

ETHERNET FABRICS: MEETING THE NEEDS OF GOVERNMENT



By introducing Ethernet fabrics, agencies can make their IT networks faster, more robust, and more cloud-ready.

HELPING GOVERNMENT AGENCIES MEET MANDATES AND ACHIEVE THEIR MISSIONS

As government looks to cut costs, agencies are faced with making massive changes to their networks to meet mandates for data center consolidation and the adoption of new technologies such as cloud computing and virtualization.

Although implementing these changes could result in lower computing costs and higher-quality services, the changes required to make legacy networks support modern technological advances could be cost-prohibitive. This is especially the case when the network's current hierarchical structure cannot meet the agency's current needs, let alone future requirements.

To overcome this challenge, many agencies are turning to Ethernet fabrics, which provide the flexibility, adaptability, expandability, and performance they need.

Today's emerging technologies require data centers to be able to rapidly shift resources to meet constantly changing demands.

A Look Back: The Evolution of Government IT

In the past, government networks began as closed systems. Agency IT infrastructures were tightly controlled, for security and to protect the technology, which was expensive and difficult to maintain. Workstations were large and immobile. Applications were small, communications were text-based, graphics were almost non-existent, and data remained on the network.

Government networks were created to support agencies with these low data throughput requirements, and they worked well because workstations, servers, and applications all resided on the same static physical network infrastructure. However, today's emerging technologies require data centers to be able to rapidly shift resources to meet constantly changing demands. Government agency networks need the flexibility to handle high quantities of data, streaming video, and an increasingly mobile workforce. The hierarchical Ethernet networks of the past just can't keep up.

The Rise of the Government Cloud

As the need for IT resources increased, it also fluctuated. It was neither constant nor predictable, and many agencies responded to those limitations by creating data centers that were much larger than they needed in order to meet peak capacity requirements. As a result, many of these data centers remained mostly unused for much of each year.

When the Office of Management and Budget implemented the Federal Data Center Consolidation Initiative (FDCCI) in 2010, it set the goal of cutting the total number of government data centers nearly in half by 2015. This mandate alone would save the U.S. government \$5 billion per year, but the agencies affected needed to find another source for the additional processing capacity they needed.

Cloud computing provided the answer. Using a network of remote servers hosted on the Internet, agencies could store, manage, and process data while avoiding the capital expense and maintenance costs associated with a dedicated data center. With these highly scalable resources available on demand, agencies could overcome the very issues that had caused the overabundance of data centers.

The "Cloud First" Policy: Redefining the Agency Network

Seeing the inherent value in cloud computing solutions, the U.S. government announced its "Cloud First" policy in late 2010. This policy requires federal agencies to use cloud-based solutions whenever a secure, reliable, and cost-effective cloud option exists.

Ethernet fabrics are specifically designed to support the demands of the cloud and the changing IT resource demands of today's government agencies.

However, the government data centers that will remain after the FDCCI is complete were designed around traditional Ethernet networks. In addition to being difficult to manage, these networks are also costly to operate, and aren't designed for the demands of cloud computing and virtualization.

To get the most value from cloud computing and to deal with the rise in high-bandwidth applications and technologies, government agencies must upgrade their network infrastructures, to allow applications and data to be available wherever and whenever agencies need them.

Why Ethernet Fabrics?

Ethernet fabrics are specifically designed to support the demands of the cloud and the changing IT resource demands of today's government agencies.

They are simpler to build and manage, and far more flexible and scalable than traditional networks. They are also designed specifically for highly virtualized and cloud-optimized data centers, and extremely stable in situations where resource scalability matters most.

For example, a traditional Ethernet network uses a hierarchical structure that provides a single connection between any two switches. This approach adds latency, since the traffic has to move through additional stops along the way, and slows down at that single point of connection.

An Ethernet fabric replaces the hierarchical structure with flat, point-to-point connections. Ethernet fabrics can be used in a number of network topologies, including tree, ring, mesh, and core/edge. This flexibility allows administrators to design services and architectures that meet their agency's needs.

By providing multiple paths, Ethernet fabrics allow data to take the shortest path to its destination, providing faster connections through a flatter architecture. This approach eliminates bottlenecks, improves performance, and supports virtualization by using every available path through an agency's infrastructure to transport virtual machines and their data more efficiently.

In addition, Ethernet fabrics reduce the cost and complexity of traditional Ethernet networks **while preserving existing IT investments**. Once in place, an Ethernet fabric network infrastructure can easily adopt new technologies without abandoning the familiar Ethernet. It doesn't require costly physical reconfiguration when resources move, and it offers greater scalability, efficiency, and ease of administration.

Ethernet fabrics provide the resource flexibility needed for cloud computing, virtualization, and future network growth.

No matter how agencies choose to meet government IT mandates, Ethernet fabrics provide the resource flexibility needed for cloud computing, virtualization, and future network growth. With an Ethernet fabric infrastructure, government organizations can keep the applications and services they need online and accessible to achieve their critical mission goals.

About Brocade

Brocade® networking solutions help the world's leading organizations transition smoothly to a world where applications and information reside anywhere. This approach is based on a strategy that enables a wide range of consolidation, virtualization, and cloud computing initiatives.

Offering an industry-leading family of fabric-based solutions, Brocade helps government organizations achieve their most critical mission objectives through unmatched simplicity, non-stop networking, application optimization, and investment protection. To ensure a complete solution, Brocade partners with world-class IT companies and provides a full range of education, support, and professional services offerings.

Brocade VCS® Fabric technology provides the foundation for the industry's most powerful and reliable—yet simplified—Ethernet fabrics. Delivered on Brocade VDX® switches, VCS fabrics offer all the benefits of advanced technology while working within the constraints of existing IT infrastructures. Learn more at www.brocade.com.



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