

The Importance of Energy to IT

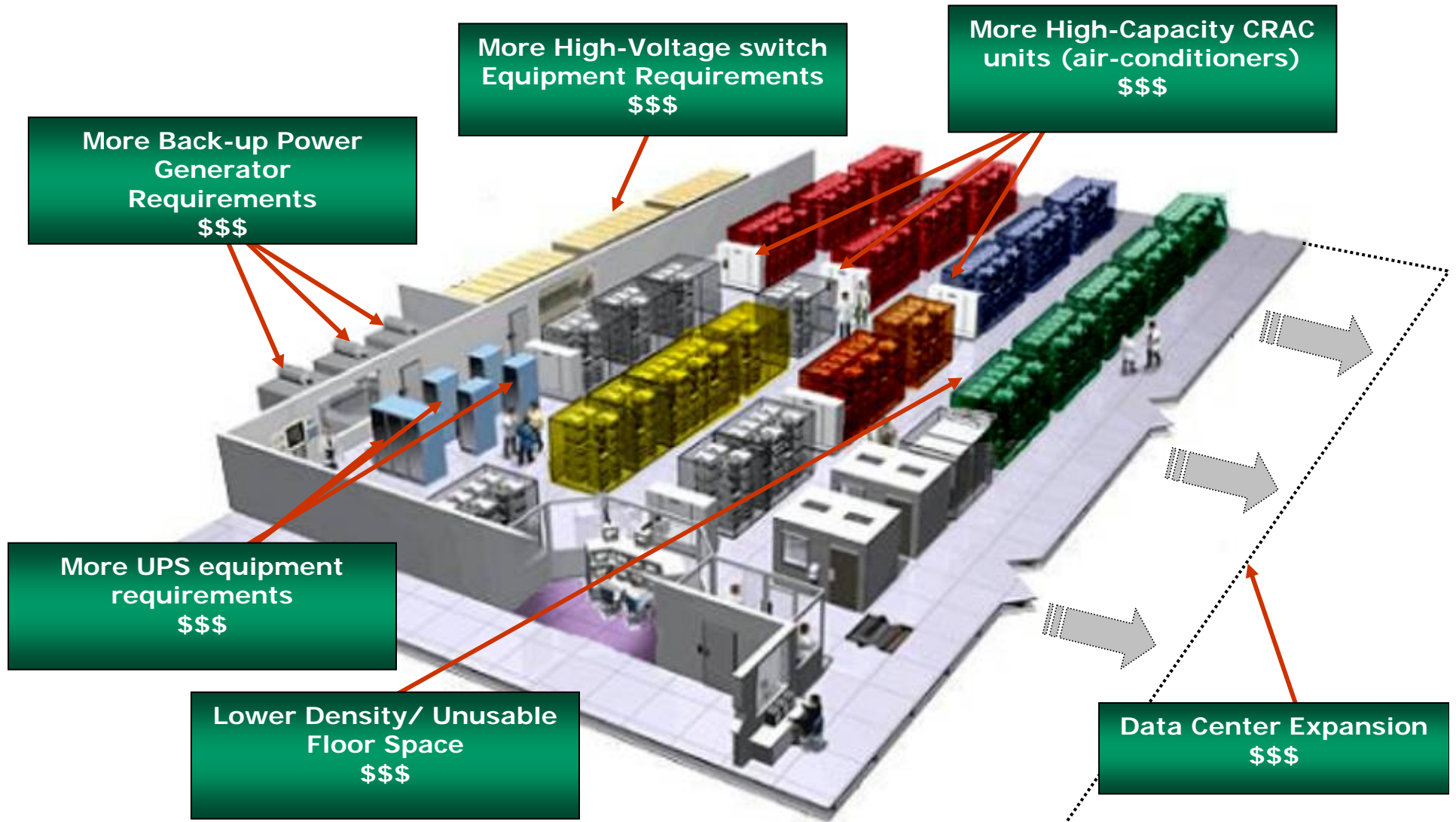
Bruce Shaw

**Director, World Wide Commercial Marketing
Advanced Micro Devices**

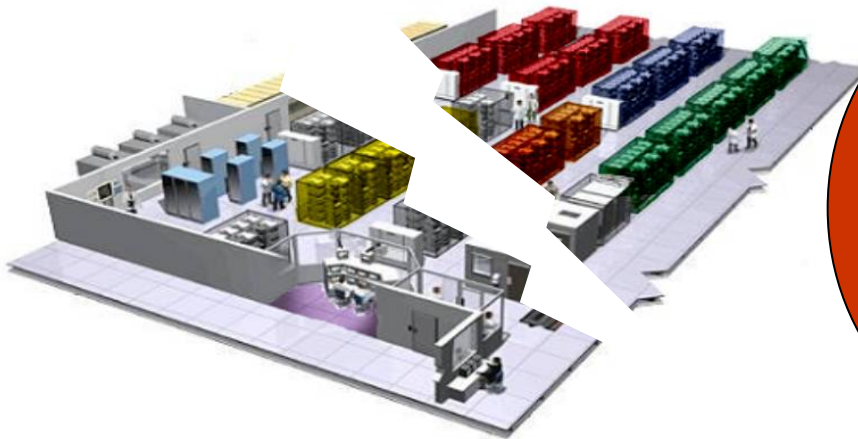
March 27, 2006

Effects of Power in the Data Center

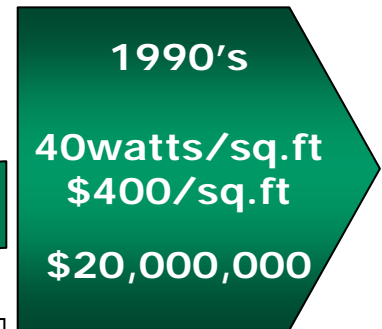
It adds up quick!



Stop the \$3,000,000 Server



**Cost to Build
50,000 ft² Data Center**



1150%

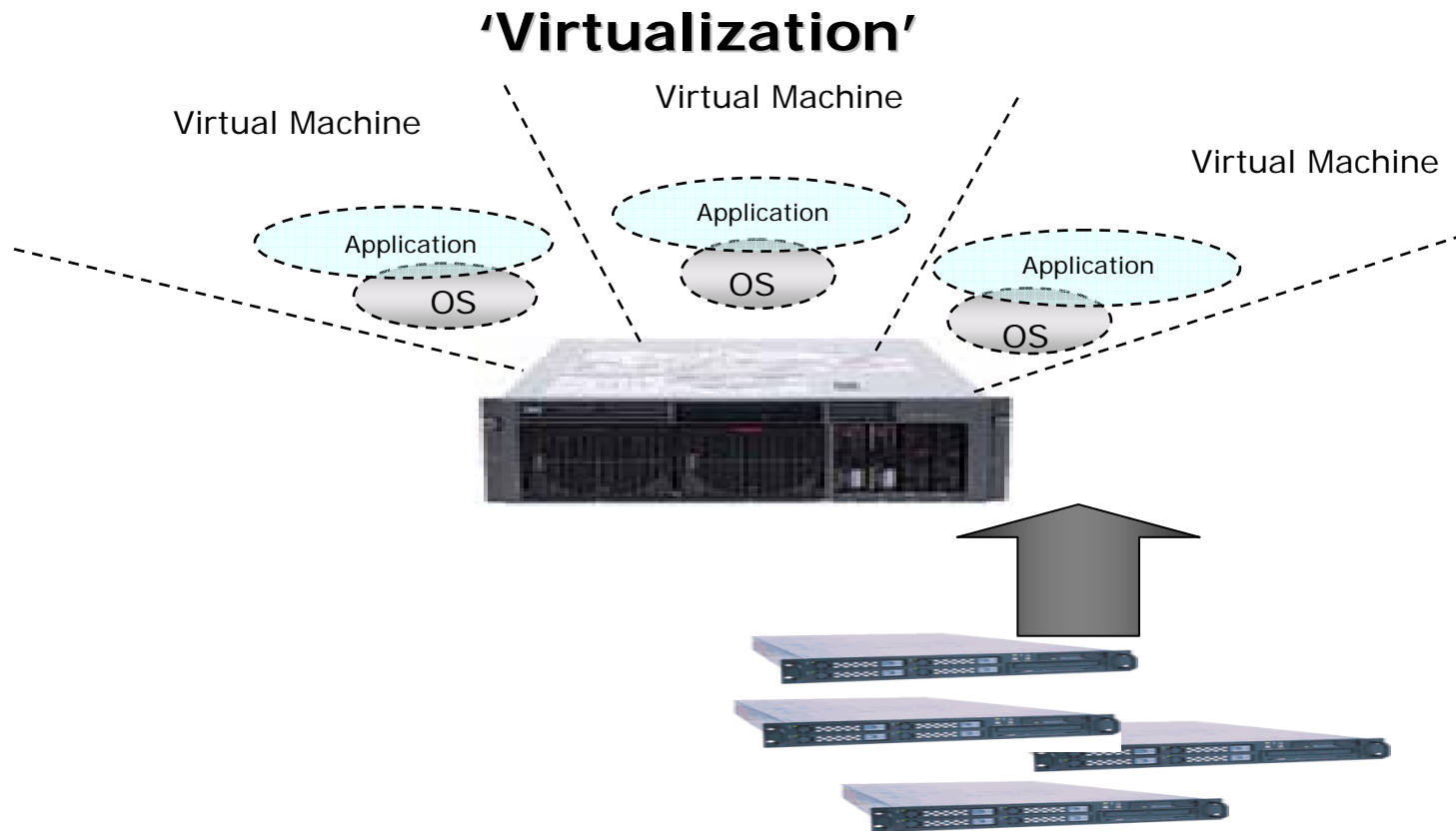


- Greatest impact can be made from “volume” servers
- Innovations that contribute to a “Balanced Platform”
 - Performance-per-watt efficiencies
 - Manufacturing processes
 - Efficient microprocessor architectural

Computerworld Nov.1 2004

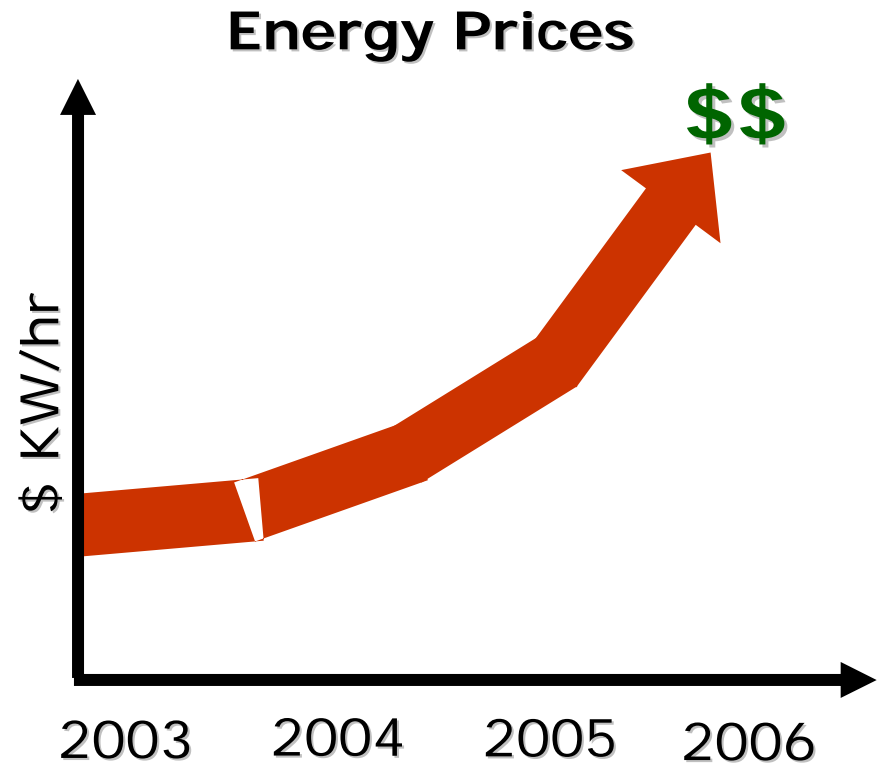
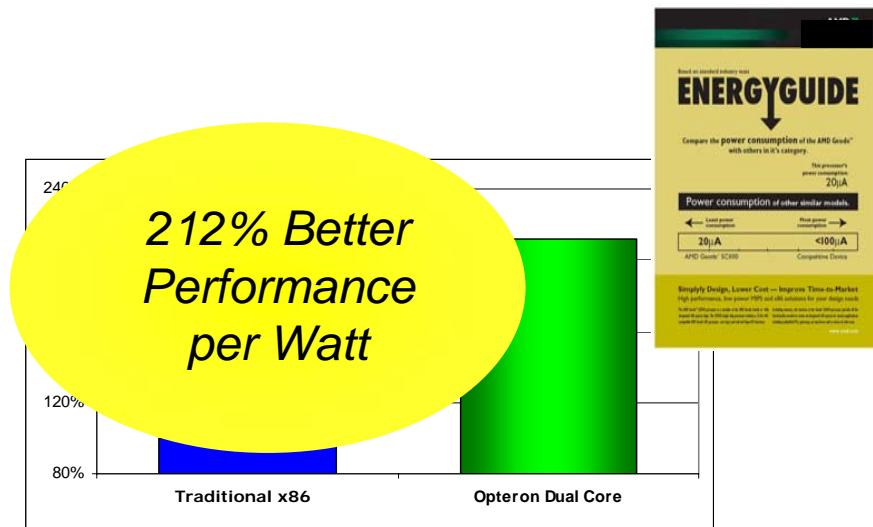


Some Efficiency Gained through Instruction Sets



Industry Developed Metrics Enabling Energy Efficient Datacenters

- Customers are asking for energy efficient metrics



Challenge the Industry to work together to develop a energy efficiency metric

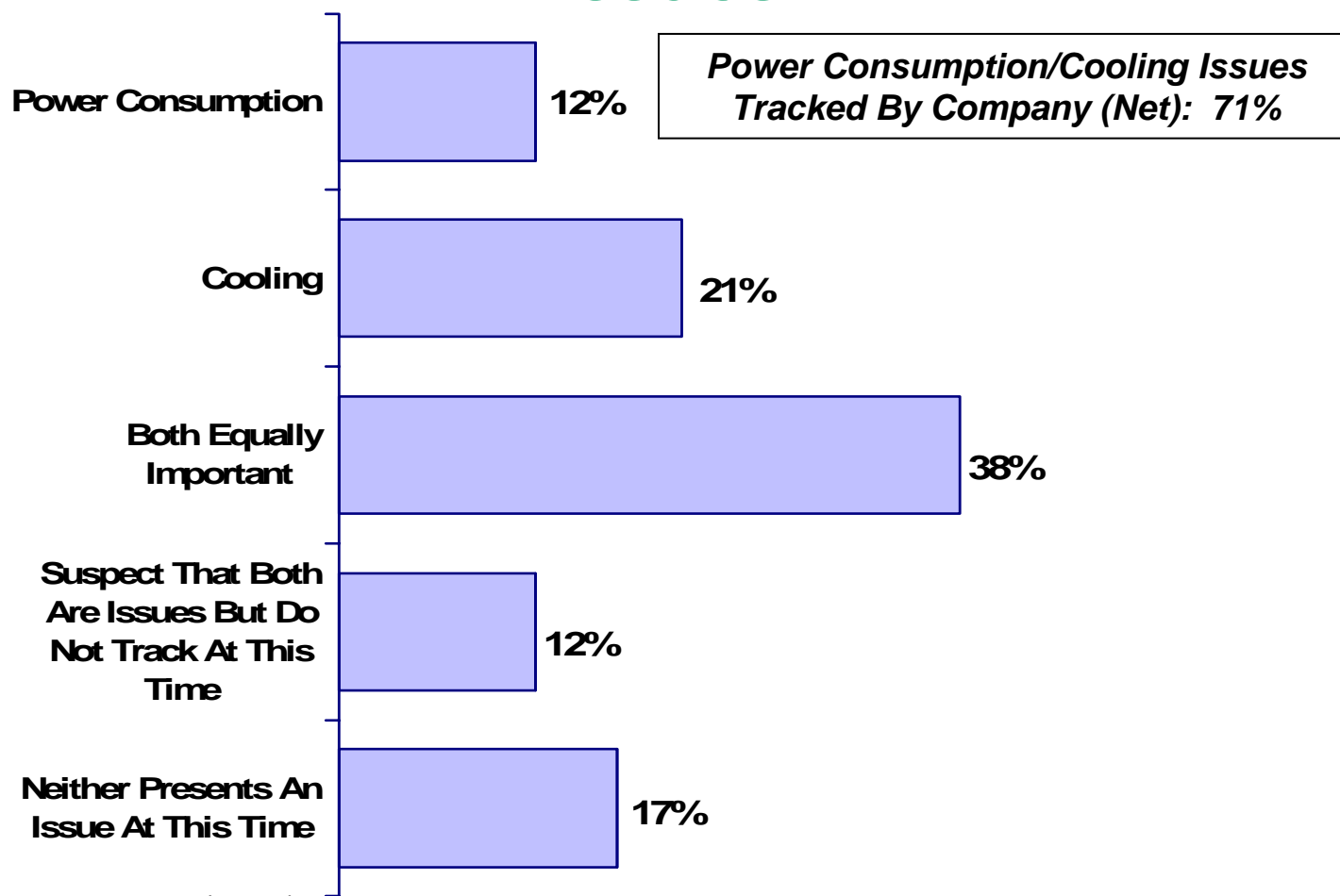


Bottomline

**IT and Data Center Management
Know They have a Problem**

Voice of the Data Center....

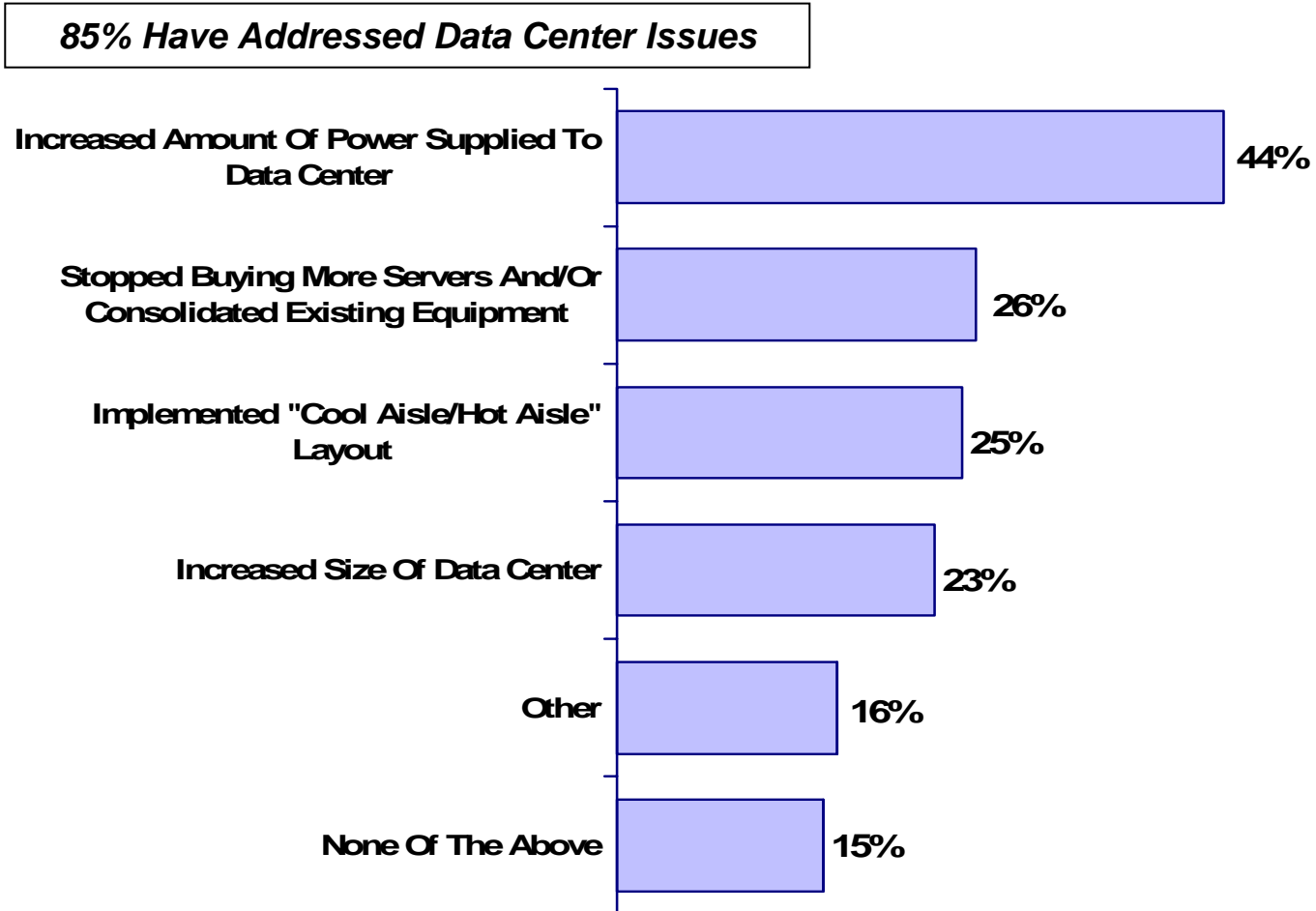
Data Center Power Consumption And Cooling Issues



Base: Total Respondents (1,177)

Q. Between the two, what is the primary issue you face in your data center today?

How Addressed These Data Center Issues

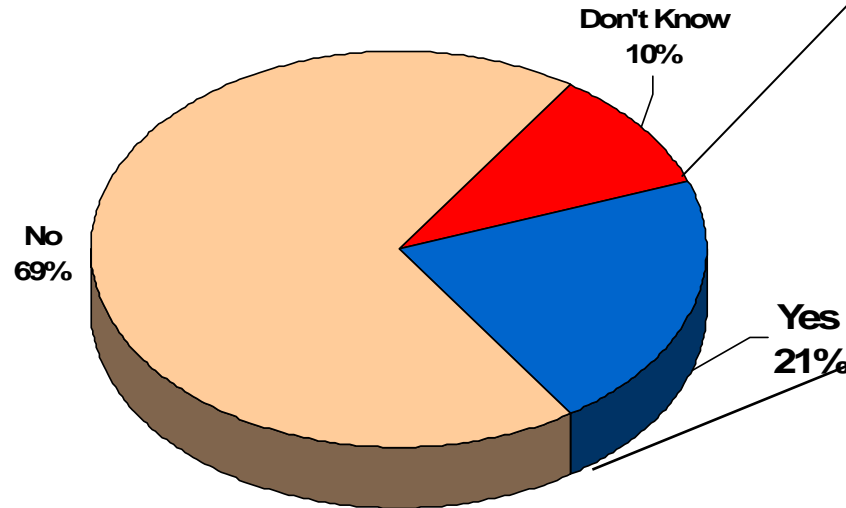


Base: Power Consumption/Cooling Issues Tracked By Company (834)

Q. How has your company addressed this issue to date?

Impact on Rack Space Usage

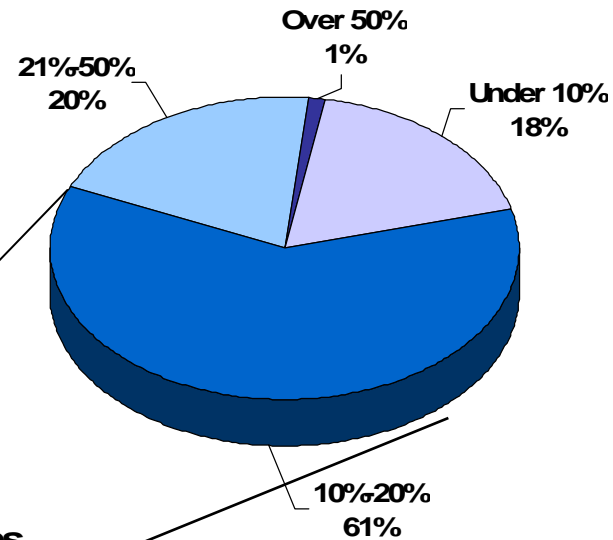
Rack Space Go Unused



Base: Total Respondents (1,177)

Q. Does rack space in your data center go unused due to power consumption and cooling issues?

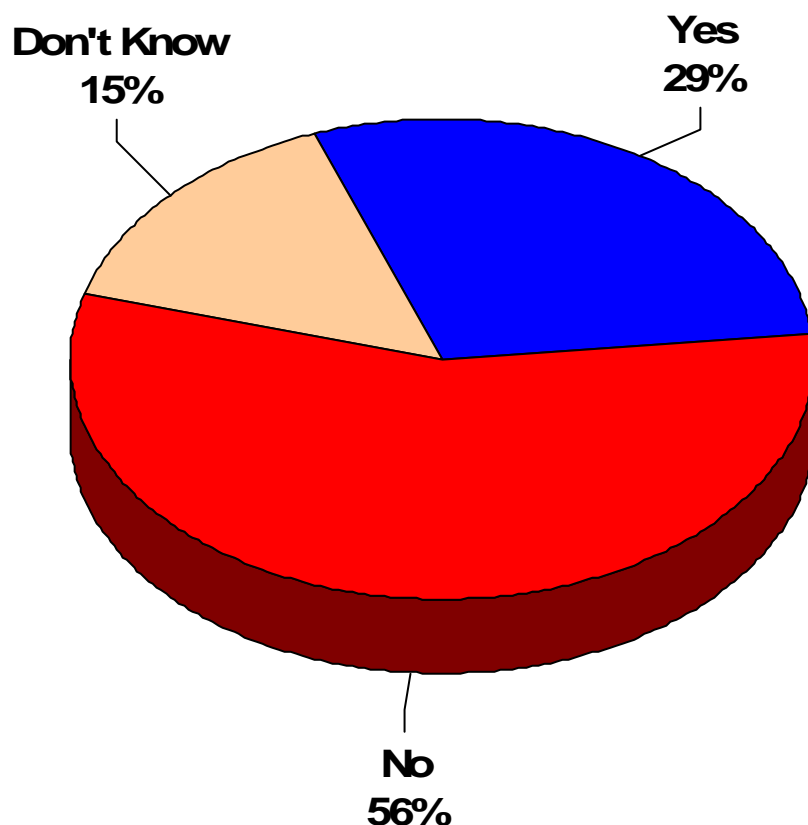
Average Rack Space Unused: 18%



Base: Rack Space Goes Unused (250)

Q. What percentage of rack space goes unused due to power consumption and cooling issues?

Data Center Power Consumption And Cooling A Way To Lower Costs

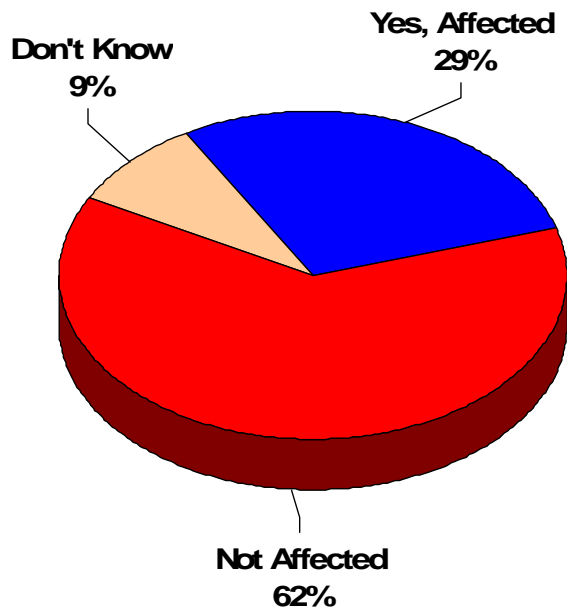


Base: Total Respondents (1,177)

Q. Is data center power consumption and cooling being investigated by business management as a way to lower operational costs?

Power Consumption And Cooling Issues Affected Server Purchase Decision In Past 12 Months

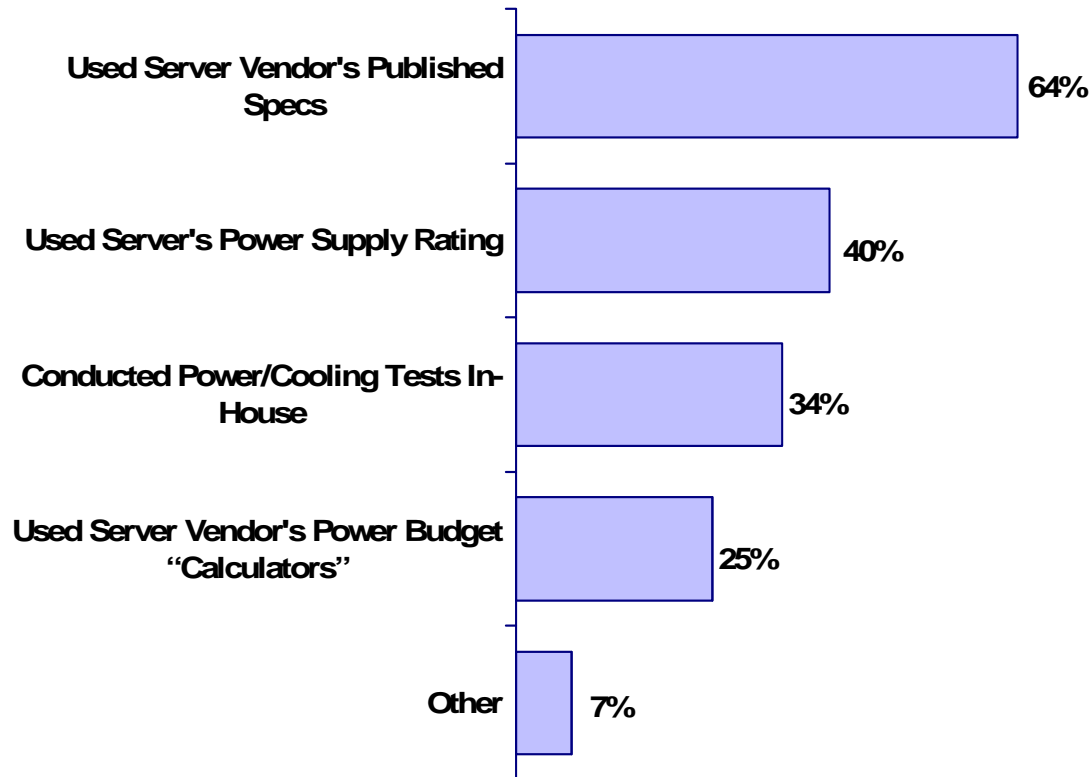
Affected Server Purchase Decision



Base: Total Respondents (1,177)

Q. Have power consumption and cooling issues affected a server purchase decision in the past 12 months?

Server Purchase Decision Criteria



Base: Issues Affected Server Purchase Decision (336)

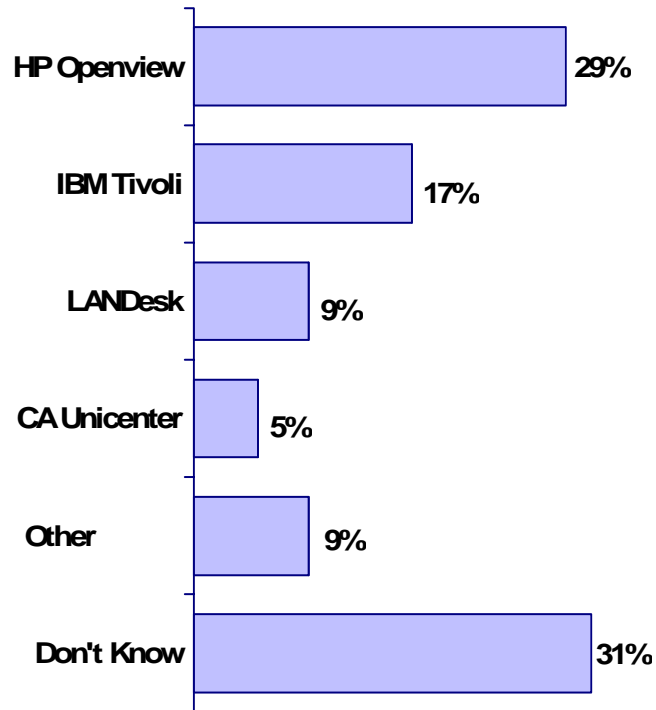
Q. How did you determine whether the chosen server met your criteria?

Implementation of System-Level Tools To Manage Power And Cooling

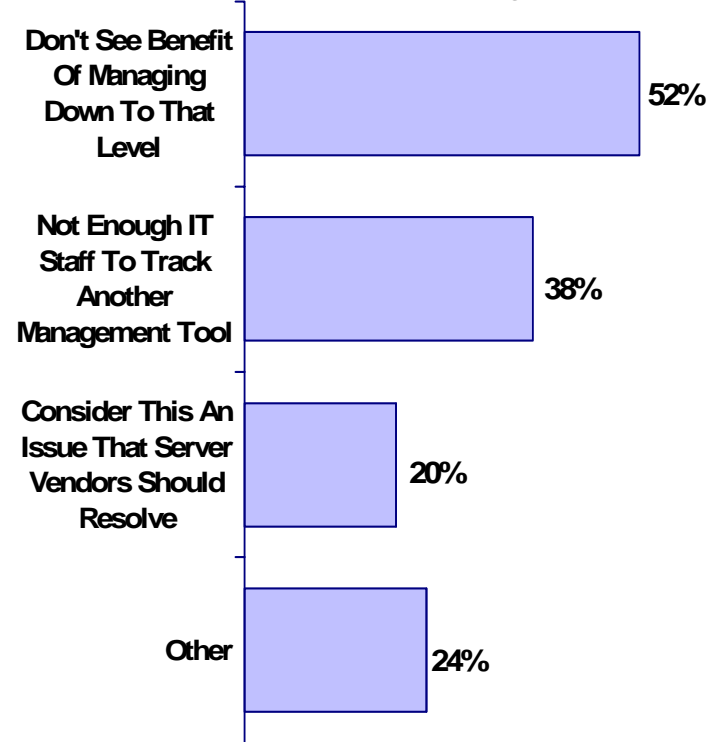
71% Would Implement System-Level Tools

29% Would Not Implement System-Level Tools

Management Package Would Like To Integrate



Reasons Would Not Integrate



Base: Would Implement System Level Tools (834)

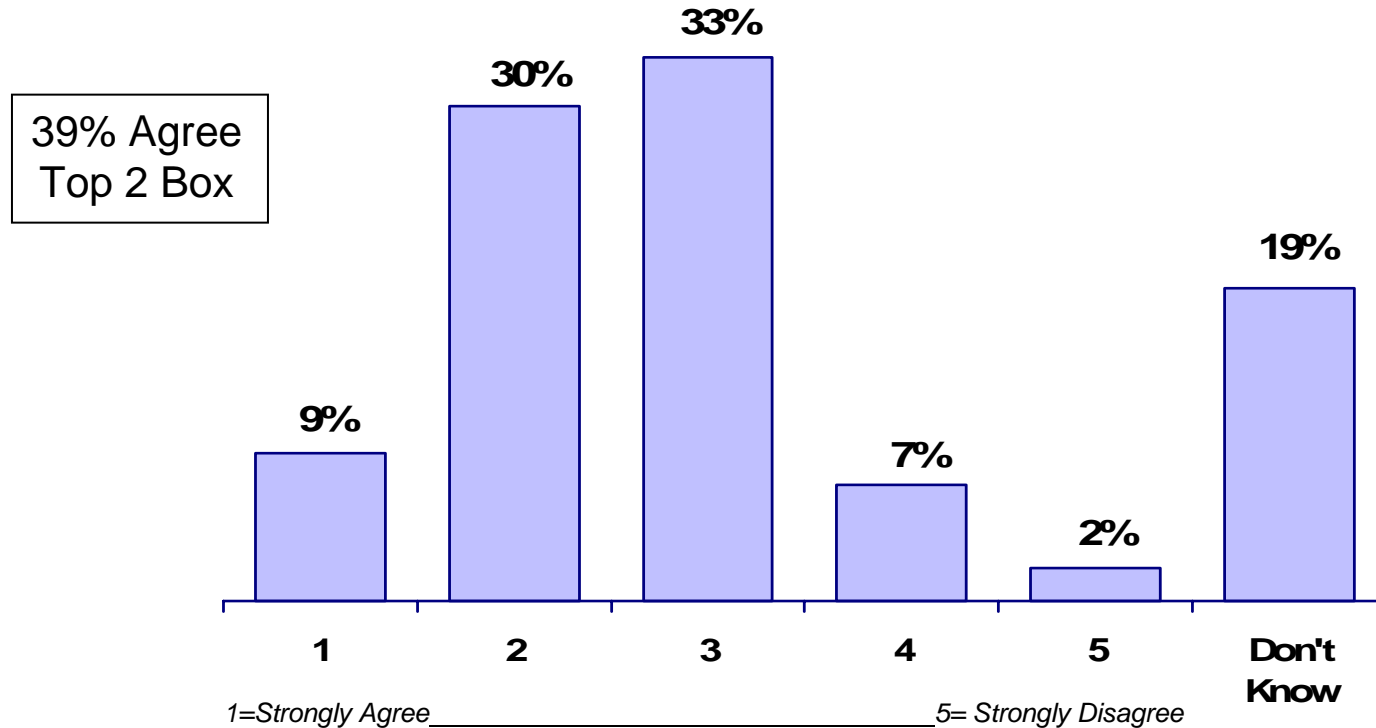
Q. If system-level tools were available that would allow you to manage power and cooling at the server rack level, would you implement them? Which management package would you like to see these tools integrate with?

Base: Would Not Implement System Level Tools (343)

Q. If no, why not?

Attitude Toward Dual-Core Processors

“Servers with dual-core processors [two CPU “cores” on a single chip] can help address data center power consumption and cooling issues.”

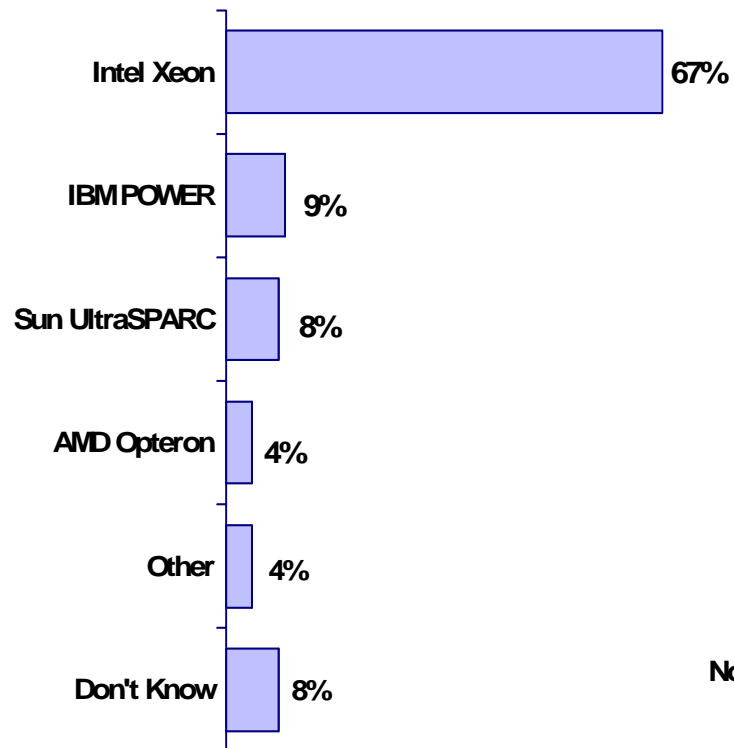


Base: Total Respondents (1,177)

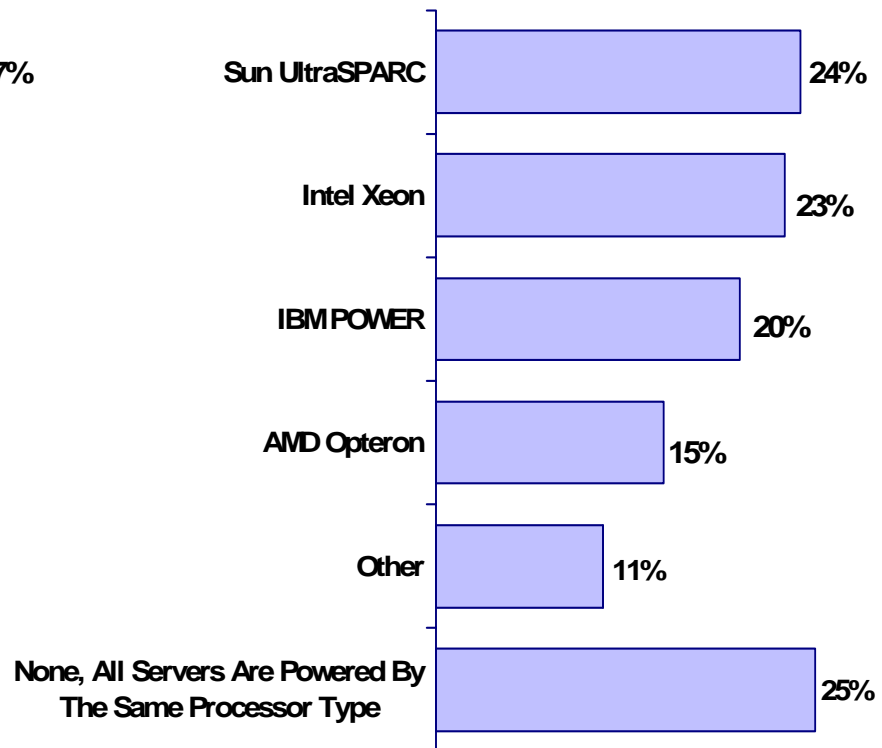
Q. Please indicate your level of agreement with the following statement:

Types Of Processors In Data Center

Processors Powering The Majority Of Servers In Data Center



Processors Powering The Balance Of Servers In Data Center



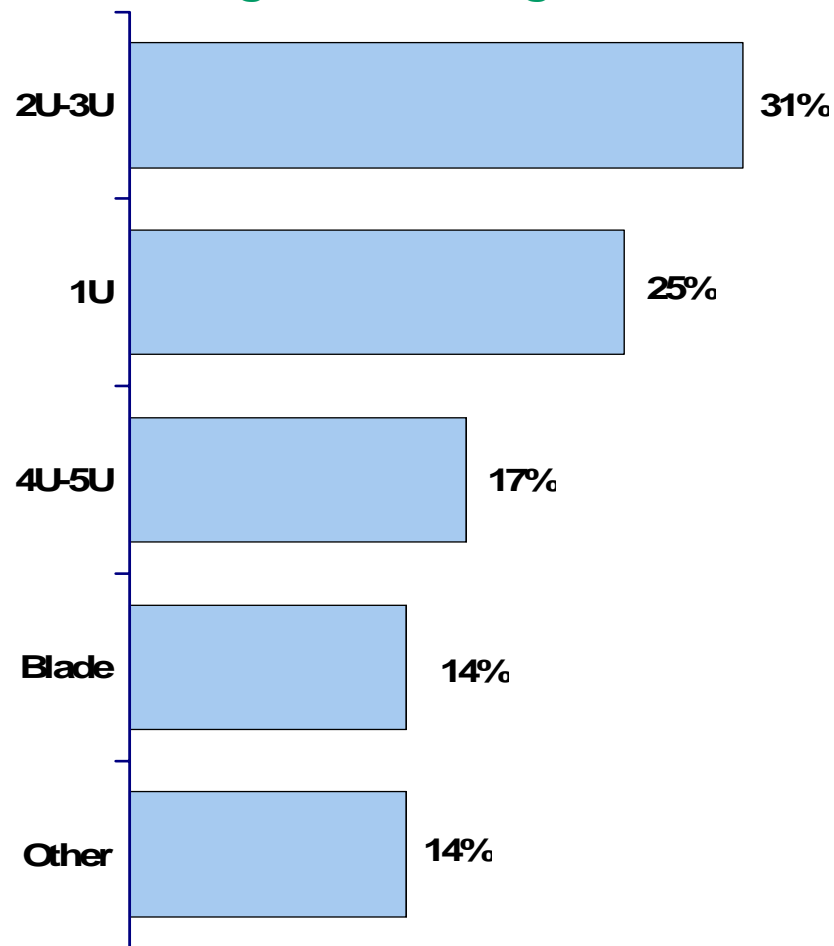
Base: Total Respondents (1,177)

Q. What type of processor powers the majority [75% or more] of the servers in your data center?

Q. What type of processor powers the balance of the servers in your data center?

Server Form Factors Currently Installed

(Average Percentage of Servers in Data Center)



Base: Total Respondents (1,177)

Q. What server form factors do you currently have installed in your data center (breakdown by percentage)?

Summary Of Findings

- 7 out of 10 organizations with data centers track power consumption and cooling issues. Among the two issues, cooling is a more significant factor.
- Most organizations (85%) have tried to address these issues in a variety of ways. Primarily by supplying more power to the data center (44%), but also by consolidating the servers they have (27%), implementing “cool isle/hot isle” layouts (25%), and increasing the size of the data center (23%).
- 1 out of 5 companies waste some rack space due to power and cooling issues, on average 18% of total rack space.
- Management is investigating data center power consumption and cooling as a way to lower costs in only 3 out of 10 establishments.
- Power consumption and cooling issues have effected server purchases in 3 out of 10 organizations. Most (64%) took into account the server vendor’s published specs. Others used power supply ratings (40%), conducted in-house tests (34%), or used the vendor’s power budget calculators (25%).

Summary Of Findings

- Most organizations (71%) are interested in system-level tools to manage power and cooling at the rack level. HP Openview and IBM Tivoli are the top server management tools needed to integrate with.
- Those not interested either don't see the need or lack the manpower to track another management tool.
- 2 in 5 decision makers tend to agree with the statement "Servers with dual-core processors (two CPU "cores" on a single chip) can help address data center power consumption and cooling issues".
- These organizations are using a variety of server form factors in their data centers. About 30% of all servers are 2U-3U, another 25% 1U, 17% 4U-5U, 14% blade servers.

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