Getting Cloud Migration Right

How to use a holistic strategy to successfully advance your cloud journey.

While cloud adoption continues to climb in state and local governments, less than 20 percent of government IT professionals in a recent CDG survey said their organizations have reached advanced stages of cloud adoption such as automating cloud services or operating multiple cloud environments at scale.[1] Additionally, a recent McKinsey study found most enterprises have only moved 20 percent of their workloads to the cloud.[2] To achieve the cost savings, speed, service levels and other benefits promised by the cloud, organizations need to think beyond simply migrating to the cloud, and adopt tools and strategies that will help them complete projects successfully, avoid cost overruns, and achieve mission and program goals.

Moving Toward the Cloud: Migrate, Modernize, Go Native

Government organizations typically take the following approaches on their path to cloud maturity. Proper planning during early phases helps lay the groundwork for more advanced implementations and also ensures organizations use the best approach for each use case.

Migration. Organizations commonly migrate existing workloads to the cloud as a first step into cloud adoption. Typical drivers are flexibility, scalability, cost savings and the shift from a Capex cost model to an Opex cost model.

Modernization. Government leaders usually take this approach to enhance existing capabilities and enable use of advanced technologies. For example, a legacy application that has been migrated is augmented with an AI interface or new cloud services.

Cloud-native development. In a cloud-native (i.e., cloud-centric) development environment, an organization has adopted all the tools and techniques required to develop modern, cloud-based applications. At this point, the organization uses integrated DevOps tools, a container-based environment and other modern technologies in a highly automated, agile, rapid release cycle.

Identifying the Right Candidates for Migration

Each organization's migration strategy will vary depending on the number of applications it intends to move, security requirements and other factors. The best cloud solutions support a range of migration options.

Ideal places to start. "The first thing we look for is existing workloads that are fairly easy to move; can create a quick win; and offer cost savings, greater agility or some other advantage," says Don Boulia, General Manager of IBM Cloud.

Self-contained workloads that have few connections to other systems or can be moved "as is" are good candidates, as are some in-house packaged applications or services (e.g., email). Another good starting point is use cases that are traditionally hard or expensive to implement and maintain in house. For example, cloud-based backup and disaster recovery solutions are good candidates because they alleviate the need for an additional standby data center.

Lower-priority candidates. Workloads that have many dependencies are often lower-priority candidates because they are more complicated to move. Having said that, if the long-term goal is to move an entire portfolio that shares data and services, it's often better to move everything together so it all functions as expected. However, this move may be more complex. Workloads that have challenges related to the data they store and data privacy or regulatory compliance regulations may also be lower priority, even if they are relatively easier to move.

VMware and mission-critical workloads. On-premises VMware workloads predominate in many government enterprises, and moving them en masse to the cloud can deliver significant advantages. However, many organizations are concerned a cloud-hosted solution will change the "look and feel" of their VMware workloads and require staff retraining. Solutions now exist that enable organizations to retain their existing interface and operate as they did on-prem. These solutions also enable organizations to maintain control over isolation and privacy, as well as the location of specific workloads. In addition, they can provide layers of support on top of core VMware functionality to enable backup, disaster recovery, workload management and other important capabilities for mission-critical workloads.

Hardware-based (bare metal) options. Many organizations will need not only virtualized options for cloud compute tasks, but also hardware-based options. This is the case when a workload's performance or isolation profile requires keeping the workload on a piece of hardware that is not shared with others. IT leaders should look for cloud solutions that include support for bare-metal implementations.

Using Containers to Simplify Migration, Accelerate Modernization and Prepare for Cloud-Native Operations

In the CDG survey, more than half (56 percent) of state and local governments were in some phase of adopting container technology. Forty percent of respondents were using containers for new applications, while 19 percent were using them for existing or legacy applications.[3]

Containers package strings of code in a standardized way so they can be used as building blocks to create and deploy different workloads. Each container stores a single, isolated application or service with the exact compute resources it needs to operate.

"Containers give us the ability to right size compute instances for the kinds of workloads we see coming," says Boulia.

The right container approach allows organizations to deploy workloads where they will run best, optimize resource usage, enable interoperability of multiple applications on a single platform and strengthen security. Overall, it improves the speed and scale with which organizations can create and deploy different workloads, which ultimately enables them to deliver new or improved services at the pace that citizens and workers demand — without requiring additional staff.

When choosing container-based approaches, it is essential to look for container-level monitoring and security controls, support for the full range of isolation and performance cases (from bare metal to virtualized to fully shared), container deployment and management tools that allow the organization to manage service levels independently, and open standards-based tools such as Kubernetes that enable organizations to orchestrate container traffic even as solutions scale to tens of thousands of containers.

Taking Advantage of Higher-Value Services such as AI and Blockchain

The cloud offers an opportunity to more easily and cost-effectively access higher-value services such as AI and blockchain. To take advantage of this opportunity, most organizations need a way to securely and safely connect and integrate existing legacy workloads, where most enterprise data resides, with the cloud. Most state and local government IT development teams will need training and other support to accomplish this. Organizations should look for service vendors that provide hands-on training for using tools, applying best practices and solving real-world problems. These tools and practices should also allow continuous delivery and continuous integration of updates and services.

Developing a Security Strategy

In the early days of cloud technology, security concerns often inhibited cloud adoption; however, in a recent Ponemon Institute survey, 49 percent of IT security respondents said "their organizations' cloud services provide a more secure data processing environment than on-premises computing."[4] Apart from dedicated security specialists and advanced security controls, the leading cloud providers also incorporate a spectrum of best practices and implementation options that allow organizations to flexibly protect each workload according to its unique requirements. The key to effectively securing workloads and other assets as they move to the cloud is a strategy that assesses the impact of cloud services on security, identifies data that is either too sensitive to move to the cloud or requires additional precautions (e.g., isolation), and includes an assessment of all the cloud resources that exist in the current environment.

Ensuring Success

Cloud-based strategies are increasingly important for state and local governments that need to deliver services quickly, lower costs and take advantage of advanced technologies. While IT and business leaders may be tempted to rush into cloud migration, modernization and other cloud activities, it's important to plan carefully and work with well-established cloud vendors that offer not only leading-edge tools, best practices, training and ongoing support, but also hands-on experience in the government sector and a commitment to continuous innovation and improvement. With the right foundation, organizations will be well on their way to mature implementations that deliver greater value now and in the future.

Endnotes:

1. CDG Survey, Cloud Computing Landscape, November 2018.
2. D. Kennelly, IBM. Three Reasons Most Companies Are Only 20 Percent to Cloud Transformation, March 2019, https://www.ibm.com/blogs/cloud-computing/2019/03/05/20-percent-cloud-transformation/
3. CDG Survey, Cloud Computing Landscape, November 2018.
4. Ponemon Institute, Closing the Cloud Security Business Gap, January 2018.

This information is part of the IBM Government Cloud Virtual Summit, a free, online event featuring 17 sessions with insightful keynotes, illustrative case studies and deep dives into job-critical topics for government leaders. To view any of these sessions, visit www.govtech.com/ibmvirtualsummit