

Advanced Power Technology

Challenge:

When overheating in existing cabinets became a concern for Bend, Ore.-based Advanced Power Technology (APT), the company was forced to find alternate cooling sources to lower critical server temperatures.

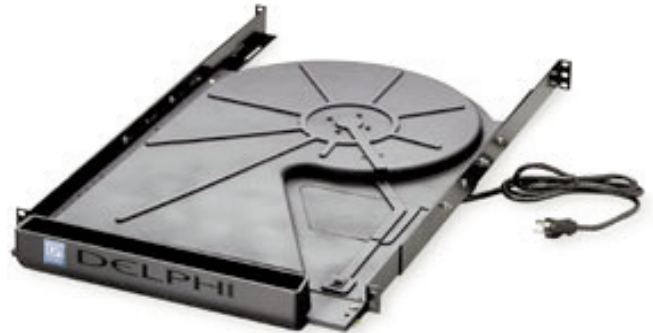
"We sought a cabinet solution that would remain relatively constant into the future as our data center continued to expand," says Gary Colton, director of information systems at APT. "Any new cabinet needed to fit easily into the configuration, while maintaining the clean appearance of the data center, and also provide additional functionality like directed cooling."

APT designs, manufactures and markets high-performance power semiconductors for electrical power conversion, control and amplification. As the company grew, its data-processing needs expanded, necessitating the installation of powerful equipment despite limited space. Overheating of the server cabinets became a problem.

Solution:

Integrator Accord Telecom & Cable (Accord), selected by APT to drive the project, determined that directing the coldest air available to the most critical point of use would result in a higher heat transfer rate, better cooling and lower CPU temperatures while minimizing any major forklift upgrade to the existing HVAC systems in the main server room. In addition, Accord identified housing equipment at APT that had become obsolete and needed replacement or retrofitting.

Existing MegaFrame® cabinets from Chatsworth Products, Inc. (CPI) had 400 CFM fans mounted on top with a large five-ton Liebert HVAC unit installed in the server room. The server room consisted of four 30"-deep cabinets. As the



The Delphi ECS Enclosure Blower and filler panels direct cold air from the floor to the server fronts

center expanded, many servers were added to the MegaFrame cabinets, surpassing the capability of the fans. The heat load was recalculated, taking into account both current usage and potential expansion.

APT wanted a solution that would lower CPU temperatures in a densely packed server environment and provide adequate cooling for additional servers as it continued to grow. In addition, the company preferred a solution that would allow the existing cabinets to be utilized — with minor modifications, if necessary.

Once the new heat load was established and an expansion plan designed, APT examined solutions from five vendors. During the process, CPI introduced its Delphi ECS Enclosure Blower and demonstrated its ability to integrate

completely with existing CPI (and other) cabinets. The blower, developed in conjunction with Delphi Corp., lowers cabinet hot spots by delivering cold air from the floor to the server fronts.

APT purchased four Delphi ECS Enclosure Blowers, blank filler panels to close cabinet fronts and maximize cooling, and three MegaFrame cabinets. During the installation, Accord retrofitted existing cabinets with the blowers. The installation required a slight modification to the enclosure blowers, so they would fit in the 30"-deep cabinets.

When the storage area network and a new blade server were installed, however, the 30"-deep cabinet was being stretched to capacity. CPI provided 7"-deep cabinet extensions, which avoided the need to replace the cabinets and allowed APT to standardize on the 30"-deep cabinets to maintain a symmetrical footprint in the data center.

In the APT data center, structural wiring is separated from the server cabinets. The enclosed CPI cabinets with the blowers house the servers, and two CPI relay racks are used for wiring. The cabling includes CAT 3, UTP voice, CAT 5 legacy, and AMP CAT 5e 350-MHz UPT/62.5/125, 10/125 optical cable and 200-pair CAT 3. A 4,000-foot underground fiber/copper backbone infrastructure (single mode and multimode) connects the remaining campus with the data center. The entire APT network serves about 400 users.

The entire process, from research to installation, took about six weeks to complete. The approximate cost of the cabinets, enclosure blowers, special orders and installation was less than \$25,000. APT's HVAC system, combined

with CPI's enclosure blower and high-flow perforated metal doors, created a 14-degree centigrade reduction in CPU temperatures.

With the blower solution, APT has been able to extend CPU life through consistent cooling, and, at the same time, prevent system failures due to overheating.

"Often, IT decision makers view cabinets and racks as simple boxes," says Todd Hurt, principal of Accord Telecom. "This can be a costly mistake. Making careful decisions when selecting cabinet hardware can save significant money in terms of performance, longevity and expansion."

Cabinets are often the most important component in the design of a data center and must be selected with expansion and growth in mind, Colton adds. A cabinet/rack solution must be able to expand, adapt and meet the changing environment of an evolving server room in order to preserve symmetry, consistency and longevity of the ROI on the original purchase. [CPI](#)

About Chatsworth Products, Inc.

Chatsworth Products, Inc. (CPI) is a global manufacturer providing voice, data and security products and service solutions that optimize, store and secure technology equipment. CPI Products offer innovation, configurability, quality and value with a breadth of integrated system components, covering virtually all physical layer needs. Unequaled customer service and technical support, as well as a global network of industry-leading distributors, assures customers that CPI is dedicated to delivering products and services designed to meet their needs. Headquartered in the US, CPI operates global offices within the US, Mexico, Canada, China and the United Kingdom. CPI's manufacturing facilities are located in the US, Asia and Europe. (www.chatsworth.com)



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