

HOW IT MODERNIZATION IMPROVES GOVERNMENT

Enhanced infrastructure enables federal agencies to accomplish their missions more effectively.

EXECUTIVE SUMMARY

Federal agencies face a constant challenge to deploy modern IT infrastructure.

Many existing tools and services rely on legacy infrastructure. Technology budgets are limited, and the majority of dollars go to maintaining and operating existing systems, rather than toward new hardware and software. Cumbersome procurement processes also can make it difficult for agencies to quickly obtain and deploy new resources when they need them.

Despite these hurdles, IT modernization is essential for agencies looking to improve operational efficiency, reduce overall technology costs, boost security and support employee productivity. Among the solutions that can help federal agencies achieve their goals for IT modernization are data center optimization, high-performance mobile devices, networking, security and data analytics. Agencies can also derive significant value by obtaining resources and services from the outside – through public cloud providers, consulting and managed services, as well as through offerings such as Device as a Service (DaaS) programs.

Effective implementation is essential to successful IT modernization. A solid strategy – combined with support from trusted service providers – can help agencies get there.

The Need for IT Modernization

Government agencies face serious challenges in deploying IT to accomplish their missions. Often, they have to deal with increasing demands from citizens even as their budgets stay level or, in some cases, shrink. In a [2016 study](#), for instance, Accenture found that 85 percent of people expect government's digital services to match or exceed the quality of what commercial entities offer. Because they do not operate on a for-profit model, it can be difficult for government agencies to justify and win approval for new IT spending.

Many government agencies spend the vast majority of their IT funds on operations and maintenance of legacy systems, with little left over for innovation. While a private sector organization can build a business case for making large investments in new infrastructure, government agencies typically don't produce additional revenue even when they provide extraordinary service. Instead, they usually must make the case that an investment will ultimately save taxpayers money — and do so quickly enough to satisfy voters and politicians.

IT modernization doesn't mean merely upgrading infrastructure so that servers are more powerful and network pipes are more robust. The goals behind IT modernization efforts vary from agency to agency, but typically, these efforts are undertaken with the aim of substantially changing the way in which IT shops structure themselves and deliver services. In a [2016 survey](#), IDG found that 74 percent of organizations rated

business transformation as either a "critical" or "very important" goal of their IT modernization plans. Seventy-three percent said that increasing business agility was a critical or very important goal, 65 percent said that enabling innovation was a major goal and 63 percent cited cost reductions. The lowest-ranked goal for organizations pursuing IT modernization strategies was the protection of legacy investments, which was cited by only 59 percent of respondents.

Other common goals motivating federal agencies to pursue IT modernization strategies include future proofing, reducing demands on internal IT staff and improving security. Several initiatives have improved the services government agencies can offer, as well as their ability to fulfill their missions:

Mobility: Every year, mobility becomes more central to the way employees work. Many government employees starting their careers today have used smartphones from an early age, and even midcareer professionals have become dependent on mobile devices and apps to be productive. To meet users' needs and best serve citizens, government agencies must adopt mobile solutions that both make data more accessible and protect sensitive and regulated information. Depending on current investments, an IT modernization effort may require a government agency to revise its device strategy, adopt new enterprise mobility management (EMM) solutions, invest in wireless networking upgrades or develop new internal or public-facing mobile apps.

Cloud computing and shared services: The capabilities of the public cloud are well suited for solving many of the challenges government agencies face when it comes to IT modernization. Public cloud providers allow organizations to rapidly scale up resources and then pull them back again if they are no longer needed. Further, the subscription-style pricing model of paying for cloud services as an operational expense can help agencies overcome hurdles related to procurement. However, the public cloud won't be a fit for every use case, and agencies must exercise caution to ensure that they can maintain the necessary level of control and availability of their data and applications. In some instances, regulations will prevent agencies from placing data in the public cloud, in which case private clouds may be a good fit.

Data center optimization and improving operational efficiency: Up-to-date storage, networking and computing infrastructure is a necessary part of any IT modernization effort, especially for agencies that plan to continue running workloads on premises.

Security: Cybersecurity threats continue to evolve. From ransomware that locks up systems to data exfiltration malware designed to leak sensitive information, cyberattacks have the potential to bring an agency to its knees. Robust security solutions should be implemented to provide agencies with multiple layers of defense. Some of this security will come in the form of tools such as next-generation firewalls, email security tools and endpoint security solutions that analyze the behavior of programs to determine whether they are malicious. But end-user activity is also a major risk factor for agencies; training programs and robust access and identity management policies and tools are essential.

Modernization by Mandate

In addition to mission-related challenges, federal agencies must meet the demands of IT modernization mandates and guidelines.



Modernizing Government Technology Act: Signed into law in December 2017, the MGT Act authorized \$500 million in appropriations over two years for IT modernization and allows agencies to use surpluses from their own IT budgets for modernization projects. The law also requires agency heads to submit periodic lists of funded IT investments to the Office of Management and Budget.

FedRAMP: The Federal Risk and Authorization Management Program (FedRAMP) is a governmentwide initiative that provides a standardized approach to security assessment, authorization and continuous monitoring for cloud products and services. The program created a core set of processes to ensure cloud security and established a marketplace to increase utilization of and familiarity with cloud services.

NIST Risk Management Framework (RMF): An effort to protect the nation's critical assets from cybersecurity threats and protect individuals' privacy, the National Institute of Standards and Technology's Risk Management Framework provides guidance to help organizations assess and manage risks. Previous versions of the RMF were primarily concerned with external threats, while a May 2018 update helps guide organizations to better protect individuals' personally identifiable information.

Data analytics: Data is growing at a massive pace. Already, government agencies are generating oceans of information via mobile devices and applications. But without analytics tools to turn this raw data into actionable insights, this information cannot help agencies achieve their full potential.

Internet of Things: The amount of data being generated today is a proverbial drop in the bucket compared with what will be produced in the coming years as Internet of Things projects are adopted in large numbers. The dropping price of sensors and the increased capacity of data analytics tools will give rise to an untold number of use cases, and it is impossible for anyone to predict IoT's impact on government agencies. However, IoT has potential applications in human health, transportation, agriculture, policing and military uses and other areas.

Solutions and Services to Achieve IT Modernization

A number of cutting-edge technologies have emerged to help provide government agencies the capabilities they need to meet the demands of IT modernization. These tools range

\$10,000

The amount that the federal government saves annually in energy costs for every remote worker¹

from end-user devices to modern networking hardware to resources in the public cloud. But investments in IT infrastructure alone are typically not enough to optimize operational efficiency and employee productivity. To achieve these goals, government agencies often rely on a trusted third-party service provider that can offer knowledgeable, unbiased advice.

Among the tools and services that can be particularly useful for government agencies undergoing IT modernization:

Cloud solutions and hybrid IT: While the public cloud has a number of benefits to offer around scalability and flexibility, many organizations have made the mistake of underestimating the challenge of making a successful cloud migration. Moving resources to the cloud is not a simple matter of "lifting and shifting." Rather, organizations must map out their application dependencies, determine which applications and data are a good fit for the public cloud (or are even *allowed* to be stored and run with public cloud providers, depending on regulations) and compare prices and service-level agreements among different providers. Help may also be required to build out private clouds, migrate and test applications, and forge connections between private and public cloud environments.

Data center technologies: Depending on when on-premises IT infrastructure was last refreshed, government agencies may find that they have an array of new options available to them with regard to data center resources, due both to improvements in technology and drops in prices. Flash storage, for example, may have previously been out of reach for an agency, but falling costs may make it a good fit for use cases in which high availability of data is a top priority. Other data center technologies that may come into play during an agency's IT modernization effort include next-generation networking, high-performance computing and software-defined solutions. Hyperconverged infrastructure is a popular choice for organizations adopting a hybrid cloud model.

Data analytics and business intelligence: Advanced analytics solutions are becoming more accessible even to organizations with budget constraints, leading government agencies to experiment with the use of data analytics and business intelligence for tasks such as law enforcement, public health and the optimization of physical assets such as buildings and vehicles. Consulting services can help agencies without internal data analytics expertise take advantage of this emerging area and improve their services.

Mobile devices and mobility management: While government agencies have generally been slower than organizations in other industries to adopt mobility, mobile solutions are now often a central part of the way employees at many agencies work. Many agencies are looking to get away from owning devices internally, leading some to adopt BYOD programs, while others look to DaaS offerings to equip users with the latest mobile technologies. EMM solutions are

Communication and Collaboration in the Cloud

Email and collaboration solutions are essential for federal agencies, yet too few of them have basic collaboration tools such as real-time web-based file sharing and videoconferencing. Most agencies that move to cloud-based collaboration solutions quickly experience significant cost savings, and migrating remaining agencies from on-premises email systems to cloud email will result in further savings, improved security and greater productivity.

In 2016, the Department of Justice began migrating its Microsoft Exchange Server inboxes to the cloud with Microsoft Office 365. Around half of the DOJ's 150,000 accounts had been migrated by the spring of 2018, and the department planned to complete the move by the end of the year. The migration will provide enhanced flexibility and accessibility, increased availability and better scalability. But the primary benefit is enhanced collaboration. With Office 365, DOJ employees can schedule meetings and share screens, whiteboards and files – something they couldn't do before the move to the cloud.

"We look at this as more than just an email platform," DOJ CIO Joseph Klimavicz told *FedTech* magazine. "Our Office 365 team sites and portals help the department stay connected, share information and make better decisions. By getting everyone on a single platform, we can enhance our collaboration capability and employee productivity."



a key component of any mobility plan, especially for agencies whose employees handle sensitive or regulated data.

Security solutions: Too often, organizations do not find out that their security solutions are inadequate until their networks have already been breached. Security assessments from a trusted partner can help identify gaps in agencies' security strategies before they are exploited by cyberattackers. Assessments can include penetration testing, in which solution experts launch harmless "attacks" against an agency's network to find vulnerabilities, as well as policy and procedure assessments designed to ensure that organizations are appropriately complying with security standards.

Implementing a Modern IT Infrastructure

Government agencies looking to modernize must formulate a strategy to do so effectively. This means not merely making large investments in new technologies, but also thoroughly assessing the current

56 YEARS

The approximate age of the Treasury Department's authoritative data source for individual taxpayers – where accounts are updated, taxes are assessed and refunds are generated. The file is written in a low-level computer code that is difficult to write and maintain, and operates on an IBM mainframe.²

state of IT operations and setting goals for where the agency wants to go.

Assess the Situation

The first step of an IT modernization plan is to identify the systems, processes and job categories that need to be modernized. This should include a careful inventory of IT systems to determine what needs to be replaced. During the assessment, IT staff should consider how much the agency is spending and how long vendors will maintain support for specific products. Next, IT leaders and agency executives should identify the goals of the modernization effort. The more clearly agency leaders can spell out where they want to get to, the more

effectively they can plan on how to get there.

Identify Opportunities for Modernization

A modernization effort represents an opportunity to find new IT partners as well as to update processes.

A network upgrade is frequently a useful target for modernization, as the network powers everything else in an agency's IT environment. Replacing older switches and routers with new hardware can provide support for the modernization of other technologies. In addition to improving bandwidth, security and efficiency, these upgrades will make every other step of IT modernization easier, as they will ensure that the network doesn't serve as a choke point that hampers productivity and limits the adoption of new applications.

Another valuable option is to deploy a unifying digital platform for centralized management of IT infrastructure. This centralized platform – or "single pane of glass" – allows agencies to view and manage data from throughout their organization. By collecting and integrating data from multiple types of sensors and applications, agencies can arrive at insights that help them to improve operational effectiveness, customize and expand systems, and inform the development of new apps.

Consider the Cloud

Public cloud providers give agencies the flexibility to rapidly scale resources up or down without major capital outlays. Private clouds offer the same benefits around flexibility and automation, but with the added benefit of on-premises control. Agencies embarking on IT modernization plans should carefully consider both approaches, and may choose to combine them into a hybrid cloud or multicloud strategy.

With the public cloud, agencies can modernize their IT systems without needing to "rip and replace" existing on-premises systems. And in many cases, they can replicate and even enhance the functionality of legacy systems by subscribing to a cloud-based, Software as a Service (SaaS) version of the same service.

Although cost reduction has historically been a major motivator for organizations looking to push resources to the

Securing the Federal IT Supply Chain

In an [April 2018 report](#), the U.S.–China Economic and Security Review Commission warned that the Chinese government's policies target U.S. federal networks and the networks of federal contractors, heightening risk to the U.S. technology supply chain. The report also noted that more than half of shipments to the leading providers of federal information and communication technologies originate in China.

Attacks on supply chains will become easier and more prevalent, the report warns, as emerging and future technologies, including 5G mobile network and IoT technologies, increase avenues for attack.

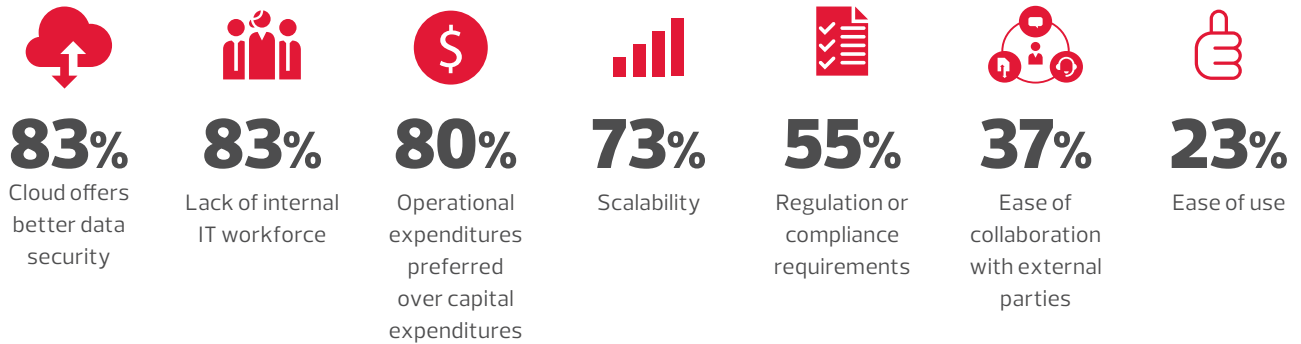
The report's authors argue that political or economic shifts will be insufficient to push IT manufacturers to reduce their operations in China or partnerships with Chinese firms. Instead, the authors suggest, a national strategy is needed to manage risk in the federal IT supply chain. They recommend that the federal government do the following:

- Craft forward-looking policies regarding supply chain security (rather than being reactive and basing security on incident response)
- Centralize the leadership of federal technology supply chain risk management efforts
- Link federal funding to supply chain risk management
- Promote supply chain transparency



Why Are Government Agencies Moving to the Cloud?

While security concerns once were a major factor limiting cloud adoption among public sector organizations, today agencies are citing security concerns as a point *in favor of* adopting cloud solutions. Here are the top reasons public sector agencies give for selecting the cloud:³



public cloud, agencies should take a careful look at their specific use cases and cost models. Often, organizations have found that private clouds are more economical for predictable, ongoing workloads. Also, private clouds are an especially good fit for agencies that must follow rigid guidelines about where and how data is managed and stored.

The Federal Risk Authorization and Management Program (FedRAMP) helps agencies to ensure that their cloud deployments meet federal requirements.

Migration is often a challenge for many agencies in moving to the cloud. Third-party IT partners can often provide valuable expertise in helping agencies identify the best path to the cloud and walk them carefully through the process.

Focus on Security

As they implement their IT modernization plans, agencies must ensure that both new and old systems are as secure as possible. A robust array of security tools will often include advanced malware detection, email security, web security, policy and access management, next-generation firewalls, network analytics and other solutions. Together, these security technologies can increase visibility across an agency's entire network. As a result, agencies will be able to block malware before it enters their networks, detect malicious code hiding in encrypted data and analyze data to better understand threats and improve future defenses.

Find Help

A trusted third party can also provide valuable assistance for agencies looking to modernize their systems. A partner may offer the expertise and perspective to perform an initial assessment, helping to provide agency leaders with an honest look at the state of various IT elements, such as cloud readiness and the status of the network. Third parties also offer managed services, such as network connectivity, colocation

for backup and IT hosting; and managed cloud services, including Infrastructure, Desktop and Contact Center as a Service. Handing these IT chores off to a partner reduces the burden on in-house IT staff and allows them to focus on the agency's mission.

A modernization of mobile IT tools can benefit greatly from third-party services. A partner will work with IT staff and mobile carriers to ensure the agency's enterprise mobile devices are automatically activated, enrolled and ready to use right out of the box. These services can include software configuration and imaging for a variety of devices, including smartphones and tablets, as well as tagging, tracking and laser etching to streamline asset management.

Many agencies are opting for Device as a Service offerings from partners. Through a DaaS program, users receive fully supported, customized devices. Because the agency pays for the devices through a monthly subscription fee, it can shift procurement costs to an operating expense. The device provider manages technology refreshes, secures devices, operates management software, provides help desk services and recycles devices.

Once a modernization program is under way, adoption and training services may smooth the transition. Even the most aggressive investments in new technologies won't do agencies much good if they're not being used. Most organizations can point to at least one or two end-user tools from over the years that simply haven't gained traction with users inside the agency. Trusted service providers can help spur adoption and train users, ensuring that agencies recoup their IT modernization investments. To take one example, some end users find video collaboration tools intimidating and, if left on their own, may never go through the simple steps of setting up an account and learning how to initiate video chats or meetings. After a short, focused training session, however, users often see the value of these systems and begin integrating them into their normal workflows.

CDW: An IT Modernization Partner That Gets IT

With decades of experience helping federal agencies choose, implement and manage technologies, CDW's solution architects understand the specialized IT needs and challenges of government. By working with a trusted partner such as CDW, agencies can find and adopt solutions that cut costs, simplify the user experience and improve services for citizens.

CDW's experts can help with the following:

Procurement: Government contracts, budgets and procurement practices differ from those of organizations in the private sector. CDW gets it, and holds a wide range of government contracts to help streamline procurement and get agencies the technologies they need, when they need them.

Cloud: CDW's cloud experts can help agencies design a roadmap for cloud migration, build out private clouds, choose suitable public cloud providers, migrate applications and implement management tools to facilitate hybrid cloud and multicloud strategies.

Mobility: Relationships with leading device makers, app development firms and network infrastructure manufacturers make CDW an all-in-one mobility partner.

Configuration and managed services: Federal IT shops are busy. While government technology workers are highly skilled, they may lack the time or specialized experience to configure and manage new tools and services. CDW can shoulder configuration and management tasks, freeing up agency staff to do their jobs.

The CDW Approach



ASSESS

Evaluate mission objectives, technology environments and processes; identify opportunities for performance improvements and cost savings.



DESIGN

Recommend relevant technologies and services, and document technical architecture, deployment plans, "measures of success," budgets and timelines.



MANAGE

Proactively monitor systems to ensure technology is running as intended and provide support when and how you need it.



DEPLOY

Assist with product fulfillment, configuration, broad-scale implementation, integration and training.

[Learn more](#) about how CDW solutions and services can bolster your agency's modernization efforts.

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