

To Extend the Enterprise, Fix the Foundation

RESEARCH BRIEF



| Swish

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Executive Summary

Legacy IT infrastructure often hampers digital transformation of government enterprises and improved attainment of agencies' missions. Until that changes, delivery of services by government agencies will continue to lag behind standards established by private sector companies.

The COVID-19 crisis has shifted the conversation in the direction of transformative solutions, such as software defined wide area network (SD-WAN) aligned with Trusted Internet Connection (TIC) 3.0. During the pandemic, the number of mobile workers and telecommuters in government has risen sharply, a big bump in what has otherwise been a long-term uptick. The trend toward more outward-bound government operations – offices, workers and service delivery – has been ebbing beyond traditional boundaries for years.

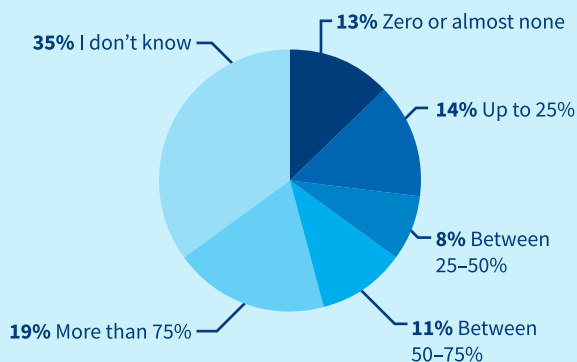
To learn more about this evolving environment, GovLoop partnered with Swish and Riverbed to survey the government community.

The survey found that 53 percent of government workers and offices primarily connect to the enterprise by way of the internet at least 25 percent of the time; for almost one in five people taking the survey, their colleagues use the internet to connect to the enterprise more than 75 percent of the time. “I think we’re going to see a more mobile workforce within the government,” said Marlin McFate, public sector chief technology officer for Riverbed, an IT company specializing in network performance monitoring and management. “COVID has really just put a point on it.”

Yet for many agencies and workers, remote access to the enterprise continues to be erratic. Half of survey respondents reported that accessing enterprise applications remotely is sometimes fast and reliable – sometimes not; and 34 percent said remote access is either always slow and frustrating or rarely fast and reliable. Only 17 percent said remote access to enterprise applications was always fast and reliable.

“Loads on networks have become exponentially higher with the use of multimedia and that creates a lot of demand on legacy architecture. It becomes a choke point,” said Sean Applegate, chief technology officer for Swish, a provider of technology solutions and engineering services. “We can get [much] more capacity, shorten the path to public SaaS application and eliminate central capacity bottlenecks.”

What percentage of people and offices at your organization under normal operations primarily connect to the Enterprise via the internet?

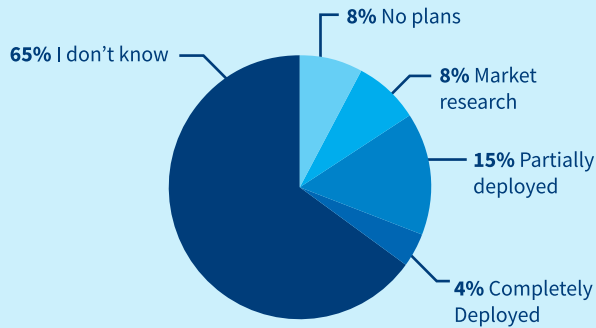


SD-WAN: Foundation for the Future

Government agencies understand the value of software defined networking (SDN). Many of these organizations have incorporated SDN into their data centers and cloud environments, yet others have resisted extending those same capabilities to include an SD-WAN for remote site connectivity.

Asked about goals for SD-WAN, nearly two-thirds of survey respondents indicated that they were unfamiliar with their organization's plans; 15 percent reported that their agency had no plan for SD-WAN, and 9 percent indicated that their organization had a partially deployed SD-WAN. Only 9 percent said their organization's SD-WAN was fully deployed.

What are your plans for SD-WAN?



Uncertainty about how to improve remote connectivity is an unintended consequence of agencies indiscriminately adding technology to networks, a practice that has persisted for years.

“Networks over time have become these bolt-on environments ... and the more we bolted on, the more complicated, inflexible and fragile networks became,” McFate said. Now, those same organizations, “don’t have any idea of how to get from point A to point B. This is a bit of an unintentional, yet self-inflicted problem.”

To simplify the process of optimizing remote access, agencies can begin by defining infrastructure requirements for branch offices in three major areas: improved performance, simplified operations and stronger security. A robust solution will align with presidential management requirements, particularly as they relate to user experience, and bring value to the enterprise. A viable solution for meeting remote connectivity requirements will determine the best path for sending data traffic – and shift from traditional packets to application or identity aware. The endgame, however, isn’t simply to send an application from point to point. The goal is to make it faster – much faster – in order to experience productivity gains that accelerate mission attainment.

Agencies will also consider how remote connectivity solutions fit with options for building a secure access security edge (SASE), which requires compliance with TIC 3.0 requirements. Ultimately, most agencies will look for a solution that maximizes security and performance.

Stopping Bottlenecks and Chokepoints Before They Start

Limitations of legacy infrastructure can lead to problems when advanced technology is introduced into a network or when workloads increase. Indeed, agencies seeking to connect remote offices to a global WAN sometimes run into challenges. Asked about problems they have encountered most frequently, 50 percent of people who took the survey identified unpredictable performance of the internet or software as a service (SaaS) application. The second biggest headache, cited by 46 percent of respondents, focused on complaints about poor or slow application performance. Complexity of network management came in third, reported by almost 36 percent of survey takers.

To a large degree, those challenges stem from underlying legacy infrastructure and protocols that require all network traffic to route through a TIC before reaching applications. Those circuitous routes add distance between remote users and their work tools.

A good SD-WAN solution, aligned with TIC 3.0, overcomes those challenges by routing traffic more directly or by providing geographically dispersed points of entry. SD-WAN also supports deduplication, improved path selection, central management and robust security at the edge. “Agencies are still trying to do all of these new great things, but they’re trying to do it with legacy networks and legacy architecture,” Applegate said.

So just how hard is it to extend IT support to workers and offices operating beyond the perimeter of the traditional agency headquarters? The majority of survey respondents (60 percent) were somewhat sanguine about attaining

When connecting remote offices to a global WAN, what challenges are encountered most often?

- 1 Unpredictable performance of internet/SaaS applications**
- 2 Users complain about poor or slow performance**
- 3 Complexity of network management**

those goals, saying they had a plan to overcome inevitable bumps in the road. One group of respondents (12 percent) indicated that the transition would be smooth and effortless. Another 12 percent cohort said they were overwhelmed and hopelessly lost.

Beware the path that appears easy. Transitions may appear effortless at the outset, deceptively so, IT experts say. Inevitably, success and failure emerge from an accretion of details, coming into view only after connecting many dots. A project that starts with high hopes can succumb to “death by a thousand paper cuts on the web,” said McFate, “particularly when legacy infrastructure is part of the equation. We need to start off with a different foundation.”

To effectively execute their missions, most agencies will have to extend IT support to workers and offices operating beyond the perimeter of traditional enterprise. How challenging will this transition be at your agency?



11% This will be a smooth and effortless transition



62% There will be bumps in the road, but we have a plan



7% We have a destination but are unsure how to get there



9% Uncertainty has kept us from making a start



9% We are overwhelmed and hopelessly lost

Security and Performance Can Coexist

Security and performance are pillars of the federal enterprise architecture standards, a duality that was apparent in the answers provided by survey respondents asked about the importance of WAN modernization use cases for remote office connectivity. Topping the list of most important use cases is “secure cloud-direct networking with TIC 3.0 integration.” Survey takers’ second most important use case is “insightful performance and security analytics.”

The top three use cases for WAN modernization:

1. Secure cloud-direct networking with TIC 3.0 integration
2. Insightful performance and security analytics
3. Low cost, high throughput, internet transport

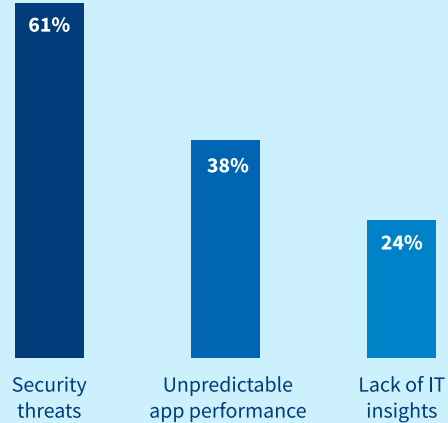
Influencing adoption of any new technology in government are bureaucratic cultures that tend to value well-defined rules, such as those that inform cybersecurity.

Performance metrics tend to be less rigidly defined, although administrative-level objectives and agencies’ strategic plans make clear that “mission is the most important thing and productivity around mission is critical,” Applegate said. “Security is there to keep us safe, but we need to be able to make data-driven decisions that advance missions.”

Security threats were the top concern among survey takers (60 percent) responding to a question about challenges arising from public sector adoption of SaaS applications, such as Office 365. Nearly 39 percent of respondents said “unpredictable application performance” was their second greatest concern.

Concerns about security extend well beyond making applications safe in the cloud, a challenge rigorously met by FedRAMP and other security requirements. In a post-perimeter environment, however, security also entails securing the branch, the remote site and remote endpoints. The goal for agencies is to get the analytics needed to monitor security while also improving

What are your greatest concerns for the employee experience when adopting SaaS applications at remote sites?



performance. For advocates of SD-WAN solutions, the answer always comes back to creating shorter, simpler paths for data, thereby eliminating unpredictably and traffic bottlenecks.

Forty percent of respondents identified “secure cloud-direct networking” as a most important SD-WAN capability. Coming in second was “Built-in Next Generation Firewall and intrusion Protection Systems,” according to survey participants.

Not all SD-WANs are equal, and some of them aren’t sufficiently robust to work as an appropriate solution for a complex enterprise with a lot of security requirements. “When done well, however, the right SD-WAN can enable a handful of people to effectively manage thousands of sites and policies,” McFate said.

“The aim is to oversee security in a more centrally managed, centrally distributed way so that you remove a lot of the human error and [potential for] unknowingly having areas of your network or pieces of the surface that are vulnerable,” he said.

What advanced SD-WAN capabilities are most important for your enterprise remote sites?



1. Secure cloud-direct networking



2. Built-in next-gen firewall/intrusion protection



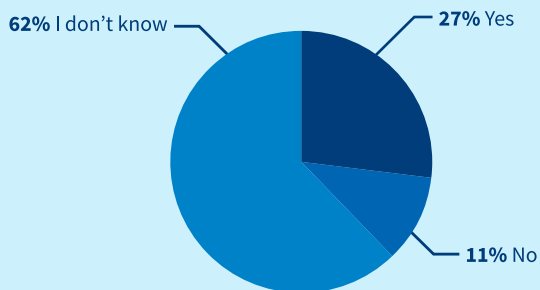
3. Built-in application acceleration

The ROI of SD-WAN: Reduced Complexity, Better Performance

At a time when many government budgets are expected to grow slowly, if they grow at all, the cost of acquiring and operating technology in the public sector will draw renewed attention. That fiscal scrutiny will include the cost of connecting offices and government workers that operate beyond the traditional IT perimeter.

Results of the survey indicate that 62 percent of respondents didn't know if their agencies had prioritized acquiring and operating WAN environments at lower cost. Of respondents who had an opinion, however, those who said cost reduction was a priority (28 percent) outvoted by a nearly three-to-one ratio those respondents who said that cost wasn't a major concern (10 percent).

Has your agency made it a priority to reduce the cost of acquiring and operating its WAN environment?



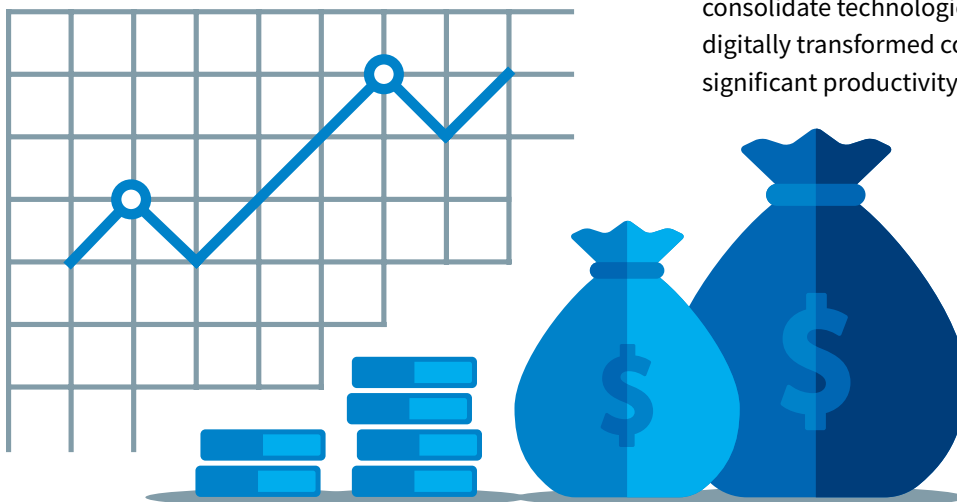
Asked about challenges encountered when connecting remote offices to a global WAN, almost 29 percent of survey takers said “cost and/or availability of private WAN circuits” are a top concern. Most frequently cited was the “unpredictable performance of internet or SaaS applications.” The second most-cited concern was complaints by users about poor or slow application performance.

Asked about the importance of WAN modernization use cases for remote office connectivity, “low cost and high throughput internet transport” ranked in the top half of responses. The number one concern was “secure cloud-direct networking with TIC 3.0.”

Concerns over the cost of extending agencies' functions beyond home offices have multiple dimensions. For most federal agencies with hundreds or thousands of sites, transporting large volumes of data using multiprotocol label switching “is very, very costly,” Applegate said. Moving to internet-based transport, enabled by SD-WAN and TIC 3.0, can increase capacity by up to a thousand times at the same or lower cost.

Upshifting from legacy technology to software defined connectivity also drives down personnel and operations costs. Managing lots of complex devices at a branch frequently requires specialized teams comprising hundreds of people, numbers that decline with advanced infrastructure.

Similarly, the architectural cost of legacy infrastructure is high relative to a SD-WAN environment that can consolidate technologies and simplify operations. Finally, digitally transformed connectivity is capable of delivering significant productivity gains, thereby boosting efficiency.



Agencies Lean into TIC 3.0

Asked to rank the importance of WAN modernization use cases for remote office connectivity, the top choice of respondents was “secure cloud-direct networking with TIC 3.0 integration,” a choice that mirrors a desire within federal agencies to rapidly improve infrastructure in advance of adopting large SaaS applications.

“We’re seeing this huge tsunami of change in a lot of agencies toward SaaS-hosted applications where they’ve moved from traditional exchange site file shares to Office 365 in the cloud,” Applegate said. “A more direct path to applications, making the path shorter, is seen as an improvement.”

Second choice was “insightful performance and security analytics,” capabilities that help organizations meet security compliance requirements. Beyond security benefits, the value of performance metrics extends to troubleshooting remote users and sites.

Many agencies are considering over-the-top cloud-based TIC 3.0 architectures to improve employee access to the internet, SaaS applications and IaaS/PaaS, while maintaining security compliance.

Asked about their organizations’ plans for a cloud-based TIC 3.0-type architecture, 27 percent of respondents said such a solution was fully or partially deployed or under active consideration. But the majority (64 percent) said they didn’t know what their organizations’ plans were.

What TIC 3.0 use cases are most important for your organization?

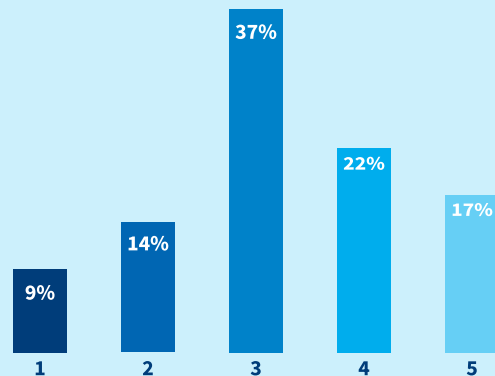
- 1 Elastic, secure access for teleworkers**
- 2 Ease of security policy management across cloud, remote work, etc.**
- 3 Data protection**

“There’s still a lot of unawareness around TIC 3.0 today,” Applegate said.

TIC 3.0 also provides innovative capabilities for streamlining global security in today’s cloud-centric world. Asked to identify the most important TIC 3.0 use cases, more than 42 percent of respondents acknowledged the importance of “elastic secure capacity for teleworker access.”

As work arrangements evolve and the ranks of off-site government workers grow, the challenge of remote connectivity has become acute. Agencies will seek solutions that efficiently break up bottlenecks and increase elasticity while improving reliability and performance.

On a scale of 1 (not at all) to 5 (extremely important), to what extent is integration of SD-WAN with new cloud-based TIC 3.0 capabilities a priority for your organization?



Overall, survey respondents reported that their organizations were more likely than not to view, as a priority, the integration of SD-WAN with new cloud-based TIC 3.0 capabilities. On a scale of 1 (not important) to 5 (extremely important), about 40 percent of respondents opted for the middle ground (3). Respondents selecting 4 or 5 (37 percent) easily outpaced the less-enthusiastic cohort that opted for 1 or 2.

Underlying those numbers, McFate said, is a desire to “shift from a fragile, secure architecture to one that is dynamic and brings the value of security and performance with greatly reduced management cost, plus the value of automation to accelerate the speed of operations.”

How Swish and Riverbed Help

Only the most robust infrastructure solution can ensure connectivity and IT functionality to government agencies that are becoming more mobile, more dispersed and operating at greater distances from home offices and traditional IT perimeters.

Riverbed SteelConnect EX is a next generation SD-WAN platform that provides unified LAN, WAN and cloud connectivity across the most complex digital enterprise. This SD-WAN ensures fast, agile secure application delivery.

Realizing the benefits of SD-WAN – flexibility, automation, service quality and centralized management – is a challenge for many government organizations. SteelConnect EX makes it possible for public-sector enterprises to replace thousands of manually configured routers with virtual network designs based on plain-language business policies; instant, single-click provisioning into the cloud; zero-touch provisioning across the edge; and easy orchestration of service level agreements (SLAs), quality of service (QoS) and network changes.

To learn more, visit www.SwishData.com and www.riverbed.com

Conclusion

Running government agencies' modern applications on a foundation of legacy infrastructure is like driving a fleet of Ferraris on a tangle of twisted, unpaved country roads. Those Italian sports cars would eventually reach their destinations, but they won't come close to reaching top speed, and eventually the wheels will come off.

Modern IT enterprises are like that. Seeking to extend offices and workers beyond the traditional IT perimeter, government organizations must support remote offices and mobile workers with fast, reliable, secure connectivity. Making and maintaining those connections at a time of increased data traffic and cloud-based

applications requires IT infrastructure that is flexible, agile and scalable – characteristics that legacy IT is ill-equipped to provide.

Nor can agencies rely on old solutions. Clumsily adding functionality to an IT enterprise – by procuring and bolting new tech onto old legacy infrastructure – no longer works. As government seeks to improve mission attainment by pushing operations beyond the perimeter of traditional IT, new requirements are burdening legacy systems. The result is bottlenecks, chokepoints and slower traffic – impeding delivery of services and undermining mission.

One path to a viable solution is a robust SD-WAN that aligns with TIC 3.0 standards.



About Swish

Swish is a 10 year old veteran-owned solutions provider, with a focus on high-quality outcomes for our clients. Our experienced and certified engineers search out the most innovative technologies, and then develop full lifecycle solution offerings to ensure our clients realize maximum operational value. Swish ensures your digital service capabilities, performance and security exceed your mission requirements. Working together, we build long term relationships focused on value, sharing our insights and ideas to help our clients succeed.

To learn more visit swishdata.com.



About Riverbed

Riverbed enables organizations to maximize performance and visibility for networks and applications, so they can overcome complexity and fully capitalize on their digital and cloud investments. The Riverbed Network and Application Performance Platform enables organizations to visualize, optimize, remediate and accelerate the performance of any network for any application. The platform addresses performance and visibility holistically with best-in-class WAN optimization, network performance management (NPM), application acceleration and enterprise-grade SD-WAN.

Learn more at riverbed.com.



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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