

GE SG Series UPS Powers Efficiency at CoreSpace Dallas Data Center

Background:

Opportunities always present challenges, especially in the competitive data center industry. CoreSpace, a growing hosting company, seized an opportunity to expand their data center presence with the acquisition of an existing 30,000 square foot data center in the Dallas, Texas, area. With more than 20 years experience in the data center industry, the CoreSpace team knew that the facility's open footprint, mechanicals, infrastructure and heating, ventilation and air conditioning (HVAC) systems were all solid. Yet they understood that the original distributed energy management and power backup architecture protecting the facilities' servers needed to be on their list of upgrades to bring their data center up to their stringent service level agreement (SLA) standards for uptime, quality and reliability they deliver for their customers.

The Challenge: Acquiring a Data Center in Dallas

The data center acquired by CoreSpace was originally provisioned with two hundred thirty 42U⁽¹⁾ (i.e., 73.5" high) server racks. Each rack was powered by its own individual, or distributed, uninterruptible power supply (UPS) that provided a single-phase "standby" or "line-interactive" topography. While these UPS systems provided some backup power to servers during a complete power interruption, they delivered little or no filtering to ensure power quality, and offered no monitoring capability to keep an eye on these critical systems. While backup power was a key concern, power quality proved to be equally important. Even a minor voltage spike for a fraction of a second can force a server to shutdown, taking precious minutes to reboot. If an entire rack of servers is impacted, it might take up to 30 minutes or more to bring the system online, cutting into uptime, affecting service and costing the company time and productivity for information technology (IT) staff resources. These hard shutdowns also can cause corruption of data on mission-critical servers. For a company committed to delivering 24/7 continuous uptime, the quality and reliability of power was a cornerstone to its service delivery equation.

The distributed UPS protection approach also raised the facility's overall energy consumption and costs. The rack-based distributed single-phase UPS systems in total used more than 100 kilowatt amperes (kWA) of power, with additional cooling costs required to manage the more than 345,000 British Thermal Units (BTUs) produced by the two hundred thirty single-phase UPS units.



⁽¹⁾ A "U" is a height measurement for server racks. 1U = 1.75 inches

CASE STUDY

GE's SG Series UPS Energy Advantage

GE's SG Series UPS with eBoost creates the energy efficiency and power reliability to help CoreSpace expand its service and serve new markets.

Reliability

- UPS back-up and power quality
- Improved server uptime and customer service
- Significantly reduced IT staff hours responding to UPS or power-related issues

Efficiency

- \$88,800 in annual energy savings
- 99 percent efficiency in eBoost mode
- 96 percent reduction in BTU energy and cooling

ROI

- 25 percent ahead on planned three-year ROI
- Recaptured valuable floor space
- Lowered battery replacement costs

The Solution: The Move to Centralized Power Protection and Energy Efficiency

CoreSpace's management knew that a centralized power management architecture, using a three-phase UPS system, would move their facility to a new level of uptime and enable them to improve SLAs for uptime, quality and reliability, while generating significant energy cost savings. They evaluated a number of providers, but decided on GE's Critical Power business to supply the GE SG Series 500 kilovolt ampere (kVA) UPS units running in GE's eBoost* energy efficiency mode. "Centralized UPS systems tend to look and act similar, but it really came down to two major criteria: reliability and efficiency. The clear leader was GE's UPS system with eBoost," said Mark Wulff, vice president, operations at CoreSpace.



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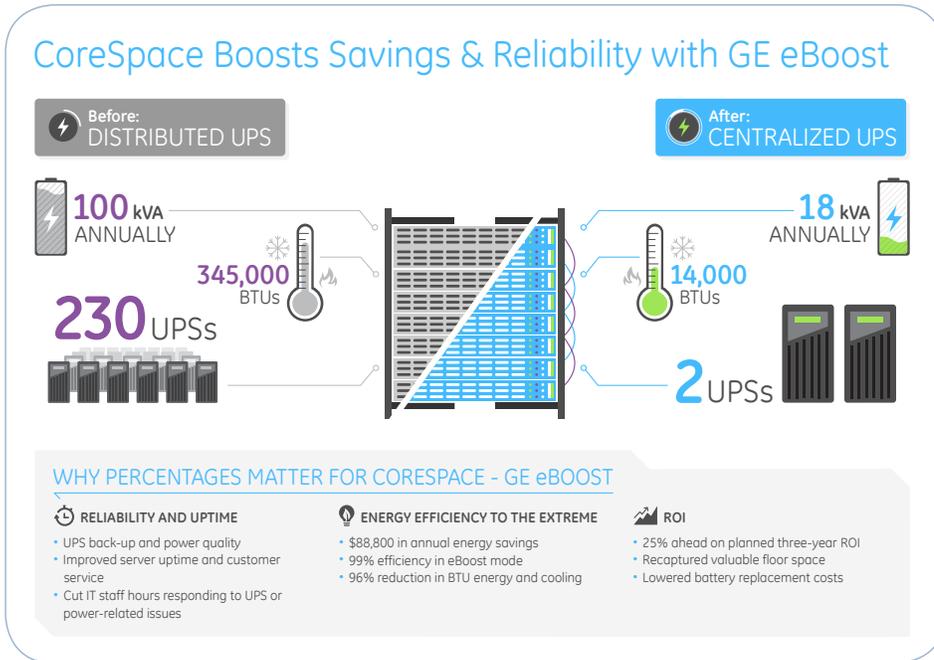
The deployed GE SG Series UPS system operates with GE's eBoost energy efficiency technology. GE's eBoost provides up to 99 percent energy efficiency in alternating (AC)-to-direct (DC) power conversion over conventional double conversion UPS technology. These efficiency levels, which offer dramatic cost savings, are created by reducing the number of AC-to-DC conversion steps from four (i.e., double conversion) to two (i.e., eBoost mode), while providing the same power conditioning protection. When there is a power anomaly, eBoost's rapid transfer speed of less than 2 milliseconds (ms) transfers the power input back to double conversion mode for a short period, ensuring full power protection and reliability.

This centralized power management approach using three-phase power protection and conditioning, versus powering and managing individual single-phase UPS units, also improves the overall reliability and quality of the power to the servers. This improved power quality translates to increased uptime, better customer service and reduced maintenance and IT response to downed servers.

During this shift to a centralized power management system, CoreSpace also added a Cummins diesel-fueled generator, which provides 1,500 kVA of extended power backup. Additionally, GE ZTS Automatic Transfer Switches provide seamless switching between the UPS and external power generation systems.

Results: Energy Savings + Power Reliability

Since the transition from hundreds of decentralized single-phase UPS units to a new centralized energy management and power backup infrastructure, powered by GE's SG Series three-phase UPS system, CoreSpace is realizing an energy efficiency level of 92 percent. That translates to \$64,000 a year in energy savings alone, coupled with an additional \$24,800 annual savings by running the UPS system at 99% percent efficiency in eBoost mode. CoreSpace also realizes additional energy savings from reduced cooling costs, as the facility's total UPS BTU output has dropped from 345,000 BTUs to just 14,000 BTUs.



By boosting uptime, providing better competitive SLA guarantees, and achieving power uptime improvements, CoreSpace is delivering on its promises to customers.



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