

How Visibility Accelerates Successful IT Modernization in the Public Sector

RESEARCH BRIEF



Introduction

Public sector organizations are feeling the pains of digital transformation. The influx of new technologies is shifting the IT environment under their feet and making it challenging to deliver services, adhere to service-level agreements and meet citizen expectations. At the same time, modernization is not an option but an imperative to meet their ongoing and new mission mandates securely.

Mandates and legislation like Cloud Smart and the Modernizing Government Technology (MGT) Act have been put in place to help agencies make positive strides. But challenges still exist. To better understand the shifting paradigm and challenges agencies face with modernization, GovLoop partnered with Splunk, a leader in data analytics, to survey public sector IT decision-makers and staff on their sentiments on modernization, challenges they face and their expectations.

Overall, our survey found that challenges like complexity and diversity of IT systems, lack of visibility into workloads and migrations, and a dearth of workforce skills are primary inhibitors to modernization, and directly affect the confidence of respondents in taking steps toward and progressing on their transformation journeys.

We'll dive into the full results in the following pages, as well as gain insights from Ashok Sankar, the director of industry product marketing with a focus on public sector and education markets at Splunk. We'll also learn how organizations can gain unprecedented transparency into every aspect of their computing environment to successfully modernize their systems.

The State of IT Modernization in Government

Audience Snapshot

For this research brief, GovLoop surveyed 156 public sector IT decision-makers and staff across federal, state and local government agencies and higher education. Here is a snapshot of the respondents and their relationships to IT operations, cloud technology and modernization efforts.

FIGURE 1: What best defines your organization's public sector segment?

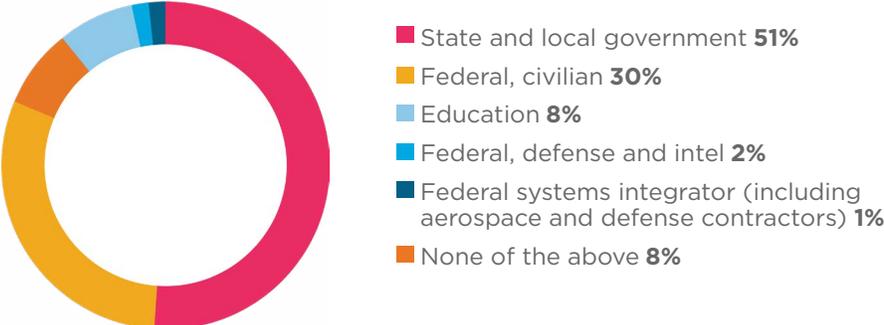
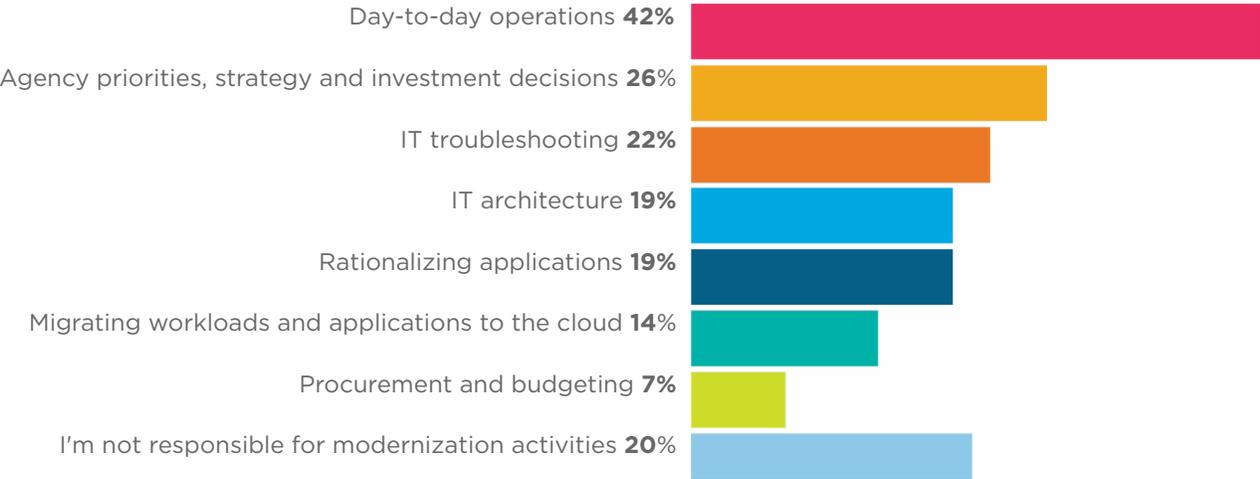


FIGURE 2: What is your responsibility with regard to cloud technology and/or IT modernization efforts?



IT Modernization and the Government

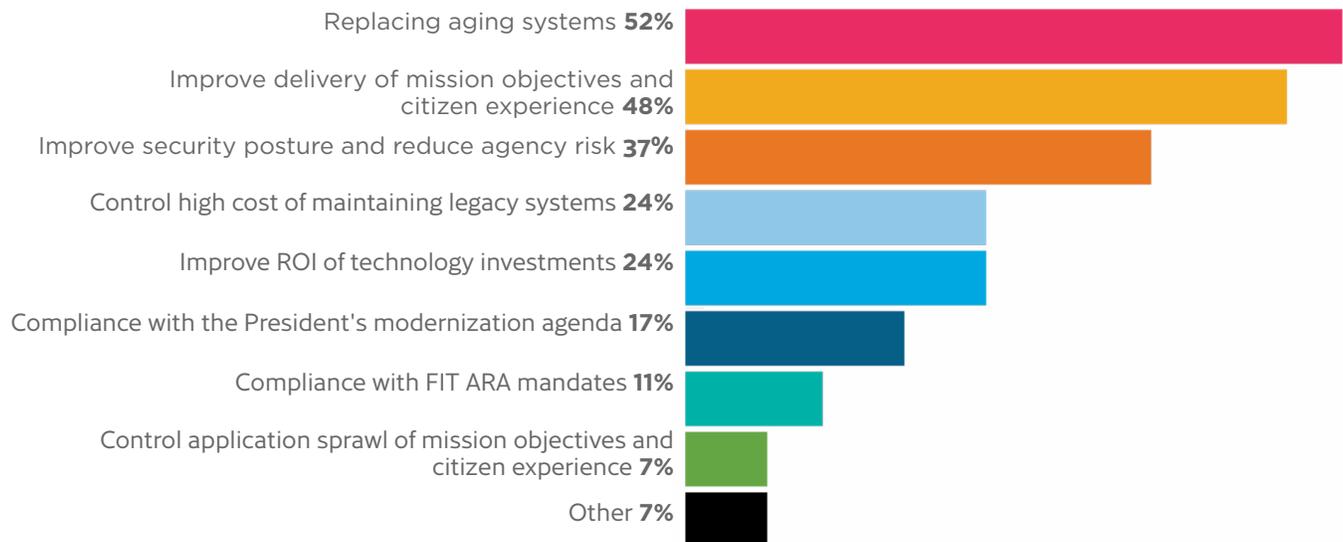
While there are mandates in place with the express intent of accelerating IT modernization initiatives, we wanted to get a sense of the reasons or drivers behind this action at organizations, and the state they expect to wind up in at the end of any migration or transformation effort.

Top Drivers for Modernization

When prompted to “Describe the primary drivers for modernization in your organization,” respondents cited a variety of reasons – with three clear top answers.

With the MGT Act clearly stating it, the top pick was not a surprise – over 52% chose “replacing aging systems” as the top driver for IT modernization at their agencies. It was closely followed by the need to “improve delivery of mission objectives and citizen experience” at 48%, while 37% of respondents cited security posture improvements and agency risk reduction as the driver (see Figure 3).

FIGURE 3: Describe the primary drivers for modernization in your organization.



These responses are no surprise. The Government Accountability Office (GAO) has estimated that the government spends nearly 75% of its annual information technology funding on operating and maintaining existing legacy information technology systems. Not only are older systems more vulnerable to attacks, they are increasingly becoming costly and difficult to maintain with a steadily retiring workforce and waning knowledge.

“These legacy systems were built at a time when technology paradigms were different. Cybersecurity was not necessarily top of mind since sophisticated attack scenarios like we face today were not envisioned,” said Sankar. “It is very likely the vendor does not support the product anymore and patching any vulnerabilities would be either cost-prohibitive or difficult, if not impossible.”

The second issue that Sankar addressed is that current legacy systems are relatively static, and not flexible and agile to easily integrate with modern IT systems. Additionally, these systems are very complicated to maintain since the younger generation coming in would have no idea how these older systems were built.

“Because of these complexities, organizations are finding it difficult to deliver service levels and customer experience akin to their private sector counterparts,” Sankar said.

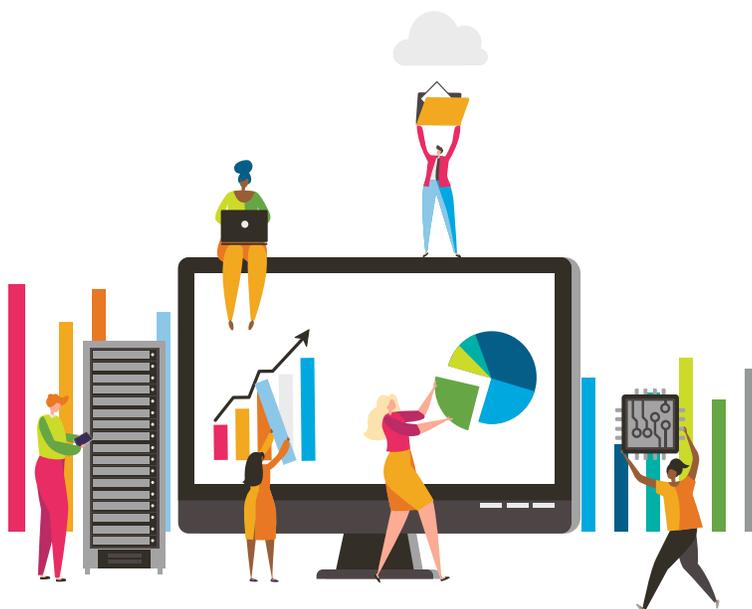
This has become a significant issue for government, because mandates and laws such as the Federal Customer Experience Act (FACT) and the President's Management Agenda are now demanding agencies measure their customer experience (CX) and improve.

"Agencies are starting to be held accountable for their CX for the first time," Sankar said. "And they are starting to see how IT modernization ultimately is necessary to realize their objectives."

Expected End States of Modernization

Modernization is a broad term and can mean different things depending on the agencies' objectives and outcomes expected. To better understand where agencies hoped IT modernization would lead them, we asked respondents, **"As part of your IT modernization efforts, which of the following end states do you expect at your agency?"**

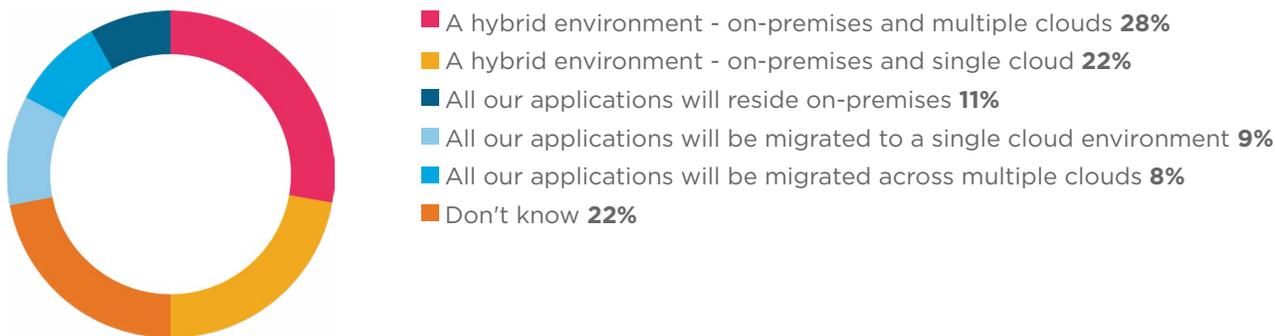
Twenty-eight percent said they believe they would end up with a hybrid environment that includes systems both on-premises and in multiple clouds. Another 22% said they expect to see a hybrid environment with systems on-premises but a single cloud; the same percentage of respondents said they did not know what their end state would look like (Figure 4).



Clearly, hybrid environments will play a large part as organizations look to transform and modernize their systems. And the reality is that any administration of this new environment should not only take into account the diversity of these singular entities but consider managing them holistically.

"When we think of modernization, we mostly think of migration to the cloud," Sankar said. "But for a variety of reasons, including data classifications, security and privacy, and other mission-specific reasons, organizations would still consider some presence on-premises. In some cases, if nothing else, it provides them a sense of control."

FIGURE 4: *As part of your IT modernization efforts, which of the following end states do you expect at your agency?*



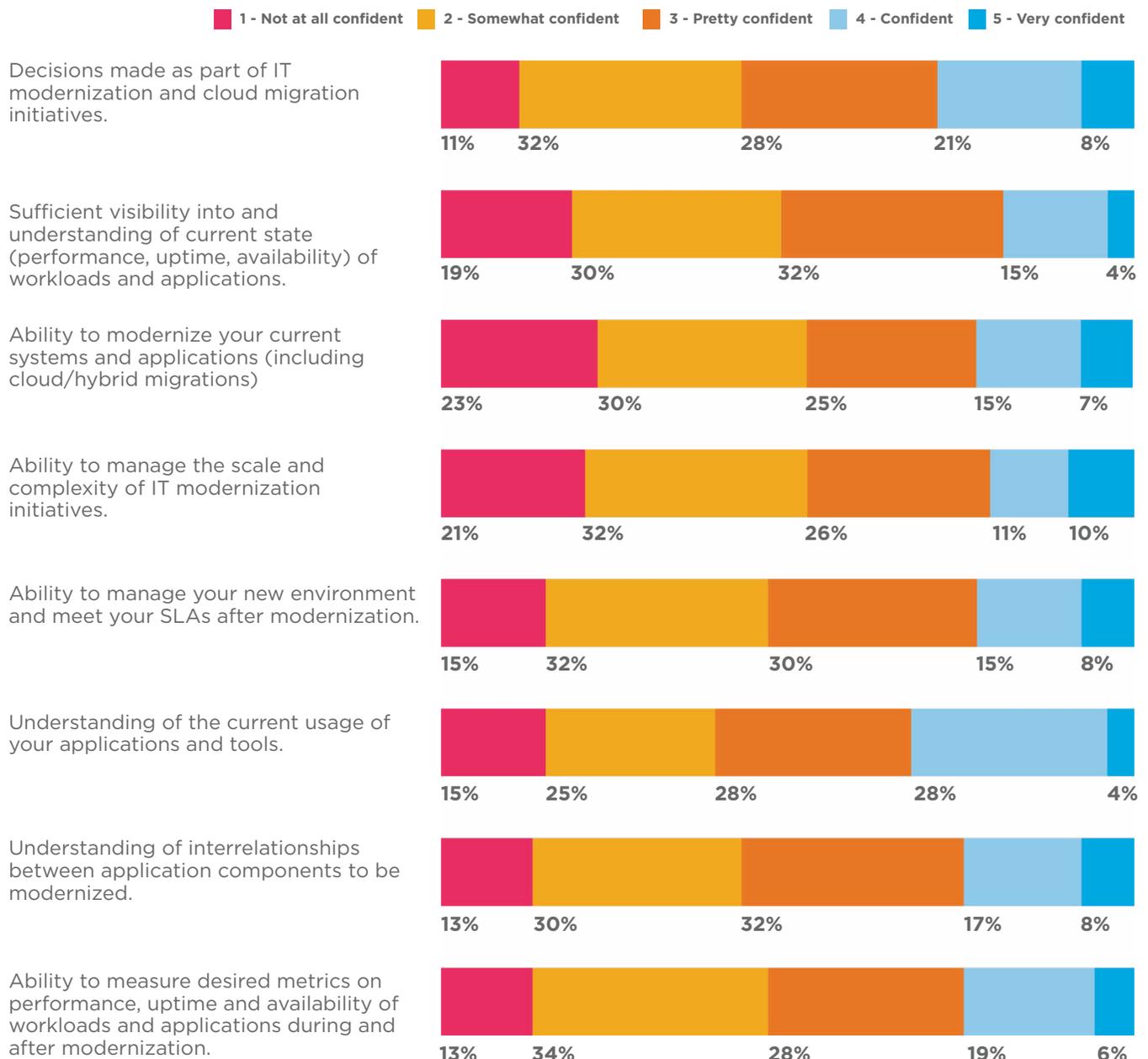
Confidence Levels and Progress With Modernization and Migration

So, with impetus and funding available to modernize, why aren't organizations making this a priority?

For one, modernization is not a lift-and-shift process. So, to better understand the audience's comfort and assurance levels on a variety of modernization efforts and steps, we asked respondents to rank their confidence about everything from their visibility into and understanding of current state (performance, uptime, availability) of workloads and applications; to their ability to manage the scale and complexity of IT modernization initiatives; to their assurance with their ability to measure desired metrics on performance, uptime and availability of workloads and applications during and after modernization; and more (See Figure 5).

As the chart below shows, overall confidence in the ability to modernize is lacking.

FIGURE 5: On a scale of 1-5 (where 1 is "not at all confident" and 5 is "very confident"), how confident are you about the following:



Only 13% of respondents felt confident or very confident in their ability to modernize their current systems and applications. While modernization involves multiple activities, a primary reason for such lack of assurance seems to be that agencies don't have visibility or a clear understanding of the current state of their applications (only 19% of respondents were confident or very confident of this aspect).

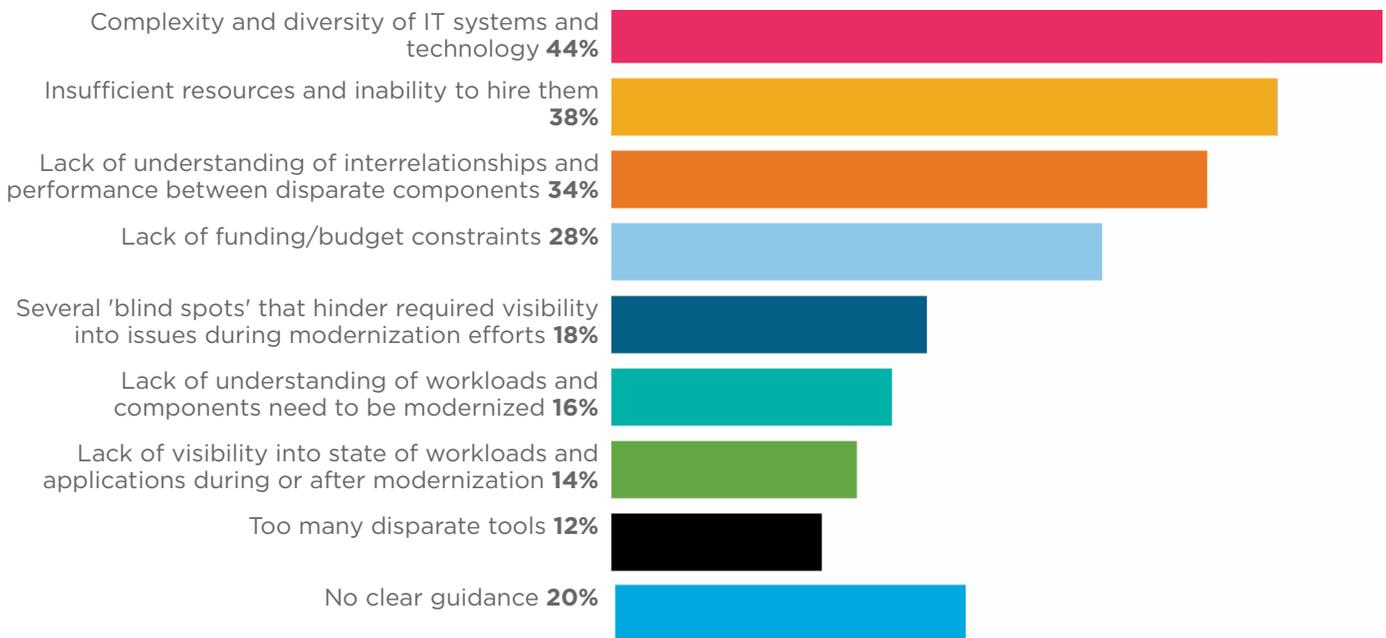
Over time, organizations have procured, built and patched systems to keep up with demand and availability requirements. This Band-Aid approach has created a "heterogenous landfill" of tools and products that manage to function together, precariously in some cases. And as teams that manage and maintain these systems churn, the know-how diminishes over the years. This has led to a lack of understanding of the interrelationships between application components (only 25% are confident enough). And combined with the inability to measure desired metrics during and after modernization (only 25% are confident), has led to doubts about ability to manage the scale and complexity of modernization initiatives (only 21% are confident).

"These sentiments could be important factors of why modernization efforts are going slowly at some agencies," Sankar said. "If you're not confident with what you have, and where you want to be, it is hard to get modernization initiatives moving. Without visibility into these heterogenous environments, and not knowing current states, agencies are hard-pressed to map out what their expectations should be and move forward with this important initiative."

Today's Challenges and Concerns About Modernization

So what challenges may be preventing government from moving forward more capably with modernization? We asked, "**What are the greatest difficulties or challenges you face with IT modernization at your organization?**" (See Figure 6).

FIGURE 6: *What are the greatest difficulties or challenges you face with IT modernization at your organization?*



As mentioned earlier, product acquisition over time has introduced a plethora of systems into organizations, creating a diverse web of systems with complex interrelationships. Forty-four percent attributed this complex IT environment as a challenge, while lack of resources to do the job figured prominently (38%), lack of clear understanding of how the disparate components make up a system or application and their interrelationships was rated by 34% of the respondents as a difficulty.

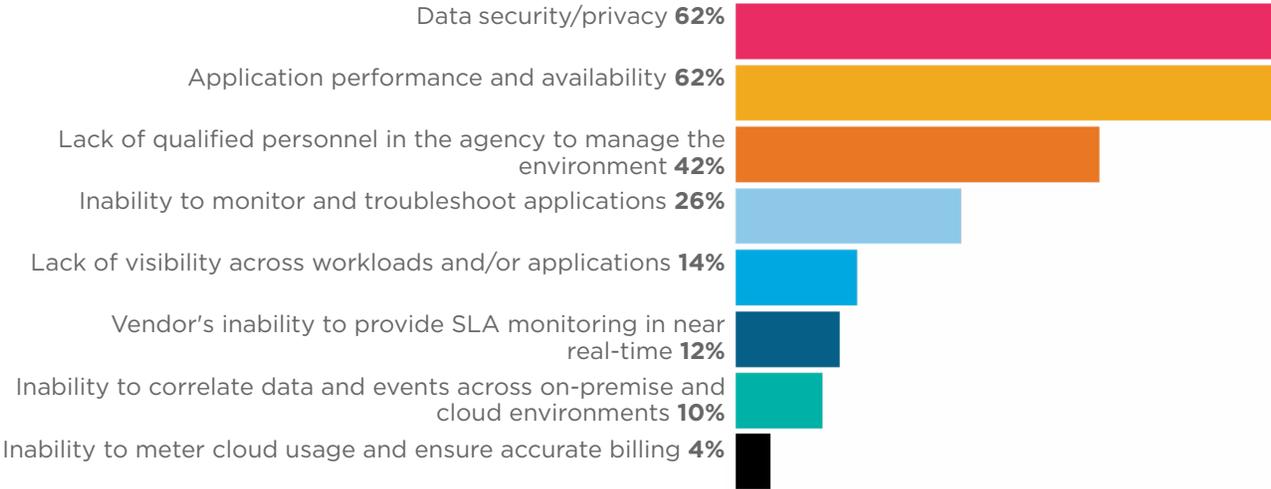
“These results are all consequences of a lack of holistic visibility and situational awareness,” Sankar said. “Over time, to keep up with requirements, systems and applications have been added on to or changed. But it is clear that these have happened in silos, leaving little or no footprints on what was changed and details behind them. Any visibility garnered is myopic, with monitoring focused within silos.”

Another insight along the same lines was the inability to gain visibility and the existence of several blind spots during and after modernization. If a workload is migrated to a cloud, agencies gain visibility into only the attributes the vendor exposes, and these are not necessarily correlated with data from other clouds or even on-premise environments.

With regard to the workforce, a dichotomy exists. Organizations are finding it hard to recruit qualified personnel, while at the same time an aging workforce is contributing to increasing difficulty in managing systems. This increases the urgency for modernization, and agencies have to look at innovative ways to address the perennial resource shortage issue, including automation.

But mandates and mission needs dictate adoption of newer paradigms and technologies. Next, we asked survey respondents about their top concerns with migrating to cloud and hybrid solutions. While respondents cited data security and privacy as the top concern at 62%, application performance and availability also featured as a top concern (See Figure 7).

FIGURE 7: As your organization migrates to cloud/hybrid solutions, what are your biggest concerns?



“Again, these results come back to the lack of visibility across the environment. The problem is exacerbated in a hybrid environment that spans multiple clouds and on-premises installations,” Sankar said.

The monitoring tools today offer visibility into specific products or a specific environment – cloud or on-premises. But when you move to a hybrid or multi-cloud model, Sankar said, you need seamless visibility across the entire environment, giving staff the insights into not only the performance and availability but also the interrelationships between the various workloads and components that make up the systems or application regardless of where they run. This helps them quickly pinpoint issues and troubleshoot applications without moving between multiple interfaces.

In Summary: Agencies Require Full Visibility for true Modernization

IT modernization is necessary if organizations want to meet their customer experience and mission objectives. Our survey revealed that while organizations clearly see the need, they are hampered from moving forward, and the issues they face make them less confident in achieving success. Primary among these challenges is the lack of understanding of interrelationships and the state of operations due to the inability to gain the visibility needed to make decisions among a complex web of systems and applications. Lack of visibility leads to a deficiency in insights to make informed decisions.

Organizations are also concerned about the situation after modernization. Without holistic visibility into the desired environment, they face blind spots that hinder them from quickly identifying problems and troubleshooting them.

It is clear that most agencies will end up with a hybrid environment as part of IT modernization to meet their mission objectives. But once these agencies start mixing and matching different types of cloud solutions, as well as different vendors and service models, things can get complicated. IT administrators need to know how all the components, regardless of their place of activity, are performing and interacting. But it can be difficult to get a clear view of disparate workloads without the capability to gain holistic visibility across these deployments.

As agencies modernize, end-to-end operational visibility is essential before, during and after the journey. Agencies need a baseline before getting started, and metrics and KPIs from current state of operations are critical. Once at hand, agencies now know what the minimal baseline operations need to be once they migrate to the new state. By keeping tabs during migration, staff can identify any issues in real time, roll back processes and fix problems before it is too late.

The path forward is embracing a platform that will give organizations end-to-end visibility and granular insights into their operational environment, including availability and performance of applications and processes. Extending real-time situational awareness during and after migrations will help agencies overcome process challenges, drive successful modernization initiatives, address exceptions, improve efficiencies and deliver superior citizen experiences.

And what does operational visibility look like in a hybrid cloud environment? It's an end-to-end view of infrastructure performance across application workloads, microservices and other components that make up that service, wherever they may reside. It provides the intelligence needed to monitor and measure metrics to ensure a compelling user experience when infrastructure spans multiple domains.

Here are some best practices that can help ensure successful migrations:

Before a migration, it is important to measure baseline user experience and performance, as well as define acceptable post-migration levels. Degradation in one performance area may be tolerated if it's balanced or offset by gains in another, all the while ensuring that the overall experience or performance is not compromised. To accurately validate a migration's success, the same monitoring tool should be used throughout the migration process.

During a migration, established performance metrics should be closely monitored in real time. Variation from the baseline can be an early indicator of trouble, providing an opportunity to take corrective action. A monitoring solution's dashboard and alerts will quickly identify these issues well before production, and save time and resources. A performance issue is better identified during a migration - when it's easier to pause and make corrections.

After a migration, the same monitoring solution should be used to measure acceptable metrics and success. And continued use of the solution and dashboards, well after the switchover, is essential to ensure compelling customer journeys that cross on-premises and cloud workloads.

How Splunk Helps

For government agency IT personnel who seek to modernize and transform their agencies' legacy infrastructures, Splunk offers granular visibility and unprecedented real-time insights into applications and workloads regardless of where they reside. This helps agencies confidently adopt new paradigms, migrate to new technologies and meet their SLAs in any environment – on-premises, cloud or hybrid.

Unlike legacy data platforms and siloed monitoring tools, Splunk offers a proven, extensible and scalable platform that delivers holistic visibility in one place, and enables discovery of powerful insights in real time to overcome challenges, drive successful modernization initiatives, improve efficiencies, meet mission requirements and deliver superior citizen experiences.

Splunk's platform allows agencies to overcome their biggest hurdle in embracing new paradigms and modernizing their legacy systems by providing granular visibility into applications and systems so they can gain insights into transformations and migrations during the entire process.

Additionally, Splunk:

- Provides the ability to ingest data from any source and in any format; and advanced search capability provides fast ways to search, index and correlate to find patterns.
- Offers the ability to monitor and identify root cause quickly. This means operations staff can troubleshoot and bring systems back online within seconds or minutes rather than days or weeks.
- Provides granular visibility into resource usage, ensuring accurate billing. It provides the ability to automatically monitor the scale-up and scale-down of instances and workloads that are constantly changing.



Splunk is available on-premises and as a cloud service. Splunk Cloud meets FedRAMP security standards at the Moderate Impact Level accelerating time-to-value. The Splunk Cloud FedRAMP service also meets U.S. Persons requirements under ITAR and is compliant with ISO 2700, SOC2 Type 2, PCI and HIPAA regulations.

“What Splunk helps organizations do is make confident decisions and take decisive actions at speeds the mission demands, so they can modernize and meet mission requirements successfully...”

Ashok Sankar
Director of Industry Product Marketing



Conclusion

As organizations look for flexible hybrid architectures as part of their modernization plans, it's critical to monitor performance across these environments with solutions that can not only collect and correlate data irrespective of source but scale up to meet real-time requirements. Multiple, fragmented monitoring solutions cannot provide the holistic visibility and intelligence needed to meet today's mission goals.

To succeed in modernization, agencies need end-to-end granular visibility into systems and applications in real time so they can understand the dependencies and relationships between them. They not only need to continuously monitor progress during the entire process but must be able to foresee issues so they can course-correct appropriately on time, lest the mission or service delivery be adversely impacted.



About Splunk

Splunk Inc. (NASDAQ: SPLK) turns data into doing with the Data-to-Everything Platform. Splunk technology is designed to investigate, monitor, analyze and act on data at any scale. Our powerful platform and unique approach to data have empowered companies to improve service levels, reduce operations costs, mitigate risk, enhance DevOps collaboration and create new product and service offerings.

To learn more visit www.splunk.com/publicsector



About GovLoop

GovLoop's mission is to "connect government to improve government." We aim 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 connect and improve government.

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