RESEARCH NOTE

Publication Date: November 10, 2009

Organizations Overlooking Significant Opportunities to Improve Efficiency and Reduce Expenses, Despite Adoption of Green Initiatives

Aperture Research Institute finds that while data center energy efficiency initiatives have become commonplace, efforts by IT management to optimize resource and process efficiency lag significantly behind.

The topic of data center energy efficiency has dominated IT industry media coverage and challenged think tanks for the latter half of this decade. Once merely a corporate social responsibility initiative, energy efficiency has achieved widespread recognition as a method for reducing costs and improving performance across IT and business operations. Yet while data center energy efficiency strategies have reached high rates of adoption, many organizations and IT professionals fail to realize that improving energy consumption is only one aspect of managing an efficient data center.

The practice of data center performance optimization maintains that an optimized data center actually achieves three types of efficiency — energy, resource utilization and process efficiency — enabling organizations to achieve an optimal balance not only of energy consumption, but of infrastructure resource utilization and process efficiency as well.

The results of the 2009 Aperture Research Institute survey demonstrate that while the adoption and implementation of data center energy efficiency initiatives have achieved high levels of adoption, organizations are overlooking significant opportunities to optimize utilization of data center infrastructure resources and staff.

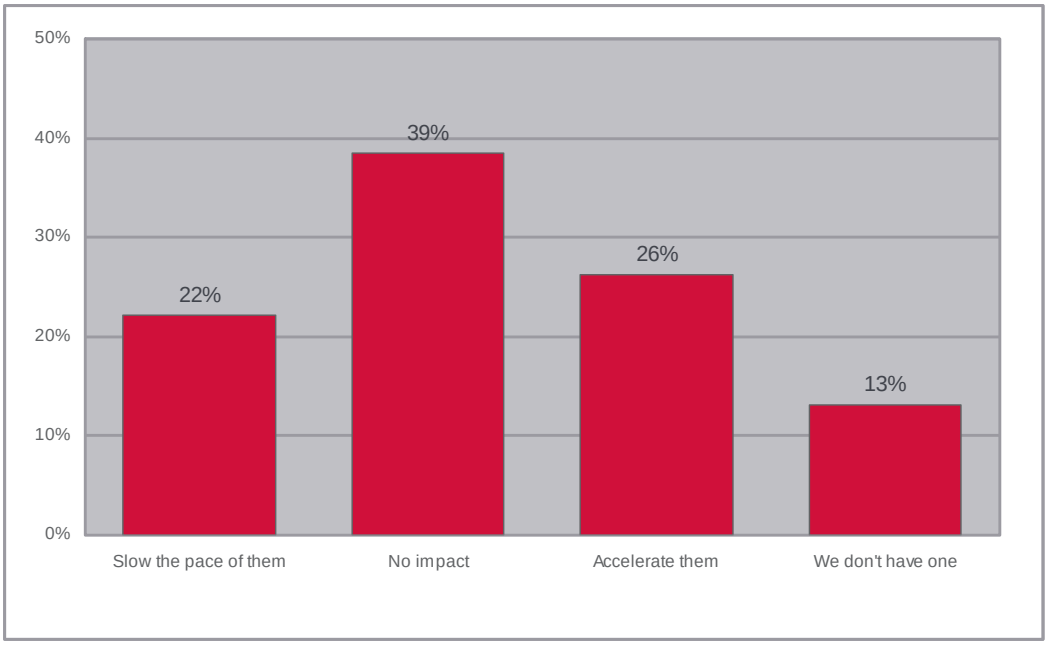
Aperture
An Emerson Network Power Brand

Energy Efficiency Initiatives have Achieved Widespread Adoption

Fueled by industry media reports and research from organizations such as the Green Grid, data center energy efficiency initiatives have achieved widespread adoption in just a few years. Eighty-seven percent of participants in the 2009 Aperture Research Institute survey reported having green/energy efficiency initiatives in place, up from just 35 percent one year ago.

The green data center movement has benefitted not only from increased industry attention, but from increasing demand for cost savings in the wake of the economic downturn of the past year. As reported in "Data Center Management Focuses on Efficiency to Balance Increasing Demand for IT Services with Stagnant Budgets," a June 2009 report of the ARI, cost savings opportunities associated with efficiency enhancements have motivated 26 percent of participating organizations to accelerate the pace of their energy efficiency initiatives. Meanwhile, 39 percent say their initiatives will be undeterred by the recession.

If you have green or energy efficiency initiatives, how will the economic downturn affect those initiatives?



"The current economic downturn is driving green initiatives to focus more on the tangible cost savings that can be realized through increased energy efficiency," the report concluded. "Energy prices have been rising, and power consumption in the data center has been a key driver of costs there. By improving energy efficiency, data centers can cut their operating expenses and better meet increasing demand at a time when budgets are flat."

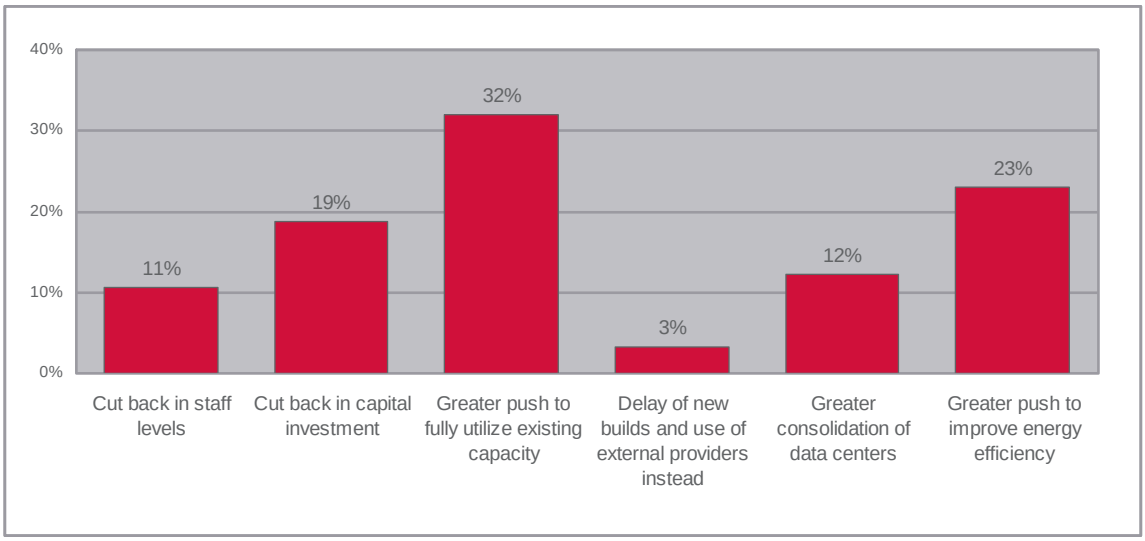
Yet while energy efficiency has received widespread attention for its ability to reduce costs in the data center, it is not the only priority of IT management as they grapple with the downturn.

The Rising Importance of Resource Utilization

While "do more with less" has emerged as the business mantra of 2009, IT management is increasingly focused on doing more with what they have. Respondents in this year's survey are taking a closer look at the utilization of existing data center resources as an opportunity to reduce operating costs and delay capital investments.

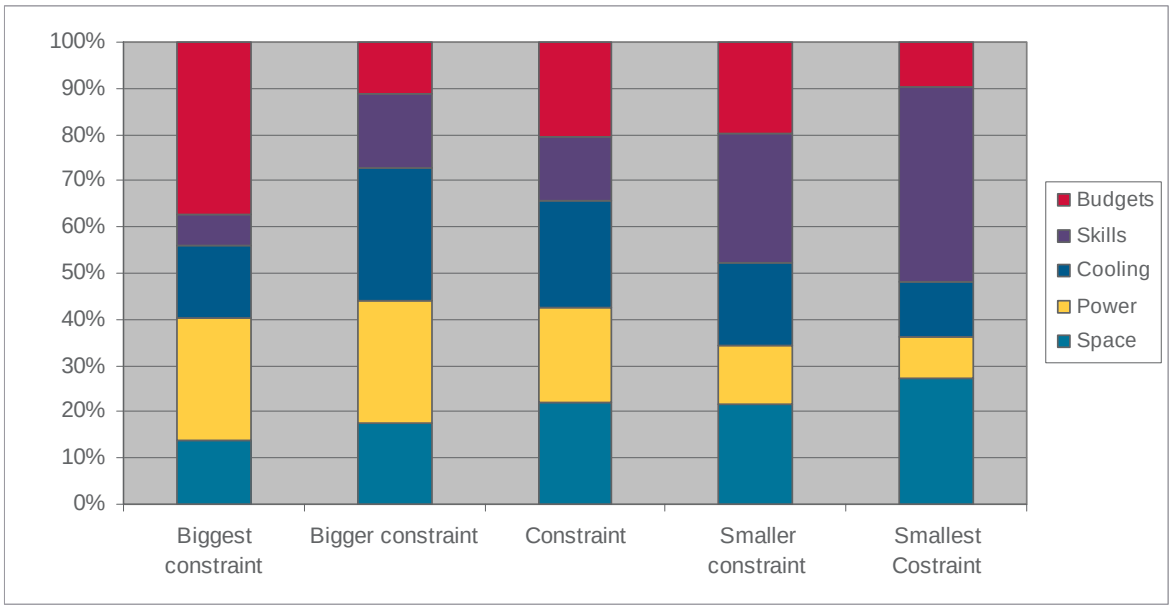
While 23 percent of survey participants indicated that their primary response to the economic downturn will be a greater push to improve energy efficiency, 32 percent intend to focus on fully utilizing existing capacity. Another 19 percent plan to cut back on capital investments, which is also likely to impact the management and utilization of existing data center equipment.

How do you think the economic downturn will most affect your data center?



While nearly one third of IT managers intend to extract additional capacity from their existing resources, others expressed concern that their physical infrastructures are already taxed. Sixty-one percent of respondents named power as their primary or secondary constraint in the data center, while 51 percent reported cooling to be their number one or number two concern.

Constraints on the data center

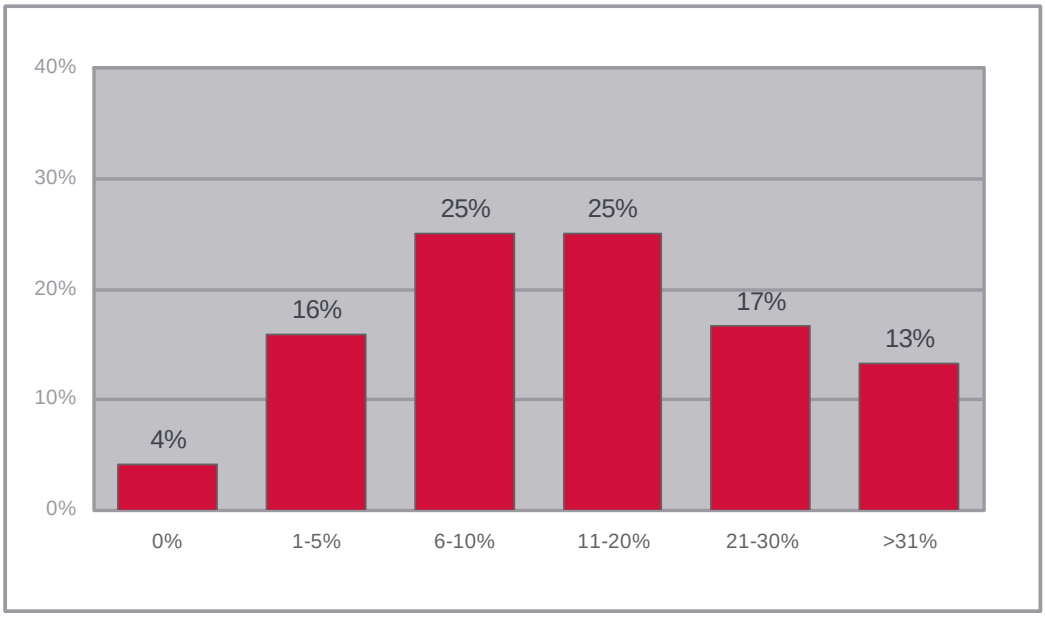


Optimizing resource utilization presents a powerful opportunity to address both of these concerns. Effective management of resources enables organizations to proactively manage capacity and ensure that critical power and cooling resources are sized correctly and balanced with computing demand, without jeopardizing availability.

Improved resource utilization can also help an organization navigate difficult economic times by delaying capital investments by improving utilization of all of the available resources.

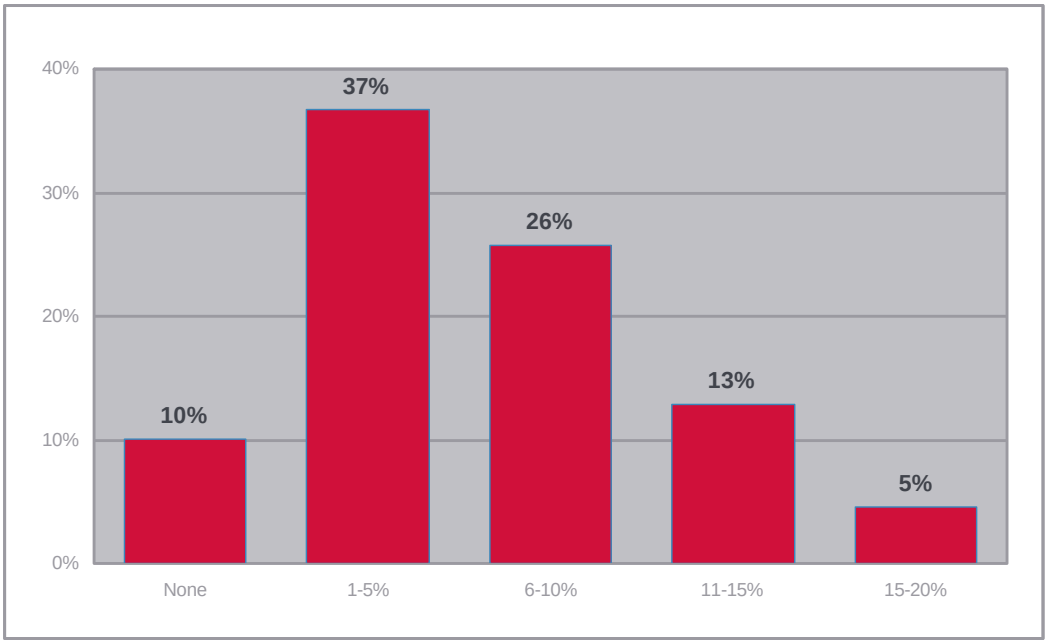
The 2009 ARI survey indicates that opportunities to better manage resource utilization and improve resource efficiency are widespread. Nearly all respondents— 96 percent – indicated that they could extract more capacity out of their infrastructures through improved management of existing resources.

How much extra capacity do you think you could squeeze out of your existing infrastructure through better management of your existing resources?



Improved management strategies can not only enhance data center resource utilization at the data center infrastructure layer, but also at the IT infrastructure layer, which is comprised of compute, storage and network equipment—and the size of the opportunity is similarly large.

What percentage of servers in your data center do you estimate are unproductive, or “ghost” servers?



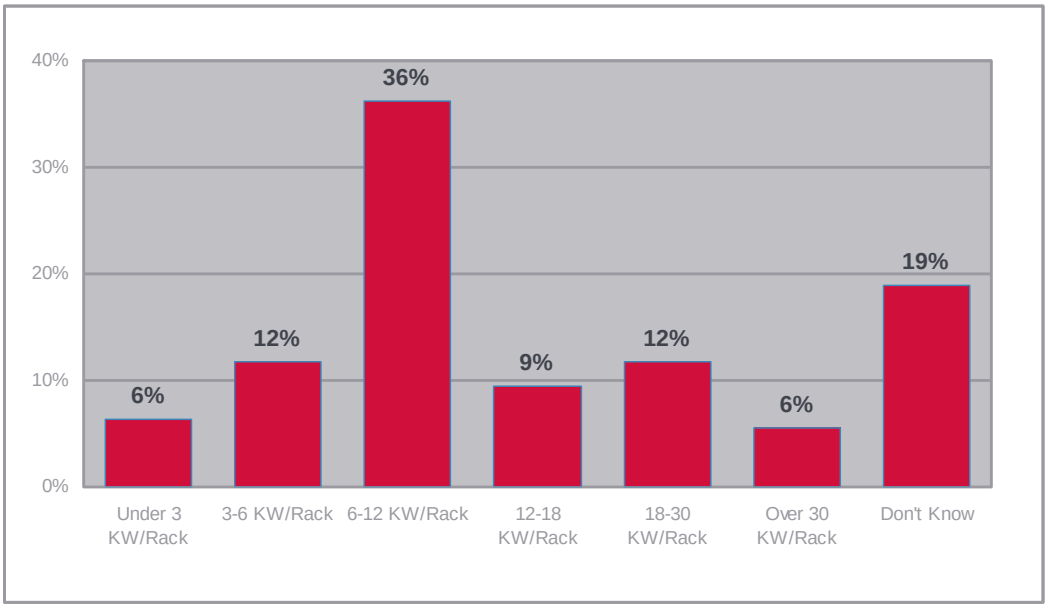
Ninety percent of IT leaders participating in this year's survey reported the presence of at least some unproductive, or "ghost" servers in their data center. Inactive servers can consume 65 to 75 percent of the power of a working server, representing not only energy efficiency, but resource inefficiency, as the servers could instead be commissioned to perform valuable work.

While proliferation of these ineffective servers was somewhat minimal for many organizations (37 percent reported just one to five percent of their servers were unproductive), a frightening five percent reported up to 15-20 percent proliferation of ghost servers in their data centers.

Improved visibility and management at the IT infrastructure level can help organizations to identify, remove and reallocate servers to tasks that contribute to the IT operation. Additionally, effective management of data center resources not only reduces costs by improving resource allocation, but also mitigates risks by providing enhanced visibility into data center resources.

Troublingly, 19 percent of data center managers reported that they do not know the maximum power density of their data center. Failure to appropriately manage resources by tracking power consumption (densities) and capacities can lead to the over-provisioning of data center resources to hedge risk, or inadequate provisioning due to lack of insight into demand. In either case, organizations are wasting money by paying for resources that are not needed, or by threatening costly outages.

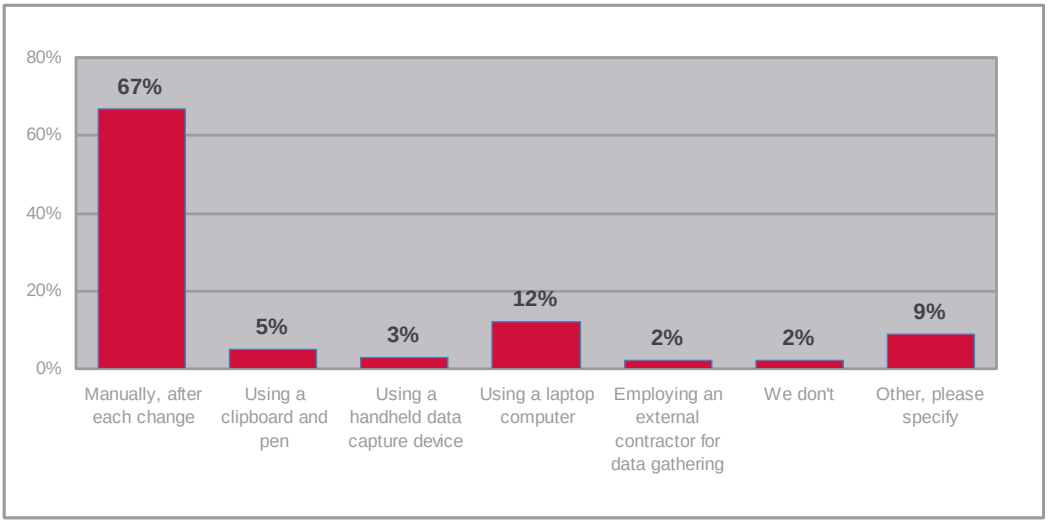
What is the maximum power density (Watts per rack) in your data center?



Process Efficiency Lags Farthest Behind in Adoption

As shown on page three, resource utilization is not the only target for cost reductions in the data center – 11 percent of respondents reported the need to cut back in staff levels as a result of the economic downturn. Amidst reduced staff levels and ever-increasing demand on the data center, process efficiency is equally critical to optimizing performance as energy and resource efficiencies. This year's survey found that among the three efficiencies, process efficiency lags farthest behind in adoption, particularly in the area of data collection and management.

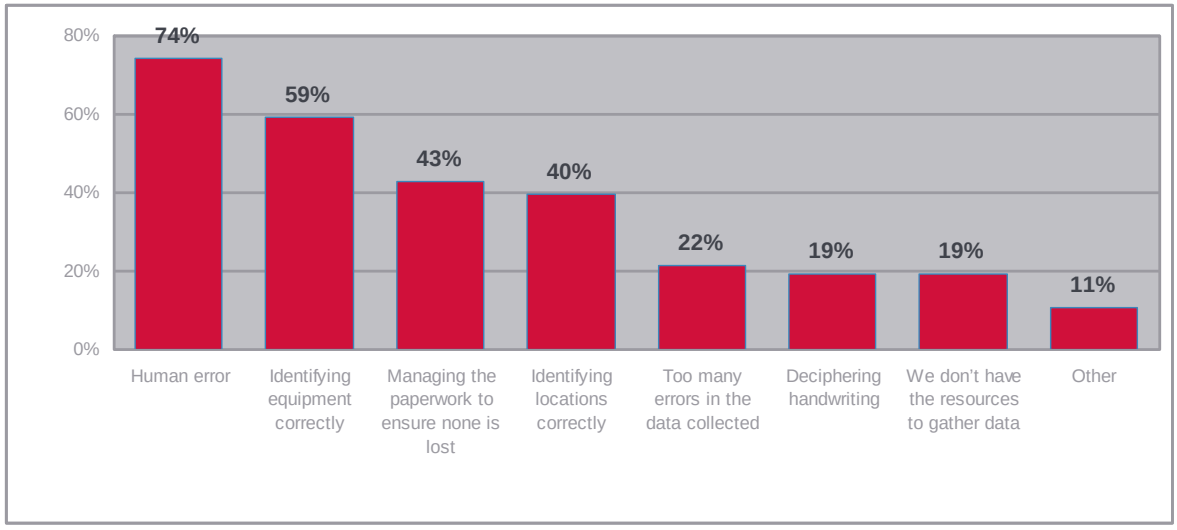
How do you update documentation in the data center?



The task of managing configuration information was identified by the ARI as a leading opportunity to improve staff effectiveness. Nearly half (49 percent) of survey respondents reported using three to five systems to document their infrastructure, furthermore, 67 percent of data center managers reported updating documentation in the data center manually. These issues can only lead to the conclusion that data center is not being used as efficiently as they could be, effectively costing the organization money.

Using disparate systems that are not updated within a well defined process is an inefficient use of time and people resources when solutions for automatically managing the data center from a single system are available. Furthermore, the inaccuracies of manual data collection can also threaten service levels. Seventy-four percent of respondents said they have experienced data collection problems related to human error when gathering data, meaning that not only is staff effectiveness reduced under existing data collection strategies, but availability is also threatened. This is a critical, often overlooked, hidden cost to the organization. Inaccurate documentation (configuration information) leads to bad decisions, costly rework and potential outages.

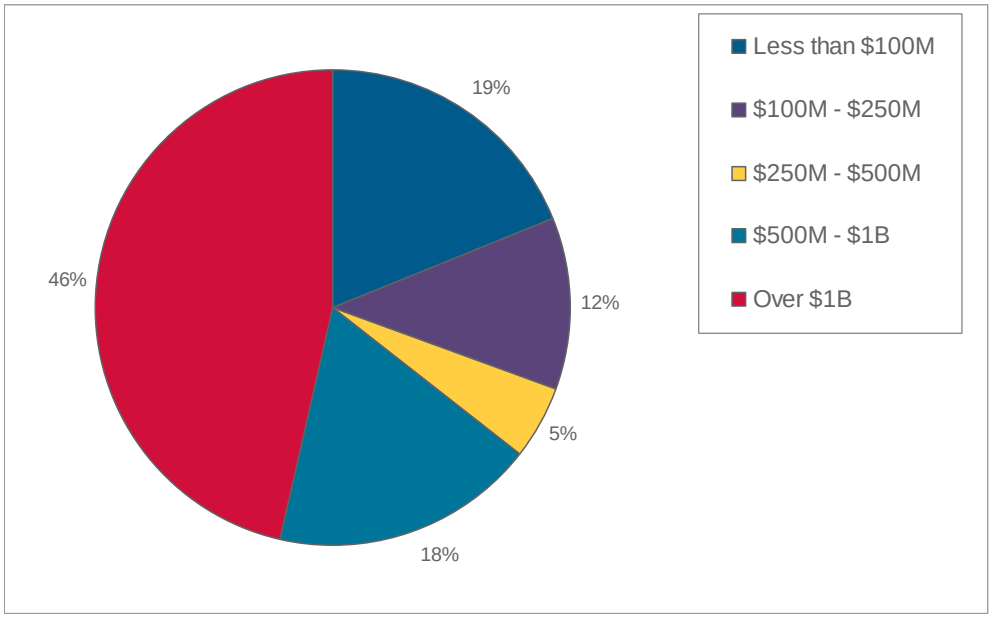
What problems have you experienced with data gathering (select all that apply)?



Survey Methodology

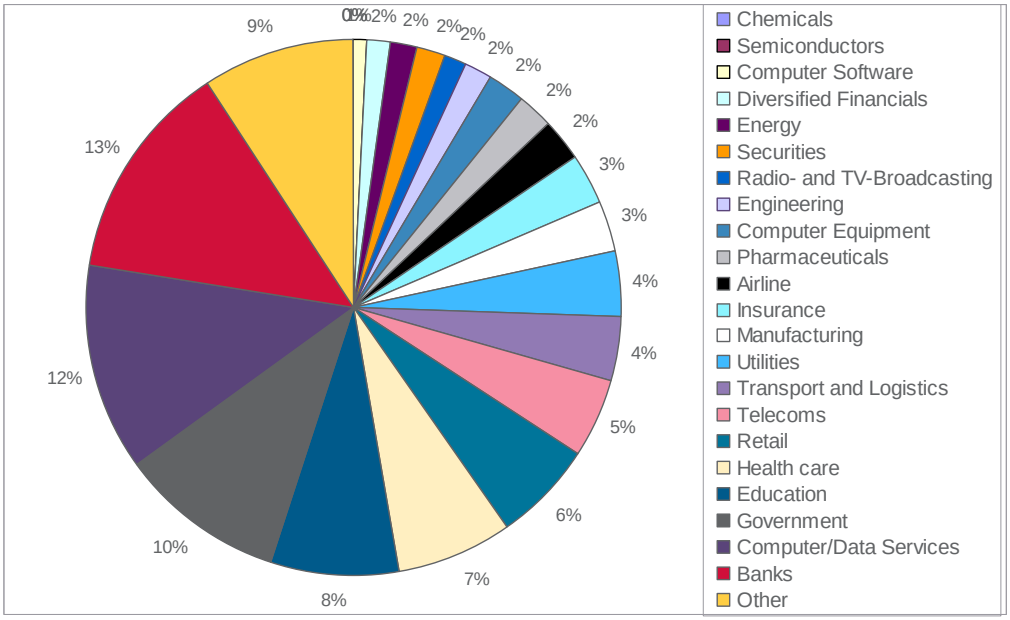
More than 100 data center professionals and executives from a variety of industries participated in this online survey. Survey participants were solicited from an industry database of Aperture customers and prospects. The charts below illustrate the demographics of companies that took part in the survey.

Annual revenue of participating organizations



The chart below 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

The practice of optimizing data center performance to both improve service levels and reduce costs can be viewed as the management of three types of efficiency – energy, resource utilization and process efficiency. The results of the 2009 Aperture Research Institute survey demonstrate that the dialogue on data center efficiency to date has been misguided, as it has only emphasized one leg of a three-legged stool.

As a result, organizations are failing to appropriately manage all three efficiencies, effectively operating in an imbalanced state, and missing opportunities to achieve efficiency on a larger scale. Furthermore, they are the preventing the efficiency initiatives they do have in place from achieving their full potential, since all three efficiencies must be in place to fully achieve optimization.

For example, an organization can improve data center energy efficiency by implementing blade servers, but if it ignores resource efficiency by over-provisioning the cooling supporting those servers, it is not optimizing these efficiency gains. Similarly, if an organization eliminates ghost servers, but data center staff tracks data center assets manually (or worse, tracks them incorrectly), there is a risk that the problem will reemerge.

As economic conditions continue to compel organizations to not only reduce spending but to achieve maximum utilization of all resources available to the business, all three pillars of efficiency will become increasingly important to effective management of the data center. Data Center Service Management strategies that focus on all three pillars of efficiency will be the most effective in enabling organizations to achieve true efficiency in the data center and optimize financial resources.

The Aperture Research Institute is dedicated to providing the market with current information and trends on enterprise data centers. The ARI plans to publish new research notes on a quarterly basis. To read the latest research findings, visit www.apertureesearchinstitute.org.

Aperture®
An Emerson Network Power Brand
www.aperture.com

CORPORATE HEADQUARTERS

Aperture Technologies
9 Riverbend Drive South
Stamford, CT 06907

tel 203.357.0800
800.346.6828
fax 203.357.0809

EUROPEAN HEADQUARTERS

Aperture Technologies
288 Bishopsgate
London EC2M 4QP
United Kingdom

tel +44 (0)20 7959 3024
fax +44 (0)20 7959 3030

EMERSON Network Power