EXECUTIVE BRIEF

CAN YOUR NETWORK HANDLE A DISASTER?

The importance of network diversity to prevent system issues and failures at government agencies

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From floods and cyberattacks to pandemics and power outages, there is an extensive list of disasters that can strike a community at any time. When one does, citizens look to their state and local governments to respond — and to do so quickly and seamlessly.

Especially in today's environment, government agencies are putting a greater focus on continuity of operations (the ability to maintain essential functions during or after an incident has occurred) and disaster recovery (having plans in place to bring networks and systems back online after an outage). These two factors are key to re-establish a healthy, functioning community quickly.

A critical component of continuity of operations is having a reliable network.

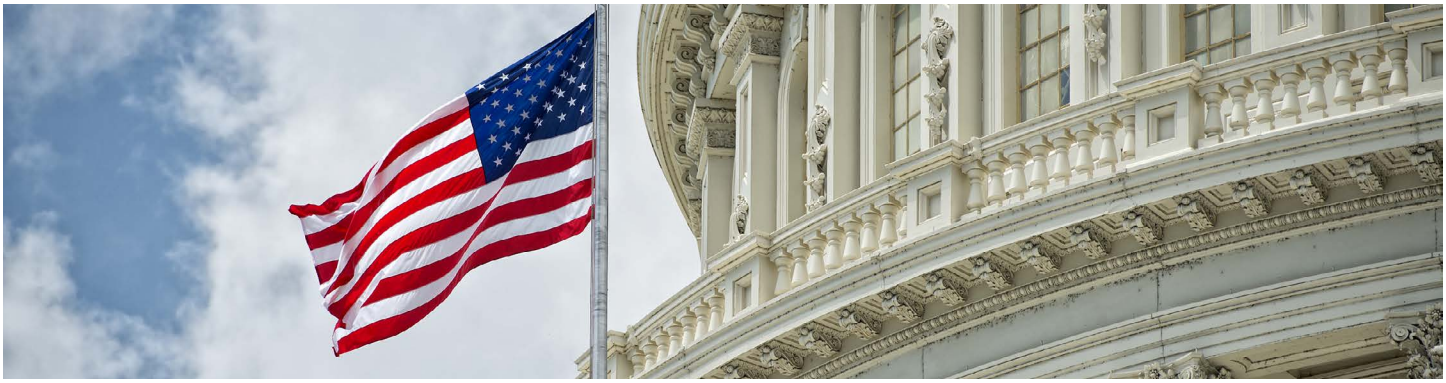
One critical component of continuity of operations is having a reliable network, one that is carefully designed and implemented to ensure your agency isn't exposed to network issues or failures. In this executive brief, learn about diversity, redundancy and design considerations for your network that can mean the difference between extended downtime or providing uninterrupted service to your citizens.

What is network diversity?

There are three types of network diversity: carrier diversity, access diversity and transport diversity.

- Carrier diversity is choosing two or more different carriers to provide network connections.
- Access diversity is the ability of a network to provide backup protection for local access circuits. These are what connect your location to the carrier hubs or wire centers.
- Transport diversity provides alternate transmission paths in the network core or cross-market section of the connection.

When combined, access and transport diversity ensures continuity of services to your location, which is important when you're connecting to the Internet, data centers or other locations. It's key to an effective disaster recovery plan. Having access diversity and transport diversity protects the connection to the building in the last mile and throughout the network. It also offers alternate access from the primary network you're using and an alternative physical connection.



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Network design considerations

Implementing network diversity requires more than just adding additional hardware. There are some important design considerations like hub diversity, separate transmission paths and uniformity in network design and build, among others.

When you're implementing hub diversity, at least two hubs should be from one or more service providers that use separate transmission paths for network traffic. Network design and build uniformity will require consistent technology for the platform, which will help you control any potential problems by introducing fewer variables that could make troubleshooting more difficult.

Another key consideration to ensure continuity of operations is making sure data and systems are backed up to the cloud or there are virtualized, redundant systems. Having dedicated bandwidth over a private connection to cloud service providers can reduce security risks, as well as allow you to scale up to cloud services as needed for faster service delivery. This may be a good time to consider replatforming legacy on-premises applications or extending them into the cloud so that they can be accessed in case of a network disruption.

The SLA with your network service provider can supplement your continuity of operations plans.

Network failover will also play into the design of your network. Separate routes are ideal for active and standby connections, and so are primary and secondary entrances to the building, to create network diversity. That way, if the route for active connections or primary entrance is compromised, the standby or secondary connections and entrances can keep the network running while the primary mechanism is being repaired — with minimal or no interruption to operations.

The value of an SLA

While ensuring your own network is up to date, you'll also want to examine the service level agreement (SLA) you have with your network service provider. This can supplement your continuity of operations plans. An SLA typically covers total performance, response and repair times. Knowing what's in your SLA can help you anticipate what you'll need to do and how long it may take in an emergency to get back online.

Having the right partner

Having a reliable, carefully designed, diverse network can help prevent network issues or failures that could negatively impact citizen experiences or result in sensitive information being compromised. That means including network design elements that can ensure operations will continue if one location goes down due to a catastrophic weather event or falls victim to a cyberattack.

Spectrum Enterprise operates a nationwide network that offers network diversity to help governments achieve the reliability they need to operate effectively. We support clients with a highly redundant and reliable fiber network. The network has more than 230,000 fiber route miles across the U.S., connecting over 217,000 buildings with fiber, making Spectrum Enterprise the third-largest provider of Ethernet services in the U.S.[1] We are also a recipient of the 2018 MEF Awards for Enterprise Application of the Year in Government.

Learn how the government IT solutions experts at Spectrum Enterprise can help prepare your agency to maintain continuity of operations at enterprise.spectrum.com/government.

1. Vertical Systems Group, "2019 U.S. Carrier Ethernet Leaderboard," (accessed 4/28/2020), https://www.verticalsystems.com/2020/02/20/2019-us-ethernet-leaderboard/.

About Spectrum Enterprise

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