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Modular Data Centers Let Federal Agencies Add Capacity

Federal agencies say modular data centers let them add IT infrastructure as their data needs grow.

Karen D. Schwartz

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The IT staff at Lawrence Livermore National Labs is very familiar with the stress that high-performance computing puts on a data center.

That's why, when it became clear that the five HPC data centers at Lawrence Livermore needed an upgrade to meet performance and sustainability goals, the institution went modular in a big way.

A modular data center consists of scalable, pre-engineered modular components that, at a minimum, include power distribution, cooling, uninterruptible power supply systems and backup generation, but that can also include monitoring and control systems, access control and physical security.

Anna Maria Bailey, high-performance computing facility manager at Lawrence Livermore, started by deploying an expandable modular data center, which manages heating and cooling with efficient fans and innovative evaporative coolers that cost half as much to install as traditional air conditioners and use 75 percent less energy.

"It's flexible, and you can get it up and running quickly," Bailey says. "But more important, it's easier to cool because there are no other hindrances in the room."

Bailey says all new HPC data centers will be modular, which will let them take advantage of the same scalability, flexibility and environmental benefits while deploying the latest HPC technology.

The idea is to not build buildings with large square-footage rooms again. "Instead, we will build in a modular fashion so we can actually scale the building and add more space as we need it, based on the requirements of the machines," she says.

Datacenter 2.0

The decision-making process Bailey's group undertook that led to a modular data center is fairly common, says Jason Schafer, a research manager at Tier1 Research in Bethesda, Md. Schafer says modular data centers are part of what Tier1 describes as "Datacenter 2.0" — a fundamental shift in the way data centers are designed, built and commissioned.

"Modular technology is much faster to get up and running, and it can save money over time," he says. "And when you adopt a modular approach to the data center, you can take advantage of advances in efficiency and technology as it happens, without replacing your entire infrastructure."

12 weeks
The time it takes to fully deploy a modular data center.

SOURCE: Cisco Systems

Charles De Sanno, executive director of enterprise systems engineering at the Veterans Affairs Department, agrees that modular data centers make sense given today's challenging economic climate.

"The idea of government agencies building large data centers is probably a thing of the past, or at least should be, when there are options like the cloud or modular data center technology," he says.

Both infrastructure as a service, which is essentially infrastructure in the cloud, and modular data center technology are good choices for the VA, but De Sanno says that it's a bit premature to choose between the two technologies.

"Right now we're finalizing our cloud strategy, and after we do that, we will see how much of our infrastructure will be cloud-based," he says. "That will be the point when we see where — or if — modular data center technology will have a place at the VA."

Modular Products Come on Strong

Modular data center technology has come a long way in a short time. When the first products came on the market three years ago, offered mainly by server manufacturers, they were not what users were looking for. Not only were they based on proprietary technology, but they also didn't solve the biggest problem data center managers were facing: how to quickly add capacity.

What a difference a few years makes. Today's modular data center products — *IBM's* Portable Modular Data Center, *HP's* EcoPOD, *Cisco Systems* and *NetApp's* FlexPod and *VCE's Vblock* — are targeted at organizations dealing with capacity, scalability and cost issues.

"Everybody talks about capacity planning, but there really is no such thing. At best, it's 'capacity guessing,' " says Jason Schafer, a research manager at Tier1 Research. "Modular data center technologies take away some of the need for exact capacity planning, because they can keep pace with where the organization is at any given time."

Schafer expects the use of modular data center components to grow significantly over the next year.

"If organizations don't consider modular components at the very least as part of their build strategies, they will be starting off at a disadvantage, both financially and in terms of flexibility," he adds.

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