Addressing IT Compliance and Complexity with Hyperconverged Infrastructure

MARKET TRENDS REPORT

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Introduction

Today's government IT leaders face tough realities in their day-to-day operations. Despite an ever-growing demand for IT services, agencies must also cope with budget cuts and resource limitations, consequently requiring that they do more with less. Add in security challenges, compliance requirements, demands for better efficiency and intensified citizen expectations, and the strain on IT departments keeps growing.

To meet this hefty list of demands—including the need to deliver responsive citizen services and applications—agencies rely more than ever on their IT infrastructures. But another challenge exists: Many of those current infrastructures are now more complex than ever. Federal data centers have become a mix of on-premises legacy systems, virtualized and non-virtualized workloads, commercial clouds and private clouds. This results in siloed systems, confusing frameworks and more resources needed to operate and maintain these systems.

So how do IT leaders and their agencies overcome the challenges of outdated, complex infrastructures to meet user demands while staying efficient, secure and meeting IT compliance mandates?

Turning to the newest generation of hyperconverged infrastructure (HCI) solutions is one answer. Unlike prior versions, the next generation of HCI allows you to easily scale and handle heavier workloads, while also providing end users with more reliable service.

Think of HCI as a private "cloud in a box," or a turnkey solution for a private cloud deployment—but without the hassle of building the infrastructure from scratch. As a result, HCI is a smart approach to meet the federal government's cloud-first mandate while ensuring that an agency's data remains in its own data center.

To learn more about how HCI can help the public sector address compliance issues while reducing the complexity of today's IT infrastructure, GovLoop partnered with Force 3, a leader in HCI solutions. In this report, we gain insight from Randall Greer, Enterprise Network Architect at Force 3, to:

- Describe the challenges of the complexity of today's IT infrastructures in government and the simplifying solutions that HCI can provide.

- Advise agencies about how they can best deploy and take advantage of all HCI has to offer.

- Share best practices for using HCI to reduce complexity and stay compliant.

BY THE NUMBERS

In a recent Gartner survey of public sector CIOs, cloud was cited as the **#1 technology** most critical to achieving their organizations' missions.

Source: Gartner

~70%

of funds went toward keeping dated hardware and software solutions running in federal government IT.

Source: IT Dashboard - Information Technology Agency Summary

89%

of federal respondents said HCI adoption could accelerate core modernization efforts like cloud, automation and advanced analytics.

Source: Meritalk

As much as 20%

of business-critical applications currently deployed on three-tier IT infrastructure will transition to hyperconverged infrastructure by 2020.
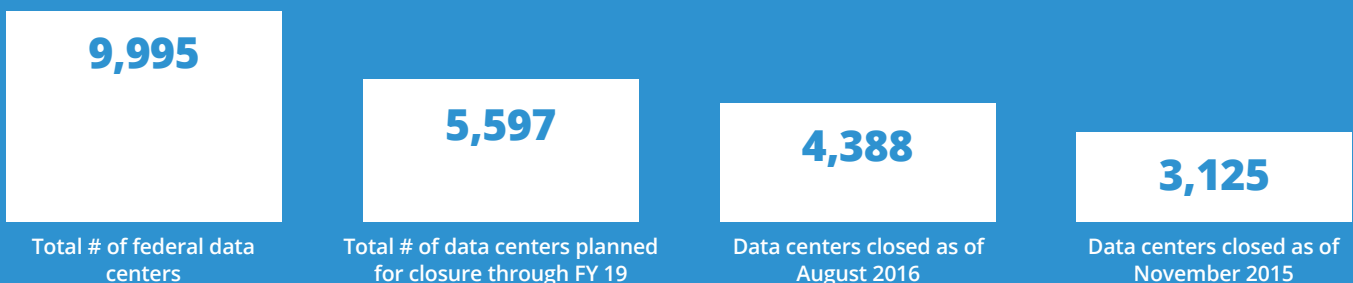
Source: Fiscal 2016 E-Gov report to Congress

41%

of respondents from a 2017 Deloitte Government survey indicated progress in moving their agencys' applications to the cloud, with an additional 9% planning to migrate soon.

Source: 2017 Deloitte Government Survey

Number of Data Centers and Completed and Planned Closures for the 24 Agencies (FY 2010-2019, as of August, 2016)

Source: GAO

9,995	5,597	4,388	3,125
Total # of federal data centers	Total # of data centers planned for closure through FY 19	Data centers closed as of August 2016	Data centers closed as of November 2015

THE CHALLENGE

Thriving in a World of Complexity and Compliance

One of the primary challenges agencies face today is that citizens want and expect better and faster capabilities and services from government agencies. But meeting these demands is no easy feat.

In order to achieve more with less, doing it more efficiently and doing it in a way that meets citizens' expectations, agencies have to figure out how to reduce the complexity of their IT environment and the time to value for mission-supportive applications. Further still, they must improve the user experience for their staff and constituents who use these applications.

Agencies also know that they must meet regulations like the Federal Data Center Consolidation Initiative, the Data Center Optimization Initiative and a variety of cloud-first policies.

These policies demand that agencies make the move from legacy stovepiped IT, while also streamlining functionality.

"Agencies today have a growing infrastructure. They've got more boxes to manage, and they don't necessarily have the head count to go along with that," said Randall Greer, Enterprise Network Architect at Force 3. "This ultimately means they've got more boxes per administrator that need to be handled and made compliant."

In short, the problem is that there's more data coming in, more applications that need to be run and a lack of sufficient budget and staffing to meet those rising needs.

"Agencies must figure out a way to reduce the amount of complexity and get more capability to the IT staff working on these issues," Greer said.

THE SOLUTION: Transforming to Simplicity with HCI

Public-sector IT must move away from siloed services, along with storage and legacy IT, and instead embrace hyperconverged, cloud-based technologies to enable better services and efficiencies.

Hyperconverged infrastructure is a virtual computing infrastructure solution that essentially provides federal agencies with a "cloud in a box" solution. By allowing them to deploy applications in one shared resource pool and combining multiple data center services, federal IT teams can accelerate the deployment of virtualized workloads.

In turn, they can transform their data centers and simplify their infrastructures by combining servers, storage, virtualization and management components into one platform, i.e., a single pane of glass. The result? Federal IT teams can reduce complexity, improve efficiency and save money.

HCI also addresses infrastructure challenges by combining the traditional compute, virtualization and storage architectures into a single, highly scalable architecture. By doing this, HCI allows agencies to handle heavier workloads, while also providing citizens with a more reliable, consistent user experience.

In terms of staying compliant and meeting government mandates, the cloud-in-a-box nature of HCI offers private cloud capabilities, keeping data and processes on premise when needed, but also moving workloads to a public cloud as necessary to leverage that bandwidth. This allows infrastructures to work together virtually so that data is no longer siloed.

With a single HCI architecture in place, you can streamline management tasks and reduce the number of skills required to support HCI. Simplifying these systems creates more agile IT departments and fosters more agency-wide confidence in IT.

"With HCI, agencies can manage both the servers and the storage from one single pane of glass, and they're seeing a lot of benefits in doing so," Greer said. "They can deploy applications more quickly, they can merge functionalities, and they reduce roadblocks created by previously complex IT systems."

BEST PRACTICES

Implementing Hyperconverged Infrastructure

Think, "Is the workload applicable?"

The very first thing you need to ask yourself is whether HCI properly fits the workload you want to support. "HCI is really sort of a Swiss Army knife in that it can support a variety of workflows," Greer said. "But there are some things that would not apply to it. For example, if you had an application that had very high storage requirements, that may not be the right fit."

Assess correctly

When considering an HCI solution, it's important to really assess the applications that will live on it. With recent advancements in the architecture, HCI is now a great fit for more workloads, including moderately database-intensive workloads and web applications. While any application can move to an HCI platform, the key is to assure application performance is predictable and that the platform is correctly scaled from the start.

Is the loading balance adequate?

Another important question to ask yourself: Are there any hardware requirements, or can you run this on any hardware that you bring? "Is your solution susceptible to what's called a storage hotspot?" Greer asked. "In certain instances, some nodes can end up taking more of the workload than other nodes, and then you get a performance bottleneck on those nodes. So, you need to make sure that the load-balancing mechanisms are adequate."

Ask the right questions of your vendor

What flexibility does the solution provide? Can you run multiple hypervisors on the same platform? Must you purchase hardware as part of the solution from the vendor? "Force 3 takes into account the whole environment, not just the need for the given application, but how it integrates with the rest of what is important to them," said Greer.

Start small to test HCI

The project should migrate a workload that shows immediate performance benefits. Ideally, this proof-of-concept deployment will make it easier to get buy-in on any future migrations.

HOW FORCE 3 HELPS

Force 3 takes HCI deployment a step further by evaluating the total needs of an agency's data center and its cloud platform.

"Not only are we going to take into account the infrastructure itself, but we'll take a look at applications that are running on it, how it's managed, if it's being automated or not," Greer said. "Then we make recommendations for how to better utilize the system."

"Force 3 is the network security company," Greer continued, "so of course we make sure that in every layer of infrastructure and the data center, we're utilizing the appropriate security technologies available."

What differentiates Force 3, Greer explained, is its holistic approach to helping agencies integrate with the rest of the network. "Many other vendors," he said, "will simply stand up the solution, hand the keys over to the customer and away they go."

Force 3 strives to help agencies achieve the best possible outcomes from their network infrastructure solutions through strategies that blend efficiency, flexibility, value and innovation. Learn more at www.force3.com.

3 USE CASES FOR HCI:
Implementation Strategies

With an ever-evolving technology climate and an ever-present demand to do more with less, federal agencies must be more agile, secure and efficient, regardless of their available resources. It's a tall order.

So, how can you make the most efficient use out of limited staff, resources and funds?

Increasingly, agencies are turning to the newest generation of hyperconverged infrastructure (HCI) solutions to solve these challenges. Here are three ways HCI 2.0 helps federal agencies offer higher-quality service while reducing IT costs and management.

1. Workload Consolidation

In the past, HCI required application-specific environments for each workload. If you didn't build out unique environments, one application could spike and sap resources from other workloads. For example, your VoIP system might spike during periods of high volume. This could impede other applications and workloads across your agency, potentially causing them to crash.

Next-generation HCI solutions don't have this limitation. Instead, you can consolidate all of your workloads in a single infrastructure without risking a decline in performance.

HCI 2.0 lets you define the minimum and maximum performance requirements for each workload. If an app tries to surpass its limit, you can prevent it from affecting your other systems. This guarantees that all of your systems maintain an acceptable level of performance.

2. Cloud Transition

Since 2011, the U.S. government has required federal agencies to evaluate cloud services before making new technology investments. The government wants agencies to take advantage of the cloud's many benefits, from reduced capital expenditure to increased agility. To facilitate the move to the cloud, the federal government has created a marketplace of authorized cloud providers and services.

The latest HCI solutions ease your move to the cloud and help you deliver reliable services to end users — without making a large investment in staff or technology.

With HCI 2.0's scalability, you can host applications in a controlled, private cloud that requires little oversight to maintain. Some HCI solutions establish service level agreements (SLAs) that define availability and offer native data protection. So, if you experience a failure, your system should restore without administrator intervention and without affecting application performance, per the availability outlined in your SLA.

3. Regulatory Compliance

Your agency's IT infrastructure must comply with numerous laws and regulations governing everything from data security to performance levels. Yet 49 percent of government agencies say that outdated systems don't meet their current performance requirements. Meanwhile, 38 percent worry about poor end user experiences.

While federal agencies recognize these problems, their IT teams often lack the time and resources to regularly assess their IT infrastructure for compliance.

An enterprise-scale HCI solution makes it easier for you to meet your performance, technology and security standards. For example, NetApp HCI allows you to set performance levels, so you can improve usability to better achieve your mission.

Conclusion

Between diminished resources, rising citizen demands for reliability and increased pressure to secure IT systems, agencies must find a way to update their complex IT systems and create a sustainable and simplified architecture for government.

For many, HCI provides a path forward. It offers the automation, scalability, security and performance that today's government agencies require. And it does so without consuming resources that agencies could better use to spur innovation. Ultimately, HCI lets federal agencies focus on meeting their missions, instead of simply maintaining technology.

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 270,000 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.

For more information about this report, please reach out to info@govloop.com.

ABOUT FORCE 3

Force 3 is *the* Network Security Company. We provide secure IT solutions and services for clients who demand value and reliability. Together with our parent company, Sirius Computer Solutions, we offer a wide range of solutions and services backed by expert engineers and strategic partnerships.

From design to deployment, support and maintenance, we constantly focus on supporting our customers' missions and promoting the best possible outcomes. Your success is critical to us—and we don't succeed unless you do.

To learn more, visit www.force3.com.

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