



Enabling Today's Warfighter With Hybrid Cloud

MARKET TRENDS REPORT



Introduction

“Accelerating DoD’s adoption of cloud computing technologies is critical to maintaining our military’s technological advantage,” Deputy Defense Secretary Patrick M. Shanahan has said.

By efficiently accessing and analyzing the vast amounts of disparate data collected from various government sources, the Defense Department (DoD) can proactively enhance decision-making. Using this data alongside innovative predictive analytic technologies, the warfighter can have a more decisive advantage at the tactical edge.

But this data is only useful if it can be securely stored, immediately accessed and available for analysis. To do that, the DoD needs a hybrid cloud infrastructure that enables warfighters to store and move data seamlessly from edge to core to cloud and back, and provides the ability to access their critical data at the echelon where resources best fit the need.

This is easier said than done, however. The DoD faces several unique challenges – from security requirements, to tactical deployments, to a siloed data culture – that currently hinder it from being able to easily and transparently move its data seamlessly and securely to the right level.

To understand how a hybrid cloud infrastructure that allows data to move seamlessly from location to location in a multi-cloud environment can propel the DoD into the future, GovLoop partnered with NetApp, a leader in hybrid cloud solutions, for this market trends report. In the following pages, we’ll discuss the challenges the DoD currently faces when storing and accessing data, as well as how it can take advantage of a hybrid cloud solution to benefit warfighters. We’ll also gain insights from Scott Rich, NetApp’s Deputy Chief Technology Officer for the Americas, DoD and Intelligence Community sectors.

BY THE NUMBERS

“Rapidly providing DoD access to underlying foundational technologies, like cloud computing and data storage, on a global scale is critical to national defense.”

–Pentagon CIO Dana Deasy

Source: General Services Administration

\$7.4 billion

Spent by the DoD on big data, AI and the cloud in 2016.

Source: C4ISRnet

105



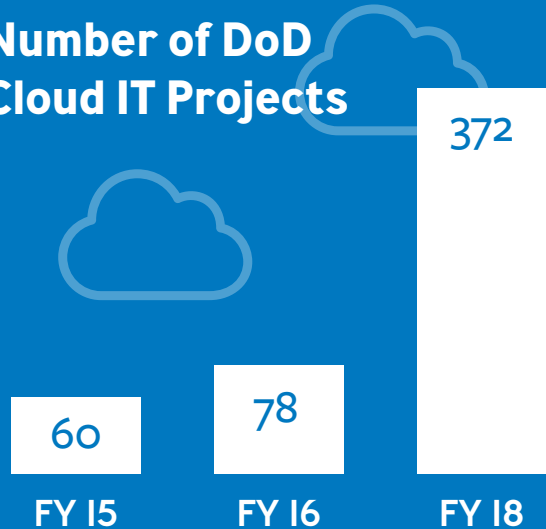
DoD data centers will be closed or affected by the Pentagon's mandate that data centers begin migrating their applications to milCloud 2.0.

Source: Federal News Radio

With the number of Internet of Things devices projected to exceed 21 billion by the year 2020, the DoD must be proactive and ready to protect its personnel, data and mission

Source: Defense Strategies Institute

Number of DoD Cloud IT Projects



Source: Defense Information Systems Agency

The DoD requested

\$230 million

for cloud computing in fiscal 2018, and it intends to request just over \$1.6 billion overall in the five years from fiscal 2019 to 2023.

Source: GovWin+Onvia

THE CHALLENGE:

Storing and Accessing Data at the Edge

To effectively carry out its mission and keep the nation safe, DoD networks must provide uninterrupted access to intelligence and data that is gathered globally. It must then deliver that data easily, transparently and securely to military personnel. This will empower them to better execute their missions both on and off the battlefield.

When data can be exploited and turned into actionable intelligence for those deployed, the DoD can form more accurate, mission-critical decisions.

“With the right data at the right time, users will be able to obtain and reach objectives quicker,” said Rich. “You could truly enable the warfighter by pulling intelligence from raw data in a shorter timeline.”

But to enable this vision, the DoD must first overcome several tactical challenges with its data.

“The DoD has hundreds of thousands of users,” Rich pointed out. “Handling the IT infrastructure is a difficult task. But then add to that the particular challenges and goals of the military — tactical deployments, sensitive systems, people deployed in the field, warfighters operating on remote edges with disadvantaged communication links — it adds a whole new level of complexity.” In short, the DoD faces a set of challenges unique to it as an organization, that makes accessing, storing and moving its data ever more complicated.

Then there’s the sheer volume of data being collected in the military. As the DoD takes advantage of new sensors, Internet of Things-enabled devices and artificial intelligence, the amount of data being used increases exponentially. Trying to organize, store, exploit, disseminate and archive all of this data becomes an overwhelming task.

Finally, DoD’s requirements are unique given its highly mobile and distributed workforce and the high security required for its data.

The ability to collect information, move the raw data back to systems for processing and return the results to the field for action in a timely manner, has long been a goal for the military, but it’s difficult to advance with the tactical and cultural challenges it currently faces.

With the advent of faster mobile communications and cloud-based artificial intelligence capabilities, data can be moved from the user in the field up to a cloud for processing and the results can be sent back to the user in near real-time. All that is needed is the underlying infrastructure to make this transparent and accessible.

THE SOLUTION:

Data Mobility in a Hybrid Cloud

To truly enable the warfighters to get the data they need, in the timeframe and location they need it, the DoD needs to turn to a hybrid cloud solution.

Embracing a hybrid cloud approach and understanding the benefits of a multi-cloud environment ultimately will help the DoD to unleash the power of data to meet mission demands and gain a competitive edge.

To harness the power of the hybrid cloud and unlock its full potential, organizations need a way to seamlessly move and securely manage data across tactical, on-premises data centers and hyperscaler cloud deployments, and to move rapidly between these different environments.

Using the NetApp Data Fabric is the answer that will allow warfighters to better harness the power of the cloud, build next-generation data centers and modernize storage through seamless data management. NetApp’s Data Fabric is an architecture and set of data management services that provides consistent capabilities across an array of endpoints spanning on-premise and multiple cloud environments.

“If data can transparently move to a core data center with local analytics, and then move again to a public or community cloud or be pushed directly from a tactical system to the cloud, enabling the use of cloud-based analytics for tactical users, that will transform the DoD,” Rich said. “Being able to transparently move data to the deployment with the resource that best fits that need — that’s the ultimate goal.”

Creating a data fabric is about taking a data-centric view of the mission in every layer of the environment: platform, transport, storage management, data management and security. The overall architecture is comprised of products and solutions that unbind data from underlying systems so that data can be accessed across the fabric.

By utilizing a data fabric that spans a private cloud, service providers and hyperscale cloud providers, the DoD can embrace the cloud on its own terms by easily and simply integrating enterprise-class data management and control with the flexibility, speed and economics of the public cloud. This approach creates a powerful framework for the DoD to create innovative solutions among multiple, otherwise disparate, cloud resources.

BEST PRACTICES

Characterize Workloads for Cloud Suitability



1. Inventory your environment.

The first step in any successful hybrid cloud implementation starts with an assessment of your current workloads to determine the exact requirements for each and where they best fit in the environment.



2. Determine your hybrid cloud readiness.

Assess your IT capabilities, processes and infrastructure. Also make sure to define risks and constraints to establish which cloud deployment models are right for different workloads and applications.



3. Align the hybrid cloud to the mission.

As your organization transitions to the cloud, you must define your strategic direction and drive innovation with a plan that delivers greater agility, efficiency and resiliency. This includes understanding how the cloud will affect your mission, determining which applications and workloads you can safely move to the cloud, defining your storage services and service levels, and providing a precise roadmap for deploying your cloud infrastructure.



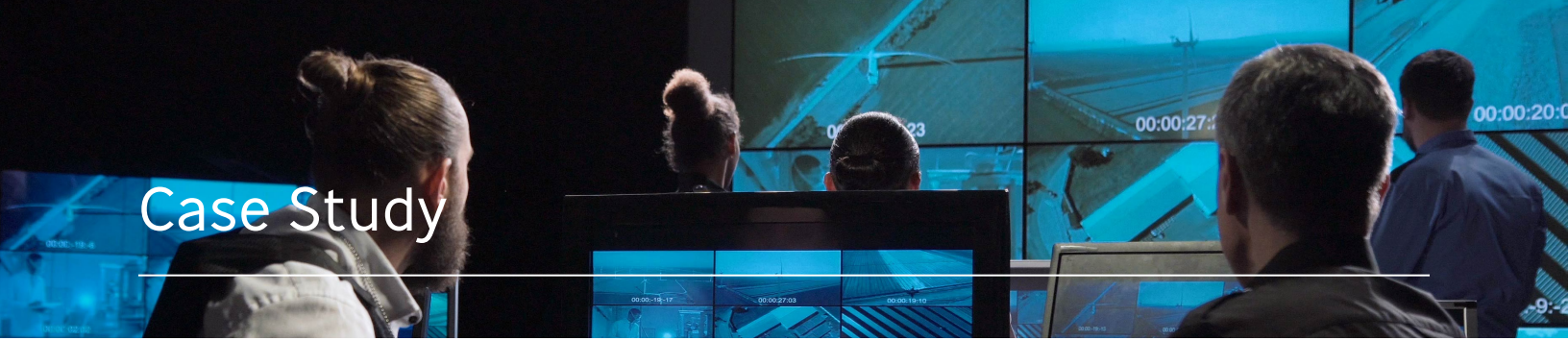
4. Help the team understand the benefits.

In a hybrid cloud environment, your organization can place data where it provides the greatest value. A hybrid cloud infrastructure also enables you to move data easily as your requirements change. With integrated and accessible data, personnel at every level can make data-driven decisions. Make sure information is accessible to warfighters, analysts and commanders at every level, and understand how to use the infrastructure properly.



5. Select the right partner that can help you navigate a multi-cloud environment.

Choosing the right vendor that understands a multi-cloud environment and how your workloads would interact with it is key. NetApp works with organizations to help with efficient and secure storage and data management across their choice of resources: Software Defined Storage such as ONTAP Select, NetApp All Flash FAS (AFF) and FAS-engineered solutions running ONTAP or Cloud Volumes ONTAP, a software-defined solution for the cloud.



Case Study

With 7,500 employees in 280 offices across the United States, one federal law enforcement agency stores and uses terabytes of data annually, including sensitive law enforcement and evidentiary information. Many of the agency's activities are carried out in conjunction with task forces made up of state and local law enforcement officers. In the event of an incident, law enforcement professionals from multiple organizations depend on rapid access to the agency's data to protect the public from violent crime.

With 800TB and counting, the agency began a multiyear project to lower IT costs and refresh its server and storage infrastructure as well as to meet a Department of Justice mandate to close its data center. It was interested in taking advantage of cloud computing to turn capital expenses into operational expenses, but it was concerned about data ownership and governance, given the sensitive nature of its data. With numerous organizations depending on its data for evidence in court, the agency must be able to document chain of custody for all data in its possession.

Putting data in a public cloud was not an option. With an immediate need to refresh various infrastructure components and a near-term mandate to close its data center, the agency turned to NetApp and 1901 Group to develop and execute a hybrid cloud strategy that provides the required server and storage infrastructure while ensuring chain of custody for sensitive law enforcement data.

Working with NetApp and 1901 Group, the agency implemented a groundbreaking hybrid cloud solution that aligns with Cloud First, FedRAMP and recent modernization mandates, while ensuring data control and governance. The agency now stores its data in a dedicated, FedRAMP-authorized private cloud, and consumes infrastructure and disaster recovery services on a per-terabyte basis.

Read more of the full case study here.

HOW NETAPP HELPS

NetApp is the data authority for hybrid cloud, providing a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premise environments to accelerate digital transformation. NetApp's solutions help connect disparate IT environments into a cohesive, integrated whole and allow DoD organizations to maintain control and choice as they manage, secure and move their data across their hybrid cloud environments. Specifically, NetApp offers its Cloud Volumes ONTAP, data management software that delivers control, protection and efficiency to data with the flexibility of the cloud.

NetApp also offers OnCommand Insight (OCI), a tool that is designed to simplify operational management of complex private cloud and virtual IT environments. OCI is a single solution to enable cross-domain, multi-vendor resource management and analysis across networks, storage and servers in physical and virtual environments.

“Most organizations will end up being multi-cloud by default based on workload,” Rich explained. “NetApp understands this - and it's why all of the cloud services we offer are available through all of the hyperscalers.”

Learn more at [Cloud.Netapp.com](https://cloud.netapp.com)

Conclusion

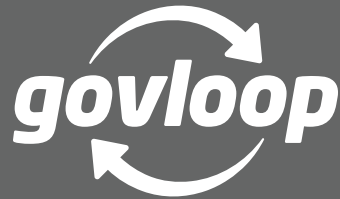
As the DoD works to enable its warfighters, meet mission demands in a more complex, technological and threatening landscape and take advantage of the vast amounts of raw data at its disposal, it will be imperative to equip warfighters with real-time insights. By turning to a hybrid cloud solution that enables warfighters to move data seamlessly from the edge to core to cloud, the DoD can fully take advantage of technologies and intelligence that will lead the military into the future.



ABOUT NETAPP

Government agencies of all levels count on NetApp for software, systems, and services to manage and store their most important asset, their data. With solutions ranging from data protection and recovery to cloud computing, data analytics, and flash solutions, NetApp has become government customers' top choice for key technologies that drive data center transformation. Top counties, cities, and states count on NetApp and value our teamwork, expertise, and passion for helping them succeed now and into the future.

For more information, visit www.netapp.com.



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.

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