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Selectel upgrades with Arista Networks to boost performance and reliability as demand for cloud services grow

Highlights

Challenge

Growing demand for its cloud services prompted Selectel to upgrade its 10G based network to 25G and selected Arista following extensive performance, reliability, and feature testing.

Solutions

- Arista 7050 Series spine / leaf switches for high performance, low latency, and flexible deployment between 1G, 10G and 25G modes.
- MultiChassis Link Aggregation (MLAG) configuration to remove traditional bottlenecks of a spanning tree design
- Dynamic packet memory allocation based on traffic class, queue depth and quality of service policy to ensure predictable performance across all use cases

Results

- Rock solid reliability and enhanced performance with highly resilient design to ensure zero downtime across maintenance and upgrade cycles
- Open standards-based approach to aid ongoing development projects around automation
- Minimal learning curve allowing networking teams to transition skill sets without formal training

With increasing demand for cloud services, Selectel chose Arista as its core network technology to meet growing performance requirements while providing the open standards needed to support its advanced service automation requirements.

Selectel

Project Background

Selectel is a reliable IT infrastructure provider with 11 years of experience. Since its launch, the company has helped over 15,000 international and local B2B clients realize their business objectives. Selectel offers a wide range of privately developed infrastructure products and services, as well as partnered solutions with the world's leading IT developers.

Challenge

With a growing portfolio including custom dedicated servers and cloud services built on OpenStack and VMware delivered from its six privately-owned, modern data centers in Moscow and St. Petersburg, Selectel has continually upgraded its core network to meet new demands.

However, its current generation of 10G switches from a legacy vendor were starting to underperform in respect to its operational needs and as Kirill Malevanov, CTO explains, "25G offers us a good path for the future, but when we looked at the market we felt that some of the vendors were not ready and others were only just entering the market with very basic products."

The upgrade was focused primarily on its cloud-based services which are growing rapidly. As a deeply technical company that has its own development team which built and deployed its own highly advanced provisioning and automation systems, Malevanov was keen to run a comprehensive test and evaluation process ahead of any purchase. "On paper, Arista looked like the best fit, but this is a major investment for us with long term consequences, so we really put Arista and two other vendors under the microscope," he says.

Solution



As an early adopter of leaf and spine architecture, Selectel was already familiar with the network design aspect of the upgrade. Instead, the testing focused on several areas

including connectivity and EVPN-VXLAN based services (both L2 and L3) plus interconnect with 3rd party equipment including its existing IP fabrics.

Following the initial fundamental-test period, testing moved on to resiliency including resistance to single and multiple failures and software upgrade with minimum downtime using MLAG ISSU.

These aspects are critical for the 24/7 nature of Selectel's business and Malevanov highlights this as an area where Arista particularly proved its worth. "We created a scenario to simulate multiple failures in our test network, and Arista easily satisfied our requirements," he explains.



Other test elements included Quality of Service management, microbursts monitoring and of importance for a company with strong development skills, Malevanov and his team examined the potential for EOS automation and customization using Python scripting.

Based on scoring following the detailed testing phase, it was clear to Malevanov that the Arista 7050 series that would make up the core of the upgrade was the best fit for Selectel's needs. "We kind of knew what to expect from Arista and it proved to be reliable, with solid performance and open, non -proprietary and standards-based technology, which is important for our future development," he adds.



Conclusion

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In total, Selectel deployed over 200 Arista 7050 series switches across its 6 data centres, "...and we were able to move from test to production in a short time with few surprises," says Malevanov.

The majority of the upgrade featured Arista 7050SX3-48YC8 switches within a 1RU system with 48 ports of 25G SFP and 8 ports of 100G QSFP with an overall throughput of 4Tbps. The high density SFP ports can be configured to run either at 25G or a mix of 10G/1G speeds. The QSFP ports allow for 100GbE or 40GbE as high-speed network uplinks, with a wide choice of transceivers and cables enabling a choice of combinations for both leaf and spine deployment. With low latency and no oversubscription, the switch is optimized for high performance server and storage deployments.



The Arista 7050X3 switches forward packets with a consistent low latency of 800 nanoseconds. Upon congestion, the packets are buffered in an intelligent fully shared packet memory that has a total size of 32MB for superior burst absorption. Unlike other architectures that have fixed per-port packet memory, the 7050X3 Series use dynamic thresholds to allocate packet memory based on traffic class, queue depth and quality of service policy ensuring a fair allocation to all ports of both lossy and lossless classes.

Malevanov was also full of praise for the Arista technical team based in Russia, "They were there for us when we needed any assistance," he says, "and the entire project has met our expectations to the point where we are now in a position to enhance our cloud services with confidence that our network is up to the challenge."

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