the**Stand** — General Dynamics Advanced Information Systems on **Cloud Computing**

Jay Mork
*Senior Director of Advanced Programs,
General Dynamics Advanced Information Systems*

Q1 Is the concept of the cloud now pretty much set, or is there more to come? Will the cloud five years from now be the same as the cloud of today?

I think it's set as far as the basics of the cloud are concerned, but how you use and deploy the cloud is going to change over the next five years. There's a similarity with where the Internet and web services were 10-15 years ago. The basic technology hasn't changed much, but the way people apply the technology has. I anticipate similar development with the introduction of new applications in the cloud.

There are different ways to structure and use the cloud today. In particular, within agencies you'll see a wide variety because of the diversity of agency missions and their specific requirements, including security.

A cloud architecture built using open standards allows for quick and rapid integration of new technologies, allowing agencies to keep pace with advancements in technology over the next five years. The cloud is an ever-evolving resource. The scalability, flexibility and reliability of a dynamic cloud will deliver capability based on mission needs.

Q2 How effective are government mandates such as "Cloud First" in promoting the use of cloud services in government? What else is needed?

Saying you want to do something is one thing, but then you have to go out and actually contract for and build pilots to kick things into gear. I'm seeing this happen as agencies become more comfortable with the cloud concept.

We're getting past the mandate phase and starting to see in a number of different solicitations that agencies want providers to demonstrate how they are going to deploy their solutions in a cloud environment. This allows us to move beyond concepts and into real world applications, helping agencies become more comfortable with the cloud and what it can do for them.

As with any organization, there is a mix of those who want to keep doing things the way they've always been done, and others who want to change. To see cloud services adopted, agency leaders need to advocate for cloud and flow that message into their organizations, helping to unify the two worlds and maintain focus on the mission.

Q3 What does the shared IT services strategy recently released by Federal CIO Steven VanRoekel mean for the future development of government cloud computing?

There is tremendous value in creating shared services across different agencies, including reduced costs. There should definitely be reuse of these services. There is no question that sharing services will be a core strategy.

The challenge is how to manage and coordinate the varying requirements, critical applications, diverse users, missions and modernization acquisitions of multiple agencies. Who leads and who follows? Agencies should collaborate to focus on what is common. If one agency can leverage what another agency has created, they are starting at an 80 percent solution rather than starting from scratch, and delivering solutions faster while saving money.

Integrated working groups will help agencies identify and prioritize needs, coordinate efforts and provide a forum to establish common requirements up front, thereby helping to drive cloud adoption.

Q4 Security of the cloud is still the biggest concern for government users, but is this warranted? Some say the need for security will soon drive cloud adoption rather than hinder it, do you agree?

Security will drive cloud adoption. The cloud takes data that is accessible now through many Internet access points, virtually and physically, and collapses it into one data center. This provides a controlled interface to the rest of the world that limits and manages access.

In this sense, cloud technology is actually more secure as there are fewer points of entry and locations. In addition, with cloud technology you never really know what computer or server any particular piece of information is on, making it difficult for bad actors to find it.

Again, the cloud is following the same adoption path as the Internet. According to Pew Research, while 82 percent of American adults use the Internet only 61 percent use online banking, an increase of just 8 percent over the past five years. I believe that the cloud is a secure technology, but developing trust in that is going to take some time.

Q5 What can agencies do to prepare for the Federal Risk and Authorization Management Program (FedRAMP), in order to make its application as easy as possible for their cloud implementations?

Agencies need to work closely with FedRAMP and make sure they understand what the standards are, what their agency's prioritized needs are, what criteria are being used to evaluate vendors, and how third-party assessments are conducted. They need to be proactive in talking about where they are going with their cloud implementations and what it is they want FedRAMP to do for them. FedRAMP has designed a number of tools to help agencies, including a security assessment.

Ultimately, understanding agency needs and the supporting priorities is going to be key for successful cloud implementation.

Q6 What are the next candidates for agency applications moving to the cloud now that "low hanging fruit" such as email and collaboration tools have been identified for the first wave? How do agencies make those selections?

Agencies are looking to the cloud to save money as they have invested a lot in their legacy systems. Now they want to leverage their investment, drive cost out and improve capability through modernization via the cloud. They will look to systems and applications they can upgrade rapidly through the cloud, allowing them to quickly retire legacy systems to get the biggest bang for the buck.

Agencies should focus first on projects that have less stringent security requirements since they likely won't involve highly classified information. There will be some smaller applications that won't be touched, as they won't provide a significant return on investment.

Agencies should then go to the next level where they can use the cloud to share data services and combine data into common data repositories. It will be a crawl, walk, run approach.

Q7 Moving applications to the cloud is expected to save agencies money, but it's not cost free. What do agencies need to do to assure a least-cost transition?

Agencies should first invest in an ROI assessment. For example, it may be that all they need to do to save money in the near term is to move an app onto common hardware. Reducing hardware and transitioning to commodity hardware can be an immediate costs savings.

I do think agencies need to take a long-term view when it comes to the cloud, but they don't need to take huge steps to get there. They can quickly get an instance of the cloud up and running, have it work in parallel with legacy systems, and gradually migrate to the cloud. You can actually do the migration better by building a little at a time and evolving to deal with changing needs and requirements. I think that's far better and smarter than developing and adhering to a detailed multi-year development plan.

Q8 Standardization has been considered a key development by government cloud users. What's the progress been in developing those standards?

A number of agency CIO offices are working together to come to an agreement on what cloud standards are and how they can be implemented in government. This is important because it makes sure everyone is on the same page and, once they do agree on standards, it makes it much easier for everyone to build to them.

Agencies are starting to use those standards in various cloud pilot programs, and the results of these programs will provide a better idea of how to drive and shape the standards because everyone will have had a chance to try,

use and test them. But they do need to stay in tune with the commercial world so they know how cloud standards are evolving to avoid reinventing the wheel.

Q9 What are some of the most important best practices that agencies can use for moving services and applications to the cloud?

The three most important are:
– Implement pilot studies to help evaluate what should move to the cloud and when
– Use of an agile and modular development process, to build a little and test a little
– Leverage open source technologies and commercial standards

Agencies will also need to understand what cross agency services they want to adopt, and how they plan to manage and govern the cloud. For example, if one agency wants to use an existing service 24/7, but the originating agency only operates it 8/5, how do we leverage the investment without altering the mission of the originating agency?

Q10 Can the cloud be used by agencies as a strategic asset? How can they "shape" the cloud to meet specific needs?

Absolutely. Moving to the cloud will help agencies save money and improve mission capability and performance. Co-locating apps and data in a central data center will allow agencies to easily combine the data with new applications, new services and missions. Now the cloud is a strategic asset as it houses the enterprise.

Developing new, mission-specific capabilities can be done quickly in 30-60 days in the cloud, allowing for rapid delivery to users. But the beauty of the cloud doesn't stop here.

Users are now part of a feedback process where they can see and react to the new services designed to improve how they carry out their mission. This is certainly another example of the cloud being a strategic asset. Getting direct user input and reaction that helps agencies fine-tune capabilities for successful execution and management of their missions.

Another advantage is agencies leveraging each other's services. Some agencies are participating in integrated working groups, putting teams together with members of varying roles and responsibilities, and tasking them with solving various problems by using the cloud and shared services.

Q11 Who should be involved in contracting for cloud services? Is this still the responsibility of the agency IT department, or should others take the lead?

We expect cloud to go beyond email and ISP to be used on projects to field common infrastructure services and customize mission capability, where it's more about migrating applications to the cloud. Based on this, contracting cloud service needs to move from the IT department to a core team of agency mission stakeholders who have the necessary domain knowledge and mission expertise and can include acquisition, engineering and general counsel. This unified approach will help address mission-specific capabilities holistically.

Q12 Are there any services or applications that agencies should not move to the cloud, and if so why? Are there situations where applications would normally be candidates for the cloud, but nevertheless shouldn't be moved?

I see two scenarios where moving to the cloud might not make sense. First, there are some legacy systems that are attached to small missions and moving them to the cloud isn't going to benefit the mission or deliver any reasonable ROI.

Second, some services are not using Internet technologies because the data or missions are just too sensitive. Because of the stringent security requirements they are unlikely to move to the cloud anytime soon.

When agencies focus on their missions and let that drive their cloud implementation strategy, rather than view clouds as a cure-all, we'll see clouds being utilized for the right purpose, becoming a true strategic asset.

Q13 How do agencies decide which flavor of cloud – public, private, hybrid, community – is best for them?

It depends on the agency missions and needs, and I expect you'll see an application of all of these kinds of clouds at some point. Security requirements and costs will influence cloud selection and whether or not an agency wants to own their cloud or contract with a provider. For example, an agency doesn't necessarily need to own a cloud if they are only running email or other non-mission critical applications.

Agency needs will change over time, and five years from now I expect those needs to be different. An agency that uses a hybrid cloud today because it wants to get the cost benefits of the cloud but is still sensitive about sharing its data will get more comfortable with how the data is being protected over time. Then we'll see the adoption of architectures such as a community shared cloud, where it shares services and its data is also in the mix.

A major benefit is that it's fairly easy to mix the various flavors of the cloud and to change those flavors over time depending on how agencies want to use the cloud. It just means changing how software is loaded and how applications are deployed in the system. So it can be an IT function to change from a public cloud to a private cloud hybrid.

Q14 Is there such a thing as a cloud ROI? How do agencies measure the effectiveness of the use of the cloud compared to initial expectations?

Agencies are now looking at how to measure cloud ROI and include the traditional costs they can track, such as application license costs, hardware maintenance costs and operation sustainment costs at different sites. Agencies ask us today how we are going to cut costs in these areas by moving to the cloud.

The one cost that I think will be a little more difficult to measure, but will be a big cost savings, is the cost to deploy new capabilities. Agencies traditionally have metrics for what it takes to deploy new capabilities in legacy systems, but it's a softer thing to measure when you do that in the cloud. The data is there, we just have to come up with a better way of measuring it because it is such a paradigm shift from how it's been done in the past.

Q15 How do companies such as yours need to operate in the current market? What do agencies expect of you?

The technology actually creates a change in the value chain for how agencies acquire various capabilities. Now, the business model is changing to better support agencies moving to the cloud. One company provides the hardware, another the infrastructure, and so on. The cloud let's agencies take advantage of available technologies easily and quickly. They can now work with market-leading providers based on what they need in their cloud to support their mission.

While agencies may be using a new acquisition mode, what hasn't changed is our continued focus on providing mission capabilities to customers. Because we started to invest in the cloud five years ago, we have been able to become mission capability experts using the cloud and are actually building and testing cloud pilots, helping customers leverage the power of the cloud to better serve their users to achieve mission success.

GENERAL DYNAMICS
Advanced Information Systems

For more information, please go to: www.gd-ais.com/cloud