

HDOT Delivers the Power and Outlet Density for Cisco

CASE STUDY - Cisco IT Labs

WHO

Mike Tran
Datacenter Design Engineer, Cisco

Mike is a member of the datacenter team for Cisco. He was brought over to the labs team to help build out their IT labs. Mike is responsible for both design and build of the labs.

LOCATION

San Jose, California

ABOUT CISCO

- 380 global sites doing business in 165 countries
- 170 labs around the world
- Annual R&D of over \$6B on total revenues of over \$40B
- Employs over 70K people worldwide.

CHALLENGES

- Power constraints within the cabinet
- Space constraints within the cabinet
- Lack of flexibility to accommodate frequent hardware changes

SOLUTION

- HDOT with Alternating Phase Outlets
- 3rd party DCIM tool

BENEFITS

- Higher power and outlet density
- The right outlets in the right place on the strip
- Integration with 3rd party DCIM
- Higher operating temperatures, resulting in improved power efficiency
- Flexibility to accommodate any type of load in a cabinet

Learn how Server Technology® Improved Power Density for Cisco IT Labs

About Cisco

Cisco was founded in 1984 in San Francisco, CA by husband and wife Len Bosack and Sandy Lerner, who created the first multi-protocol router when they were seeking a means to communicate via email on the Stanford University campus. Today, Cisco is the world's leading provider of networking hardware, software, and solutions that support digital security, converged infrastructure, cloud computing, mobility, and the Internet of Everything. Cisco's mission is to shape the future of the Internet by creating unprecedented value and opportunity for their customers, employees, investors, and ecosystem partners and has become the worldwide leader in networking - transforming how people connect, communicate and collaborate

According to Cisco's website, they have over 380 global sites doing business in 165 countries and 170 labs around the world. They employ over 70,000 people, have revenues in excess of \$40B annually, and spend over \$6B annually on research and development.

The Challenge

Historically, the Cisco IT labs relied on single phase power to their IT and networking equipment cabinets. But as time progressed, technology evolved along the lines of both speed and density. More network ports were put into the same amount of space, and network speeds went from megabits per second to hundreds of gigabytes per second. Single phase 208V power allowed for a maximum of only 5-6 kilowatts of load per cabinet. Equipment loads got commensurately larger. This led to the frequent tripping of circuit breakers within the labs.

"Our deployments typically have an A & B side power feed, requiring 2 power strips per cabinet. Now if your power strips are 2 RUs wide (3.5") each, that's 4 RUs of valuable real estate inside the cabinet for power and cable management," says Mike. "The key challenge for us was to have enough power density in the smallest form factor possible."

Fortunately Cisco already had enough power in the buildings where the labs are housed to support higher power densities in the racks, but had to update the infrastructure within the labs to incorporate overhead busways to deliver three phase power to the rack.

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Engineer, Cisco

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“We used to have 4 separate PDU configurations in order to meet the various cabinet loads and configurations. HDOT has reduced that to 1.”

Mike was having to use four different PDU models in order to meet the various loads and outlet types for his cabinets in the labs. Cisco sought a universal power strip that would provide him with the flexibility to meet the ever changing demands in their facility. It was Cisco’s goal to be able to use any cabinet to house and power any device they might bring into the lab for the next 5-7 years. As such, they sought the ability increase the available power per rack from 6kW to 17kW, of which they would likely make routine use of about 12kW.

Finally, Cisco also needed a means of better understanding where power was going within the lab – which cabinets were using the most power, what time of day they were seeing the heaviest loads, and whether or not there were any patterns in the power consumption. Any PDU selection made needed to be compatible with their chosen DCIM solution.

The Solution

Cisco spent nearly nine months to evaluate power distribution solutions from a number of vendors. When Mike contacted his local Server Technology representatives, he was pleased by their responsiveness and the array of solutions that could be offered to support Cisco’s goals. Working with his Server Technology Sales Engineer, Mike was able to tailor a solution that was specific to Cisco’s needs.

“Server Tech High Density Outlet (HDOT) technology with Alternating Phase Outlets (Alt-Phase) provided us both the power and outlet density to support our virtualized server farms which required C19 outlets and our high density rack mounted clusters which required C13 outlets.” By choosing the outlet type and location on the PDU through the ‘build your own PDU’ approach of Server Technology’s HDOT units, he was able to get exactly what was needed to support the hardware diversity present in the labs. Having alternating phase outlets also made it inherently easier for Cisco to load balance across phases within each cabinet and row of cabinets within the lab.

Power strips from the HDOT family are all delivered in a 1RU (1.75”) wide form factor. The cabinet real estate gained by using the narrower PDU with alternating phase outlets allowed for better cable management to be implemented, resulting in improved airflows and better reliability. The ability to remotely monitor his power to the cabinet, combined with the ability of the PDU to provide alerts and traps, proved to be instrumental in improving the uptime of the power circuits in the lab, as well as helping identify where additional power capacity is available for new gear deployments.

Cisco was already using a 3rd party DCIM tool, Synapsense from Panduit. The Server Technology PDUS integrate nicely with Synapsense via SNMP polling of the PDU.

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Mike Tran

Datacenter Design
Engineer, Cisco

“Server Technology really listened to what Cisco needed. Their willingness to make products specific to our needs sets them apart from the competition.”

Benefits

Utilizing an HDOT-based power solution affords great flexibility for the customer. “Working closely with Server Technology allowed us to get the right product the first time. Cisco was re-thinking and re-engineering right up to the last second before the PDUS shipped, and Server Technology was right there along the way to help ensure I got exactly what I needed. They have been true partners in every sense of the word.”

Having a multitude of both outlet types on the power strip makes it possible for Cisco to reconfigure the cabinet with different gear without having to install a different power strip. Rack mount servers, virtualized clusters, and storage can all be moved or changed out with ease. Alternating phase outlets enables Cisco to use shorter power cords than they would with a conventional 3phase PDU, resulting in a cleaner look and better airflow.

The ability for the Server Technology PDUS to interface to Synapsense has been instrumental in Cisco gaining a better understanding of their power utilization, available capacity, and improving uptime. They are experiencing fewer circuit breaker trips, and have improved technician productivity by not having to clamp on meters to take current measurements. They are also able to correlate temperature in the cabinet to the compute load now, helping Cisco to determine whether or not a given cabinet will be able to sustain that load over time.

HDOT PDUs from Server Technology provide support for a 60C operating environment. This allows the Cisco labs to operate to TIA-942 standards, a much higher operating temperature than before. This lessens the cooling requirements for the lab, making them more power efficient.

“Our labs are now a showcase. We give daily tours with customers who are both internal and external to Cisco. We are able to show them what we’re doing with power.”

For More Information

www.servertech.com

<http://www.servertech.com/solutions/capacity-planning-solutions>

<http://www.servertech.com/products/sentry-power-manager>

<http://www.servertech.com/products/switched-pdus/>

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Why Server Technology

Server Technology's power strategy experts have provided power solutions for labs, data centers, branch offices and telecommunications operations for 30 years. Over 60,000 customers around the world rely on our cabinet power distribution units and award winning power management solutions to reduce downtime, facilitate capacity planning, improve energy utilization, and drive efficiency. With the best quality, best technical support and most patents, Server Technology products provide uncompromising reliability, innovation, and value for the datacenter. Only with Server Technology will customers Stay Powered, Be Supported and Get Ahead. www.servertech.com

Interested in learning more about how Server Technology can help you manage and distribute power in your data center?

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Server Technology
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Stay Powered



Be Supported



Get Ahead

From Your Power Strategy Experts

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