



# Organizations Struggle with Data Center Capacity Management

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## Survey shows data center processes and tools lagging

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Businesses today are increasingly reliant on technology for mission-critical functions. However, analysts report a dearth of information about techniques for grappling with the complexities new server technologies have brought to the data center. With the proliferation of high density servers, heat and power management issues have emerged as pressing issues among those responsible for ensuring business continuity. Data centers have typically managed only the logical aspect of their IT infrastructure, yet these methods do not provide insight into infrastructure thresholds and capacities—a critical factor for optimizing technology investments and eliminating downtime.

In the first of a series of research notes, Aperture Research Institute™ explores what organizations are doing to gain greater control and visibility into capacity management of mission-critical infrastructures. Based on interviews with more than 100 data center professionals across a range of industries, the Institute's extensive 2006 survey results confirm that while data centers have grown in complexity, the tools and processes to manage these centers have not evolved along with the technology—putting companies at risk.



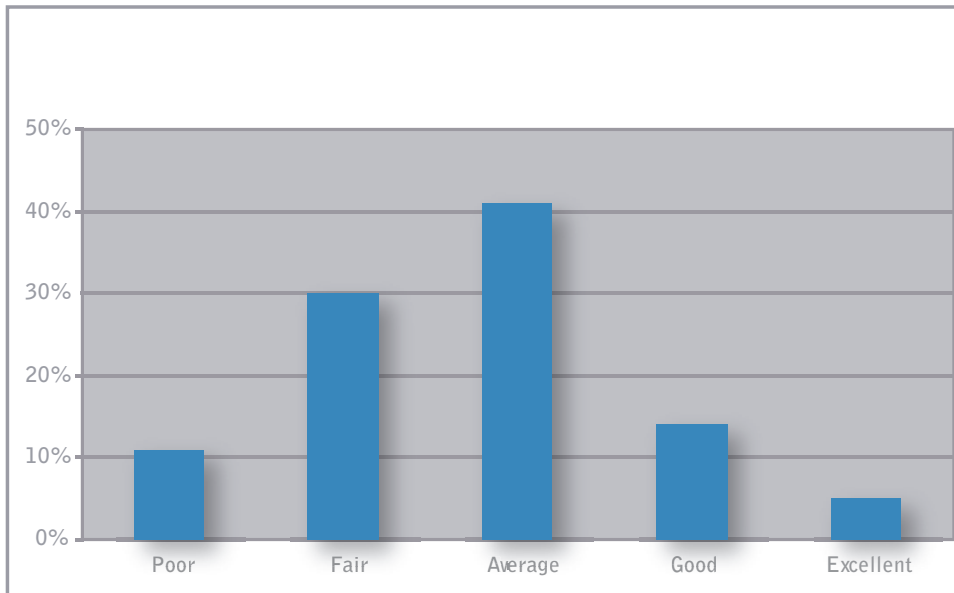
**Analysis**

Not long ago, data centers would remain primarily status quo for years. Today they are changing on a monthly basis. It is not uncommon in large organizations to be adding or changing hundreds of servers per week. Companies are struggling to come to grips with the impacts of emerging technologies, rising power and cooling costs, and the inability to manage and plan for change. For example, the increased power density and heat dissipation of new servers are putting immense pressure on data center infrastructures. High-density blade servers are ultra-compact yet generate tremendous amounts of heat. Data center capacity management tools and processes have not kept up with these changes. Thus, power and cooling in the data center is now the #1 issue facing organizations today.

Until recently, organizations lacked sophisticated data center management tools to grapple with new IT infrastructure challenges. This led 11 percent of respondents to rate their infrastructure capacity planning procedures as poor, 31 percent to rate their procedures as only fair, and less than 20 percent rated their processes as above average.

One of the major goals of capacity management is to ensure the appropriate resources are in place to meet near-term needs and provide visibility into future requirements. High density computing has introduced additional complexity into this equation and made predicting future space, power, and cooling requirements much more difficult.

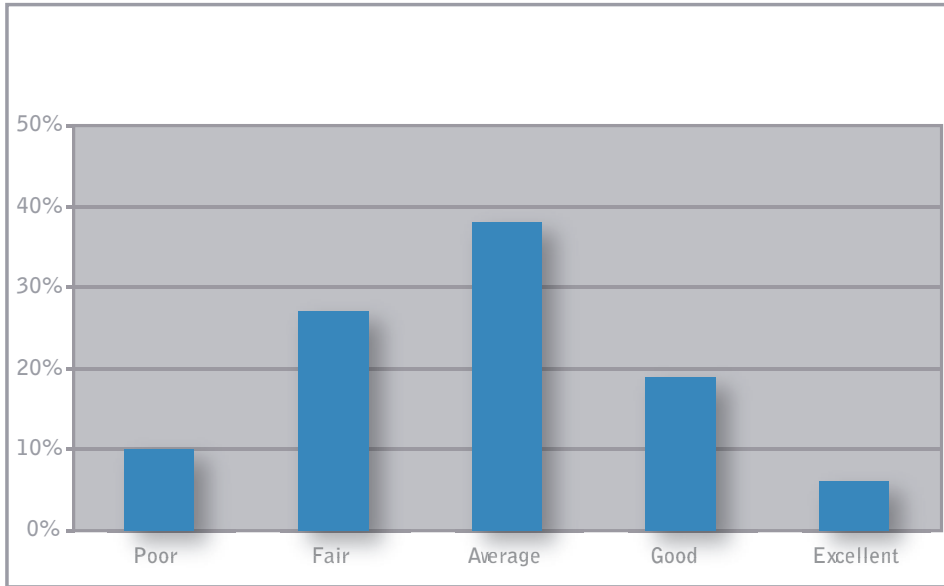
How would you rate your infrastructure capacity planning procedures?



As the following question demonstrates, data center infrastructure planning is one of the most overlooked areas in any business, with 10 percent of respondents revealing their methods for predicting future space and power needs are poor and 27 percent rating their abilities as fair, and only 25 percent rating their abilities above average.

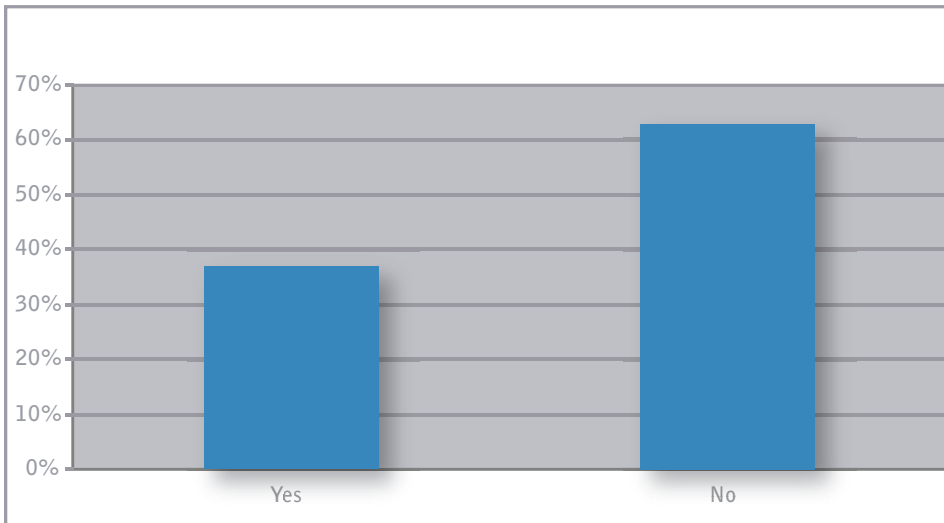


How well can you predict when you will need additional space or power infrastructure?



In the most telling survey question shown in Table 3, almost 40% of respondents reported that they had run out of space, power, or cooling capacity without having sufficient notice. This can result in delaying provisioning of new initiatives or paying more for additional resources to host those systems. These survey results are indicative of a burgeoning problem in data centers today where there is no mechanism in place for proactively managing and optimizing resources. This puts businesses at tremendous risk of costly system outages. It is now abundantly clear that managing the physical aspects of the data center – the heating, cooling, configuration, power needs, etc. – can no longer be accomplished manually without incurring significant risks.

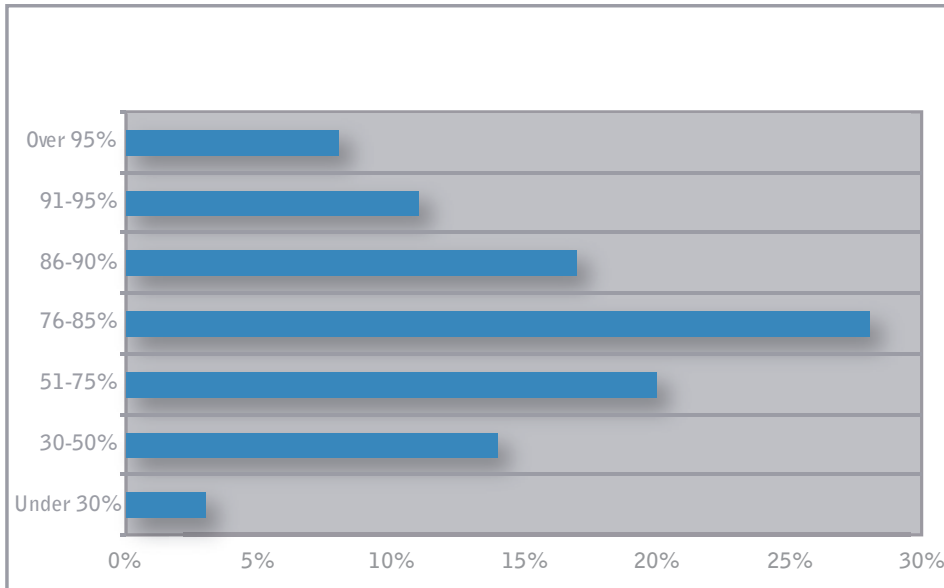
In the last 2 years, have you ever ran out of space, power or cooling capacity in your data center without having sufficient notice?



Without visibility and control at the granular level of the complex data center environment, organizations are faced with poor capacity management. They may be underutilizing their space and resources, or pushing systems to the brink, causing unexpected outages. As Table 4 reveals, almost 20 percent of data centers are operating at more than 90 percent capacity—far too close to the limit to ensure optimum performance and uptime.

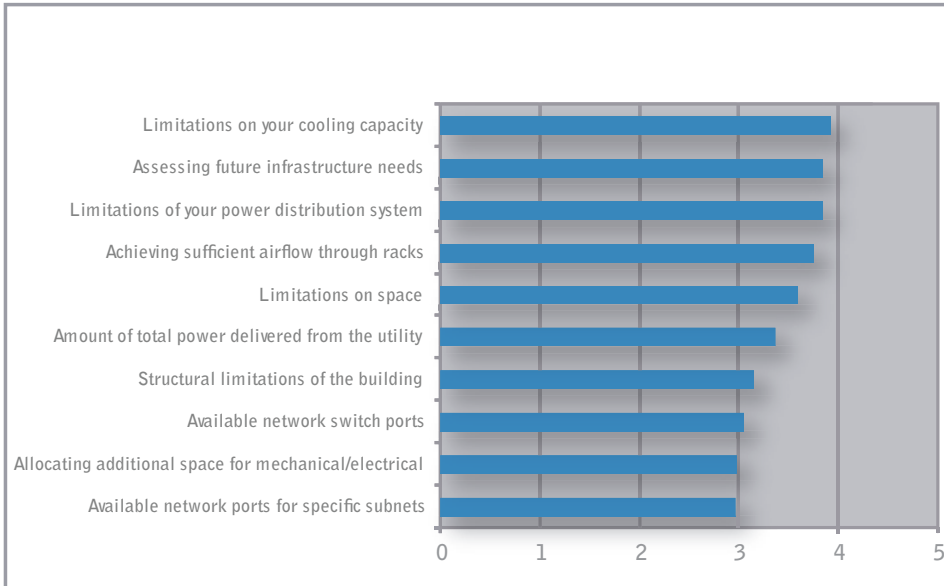


What is your current percentage utilization of total overall capacity in your data center?



Data center planning used to be driven by space management. However, today, power and cooling issues have emerged as a primary concern for those responsible for managing IT infrastructures. The changing factors in data center management necessitate that organizations change the way they run their data centers to meet future demands. Table 5 shows that power and cooling capacity issues are now major concerns in managing data center capacities.

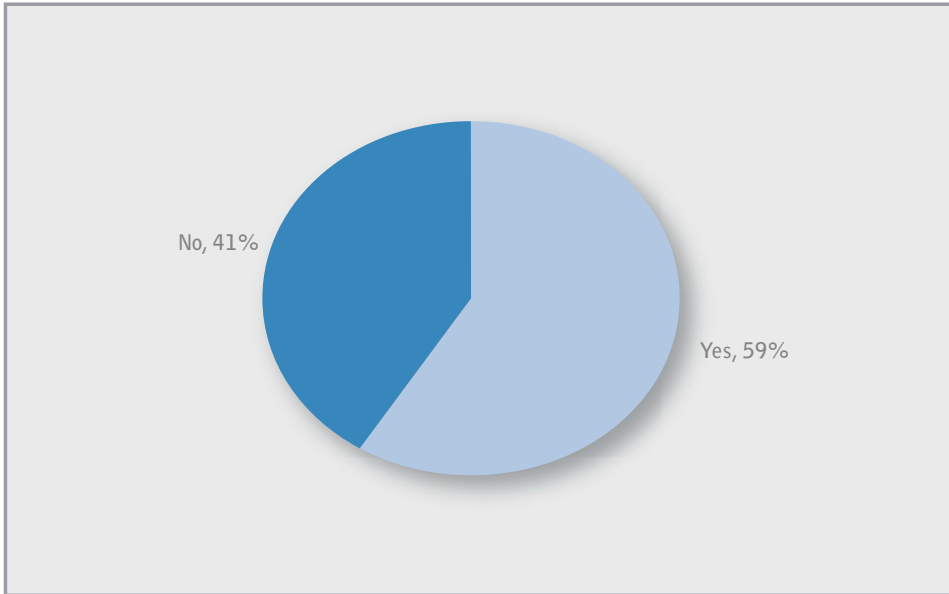
What are the most important factors in managing your data center's capacity?



One factor that is gaining ground in today's data centers is managing 3-phase power at the rack level. With power utilization for high-density servers reaching in excess of 10 kilowatts per rack, businesses face a pressing need to monitor power consumption to prevent system downtime and performance degradation. Table 6 shows that a majority of companies are managing 3-phase power at the rack level.



Do you manage 3-phase power at the rack level?

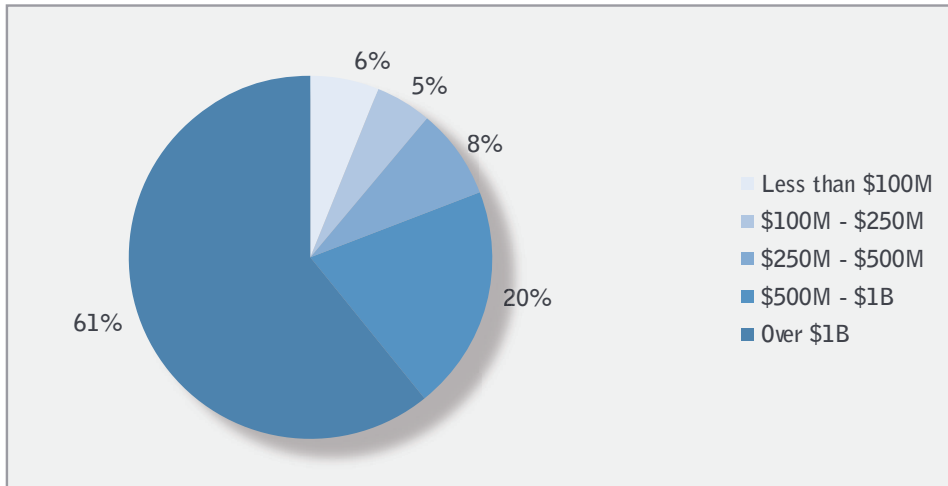




**Survey methodology**

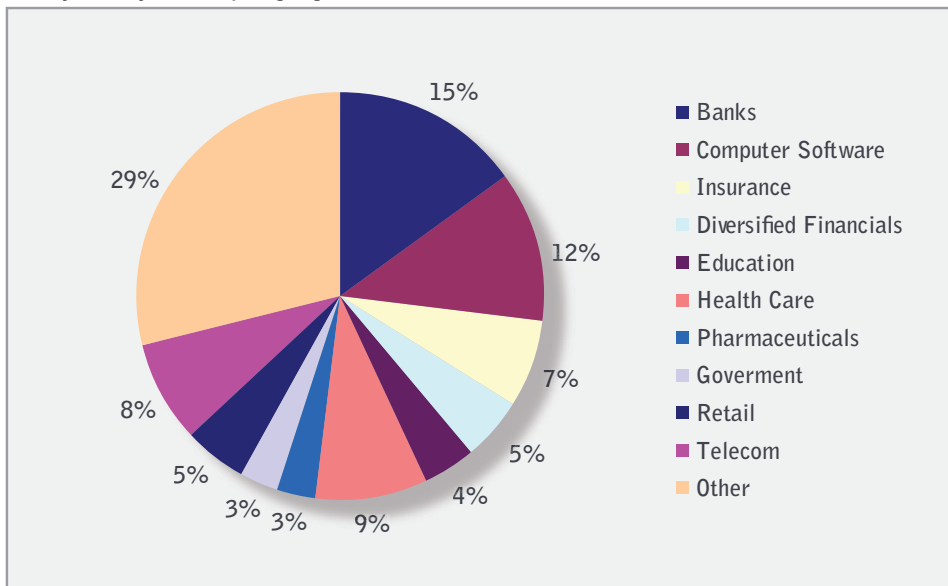
More than 100 data center professionals and executives from a variety of industries participated in this online survey. Survey participants were solicited from an industry database of Aperture customers and prospects. The below charts describe the demographics of companies that took part in the survey. Please note that we cannot guarantee that participants (sample) are an exact representative of the total population and as with all research reports, there is a margin of error..

Annual Revenue of Participating Companies



The below chart shows the cross section of types of businesses that participated in the survey. It includes companies across various vertical industries and ranges from smaller businesses to Fortune 100 companies.

Primary Industry of Participating Organizations



**Conclusions**

Data center management requires a careful balance, ensuring not only that infrastructures aren't overtaxed but that they aren't underutilized as well. Organizations require a mechanism to look inside the data center to manage not only what they see but what they don't see. These systems have become far too complex not to manage. The new technology trends require data center managers to proactively monitor every facet of the data center to ensure the most efficient operation.

The Aperture Research Institute is dedicated to providing the market with current information and trends on enterprise data centers. The institute plans to publish new research notes on a quarterly basis. To read the latest research findings, visit <http://www.aperture.com>.

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