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April 29, 2010

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Power Density: Getting to the Core of the Issue

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In the race for data center space, financial services firms are being reminded that more space means more power and with that, new technology that can handle all of that power (and keep down the electric bill).

“Servers are getting faster and faster and because they are faster, they are consuming considerably more power,” said Tabb Group senior analyst and report author Kevin McPartland. “To make the best of use of the limited prime data center space around the major market centers, they need to have very high power density to be able to support as many servers as the clients in the data centers want to put in them.”

“Power density,” as it’s spoken about in data center terms, is how much power utilization per square foot can be supported in a data center of IT load, according to Michael Terlizzi, vice president of operations for interconnection company Telx.

Today’s data centers may be built anywhere from 100 up to 300 + watts per square foot of IT load, or, the total power that is required to run the services, explains Terlizzi, who noted that Telx builds its sites between 150 to 200 watts per square foot of IT load.

“As a facility becomes more mature some of the older legacy data center operators may find themselves in a power squeeze, asking how to get more power,” said Terlizzi. “Sometimes that additional power isn’t available and they want to know how to do more with the power they have. And one way to do that is to become more efficient with the power usage and improve on the ratio of IT load over the power required to support it.”

Firms can accomplish this by replacing some of the end-of-life gear with newer, more efficient gear—for example, antiquated HVAC systems can be replaced with higher, more efficient unit and have less waste on the power, he said.

Technology firms such as Intel are launching new technology that addresses the power density issue. Late last month, Intel unveiled its new Xeon processor that aims to cut power needs.

In conjunction with the unveiling of the Xeon 7500, NYSE Euronext participated in a Webcast touting the benefits of the new processor for NYSE and market participants alike. NYSE Technologies CEO Stanley Young highlighted the importance of Intel's latest chip to the NYSE with regards to the company's new Mahwah data center, expected to launch in the third quarter of this year.

The Intel Xeon 5000 and 7000 processors provide financial customers improved processing latency, while decreasing power consumption in some cases as much as 30 percent, said John Panzica, vice president of Switch and Data's financial services practice.

"Even though the chips utilize power more efficiently, financial firms are adding more processing capacity to their footprints in order to utilize their colocation space more efficiently," said Panzica. "These chips also provide firms additional processing capacity as trade volume and market data have had great fluctuation across geographic region and asset classes."

From a power standpoint, power density has become a rising concern with IT managers, said Steve Thorne, product line manager in the Intel Xeon processor family.

"What Intel is focused on is reducing the overall power consumption of the processor and the components in typical systems," said Thorne. "We can reduce the power load but at the same time we don't want to sacrifice performance. It's easy to scale back your performance and also reduce your power consumption but then you tend to buy more systems at the end of the day."

One of Intel's primary considerations are data center accounts, and not necessarily just the largest data centers in the world, but "anyone installing systems in a rack where they've got to deliver power and cooling, who can benefit from this technology, noted Thorne."

"At Intel we have formulated a whole team that is looking at problems associated both with power delivery, efficient power usage and cooling," continued Thorne. "We are very focused on meeting government regulations like Energy Star and reducing the overall carbon footprint. It's hard to say as to whether the power density has become the primary consideration. At the end of the day people are still interested in getting delivered performance. We have to be able to institute these changes without sacrifice performance."