Federal IT transformation & the benefits of multi-cloud

The cloud is an operating model, not a destination, suggests leading chief technologist.

BY FEDSCOOP STAFF

The last word in the federal government's cloud migration is far from written, but the convergence of agile development, containerization, microservices and DevOps has led to what many analysts are calling the predominant operating model for the next generation agency enterprise: the multi-cloud.

Although cloud may have started as an exercise in lowering costs, the most forward-leaning federal enterprises now take a strategic approach to cloud computing and its business and digital transformation benefits – speed, agility and responsiveness to agency mission requirements, to name just a few.

With this comes a fundamental shift in how agencies must think about the cloud, says Cameron Chehreh, chief technology officer at Dell EMC Federal, which is leading a push to help agencies visualize a roadmap to their next-generation enterprise. The cloud, Chehreh says, is an operating model, not a destination.

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"All missions and mission requirements in the government are different. In order to address leveraging cloud as an operating model, not a destination, you have to have a multi-cloud strategy," he says.

Although managing a multi-cloud environment may be a new and daunting endeavor for many large and midsize

government agencies, private industry has clearly made the shift. According to two recent studies by IDC and RightScale, more than 80 percent of enterprises have committed to multi-cloud architectures. And, as it turns out, federal agencies are beginning to have the same conversations about multi-cloud and realizing that it may be the key to their future IT strategies.

But where to start?

The what and why of multi-cloud

Although many use the terms multi-cloud and hybrid cloud interchangeably, they are, in fact, different variations. A hybrid cloud is typically a private, on-premises cloud paired with a public cloud. A multi-cloud architecture, on the other hand, involves the use of two or more public clouds.

Of course, multi-cloud is more than just a numbers game. It is really the product of an explosion in the number of viable cloud alternatives that have been introduced by industry players beyond the big three – Amazon, Microsoft and Google. With so many choices, enterprises began collecting and using these different clouds for various reasons, seeking to leverage the different features of each. The end result has been the creation of complex environments that can hinder mission agility by making it more difficult to replace legacy systems. It also complicates efforts to deploy and manage apps on an enterprise scale.

"In order to truly meet the agency's mission, you will have to deal with multiple clouds because legacy applications are a lot like trees – they grow roots throughout the enterprise," Chehreh says. "It's all about interoperability. There are going to be workloads that agencies will find

are not technically or financially viable to run in a public cloud infrastructure. So, they're going to want to run those workloads in a private, on-premise cloud, which begins to create the first aspect of a multi-cloud cloud environment."

Planning for multi-cloud by adopting the 'Agile Manifesto'

Planning for successful multi-cloud operations is not only possible but is an absolutely necessary exercise for today's modern government IT enterprise to meet the mission requirements of its agency.

"When we find agencies adopting cloud as an operating model strategy, the first question they have is, 'What are we using the cloud for? What are the mission applications or mission requirements that they are addressing successfully using cloud?'" Chehreh says.

From there, the follow-on conversation is all about the mission applications and developing the ability to respond to change, he says. That is at the core of Dell's support for the so-called Agile Manifesto. Written in 2001 by 17 independent software developers, the Agile Manifesto laid the groundwork for a reimagining of software development that focused on producing working software incrementally and avoiding cumbersome documentation, lengthy contract negotiations and requirements processes.

For Chehreh, the only way agencies can really integrate new, cloud-based capabilities into the existing workflow of their organizations is through a multi-cloud environment. The multi-cloud structure leverages the agile development methodology so they are not held hostage by their cloud providers.

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"When we look at the Agile Manifesto, it's really about dealing with the applications that ride on top of the cloud environment and how to drive value in the shortest time possible," Chehreh says. "I have the agility of cloud to stand up capability. Now I have to create the capabilities aligned more specifically to mission requirements, based on the application layer, and then deploy applications rapidly. These factors combined create what we call mission agility."

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*Source: IDC
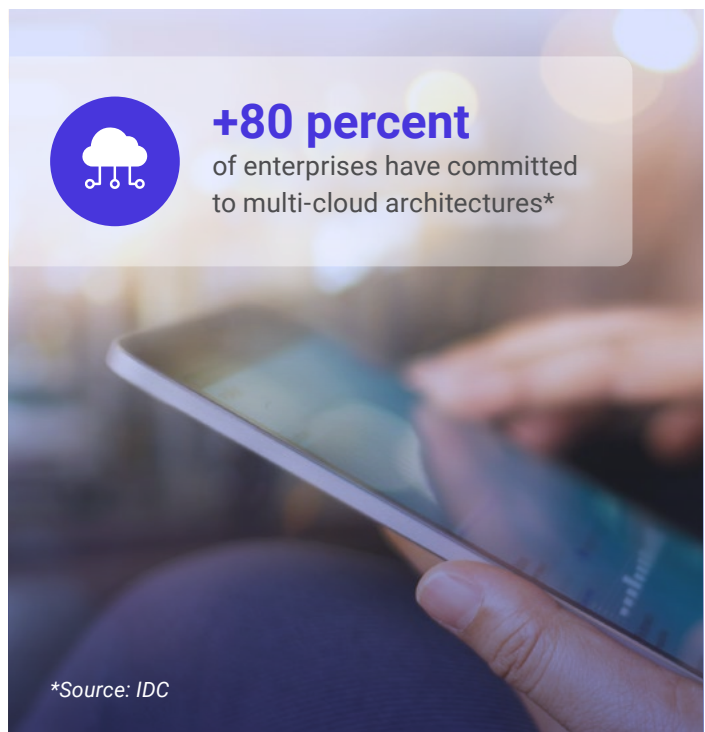
The four forces

The confluence of agile development, containerization, microservices and DevOps offers a powerful environment to transform how agencies deliver IT services — and forms the basis for Dell's strategy to help agencies envision their next-generation enterprise.

"What we find in all facets of government, whether it's civilian, DOD or the intelligence community — there are certain times when cloud computing is necessary in the field without ubiquitous network access," Chehreh says. "Things like FEMA's response to the hurricane in Puerto Rico or a Department of Defense dismounted soldier capability, or an intelligence community operation around the globe — they are always disconnected at some point."

For example, if FEMA needs to respond to a natural disaster, they have the opportunity to take a portable tactical cloud and deploy a small containerized application for doing things like citizen identification or health services requirements when connections to the internet aren't available.

"But when that cloud comes back into the enterprise, I can re-shift that application and its data into the enterprise cloud using this containerized methodology because I've embraced agile as a development process," Chehreh says. "I can now make changes to the application or move the data itself given that these are next-generation or fourth-generation applications."

"At the end of the day, as we look at these modern applications, they're really all about containerization … of the application itself," Chehreh says. "Using things like Kubernetes or Pivotal Cloud Foundry, we can build these lightweight, agile, next-generation apps that can drive mission value." Kubernetes is a leading container orchestration system and Pivotal Cloud Foundry is an open-source multi-cloud management platform.

Where do agencies begin?

There are a lot of agencies trying to move down the multi-cloud path. But Chehreh says the results have been mixed.

"We see some leaning forward, such as the agencies that adopt a lot of the services from 18F or the U.S. Digital Service," he says. He cited the FCC's full migration to the cloud as perhaps one of the best examples. Other agencies are moving more slowly than they might like. "It really is a spectrum. There are many agencies that are still sitting in legacy mode because they have a lot of critical assets that are very complex."

According to Chehreh, the process of leveraging the multi-cloud begins with the application portfolio.

"We recognize very powerfully that it's all about the applications. And for agencies, the hardest challenge we find is getting their arms around the entire application portfolio and making those application-centric decisions,"

he says. "Is the application critical? Do I re-platform the application? Is it written in a language that will allow it to run in a cloud environment? Do I rewrite it, or do I retire it?"

The best place to start in your understanding, he says, is to answer those questions and determine the composition of your application portfolio. Those applications will dictate infrastructure requirements, cloud requirements, and network requirements.

Although the jury is still out when it comes to agency adoption of multi-cloud as an operating environment, Chehreh is optimistic.

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"There are a lot of great pockets of transformation occurring," he told FedScoop last April. "The last piece for us is all about the software, and taking transformational technologies, like a Pivotal Cloud Foundry, to build these 4th-generation, next industrial revolution-based applications."