Managed SD-WAN Can Help Government Agencies Provide Better Service at the Edge

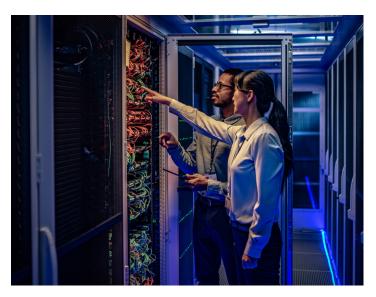An emergency manager in Louisiana coordinating the federal response to a hurricane. A public health nurse setting up a COVID vaccination clinic in rural New Mexico. A team of smoke jumpers keeping a forest fire at bay in the mountains of Idaho. A ranger trying to keep a national park in Tennessee from being overcrowded with visitors.

These people are each at the outer edge of a vast network of men and women working for government agencies all over the United States. To do their jobs well, they need to be in communication with their peers and with those coordinating their activities across the government. Most of the time, existing landline and mobile networks are enough to support the task at hand. But often, people on the front lines work in locations out of range of terrestrial networks. Or they need to provide emergency or recovery services in an area where the terrestrial infrastructure is damaged due to natural disasters. Or they don't have enough bandwidth to carry the amount of voice, video, or data required. Or they are on a proprietary network that is incompatible with those of their peers at other agencies.

This doesn't happen in the private sector. Fill up at any gas station off the Interstate in the middle of the Nebraska prairie and your credit card transaction is immediately approved at the pump. That's because the pump is linked to the nation's financial network through a connection that might include terrestrial, wireless, and satellites. Most companies figured out long ago that multitransport networks connected to the Cloud could meet the demands of their customers for quick, seamless service, virtually anywhere.

Government agencies are finding that their existing communications networks based on legacy MPLS circuits connected by T1 lines are costly, inflexible, and limiting. In a survey of federal IT professionals, 67% of respondents said that their agency is struggling to keep pace with the changing demands of Cloud-based and hybrid technologies. Agency employees who work in the field or in out-of-the-way locations can't count on always having the communications tools that they need to best do their jobs. Demand for bandwidth from Cloud technologies, video streaming, teleconferencing, and other bandwidth-hungry applications will only continue to grow. This was particularly evident in the strain on networks caused by wide-scale telework during the COVID-19 pandemic.

Another challenge is that agencies providing a service 24 hours a day, 7 days a week cannot risk any network outage. But terrestrial networks often suffer from brownout and blackouts, causing network disruptions. In the commercial world, an organization with 1,000 or more sites will experience from a few minutes to several hours of downtime at 10% of the locations every day. They get around this by having redundant terrestrial lines or, more commonly, secondary wireless capacity that comes online in the event of a terrestrial network glitch.

The Managed SD-WAN Solution

The solution for government organizations is a managed software-defined, wide-area network (SD-WAN) that is tailored to meet each agency's particular needs. Using an intelligent, on-premises routing device, a Managed SD-WAN from Hughes can be phased in gradually while an agency continues to use its existing MPLS connections so that there is never a disruption in service anywhere on the network. The Hughes Managed SD-WAN includes equipment, broadband transport, network management, help desk support, and robust branch security.

HughesON™

HughesON is a suite of innovative, Cloud-ready network and digital media solutions.

A typical MPLS network allows an agency to connect remote locations to a central data hub and to one another. The network typically uses compatible equipment from a single vendor or carrier, but it is expensive, and long distances and the number of sites drives up that cost. Another challenge is that an MPLS network provisioned with T1 lines is limited to 1.5 Mbps per link, which may not be enough for some users, leading to congestion. Upgrading to MPLS Ethernet at 5 or 10 Mbps drives the costs up further. An agency can reduce the cost by using an IP based connection, but the capacity would be shared among all the other users on that network segment. This can lead to congestion, latency, and outages.

The Hughes Managed SD-WAN solves these problems by taking over the task of data routing and overlaying the network with control policies that allow the disparate network connections to run more like dedicated circuits while also managing traffic flow across multiple connections. Managed SD-WAN is carrier agnostic and weaves together wired, cellular and high-throughput satellite connections into a seamless network. In locations outside of terrestrial wire connections, cellular 4G LTE (and soon 5G) can be used for low-latency applications while satellites can carry the bulk data, giving an agency a dual path for high-availability, low-latency networking.

With Managed SD-WAN, both the cost savings and the increase in bandwidth can be dramatic. Agencies typically pay an average of $400 to $600 a month per MPLS T1 line, which delivers a mere 1.5 Mbps download speed. That's not even enough capacity to stream multiple meetings over Zoom. The cost of a broadband access line to the same location would be between $100 to $250 a month and provide 25 Mbps to 100 Mbps download speed per line. For government agencies with hundreds or even thousands of locations, a modern Cloud-based network provides huge benefits to both budgets and efficiency.

One of the greatest benefits of Managed SD-WAN is that network functions and policies are automated, ensuring that applications are automatically identified, and that critical data is prioritized in real-time, even when encrypted. With the system identifying and prioritizing applications automatically, new applications can be added without making network changes while ensuring that existing functionality is not impacted. Because agency networks depend on broadband connectivity with variable performance characteristics, Managed SD-WAN with forward-error correction ensures that critical data gets through even if there are network issues. Finally, Managed SD-WAN delivers highly available connectivity by leveraging multiple WAN connections at the branch and seamlessly routing applications to the best performing path to ensure the best user experience. Data compiled by Hughes shows that having just two circuits working together can provide 99.997% availability, much higher than can be achieved with any single circuit.

Once fully implemented, the Managed SD-WAN solution from Hughes can provide an agency with the very latest network management capabilities:

- **Hughes AIOps:** Using Artificial Intelligence (AI) and Machine Learning (ML), Hughes AIOps automatically predicts and preempts — or "self-heals" — undesirable network behavior, preventing service-disrupting events. Hughes is the first managed services provider to deliver a self-healing network capability to its customers. Hughes AIOps detects deviations in key metrics against an evolving network baseline, gleaned from nearly 215,000 North American enterprise sites under the company's management. Hughes AIOps then assesses the risk-reward of potential corrective actions, autonomously takes appropriate measures, and tracks performance to ensure a return to steady-state parameters. Hughes AIOps also recommends corrective steps to IT managers as agency network problems are identified.

- **Secure Access Service Edge:** For any agency making a change in its network, implementing robust security is a top priority. A security failure at any single agency site can result in an intrusion that could wreak havoc on servers, laptops, and mobile devices across all sites. The Hughes Secure Access Service Edge (SASE) provides dynamic, network-wide security so that all network users, device endpoints, public and private Cloud resources, and data centers are authenticated and secured within the context of preset parameters. By focusing on end-to-end security from the user to the agency server or workload, the two most vulnerable points in any network interaction, an agency greatly reduces the risk of a significant breach at a single point of failure.

- **HughesOn Portal:** For an IT manager, being able to see all aspects of network is critical. The HughesOn Portal is the interface that provides a complete picture of all network activity on a single screen. The HughesOn Portal gives agency IT managers a single interface to request and track network service changes as well as for network monitoring, diagnostic tests, specific location information and historical information about the performance of each part of the network.

Transforming a network is a process, not a one-time event. With Managed SD-WAN from Hughes, government IT managers can build upon existing infrastructure and gradually add enhancements that grow to meet each agency's individual mission. The process is never complete because the network is a reflection of the agency, constantly evolving and improving with the organization and reflecting advancements in network management technology and practices. The Hughes Managed SD-WAN solution provides the flexibility to continually add the best tools available that serve the communications needs of agency staff working on the front lines.

For additional information, please call 1-844-817-9099 or visit government.hughes.com.

HUGHES

An EchoStar Company

government.hughes.com