XO COMMUNICATIONS STAYS ON THE CUTTING EDGE WITH JUNIPER NETWORKS

Summary

Company: XO Communications

Industry: Service Provider

Challenge(s):

- Meet growing demand for high-speed IP transit, Internet peering, and VPN services
- Scale the network while lowering costs

Selection Criteria: XO wanted a new network that would scale easily, be highly reliable, and be operationally efficient to support new services and technologies at competitive rates.

Network Solution:

- MX Series 3D Universal Edge Routers

Results:

- Highly reliable, scalable IP network that enables multiple network services without a performance penalty
- Simplified network with MX Series 3D Universal Edge service delivery platform
- Offers a wide range of services, including IP VPNs and VPLS
- Supports IPv4 and IPv6

The Telecommunications Act of 1996 opened up the communications market to numerous competitors, known as competitive local exchange carriers (CLECs). This made a big splash at the time by offering an alternative to the traditional phone companies most companies had dealt with for decades. That same year, XO Communications was founded. Today, as one of the last CLECs, the company is one of the largest communications service providers in the U.S. Its customers are businesses, government agencies, cable companies, mobile operators, content providers, and domestic and international carriers.

With a Tier 1 IP network that encompasses over 1 million miles of fiber, 3,300 on-network buildings, and fixed wireless licenses covering 95 percent of the top U.S. business markets, XO is constantly looking for ways to improve its infrastructure to benefit its customers in the U.S.

Challenges

XO Communications has operated a network with a 10 Gbps backbone since 2001. The network was designed to meet the needs of customers who mostly wanted T1 and DS3, but as technology has become woven into the fabric of business, XO's customers now need higher speed connections and more Ethernet capability.

"This led to the growth of the whole platform," says Tom Schlatter, director of data architecture at XO Communications. "We needed a network that was more scalable and stable, and had a better cost basis."

Selection Criteria

XO Communications defined its requirements for Internet peering, IP transit, and VPN services, and issued an RFP. "Originally that RFP was going to be coupled with a second RFP for market aggregation, which addressed the density issues we had with our OC-48 routers," says Schlatter. "We needed something that had greater scale."

XO needed a new IP network that would scale easily and be highly reliable. It also needed a network that was operationally efficient so that it could continue to offer its customers competitive rates. The company wanted to deploy an MPLS network to support a range of robust network services, including class of service, IPv6, and IP multicast, to support customers' fast growing needs for IT infrastructure, a managed network, and IP communications.

After a thorough evaluation, XO selected Juniper Networks® MX Series 3D Universal Edge Routers for Internet peering, IP transit, and VPN services as well as for market aggregation. "The main differentiator for Juniper is the consistent performance and feature set of the MX Series," Schlatter says.

Solution

XO Communications uses Juniper Networks MX960 3D Universal Edge Router, a high-density Layer 2 and Layer 3 Ethernet platform that supports a variety of services and a range of deployments, architectures, port densities, and interfaces. XO uses the Juniper platform to support a broad range of XO services, including high-speed IP transit, IP VPN, and voice over IP (VoIP) for businesses, large enterprises, and wholesale customers. The new network also allows XO to meet customer demand for higher speed IP transit services at speeds of 1 Gbps and 10 Gbps.

> "The MX960 does a great job of being able to enable features without impacting changing performance. As a cost conscious provider, the ability to do everything in one box is important."
>
> - Tom Schlatter,
>   Director of Data Architecture, XO Communications

The MX Series delivers the 3D scale, maximum performance, availability, and service agility that XO needs for transit, peering and aggregation. "Turning on all services at once without incurring a performance penalty is very important for us in any platform," he says. "The MX960 does a great job of being able to enable features without impacting performance. As a cost conscious provider, the ability to do everything in one box is important."

Selecting MX Series routers also allowed XO to simplify its network architecture by consolidating the provider edge with the customer termination layer. "Since the MX Series had the scale to do both, we were able to collapse those functions into the same layer of the network," Schlatter says. By deploying a Universal Edge, XO simplified its network while increasing flexibility and performance.

XO offers a broad range of enterprise network services, including IP VPN, virtual private LAN service (VPLS), voice, and video. Many customers are moving their private WANs from frame relay to IP VPNs using MPLS, and XO's IP VPN service is in high demand. In addition, as the desire for private cloud services grows, the ability to use VPLS services to create multipoint Ethernet connections becomes an important differentiator for XO Communications. "It comes down to the Layer 3 aspects of the application, whether it's MPLS or VPLS," Schlatter explains.

XO takes advantage of the robust quality-of-service (QoS) features on the MX Series to offer business quality voice and video services to its customers, as well as for the company's internal use. XO offers customers the choice of multiple options for QoS to best fit their business and application needs. "We allow customers to choose their QoS weighting from a menu as part of their service," Schlatter says.

With growing commercial demand for IPv6, robust support is vital. Schlatter notes that Juniper's leadership in supporting IPv6 was a big selling point of the MX Series. "We're seeing more demand for IPv6, but it's at lower speeds," he says. "For the most part we're seeing IPv6 used in government agencies, but there's also an uptick in the end user community and among content providers and other carriers that deploy it internally as needed."
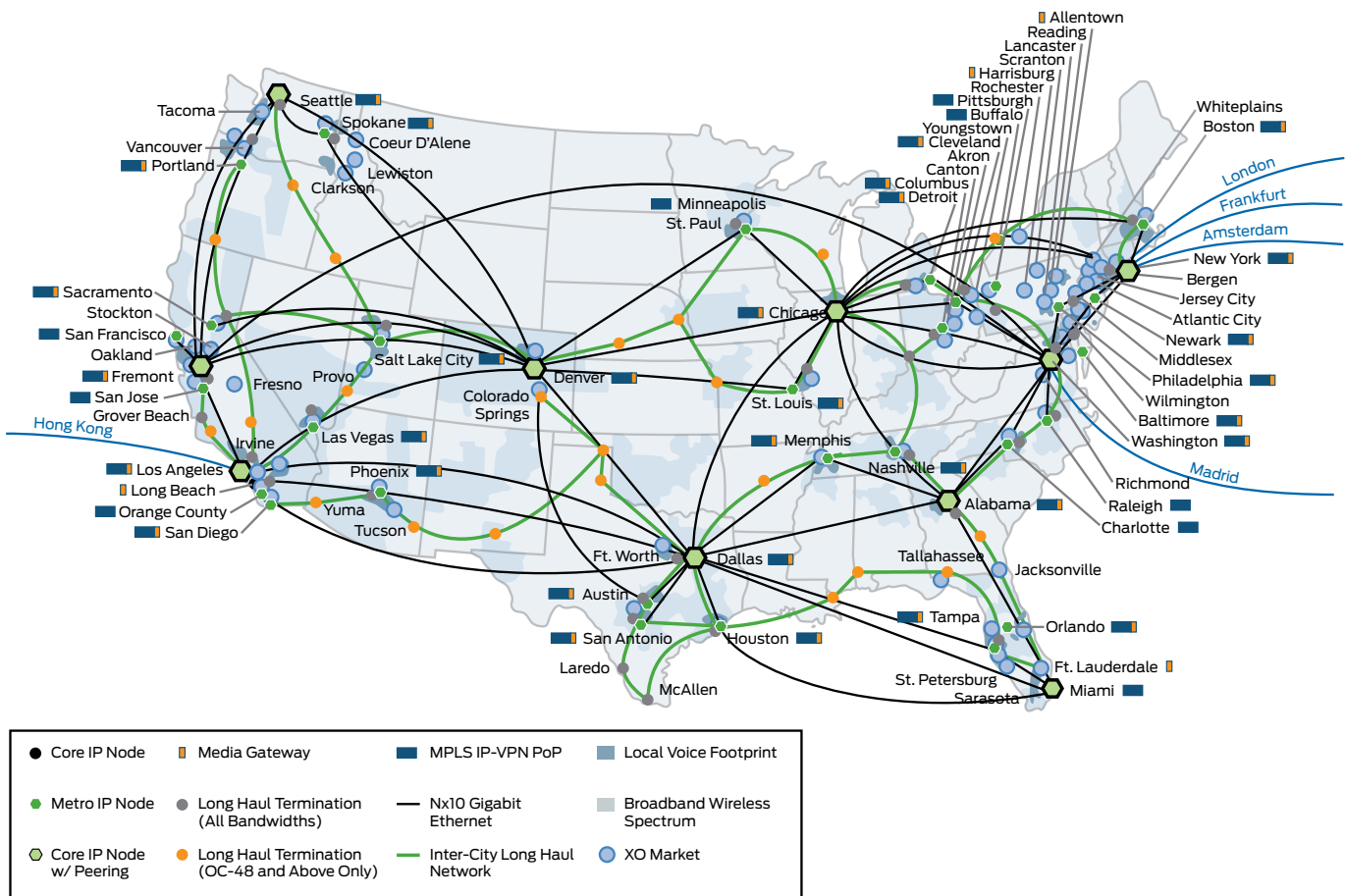

Figure 1: XO Communications' Tier 1 network encompasses over 1 million miles of fiber and 3,000 on-network buildings.

XO has been pleased with the operational efficiencies from Juniper Networks® Junos® operating system, which runs Juniper's switching, routing, and security platforms, including MX Series routers. Junos improves the availability and reliability of the network and makes it faster and easier to deploy new services. "Junos OS has helped us to have a consistent interface into the platform," Schlatter says. "We like having something as flexible and malleable as Junos because it gives us more options."

Network reliability is paramount for XO, and the MX Series provides the highest levels of redundancy and resiliency so that critical services and customers stay connected. The MX Series has fully redundant hardware, separate data and control planes, and supports graceful restart, nonstop routing, MPLS fast reroute, and VPLS multihoming.

Results

With its new network, XO Communications has been able to reap a three-fold increase in capacity across the edge of the IP network to support video streaming, voice, gaming, and e-commerce. XO has also been able to reduce operational costs while accelerating the speed at which it can introduce new services and satisfy increasing demands from its enterprise and wholesale customers.

Next Steps and Lessons Learned

As enterprise and wholesale customers consume massive quantities of bandwidth, XO can continue to scale its network gracefully. XO plans to ratchet up from 10 Gbps all the way to 100GbE. "Right now, we're doing transport testing in the lab for 100-Gigabit Ethernet," notes Schlatter.

The introduction of future services will be supported by a solid relationship with Juniper Networks. "Juniper does a good job in terms of support and technical features," Schlatter says. "Juniper provided great support during the selection process to define requirements, helped with testing, and supported the deployment, and that level of support continued after the sale."

About Juniper Networks

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