

A Testimonial

DICE First to Study Power & Cooling Requirements and Planning at Data Centers

Power & Cooling Study: Important Implications

- HPC is critical to maintain American competitiveness in science and technology
- Energy efficiency is critical to the future growth of HPC data centers
- Vendors and data centers need the capability to openly test and evaluate emerging power and cooling technologies while protecting intellectual property – essentially the DICE Program model
- The HPC-community needs a strong partnership (government, industry and academia) to research, develop and deploy more energy efficient power and cooling solutions
- Federal and state governments, the largest buyers of HPC systems, must take leadership in establishing policies and research direction to allow growth and expanded application of HPC solutions while encouraging innovation in power and cooling solutions

The explosive growth in the number and size of data centers and computing power is creating an unsustainable demand for power and cooling requirements. At the current rate, America's power infrastructure will not be able to support the growth in computing to maintain – let alone grow – America's global competitiveness.

That's why Avetec's HPC Research Division, the Data Intensive Computing Environment (DICE) worked with IDC's HPC Group starting in 2008 to study power and cooling practices and planning for data centers, including high performance computing (HPC) and enterprise centers as well as vendors. The resulting two-part study looked at HPC data centers, enterprise and information technology (IT) data centers internationally.

"To our knowledge, this study is the first to examine this important topic on a worldwide basis and across all major categories of data centers including HPC, enterprise and communications," said Steve Conway, Research Vice President of Technical Computing, with IDC, the research firm DICE partnered with to conduct the study. "We feel proud of working with Avetec to create the first high resolution snapshot of the realities in 'green' computing."

Research to date by DICE includes a two-phase survey of administrators representing more than 170 data centers and vendors worldwide that explored current actions, attitudes, approaches, plans and expectations related to energy efficiency and the growing problem of data center power and cooling. The survey has produced many interesting findings and clearly validated that both the HPC and IT communities are struggling with power consumption and meeting ever-increasing power and cooling needs.

"We have heard from quite a few [people] who have read the studies and they really appreciate getting the kind of information that is really rare about the realities in green computing," said Conway. "We haven't heard anyone come back and say that 'you're just wrong.'"

“These studies zero in on the reality as opposed to ‘green’ hype marketing.”

-Steve Conway, Research Vice
President of Technical Computing



The study found that most data centers lack strong mandates today to improve their energy efficiency. Fewer than one in three centers employ metrics for measuring and tracking energy efficiency. Half of the data center organizations plan to improve their measuring and tracking of energy efficiency over the next 18 months at least to some extent. In addition, the study concluded, “with few exceptions, the data centers are planning no major changes, and they do not anticipate any game-changing power and cooling technology breakthroughs in the near term.”

“ While people are heading in the right direction of getting greener, things are not nearly as far along as the marketing messages might imply. ”

-Steve Conway, Research Vice
President of Technical Computing

Other key findings of the reports include:

- The largest non-technical barrier to increased energy efficiency is financial. This constraint was cited by over half of the data center administrators.
- Fewer than one in three surveyed data centers have a formal roadmap for improving power and cooling efficiency. But most of the data centers recognized this as something important to do, and eight organizations expressed interest in helping to develop a community-wide roadmap.
- Half of the data centers surveyed are considering distributing their resources to multiple buildings or locations.
- Most data centers favor the idea of an independent testing and validation service. Two-thirds of data centers do not conduct in-house testing to validate energy-efficiency of computing hardware.
- Many data centers are not directly responsible for budgeting or accounting for the cost of power. The management attitude often is “the cost of electricity is simply the cost of doing business.”

The main objective of the Power and Cooling Solutions for Data Centers study was to identify and assess approaches to data center energy efficiency being used today and planned for the future.

To see how the DICE Program can help your organization, visit www.diceprogram.org.