Taking Data Center Modernization to the Next Level

MARKET TRENDS REPORT

Introduction

Agencies are under tremendous pressure to modernize their data centers. In addition to encouragement from the federal Data Center Optimization Initiative (DCOI), agencies have many practical reasons to find ways to consolidate and optimize their data centers. These include requirements for stricter compliance, better security, more controlled costs and increased efficiency.

While most agencies have made some progress in consolidating data centers — an important first step — many are unsure how to proceed from there. While the cloud is a critical tool for modern data centers, for example, it may not make sense to move everything to the cloud. Decisions about what to transition to the cloud, the speed of modernization and ensuring strict compliance and security during the transition are key.

For many agencies, modernizing and optimizing data center resources works best when it combines the expertise and knowledge of federal IT professionals with the flexibility and adaptability of the hybrid cloud model. By combining the two, agencies can retain critical agency knowledge and expertise while improving efficiency, controlling costs and preparing for whatever comes next.

To learn more about how agencies can use the hybrid cloud model and a software-defined infrastructure to modernize their data centers, GovLoop teamed with Connection, a global solutions provider with deep expertise in helping public sector organizations achieve their goals. Connection works closely with major vendors including Dell Technologies, Intel and VMware.

By The Numbers

87%

of IT leaders in the federal government say hybrid cloud is the ideal IT operating model.

$1.6 billion

is the amount budgeted by federal agencies for cloud-based infrastructure and platforms in fiscal 2020.

$1 trillion

is the amount the federal government could save by modernizing its technologies and operations over the next 10 years.

10,000

is the number of data centers the federal government operated at one point, as estimated by the Government Accountability Office.

48%

of IT decision-makers prefer a consumption-based model for data center infrastructure, up 6% from last year.

230

federal data centers, spread across 24 agencies, are expected to close by 2022.

›90%

of enterprises worldwide will rely on a hybrid cloud infrastructure to meet their infrastructure needs by 2022.

The Time Is Now: Transitioning to a Modern Data Center

The Challenge: The Complexity of Cloud Migration

For most agencies, cloud computing is a critical component of data center modernization. Deployed properly, it is a logical path toward greater efficiency, improved consistency and virtually limitless scalability. At the same time, determining where to use cloud — and what type of cloud resources to deploy — can be complicated. Here are some of the key issues:

Understanding your total cost of ownership. It's tempting to move as much infrastructure and as many workloads to the cloud as quickly as possible, but that's not always the right move. Instead, examine each resource individually. For example, if your storage infrastructure is end-of-life, it may make sense to consider cloud-based storage infrastructure. On the other hand, if your storage is in good shape but simply running out of room, it may make more economic sense, at least temporarily, to simply add more storage nodes. If the choice is to upgrade, it's also important to evaluate whether that upgrade will take the agency further along the path toward modernization, and whether it makes sense from a total cost of ownership (TCO) perspective.

Making sure each application gets the resources it needs. Without understanding the options, it's difficult to make the right decision. Knowing your options requires understanding the TCO of running an application or storing data in various environments.

Deciding which resources should move to the cloud. With the strong focus on cloud in government, the obvious answer may seem to be "yes," but the real answer is "it depends." Many agencies have no choice but to keep some resources on premises for security and privacy reasons. Others can choose what they want to move to the cloud, based on convenience, access requirements and economics. In most cases, the decision ends up being a mix of public cloud and on-premises, private cloud resources.

The Solution: Software-Defined, Hybrid and Hyperconverged

Most agencies get the best value from a hybrid approach to data center modernization — one that combines on-premises private cloud with public cloud resources. With this approach and the right technology and expertise backing it up, agencies can reduce costs and improve flexibility and scalability while making the best use of internal agency IT expertise.

Standardizing on a software-based hyperconverged infrastructure (HCI), which combines all elements of a traditional data center (storage, compute, networking and management) is a good option. Managing data center operations with software-defined processes helps agencies get the most out of both applications and infrastructure. In addition to automating deployment, operations, lifecycle management, patching and updating, it helps IT staff quickly determine which equipment might be under- or over-utilized.

"If you start with a software-defined platform, it's much easier to move your workloads back and forth between locations without having to rename, relearn and refactor," said Jake Bernier, a senior inside solutions architect with Connection.

To make the transition as smooth as possible, choose technology your IT staff already is familiar with. This can shorten the learning curve and get modernized data centers up and running more quickly and efficiently.

For example, a modern data center solution anchored by Dell EMC's VxRail HCI solution running Intel Optane and managed by VMware's VCloud Foundation suite would allow agency IT staff to hit the ground running because Dell EMC and VMware products are probably already part of the agency's IT environment. This approach would allow staff to get up to speed very quickly so they can move workloads back and forth, automate deployment, ensure security and manage all components, but they can deploy and manage virtual machines and container-based workloads.

Best Practices in Data Center Modernization
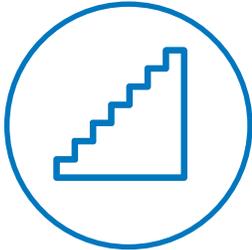
Take a gradual approach.

Instead of diving headfirst into a full cloud-based data center, it's often more effective and less stressful to take a gradual, staged approach. That way, agencies can see what works and what doesn't, and move resources to the cloud if and when it makes sense. "Even if your next move isn't into the cloud, it should get you further along the path," Bernier said. "If your team of trained IT staff is familiar with a particular type of storage that is becoming end-of-life, it could make more sense to upgrade to a new cloud-ready storage solution that gives you some future flexibility instead of immediately jumping to cloud-based storage."

Optimize private clouds with HCI.

Think about it this way: A private cloud is essentially the same thing as a public cloud, except it is housed, managed and run by the agency itself. "Private clouds turn IT departments into brokers of IT; doling out compute, storage and networking resources to the rest of their organization, and they need to be able to spin up those resources quickly," Bernier said. "From the end user's standpoint, the experience is really no different from consuming IT resources in the public cloud, but the underlying hardware remains in-house."
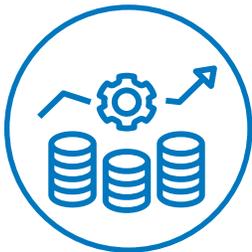
Use platform tools to calculate costs and chargebacks.

Effective cloud management requires understanding which stakeholders are using specific resources, and how much they are using. Without that information, it's impossible to charge divisions for the resources they use. An effective way to keep on top of this information is via a platform that connects and consolidates all resources, and that can continually display resource usage and costs associated with that usage.

Improve and standardize security and compliance.

Turning over the reins of anything can be nerve-wracking, and that's definitely true when it comes to government data, applications and other resources. The situation can become even more complicated when multiple cloud providers are involved. Not only do they have different ways of doing things, but they often have different terminology for the same functions. Instead of going it alone, Bernier recommends building on a trusted software-defined infrastructure like vCloud Foundation, which essentially wraps all resources in a fully software-defined envelope that includes all relevant security and compliance policies. "You are giving those resources every policy you want to apply to that data or application, so no matter where it may go, in the cloud or on premises, your policies will always be associated with that workload," he said.

Case Study: Air Force Aims High With VDI

An Air Force base had such great success with its virtual desktop infrastructure (VDI) solution that it wanted to find a way to extend it to other Air Force sites. The dilemma was whether to outfit additional bases with the same servers, storage arrays and VMware Horizon VDI platform, or find a creative and efficient way for multiple bases to share the same VDI resources.

Envisioning a future where cloud would become even more pervasive, Air Force officials decided on the second option. While cloud-based VDI was not within the scope of the current project, it made sense to get on the cloud path, they reasoned.

To make it happen, the Air Force chose to implement a hyperconverged infrastructure platform based on VCloud Foundation, starting with a five-node vSAN cluster at each of two Air Force bases. This setup would allow users at both locations to share VDI resources. In addition, the multisite resiliency would allow the Air Force to easily expand VDI functionality to additional bases as needed without starting over.

Because the Air Force chose to go this route, it is now in a better position to adapt to changing mission requirements and directives that include the cloud. Not only are they part of the way there in terms of infrastructure, but internal agency IT teams now have the time to learn how to manage and use it in advance of new requirements.

HOW CONNECTION, VMWARE, DELL AND INTEL HELP

Connection's Public Sector Solutions has been providing vendor-agnostic IT services and advanced technology solutions to government institutions for more than 25 years. In addition to partnerships with major vendors, Connection serves its customers with a highly trained staff, who together hold more than 2,500 certifications. Connection also can help government customers comply with standards stemming from requirements like FISMA/FedRAMP to NIST standards like 800-53 and Cybersecurity Maturity Model Certification (CMMC).

VMware's technology is widely used throughout the federal government. VCloud Foundation is an integrated platform including compute virtualization through VMWare vSphere, storage virtualization through VMware vSAN, network virtualization through VMware NSX and cloud management and monitoring through VMware vRealize Suite.

Dell EMC is a premier provider to the federal government, focused on helping agencies deploy the resources they need across public cloud, private cloud and the edge. Its VxRail hyperconverged infrastructure, built to run on VMware, provides a software-defined architecture that consolidates compute, storage, virtualization and management.

Intel processors are standard throughout government, and Optane is Intel's most advanced memory module. Designed to improve speed and performance, Intel Optane technology delivers solutions that increase overall platform performance.

"[Connection] works directly with the vendors, we have this wide customer base in federal government, state and local government, and private sector, so we just have this huge flow of expertise, in real-world tangible experience that we can draw upon to make those conversations go better, or keep these decision processes on track, as people have modernization on their mind." Bernier said. "We can help them paint that path forward."

To learn more visit: govconnection.com

Conclusion

Data center modernization continues to be an important goal for federal agencies across the board. While many have made progress in consolidating data centers, it has been more difficult to retrofit existing data centers with technology and processes that will position them well for the future. As a result, agencies are facing reliability, scalability, performance and cost issues.

For many, the solution is a software-defined, cloud-enabled platform that enables them to modernize their data centers step by step as it makes sense. Through software definition, agencies get the flexibility they need to ensure cost optimization, oversight, compliance and security. With a cloud-enabled platform like a hyperconverged infrastructure, agencies don't have to worry as much about upgrades or taking advantage of cloud resources.

As agencies continue to modernize their data centers with the cloud in mind, it's wise to take it slowly. Move resources to the cloud as it makes sense instead of as a matter of course. "You don't have to reinvent the wheel," Bernier said. "It's very possible to get the best of all worlds."

ABOUT CONNECTION

Connection is a Fortune 1000 Global Solutions Provider that connects people with technology to enhance growth, elevate productivity, and empower innovation.

Our company has over 2,500 technical certifications that ensure our experts can solve any customer need, no matter how complex. Additionally, our GlobalServe offering delivers global procurement solutions through our network of 500 suppliers in 174 countries.

For more information, visit:
www.govconnection.com

ABOUT DELL

Progress lies at the intersection of technology and humanity – a reality government IT leaders live every day, but are challenged to support. Dell Technologies provides the end-to-end capabilities that enable federal digital transformation, offering solutions and services that reach from edge to core to cloud. Our story began with two technology companies and one shared vision: to provide greater access to technology for people around the world. Dell Technologies is instrumental in changing the digital landscape the world over, fueled by the desire to drive human progress through technology.

For more information, visit:
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ABOUT INTEL

Founded in 1968, Intel's technology has been at the heart of computing break-throughs. We are an industry leader, creating world-changing technology that enables global progress and enriches lives. We stand at the brink of several technology inflections—artificial intelligence (AI), 5G network transformation, and the rise of the intelligent edge—that together will shape the future of technology. Silicon and software drive these inflections, and Intel is at the heart of it all.

For more information, visit:
www.intc.com

ABOUT VMWARE

At VMware, we believe that software has the power to unlock new opportunities for people and our planet. We look beyond the barriers of compromise to engineer new ways to make technologies work together seamlessly. Our compute, cloud, mobility, networking and security offerings form a digital foundation that powers the apps, services and experiences that are transforming the world.

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ABOUT GOVLOOP

GovLoop's mission is to "connect government to improve government." We aim to inspire public-sector professionals by serving as the knowledge network for government. GovLoop connects more than 300,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to connect and improve government.

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