ADVANCED IT Playbook

Agencies can leverage cloud to speed development and drive innovation.

Accelerating the Pace of Government

Migrating to the cloud via the lift-and-shift method gives government agencies the computing speed and scale needed to drive innovation. The cloud is also a natural stepping stone to using DevOps, an agile approach to enterprise software development that drives organizational improvements.

"In the past, a developer would have to rely on a system administrator to provision resources – computer power, memory and storage space – in order to create and test programs," said Arun Simha, a digital solution architect with Akima, an IT services provider. "Procurement of those resources would entail considerable cost and delays, sometimes of many months."

By contrast, the cloud makes resources readily available to development teams that place "orders" via a portal that also handles payments for resource usage. Provisioning and achieving a configured development environment can happen in minutes.

The cloud also enables extensive model testing. In the commercial world, Amazon and other companies use models to determine pricing for products and services. In the public sector, model testing could benefit an agency seeking to quickly model hurricane paths based on complex weather data, for example.

In the past, constraints on storage in a traditional IT environment often slowed such simulations.

"The cloud has changed that," Simha said. "Our government wants to achieve results comparable in speed to the commercial world, but the first concern is security. The cloud and DevOps empower both agility and security."

Other attributes native to the cloud can bolster the effectiveness of government IT, among them cloud-based business options: Software, Platform and Database-as-a-Service tools. Agencies in the cloud can rapidly adopt Infrastructure as a Service, reducing costs for development and time-consuming support operations.

When agencies contract as-a-service capabilities, "you are consuming innovations from somebody else," Simha said. "Once you know what you need, you order the service you want, and it arrives in a just-in-time fashion … without having to undertake all that development or support all that hardware internally."

CULTURE SHIFT

To get to DevOps, IT leaders must confront technical and cultural considerations. On the technical side, DevOps capabilities are native to all major cloud providers. Third-party partners also make tools that are intuitive to use and easy to deploy – at little or no cost.

In addition, a form of virtualization known as containerization can facilitate DevOps across private and public clouds. Containers separate code and data from the operating system and enable DevOps teams to work without regard to underlying operating system dependencies. Containers accelerate the DevOps lifecycle, from initial development to staging and production.

The cultural side of DevOps can be more complex. IT leaders should cultivate stakeholder buy-in though DevOps pilot programs that articulate the benefits of teams working together. As the government increasingly adopts

> DevOps (development and operations) is an agile design methodology that combines IT operations with development. It enables a development cycle that can continuously update and patch applications, often without the need for re-authorization. In a DevOps environment, securely setting up and modifying a project environment can be done in hours, rather than weeks.

cloud and DevOps, training and communication will be important. "The upbeat narrative from leadership on DevOps should be that it is the next step in agility and security following the cloud," Simha said. IT leadership should make clear how the adoption of new processes and technologies will improve the lives of stakeholders. Everyone should see the benefit, coupled with a call to action.

NEW RULES

To make the most of what the cloud has to offer – from as-a-service business models to an agile development environment – IT leaders will also have to consider the role of governance. Cloud is a new road; it requires new rules.

"These things are all moving so rapidly, and it requires a lot of responsible people to ensure that the right services are being used and the right data is being consumed," Simha said. "It requires leadership to put in place a higher level of education, and the appropriate controls to make sure things are always consistent with the organization's mission. They may even need to ensure the data going back and forth is checked or sampled, so that they can feel certain the people are using the right data for the right reasons."

Emerging IT governance will likely require some automation. Speed and volume are particularly relevant to cloud computing, yet the ability to manipulate data on a massive scale is both a promise and a challenge.

Good governance also sets the stage for future achievement. Experience has shown that a successful cloud implementation typically drives additional reliance on cloud. Once an agency gets a taste of the cloud's speed and innovation, it often seeks to expand on those efforts.

To ensure that a successful cloud implementation serves as a launch point and not an endpoint, Simha urges agencies to set measurable goals and define the success of projects. "Celebrating small successes can be a huge morale booster for any agency that is approaching cloud," he said. "Recognition is what makes people want to keep moving forward." ✖

✖ You've Climbed the Mountain. You're in the Cloud. Now What?

■ **Celebrate.** "You've done the lift and shift, you are at the summit, so you plant a flag and celebrate that success," says Arun Simha, a cloud solution architect with Akima. "Recognize that accomplishment. If you communicate that to the rest of the organization, people will be inspired."

■ **Reflect.** Consider lessons learned before moving ahead. "Take stock," Simha says. "You've avoided the crevasse; you've gone under the ledge to avoid the avalanche. Take time to review those lessons learned along the journey."

■ **Regroup.** "As you shift toward DevOps and start to work within the cloud, marshal the next team," Simha advises. "Share what you have learned so far. Approach the next set of tasks armed with that knowledge and wisdom."