Going SONiC with XCloud and Mellanox

Where Simplicity and Scale are the Highest Priority

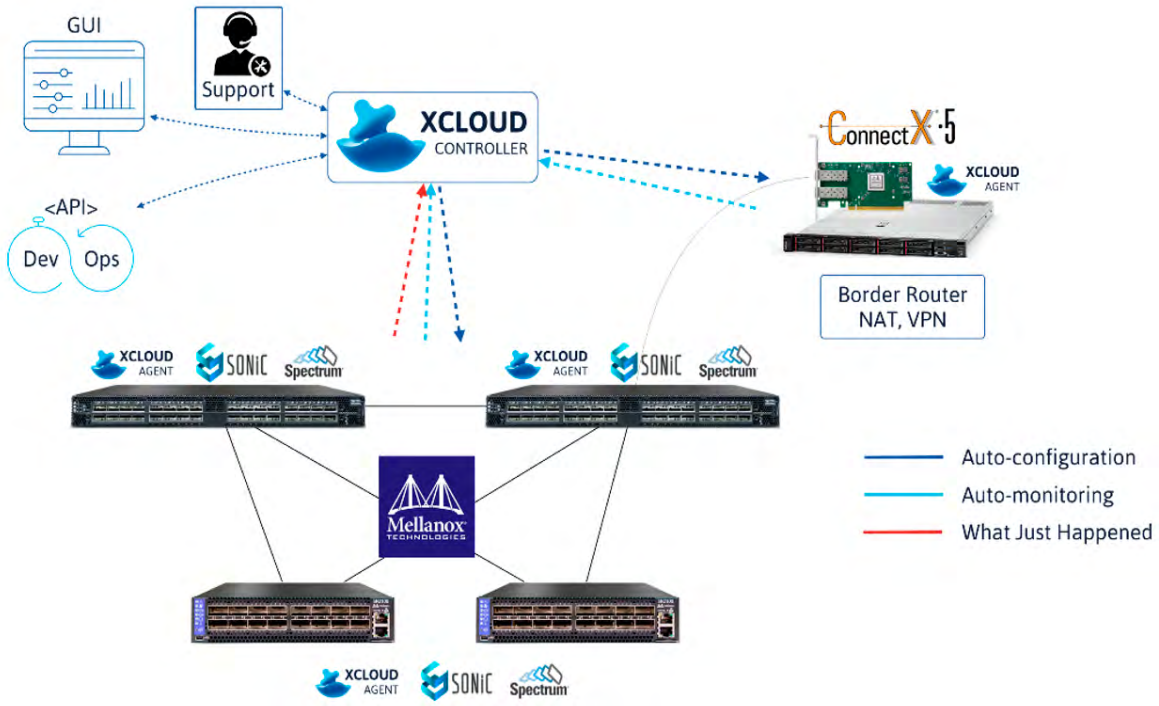
Overview

Network disaggregation allows data center operators to break free from vendor lock and build infrastructures using best -of-breed hardware and software. Open, reliable and high performance operating systems like Linux have been freely available for several decades in the server market. However, the networking industry has been lacking a royalty-free, reliable and scalable Network Operating System (NOS). That just recently changed with the introduction of SONiC.

SONiC – Software for Open Networking in the Cloud, is a Microsoft-driven open-source network operating system (NOS) that delivers a collection of networking software components aimed at scenarios where simplicity and scale are the highest priority. Based on modern open-source software such as Redis database and Docker Containers, SONiC is enterprise-class, scalable, reliable and fault-tolerant. SONiC supports standard-based layer-2/layer-3 constructs and is ideal for building large automated data center networks. SONiC represents several years of work done by Microsoft, Mellanox, and the open-source community. Like all emerging open-source software, SONiC could pose a steep learning curve.

BENEFITS

- Agile Cloud Networking experience
- Data Center-wide Visibility & Automation
- Open technology with no vendor lock-in
- Hardware-accelerated NFV
- Improved uptimes
- Reduced costs – OpEx & CapEx



The Challenge

Large network operators achieve scale by simplifying operations and automating their infrastructure. Adopting open-source software like SONiC at such a scale can involve a steep learning curve. Operators may already have existing automation and orchestration tools. The disaggregated infrastructure should support API hooks that can be integrated with existing tools. To provide future-proofing and an agile seamless service experience, those same operators would require a software layer to abstract the underlying physical infrastructure and differences in the NOS.

Operators need to constantly improve infrastructure uptimes. They need to deploy network telemetry and visibility tools to proactively identify issues. However, commodity switch hardware in the market lacks telemetry capabilities.

The Solution

The solution is comprised of XCloud controller and Mellanox Spectrum Ethernet switches running the SONiC operating system.

XCloud

The XCloud controller abstracts out network operating system-level differences and transforms the entire network infrastructure into one large, centrally managed fabric. Based on modern container technology, XCloud is fault-tolerant and can scale from 10s to 10000s of switches.

XCloud provides a single dashboard experience by operating with both physical as well as virtual switches. Additionally, XCloud leverages hardware acceleration capabilities in Mellanox ConnectX adapters to deliver virtualized network functions such as load balancer, router, NAT and VPN.

Tightly integrated with Mellanox Spectrum Ethernet switches, XCloud leverages Mellanox's What Just Happened™ (WJH) advanced telemetry capabilities to deliver proactive insights into infrastructure issues.

With a single point of management, support for virtualized network functions, infrastructure automation, and advanced telemetry, XCloud provides a cloud-like interface and experience with an on-premise infrastructure.

Mellanox Spectrum Ethernet Switches

Mellanox has been pioneering the Open Ethernet approach to network disaggregation for several years. Today, the Spectrum family of Ethernet switches supports the widest range of open network operating systems, including SONiC. Customers have the choice to upgrade to the "fit-for-purpose" operating system while retaining the same underlying hardware.

Unlike other vendors who use off-the-shelf switch silicon, Mellanox Ethernet switch platforms are based on its differentiated Spectrum silicon technology. Spectrum Ethernet switches are ideal for building wire-speed and cloud-scale layer-2 and layer-3 networks. Mellanox Spectrum switches feature a robust high-bandwidth and low-latency RoCE data path. Spectrum platforms deliver high performance, consistent low latency along with support for advanced software-defined networking features, making it the ideal choice for web-scale IT, cloud, hyper-converged storage and data analytics applications.

Mellanox Spectrum Ethernet switches support advanced streaming telemetry technology called What Just Happened™ (WJH), which goes beyond conventional telemetry solutions by providing actionable details on abnormal network behavior.

Solution Support

Mellanox is the second largest contributor to SONiC. With its significant open-source software contribution and industry-leading silicon technology, Mellanox is uniquely positioned to offer one-stop-shop ASIC-to-Protocol support for SONiC to customers who want to embrace open networking paradigm. Additionally XCloud provides 24/7 full-stack support covering both commercial and open-source components of the whole solution.

Conclusion

Network operators can derive significant operational and cost efficiencies by adopting open-source operating systems like SONiC. However, adopting open-source software at scale can be a daunting task, which poses a steep learning curve. XCloud and Mellanox are partnering to help customers by bridging that knowledge gap. The solution comprises the XCloud controller and Mellanox Spectrum Ethernet switches running SONiC. The solution is fully backed by Mellanox and XCloud – Mellanox provides ASIC-to-protocol support for SONiC and XCloud provides support for the controller and application layers.

About Mellanox

Mellanox Technologies (NASDAQ: MLNX) is a leading supplier of end-to-end Ethernet and InfiniBand smart interconnect solutions and services for servers and storage. Mellanox interconnect solutions increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications, unlocking system performance and improving data security. Mellanox offers a choice of fast interconnect products: adapters, switches, software and silicon that accelerate application performance and maximize business results for a wide range of markets including cloud and hyperscale, high performance computing, artificial intelligence, enterprise data centers, cyber security, storage, financial services and more. More information is available at: www.mellanox.com

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About XCloud Networks

XCloud Networks is vendor of cloud-networking automation software for next-gen datacenter and telecom networks. With a strong focus on open-networking technologies, XCloud offers an intelligent network controller with intuitive GUI and RESTful API. XCloud controller abstracts away CLI-based administration of individual devices turning on-prem multi-vendor and multi NOS infrastructure management into simple cloud-style or DevOps workflows. XCloud customers benefit from obtained ability to mix and match hardware from various vendors (removed HW vendor lock-in), dramatically increased operational agility (up to 90%), 80% overall time & cost savings. XCloud Networks TAC is providing 24/7 full-stack support covering both commercial and open-source components of the whole networking solution. More information is available at: www.xcloudnetworks.com

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