

Data Center 3.0: Back to the Future

Government and enterprise data centers are undergoing a rebirth – and the result might look familiar. “Data centers are being recentralized, reflecting IT’s increasing relevance to agency missions,” says Steve Picot, regional manager for Cisco’s federal data center team.

Recentralization: What Goes Around, Comes Around

The new trend is being heralded as Data Center 3.0, the third wave in data center architectures. The first data centers were highly centralized, based on mainframes. Then the pendulum swung toward today’s highly distributed environments, in which individual agency departments maintain their own servers and applications. That movement, Data Center 2.0, is the current state for many agencies, according to Tim Simon, federal marketing manager, Cisco. “But a common drawback of highly distributed environments is poor server and storage utilization,” he says. “This is becoming increasingly problematic as data centers run out of space and power.”

Data Center 3.0 combines the best of its predecessors. The centralized element, a unified network fabric, has the resilience needed for continuity of operations (COOP) and the scalability to accommodate agency growth and reorganizations. The distributed elements are servers and storage that can reside anywhere, providing virtualized services to the different agencies and departments that share them. Ubiquitous access to agency services and applications empowers a reduced government workforce to deliver enhanced citizen service and meet mission objectives.

An Approach, Not a Product

Data Center 3.0 is not a shrink-wrapped solution from a single vendor. Rather, it’s an approach to data center architecture that applies to storage, servers, applications, Web services, and the unified fabric that interconnects those resources. The defining attributes of Data Center 3.0 are consolidation, virtualization, and automation:

- *Consolidation:* As an example, rather than deploying standalone load balancers, application accelerators, and encryption engines, an agency can use a single Cisco® Application Control Engine (ACE) module that combines all three functions and fits into an existing Cisco switch. “The IT group can buy fewer devices, which results in lower power consumption,” says Picot.
- *Virtualization:* A single physical resource – firewall, load balancer, storage fabric, or other – can act like multiple virtual resources that serve different departments or applications. Virtualization helps to improve utilization.
- *Automation:* Agencies can set up policies that assign resources where and when needed. An example of an automation tool is Cisco’s VFrame Data Center, which can anticipate an increasing server load, provision additional servers without human intervention, and then release the assets back into the resource pool when they are no longer needed.

Implications? Improved Citizen Service, Bigger Role for IT

Data Center 3.0 directly benefits taxpayers by enabling government to offer citizen-centric services such as e-filing of tax returns and enhanced public safety through the ability to mine the data on social networking sites to identify criminal activity.

Another effect of Data Center 3.0 is to return more control to agency IT groups, which are assuming more visible roles as enablers for agency missions. An example is the Air Force Cyber Command, which uses Data Center 3.0 technologies to provide a hosted service for other government agencies to protect their infrastructure.

How Do I Get There?

Agencies can migrate to Data Center 3.0 at their own pace, and small improvements can have big paybacks. "Many organizations start by virtualizing their servers, which typically have only 20 percent utilization," Picot says. "That's like having an employee who only works one day a week."

To get the most benefit from Data Center 3.0, agencies need to have an overarching architectural plan. Purchasing new, powerful servers with the idea of using them for application virtualization is effective only if the agency also has sufficient memory and bandwidth. "At some point, IT needs to put a temporary halt on purchases, assess what they have, and plan the timeline for new investments," says Simon.

For more information on Data Center 3.0, visit: www.cisco.com/go/feddatacenter

To watch a video of Cisco Chairman John Chambers discussing Data Center 3.0, visit: www.cisco.com/en/US/netsol/ns340/ns394/ns224/networking_solutions_packages_list.html



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