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technology equipment ...



Success Story:

CDW: Hosting Facility Utilizes Passive Cooling to Achieve Energy Efficient Results



Eric Patterson, Data Center Manager for CDW played a strong role in the decision to install F-Series TeraFrame Cabinets equipped with CPI Passive Cooling Solutions in their new state-of-the-art data center.

CDW Corporation is a leading provider of technology solutions, including unified communications, security, remote managed services, information worker solutions, and virtualization and optimization. Their high-tech data centers deliver hosted applications, co-location and managed services to clients nationwide. To sustain current and future growth, CDW recently built a new enterprise hosting center, located just outside of Madison, WI, that provides customers with a state-of-the-art facility for securing and managing their mission-critical IT infrastructure equipment. In July of 2008, the facilities new 3,400 square foot data center opened employing innovative energy efficient solutions that provide 100% uptime through the use of premium, redundant power and cooling infrastructure equipment.

Challenge:

When designing the data center facility for CDW's new enterprise hosting center, the most important issue that needed to be addressed, next to physical security, was the ability to provide adequate cooling to equipment in an energy efficient manner. With equipment densities continually increasing and generating more heat per cabinet, CDW set-out on a mission to locate the ultimate cabinet solution that would provide flexible, safe and most of all effective and resourceful thermal management for their new data center.

Throughout this process CDW's data center team looked at almost every cabinet manufacturer and evaluated numerous data center cooling techniques. One of the first thermal design concepts assessed included liquid cooling, which was ruled out fairly quickly. "We did look into liquid cooling, but had a very uneasy feeling about bringing water into the data center. When you add liquid cooling within the space you must include a lot of overhead plumbing, the idea of this made us extremely uncomfortable," explained Eric Patterson, Data Center Manager for CDW. Another design approach that was evaluated included cabinet systems

with active exhausts to pull the heat out of the cabinet space. "The problem with active exhaust fans is that you are effectively throwing more power into the equation. Anytime you add more power you are creating more heat and adding points of failure, and this was something that we definitely wanted to avoid," stated Patterson.

In addition to finding a cabinet that provided adequate cooling on a slab floor environment, CDW needed a highly flexible cabinet solution. "As a hosting facility, we do not maintain control over what types of equipment will be placed in our cabinets, so we needed something that was very flexible and could accommodate a large variety of manufacturers' equipment," said Patterson.

Solution:

When CDW learned about the innovative thermal management techniques that Chatsworth Products, Inc. (CPI) could offer with the F-Series TeraFrame™ Cabinet System, they were immediately interested. The F-Series TeraFrame Cabinets equipped with CPI Passive Cooling® Solutions presented them with all of the features and benefits they had set out to find. "The passive cooling abilities found in CPI's F-Series TeraFrame Cabinet fit our requirements perfectly, they encompassed the energy efficient technology, flexibility and security we were looking for," affirmed Patterson.

To help finalize their decision, CPI shipped CDW some demo F-Series TeraFrame Cabinets with CPI Passive Cooling to evaluate and test. "We put them in front our engineers and level one, two and three folks that rack test equipment so they could analyze and test the solutions. CPI then worked closely with us to make some very minor modifications and sent us some additional mock units for testing. We were extremely pleased with the results and the top-notch product quality, therefore we decided to move forward with the F-Series TeraFrame equipped with CPI Passive Cooling Solutions for our new data center facility," stated Patterson.

About Chatsworth Products, Inc.

Chatsworth Products, Inc. (CPI) is a leading manufacturer of systems designed to organize, store and secure IT infrastructure equipment. As an industry leader, CPI Products set the benchmark by providing superior structural support that exceeds customer expectations through innovation, function and performance. Unequaled customer service and technical support, as well as a global network of industry-leading distributors, assures our customers that CPI is dedicated to delivering IT infrastructure solutions designed to meet their needs. Headquartered in Westlake Village, Calif., CPI has manufacturing facilities in Chatsworth, Calif.; Georgetown, Texas and New Bern, N.C., with international offices located in Mexico, China and the United Kingdom.

For More Information:

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CDW installed 103 F-Series TeraFrame Cabinets in the first phase of their new data center facility and plan to use them as the additional phases are opened. "We love these cabinets; they are the crowned jewel of this facility. They are exactly what the data center was designed around and provide a flexible and scalable cabinet solution with the most efficient cooling techniques available," declared Patterson.

To achieve the ultimate CPI Passive Cooling Solution each F-Series TeraFrame Cabinet System is configured with a perforated front door to ensure proper equipment intake airflow, a solid rear door and side panels to prevent hot exhaust air from escaping out the back and sides of the cabinet and filler panels to eliminate bypass airflow around equipment. In addition, an Airflow Director is installed to move hot exhaust air up the back interior part of the cabinet and a modified Vertical Exhaust Duct is located on top of the cabinet system to direct hot exhaust air out of the cabinet space and back to the cooling system.

The building is outfitted with a 300-ton roof-top air conditioning system that cools the entire data center and two additional units for redundancies sake. Each exhaust duct is direct-ducted back to the cooling unit, filtered, cooled and returned to the data center through large ceiling grates. This process along with CPI Passive Cooling technology, allows CDW to achieve complete airflow isolation, which increases HVAC efficiency, allows higher supply air temperatures and decreases energy consumption; a more than ideal platform for a growing high-density data center.

As a hosting facility, customers depend on CDW to keep their equipment running at safe operating temperatures with 100% uptime. Not only do CPI's solutions help them achieve these goals, but they allow CDW to keep supply air temperatures around 68-70°F, which is a remarkable accomplishment for a data center of this size. Even after the data center is fully populated, it is expected that the supply air temperature will remain the same.

"We have done some initial calculations and estimates to see what kind of savings that CPI's solutions will help us achieve, and have found that using CPI Passive Cooling will save us about 25-30% on our energy bill, per fully loaded cabinet. We expected that it will cost about one million in energy charges to run this facility per year, and CPI's solutions should save us about 25-30% percent of that, coming in at about \$250,000 to 300,000 savings per year, which presents quite a substantial savings. As the facility grows out and more data centers are added, we may use three, five or seven million per year in energy, and the savings that CPI Passive Cooling Solutions provide will sure add up quickly," explained Patterson.

CDW understands that data centers require a lot of power and cooling, which is why these factors became key design considerations when planning their new data center space. "This entire facility is powered by solar, wind and renewable energy, therefore the F-Series TeraFrame Cabinet equipped with CPI Passive Cooling Solutions fit the green direction of this facility, and will contribute to decreased energy consumption, a very important attribute for CDW and today's power hungry data centers," said Patterson.

"...CPI Passive Cooling will save us about 25-30% on our energy bill, per fully loaded cabinet...coming in at about \$250,000 to \$300,000 savings per year..." explained Patterson.

With CPI's solutions, CDW can assure customers that their equipment will run at safe operating temperatures with 100% uptime.



CDW has installed 103 F-Series TeraFrame Cabinets with Vertical Exhaust Ducts in the first phase of their new data center.



"We love these cabinets; they are the crowned jewel of this facility. They are exactly what the data center was designed around and provide a flexible and scalable cabinet solution with the most efficient cooling techniques available," declared Patterson.



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