

ISSUE BRIEF

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Effectively Approaching a Multi-Cloud Strategy

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THE BIG ISSUE

Federal policies, like 2011's Cloud First and 2018's Cloud Smart, help accelerate improvements in government IT infrastructure, but the move to multi-cloud computing environments has left some agencies overtaxed when it comes to compliance, security, data management, and sharing due to a lack of vital infrastructure foundational to cloud.

WHY IT MATTERS

Multi-cloud poses opportunities and challenges to government agencies. Multi-cloud implemented ineffectively can create data islands that impact data security, management, and compliance in government agencies carrying classified information. When adopted effectively, however, multi-cloud is valuable to government agencies as it prevents vendor lock-in and offers flexibility, optimized performance, and sometimes reduced costs.¹ A cloud management system must be carefully and strategically implemented to maximize the benefits.

45%

of federal employees say their agencies are not adequately preparing for their multi-cloud environment.²

80%

of federal employees rank their multi-cloud environment as less than "very good."³



THE GREAT CLOUD MIGRATION

Federal agencies have made substantial progress migrating to cloud. 100 percent of the 16 agencies studied by the Government Accountability Office (GAO), for instance, have made progress implementing cloud.⁴ And agencies are typically implementing more than one cloud. In fact, organizations utilizing cloud have an average of five cloud platforms⁵, and 81 percent of IT decision makers report that their government agencies are using multiple clouds that often have different, unstandardized portals and software, according to a recent survey.⁶



63%

of federal agencies evaluated by GAO have increased cloud usage between FY2016 and FY2019⁷

100%

of agencies increased cloud spending since 2015⁸

Despite the potential of a multi-cloud strategy, a majority of federal employees cite the multi-cloud environment as one of the top challenges their agencies will face in the next five years.⁹ The same study found that 45 percent of federal employees believe their agencies are not adequately preparing for their multi-cloud environment.¹⁰

These challenges have pushed some agencies to explore hyper-converged infrastructure (HCI) to replace legacy architecture and improve visibility and control over the multi-cloud. HCI combines capabilities, including storage, computing, networking, and virtualization, into a single platform that simplifies the move to cloud and legacy architecture. The Department of Defense (DoD) Joint Service Provider transitioned to HCI to enable virtual desktop infrastructure, which allows for encompassing upgrades across all hardware and eliminates wasteful practices. Since its transition, performance at the agency improved by 300 percent and server build time declined significantly from days to seconds.¹¹

ADDRESSING DIMENSIONS OF MULTI-CLOUD ARCHITECTURE WITH HCI



COMPLIANCE

As is increasingly the case, federal data may be tied to compliance regulations, including the U.S. International Traffic in Arms Regulations and the EU's General Data Protection Regulation, which regulate accessibility and storage in cloud environments. For example, the Criminal Justice Information Systems division of the Federal Bureau of Investigation requires that the living location of data be known in order to remain in compliance.¹²

An unchecked multi-cloud strategy makes achieving regulation compliance more difficult because the user has less awareness of server locations and less control securing access across multiple cloud platforms compared to just one.¹³ Additionally, a complicated multi-cloud environment may increase the likelihood for a user to run an application in an unapproved environment¹⁴ and experience cyberattacks since data is accessible through several access points. HCI enables the user to have more control over data locality and management to satisfy federal mandates such as those pertinent to data security. For example, users can utilize HCI, when supplemented with cloud, to easily repatriate sensitive data from cloud and hold it on-premises if needed.

REGULATORY COMPLIANCE AGENCIES AND POLICIES

- **DoD Defense Information Systems Agency:** provides the DoD Cloud Computing Security Requirements Guide for clouds hosting DoD information
- **The Federal Risk and Authorization Management Program:** provides security standards for cloud products
- **The Federal Information Security Management Act of 2002:** requires annual review of information security programs
- **U.S. International Traffic in Arms Regulations:** controls the export of information related to U.S. defense

35%

of federal employees think regulatory compliance is among the top challenges with multi-cloud environments¹⁵

HCI “will help agencies meet a wide variety of federal mandates, including the Data Center Optimization Initiative (DCOI) and the requirements put in place by the Federal Information Technology Acquisition Reform Act.”¹⁶

- the General Services Administration



GOVERNANCE AND VISIBILITY

A multi-nodal cloud ecosystem with varying providers may require vendor management and platform training on a cloud-by-cloud basis. This can result in expenditures for IT labor and management. One figure marked that unnecessary spending on public cloud infrastructure amounted to \$14 billion in 2019.¹⁷

Cloud sprawl and a lack of streamlined management also incur a cost of limited visibility. The Office of Management and Budget, for instance, found that 73 percent of federal agencies are unable to identify when large amounts of data are erased from their networks due to limited visibility.¹⁸ HCI removes data silos, improving data consolidation and organization, and thus the ability to locate and access data.



DATA AGGREGATION AND ORGANIZATION

Cloud sprawl emerges as an issue with multi-cloud environments as cloud platforms may lack interoperability. Because of the number of cloud platforms some agencies have, data can be redundant and sometimes lost within a multi-cloud environment. Enterprises waste \$2 million a year just to find needed data within the complex multi-cloud storage centers.¹⁹

The lack of interoperability and data sharing due to siloed clouds also put quality services on the line, as access to different datasets can be vital to providing essential services to clients, according to the Health and Human Services (HHS) CIO Jose Arrieta. Arrieta suggested in a 2019 health IT workshop that health personnel with access to additional information of patients, such as social determinants of health (e.g. social stressors), may help with giving them even better care.²⁰ Interoperable multi-cloud environments can help facilitate this.

38%

of federal personnel think data governance is among the most important issues with multi-cloud²¹

35%

think interoperability ranks as a top issue as well²²

“The addition of the HCI platform under the FITARA initiatives provides federal agencies with access to a streamlined procurement option for easily and efficiently transitioning to a converged cloud environment, whether public, private, or hybrid.”

- Kay Ely, Assistant Commissioner of GSA Office of Information Technology Category²³





INDUSTRY PERSPECTIVE:

Christopher Laffey, Field CTO of Dell EMC

We're seeing an acceleration of how people interact with technology and data. And for us to keep up with that interaction, we need a way to be agile and scale quickly, while simplifying the management and operational components required of it. When we think about the way a lot of government agencies are run, they are in a highly distributed model. They have hundreds of offices across the country, and one may not look exactly the same as the next. Some have a centralized data center back at a core location, but they need standardization and consistency of operation and hardware for it to be operated simply.

HCI simplifies the procurement, management, and consistent day-to-day operations of that environment. It condenses the data center footprint from a monolithic architecture of server network storage into a cleaner, smaller, and more agile footprint. With HCI, agencies can incrementally add nodes to meet growing needs on a much smaller cost basis, resulting in less overhead. With HCI, federal agencies don't have to have a risky data migration. They can scale storage or compute within a cluster with added layers of simplicity and agility, while also de-risking the long-term state of the application and data itself. It is a different consumption, procurement, and management model that's meant to drive speed, agility and efficiency, and rid of some of the monolithic spend that agencies have with traditional three-tier architectures.



LOOKING AHEAD

Employing a cloud management solution may help ensure that management is centralized and standardized to meet security, compliance, and data needs. Imagine a single portal that opens visibility and management across all clouds, or perhaps a platform that analyzes cloud performance in the whole multi-cloud environment.

Without losing out on the benefits of multi-cloud environments, agencies can utilize HCI to leverage a singular, standardized management platform to mitigate the challenges multi-cloud presents. Agencies could also consider using a single provider to avoid needing a multi-cloud strategy; however, a single-provider path will limit the ability to choose a cloud solution that best fits each organizational IT need. HCI is a promising solution for agencies seeking or employing multi-cloud. In fact, some agencies already have a prolonged use of HCI, such as the Federal Bureau of Investigation (FBI), which onboarded HCI half a decade ago.²⁴ Cloud management is imperative for federal agencies looking to cloud to satisfy federal IT mandates and meet growing IT needs.



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