



Cooling Down the Data Center

New business demands in today's fast-paced, global economy are requiring companies to add additional IT resources in the form of countless new systems. The numbers are astounding, with industry analysts predicting there will be more than 35 million new servers installed worldwide and more than 16 million in the U.S. by 2010. Unfortunately, alleviating one problem brings on a new set of issues for datacenter managers, as excessive heat, insufficient power, and poor space utilization are resulting in rising costs where more is now spent on power and cooling than on the hardware itself.

THE ANSWER?

Data center managers must rethink how they approach power and cooling. Only one percent of managers take design into consideration when setting up a data center – and even fewer think about cooling. According to Gartner, traditional data centers typically waste more than 60 percent of the energy they use to cool equipment.

While consolidation is a great remedy for server sprawl, it can also create havoc on the servers housed in a datacenter originally designed for only one or two large systems. Instead of being able to spread out the servers so air can flow, businesses are stacking them, resulting in excessive heat. Too many managers treat the problem by upping the switch on the air conditioning.

Rethinking energy efficiency trends and considering new technologies available today can lead to dramatic improvements in energy efficiency and cost as the datacenter is fast becoming oceanfront property for today's business.

LOST IN SPACE

With space and real estate costs at a premium, most companies are limited to their existing footprint. Without the option to redesign their layout, datacenter managers need to spend time understanding their infrastructure and making realistic predictions.

Some important considerations include:

Heat Reduction: Choose systems designed to get rid of as much heat as possible. All that energy has to go somewhere and most is converted into heat. It is important to research energy efficient server options in the market that best fit business needs.

"Right Size": "Right size" the data center by getting rid of unnecessary components or features to optimize for performance and total cost of ownership. On the system level, use software and hardware techniques to assure components not in use are turned off. Running a data center at its intended usage rate is much more efficient than installing and running it at a very low usage rate.

Utilization: Be aware of the actual machine utilization in your data center. The EPA estimates that 20, perhaps 30, percent of servers in data centers are not doing useful work. Many would agree this is a common situation, one that can be changed.

Virtualization: Consider utilizing virtualization to assure systems are used as efficiently as possible. Virtualization for server consolidation taps the unused energy from underutilized servers and that equals inherent power savings, and certain soft-

ware enables multiple operating system images to run on a single machine.

Air Conditioning: Consider how and why extra air conditioning is implemented to cool down data center hot spots. Air conditioning uses as much, if not more, energy than the hardware it's intended to chill, and some experts believe that as much as 25 percent of the cooled air is wasted. Rethinking AC can drive huge efficiency gains.

THE REASONS TO RETHINK COOL

Besides the cost and environmental benefits in moving towards a greener data center, businesses will also reap the benefits of their IT investment for a much longer period of time. There is a causal relationship between high temperatures and how long equipment lasts. Less fans and AC equipment also means less noise.

Energy efficiency innovations that exist today -- software tools that plan for data center power needs, deep cooling doors that utilize chilled water and high frequency energy efficient chips -- can all help reap dramatic power benefits. As energy costs continue to soar, the problems of energy usage and heat generation that accompany extremely dense technology, will only continue. By considering all options available in the software, hardware and the virtualization realm, IT managers can run the most cost-effective, energy efficient data center possible.

*Marián Korienek
Systems and Technology Group Manager
IBM Slovakia Ltd.*

