



Eaton Helps Optimize "Green" Data Center

Product:

Eaton® Energy and PowerChain Management Audit

Location:

Harrisburg, Pa.

Market Served:

Health Insurance

Background

A Pennsylvania-based health insurer's mission is to provide access to affordable, quality health care that enables individuals to live longer, healthier lives. Supporting some 4.6 million customers, the company also contributes millions of dollars to help keep quality health care affordable and to sustain community-based programs.

Like a growing number of eco-friendly corporations, the company is also dedicated to implementing initiatives that reduce the risk of climate change impacts through green business projects. In fact, the company's active role in this area was recently recognized by *Computerworld* magazine, where they were ranked as a top "green" information technology company for 2008.

Challenge

Ensuring the ongoing health of its data center is an integral part of the company's ability to deliver quality health care initiatives to its subscribers. Responsible for providing connectivity to more than 100 hospitals and 40,000 health care professionals, the data center processes upwards of 500,000 claims and supports some 30,000 customer inquiries each day. The ability to maintain continuous high availability and uptime throughout the environment is absolutely critical, as estimates indicate that a mere five minutes of downtime would result in as much as \$650,000 in lost productivity alone.

In an effort to identify any inefficiencies in energy within its data center, in November 2007 the company asked a global IT infrastructure provider to complete an energy efficiency assessment and a thermal analysis of air flow. The goal was to assess the overall efficiency of energy usage within its facility, as well as quantify energy costs and the cost of energy losses, and solicit recommendations based on ROI and reliability considerations.

The thermal analysis was completed using technology, which calculates 3D temperature distributions within data centers to discover where improvements are needed. Then, to execute the energy efficiency portion of the assessment, the IT firm turned to a trusted partner of its own: Eaton®.

Solution

As a global leader in energy management, power quality and electrical solutions, Eaton was uniquely qualified to provide the perfect Rx for appraising the data center: the Energy and PowerChain Management® Audit. Designed to evaluate and improve the availability and reliability of a company's entire power system, the audit consists of visual inspections; electrical measurements using power quality monitoring equipment; interviews with on-site personnel; and review of utility bills and data.



Powering Business Worldwide

The engineers reviewed the data center's energy consumption to determine possible savings with utility rate structures, energy usage, time of day (on- or off-peak), power factor correction, and various methods of metering. During the survey phase, the data center had a Power Usage Effectiveness (PUE) of 2.50 and a Data Center Infrastructure Efficiency (DCiE) of 40 percent. When all projects are completed and the data center is fully populated, DCiE is projected to reach 65 percent.

As part of the Energy and PowerChain Management Audit, Eaton investigates methods of improving the reliability of the power system to help customers avoid costly downtime and repairs. Specifically, the audit examines interruptions, voltage sags, harmonics, surge protection, grounding, energy management and arc flash safety. In addition to analyzing existing system data, monitoring critical processes and loads, and evaluating energy usage, engineers assess power quality concerns related to internal loads or caused by external events.

Following a pre-site conference call, Eaton engineers and the health insurer's representatives walked the facility's power chain together. Engineers then evaluated factors such as wiring and grounding methods, the surge protection at the utility connection point and the downstream loads, and the company's backup protection including uninterruptible power systems (UPSs), backup generation, sag correction and power conditioning. Another focal point was a thorough review of the company's energy management processes to determine demand-side management opportunities and analyze energy-efficient electrical loads.

Upon conclusion of the audit, the company was supplied with a detailed engineering summary and evaluation of its electrical system, as well as ROI assessments for suggested solutions. Eaton identified 17 potential energy-saving opportunities representing up to \$138,000 in annual energy savings, and an average ROI of just 1.25 years. A follow-up call was completed at the facility three months later to ensure complete satisfaction.

The Energy and PowerChain Management Audit is one component of Eaton's overall PowerChain Management Solutions, which help enterprises achieve a competitive advantage through proactive management of the energy and power system as a strategic, integrated asset throughout its life cycle. Because a company's energy and power system is often a disparate collection of equipment, it doesn't always work in harmony to deliver the desired level of reliability, safety or operating costs. This challenge can be further complicated by the fact that an enterprise's energy and power system generally evolves as the business evolves, often making it more complicated, inefficient and harder to manage over time.

Result

The thermal analysis and power chain audit proved to be just what the doctor ordered. Although Eaton's Energy and PowerChain Management Audit determined that overall, the data center was a highly efficient facility, it also uncovered some key areas where improvements could be made.

For instance, the audit identified a high unbalanced current on the 480V mains feeding the company's UPS systems.

Also detected was a low power factor on the 480V mains; the absence of a power monitoring system; questionable arc flash reporting labels; a potential cascading transformer failure; and unit substation transformers that were at risk for damage by voltage transients.

By identifying cooling and electrical usage trends, Eaton uncovered opportunities to reduce excessive operational costs. This, in turn, has helped the company increase data center flexibility, speed of response and availability — all of which will translate into better service and value.

A significant percent of today's IT costs are driven by actual computing systems. Companies are always looking for opportunities to reduce their power footprint. Eaton can improve efficiency in data centers—both to reducing environmental impact and supporting offerings to communities worldwide.

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