HYBRID INFRASTRUCTURE FOR A MORE INNOVATIVE GOVERNMENT

The pandemic that struck the world in early 2020 created widespread government disruption. Offices closed; services moved online (where they could); and employees shifted to remote work environments. One clear lesson emerged as those events unfolded: agencies with agile, cloud-based infrastructures were better equipped to rapidly move services online, scale to serve increased citizen demand, and provide employees remote access quickly. Some agencies that couldn't accomplish those objectives put services on hold. Others made headlines as legacy systems crashed under the weight of overwhelming demand.

"Even when government buildings close, the cloud doesn't. People can run it, administer it, and keep it going from wherever they are around the world," says David Knox, group vice president of Solution Engineering, Oracle Public Sector.

Cloud has several other benefits, including reduced costs, better scalability, enhanced business continuity and disaster recovery protection, and automation — benefits that are especially helpful during times of reduced budgets. And surveys show government agencies are indeed moving to cloud in growing numbers. According to a recent survey, seven in 10 state IT leaders expect their agencies to shift the bulk of their IT investment funds toward a combination of cloud computing models over the next three years.[1]

But for some government agencies, a wholescale cloud migration isn't realistic. Certain agencies can't eliminate existing on-premises data centers, applications, databases and other systems they've used for decades, or they may be prevented from doing so by law or regulation. For others, years of customizations to existing IT infrastructures make it extremely difficult to migrate to cloud on a large scale. Government agencies that have existed for decades don't have the luxury of starting with a "clean white board" like a new business can. Yet reliance on legacy systems, which may appear to run fine today but can fall apart under sudden peaks in demand as many agencies saw when COVID-19 hit, isn't a solution either. Some level of modernization is important. So what options are available to agencies that can't make a wholescale migration to cloud?

The Hybrid Approach

Government agencies can't shut down to build a cloud infrastructure. They must work toward modernization and look for ways to increase capabilities in the cloud gradually. That's where a hybrid approach comes into play.

A hybrid approach to cloud, which combines both on-premises and cloud systems, allows agencies to reap the benefits of IT modernization while ensuring existing applications — even those that are heavily customized — can still be used. This provides agencies a commonsense approach to cloud and sets the stage for a series of incremental, bite-sized steps toward modernization.

"Maybe there is a new implementation they're looking at. They might put that into the cloud first, and have it tie back into their legacy systems," says Knox. "It's about building a logical, phased approach toward cloud with appropriate trade-offs when it comes to risk, cost, and time."

Alternatively, IT leaders might examine back-office systems used within their respective agencies, such as human capital management (HCM), financial, accounting, or supply chain systems. Migrating these types of systems to cloud can be a heavy lift, but they also tend to provide the highest return on investment.

Agencies that are prevented from putting data in the cloud by regulation can still reap the advantages of cloud by adding cloud services to their data centers — an approach Oracle calls Cloud@Customer. This strategy provides all the advantages of cloud — including lower costs, higher performance, and autonomous operations — yet allows an agency to maintain complete control of its data so it can address data sovereignty, security, and connectivity concerns.

"The idea is you take the best of both cloud and on-premises and marry them together. You get the best parts of cloud — automatic patching, better security, and the all-important data sovereignty — but you control all the data. Meanwhile, it integrates fully within your IT construct," says Knox.

Meeting in the Middle

A hybrid approach to cloud also provides agencies better choice and flexibility. For example, if migrating a system to cloud

means an agency must drastically change its processes, that can be a nonstarter.

"You could do it, but it would be a big change management issue. There's a lot of risk associated with it. And people will defer that decision for as long as possible," says Knox.

A hybrid approach means getting the benefits of cloud without having to make those types of broad changes. It also has several additional benefits:

Enables migration away from legacy systems. Legacy systems may run great today, but it's only a matter of time before problems arise.

"It's like a car that has a 100,000 miles on it," says Knox. "It runs fine most days but eventually you know there are going to be problems. It's better to get ahead of that than to be surprised by it."

Improves disaster response/business continuity. Traditional on-premises back up and disaster recovery (DR) approaches can double an agency's hardware and facility costs. Unfortunately, that sometimes means agencies forgo these systems. Using cloud-based backup and DR allows agencies to augment on-premises systems and ensure failover during an unexpected event without the expense of an additional on-premises back up facility.

Enables newer technologies and innovation. An agency with a cloud-based infrastructure is also better positioned to take advantage of newer technologies like Autonomous Transaction Processing (ATP) and Blockchain. ATP is a cloud database service that eliminates the complexity of operating and securing high-performance databases and can help government agencies drive cost and operational efficiencies. Blockchain, with its immutable distributed ledger technology, has many potential applications within government. Recently, some health and human services agencies have used blockchain to experiment with in-home COVID-19 tests for residents. Blockchain can ensure those agencies receive secure data from citizens that hasn't been compromised.

Improves security. Demand for IT security professionals in state and local government is high, yet supply is low. Cloud can help agencies that don't have the resources to protect themselves from the growing number of cybersecurity threats aimed at government.

Within government, thousands of agencies own Oracle's signature on-premises or cloud-hosted database products. Oracle has created a new service called Data Safe to unify and integrate multiple advanced security technologies onto a "single pane of glass," mitigating the risk of data breaches from intruders or human error.

"Data Safe does the hard stuff and allows you to understand the sensitivity of your data so you can apply the right level of security controls to protect it. This is the heart of security risk and compliance. Data Safe unifies several parts of the security continuum in a complimentary way that allows agencies to better protect themselves from cyber threats," says Knox.

1. https://statescoop.com/state-agency-leaders-focusing-more-on-cloud-it-investments-survey-says/

DEFINING HYBRID

Hybrid has become a buzzword over the last several years. But what does hybrid mean when it comes to IT systems? Hybrid is used to describe several approaches, including situations where:

☑ Some systems are in the cloud; some are on-premises.

☑ Some systems comprise several clouds from multiple cloud service providers.

☑ Some applications are composed of components strategically scattered. For instance, Oracle can be running the database portion, with another vendor hosting pieces and parts of the application. Each workload is optimized for maximum performance. Data centers with co-located applications are an example of this use case, with a goal of avoiding latency issues.

☑ An environment that employs two of more of the above scenarios.

Adapting to a Hybrid Future

Going forward, most government agencies will likely rely on a combination of cloud models — including government-only community clouds, commercial clouds or a hybrid approach — rather than solely on on-premises, government-run data centers. For some, both will be necessary. Just as agencies have used multiple vendors to meet their various IT needs over the years, those agencies will likely combine different cloud providers and legacy, on-premises systems to meet their needs going forward.

Oracle's experience and expertise both with on-premises data centers and cloud uniquely positions it to provide state and local governments a practical pathway to a hybrid cloud environment. For example, Oracle and Microsoft recently formed a cloud interoperability partnership that delivers direct, fast and highly reliable network connectivity between two clouds. These types of cloud-to-cloud and cloud-to-hybrid connections will allow agencies to move data between systems faster while maintaining the highest levels of security.

"This is an excellent example of where we're going in the future," says Knox. "It's about cooperation and ensuring consistency in how cloud, on-premises, and everything else an agency needs to use to deliver on its mission works together to enable better citizen service, stronger resiliency, more flexibility, and innovation no matter what circumstances the world is dealing with."

For more information on Oracle next-gen cloud solutions, visit **oracle.com/stateandlocal**

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