DATABASE
TRENDS AND APPLICATIONS
Solutions for the Information Project Team • www.dbta.com
Volume 21, Number 4 • April 2007

Is Your Data Center Prepared For Dense Computing?

By Blake McLane

When CIOs and IT managers think about their data centers, it's usually in terms of metrics such as uptime and capacity. But two more key metrics deserve attention: power and cooling. By 2009, U.S. enterprises will spend twice as much on power and cooling as they do to buy the server hardware in their data centers, according to a May 2006 report by IDC. Power and cooling requirements directly impact the data center's total cost of ownership.

The migration to high-density infrastructures such as blade servers is the main reason data centers have greater power and cooling requirements. The average enclosure uses less than 2 kW, but the use of high-density products such as blade servers can result in power consumption of 20 kW or more per rack. That's five to 10 times greater than what many data centers were designed for in terms of power and cooling resources.

Meanwhile, the more power that each rack uses, the hotter its exhaust is, creating a ripple effect on the cooling side. If the increase in hot air is not kept in check by an increase in cooling capacity, some of the data center infrastructure might begin using unconditioned exhaust.

The financial impact of these trends is significant. Roughly 20 percent of data center operational expenses goes toward power and cooling, according to IDC. Increases in electric rates mean that data centers will require additional operational expenses.

To put these trends in perspective, consider that it costs approximately $400 per square foot to build a data center that's designed to handle 40 W per square foot. High-density IT equipment can increase the load to 500 W per square foot, and the cost of power and cooling infrastructure skyrockets to $5,000 per square foot, according to the California Data Center Design Group.

But, power and cooling are just two of many IT challenges that enterprises now face. Often, a data center lacks the capacity necessary to process massive volumes of information about reserves fast enough to meet financial reporting requirements such as Sarbanes-Oxley. Adding data center capacity can require significant investment, which may not be immediately available. Some data center infrastructures are difficult or expensive to expand. IT budget constraints can limit access to the latest technologies. Finally, keeping a data center operational and safe even during adverse conditions, such as a flood or hurricane, is challenging.

All of these challenges highlight the value of exploring outsourcing the data center. Outsourcing can provide flexibility and shift many of the challenges to the company providing the data center services. For example, the enterprise can quickly and cost-effectively scale up or down based on factors such as acquisitions, spin-offs or the debut of new fields. There are no capital expense burdens or delays in scaling because the infrastructure is there on an on-demand basis.

These benefits apply to cooling and power, too. And by outsourcing the data center, an enterprise can enjoy peace of mind with, for example, redundant 1700-kW generators and a seven-day fuel supply. Outsourcing providers also have the resources invested in the latest security technologies. By outsourcing the data center, enterprises are freed from a variety of extra capital and operational expenses.

The long-term trends identified in this article point to the need to carefully examine the total cost of ownership of operating a data center. Outsourcing can be a good alternative that provides savings flow directly to the bottom line and help improve the enterprise's competitive position.

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