

iovation prevents internet fraud with a new network from juniper

Summary

Company: iovation, Inc.

Industry: B2B SaaS Services

Challenge: Expand data center capacity to meet the growing demand for online fraud protection

Selection Criteria: High-performance and highly available data center network to support complex analytics and real-time responses

Network Solution:

- EX Series Ethernet Switches
- MX Series 3D Universal Edge Routers

Results:

- Processed more than 8 million reputation checks per day
- Able to support distributed scale environment in the data center to meet growing demand
- Simplified data center infrastructure has improved scalability and lower operating expense

The foundation of doing business online is trust, and ensuring that trust by protecting customers and communities against online fraud and abuse is a growing challenge. That's the domain of iovation, a device reputation and fraud protection service that helps businesses know which online visitors to trust. iovation's flagship service, ReputationManager 360, begins with advanced device identification and then determines the level of risk associated with any type of online transaction based on shared evidence of fraud and abuse from the world's leading brands, real-time business rules, account relationships, related devices, and other transaction anomaly checks.

Challenges

iovation performs eight million reputation checks and stops 150,000 online fraudulent activities every day.¹ The company has processed more than 8 billion device reputation checks and manages more than 1 billion devices.²

"We had been growing rapidly due to customer demand and needed to continue expanding capacity at all of our facilities," says Eric Rosenberry, the senior infrastructure architect at iovation. "A large portion of our services provides real-time responses, so the systems are on the hook to respond to extremely complex queries in fractions of a second."

The network infrastructure at iovation's primary data center was straining under the weight of exponential business growth. The data center switches were oversubscribed and approaching saturation, which risked inconsistent performance. In addition, iovation was building out additional data centers to share the workload and ensure service availability. iovation decided to look for a new data center network solution to expand the capacity of its primary data center and to establish the new network standard for its data centers around the world.

Selection Criteria

iovation's Rosenberry is a big believer in using open standards and commodity hardware to meet the challenges of massive scalability. High performance, low latency, easy scalability, and carrier-class reliability were on the short list of requirements for iovation's new data center network.

Solution

iovation chose to deploy Juniper Networks® EX Series Ethernet Switches for the network infrastructure in three data centers, and it used Juniper Networks MX Series 3D Universal Edge Routers to connect to the Internet. iovation built out two data centers to service its worldwide customer base and a third data center for data storage and analytics (see Figure 1).

A key component of the design was an architecture that allowed the data centers to run as active/active facilities with half of the traffic handled by each facility under normal operating conditions. This design allows iovation to shift traffic between facilities regularly when performing maintenance activities in one facility that have the potential to impact transaction processing.

¹ iovation, September 2012.

² Ibid.



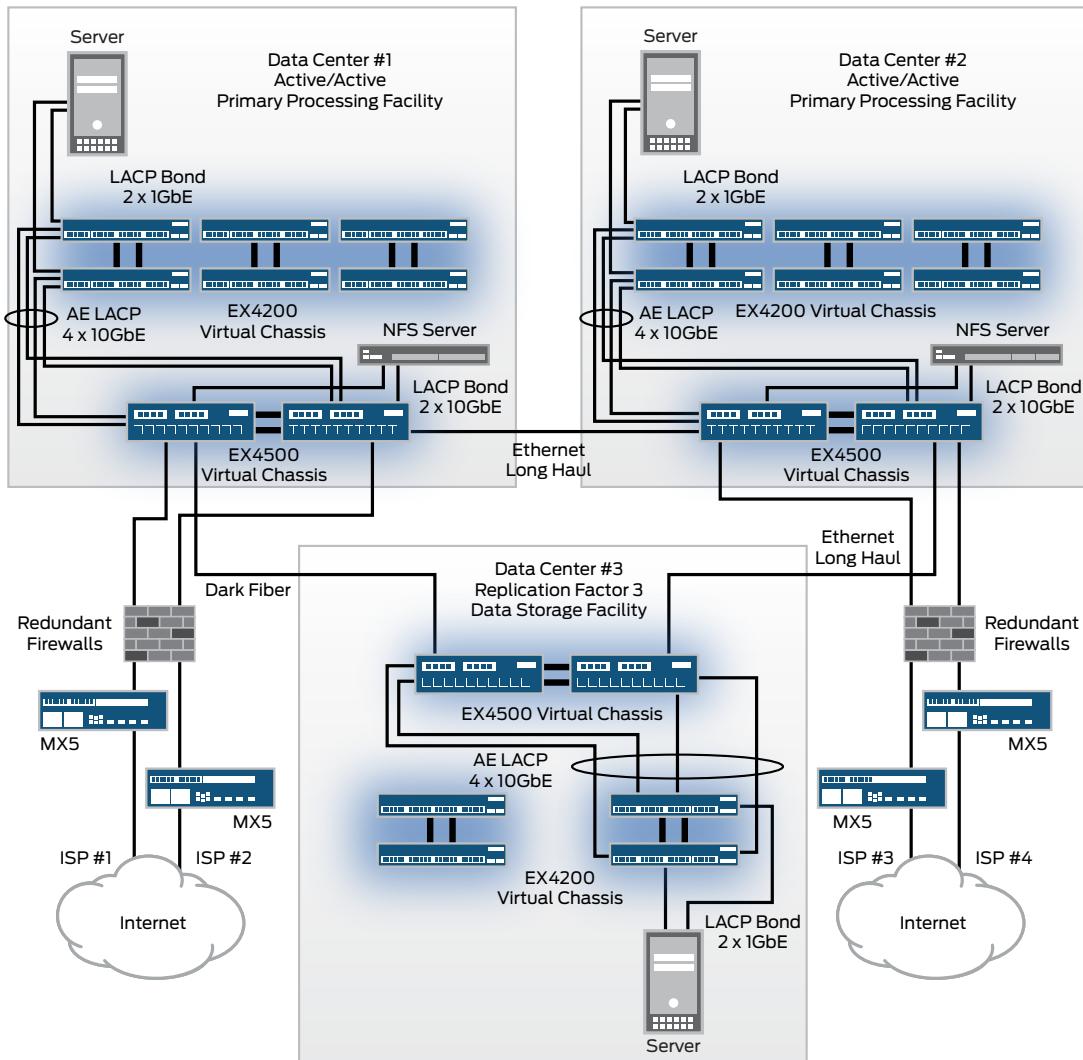


Figure 1. iovation uses a distributed architecture across three data centers to ensure the response time, scalability, and availability of its global fraud protection service.

iovation's data centers are designed for horizontal scale and have hundreds of servers containing multiple petabytes of storage. A scale-out architecture generates more real-time network traffic and requires more bandwidth than data centers designed for vertical scale, where most of the computing is within one large system and storage is centralized.

"We don't just scale horizontally, we also use a distributed scale architecture," says Rosenberry. For example, the company's data centers in Seattle and Portland each handle their share of transactions, but when performing maintenance with potential impacts or under extreme failure conditions, all transactions are processed by the other facility. "Juniper's high-performance switches and routers have helped iovation scale and meet the growing demand for online fraud prevention from our customers," he says.

iovation uses pairs of the Juniper Networks EX4500 Ethernet Switch in the data center core and pairs of the Juniper Networks EX4200 Ethernet Switch for top-of-rack aggregation. In the data center, the EX Series Ethernet switches—designed to satisfy demands for high performance, high availability, and operational efficiency—are well suited to meeting the challenges of server virtualization and distributed architectures.

Juniper Networks Virtual Chassis technology enables multiple interconnected EX Series switches to operate and be managed as a single, logical device. Network virtualization further reduces operational expenses and eliminates the need for protocols such as Spanning Tree.

"Juniper's high-performance switches and routers have helped iovation scale and meet the growing demand for online fraud prevention from our customers."

- Eric Rosenberry,
Senior Infrastructure Architect, iovation

"With Juniper's Virtual Chassis, we have one control plane and hardware redundancy," says Rosenberry. All servers are fully meshed to the highly resilient EX4200 top-of-rack switches; the EX4500 switches at the core are also meshed for redundancy. Key servers are directly cabled back to the EX4500 core to support 10GbE to the servers. Each Virtual Chassis consists of two

switches with stacking cables, and servers have Link Aggregation Control Protocol (LACP) trunks back to dual EX4200 top-of-rack switches using the Linux kernel bonding driver. With this design, any switch can fail without impacting any servers. iovation has an identical network configuration in all three of its main data processing and storage facilities for its non-production network to support development and quality assurance efforts and to allow the operations staff to test all configurations, procedures, and code before deploying them in production.

The EX Series switches run the same Juniper Networks Junos® operating system as other Juniper router and security solutions, ensuring consistent behavior and shared feature implementation across the network infrastructure. Junos OS integrates network routing, switching, security, and operating services in a single network operating system to reduce network complexity. Running Junos OS in the network increases reliability and reduces the time to deploy new network operating services.

"The roll-forward and roll-back commands with commit scripts in Junos are huge."

- Eric Rosenberry,
Senior Infrastructure Architect, iovation

iovation uses Juniper Networks MX5 3D Universal Edge Router for its Internet routers. Powerful switching and security features give the MX5 unmatched flexibility and reliability to support advanced services and applications. MX Series 3D Universal Edge Routers separate the control and forwarding functions to provide maximum scale and service delivery capabilities. Using the unique "pay as you grow" capability in the MX Series, iovation can increase the routing throughput with a simple software license upgrade. This allows the company to manage its growing customer demand without changing the hardware platform.

Another scaling benefit from Juniper is the scripting capability in Junos OS. The ability to script configurations and support automation within the Junos operating system aligned well with iovation's operational processes. The scripting supports automated provisioning when deploying new server pods in the primary and secondary data centers.

Results

With a new network from Juniper, iovation can help customers in financial services, retail, travel, gaming, social networking, and other online-intensive industries protect themselves—and their customers—from fraud and abuse. A brilliantly simple data center design, predicated on a high-performance network, allows iovation to meet the rigorous demands of real-time fraud prevention.

"Our network environment is fairly simple," says Rosenberry. "What makes us different is the fact that everything is fully redundant across multiple geographic locales, which allows us to deliver the service reliability that our customers expect. All real-time service

tiers are N+1 in Portland and separately are N+1 in Seattle. We're doing Replication Factor 3 for our Apache Cassandra database across three geographically distributed facilities with carrier-grade Ethernet long-haul paths or dark fiber between them running at 1GbE or 10GbE. This allows us to avoid purchasing WAN routers while providing us with ultra-low latency, non-oversubscribed connectivity between data centers."

Cassandra is a distributed database system designed for the deployment of large numbers of nodes across multiple data centers. It is ideal for geographical distribution, redundancy for failover and disaster recovery, as well as for creating dedicated analytics centers replicated from the main data storage center.

Simplifying the data center architecture by avoiding the need for WAN routers and leveraging commodity hardware have also allowed iovation to hold the line on capital and operational expenses. "There is less equipment to purchase, lower latency, and less to fail," Rosenberry says.

While iovation's operations team was new to the Junos operating system, they acclimated quickly. "The roll-forward and roll-back commands with commit scripts in Junos are huge," says Rosenberry. "The ability to batch changes is massively helpful."

Next Steps and Lessons Learned

With the prevalence of fraud rising around the world, many online businesses will look to innovators like iovation to help stop fraud and abuse. And with a growing global business, iovation can help its customers—and consumers—stay one step ahead of cybercriminals.

For More Information

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

About iovation

iovation helps companies know which online visitors to trust in order to reduce fraud, abuse, and protect customers and online communities. We apply the world's largest database of devices used to access the internet to determine the level of risk associated with any type of online transaction. For more information, please visit www.ovation.com.

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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