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Green IT, Cloud Computing to Impact Data Centers: Report

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Smarter, greener data centers will combine with the increased use of cloud services to change management of the centers, Gartner reports.

According to IT research firm Gartner, Inc., four forces currently operating in the market could result in data center space requirements that will shrink dramatically before the decade is out. These include smarter designs, energy efficiency pressures (or green IT), the realities of high-density environments, and the potential of cloud computing. The company recommended that data center managers who are trying to determine how to optimally design and plan for the leading-edge data center of the future should focus on these factors.

The report, which predicts the evolution of the four trends over a five-year period, noted most data center managers paid little attention to the "greening of IT," unless senior management or the public pressured them into it. However, as awareness has increased, there has been a constant uptick in the attention paid to energy consumption in data centers, and new data center managers take a hard look at energy efficiency in both design and execution.

The development and marketing of power utilization efficiency (PUE) by the Green Grid continues to gain ground in the market, according to the report, and many new data centers are being developed with specific PUE targets in mind—both for the energy-efficiency advantages and the public relations impact.

With smarter designs and green pressures, data center managers and designers have begun to focus on the compute density in their environments, Gartner analysts said, pointing out that most data centers are “woefully underutilized” from a space perspective. The physical floor space might be nearing capacity, but, in many cases, the actual compute space within racks and servers is very poorly used, the report noted, with average rack densities approaching just 60 percent worldwide. “Newer designs focus on this issue and are developed to allow optimal rack density, often approaching 85 to 90 percent, on average, thus increasing the compute-per-square-foot ratio,” the report said.

Smarter designs have also taken into account the demand for flexible workloads by adding different density zones for different workload types, the report explained. One zone might employ directed cold air, or even in-rack cooling, to support very high-density workloads with minimal disruption or impact on the rest of the floor. Secondary zones can support steady-state applications that consume a consistent amount of power and produce manageable heat loads, while low-density zones can be designed to support low-power equipment, like telecom and storage.












Gartner also predicted that, by 2018, data center space requirements will be only 40 percent of what they are today. The focus of these data centers will be on core business services, and, as those services continue to demand more IT resources, the shrinking size of servers and storage (and telecom equipment) will more than offset that growth. With offloading services to the cloud, ownership and management of IT assets is shifted to the provider.

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"In the world of IT, everything has a cascade effects, and in data centers the traditional methods of design no longer work without understanding the outside forces that will have an impact on data center cost, size and longevity," said David Cappuccio, managing vice president and chief of research for infrastructure at Gartner. "However, these very forces can actually work in your favor, providing the means to apply innovative designs, reduce capital costs and operating costs, increase long-term scale, and keep up with the business."