Improving Flexibility Through Proper Rack Selection

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As more organizations rely on IT to run their business-critical operations, it has become apparent that a reliable infrastructure for IT operations is needed to minimize any change of disruption. With this in mind, end users need to consider evolution in equipment and applications, as well as design changes as they plan for new installations or replacement systems.

Ensuring IT systems are available when needed has been the dominant driver in infrastructure design. As long as IT systems didn't go down, the infrastructure was doing its job. However, as organizations struggle to address the rapid pace of technology change, a new design consideration has emerged: Flexibility.

Racks, aside from being the basic building block in data centre infrastructure, are now considered as 'solutions' that contribute in creating a high level of management and design flexibility. Racks serve as platforms for integrating power, cooling and information technologies and end users who acknowledge this can determine which appropriate rack or enclosure to use for their high-availability environments.

When implementing racks, there are some factors to consider:

Size – servers used to be in tower form until Microsoft drove the change to 19 inch to save space. Today's high-density servers adopt 1200mm deep and require more cabling, power and heat rejection. Racks measuring 42U in 2m height and 800m in width provide greater flexibility as it fits through standard-sized doorways and provides more room for mounting of power strips and network cables.

Equipment density - end users should consider the volume and thickness of cables; choice of power strips and airflow management. Racks with front and rear cable management solutions provide more space for power and network cables. It ensures cable management flexibility and unobtrusive power strip location. Further, it improves open air circulation preventing undesirable hot spots in and round sensitive equipment.

Power availability – in the past, equipment racks consumed less than 2kW of power, but today's power requirements are pushed up to 20kW per rack due to blade servers and other high density equipment. Fortunately, there are best practices that can be implemented these include separating data and power cables; routing cables either above or below the rack; and proper selection of power strips.

Rack cooling - implementing best cooling practices such as row or rack architecture can help address heat problems. In these approaches, the air condition systems are integrated with rows or racks or individual racks, resulting a shorter and defined air path. This provides higher efficiency and higher power density.

In addition, some IT equipment breathe side-to-side, such as Cisco switches and Sun servers, hence it's important to get a wider cabinet preferably 700-800mm. Airflow can be greatly improved through racks with 64 to 83 percent free area. By having free airflow, cooler air helps servers run more efficiently and longer than hot servers.

Weight – most floor tiles are rated for 550kg. A typical rack rests on two floor tiles, supporting 1,100kg in total. Today's racks, however, are now rated at 900kg due to increased equipment densities; this can lead to design limitations since not all building floors are designed to withstand over 1,000kg. End users should consider lightweight yet sturdy racks that can be easy for one person to move around.

Monitoring – monitoring is critical as it provides continuous monitoring of environmental conditions at rack level. Today's new monitoring systems protect critical data centre assets from heat, humidity, smoke, water leaks, cabinet intrusion and other environmental conditions.

While growing businesses manage a high degree of change with limited resources, available new rack designs are making it easier to accommodate unexpected changes in IT systems without disrupting operations. Working together, a highly-flexible rack system, proper cabling management and appropriate rack accessories can help a growing business create an IT infrastructure that delivers flexibility, high availability and low cost of ownership. ■

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