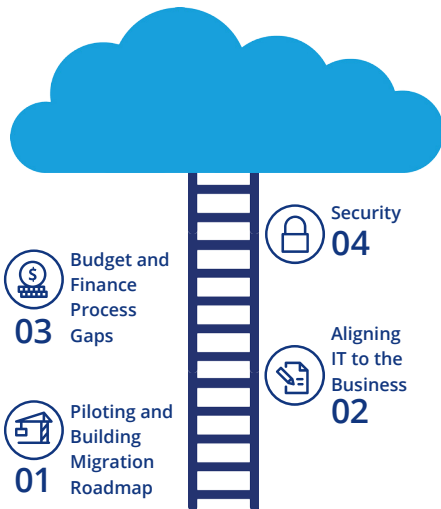


## Ready for Cloud?

Five key elements for a successful cloud application migration journey



### Introduction

Ongoing budgetary pressures have placed funding constraints on many government agencies, while mandates, such as the Federal Government “Cloud First” policy, are requiring IT transformations aimed at lowering IT operational costs and reducing capital investments across servers and data centers. CIOs are under pressure to increase overall efficiencies and enable on-demand capabilities to better support their mission programs. In the wake of these IT challenges, many government agencies are considering migrating applications to a cloud while other agencies that have already adopted cloud solutions are continuing migration efforts to maximize their return on investment (ROI).

While cloud presents opportunities, it is also a disruptive technology. The disruptive nature of cloud demands robust planning, a cohesive framework and tools to guide and facilitate the migration process. Based on our experience helping government clients with cloud transformation efforts, we see five essential elements that CIOs and key stakeholders should understand and take in to account before beginning their journey to cloud.

### Essential elements for paving a successful journey to cloud

Integrating the essential elements into your approach from the onset will help you embark on a cloud migration journey and maintain the right pace. Each element represents a distinct area of focus. Some areas, such as Security, may already be at the top of your list, while others may warrant further exploration. We invite you to give equal attention to all five: Take a holistic approach, Pilot before building a roadmap, Align IT to the business, Reengineer financial and business processes, and Secure your data. Limited consideration to these elements could result in sub-optimal gains—falling short of stakeholder expectations—and the cloud journey could lead to the wrong destination.



### **Journey begins with understanding cloud and adopting a holistic and agile approach**

The journey to cloud begins with the right understanding of how cloud could impact the agency mission and program objectives. Whether the focus is on building a private cloud capability or consuming public cloud resources, it is imperative that CIOs understand that deploying applications to cloud is more than just an IT activity. Cloud delivers many IT capabilities, and it also provides business an opportunity to do things differently and drive innovation. A successful application migration requires better understanding and assessment of people and processes in addition to fully grasping technology capabilities. Moreover, the leading CIOs are viewing cloud adoption as a journey and not a sprint.

With this mindset, agencies should take a **holistic approach** that includes an evaluation of key components including risks and costs. The approach should begin with an initial **Discovery** phase that defines the strategic goals and includes the assessment of the current application portfolio, from which a list of applications can be rationalized and prioritized based on “cloud readiness.” These activities are critical to setting expectations and defining key drivers, program outcomes, and budget.

The next logical step is to develop a robust **Plan** for the cloud journey. During the Planning phase, identify key project and program success factors as well as the metrics needed to measure success, and define the project scope. Research the processes and tools for managing risks, issues, decisions, and budget. In the **Build and Deploy** phase, key activities are detailed to ensure successful build and deployment of workloads. Once applications have been deployed, service level and operational level agreements are monitored during the **Operate and Tune** phase. Additionally, application performance and availability is measured and optimized while new cloud services are evaluated and implemented as they become available.

The adopted approach should enable a continuous feedback loop to incorporate lessons learned and agency-specific improvements identified throughout the migration process.

### **Piloting and building a migration roadmap**

Starting the journey to cloud at the right pace with smaller steps can set the groundwork for larger leaps forward down the road. The journey to cloud is not a turnkey proposition. Agencies should “test the waters” by carefully selecting an application for a cloud pilot effort. The experiences gained from piloting will help uncover unique business challenges and allow for better planning for the rest of the journey. Furthermore, a pilot effort can give CIOs better insights into their organization’s current capabilities as applications are migrated to cloud platforms. The pilot effort will serve as a real-time gap assessment and can provide better clarity around the required level of effort to execute each application migration, provide opportunities to refine the migration plan, identify processes for improvement, adjust team commitment, and address resource or skills gaps accordingly.

Agencies that tend to focus on building a cloud roadmap before conducting a pilot effort are susceptible to failure. Need proof? Look back at the history of all the delayed or failed transformational initiatives within your respective agency. Let the experience of a carefully executed pilot lead you to success. As CIOs participate in pilot efforts and evaluate their experiences, it allows them to build on the right foundation and enables them to set realistic development goals. Keep in mind, however, that pilot projects should not be done in isolation. A series of disjointed pilots could turn into a collection of unorchestrated cloud point solutions. Therefore, it is imperative for IT and the business to stay coordinated and work side-by-side to maintain critical alignment.

### **Aligning IT to the business**

Success in long-term adoption comes from instituting a strategically coordinated approach. Although each application to be migrated will serve a different purpose, the migrations themselves should not be independent projects. Further, the specific capabilities of each application should be viewed as business services and orchestrated for use across the agency. Some simple guidelines can help promote better IT and business alignment during the early phases:

First, **keep an enterprise view**. Each of the mission areas within the agency will likely be focused on their respective needs. Look for common business drivers across the agency. We recommend breaking down the most critical business processes and operating models into sequences of individual services, and then identify which services might comprise a coordinated grid of enterprise cloud services. Look for common infrastructure and application components in each system and consider the cost and benefits from refactoring. Trace each business service back to its core business driver and redefine it as a service that solves a business problem or fulfills part of an operating model. Then, examine the interdependencies across all services and look for opportunities for optimization.

Next, **assess each service for cloud delivery**: Can the service be made available to the entire enterprise (and should it)? Does the service have any components that would require dedicated hardware tenancy and/or cannot be replaced by cloud-based services? Can the service be provisioned on-demand in real-time? How much effort would be required to instrument the service for rapid scale-out and scale-in? Finally, remember that it’s clouds, not “the cloud.” Consider the business agility of being able to port services to and from the in-house core or between multiple capability clouds. Evaluate each service further in terms of microservices, data sensitivity and standards, and business logic.

### Reengineering processes to support shift from CapEx to OpEx

When architecting the future-state environment, all billing, financial, and contractual processes within the organization should be revisited. The transition from capital to operating expense (CapEx to OpEx) may demand a shift from the way traditional assets were purchased and consumed. Cloud concepts like 'pay-as-you-go' require agencies to evaluate current-state business activities and possible changes in order to tie business activities to variable consumption-based metrics and to be able to successfully adjust obligations as warranted.

This shift brings about added responsibilities on leadership, IT and administrative staff. Leadership should educate staff and drive the message of stewardship. The staff should make it a point to capitalize on the cloud model to drive savings, efficiencies, and to be better stewards of dollars, overall. Implementing scheduled downtimes for on demand instances during nonpeak hours and repurposing development and test environments for innovation are just two examples where IT staff could play a key role in improving spend management.

A missing link between cloud activities and IT spending can result in the inability of federal agencies to leverage the cost efficiencies of migrating to cloud. To realize maximize cost savings, utility-based contracting and billing methods should be utilized.

Be sure to **plan the acquisition timeline**. The focus on cloud adoption tends to be on the technology, but it is important to also focus on contract strategy and leveraging existing means of procuring cloud services. Agencies should consider updating procurement processes, acquisition planning mechanisms, and related policies to support the accessibility to cloud technology.

### Securing data throughout the cloud journey

Security is often one of the top concerns inhibiting agencies from embarking on cloud solutions. Some agencies are embracing the challenges and are proceeding forward with caution while others are tempted by the compelling benefits, but remaining on the sidelines. Even as the demand for cloud adoption grows, agencies continue to struggle with the fundamental questions of securing data and maintaining federal compliance. The challenge is further compounded by the variability of cloud deployment models (i.e., software, platform, and infrastructure as a service, public versus private, etc.).

To help security alleviate concerns and mitigate risk, we recommend agencies apply a broad end-to-end risk assessment. This will help agencies understand the risks and security posture to position them to provide appropriate guidance. Furthermore, we have identified a few high-level steps that agencies can follow to mitigate risks and maintain compliance. While this is not an exhaustive list, it provides a good baseline.

Firstly, agencies should determine what can be moved and classify accordingly. All things are not created equal; data and software assets are not outliers to this rule. An effective method of determining the right candidates for the cloud is by analyzing the application portfolio and classifying the portfolio into two parts: data and all other software components. The data can be further categorized by sensitive and non-sensitive. This classification effort will help agencies decide which applications are eligible for public hosting versus hosting in-house.

If the asset is determined to be a candidate for cloud migration, an important next step is to classify it in the context of the security triad: confidentiality, integrity, and availability. For example, if the data is made public or manipulated, how will this affect the organization? What is the business impact from service unavailability?

When developing their deployment strategy, agencies should also verify the vendors' ability to comply with federal mandates and agency-specific security guidelines while balancing potential risks. Trace the data flow and map against a compliance matrix from the cloud to all points of the value chain. This will help identify all points of ingress and egress and provide a blueprint of what security mechanisms should be considered.

Remember that some vendors differ in what they provide; therefore, an establishment of responsibilities should also be identified in this process. Ideally, create a controls map of compliance mandates at the same time, to ensure the organization is compliant post migration.



## Conclusion

Adoption to cloud is a journey and not a sprint. This understanding is quintessential for a successful cloud journey. Moving applications and workloads to cloud is not a silver bullet and requires a holistic approach comprising of multiple perspectives and collaboration points across IT and business units. The art of cherry-picking applications to deploy to cloud may only result in sub-optimal gains. Every application behaves differently and has a unique set of requirements, which often requires a hybrid set of configurations to deploy to cloud.

We recommend that agencies institute a structured approach that will provide the ability to measure effectiveness and success factors of cloud migration at every step of the way. Planning for a pilot effort can enable agencies to develop foresights into their capability to execute a cloud based transformational delivery model. Furthermore, by keeping the above essential factors in mind, government agencies can start their journey at the right pace, increase their ROI by maintaining IT alignment with the business, minimize transformational risks, and secure assets throughout the journey.

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