



The Foundation for Your Agency's IT Modernization Success

MARKET TRENDS REPORT



Introduction

Today, most federal agencies are undertaking IT modernization efforts with the goal of substantially changing the way IT shops are structured to deliver services to support the mission. The hope is that this allows agencies to lay the groundwork for continued technological advancement and innovation.

This need for government agencies to modernize their IT is critical and apparent in many ways. For one, many IT shops continue to spend their time and budgets on maintaining legacy systems, some of which can be decades old. Additionally, agencies need to modernize to make the most of up-to-date and emerging technologies such as artificial intelligence and the Internet of Things (IoT).

Although the benefits of modernization are clear, agencies still struggle to make the changes. First, there's the challenge of not only aging technology, but also an aging workforce that operates and maintains it. New hires are unlikely to understand many of the legacy systems with mainframes and programming languages like COBOL. Second, users – both internal and external – expect digital experiences akin to those they get from private sector interactions, and agencies must deliver services that meet that demand. Lastly, agencies face an overwhelming choice when it comes to what technology they should focus modernization efforts on.

Fortunately, there are ways to ease the transition. A network that is secure, scalable and reliable can bridge the IT gap of the past, present and future. What's more, it can enable virtualization through low-latency, high-throughput connectivity – providing improved cyber posture, simplified cloud adoption and actionable data to improve efficiencies.

To better understand how to modernize your network foundation, GovLoop partnered with CenturyLink, a global technology leader delivering network, cloud and security solutions. In this report, we explore the challenges of designing and maintaining the right foundation for IT modernization and the network-driven solutions that help agencies overcome them. We also provide insights from Stephen Opferman, Senior Director of Innovation, and Dave Young, Senior Vice President of Strategic Government at CenturyLink, on modernization best practices.

\$110 billion

the cost savings the Technology CEO Council estimates the government can achieve over 10 years through IT modernization.

Source: [Technology CEO Council](#)

75%

how much of the federal IT budget goes to the operations and maintenance of IT systems that were already obsolete or were quickly getting there.

Source: [GAO](#)

\$90 million

the amount the new Technology Modernization Fund approved for seven projects at five agencies

Source: [Performance.gov](#)

\$3 billion

The estimated value of federal IT equipment that will reach end of life by 2020, per Tony Scott, former federal U.S. CIO

Source: [GovLoop](#)

THE CHALLENGE

Designing and Maintaining the Right Foundation to Enable IT Modernization

In their rush to realize IT modernization's promises of more security, better service delivery and greater innovation, agencies are at risk of making rash decisions about how to build a modernization plan. After all, it sounds simple: Procure and deploy new technology, and ta-da! Modernization is done.

But organizations that slow down and carefully consider the process find three main challenges.

First, there's the technology itself. "For decades, the government viewed technology through a programmatic lens," said Dave Young, Senior Vice President of Strategic Government at CenturyLink. "The entire nature of how government agencies designed, developed and implemented technology was purposely siloed. And the government had unique requirements."

As IT companies have shifted focus from specialized hardware to software in recent years, they have moved functions traditionally embedded in the network to the software stack. In so doing, they developed protocols to orchestrate software versioning, creating a wide variety of software-based options, but many struggle to fulfill their new role, said Stephen Opferman, Senior Director of Innovation at CenturyLink.

"The results of that movement are that those applications now not only require the software orchestration capabilities, they also have low-latency requirements," Opferman said. "This is one of the reasons why CenturyLink has recently announced an edge core strategy. It allows government agencies to leverage a highly diverse, global fiber that enables environments to compute at the edge of the network. This results in improved latency for transformational applications, such as next-gen Internet of Things, artificial intelligence and machine learning."

"Agencies have attempted to modernize their systems but have been stymied by a variety of factors, including resource prioritization, ability to procure services quickly, and technical issues." - Report to the President on Federal IT Modernization

A second challenge is culture and regulations. Agencies must modernize to meet growing citizen expectations of digital services, and federal mandates such as the President's Management Agenda and the Modernizing Government Technology Act. All of those call on agencies to provide digital services such as chatbots relying on artificial intelligence, blockchain to secure supply chains into government agencies and Internet of Things-driven edge computing. A 50-year-old mainframe built with COBOL simply can't support those emerging technologies.

"Modernization is not always about the technology," Young said. "Technology is rarely the challenge. People are the real challenge. How will people adopt the technology? The impact technology has on process and procedures will require a behavioral change. That's why it's important to have a thoughtful implementation plan that explains how the new technology will coexist with the existing technology."

That ties into the third challenge, which is **recruiting and retaining employees to operate and maintain legacy systems.** As the number of federal employees eligible to retire jumps from 14% in 2018 to 30% in 2023, many will take their knowledge of such systems when they go, while incoming federal workers are likely to be more interested in modernization efforts than in the care and feeding of decades-old systems.

To overcome these challenges, agencies need a new approach that builds up from the network, bridges the IT modernization gap and pushes into the future. "Government is starting to realize the benefits of future network technologies like software-defined, edge computing, zero trust, unified communications, cloud connectivity and security services," Young said.

THE SOLUTION

Implementing Network-Driven Solutions

The network is the foundation that enables the delivery of innovative IT modernization solutions that government employees and constituents can use either onsite or remotely. In other words, it can make or break how effectively and efficiently an agency can meet the needs of the business and the mission.

Today, the network has taken many forms. It connects the dots that drive modernization. From an application and data perspective, it allows for mobility and the ability to perform with minimal latency and on-demand. “We are looking at our network much more holistically than we have in the past,” Opferman said. “You see the network playing a much more real-time role in delivering the applications and the needed bandwidth in an on-demand basis.”

The movement of data and applications on the network can take place from anywhere, geographically speaking, and also while mobile. That’s the adaptive network. The network is vital when it comes to enabling innovation in the domains

of application mobility. The network is also vital to enabling the application to be redundant and to achieve a high degree of reliability.

IP and routing protocols are robust enough to allow networks to have a comfortable degree of fault tolerance, which frees IT managers to focus on user requirements and how to deliver on them.

“Innovation is able to occur much more rapidly, much more creatively, because a lot of the underlying functions are being handled, are being taken care of, so we don’t necessarily have to worry about how to move, how to protect, how to secure the application itself,” Opferman said. “That’s all taken care of for us. The network really obfuscates a lot of the complexity in offering services per the requirements that we’re getting today.”

Innovation and technological evolution can sustain those growing requirements by virtue of a secure, reliable network.

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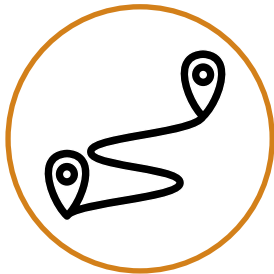
- Stephen Opferman, Senior Director of Innovation, CenturyLink

Creating Network-Driven Solutions for Modernization



1. Get agencywide employee support.

In modernization, cultural change matters as much as technological change. Change can be hard for longtime employees who oversee legacy systems, while newer ones are likelier to embrace it. Getting support from agency leaders will go a long way toward amassing widespread buy-in. It's also helpful for the IT shop to score a small win with modernization that they can use to illustrate how the changes translate into improvements.



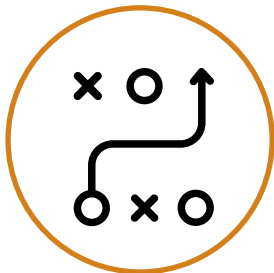
2. Plot a path to incremental change.

Preparing for modernization requires strategic and tactical planning so that each requirement you deliver on builds more capabilities into the infrastructure you're upgrading. "Your plan to modernize should not be this atomic drop where one day you wake up and the entire network has evolved," Opferman said. Take software-defined networking in a wide-area network (SD-WAN), for example. A virtualized SD-WAN environment lets you dynamically change your overlay network to suit your needs, but you must build up to it, adding equipment to the edge of the network and looking at it from an operational perspective.



3. Determine your security posture.

There's no one-size-fits-all plan or silver bullet. Agency officials need to collaborate to decide whether they want a zero trust environment or if some capabilities can be waived, whether they will allow incoming traffic or block everything from coming into the network.



4. Establish a plan for applications.

As you make changes to your network, understand where and how your applications are going to be run and managed. Because you build out modernization piecemeal, the workload will steadily increase. "We're going to have to be in a position where we can scale horizontally, not just by adding new servers as we have done in the past, but now that the network offers the ability to execute in a much more geographically diverse way, we're going to have to rethink how we scale our compute and our storage," Opferman said. "The network will allow for a tremendous amount of permutations."

"Modernization is a constant state of change and part of the day-to-day business of technology at every agency." - Cloud Smart Strategy

USE CASE

The Network and Connectivity

Although agencies' IT modernization needs differ, a common theme threads through them: connectivity. And at the core of that connectivity is the network. Without those elements, agencies would not be able to deliver services, meet missions or serve citizens.

Most recently, the Census Bureau tapped CenturyLink to help digitize the 2020 Census by providing the agency Managed Trusted IP Services at speeds of 40 Gbps or higher. That will enable the agency to comply with the Office of Management and Budget's Trusted Internet Connection initiative, making the census process more secure for 125 million households.

Other success stories include:

- Saving a federal law enforcement agency \$30 million in capital expenses through a CenturyLink-funded infrastructure upgrade
- Helping a Department of Defense (DoD) customer improve the end-user experience by upgrading more than 3,500 Wi-Fi access points at one installation to optimize coverage
- Assisting a DoD innovation lab in the development of an IoT-driven smart factory, a digitized and connected production facility, to automate the management of logistics functions enterprisewide
- Increasing a federal agency's productivity via adaptive networking solutions that deliver always-available data and fast, secure cloud connections

CenturyLink again put the spotlight on the network when it launched Cloud Connect Dynamic Connections for real-time network provisioning last year. Based on information such as throughput requirements that agencies give to an application programming interface, the technology responds by providing the connection that meets those needs.

HOW CENTURYLINK HELPS

A trusted provider of infrastructure and network-driven solutions, CenturyLink is helping hundreds of government customers bridge the IT gap of past, present and future technologies to deliver on the mission.

Evolved from strategic acquisitions of key government IT services and solutions providers including Qwest, Savvis and Level 3, these acquisitions were designed with our end customers in mind. CenturyLink's combined forces provide government with secure, scalable and reliable network solutions that help agencies to accelerate their modernization by bridging the gap of past, present and future technologies that enables a portfolio of innovative, network-driven solutions.

Keeping pace with innovation means changing the way we provide services and solutions to the government.

CenturyLink works hand in hand with government customers with a shared mission focus on IT modernization. We invest time and resources with our customers that demonstrates our commitment to their success, our ability to provide rapid design and implementation of needed capabilities and innovative network-driven solutions, as well as our responsive engineering capabilities.

"What I'm talking about is a partnership between government and industry where sharing is valued," Young said. "This is really at the core of how I describe IT modernization; it's a lifestyle. It is something that's always evolving and never finished. If government and industry are working together on a common outcome, it changes everyone's perspective. So, the precursor to a question about which technologies agencies need to adopt is: How can we change how government buys technology in the first place?"

Conclusion

Legacy IT has had a good run, but as citizen and government employee expectations evolve, aging systems' days are numbered. Support for modernization has reached the government's highest leaders, making it a must for federal agencies.

At modernization's core sits a scalable, secure network that can deliver the innovative solutions employees and citizens expect for efficient, effective digital experiences. But achieving an up-to-date IT environment has no one-size-fits-all solution and no switch can be flipped to make it so. Rather, it's a multi-step process that involves more than just technology. It requires careful planning and buy-in from employees at every level of your agency – effort that is well worth the payoff.



ABOUT CENTURYLINK

CenturyLink is a technology leader delivering hybrid networking, cloud connectivity, and security solutions to customers around the world. Through its extensive global fiber network, CenturyLink provides secure and reliable services to meet the growing digital demands of businesses and consumers. CenturyLink strives to be the trusted connection to the networked world and is focused on delivering technology that enhances the customer experience.

Learn more at centurylink.com/federal.



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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