

ONLIVE DELIVERS AN EXCEPTIONAL EXPERIENCE FOR ON-DEMAND GAMING WITH A JUNIPER NETWORKS INFRASTRUCTURE

Summary

Customer: OnLive

Industry: Entertainment/Gaming

Challenges: OnLive supports cloud-based, on-demand video gaming over fast connections directly to customers' TVs, PCs, and Macs

Objectives: Deploy a data center infrastructure capable of delivering the hottest on-demand video games to discerning customers across all platforms

Solution:

- MX960 3D Universal Edge Routers
- EX4200 Ethernet Switches
- SRX3400 Services Gateways
- Junos operating system

Results:

- Delivered realistic video games to consumers through the cloud
- Simplified data center network design for massive scale
- Improved agility to meet consumers' changing entertainment demands
- Leveraged Junos OS for greater operational simplicity
- Delivered compelling performance and economics with 3-2-1 architecture

Ever since Atari helped pioneer the home video game market in the 1970s, kids and adults alike have gone along with every step of the gaming market's evolution. From the original Pong through the Sony PlayStation all the way to today's Microsoft Xbox 360 and Nintendo Wii, the video gaming market has never been hotter. But throughout the history of the ever changing and expanding home gaming market, one constant has remained—consumers have had to purchase a gaming system and either cartridges or discs to play the games.

OnLive is turning this model on its head with a bold new vision for gaming. Instead of spending hundreds of dollars on a gaming platform and then additional money on the games themselves, OnLive lets customers play games directly through their TVs, PCs, or Macs through a cloud computing model with no special hardware, discs, or downloads required. Since coming online in 2009, OnLive has constantly added new options for consumers, including the ability to try games free, rent games, or pay a flat monthly rate for unlimited play.

Challenges

A cloud model in gaming is revolutionary. Unlike the legacy approach, there are no upfront costs to the consumer (except for a computer or TV and broadband connection, which many homes already have). But success in this business model requires that OnLive approach the problem differently. OnLive must move huge amounts of bandwidth per session, with thousands of gaming sessions taking place simultaneously. With today's advanced, realistic video games, the connection must have very high quality of service (QoS) with low latency, so the user has the same experience as someone playing on an in-home gaming platform.

"The trick is how to have a platform that delivers many concurrent 10 Gbps connections—and to build the platform most efficiently and affordably," says Darrell Gentry, director of systems planning at OnLive.

Selection Criteria

Delivering rich, interactive media directly to the consumer puts OnLive in a new league. To provide a simulated, high-end gaming console, OnLive needed a production data center network that was high performance, massively scalable, ultra reliable, and also delivered a strong value for the cost.

As Gentry explains, "Our fundamental requirement was that we have many tens of thousands of megabits of capacity that we need to process and get from the hosting units to the end users. "Our challenge was to do that without breaking the bank or sacrificing reliability of service."



After a competitive evaluation, OnLive chose a Juniper Networks data center infrastructure because of Juniper's experience building carrier-class systems and compelling economics. "The number one factor that drove us to Juniper Networks was the value proposition—the bang for the buck we get from our core routers, switches, and firewalls," Gentry says.

Solution

OnLive deployed three production data centers in the United States and is building out a presence in Europe. The cloud-based data centers support streaming sophisticated video games to consumers, as well as voice, video, and data.

Juniper Networks® MX960 3D Universal Edge Routers serve as the core of OnLive's private MPLS network. Gentry and his team are very happy with the MX Series and plan to continue deploying the MX Series family. "We are exceptionally happy with the MX Series platform. It's been bulletproof," says Gentry. "The MX Series is the gold standard for MPLS and data center routing."

The MX960 is ideal for high-performance deployments and provides high port density routing, with switching and security. Powered by Juniper Networks Junos® operating system, the MX Series provides a consistent operating environment that streamlines network operations and improves the availability, performance, and security of supported services. The MX Series also offers Junos OS routing features, including traffic segmentation and network virtualization with MPLS, low latency multicast, carrier-class reliability, and advanced QoS to accelerate the delivery of time sensitive applications and services.

OnLive uses the Juniper Networks EX4200 Ethernet Switch with Virtual Chassis technology to meet its stringent port density, scalability, and high availability requirements in the data center. Clusters of EX4200 Ethernet switches with Virtual Chassis technology serve as top-of-rack switches. The EX4200 switches deliver the reliability of modular switches with the economics and flexibility of stackable switches.

Virtual Chassis technology enables up to 10 EX4200 switches to operate as a single, logical device with a single IP address. Deployed as a collapsed aggregation or core layer solution, an EX4200-based Virtual Chassis configuration creates a network fabric for interconnecting access switches, routers, and service-layer devices such as firewalls.

"The Virtual Chassis feature was a key reason we used the EX Series platform," Gentry says. "Virtual Chassis gives us the flexibility in terms of logical architecture and scale as well as the physical ease of use."

OnLive uses the Juniper Networks SRX3400 Services Gateway to provide data center firewall services. The SRX3400 supports up to 20 Gbps firewall, 6 Gbps firewall with intrusion prevention system (IPS), or 6 Gbps of IPsec VPN, and up to 175,000 new connections per second. It is ideal for securing and segmenting data center network infrastructures, aggregating different security solutions, and enforcing security policies by zone.

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Darrell Gentry,
Director of systems planning, OnLive

Results

OnLive is seeing concrete benefits from a cloud-ready data center. With Juniper Networks' 3-2-1 data center network architecture, multiple switching tiers are collapsed, leading to a simplified design that requires fewer devices and interconnections. Eliminating the aggregation tier in a traditional 3-tier network has many advantages, including operational simplicity, lower latency, and better economics.

Running Junos OS, a common operating system with an open network automation platform, gives OnLive additional leverage. With Junos OS, OnLive can more easily manage and administer the data center network as well as efficiencies in space, power, and cooling.

"We view Junos OS as a considerable advantage. We can configure scripts and conduct management oversight with a modicum of effort," Gentry says. "As a startup, we have to use our operational and engineering resources wisely, and Junos operating system is one component that makes our lives easier. With Junos OS, we can live within our means, yet not worry about scaling up."

Gentry added that the universal nature of Junos OS has meant that OnLive can develop scripts once and apply the results against different infrastructure elements, including routers and switches.

Next Steps and Lessons Learned

OnLive's patented low-latency cloud gaming technology, paired with a high-performance Juniper infrastructure, allows the company to deliver true innovation embodied in its high-end gaming experience from the cloud. Having a massively scalable network from Juniper Networks is the foundation upon which the company intends to build its continued success.

OnLive recently announced the availability of the OnLive Game Service, which brings instant play video games to televisions. "It is a very thin client," Gentry explains. "In January 2011, we announced that VIZIO would integrate the OnLive Game Service into its high-definition TVs and other devices." These devices include a tablet, phone, and Blu-ray players that are part of VIZIO's VIA Plus ecosystem.

This innovation instantly broadens the scope of OnLive's cloud-based gaming outside of the traditional computer space with no need for a console, discs, or downloads. As Gentry points out, there is nothing to download because everything is in the cloud, so users experience instant gratification and a minimal learning curve. "We started with the hardest technical challenge—first-person shooter games with intense 3D graphics. If people can't tell the difference between our experience and a local gaming console, then the sky is the limit."

For More Information

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

To find out more about OnLive, visit www.onlive.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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