First Mover: The Georgia Department of Revenue's Cloud Migration

Tasked with processing tax returns and other revenues every year, the Georgia Department of Revenue's (DOR) integrated tax solution (ITS) is the definition of a mission-critical system.

Over the years, DOR had made considerable investments in on-premises infrastructure to support ITS, including capacity within its data center to accommodate seasonal tax filing deadlines and a redundant footprint at a remote data center for disaster recovery. As the hardware powering the system approached the end of its useful life, department leaders faced a decision on modernization strategy.

Simply replacing the existing data center hardware and storage wouldn't yield the improvements DOR needed. Instead, Georgia became the first state to migrate its tax system to the cloud, opting in 2020 to work with Amazon Web Services (AWS) Cloud infrastructure and services.

"Our department wanted to go toward a solution agile enough to meet changing needs," says Ananias Williams III, the department's CIO. "Looking collectively at disaster recovery, compliance, and the business and technology processes—all of those together drove the decision."

The success of DOR's cloud migration, completed in 2021, is now informing modernization efforts statewide.

"The department started the trend. Now, we're looking at the moves they've made as a blueprint for the rest of the state," says Dmitry Kagansky, chief technology officer for the Georgia Technology Authority (GTA), which provides IT infrastructure services to more than 1,200 state and local government entities across Georgia's 159 counties.

The move to the cloud

DOR launched the ITS migration in March 2020 and needed to wrap up the project in time for the 2021 tax season early the following year.

The department, in collaboration with the governor's office and GTA, had to determine requirements for the project and develop a strategy to move ITS, its underlying database structure, and existing data stores to the cloud. At the same time, new rules for the upcoming tax season needed to be incorporated into the system.

In response, the department adopted an agile project management approach to address infrastructure, data, and applications in tandem. That agility was tested when the pandemic shifted the state and its vendors to remote work almost immediately after they kicked off the project.

To augment internal staff capacity and meet project requirements and timelines, DOR used Amazon Managed Services (AMS) to provide a dedicated cloud architect and professional services to help define security and connectivity requirements for the project. AMS also trained the department's staff to manage and support the new environment while workers were still remote.

Given the tight schedule and mission-critical nature of the system, the ability to create instances for testing using AWS CloudFormation templates proved invaluable as the department began migrating its data to the cloud. DOR conducted more than a half-dozen full-scale trials and countless smaller tests to make sure the tax application and data would work smoothly within the new cloud platform.

"That was one benefit of the cloud—we could spin up as much architecture as we needed," says Kagansky. "In an on-premises environment, that wouldn't have been possible without buying a lot of hardware."

The AWS architecture also allowed DOR to conduct trials simultaneously, greatly reducing the testing timelines. The system went live on schedule in February 2021, in time to process returns ahead of spring tax deadlines.

"We knew we could convert over to the cloud without any disruptions to the business or disruptions to our customers," Williams says.

The results: Cost savings and flexibility

DOR has seen lower costs and measurable improvements, including the flexibility to scale the environment during tax season. DOR also benefited from migrating to the newest generation of Amazon's storage services.

DOR strengthened resilience by distributing components of ITS across multiple availability zones. The department uses AWS services to monitor systems, automate backups, and adjust cloud resources as tax deadlines ebb and flow over the year.

Lessons learned

Kagansky and Williams point to several key lessons learned during the project.

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Experiment. One undervalued benefit of the cloud, Kagansky says, is the ability to rapidly iterate and test changes. "The one thing I stress with all agencies is that a lot of these changes aren't permanent—you can try different avenues," he says. "I liken it to one-way versus two-way doors. The cloud gives you a lot of two-way doors you can back out of."

Establish partnerships. The ITS project required clearly defined roles and a commitment to collaboration among DOR, GTA, the governor's office, AWS, and system vendors. "Collaboration sets the path," Williams says. "Working together to establish that network connectivity, data resilience, security, compliance, and data migration sets the path for ongoing maintenance and support."

Focus on processes. Cloud migration provides opportunities to rethink workflows and roles as well as technology, according to Williams. "It allows the agency to be agile and process driven, and to step forward into services that would help enable various teams to do their job in supporting the mission."

A statewide shift to cloud

The lessons learned from the ITS cloud migration are being replicated across other DOR systems and workflows—and in other departments.

"ITS set the stage with a blueprint for establishing the infrastructure and security controls, backup, and redundancy, and we are able to leverage it for other systems as well," Williams says.

In September 2022, the department modernized user interfaces for its public-facing systems and is planning additional constituent services, including chatbots capable of handling resident inquiries about tax refunds and other services.

Similar efforts are taking place statewide. The Georgia Department of Human Services is migrating systems to the cloud, and GTA is working with other large executive branch agencies.

"About a dozen agencies are in various stages of cloud migration," Kagansky says. "They have been taking what DOR has done and essentially cookie-cutting it. That kind of awareness gets everyone else motivated to do these projects."

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