Moving Forward with Modernization

How the Adaptive Network™ enables governments to build a more efficient, cost-effective path to a digital future

The major disruptions that have taken place so far in 2020 required government IT teams to adapt quickly to rapidly changing environments. At the same time, demand for government services is growing. Government IT offices are under mounting pressure to modernize their networks to deliver digital applications that provide citizens, businesses, and employees 'anytime, anywhere, any-device' access to digital services — even as budgets shrink.

For states that have a centralized Office of Information Technology (OIT), the need to serve disparate departments creates additional challenges. OITs are increasingly asked to deliver network services to departments with vastly different network traffic needs, priorities, and latency sensitivities.

To meet today's demands, the networks on which OITs rely must be high-capacity, fast, and reliable. But given current budget restraints, building new networks from scratch or conducting major 'rip and replace' projects is out of reach. Instead, state and local IT departments need a way to glean higher performance from existing networks without significant investment.

The Adaptive Network™ vision

To achieve economies of scale, many OITs strive to utilize a single network infrastructure. But the digital applications government agencies and citizens demand today are more bandwidth-intensive and latency-sensitive than those utilized in the past. In addition, many of those applications leverage technologies like artificial intelligence (AI), the Internet of Things (IoT), or robotics, all of which place significant demands on a network. As a result, legacy networks can easily become over-subscribed, leading to congestion or outages.

Legacy networks can also be complex to manage. Whenever network elements need to be repaired or replaced, it can take days to accomplish, interrupting operations and generating additional expense. Adding to that challenge, experienced government IT staff are retiring in growing numbers, and OITs continue to struggle to attract and retain new IT talent that can manage legacy network protocols and technologies.

To provide the modern IT services citizens, departments, and employees want and need, OITs must have a network that can

adapt to different demands and enable them to provide reliable services across different customer sets — a modern network foundation that is predictive, automated, and virtualized. The good news is that achieving these goals does not require building new networks. The Adaptive Network vision, built on Ciena's hardware and software solutions, can enable an OIT to optimize existing network infrastructure and steadily move to a more modern, predictive, automated, and agile network.

The Adaptive Network vision is built on three key pillars:

1. Programmable infrastructure refers to physical and virtual network devices that can be accessed and configured via common open interfaces, are highly instrumented (with the ability to export real-time network performance data), and can adjust as needed to meet the demands of the applications running on them. Programmable infrastructure helps prevent network outages and congestion and results in improved network reliability and resiliency.

2. Analytics and intelligence help predict potential network problems and anticipate trends. This also allows OIT staff to conduct 'what-if' modeling to see instantly the potential downstream implications of planned changes to the network. In the same vein, combining network traffic data with analytics software can provide OITs a clearer view of what is happening throughout their systems. They can see and resolve problems and ensure network traffic returns to normal quickly.

3. Software control and automation simplify the act of managing and automating networks end to end across multi-vendor, multi-domain hybrid networks. This reduces complexity and provides OITs greater control. An OIT no longer needs a separate staff to manage various vendors' network devices; it is all done through a single 'pane of glass.'

Making networks that adapt can enable state and local government IT teams to consolidate disparate platforms and networks across agencies to achieve cost and operational efficiencies, while ensuring traffic prioritization and low latency where required. Further, it can help IT staff become more efficient and flexible and ensure various agencies — regardless of size — have reliable, resilient connections to critical applications and data hosted in the cloud or OIT data centers.

For example, one state was running a large Multi-Protocol Label Switching (MPLS) network with thousands of endpoints. Congestion and outages were increasing, and it took them days to figure out the root causes and resolve them. Working with Ciena to implement the Adaptive Network vision, state OIT employees are now able to identify the root cause of problems within minutes and resolve them more easily. The state has also adopted what-if modeling to understand the implications of any changes, maintenance, or upgrades to the network. They can now easily identify any unexpected impacts of those changes and avoid or modify them to prevent disruptions or downtime.

Moving toward a modern network

Moving to a modern network that relies on programmable infrastructure, machine learning-based analytics, automation, and virtualization can help OITs maximize the performance on their existing networks. The automation, virtualization, and analytic capabilities that are part of the Adaptive Network vision can also help OITs accomplish more using fewer employees. By consolidating disparate platforms and networks across agencies, an OIT can achieve cost and operational efficiencies and enable more streamlined operations while providing a better customer experience.

A modern network can also help OITs simplify IT, improve resiliency, and become more flexible. Given the current environment, the ability to make modifications or repairs to the network remotely is more important than ever. And as technology evolves, the Adaptive Network can help state and local governments adapt and keep pace with innovation.

But network modernization does not have to happen overnight. Migrating to a modern network can be a gradual, ongoing process that keeps downtime and disruption to a minimum and does not require OITs to rip and replace old networks. An agency also does not need to pursue all three pillars at once. An OIT can look at commonalities of demand or challenges within those three pillars, prioritize specific use cases, and expand from there. Perhaps most critically, the Adaptive Network can provide governments a cost-effective path to a more resilient and digital future.

This piece was written and produced by the Center for Digital Government Content Studio, with information and input from Ciena.