Life in the Cloud: The State of Alaska and Rapid Cloud Migration

State of Alaska | Office of Information Technology

Award Category | Enterprise IT Management Initiatives
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OFFICE OF INFORMATION TECHNOLOGY
One government, empowered by innovative technical collaboration

Executive Summary

State of Alaska | Office of Information Technology

Over the past six years, the Office of Information Technology (OIT) has continued to mature as the enterprise IT organization for the State of Alaska. Originally established through an administrative order in 2017, OIT manages the telecommunication and information technology services within the executive branch and provides enterprise solutions to fifteen State of Alaska (SOA) departments.

Under the direction of the State's Chief Information Officer, OIT is responsible for enterprise IT policy and governance, applications, information security, and network connectivity. Since 2020, OIT has aggressively pursued new opportunities to improve IT administrative productivity through the implementation of large, statewide projects that enable standard processes and data integration.
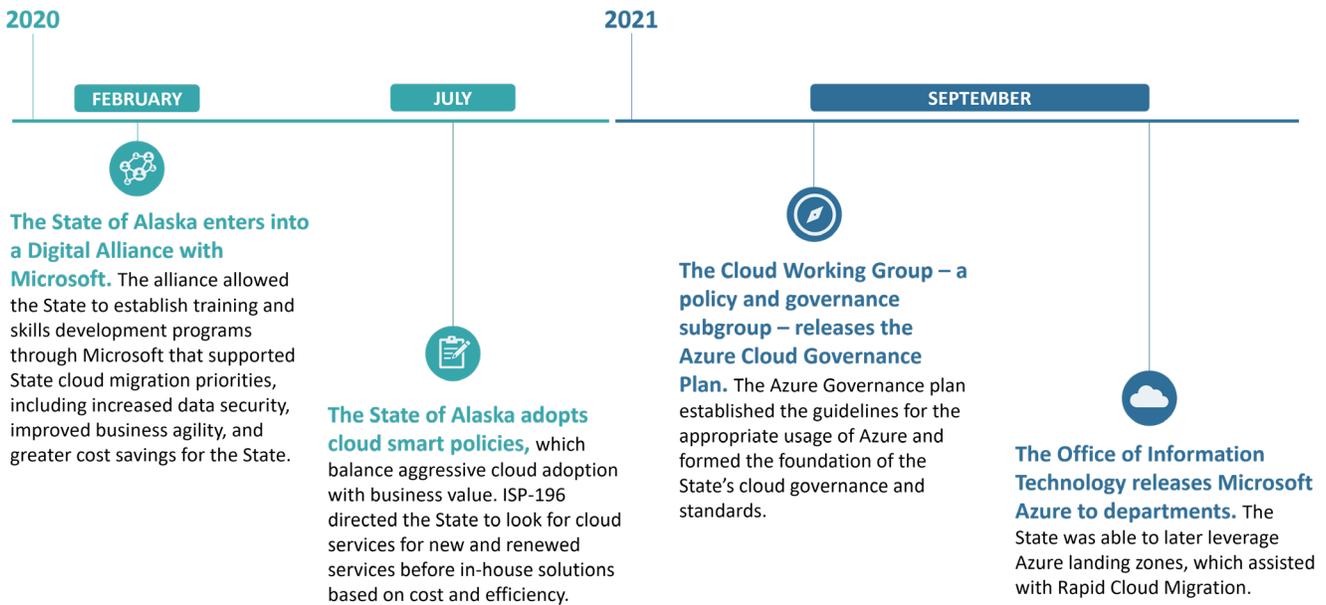
Unique IT Challenges in Alaska

Alaska is a state of charming contradictions, no doubt exemplified by being the largest state geographically while also the 3rd least populated. As such, the IT needs of the over 14,000 State of Alaska employees are diverse. When coupled with the challenging terrain and environmental elements of the state – including earthquakes, volcanoes, sea ice, and forest fires – the building, operation, and maintenance of IT infrastructure creates additional challenges. OIT is responsible for ensuring that enterprise solutions are flexible enough to accommodate Alaska's unique state government IT needs.

The Case for IT Change: Rapid Cloud Migration

How It Started

Taking Advantage of Opportunities: Governance, Training, and Capability

Rapid Cloud Migration is a byproduct of several initiatives aimed at reducing the State of Alaska's on-premise risk. Building on the foundations of cloud-specific governance, training, and Azure connectivity ensured that Rapid Cloud Migration implementation could occur as soon as the time, funding, and organizational focus challenges were addressed.

2020

FEBRUARY

The State of Alaska enters into a Digital Alliance with Microsoft. The alliance allowed the State to establish training and skills development programs through Microsoft that supported State cloud migration priorities, including increased data security, improved business agility, and greater cost savings for the State.

JULY

The State of Alaska adopts cloud smart policies, which balance aggressive cloud adoption with business value. ISP-196 directed the State to look for cloud services for new and renewed services before in-house solutions based on cost and efficiency.

2021

SEPTEMBER

The Cloud Working Group – a policy and governance subgroup – releases the Azure Cloud Governance Plan. The Azure Governance plan established the guidelines for the appropriate usage of Azure and formed the foundation of the State's cloud governance and standards.

The Office of Information Technology releases Microsoft Azure to departments. The State was able to later leverage Azure landing zones, which assisted with Rapid Cloud Migration.

Microsoft Azure Cloud services were available to all SOA departments starting in 2021; however, most department servers and applications remained on premise in Juneau and Anchorage. The heavy reliance on on-premise servers

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increased security risks, made technical debt eradication difficult, limited resilience, and often obscured total cost of ownership.

Initial Challenges: Time, Funding, and Statewide Focus

It was clear that an enterprise approach was necessary if OIT wanted to implement Rapid Cloud Migration, but the complexity of the large-scale effort – including application discovery and compliance requirement reviews – necessitated buy in from busy department leadership and line-of-business IT staff already tasked with department-level, mission critical projects and initiatives.

> *For Rapid Cloud Migration to be successful, OIT needed to lead the migration effort and work with carefully chosen external partners.*

Funding resources were needed for an application validation technology platform and for vendors to assist with infrastructure, discovery and analysis, and migration lifts. The Governor advocated for critical funding, and it was supported by the Alaska State Legislature – setting the stage for success.

> *Successful deployment of Rapid Cloud Migration required resources to be added into the Governor's budget and to be appropriated by the Alaska State Legislature.*

Rapid Cloud Migration was an enterprise initiative – spanning across all executive branch departments – and needed strong executive sponsorship to encourage departments to participate and provide the necessary line-of-business IT staff to make the effort successful.

> *Support from the Governor and the Governor's Office was key to Rapid Cloud Migration success within the State of Alaska.*

"At the heart of this initiative is our commitment to modernize and secure Alaska's digital landscape. By transitioning to cloud technology, we are not only ensuring the safety of our citizen's data but also paving the way for a more efficient and flexible government. **We are striving to be at the forefront of digital innovation, and cloud migration is an important step.**"

– Governor Mike Dunleavy, January 10, 2024, Press Release

Project Description

Idea: The State of Alaska is a Cloud Smart State

The Problem / The Opportunity

For two years the State of Alaska had limited success migrating applications and workloads into the Microsoft Azure Cloud-Native environment. Moving applications from on premise to cloud-native often required significant infrastructure modernization. In the face of such obstacles, OIT often received feedback that moving applications to the cloud would "take too much time" or "be impossible".

Rapid Cloud Migration was an opportunity for the State of Alaska to break cloud migration into more manageable chunks by removing our infrastructure deficits and focusing instead on using the Azure VMWare Solution Platform to conduct a rapid "lift and shift" of existing servers. This allowed the State of Alaska to move line-of-business applications from servers in Anchorage and Juneau to the cloud, followed by more deliberate modernization and life cycle management activities over time. This approach achieved our project goals and provided a robust environment for future growth.

Why It Matters

The primary objective of Rapid Cloud Migration was to reduce on-premise risk. This included improving our data resiliency in the event of natural disasters, reducing storage costs, and vastly improving the security of our data from hackers and other malicious actors – all without any noticeable changes to the end user experience when using impacted applications.

Security

Migrating servers to the cloud provides next-level physically secured facilities, access to teams of cybersecurity experts, and customer managed encryption keys.

Resilience

Migrating servers to the cloud backs up our information across multiple secured data centers within the continental US, ensuring that our data is readily available, even in the event of a localized natural disaster.

Cost

On-premise servers use up space, electricity, and state staff resources. Migrating servers to the cloud allows the State of Alaska to leverage expertise and capacity at a transparent price.

What Makes It Universal

At its core, Rapid Cloud Migration is another tool to address the expanding IT needs of state government. While no single IT solution is right for all circumstances, OIT's continual evolution to respond to cybersecurity and risk management issues; legacy modernization; and consolidation and optimization challenges through cloud service utilization is something we believe all states can relate to. This project also aligns with many of NASCIO's CIO Top 10 Priorities.

"Migrating State servers to the cloud isn't just a leap forward for State agencies; it is a leap forward for Alaskans. The resulting enhancements in security, reliability, access, and safety are an improvement for us all. **Our data will be secure and State services will be more reliable and accessible for Alaskans.**"

– Paula Vrana, Department of Administration Commissioner

Implementation: Life in the Cloud Requires Adequate Supports

The scope of the project included all 4,400 executive branch servers and the goal was to migrate everything that could technically move, while maintaining minimal interruption to public services, judiciously using the time of department line-of-business staff, and meeting compliance requirements for each department.

The Team

Key Groups| Rapid Cloud Migration

Governor Supported Initiative | Department of Administration Commissioner Supported Initiative

Project Team

State of Alaska | Office of Information Technology

Vendor Partner | VMWare

Vendor Partner | Planet Technologies

Vendor Partner | Microsoft Pro Services

DTOs + Others Involved

State of Alaska | Department Technology Officers (DTOs) – (*department OIT/IT representatives*)

State of Alaska | Department Commissioners, Administrative Services Directors, and others

App SMEs + Owners Involved

State of Alaska | Department line-of-business staff (*application subject matter experts and application owners*)

Rapid Cloud Migration involved a core project team and department focused teams.

The core project team was comprised of OIT – acting as the State of Alaska project management lead for this project – and two primary vendor partners, VMWare and Planet Technologies. Both VMWare and Planet Technologies were crucial partners in successfully implementing Rapid Cloud Migration as they provided consulting, communications, software platform support, training, and change management tools to keep this project within scope and budget. VMWare also led the discovery interviews further detailed below. Microsoft Pro Services significantly helped with communication planning, troubleshooting, and solutioning several technical issues and provided guidance in meeting industry compliance standards.

The project team worked with Department Technology Officers and department leadership to communicate about important elements of the project and to facilitate access to the application subject matter experts.

Rapid Cloud Migration would not have been possible without access to the department line-of-business staff who were the application subject matter experts and application owners. Leveraging their expertise, knowledge, and feedback was critical to the success of the State of Alaska's Rapid Cloud Migration effort. From initial interviews to each migration event, line-of-business staff invested time and energy (in addition to their regular duties) to ensure that the applications that could move to the cloud, did move to the cloud.

The Roadmap

The project team knew that successful implementation would involve an assessment of all executive branch servers and the migration of all servers that could technically move. The Rapid Cloud Migration Roadmap was created and shared with all stakeholders. The roadmap illustrates the iterative steps in the process and shows who is involved with each phase.
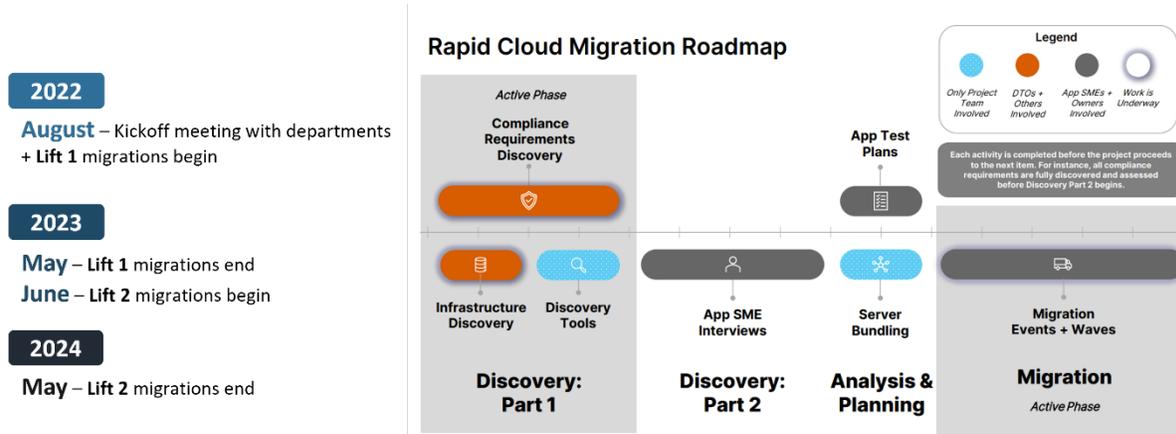
Rapid Cloud Migration Roadmap: Discovery

During this phase of the roadmap, the project team asked each department to compile a list of applications and application subject matter experts and owners. The VMWare transition team led discovery interviews with each application subject matter expert – ranging from an ½ hour to 2 hours – to better understand the risks and dependencies for each application.

Rapid Cloud Migration Roadmap: Analysis & Planning

The project team used discovery tools, such as VMWare's vRealize Network Insight (VRNI), to better understand and verify which servers were codependent on each other. Servers to be migrated were then "bundled" to reduce latency issues.

Rapid Cloud Migration Roadmap: Migration Events and Waves

During this final phase of the roadmap, the project team worked with department line-of-business IT leads to migrate applications in twelve separate "events" or "waves". The twelve migration waves were held during weekly maintenance windows, which eliminated any additional down time for services. This phase also included the testing of applications after they were migrated.

> "**The Cloud project has given us greater visibility on our assets and allowed us to almost eliminate our physical server footprint.** It has moved us closer to implementing a virtual desktop solution for our engineers and architects, and it has created resource scalability to support our rapidly growing Unmanned Aerial Vehicle (Drone) program, which captures ever growing amounts of LiDar, point cloud, and high-definition videos."
>
> *– Dom Pannone, Administrative Services Director, **Alaska Department of Transportation and Public Facilities***

How We Did It

Rapid Cloud Migration was broken up into two, 9-month lifts, each composed of several waves. The final migration event occurred on May 22, 2024.

Lift 1 focused on the 1,900 servers located in on-premise data centers in Anchorage and Juneau. Lift 2 focused on the 2,500 remaining servers throughout the state. Each wave was preceded by application discovery, which allowed the teams to troubleshoot any issues prior to migration day.

The Rapid Cloud Migration project included time-limited funding for operational cloud consumption, allowing the project team to rightsize cloud services, for department budget teams to address the new enterprise chargeback model, and for infrastructure teams to identity which on-premise resources and facilities can be decommissioned.
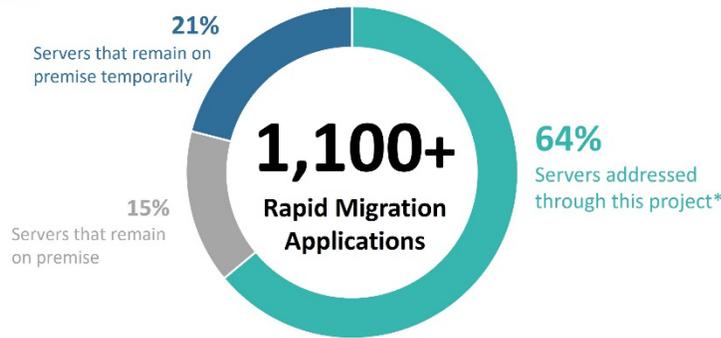
Why We Did It

By migrating applications to the cloud, the State of Alaska will be better positioned to apply data center best practices across platforms, including establishing resiliency, exploring easily distributable cybersecurity controls, rapid access to evolving technology, and increasing the transparency around data center costs.

Impact: Life in the Cloud

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Where We Are Now | Cloud Migration

21%
Servers that remain on premise temporarily

1,100+
Rapid Migration Applications

64%
Servers addressed through this project*

15%
Servers that remain on premise

*includes servers migrated through rapid cloud migration, standard migration, or servers that were decommissioned through the discovery and analysis process

Where We Are Now

Rapid Cloud Migration implementation was a fundamental shift in how the State of Alaska approached cloud migration. With executive support, OIT project management, and funding allocations, the State of Alaska was able to:

- **Assess all 4,400 executive branch servers** and migrate everything that could technically move in its present state;
- **Ensure minimal interruption** to public services;
- **Leverage vendor partnerships** to judiciously use department line-of-business IT staff time; and
- **Meet all compliance requirements**, while reducing on-premise risk.

Benefits We Can See

Rapid Cloud Migration included several tangible successes over the last 21 months, including **the rapid migration of over 1,100 applications**. Each Rapid Cloud Migration brought the State of Alaska closer to its goal of reducing on-premise risk

as well as technical debt. The State of Alaska's Rapid Cloud Migration project stayed on budget and was completed within 90 days of the target schedule.

Rapid Cloud Migration also brought the State significant additional value:

- **Enterprise Inventory:** As part of the Rapid Cloud Migration project, the State of Alaska now has a current inventory of statewide servers, applications, and owners. The State plans on exploring processes to ensure that this inventory remains updated and useful.
- **Immutable Storage for AVS Servers:** Immutable storage is a strong defense against ransomware. Through Rapid Cloud Migration, the State of Alaska has access to this valuable security tool.
- **Azure AI Proximity:** As Microsoft continues to make AI tools available to organizations in the cloud, the State of Alaska is now positioned to take advantage of AI tools more readily due to the Rapid Cloud Migration efforts of the past two years.

Up Next

Now that the State of Alaska's Rapid Cloud Migration project has ended, the State is moving to consolidate remaining on-premise systems and to reinforce security documentation to support the next wave of modernization efforts. OIT will continue to track and migrate the 21% of servers which remained on premise for temporary reasons, such as old code, bandwidth or latency requirements, and compliance requirements that could not be addressed through the Rapid Cloud Migration project.

Departments will continue to maximize the initial investments in Rapid Cloud Migration by working towards refactoring servers into more modern cloud platforms (Platform as a Service).

Rapidly moving to the Azure cloud was the first step of the journey. We are now building new resources in the cloud as a routine matter (over 200 cloud native servers during the rapid migration project), and initiating efforts to establish enterprise environments with other cloud providers.

> "Building trust was essential to the success of Rapid Cloud Migration. As we started to have successful migrations, departments could see that they could trust us to move the systems that they were the custodians of and to respond to any issues that popped up. **The interagency trust we established will help with future systems improvements, which will benefit all Alaskans.**"
>
> – Joe Butler, Cloud Governance and Innovation Manager, *Office of Information Technology*

> "Rapid Cloud Migration is a major milestone towards cloud optimization and allows us to make a major step forward in resiliency and to immediately begin to leverage security tools that are now cost proportional to the workload, whereas those tools were previously cost prohibitive in an on-premise environment. **We're able to better deliver to Alaskans the security that they expect at a more affordable price.** We still have work to do, but we have a good toolset to do it with."
>
> – Leonard Robertson, Acting CISO, *State Security Office*

We are creating a true multi-cloud, hybrid environment that provides security, resilience, and rapid access to emerging technology not previously available.