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Power & Cooling Shopping Checklist

Take The Mystery Out Of Shopping For These Important Infrastructure Components

It probably goes without saying that power and cooling are essential to data center operations: Without power, equipment won't run, and without cooling, equipment will run for a very short time before burning itself into useless cinders. Making the right choices in these two critical infrastructure elements will deliver a data center that runs smoothly and trouble-free. Here's a look at the ins and outs of buying power and cooling equipment and the knowledge that's required to make the right decision.

Things To Keep In Mind

One of the most important things admins should understand when buying power and cooling equipment is that equipment density will continue to grow over time, says Kris Domich, principal consultant for data center solutions at Dimension Data (www.dimensiondata.com). This means that power and heat loads will become more localized to equipment racks, so some racks may be significantly hotter than others. Thus, managers must understand their thermal loads in order to be successful.

Deepak Jain, founder and president of AiNET (www.ai.net), says administrators must consider the total cost of ownership when purchasing power and cooling equipment, especially in an environment where energy and maintenance costs are going up. Purchasers should consider the efficiency of equipment at 25%, 50%, and 75% load (part-loading), Jain says. This is because, in general, power and cooling systems only run at 100% for a few hours per year, so it's important to consider how the equipment operates the rest of the time.

Understanding capacity is a critical component of successful power and cooling equipment purchases, says Jeff Lowenberg, vice president of facilities for The Planet (www.theplanet.com). Lowenberg recommends that administrators purchase new equipment that can not only power and cool operations today, but also into the foreseeable future. In addition, he adds, admins should purchase equipment designed for the prevailing climate. For example, equipment that features heat rejection capacity for temperatures over 100 degrees is critical in hot climates, while products that can provide "free cooling" in cold climates can provide capital and energy savings benefits.

Key Points

• Understanding both present and future data center capacity needs is essential to making the right power and cooling purchasing decisions.

• Going cheap and failing to consult technical experts can result in costly purchasing mistakes.

• Above all, administrators should do their homework and have a clear understanding of their environments and any potential problems that need to be addressed.

Pitfalls To Avoid

Power and cooling infrastructure can represent a significant outlay of capital, making missteps very costly indeed. A main pitfall is buying power and cooling for the data center as a whole, says Brian Strosser, vice president of enterprise data management for DLT Solutions (www.dlt.com). Strosser recommends that administrators think of the data center modularly and focus on the data center rack, rather than trying to cool the entire data center. Also, he warns, administrators must never assume that energy needs are going to be constant and should avoid growing the data center infrastructure without thinking about power and cooling up front.

Melissa Ross, CTO at NITConnect (www.nitconnect.net), recommends that purchasers avoid undersizing and/or oversizing power and cooling equipment. Undersizing equipment, she warns, can cause an operation to run the risk of outages, downtime, and equipment damage or failure. Oversizing, on the other hand, can lead to higher expenditures of energy and money. Administrators must find a middle ground that meets operational needs without losing sight of increased demands as power and cooling needs increase in the future.

Another common pitfall is failing to understand what the infrastructure needs to do for the enterprise, says Julian Kudritzki, vice president of development and operations at the Uptime Institute Professional Services (professionalservices.uptimeinstitute.com). For example, he says, purchasers should make sure that the configuration of the equipment, regardless of manufacturer or technology, allows for replacement and repair without affecting the delivery of power and cooling to the critical load.

All equipment is not created equal. And, says Arthur Valhuerdi, vice president of engineering for Zayo Colocation Services (www.zayo.com), two pieces of equipment can have the same specifications yet have vastly different costs. Buyers should be especially wary of purchasing less expensive equipment without learning about its reliability, warns Valhuerdi. The TCO can far exceed the initial cost of a piece of equipment, whether it is replacing a compressor on an HVAC unit or the DC batteries on a UPS. The cost of equipment unavailability due to breakdowns, he cautions, can often dwarf any minor savings realized at the time of purchase.

Do Your Homework

There are certain data center variables that buyers of power and cooling equipment should understand prior to purchasing. Dimension Data's Domich says purchasers should assess their environments and understand the actual requirements for power delivery, cooling distribution, and heat removal. These two considerations, he says, can have a profound impact on the strategy selected to cool and/or power a data center.

NITConnect's Ross says buyers should perform a data center audit to determine needs and identify any problem areas, such as under-floor and overhead obstructions that can cause airflow issues. DLT's Strosser recommends that buyers focus on the area of the data center that is of the highest concern and plan to purchase power and cooling equipment based on the needs for that area. Working with manufacturers, he adds, is recommended to determine best practices in dealing with power and cooling requirements for various technologies.

Purchasing data center cooling and/or power equipment will almost certainly mean using consultants and/or vendors to help with equipment selection, purchase, configuration, and installation. AiNET's Jain recommends that administrators choose vendors and consultants well. This means checking references and ensuring they have the experience and scope needed for the job. In addition, says Jain, vendors and consultants should provide service-level guarantees in writing that include response times and financial penalties for non-performance. ■

by Sixto Ortiz Jr.

Steps To Success

Carl Hillier, director of strategic marketing at Fujitsu America (www.fujitsu.com), recommends that prior to purchasing power and cooling equipment, administrators should first do what they can to minimize the amounts of power and cooling needed. According to Hillier, this can be achieved by:

• Choosing the right hardware, such as servers with lower power consumption and efficient heat dissipation.

• Using consolidation and virtualization to reduce server populations and thus the demand for power and cooling.

• Managing data center airflow by using techniques such as hot/cold aisles, thus maximizing the efficiency of the deployed cooling infrastructure.
