of the origination location of the arc, with no increase in footprint. The patented venting system directs arc gasses out the top of the enclosure and the patented bellow design allows draw out of breaker into disconnected position with the door closed while simultaneously protecting the operator from any dangerous gases during an arc event.



Power Xpert™ 9395 UPS with ESS

With an unprecedented level of power performance, the Power Xpert 9395 has numerous technological advancements that creates an optimal level of reliability while emphasizing serviceability. Key features and benefits include

- 99% efficient with Energy Saver System (ESS)
- Only 400V / 60 Hz UL-listed UPS available in North America
- Provides stronger power performance with double-conversion design and Eaton's exclusive Easy Capacity Test
- Powerware Hot Sync paralleling offers superior battery management, inherent redundancy and a scalable architecture that adapts to increasing power requirements



Medium Voltage switchgear

Save over 50 percent of the space required for your switchgear. Eaton's industry leading Metal Enclosed Front Accessible switchgear combines space-optimization with front-accessibility in an agile and cost-effective assembly.



Unit substation transformer

Unit substations may be indoor or outdoor, with a selection of high-voltage incoming sections, a choice of transformer types, and an arrangement of switchgear to suit the application. Unit substations follow the system concept of locating transformers as close as practicable to areas of load concentration at utilization voltages, thus minimizing the lengths of secondary distribution cables and buses.



Low voltage switchgear

Eaton's front accessible low-voltage switchgear offers a space savings of more than 40 percent over traditional models. It represents the most flexible, cost-effective, high-performance switchgear available for low-voltage applications.



Integrated Facility Systems (IFS™)

Shorten site construction times with Eaton's IFS solutions. These prefabricated transformers, switchboards, UPSs, lighting control and DC power units are ready to install when they arrive, saving space and reducing construction costs.

Facilities



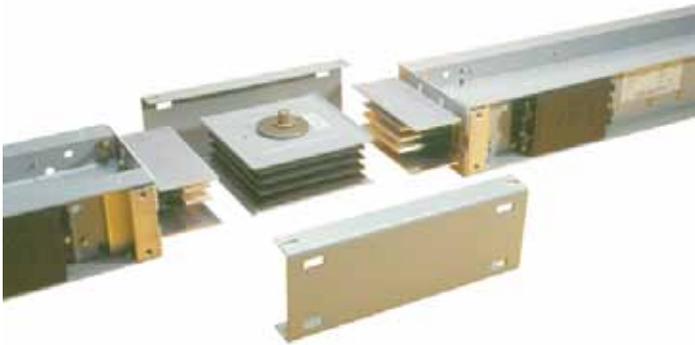
Paralleling switchgear

Ensure reliable power sources with medium and low voltage paralleling switchgear that enables facilities to have redundant power systems.



Surge suppression

Protect your equipment against power surges with our complete line of surge suppression products for applications from service entrance to data communications. Equipment can be factory-mounted into switchboards or wall-hung. Eaton provides surge suppression for multiple levels within the data center facility.



Pow-R-Way III busway

Eaton's Pow-R-Way® III busway offers electrical distribution solutions that are flexible and without limitations, and are energy efficient, saving time and money.



Automatic transfer switches

Automatic transfer switches are critical components of any emergency or standby power system. Eaton's transfer switches are reliable, rugged, versatile and compact assemblies for transferring essential loads and electrical distribution systems from one power source to another.

Software and management of your data center

Monitoring your data center gives you the power to manage, measure and control your power equipment. Eaton provides different levels of software solutions that combine hardware, software and communication elements to bring diverse power components into a unified system.

Power Xpert and Foreseer (over 100 racks)

Power Xpert Software enables you to manage the complexities of large system deployments, from one desktop, on one screen. Web-enabled hardware devices are fine in limited numbers, but as the number of components grows or becomes more complex, Power Xpert Software is the logical choice for the required trending, analysis and alarming systems.

Eaton's Foreseer® software is a highly customized application that enables data center managers to see their facility through one pane of glass. Eaton engineers set up the entire system onsite, including designing customized web pages. We ensure every device that needs to be monitored in the data center, no matter the manufacturer, is reporting properly to the central location.



Intelligent Power Manager (less than 100 racks)

Eaton's Intelligent Power® Manager gives you all the tools you need to monitor and manage power devices on your network, even in a virtualized environment.

- Remotely monitor and manage multiple UPS and ePDU devices across your network from a single interface — any PC with a Web browser or your vCenter™ or XenCenter™ dashboard
- Measure power consumption and kWh to help calculate power usage effectiveness (PUE)
- Integration with virtualization platforms increases productivity and operational responsiveness
- Trigger migration applications to transparently move virtual machines to an available server on the network, for data integrity and zero downtime

Eaton network operation center

Eaton is the leading provider of ergonomic consoles for mission-critical applications. By integrating people with technology, Eaton console designs help to manage technology-intensive network operation environments in data centers.



Software and management of your data center

Having the appropriate type and placement of energy meters with accompanying software tools allow you to measure and analyze your facility for PUE improvement possibilities.

eNotify Remote Monitoring

Eaton's eNotify Remote Monitoring features 24x7 real-time monitoring of your UPS and battery systems. eNotify collects performance data and sends status messages to Eaton's Remote Monitoring Command Center. Remote diagnostics and field technician dispatch expedites service response time. eNotify evaluates the health of your UPS by comparing current and historical performance data with specified parameters. The analyzed data is then used to make accurate performance reports of the UPS's status. Monthly e-mail reports detail UPS performance and alarm history, enabling you to make more informed management decisions.

Cellwatch battery monitoring

Cellwatch is Eaton's battery monitoring system, which monitors the ohmic value of all jars in the battery every day. By avoiding random sampling of jars, which can miss a failing cell, Cellwatch dramatically increases the likelihood of identifying a potential problem before it becomes a crisis. It uses a very light test load, combined with superior electrical noise filtering techniques, enabling timely battery replacement or other preventive action.

Power and energy meters

Harmonics, voltage fluctuations, transient over-voltage conditions, and more can wreak havoc on equipment and processes. Eaton's advanced meters provide accurate real-time system values, capture waveforms and system events, and display data directly on the device through on-board Web servers or through a software monitoring solution.

Energy management system upgrade kit

With Eaton's EMS you continuously measure the current on all breaker levels and are warned of impending trouble, allowing you to be proactive. The kit allows you to bring your entire power distribution system under one umbrella, giving you the insight and edge you need to manage your data center.

Power Xpert Meter 2000 Series

Eaton's Power Xpert Meter 2000 offers comprehensive world-class power and energy measurement and monitoring that reduce day-to-day operating costs and help avoid costly business interruptions. The series combines state-of-the-art technology with harmonic viewing, data trending, and performance benchmarking.



Power Xpert Meter 2000



Power Xpert™ 4000/6000/8000 meters

Ongoing service support

Ongoing support services from Eaton provide the maintenance, parts and service you need to get the best performance from your equipment that is already in place. Our field technicians and customer support engineers can start up and commission equipment, perform planned maintenance, monitor performance and diagnose problems remotely, as well as respond to emergencies on a 24/7 basis, 365 days a year. In addition, our customer support centers are available round-the-clock to

schedule services, monitor equipment, send spare parts and provide emergency support. With optimal maintenance and support, your business will have more reliable, higher quality and more cost-effective power. Our support services help businesses make the most of their existing electrical equipment by optimizing performance and extending the life of existing facilities.

Range of services

- Equipment set-up and installation: pre- and final commissioning
- Technical studies and reports, relay protection, grounding, power quality, partial discharge: online service design (Eaton-InsulGard)
- Maintenance of MV & LV systems networks and capital equipment. (All makes and models non-destructive, non-intrusive, predictive and conventional time based.)
- Equipment life extension – Retrofit equipment and accessories including vacuum breakers
- Local operational site control – ‘SAPs’ based on client’s sites (SAP-switching/safe systems/safety rules)
- Training for personnel competency and authorization
- Crisis response and disaster recovery: 24-hour call-out retainer contracts and emergency/supply failure

UPS services

A preventive maintenance plan is the key to achieving maximum performance from your Eaton UPS. With a variety of service plans tailored to meet your unique needs, Eaton is uniquely positioned to provide premium power protection. We have over 240 field service technicians that are available 24x7. Their services include:

- Start-up and commissioning
- Upgrades
- Preventive maintenance
- Thermographic inspection
- Load bank testing

Contact Eaton

Visit Eaton on the Web at
Eaton.com/datacenter



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