WAN SOLUTION MEETS THE CHALLENGES OF THE LARGE ENTERPRISE

Complete Enterprise WAN Solution Enables OpEx Reduction, Cloud Adoption, and Service Expansion

The network is a key component in the success of modern enterprises that need high-performance access to applications. A fast and reliable wide area network (WAN) service that connects all of an organization’s offices is no longer a luxury—it is critical to business success. The productivity of a workforce can be attributed to and enhanced by the quality of the WAN network in the enterprise, as it can ensure a superior application user experience. As the WAN has become more important, however, the operational and financial challenges of operating the network have become more of a burden. This traffic burden needs to be addressed in a way that enhances not only performance and reliability, but security, privacy, and compliance.

While critical to the operation and innovation within the enterprise, the complexity and expense associated with the network has also grown as networks have become faster and more robust to support the current and next generation of business applications. Growth in the WAN segment has introduced several key challenges to the enterprise, with deployment ease, flexibility, and scalability being an ongoing challenge in this segment.

How does the enterprise deploy a WAN easily while ensuring that the components implemented are future-proof and able to scale to meet future demands? How do enterprises enable cloud services such as access to hosted applications? An enterprise WAN network architecture is needed to effectively address this growing challenge.

**The Challenge**

Companies are increasingly looking to cloud service providers to augment their business with immediate access to applications and services, and a WAN that can enable this agility is essential to success. But adding services and additional devices to meet this challenge increases the total cost of ownership of the WAN and can have an effect on the bottom line.

Once installed, a new challenge is presented in the management of the WAN. Once implemented, the network should be easy to manage—and addressing this challenge is particularly problematic as the complexity of the network increases. Finally, the WAN should be services-ready, so that services can be added as needed without requiring changes to the network. A WAN implementation must support technologies that enable future growth and the addition of value-added services to the network.

The first key challenge of the WAN is in the ease of deployment and in its flexibility and scalability. This ease should extend to the manageability of the network once it has been implemented. The enterprise WAN does not consist of a single branch location, but rather sites of various size and purpose that are geographically dispersed. This dispersion and difference of purpose can be effectively addressed by introducing a common network that excels at carrying traffic of varying importance, with the ability to identify and prioritize it between sites, as well as between partners and third-party support organizations. The technology used to enable the single WAN network should have commonality. Network platforms that share the same operating system can be more easily migrated to more robust platforms as needs dictate. In addition, having a single operating system makes it easier to introduce new services and configurations to the network, as the same configuration is likely to migrate wherever it is needed.
Another key challenge is ensuring that cloud services are easily adopted by the enterprise. The drive to reduce cost combined with the need to provide a high-quality user experience often collide and cause business needs to come second to the need to control expenses. An answer to this conflict is often found in the adoption of cloud services in the enterprise. An effective enterprise WAN enables not only intercompany communication, but enables a robust and high-quality connection to the data center, either through direct interconnection to an enterprise data center, or through a direct connection to a cloud data center. Meeting this challenge is critical in controlling cost while enhancing the user experience with the data center.

The final challenge in the enterprise WAN is ensuring that the network is services ready. The network should be designed to be flexible, scalable, resilient, and secure—as these characteristics are all requirements of any service-ready network. An effective architecture in this space is modular in nature, allowing the addition of new services to the enterprise WAN such as VPN, Network Address Translation (NAT), and stateful firewall services. In addition, the enterprise WAN should support implementation of value-added services such as WAN acceleration and content caching services, to name a couple.

The Juniper Networks Enterprise WAN Solution

The Juniper Networks enterprise WAN solution addresses each of the areas that typically challenge enterprise WANs, including the Internet edge, WAN aggregation, and data center connectivity, for both large enterprises and managed service providers (Figure 2). This solution can be viewed as an aggregation services point of presence (POP) at the enterprise edge. The solution is built upon Juniper Networks® MX Series 3D Universal Edge Routers as the large and medium site enterprise WAN routers. This enables easy deployment, as the MX Series routers all run on a single version of Juniper Networks Junos® operating system, which provides a common set of commands as well as robust and proven automation capabilities for configuration, operations, and event management. The MX Series enables flexibility and scalability with its capabilities and performance as a carrier-grade device. The solution also enables carrier-grade resiliency and security, providing carrier level protocol convergence and redundancy as well as security in a single enterprise WAN platform. This ensures high availability, protection from outages, and fast recovery in the event of a network incident.

The Juniper Networks enterprise WAN solution is also built to be simple to manage. Because the entire solution runs on a single code base (Junos OS), configurations are portable, designed to be moved and repurposed across the network. The solution supports standard management interfaces such as SSH and HTTPS and will interoperate with various network management systems, including the open and extensible network application platform, Juniper Networks Junos Space. The management of the enterprise WAN solution is a key component in simplifying the operations of the network. Finally, the enterprise WAN solution is built to be services ready, able to provide VPN, NAT, stateful firewall services, and WAN acceleration. In addition, through Juniper Networks Junos SDK and virtualized security services such as Junos OS Firefly Perimeter and Juniper Networks Firefly Host, value-add services can be introduced at the enterprise WAN, further enhancing the utility and functionality of the WAN router.
Features and Benefits

- Scalability and performance of carrier-grade WAN devices bring down costs.
- Complexity is reduced due to a homogenized approach that uses different tiers of a single WAN device to enable simpler configuration and operation.
- Introduction of services to the enterprise WAN is enabled by support for L4-L7 inline services.

Summary—A Simpler and More Cost-Effective Enterprise WAN

The Juniper Networks enterprise WAN solution solves the challenges of deployment ease and flexibility, cloud data center readiness, and is architected to enable future service adoption by providing rich capabilities on the box. The solution has been verified by Juniper solution testing, a detailed framework that tests the solution from both a network and application perspective. Testing and measuring applications at scale verify the integration of the network, compute, storage, and virtualization components. Juniper solution testing provides the peace of mind and confidence that the solution behaves as described in a real-world production environment.

To ensure that customers receive the benefits of our testing, we have created The Enterprise WAN Design and Implementation Guide (DIG), which is a comprehensive solution document written for architects and engineers. The DIG starts with a high-level overview of the challenges and then drills down into the details and options that make up the enterprise WAN solution. The DIG is the ultimate point of reference for designing and implementing an enterprise WAN. This design and implementation guide covers the following areas:
• Business requirements and segment overview—providing a foundation for understanding the challenges that must be addressed in considering an enterprise WAN solution
• Design recommendations and considerations—weighing the alternatives and providing clear guidance on the best way to design the enterprise WAN
• Solution implementation and configuration—illustrating how to implement and maintain the solution

Next Steps
For more information about the Juniper Networks enterprise WAN solution, please go to www.juniper.net or contact your Juniper account representative.

About Juniper Networks
Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.