London Internet Exchange Ltd. Implements High-Performance Architecture to Accommodate Exploding Traffic Levels

Summary

Company:
London Internet Exchange Ltd (LINX)

Industry:
Telecommunications

Challenges:
- Evolve the network to allow for the ongoing surge in digital content demand
- Provide industry-defining standards of scalability, reliability, and automation in the supercore, while maintaining the feature-rich environment
- Provide an absolutely seamless transition to the new infrastructure

Selection Criteria:
After conducting a thorough review of market solutions, LINX selected Juniper as its technology partner.

Network Solution:
- MX Series 3D Universal Edge Routers
- PTX5000 Packet Transport Switch
- Junos operating system
- Junos Space Network Management Platform
- Professional Services from Juniper Networks

Results:
- Increased potential network traffic throughput by 20% to 1.8 Tbps
- Enhanced value in the network by bolstering the supercore
- Improved end-to-end network service and transport capabilities
- Implemented a future-ready, secure, and robust network infrastructure

As a mutually-owned membership association for operators of IP networks, London Internet Exchange Ltd. (LINX) is one of the world's largest Internet exchanges. As such, it is in the unusual position of delivering a reliable exchange of traffic for its 400+ members, and also needing to return the best value for these members in terms of high levels of technical capability, robustness, and support, as well as the lowest possible per-port pricing. Membership fees are reinvested to strengthen LINX's network services, so it is vital to keep the infrastructure as up-to-date as possible and remain at the forefront of the Internet Exchange Point industry.

LINX's members include traditional service providers such as BT, Deutsche Telekom, and AT&T; content providers such as the BBC and Google; and application providers including Microsoft. More recently, innovators like Amazon and Facebook have also joined the LINX community. Together, the members represent hundreds of millions of subscribers around the world, and approximately 1.5 terabits per second of traffic passes through the LINX infrastructure in any given day.

Challenges

LINX saw an increasing end user demand for high-quality content across an array of devices and access technologies. Exploding traffic levels were expected, and this was putting pressure on its members to deliver richer, faster services. Also, LINX members were under a lot of cost pressure, and LINX prides itself on its low operational cost base. Clearly, it needed to evolve the network to allow for the ongoing surge in digital content demand, and provide industry-defining standards of scalability, reliability, and automation in the supercore, while still maintaining its feature-rich environment. Another key requirement was to provide an absolutely seamless transition to the new infrastructure.

"In Juniper we've chosen a partner with a reputation for robust, carrier-grade networks, and an ability to provide high performance at scale. Traffic levels are only going in one direction, so our investment in Juniper has enabled us to build a fast, cost-effective platform for the long-term good of our members and their customers."

Mike Hellers, Network Engineering Manager, LINX

Selection Criteria

London Internet Exchange knew that its existing network infrastructure would struggle to support members' needs as demand for data upload/download continued to grow. So LINX looked for a network partner to support the design and build of a new network architecture, one that could meet its growth requirements and at the same time keep operational costs as low as possible.

Following a thorough review of the market, Derek Cobb, chief technology officer for LINX, decided to work with Juniper Networks. As Cobb explains, "We chose Juniper because we believed in the product roadmap and the scale of the company. We saw its commitment to make LINX a success, and we'd witnessed a track record of delivering successfully for our members over a number of years."

"Professional Services were essential to the success of this project."

Mike Hellers, Network Engineering Manager, LINX

Solution

The decision was made to build the new network in two phases, with the end goal of improving LINX members' ability to interconnect and share video, cloud, and other content-rich traffic reliably, rapidly, and cost-effectively across fixed and mobile offerings. The first phase of the new network comprises Juniper Networks® MX Series 3D Universal Edge Routers and Junos® Space Network Management Platform. Junos Space Services Activation Director, an MPLS network automation application, was also deployed within this first phase. Space Activation Director is designed to enable LINX to automate the configuration, monitoring, management, and troubleshooting of its MPLS services, making it highly responsive to user and application requirements.

Mike Hellers, network engineering manager, explains why phase two followed the successful first phase so quickly. "Even as we were implementing the MX Series-based network, we realized that we would soon reach the limits of scalability and plans were made to bolster the network core with Juniper Networks PTX Series Packet Transport Switches."

The PTX Series is designed to create a Converged Supercore™, uniquely able to combine native MPLS packet switching and optical transport capability end to end within a single network layer. It helps LINX manage evolving traffic patterns effectively and economically. The PTX5000 provides an unmatched density of high-speed interfaces within a single chassis to support high levels of simultaneous demand.

"We were experiencing a great level of availability using the MX Series-based network, and it was important that this would not be affected during the implementation of PTX Series," Hellers says. "We absolutely needed the extra scalability and higher port density the PTX Series would give us, but weren't prepared to compromise on the feature-rich experience we had so far with the MX Series."

Extensive proof of concept and laboratory testing was conducted to determine how the design of the network needed to change to accommodate the PTX Series without negatively impacting the existing MX Series features. On the use of Juniper Networks Junos operating system, Hellers adds: "The added benefit of implementing the PTX Series was that it also leverages Junos OS. Our engineers were already very familiar with this and liked the way in which it handles configuration changes and works in a very structured way."

Professional Services Support

Unlike previous technology implementations, LINX decided now was the time to take a more collaborative approach and leverage the expertise which was clearly present within Juniper Networks. As Hellers explains: "Professional Services were essential to the success of this project. We were early adopters of the PTX Series technology and so were understandably nervous about the possible risk this posed. We wanted a solution that was designed together with Juniper to make sure we were using the product to its full extent and capability. Juniper engineers were involved in the early testing phase, through to design and even during implementation and the actual work of inserting the device into our network in the middle of the night. It was a true collaboration and the key to the success of this project."

Results

Thanks to this engagement and the skill of the in-house LINX engineers, the entire network was delivered with minimal disruption. The process of moving ports from old to new went smoothly and was delivered on time, to budget, and with no adverse impact to member organizations and their subscribers. The inclusion of the PTX5000 within the network was successful too, with the entire upgrade achieved without any outages. And, because much thought had been put into the network design, all features important to LINX and its members were delivered on the new high-performance infrastructure.

The completion of the project means the network is now able to manage a throughput of 1.8 Tbps, an uplift of 20 percent. And, it gives LINX the opportunity to offer value-added services to its customers, which it couldn't before the network upgrade. An example is ConneXions, a program introduced for LINX partners to connect their own customers to LINX in a much more efficient way. In addition, a 100GbE port has been introduced for LINX members, providing unparalleled scalability and performance.

Cobb is confident in the network's capabilities. "In Juniper we've chosen a partner with a reputation for robust, carrier-grade networks, and an ability to provide high performance at scale. Traffic levels are only going in one direction, so our investment in Juniper has enabled us to build a fast, cost-effective platform for the long-term good of our members and their customers."

For More Information

To find out more about Juniper Networks products and solutions, please visit www.juniper.net.

To find out more about The London Internet Exchange Ltd, please visit www.linx.net.

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.

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