

Beyond Cloud Smart: **How to Optimize Your Cloud Journey**

govloop aws CDW

Introduction

Federal organizations have been working to optimize their cloud capabilities since 2011 when the Cloud First policy came out. For some organizations, optimization means lifting and shifting workloads and applications, while others are taking a cloud-native approach. Whatever the approach, the optimization process is lengthy but critical for mission success.

Today, many agencies still have a way to go on their cloud journeys. The Cloud Smart strategy that the Office of Management and Budget released in 2018 recognizes and addresses this. Where Cloud First gave agencies authority to adopt cloud solutions, Cloud Smart provides "practical implementation guidance for Government missions to fully actualize the promise and potential of cloud-based technologies while ensuring thoughtful execution that incorporates practical realities."

Still, that guidance may not go far enough in helping agencies achieve the operational excellence possible with the cloud. The strategies empower agencies to adopt cloud and tell them how to do it, but that is still not optimizing it. To understand that crucial aspect, GovLoop partnered with CDW, a leading multi-brand provider of IT solutions, and Amazon Web Services (AWS) to create this playbook. You'll learn three ways to truly make the most of the cloud.

Need to Know

4 Challenges to Realizing Cloud Benefits

Ensuring cybersecurity

Procuring cloud services

Maintaining a skilled workforce

Tracking costs and savings

(Source: Government Accountability Office)

Funding is a major factor in how much agencies can optimize cloud environments.

54%

the number of public-sector chief information officers who said they'd increase cloud spending at the beginning of 2022. Only 35% said they would decrease spending on legacy IT (Source: PluralSight)

$100 billion

the amount the federal government spent on IT in fiscal 2022. Only $12 billion went to cloud services, while more than half went to maintaining legacy IT

(Source: Center for Strategic and International Studies)

$200 million

the amount requested in the fiscal 2024 budget for the Technology Modernization Fund

(General Services Administration)

Prep work is crucial to cloud optimization.

62%

the amount of survey respondents who said optimizing existing use of the cloud is their top priority

(Source: Flexera)

84%

the amount of survey respondents who cite optimizing cloud costs and governance as top challenges

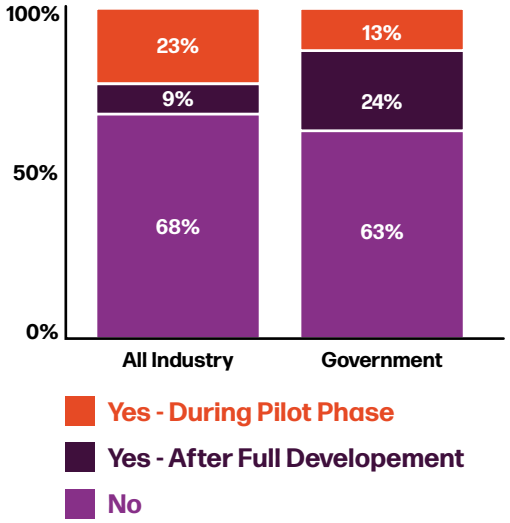
(Source: Flexera)

62%

the amount of cloud professionals and senior executives who say the best time to address cloud complexity is before migration

(Source: Deloitte)

Government Cloud Failures



(Source: Gartner)

THE PLAYBOOK

3 Steps Toward Cloud Optimization

Adopting the cloud involves a multi-step journey, and following a well-thought-out strategy can pave the way to mission success. But that doesn't mean it must always be linear. You can begin this journey wherever you are, and you can move among the phases as needed to ensure you can continue on the path to operational excellence. Here are the three must-have stages to optimize your cloud environment:



1 Assess, Discover and Migrate

At this stage, you evaluate your existing environment and strategize your migration. Here's a breakdown of each step:

Assess

Start by examining your overall cloud readiness. This is a strategic review. "We're not getting into bits and bytes at this stage, but looking at how they've been running their operations and what their goals as well as the organizational readiness for cloud operations," said Asim Iqbal, Chief Technology Officer at Enquizit, which CDW acquired in June 2023.

Discover and Plan

At this stage in the process, we begin to get more technical. Conduct discovery on your digital assets by deploying a virtual device that can scan all your machines and collect data about how many there are, what operating systems they use, how up to date they are and what frameworks are in play. "That also gives a picture of which machines and applications are starved for resources and which are way over-provisioned," Iqbal said.

As part of this, establish a cloud migration strategy based on the agency's mission. "Look at how whatever we're proposing, whatever we're assessing, serves the mission," Iqbal said. Then look at each application and its expected lifespan, how critical it is, how often it's used and how much friction it introduces for the human at the end of the chain who's consuming the service.

Be sure to include all stakeholders – the security, operations, business and IT teams – in developing the strategy and a migration prioritization that works for everyone, he added.

From this process emerges a comprehensive migration plan, detailing the pace at which applications will be moved. "Rather than starting with a blank slate and asking, 'What would you like to migrate first?' we've developed a formula based on prioritization," he said.

Migrate

Finally, determine which machines and applications are ready for cloud migration based on agreed upon criteria. For instance, built in house or is a COTS (commercial off the shelf) product? "The investment one might make in application A vs. B is going to be very different," Iqbal said.

Another consideration is staff training. If employees are not trained and ready to use the cloud, that creates bottlenecks in migration. "Start skill assessment of the staff that is going to take over the operations … game day minus six months" before migrating, he said. "They're going to need time to train, so require your vendor to engage your team so they can see hands-on how this is done."

5 Ways Government CIOs Can Optimize Cloud Deployment

1. Create a policy, strategy and adoption plan that unites the intent, direction and a roadmap of the cloud migration to reduce ambiguity.

2. Establish a cloud center of excellence that has a knowledge base and code repository that units organizationwide can contribute to.

3. Build essential skills for cloud management and architectures to support hiring and retention of cloud-savvy employees.

4. Expand use of software-as-a-service, but ensure you have a management and integration plan.

5. Increase the adoption of cloud policy enterprisewide because a cloud-first policy does not affect only the IT department.

(Source: Gartner)

2 Code Optimization

In the next step of the process, you evaluate and refine your applications and code for cloud compatibility. Here's a breakdown of its significance and importance, and strategies to overcome potential challenges:

What is code optimization?

"Code optimization is the process of analyzing and refining applications and their underlying code to make them more efficient, scalable and cost-effective in a cloud environment," said Alex Vega, Principal Field Solutions Architect for Cloud Native and Digital Velocity at CDW. "This phase is centered around pinpointing opportunities for improvement, such as boosting process efficiency, lowering resource use and elevating overall performance. At this stage, organizations typically determine which aspects to maintain, revise or phase out."

Why is code optimization important?

Code optimization and modernization offer several advantages. Three of the most common reasons organizations do this are to increase velocity, improve the user and customer experiences, and enhance efficiency – but there are other benefits, too. For example, they enhance an organization's ability to scale, improve application performance, reduce operational costs and enhance security. "They also enable the adoption of cloud-native technologies, which can lead to greater agility and innovation," Vega said. "Ultimately, modernization helps agencies stay competitive and responsive to evolving user needs."

Still, it's not simple to do. Agencies often run into challenges related to legacy code, technical debt and application complexity, he said. As a result, they may struggle to identify which parts of the code base need optimization, face integration issues and determine the best ways to align modernization efforts with business objectives. "Authors of the code may no longer be at the organization, and this poses challenges with modernization efforts," Vega said.

What's necessary for code optimization?

DevOps plays a pivotal role in application modernization. It encourages collaboration among development and operations teams and shortens development times, meaning agencies can optimize their cloud environments sooner. This results in a better experience for both customers and employees. Organizations see a 20% increase in DevOps team productivity when they adopt hybrid cloud platforms to support application modernization, according to Red Hat.

"It's important to note that modernization efforts can benefit from a broader perspective encompassing what I like to call 'X-Ops,' which includes DevOps, FinOps, GitOps and other relevant practices," Vega said. "This holistic approach ensures that modernization aligns with organizational goals, maximizes efficiency and delivers value across the entire application lifecycle. In the declarative world we live in today, application rationalization can benefit organizations by streamlining their software portfolios, aligning IT capabilities with business goals and driving cost efficiencies."



3 Cloud FinOps

At this point, you're ready to bring financial discipline to your cloud operations, with financial analysis and reporting, and to look for ways to drive cost savings. This is called FinOps. Here's what to know:

Understand and identify cloud waste.

Cloud waste occurs when cloud services are under-used or not used at all used, and it's a big problem. One-third of cloud spending is estimated to be wasted, according to Forbes. And only three out of every 10 organizations know where their cloud spending is going, according to CloudZero.

Examples of cloud waste:

- You use only 10% of your cloud-based virtual machines' capacity. You're paying for more than you need.
- Applications need to run in the cloud on weekdays from 9 a.m. to 5 p.m., but you're paying to run them around the clock.
- Employees turn off virtual machines but not their associated storage. You're paying for the zombie storage accounts or orphaned storage.

"It leads to a tremendous amount of operational inefficiencies," said Chris Pyle, Vice President of Inscape's Cloud Management platform for CDW. "There's absolute financial impact, but agencies should also look at the environmental impact. You're consuming all this energy; it's spewing out carbon emissions. By optimizing your cloud resources, you can mitigate the impact to the environment."

Control cloud waste.

Agencies face two main challenges with cloud waste and FinOps optimization:

- **Lack of visibility into what they're using**: "Establish a baseline of what you're spending today, how you're spending it, who is spending it and what are the biggest consumers, and then determine how to attack it as a team," Pyle said.
- **Operating in a vacuum:** "When you're looking at reining in cloud spend, it's absolutely a team sport," he said. "How do we go about making the best purchasing decisions for the agencies? People, process and technology. You can't have one leg of the stool and not the other two, because you'll fall, and so you need to bring in the people who are going to be involved, the process you're going to use and the technology you're going to use to get the visibility and the optimization opportunities."

Which tech is most helpful?

Technology can provide visibility to best allow for cost allocation. You want a setup that:

- Provides a single dashboard from which to manage all cloud providers
- Recommends ways to improve productivity, reduce costs and mitigate threats in the cloud
- Finds and alerts you to cost anomalies
- Uses a cloud maturity score based on cost, security, availability and performance and measured against comparable agencies

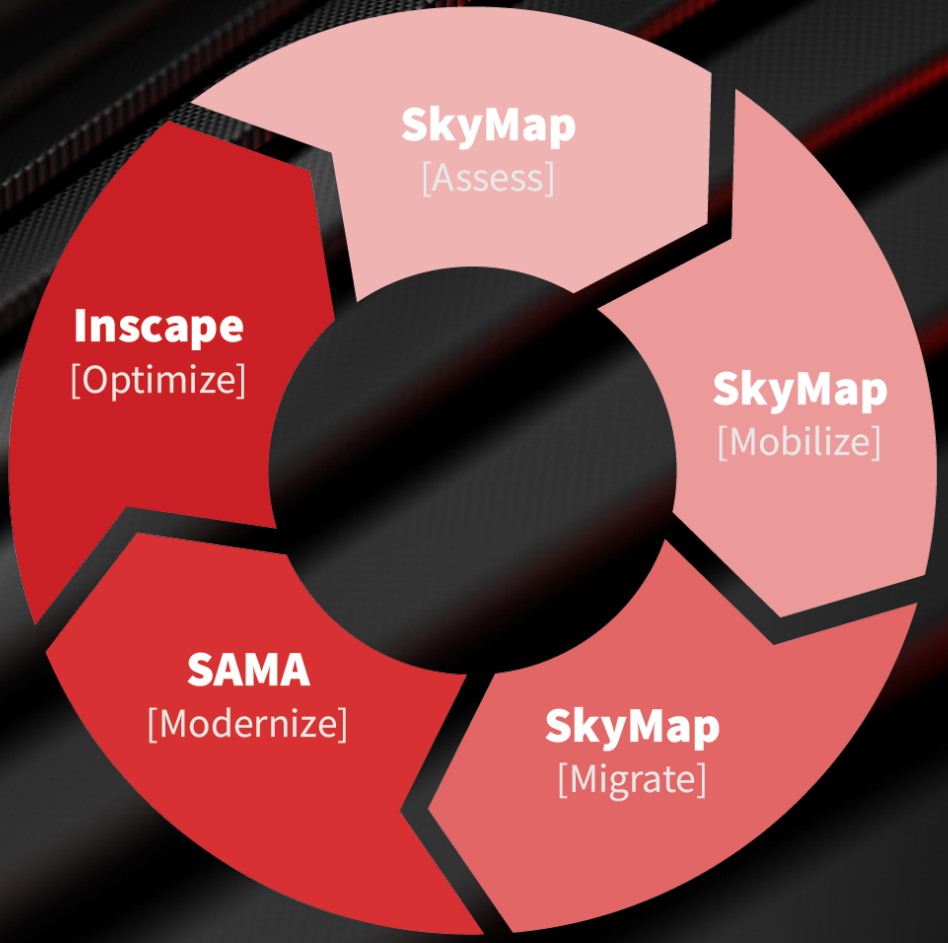
Pyle recommends that agencies apply the principles of the FinOps Foundation, an organization "dedicated to advancing people who practice the discipline of cloud financial management through best practices, education and standards." It offers training and certification programs that can help agencies achieve operational and financial excellence in the cloud.



Get Cloud Smart With CDW

The goal is not just to get to the cloud, it's achieving operational excellence once you're there. That takes planning, staff training and monitoring.

With Cloud Smart technologies like SAMA, Skymap and Inscape, CDW has the solutions you need to make the most of your cloud environment and investment.



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Solutions Spotlight: Guides for Your Cloud Journey

For each stage of the cloud journey, CDW has solutions to help agencies achieve success.

For Assessing, Planning and Migrating: SkyMap

Developed by Enquizit, an AWS premier consulting partner (and a CDW company), this proprietary migration management tool helps customers map out a process for moving machines and applications to the AWS cloud. It eliminates the guesswork by codifying the plan for everyone to see and accelerates migration by keeping everyone on pace with an optimized, cost-efficient path to the cloud.

First, SkyMap conducts a readiness assessment. It establishes the current state and analyzes existing assets, the resources needed to achieve the desired cloud state and the tools required to be successful after migration. Enquizit has amassed a decade's worth of migration data and fed it into SkyMap's machine learning (ML) engine, which drives the process. The assessment provides customers with a readiness score and estimates for the people and budget needed.

Second, SkyMap coordinates and unifies the discovery process. The tool analyzes gaps to be addressed pre-migration and prioritizes tech assets in your organization for a no-drama, no-surprises migration. It provides a dashboard where everyone can see who is responsible for the given tasks based on their role.

Third, to migrate according to the plan, SkyMap continually tracks the project phases, timelines and progress to ensure an updated and transparent view of the project is available to all stakeholders.



For Optimizing Code: Strategic Application Modernization Assessment (SAMA)

CDW's SAMA helps bring legacy systems up to speed, futureproof applications and maximize return on investment by determining what an agency could achieve if it had less technical debt and more efficiency and scalability.

SAMA can:

- Analyze more than 1,000 applications using custom reporting and analysis tools
- Recognize more than 40 programming languages and understand applications on mainframes
- Provide insight for seven functional areas, including application security, complexity, compliance, and continuous integration and continuous deployment

By using this cutting-edge scanning technology, agencies remove the need for time-consuming interviews with staff to discover information about applications' age, security and complexity, and more, to provide six outcomes for every application: refactor, rewrite, replatform, retire, rehost or retain.

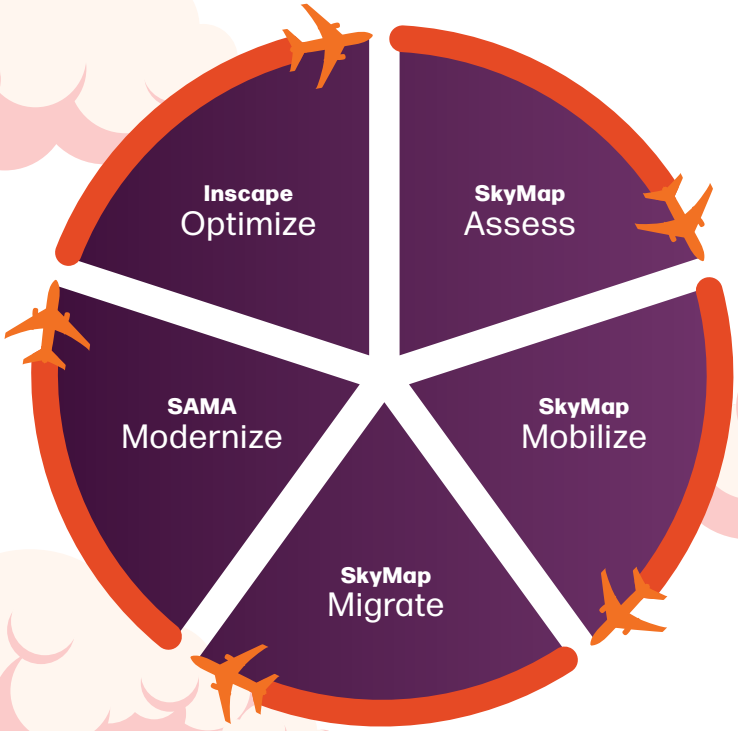
To fuel digital transformation, it is important that assessments look at environments from a software standpoint rather than taking an infrastructure-centric approach. What's more, SAMA takes a DevOps approach to the assessment, resulting in a better understanding of existing employees' skill sets, how current practices align with a DevOps approach and what barriers stand in the way of successful DevOps implementation.

For FinOps: Inscape

Inscape is a cloud and software-as-a-service management platform that gives you the information you need to make better decisions, and the tools you need to implement them quickly. With it, agencies get cost visibility across their AWS environments and can allocate and budget for cloud costs by department, lines of business or application; detect cost anomalies; and get recommendations on cost expectations and cloud maturity.

Six benefits of Inscape are:

1. A clear view of your cloud spending and savings across departments
2. Intelligent data with pre-built graphs and charts
3. Analysis of your cloud spending to see all moving parts and clouds at once
4. Personalized recommendations that can save money
5. Multicloud budgeting
6. Tracking weekly and monthly cloud commitments across vendors



Vision
To create the most compelling customer experience for cloud transformation in the industry.

How
By integrating 3 disparate IP sets into a single solution offer, CDW has an opportunity to capture a higher value and volume of cloud transformation projects across all segments and verticals.

SkyMap
Acquired with Enquizit, SkyMap is focused on AWS assessment and migration with some modules that address infrastructure modernization.

SAMA
Acquired with Sirius, SAMA analyzes applications and code for modernization opportunities.

Inscape
Acquired with Sirius, Inscape provides financial analysis/reporting and recommendations for potential cost savings.

Use Cases in Cloud Optimization

To understand the impact these three steps can have on agencies, see what happened when three agencies applied each.

SkyMap in Action

Challenge

Coordinating a move for applications retaining and analyzing a human body's response to space flight. The applications were obviously very critical and were exchanging data with multiple end points. That made coordinating the migration and finding down time very complicated as they were in use around the clock.

Solution

The agency used SkyMap to plan and coordinate when migration could happen with the least downtime by collecting performance and blackout data and assigning each application to be moved during a period of least impact.

Outcome

In addition to improving availability and resilience, the new setup allows for keeping extensive logging, and the agency now can quickly provide proof that all access was within compliance. Additionally, data has higher security and storage is easier to scale and protect against disasters.

SAMA in Action

Challenge

The total on an agency's cloud invoice was always a surprise. To figure out where the unexpected costs were coming from, it did some digging and found there was nothing in place to capture anomalies. Of course, it turned out there were three: a ghost in the code that caused an application to consume more and more computing power, human error in forgetting to turn off virtual machines and contractors spinning up expensive resources without the agency's knowledge.

Solution

The agency turned to Inscape to discover, manager, optimize and report on its investments running in the cloud. Because it supports multifactor and token-based authentication, it gave the agency a clearer picture of who was using what and when, and because it performs cost anomaly and prediction using ML, the agency could get alerts regarding its AWS environment.

Outcome

The agency no longer gets surprised by invoices. It solved the three anomalies and saves about $80,000 a month as a result.

FinOps in Action

Challenge

Before they can modernize their IT, agencies must first assess their environments. That can be complicated depending on the complexity of the organization's landscape. They also must consider common workflows and how much they rely on digital transactions already.

Solution

A design-first approach can help bridge gaps between existing applications and new, modern ones. CDW's SAMA can analyze applications at any stage of code maturity and readiness – including at the beginning of an overall assessment, and after an infrastructure assessment. It helps create a map of code segments that need surgical review to make applications cloud-ready or up to contemporary coding beat practices. SAMA can also be run on code after an infrastructure migration to the cloud to map out the next stages of the agency's cloud evolution.

Outcome

The best time to run SAMA is not based on a stage, however, but when an agency expects to make a major investment in technology assets. It can help ensure the organization spends those technology dollars more strategically.

Conclusion

It's great when an agency says, "We're 60% in the cloud." That checks a box and has good optics. But the goal is not just to get to the cloud. What matters is achieving operational excellence once you're there. That takes planning, staff training and monitoring, all of which sounds time-consuming and daunting.

It doesn't have to be. By breaking the work into logical chunks and applying purpose-built technology to each, agencies can not only accelerate into the cloud but make the most of its benefits.

Thank you to CDW and AWS for their support of this valuable resource for public sector professionals.

About GovLoop

GovLoop's mission is to inspire public sector professionals by serving as the knowledge network for government. GovLoop connects more than 300,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to the public sector.

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