Is Your Data Center Running Out of Space and Power? Optimize It!

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The lifecycles of data centers are getting shorter and shorter. The needs of today's data centers are much more complex than they were 25—or even five—years ago. As a result, data centers are increasingly challenged to support high density environments often running at full capacity, frequently running out of space and power.

Although technology is improving every day and new servers are more efficient, corporations need to intelligently allocate resources and get the most from their existing infrastructure. Optimizing your current environment will help you reclaim precious capacity and may allow you to delay or avoid altogether the time and expense required to build a new data center saving money and achieving immediate results.

When looking to optimize data center space managers need to consider four areas for improvement, servers, storage, network and infrastructure. For the purpose of this article we will focus on infrastructure.

Optimizing the data center infrastructure involves three activities: 1) analyze the current data center environment, 2) implement effective cooling technology, and 3) modify power sources for maximum efficiency.

Data center analysis

The first—and most important—step in optimization is to conduct a thorough analysis of the data center's dynamics. This analysis is three-fold: 1) measure temperatures and power use to establish a baseline; 2) carefully examining every item in the data center to ensure that each component is serving its intended purpose; and 3) conduct a comprehensive airflow analysis to identify areas of weakness. Because this process requires detailed data collection and analysis, an expert who has the tools, knowledge and experience is best-suited to perform the assessment. This comprehensive analysis provides metrics for performance measurement, identifies problems and allows managers to make intelligent decisions to improve data center efficiency.

Efficient Modular Architecture

Effectively removing heat is an important factor in data center performance. Traditionally, data center managers have relied on ambient air cooling solutions. Such solutions, however, are inefficient at handling high heat loads and can be cost- and energy-inefficient. With modular solutions, data center managers can match cooling and power resources to the devices that consume the most power and generate the most heat. Locating the cooling source closer to the heat-generating device improves efficiency that would otherwise be lost in transport. With fewer barriers to air flow, less energy is wasted and the data center's stability, reliability and efficiency are improved.

Efficient power management

When optimizing the data center, intelligent power management is essential. Managing the efficiency of your power distribution infrastructure starts with an analysis of each component. By improving the efficiency of each component of the system, as well as taking advantage of high voltage, or three phase power, you can squeeze more computing performance from each rack.

If your data center is reaching full capacity, you don't have to rebuild a new one. Optimization significantly improves a data center's space and power limitations while saving time and money. By first analyzing the dynamics and then implementing effective cooling and power management technologies, you can boost efficiencies and extend the life of your data center.

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