

# Green without compromise, with the industry's most efficient UPS

## Product:

Eaton® 9395 with Eaton Energy Saver System and power distribution components

## Location:

Lynnwood, Wash.

## Market Served:

Collocation data center

*"We're talking about megawatts of power here, a large baseline of power consumption. When you take that over days, months and years, there's the potential for hundreds of thousands to millions of dollars in savings."*

- Adam Vierra,  
sales and marketing manager, NetRiver

## Background

Imagine your data center is not only the support engine for the business, but it is the business. That's the scenario for NetRiver, the leading provider of collocation and interconnect services in Washington state.

The company's primary data facility in Lynnwood, Wash., provides a resilient platform for carriers, Internet content companies, hosting firms and enterprises to outsource their data center and network operations.

The Lynnwood facility is not NetRiver's only data center, but it is their newest, delivering 250-500 watts per square foot—or 5,000-10,000 watts per enclosure. Yet by 2008, NetRiver was facing a major expansion and needed another 1.5 megawatts of clean, computer-grade power to match its growth.

## Challenge

The management team faced some constraints, and they had a large shopping list of must-haves. Topping the list were requirements for:

- **Energy-efficiency.** The new power systems would have to do better than the 94-95 percent efficiency typical for traditional UPSs—even better than the 97 percent efficiency of their existing UPS. It was important to NetRiver to trim energy costs and qualify for utility company rebates.
- **Small footprint.** For a collocation provider, every square foot used for support infrastructure is space not earning revenue. The UPS, batteries and power distribution unit (PDU) would have to fit into a small room, only 16'x31'—along with the existing power systems, which were staying.
- **Minimal cost.** Anything that reduces total cost of ownership would help NetRiver continue to offer competitively priced services. So every cost factor, from shipping and installation to day-to-day operating expense, had to be considered.

- **Scalability.** NetRiver knew that large increases in power consumption could come at any time as new clients are added. The power protection system had to scale to match unpredictable future demand, without requiring them to overbuild today.

## Solution

NetRiver evaluated options from several vendors—looking most closely at Eaton and the manufacturer of their existing UPS—and ultimately selected an Eaton solution that included the following elements:

Three **Eaton 9395 UPSs**, each rated for 550 kVA, provide protection with N+1 redundancy for the entire expansion area of the data center.

Equipped with Eaton's new **Energy Saver System**, these UPSs operate in multiple modes. When utility power is within normal tolerances, the UPS delivers power with *99 percent efficiency, the highest in the industry.* When utility power falls outside acceptable limits for IT equipment, the UPS seamlessly switches to double-conversion mode.

Eaton's custom battery solution includes battery cabinets designed with additional height to create a smaller footprint – again, saving floor space.

# EATON

Powering Business Worldwide

Three **Eaton Power Distribution Units (PDUs)** convert the 480V UPS output to 208V for IT equipment, and distribute the UPS power to the data center floor.

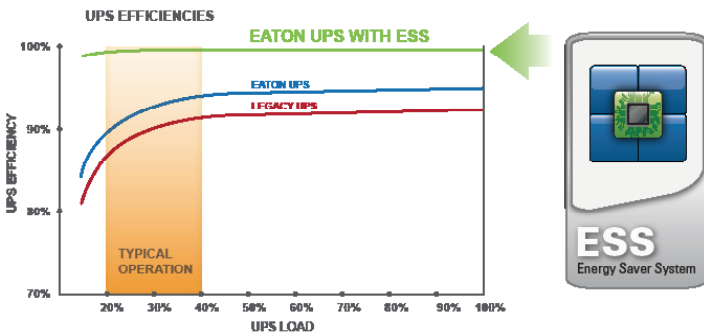
**Five Eaton Rack Power Panels (RPPs), dual fed, quad panels** which brings high-density power distribution closer to IT enclosures—streamlining cabling while providing a more adaptable infrastructure.

PDUs and RPPs are equipped with the **Eaton Energy Management System (EMS)**, which continuously measures the current on all breaker levels. With real-time insights into power conditions throughout the data center, managers can more effectively prevent overload conditions, optimize power distribution and track each customer's energy use.

## Results

"Our experience so far has been very positive," said Adam Vierra, sales and marketing manager at NetRiver. "In the first month, we did a full test in high-efficiency mode, and it worked just as it should. It's very simple to use; it's push-button type of stuff."

**Energy efficiency.** "Not surprisingly, small percentage gains in UPS efficiency lead to huge energy and dollar savings," said Vierra.



**Figure 1. Even at light loads, where you would expect efficiency to be much lower, this UPS maintains a consistently high efficiency profile.**

"That's huge, because traditional UPSs are terrible in terms of efficiency," Vierra said. "It's like going to those places in the mall where you put your change in and get only part of it back. With this Eaton UPS, it's like putting 100 pennies in and you get 99 cents back. Because we use billions of pennies, so to speak, it really adds up."

Based on a utility rate of \$.07 per kilowatt/hour, NetRiver calculates savings of more than \$27,000 per year by using the Eaton Energy

Saver System technology instead of just a traditional UPS. Initial Public Utility District (PUD) energy rebates are expected to bring nearly \$100,000.

**Small footprint.** "We are continually pressing for more density in more confined spaces," said Vierra. "We charge roughly \$35 per square foot. That's expensive commercial real estate, compared to the regional average of \$2 per square foot. The less space we have to build out for support infrastructure, such as HVAC and power, the more space available for billable data center operations."

The Eaton solution offered the smallest UPS footprint—50.1 ft<sup>2</sup> compared to 87.5 ft<sup>2</sup> for the other products being evaluated. NetRiver figures it saved about \$57,000 in real estate costs. The smaller UPS modules also fit easily through the building's doors and freight elevators, so no dismantling or crane rental were required for installation.

**Low implementation cost.** NetRiver's Eaton UPS configuration weighs 8,931 pounds, for a freight cost of only \$893, compared to 21,120 lbs and nearly \$2000 for freight for the other vendor's offering. NetRiver saved approximately \$3,700 in freight charges for the total configuration. Add to that the real estate savings, annual operating efficiencies and utility rebates, and the business case was clear.

**Scalability.** "We have additional space in the building that we will be converting into data center," Vierra noted. "When we do, the paradigm does not change. We will still be looking for highest efficiency, reliability and small footprint." NetRiver can expand in building-block increments by adding Eaton 9395 UPS modules, PDUs and RPPs as needed.

## Conclusion

"At an industry trade show a few months ago, someone asked me, 'What sort of problems did you experience, and would you recommend Eaton?'" Vierra recalled. "My candid response was, 'I'm here today because I'm happy.' We chose the newest technologies because they fit the bill and met all our requirements. Eaton's attentiveness on the service side has been spectacular. The whole package deal for us has been great. In a way, we lucked out."

"Other alternatives were not as efficient and they had a larger footprint," Vierra noted. "The Eaton battery cabinets are taller, so they take less footprint. And the 99 percent UPS efficiency is incredible. We're talking about megawatts of power here, a large baseline of power consumption. When you take that over days, months and years, there's the potential for hundreds of thousands to millions of dollars in savings."

With Energy Saver System, NetRiver did not have to choose between highest efficiency or highest protection. One UPS provides both, intelligently switching modes to match the conditions of the moment.

## The 550 kVA Eaton 9395 UPS beat all the competition in footprint, weight and freight.

Manufacturer	kVA	Density (kW per ft2)	Weight (lbs)	Footprint (ft2)	Dimensions (HxWxD, in.)	Cross-country freight cost
Eaton 9395	550	29.6	2977	16.7	73.6x32.7x73.7	\$893
Competitor A	500	24.1	6900	18.7	69.0x39.0x82.0	\$2,070
Competitor B	500	24.0	5226	18.8	80.7x33.5x76.7	\$1,568
Competitor C	500	23.9	5512	20.9	94.0x32.0x71.0	\$1,654
Competitor D	500	23.1	5795	19.5	72.0x39.0x78.0	\$1,739
Competitor E	600	20.6	6373	29.1	99.8x42.0x80.8	\$1,912
Competitor F	500	15.1	6930	29.9	114.2x37.7x79.7	\$2,079

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