Counting the Cost: Reevaluating Your Agency's Path to Cloud

RESEARCH BRIEF

govloop ClearShark NUTANIX™

Executive Summary

For years, federal IT professionals have worn multiple hats at their agencies. In addition to ensuring employees have the technologies and tools they need to be successful, they've also played the complex roles of fortune teller and firefighter — to name a few.

They've had to predict years in advance what IT resources employees need to do their jobs and how much of those resources they would use. If they guess too high, there will be wasted resources. If they guess too low, they're stuck rationing resources. A correct guess still means they will have resources waiting on standby until they are needed months and even years later.

If something goes awry with a system or in the data center, there's often a mix of separate servers, storage networks and technologies that IT departments must sift through to detect the disruption and remediate it as soon as possible. Meanwhile, federal employees and the constituents who depend on government services, such as public safety and social benefits, are forced to wait until IT support resumes.

The headaches and time-consuming nature of managing technology drove government agencies to look for a better alternative. For many, that answer came in the form of cloud computing, which has been widely endorsed by the government's top technologists as a more efficient and cost-effective way to buy and deliver reliable IT services.

For some enterprises, adopting a cloud-first approach to rolling out new technologies was a no-brainer, but they eventually realized they hadn't made key considerations around staffing requirements, performance expectations and overall costs before taking the leap.

This was especially true for early adopters who lifted and shifted operations from their data centers to the cloud, said Chuck Perry, Consulting Engineer at ClearShark. Some tried to move the entirety of their IT operations to the cloud with mixed results.

Federal chief information officers say they want to get out of the data center business altogether, but parting ways with traditional solutions requires a fundamental rethinking of their approach to digital infrastructure.

To better understand this shifting paradigm, GovLoop partnered with Nutanix and ClearShark to conduct a survey of nearly 70 government employees who are actively involved in IT infrastructure operations at their agencies. Respondents shared the current state of cloud adoption at their agencies, the drivers and the alternatives they are seeking to create a more modern infrastructure.

In this report, you'll hear from ClearShark experts about the considerations agencies should make as they plan for the next evolution of their on-premise infrastructure and what role technology such as cloud and hyperconverged infrastructure can play. ClearShark is an IT solutions provider and Nutanix is a pioneer when it comes to next-generation IT infrastructure.

To set the stage, let's start by exploring where agencies are in their cloud journey today and what brought them there.

Cloud Adoption in Government Today

Where are we and what led us here?

A growing number of federal agencies are moving full steam ahead with cloud adoption — backed by a suite of new policy changes aimed at removing cloud procurement, security and workforce barriers.

When asked about cloud adoption at their agencies, 72% of respondents said they are using cloud solutions (See Figure 1). But to what extent? We dug a little further and found that of those who are using cloud, nearly half said at least some of their applications are in the cloud. Forty percent said few applications are in the cloud (See Figure 2).

To add some context to our findings, John Broome, Systems Engineer at ClearShark, explains that cloud adoption governmentwide has been a slow and gradual buildup that looks different across agencies.

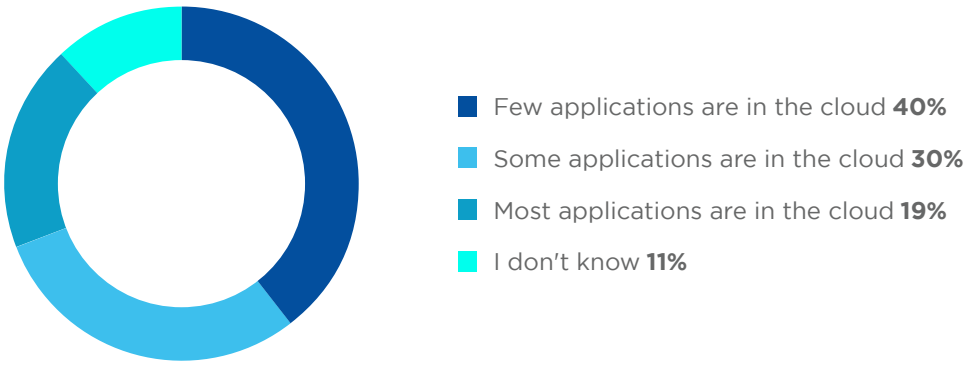
FIGURE 1: Is your agency currently using cloud computing solutions?

"When you ask people if they are adopting cloud, the common answer is, 'yes,'" Broome said. But the maturity levels vary. For some, cloud adoption means their email system is in the cloud. For others, it means they are using additional Software-as-a-Service capabilities that are running in a cloud environment.

"Overall, agencies are just hitting their stride as far as moving services to the cloud," Broome said.

Administration officials believe that recent policy updates, such as the final Cloud Smart strategy, will further help to remove barriers around cloud adoption. The strategy identifies procurement, security and workforce as interrelated components of moving to cloud during this era of IT modernization. Cloud Smart differs from its nearly decade-old predecessor Cloud First by focusing on adopting cloud effectively rather than deploying the technology by any means possible. Cloud First mandated the move to cloud but did not provide specific guidance on how to accomplish it.

FIGURE 2: If yes, how would you describe the current state of cloud adoption at your agency?



"We believe [Cloud Smart] will help remove barriers that we identified in discussions with agencies," Federal Deputy CIO Margie Graves told attendees at the ATARC Cloud and Infrastructure Summit, less than 24 hours after publishing the final strategy.

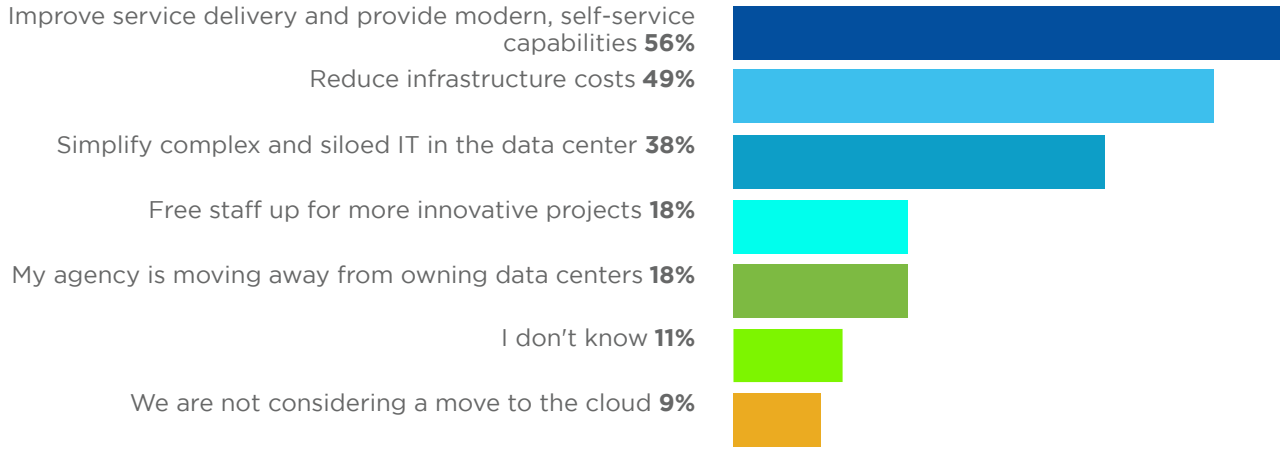
As agencies work through those barriers, we wanted to understand what's driving cloud adoption at their agencies, apart from policies and requirements. Here's what survey respondents said (See Figure 3):

community for more self-service portals and the ability to rapidly provision additional resources. "They need the ability to quickly respond to world events," he said, "and sometimes having quicker responses can't be done with what's already provisioned."

Part of the reason is legacy resources can only scale so far and cannot support a sudden demand for more storage or an uptick in users for a critical website or applications. As if that weren't challenging enough, agencies must also contend with the complexities

For some early adopters, public cloud was the easy answer because it came with these and other promises. But agencies have learned that the easy answer pales in comparison to the smart or best answer. The issue isn't so much with public cloud, but the fact that a strong infrastructure strategy requires careful consideration of all options to determine the best environment for specific workloads.

FIGURE 3: Which of these best describes the reason for your agency's move to cloud? (Select all that apply)



Improving service delivery and providing modern, self-service capabilities topped the list as the main driver for cloud adoption (56%), followed by reducing infrastructure costs (49%) and simplifying complex and siloed IT in the data center (38%).

ClearShark's Perry noted that there is a growing demand specifically across the intelligence

of siloed data centers: messy cables, endless servers and proprietary hardware.

To free themselves from the headaches and ballooning cost of legacy IT, agencies turned to the cloud as a viable alternative for several reasons: attractive costs, reduced manpower needed to operate infrastructure and improved IT service delivery.

That's why it's critical for agencies to embrace any new technology with their eyes wide open, especially if it's the underlying infrastructure that supports their agency operations. They must have a full understanding of total costs, security and IT management responsibilities, as well as a willingness to look at the breadth to find the best fit.

Not All Clouds Are Created Equal

Maybe your agency adopted cloud quickly — as soon as it became available — or maybe you cautiously watched from the sidelines.

Regardless of which camp you align with, chances are you might have experienced cloud remorse firsthand or have heard from agencies that felt it. It wasn't so much that cloud wasn't the right option — there was a deeper issue at play.

In his book, "The ROI Story: A Guide for IT Leaders," author Steve Kaplan explains that **some enterprises make incorrect assumptions about overall cost due to the lower upfront capital expense of public cloud. Yet capital expense is merely one element of the larger equation, and IT decision-makers should do a sound financial analysis that accounts for all of the factors that add up to the true cost of an IT investment.**

So where do agencies stand in terms of how they are deploying cloud (See Figure 4)?

The hybrid cloud approach — or a combination of private, community or public cloud — was by far the most popular option. "We know that most agencies will continue to operate in what I would consider to be a hybrid environment," Graves said. "So being able to seamlessly move between those environments requires that you understand the engineering that goes on between … clouds."

Several agencies are operating email, collaboration and even some mission-critical systems in the cloud, but this is not the reality for all agencies.

The reason? They often don't know where to begin or are apprehensive about the cloud, data security, access to data and more.

Hybrid cloud allows agencies to move to the cloud without abandoning the convenience of their preferred on-premise solutions.

The survey data is telling of the evolutionary journey of federal cloud adoption in many ways. It shows only 13% are using public cloud today. But many agencies started with public cloud — and for good reason. There were savings to be had, and a desire to spend less time managing infrastructure.

FIGURE 4: What type of cloud deployment model is most prevalent at your agency?

- Hybrid cloud (a combination of any two: private, community, or public) **40%**
- Government community cloud **21%**
- Private cloud **17%**
- Public cloud **13%**
- Other **9%**

In reality, cloud doesn't necessarily offload all responsibilities from your staff onto a cloud service provider. It is a shared responsibility that agencies must explain, document and understand upfront. We asked respondents how they would describe the level of involvement and time their team spends managing cloud infrastructure (See Figure 5). Nearly 60% spend at least some of the time managing infrastructure. Of that, 15% said they spend most of their time tending to cloud infrastructure.

"The possibilities are there for appropriate workloads [in the public cloud] to save money," Broome said. "It requires a lot of thoughtfulness, in terms of which workloads to take there.

FIGURE 5: For the part of your agency that is running in the cloud, how would you describe the level of involvement and time staff spend managing the cloud infrastructure?

- Most of the time (65-100%) **15%**
- Part of the time (50-75%) **17%**
- Some of the time (less than half) **27%**
- We spend very little (less than 10%), to no time managing infrastructure **15%**
- I don't know **26%**

This idea that we can just pick up everything we're running on-premise and take it to a public cloud and save all that infrastructure cost is misleading."

Determining what goes to the cloud and what stays on-premise is a balancing act that requires careful consideration for the demands of each workload, how sensitive it is, what level of agility is required, associated costs and more.

On-Premise Versus Off-Premise

Earlier in this report we shared the top three reasons agencies moved to the cloud:

1. To improve service delivery and provide modern, self-service capabilities
2. To reduce infrastructure cost
3. To simplify complex and siloed IT in the data center

We followed up to see if respondents felt their agency could achieve those three priorities on-premise. They shared a variety of responses, but here's a sample of what we heard:

"Cloud vendors have significant development staff that can continually add services. The public sector has difficulty competing with that."

"Probable, but it would be more difficult."

"Yes. We have achieved on all of those items with the exception of 'increased innovation.'"

"Not all of them because we have researched our options extensively and have weighed the pros/cons of doing so. We have found that a hybrid solution will get us a maximized version of tools and services for our needs."

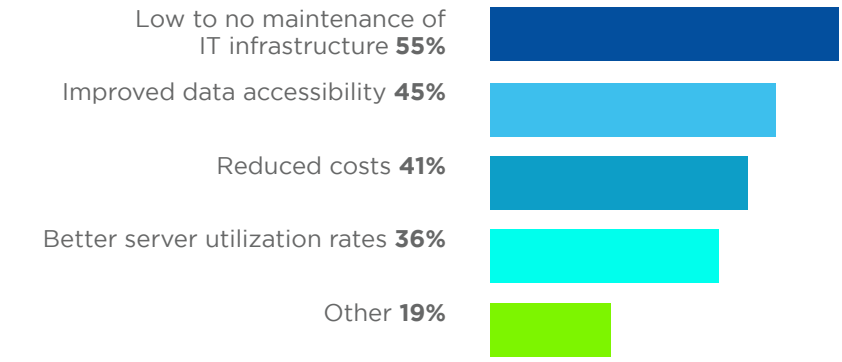
Perhaps you cautiously explored your options before testing out cloud on a limited basis. One Nutanix customer shared that the organization adopted cloud services quickly when they became available, but in a short time started to experience "cloud remorse." In many cases, the organization was paying a premium over what its on-premise costs would have been. **The lesson learned was that public cloud has big benefits, but you need to examine your applications and use cases carefully.**

When asked about the reasons for running workloads in the public cloud, the top response was low to no maintenance of IT infrastructure (55%). Improved data accessibility and reduced costs were also a driving force behind public cloud adoption (See Figure 6).

Broome explained that when you move to the public cloud, you are no longer maintaining infrastructure, but that doesn't take agencies off the hook in other areas. "The same level of expertise is still needed to manage applications, configure the cloud-native versions of your network setup and secure and monitor workloads," he said. "None of those costs really go away."

Depending on the situation, there are cases where an incident arises that requires a response from the cloud service provider, the agency and/or other parties. There are also costs over time that investors in public cloud must consider.

FIGURE 6: What are your reasons for running workloads in the public cloud? (Select your top 3)



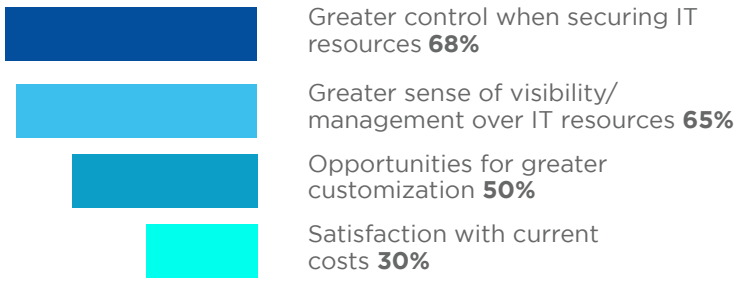
"I think the cost associated with that move to public cloud is surprising and has put the brakes on some activities," Broome said. "There will always be a demand for at least a minimal on-premise infrastructure, and I think hybrid cloud is the right architecture to support agencies going forward."

There's also the accountability piece and a need for direct control over some applications, and that's part of the benefit that remaining on-premise can provide. More than 60% of respondents said that greater control when securing IT resources and a greater sense of visibility and management over IT resources were the top two benefits of having on-premise, agency-owned infrastructure (See Figure 7).

"In a traditional on-premise network environment, an Agency would have control over the physical security measures used for protecting their systems," according to the Homeland Security Department's Cloud Security Guidance. "The cloud computing environment, however, limits the Agency's ability to manage these controls as the CSP is often responsible for such actions."

When you consider that every workload at your agency will not go to the cloud, for these and other reasons, the question becomes: **What are your alternatives for getting cloud-like benefits without forfeiting control and visibility that comes from being on-premise?**

FIGURE 7: What do you feel the value of on-premise/agency-owned infrastructure is? (select your top 3)



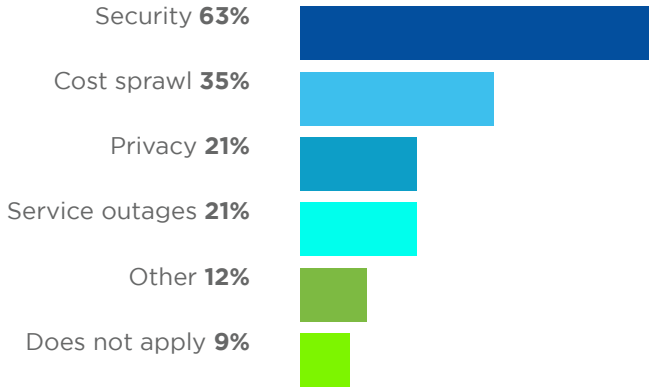
A Public Cloud Alternative

Federal IT professionals are working to deliver next-generation applications to government employees and the public, but obtaining the resources they need to be productive is far from easy. In many cases, agencies distribute IT operations across data centers, secondary facilities, remote offices and the cloud.

Meanwhile, IT departments are also responsible for protecting intellectual property and maintaining security. As expected, security is by far the most important element of data center modernization, according to 63% of survey respondents (See Figure 8). Cloud sprawl was next, followed by privacy and service outages.

So how do you empower a complex web of employees, contractors and partners without creating more risks? To address these needs, some enterprise IT teams are adopting hyperconverged infrastructure (HCI) as an alternative to traditional infrastructure solutions. It sounds like a mouthful, so it's worth breaking down what this technology is in lay terms and explaining why it can be a game-changer for agencies that have chosen that route.

FIGURE 8: What are the most important elements of your data center modernization effort? (Select your top 3)



"With traditional data center infrastructure, servers, storage, and networking are all separate. HCI combines compute, storage, networking, and virtualization into simple building blocks, making IT infrastructure easier to procure, deploy, manage, and scale. HCI solutions are available in the form of turnkey appliances or as software that runs on hardware from your preferred vendor."

Nutanix
"Building a Case for HCI"

HCI Advantages According to HCI Adopters

Here's a list of the key benefits that this new way of deploying and managing infrastructure can provide government agencies:

- Improved operational efficiency
- Reduced costs
- Improved scalability
- Greater data efficiency
- Improved service and support
- Increased application performance
- Less time spent managing infrastructure
- Faster integration and deployment (better support for your developers and DevOps efforts)

Because HCI architectures rely on simple building blocks similar to those used by public cloud providers, they deliver many of the same benefits but with many additional advantages. Those include:

Control. You have less fine-grained control over workloads running in the cloud than you do on-premise.

Security. Many enterprises, particularly those in regulated industries, such as the federal government, remain concerned about committing sensitive data to the public cloud. HCI architectures offer enterprises a more familiar security model. Because much of the infrastructure stack is provided by a single vendor, HCI may also offer greater security than traditional data center infrastructure.

Consistent management. Many IT teams get into trouble in the cloud because the management paradigm is different. Mistakes and errors can result in outages or leave data exposed. HCI can be easier for IT teams to understand, implement and manage.

Predictable costs. HCI costs are not only more predictable, total costs for HCI can work out far more favorably.

Seventeen percent of our survey respondents are currently using HCI, and 15% said they are considering it (See Figure 9). But there is still a learning curve for agencies that are seeking alternatives to traditional infrastructure.

FIGURE 9: Is your agency considering hyperconverged infrastructure (HCI) as an option for moving to a more modern infrastructure?

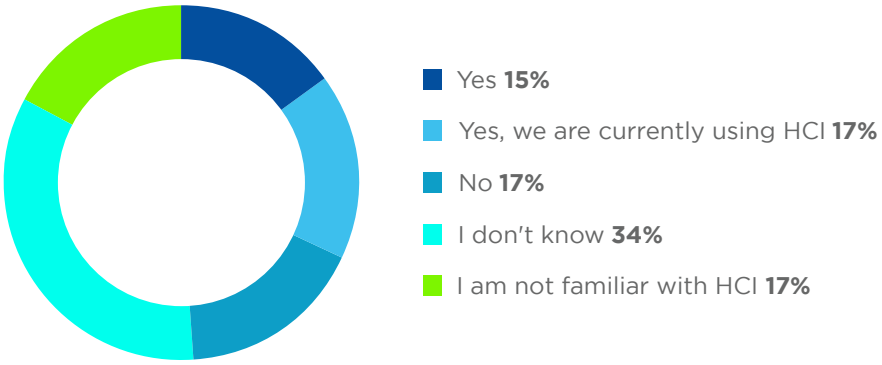
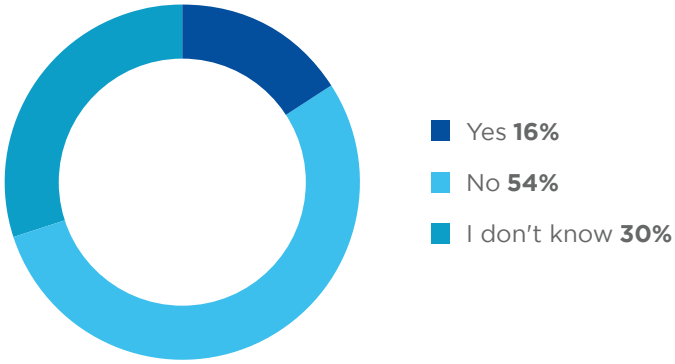


FIGURE 10: Is your agency considering moving workloads from the cloud back on-premise?



In their efforts to achieve the benefits listed above, some agencies moved to public cloud without understanding the full scope. Nutanix has seen organizations opting to repatriate their data and application workloads back on-premise for a variety of good reasons, including cost sprawl, security, privacy and service outages.

Our survey found that so far, 16% of respondents are moving applications back on-premise from their internal data centers (See Figure 10). That is a trend that is worth watching, as agencies continue to assess the results of their cloud efforts.

How Nutanix Helps

Not all HCI solutions are the same, and you'll need to evaluate solutions carefully based on your needs and priorities. Nutanix offers a solution that delivers on the potential and promise of HCI:

- Fully distributed architecture with data locality out-scales both traditional and HCI alternatives.
- Integrated, consumer-grade management and advanced automation streamline the management experience and free your team to focus on business priorities.
- Advanced cloud support enables you to create and efficiently operate hybrid and multi-cloud environments.
- The Nutanix AHV hypervisor offers a complete virtualization solution that eliminates virtualization licensing costs.
- Nutanix extends the HCI environment with tools that increase the velocity of your development efforts for both cloud-native and traditional enterprise applications.

Conclusion

Government has an imperative to achieve IT modernization. To empower public servants to perform their jobs and better meet the citizen demands of today, agencies need to leverage modern tools and technologies. Many organizations, however, find updating systems and applications challenging because their underlying IT infrastructure is complex, costly to maintain and outdated.

That's why agencies are considering hyperconverged infrastructures. Moving to a software-defined, hyperconverged infrastructure model will consolidate, streamline and redefine government data centers for modern requirements. What's more, it will prepare agencies to transition to cloud computing – the first and most vital step of IT modernization.

About Nutanix

Nutanix is a global leader in cloud software and hyperconverged infrastructure solutions that make infrastructure invisible so that IT can focus on the applications and services that power the mission. U.S. Defense and Civilian agencies use Nutanix Enterprise Cloud OS software to bring one-click application management and mobility across public, private and distributed edge clouds so they can run any application at any scale with a dramatically lower total cost of ownership. The result is organizations that can rapidly deliver a high-performance IT environment on demand, giving application owners a true cloud-like experience.

Learn more at www.nutanix.com or follow us on Twitter @NutanixFederal

About ClearShark

ClearShark is an IT Solutions Provider with a first-class engineering team, comprised of mission-focused, results-driven SMEs from the IC, DOD, and Civilian government. We are focused and innovative, priding ourselves in our lean line card, making investments in technologies we believe in, and being free to pivot and find disruptive technologies.

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.

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

govloop.com | @govloop

1152 15th St. NW, Suite 800
Washington, DC 20005

(202) 407-7421 | F: (202) 407-7501

www.govloop.com
@govloop