

# Powering data centres worldwide



**EATON**

*Powering Business Worldwide*



## Your needs – our solutions

Every day all over the world, countless applications are managed, distributed and protected by systems and products from Eaton. Operating since 1911, Eaton is a diversified power management company with 2010 sales of \$13.7 billion. Eaton serves customers in more than 150 countries and employs 73,000 people.

We are dedicated to ensuring that reliable, efficient and safe power is available when it's needed most. With unparalleled knowledge of electrical power management across industries, our experts deliver customised, integrated solutions to solve our customers' most critical challenges.



Outsourcing, co-location and cloud computing, energy and cost-efficiency, environmental and legislative issues: running a data centre in a constantly changing world is a huge challenge.

**From an IT perspective**, advanced, high-density blade equipment brings with it denser power requirements, meaning more heat to dissipate in less space. In both physical and virtual environments, power monitoring and management is essential, both to maintain a clean and reliable power supply, and to manage costs more effectively.

**In terms of electrical needs**, scalability and speed to installation are second only to the absolute need to maximise uptime – the availability of power at all times. There are pressures on capital budgets, on use of space and energy; and, of course, the overriding requirement to ensure that every link in the system that supplies power to your data centre is strong and reliable.

Eaton is a single-source provider offering power distribution, power quality, heat management and monitoring products and solutions as well as project management services to data centres.

Building reliable, energy-efficient and environmentally-friendly products and life extendable solutions, we are a global, trusted power management partner, supporting your data centre project from conception to completion with life-time services.

We have delivered significant power infrastructure projects to data centre customers worldwide, including financial and government organisations, hospitals, educational institutes, internet service and wholesale data centre providers. We also partner with global IT manufacturers to facilitate their data centre solutions.

## Solutions

Whatever the specific power infrastructure issues you might have in your data centre, Eaton has the expertise and the resources to deliver appropriate, robust and sustainable solutions which will help to reduce expenditure and energy usage.

### IT issues



Managing blade power and heat



Managing power for cloud and virtualised IT



Power monitoring and management

### Electrical needs



Managing uptime



Improving energy efficiency



Ensuring life extendability (scalability)



Optimising space



Managing heat



Improved metrics



Speeding installation



Providing life cycle services



Operating sustainably (environmental)



Minimising capital expenditure

# Solutions that deliver the reliable power your system needs

Your data centre and the network it supports forms the backbone of your enterprise. If there's a problem with the power to your data centre, every part of your business can be impacted. When the stakes are this high, you need exceptional power management capabilities throughout your power system.

## Eaton data centre solutions

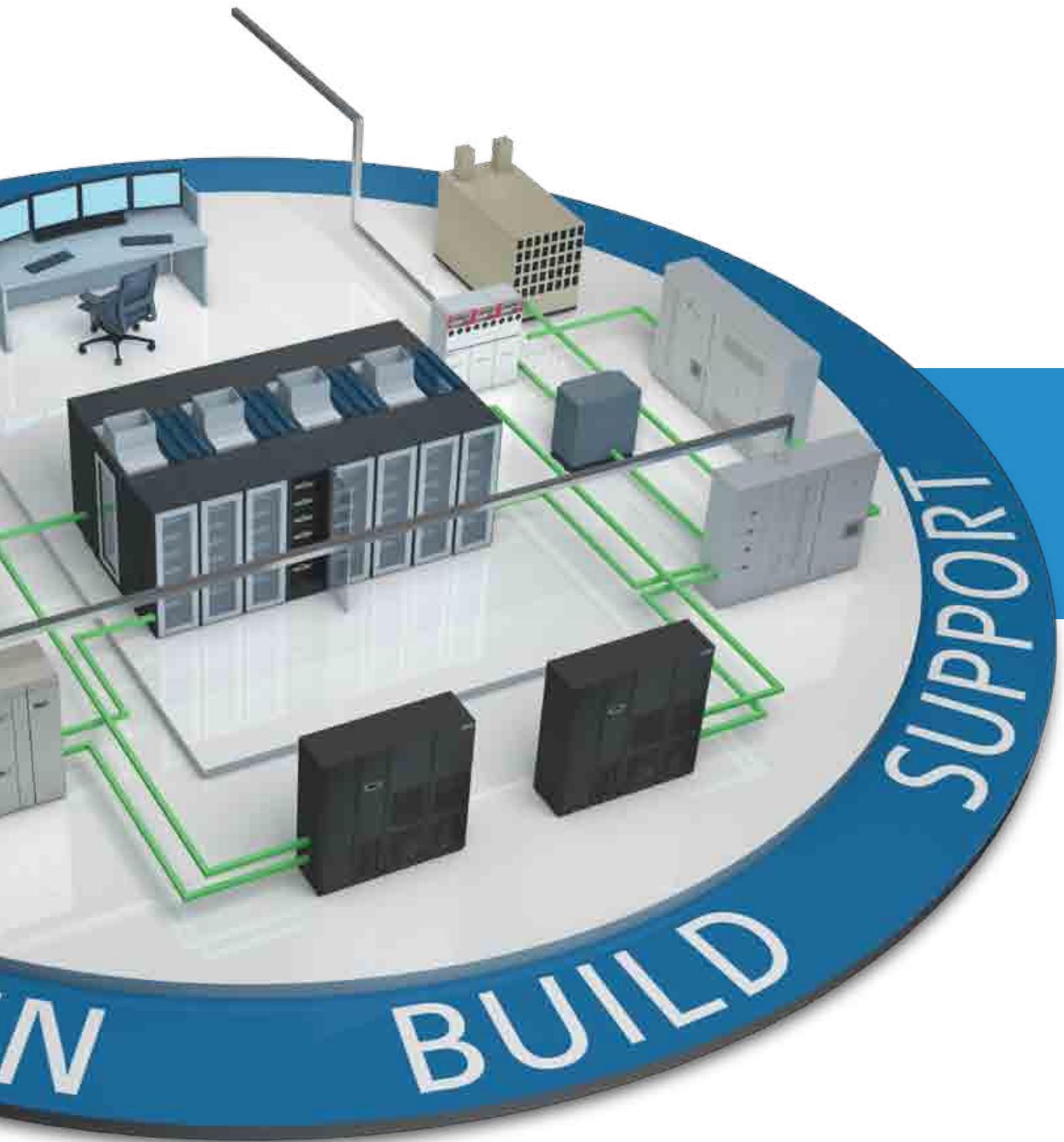
- Power distribution at a medium and low voltage level
- Power quality solutions
- Heat management solutions
- Monitoring solutions
- Project management and services

Our experienced data centre specialists will manage a construction project from start to finish, recondition or upgrade equipment or modernise a power system. In addition, our support services will help you make the most of your existing electrical equipment by optimising performance and longevity.

We can help you build a power system that delivers the reliable, high-quality power your data centre needs. We help enterprises find competitive advantages by seeing every power system as a strategic asset to be measured and managed in an integrated way throughout its life cycle. Taking a broader view of a power system as wholly integrated leads to powerful results: greater reliability, operating cost efficiencies, effective use of capital, enhanced safety and risk mitigation.

See our data centre solutions brought to life at [www.eaton.eu/datacentres](http://www.eaton.eu/datacentres), an invaluable resource for IT and electrical consultants everywhere.





# Power distribution

Eaton delivers safe, high-performance, IEC-compliant medium and low voltage systems for switching and controlling electrical energy in distribution networks.

## Your needs – our solutions

Whatever your priorities are, we have a range of medium and low voltage equipment to meet your needs precisely.

-  **Improving energy efficiency**
-  **Ensuring life extendability (scalability)**
-  **Optimising space**
-  **Minimising capital expenditure**
-  **Ensuring speed to installation**
-  **Operating sustainably (environmental)**
-  **Managing uptime**

### Medium Voltage Switchgear

Eaton's medium-voltage switchgear provides the first stage of control and protection in power distribution.



#### Power Xpert® FMX, 3,6–24kV

IEC switchgear, single busbar with fixed breakers and based on solid- and air insulation. Using industry-leading vacuum and solid insulation technology (SF<sub>6</sub>-free).



#### M2L Package Substation

A compact, integrated electrical distribution system for a complete factory build solution, combining medium voltage connection and low voltage distribution including transformer.



#### SVS, 3,6–24kV

Metal-enclosed, epoxy resin insulated switchgear with fixed vacuum circuit-breakers or load-break switches, up to 24kV, 630A.



#### Xiria Ring Main Units, 3,6–24kV

An extremely compact, environmentally-friendly ring main unit switchgear supplied in two-, three-, four- or five-panel versions. Both the primary part of the unit and the mechanisms are housed in a fully enclosed housing.

### Low Voltage Switchgear

A comprehensive range of factory-assembled, IEC-compliant switchgear solutions provides centralised control and protection of low voltage power equipment and circuits. Add arc fault protection and you have a reliable and safe low voltage solution.



#### Capitole 40

A switchgear and control gear assembly up to 6300A/690V with a full range of fixed, plug-in and withdrawable functional units, which comprise feeders, bus couplers, motor starters and distribution feeders.



#### Power Xpert® CX

Withdrawable switchgear for distribution and motor control in 3b and 4b form up to 480V, 4000A.



#### Arcon

The revolutionary arc fault protection system for low voltage switchgear.



#### Busbar Trunking System XP

A highly flexible alternative to cable management. From 500–6300A, the XP system takes low impedance, sandwich construction busbar trunking to a new level.



#### Busbar trunking system MP, 125–800A

Medium power busbar trunking (MP) systems are Kema certified with plugging facility every 333mm. 8 tap-off units can be fitted along a 3m length. A range of SPN and TPN tap-off units are available with CE sockets protected by MCBs.



### **SF<sub>6</sub> free**

Medium Voltage (MV) switchgear requires an insulation medium. Our solutions include air insulated and solid insulated switchgear designs that avoid the use of environmentally harmful SF<sub>6</sub> gas and can offer a lower total cost of ownership over the complete life cycle of your medium-voltage equipment.





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### **An Eaton Green Solution**

#### **Eaton Green Leaf**

As extremely environment-friendly, energy-saving solutions, Eaton 9395 and Eaton BladeUPS carry our 'Green Leaf' status, highlighting that they go beyond normal standards to provide an exceptional environmental performance.

# Power quality

Our power quality solutions maximise clean, reliable and highly efficient power to critical data centre applications, giving you continuous uptime to keep your business running without interruption.

## Your needs – our solutions

Uncompromising reliability and state-of-the-art technology go together in our pioneering, world-class range of UPS and ePDU solutions, helping you address a range of data centre challenges safely and cost-effectively.

-  **Managing uptime**
-  **Improving energy efficiency**
-  **Ensuring life extendability (scalability)**
-  **Managing power for cloud virtualised IT**
-  **Managing blade power and heat**
-  **Power monitoring and management**
-  **Optimising space**
-  **Operating sustainably (environmental)**
-  **Minimising capital expenditure**
-  **Improved metrics**



### Eaton 9395 225–1100kVA

This industry-leading three-phase double conversion UPS, with its innovative scalable design and energy-saving technologies enabling up to 99% efficiency, is trusted by major global organisations including financial institutions, manufacturers, internet service providers, health authorities and ship owners.



### Eaton 9390 40–160kVA

A three-phase double conversion UPS which provides a scalable, reliable solution and delivers up to 99% efficiency.



### Eaton BladeUPS® 12–60kW

A three-phase UPS solution delivering 98% efficiency that provides scalable, flexible and highly efficient backup power, optimised for high-density blade servers and IT equipment.



### ePDU®

Enclosure-based power distribution units designed to provide reliable, cost-effective power distribution together with highly accurate monitoring, control and management data centre IT equipment. We have a full range of ePDU technologies: Managed, Advanced Monitored, Switched, In-line monitored, Monitored, Metered and Basic.



### Intelligent Power® Manager

This software offers complete control and monitoring of UPS and ePDUs and integrates seamlessly with the leading virtualisation management tool, VMware vCenter. It can even trigger vMotion to move virtual machines to other servers or sites if there is a fear of power loss.



### Intelligent Power Protector

This solution allows for safe and coordinated shutdown of servers that need to be rebooted or removed. Intelligent Power Protector supports traditional server operating systems as well as VMware ESX, Microsoft Hyper-V, Xen and KVM virtual environments.

# Heat management

We offer a broad range of airflow management solutions to optimise control of the heat inherent in data centres today.

## Your needs – our solutions

We offer a wide range of airflow management solutions developed to meet the very specific needs of today's data centre.



**Managing blade power and heat**



**Managing heat**

### IT Racks

Intended to optimise heat management within the rack, our enclosures provide an ideal base for the room airflow management system. Available in a variety of heights, widths and depths, Eaton's racks are designed to keep air leakage to less than 3%. They can be provided with numerous devices including ePDUs, Blade UPSs, side-to-side airflow managers for network switches, and a wide variety of cable management configurations.



### Airflow Management Solutions

Our airflow management products, including aisle and rack-based heat management systems, help you ensure a more predictable, efficient operating environment.



#### Aisle-based solutions

include hot or cold aisles with horizontal, ducted and even vertical wall arrangements providing solutions for any data center airflow needs.

These vendor neutral containment products are capable of accommodating differing rack heights and widths, and can be mounted to the IT racks, directly to the floor – or even suspended from the ceiling. In terms of security, we have developed a fire-activated ceiling which can be either heat or electronically opened, and is available on any of our containment frames – rack, floor or ceiling-mounted.



#### Rack-based solutions

are attached individually to each rack where they direct heat from the IT equipment through a top-mounted chimney into the ceiling or ducted plenum. These patented chimney products are either passive or active with redundant fans controlled by temperature or pressure. Vendor-neutral in design, the heat-containment chimneys are able to be retrofitted into existing facilities to resolve a wide range of hot spot or other airflow management issues.





# Monitoring

Eaton offers a range of industry-leading solutions able to monitor and manage multiple power and environmental devices across the network via a single interface, from a web browser, even for virtualised environments.

## Your needs – our solutions

Eaton offers a range of monitoring solutions which help you to identify, control and manage power equipment in your data centre.



### Power monitoring and management



### Improved metrics

**Power Xpert**® monitoring system offers system-level management of the data centre's power infrastructure, giving customers access to critical information from any location via a web browser. The system provides warning messages if there are undesirable conditions in the power system. It also supplies event logs, giving valuable information that helps customers improve their power systems. Power Xpert Reporting automatically calculates Data Centre Infrastructure Efficiency (DCIE) and Power Usage Effectiveness (PUE). These industry-standard efficiency metrics help IT managers understand, track and benchmark how efficiently their data centre is running and how effective improvement efforts have been.

**Foreseer**® Power Monitoring Software is developed to support thousands of devices, connections, device parameters and data logging. It is fully scalable and facilitates monitoring of infrastructure pieces, including HVAC, UPS, power distribution systems, generators, fire-detection, security systems, and other communicating sub-systems from hundreds of manufacturers – all on one screen.

**Intelligent Power Manager** software offers complete control and monitoring of UPS and ePDUs and allows access from any computer in the network or remotely via the internet. It also integrates seamlessly with the leading virtualisation management tool, VMware vCenter. It can even trigger vMotion to move virtual machines to other servers or sites if there is a fear of power loss.

Intelligent Power Manager also integrates with **Intelligent Power Protector** allowing for safe and coordinated shutdown of servers that need to be rebooted or removed. Intelligent Power Protector supports traditional server operating systems as well as VMware ESX, Microsoft Hyper-V, Xen and KVM virtual environments.



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# Project management and services

## Your needs – our solutions

Our experienced team help support you through a variety of power-related challenges.



Providing life cycle services

All businesses are different, but they have one thing in common. All depend on electrical power to create value. Our experienced data centre specialists help you better design, build and maintain data centre power and airflow management infrastructure, making it possible to manage power systems as a strategic resource that brings you competitive advantage.

### Design

We offer a full portfolio of design services, from consulting, design, and engineering, to safety studies, energy management audits, and power quality and reliability audits.

### Build

Our specialists can manage a construction project from start to finish, upgrade equipment, or modernise your power system.

With our project management services, you'll have a single point of accountability - with smaller risk of project delays and failures. The result will be a safer, more reliable, and cost-efficient power system.

### Support

With optimal maintenance and support, your business will have more reliable, higher quality, more cost-effective power. Our support services help businesses make the most of their existing electrical equipment by optimising performance and extending the life of existing facilities. We provide the maintenance, spare parts, and service needed to get the best performance from your power system.



# Partnering for efficient data centres

Eaton works with other global organisations to develop and implement ever more reliable, energy-efficient, manageable and sustainable power infrastructure products, solutions and services for data centre customers.

## The Green Grid member

Eaton is a member of the Green Grid consortium – a group of information technology companies and professionals seeking to lower the overall consumption of power in data centres around the globe.



## Blade.org

Eaton takes part in Blade.org, which is a collaborative organisation and developer community focused on accelerating the development and adoption of blade server solutions. The organisation provides leadership to the blade market and fosters a thriving industry ecosystem focused on delivering valuable solutions to blade computing customers.



blade.org

## Blade Systems Alliance (BSA)

Eaton belongs to Blade Systems Alliance (BSA), which is an independent, non-profit organisation of server blade manufacturers, software suppliers, system integrators, analysts, consultants, end-users, and other interested parties to serve as a clearinghouse for information about blade systems, provide a focus for extending and improving standards, and promote their use in enterprise applications.



## Code of Conduct for Data Centres

Eaton has been granted the title of Endorser in the European Code of Conduct on Data Centre Energy Efficiency, drawn up by the European Commission's Joint Research Centre. The title was issued thanks to the company's determined work in developing sustainable products and solutions for data centres.



As a **VMware Technology Alliance Partner**, Eaton is on the forefront of maximising compatibility of its protection software for the virtual environment.



For more information about Eaton Data Centre Solutions, visit the Eaton Data Centre Consultant Portal at **[www.eaton.eu/datacentres](http://www.eaton.eu/datacentres)**. The portal is designed to help professionals pinpoint and provide reliable, cost- and energy-efficient solutions in data centre power systems.

To contact an Eaton representative to discuss Eaton data centre solutions, please visit Contact Us page of the portal.

Eaton is dedicated to ensuring that reliable, efficient and safe power is available when it's needed most. With unparalleled knowledge of electrical power management across industries, experts at Eaton deliver customised, integrated solutions to solve our customers' most critical challenges.

Our focus is on delivering the right solution for the application. But, decision makers demand more than just innovative products. They turn to Eaton for an unwavering commitment to personal support that makes customer success a top priority. For more information, visit [www.eaton.com/electrical](http://www.eaton.com/electrical).