

NYAT Case Study: Ribbon Communications

Ribbon Communications Reduces Development Cycles, Improves Customer Confidence with NETCONF & YANG Automation Testing

About Ribbon

[Ribbon Communications](#) is a global leader in IP and optical telecommunications solutions. The company's Neptune IP Systems product line, acquired through a merger with ECI Telecom in 2020, serves as the heart of thousands of service provider and enterprise networks. Today, tier-1 operators around the world rely on Ribbon to help them capitalize on the 5G revolution by providing stable, high-performing transport solutions that are fully open and programmable.

A Need for Reliable Programmability

As operators worldwide advance their 5G rollouts, they are looking to reap the benefits of open, programmable multi-vendor networks. To do this, they increasingly demand that Network Equipment Providers (NEPs) support standard interfaces like NETCONF and standardized data model-driven programmability via YANG. For NEPs like Ribbon though, complying with these standards in the lab, and relying on them in real-world production environments, are two different things.

"It has become critically important to our customers to gain the agility that comes with programmable, data model-driven services," says Dmitry Valdman, IP Transport PLM, Ribbon. "As such, they increasingly want assurances that our solutions will be painless to integrate. If there are integration or interoperability issues, we need to find them ahead of time, before deploying with a customer."

Validating NETCONF and YANG implementations, however, is not always straightforward. Most testing tools are limited. And, even if they show an implementation complies with the standards, that doesn't mean the device will work seamlessly in production or employ best practices for multi-vendor interoperability and automation.

"Previously, we were using a NETCONF browser to verify syntax validity and operations, but that doesn't give you the full picture," says Valdman. "You're limited to the resolution of atomic functions; not the full sequence and flow. Which means you can't really answer the question of whether a device will actually work in a customer's production environment."

"You can stand behind your product, with the certainty you have a solid NETCONF and YANG implementation across your devices, when you can validate you are aligned with the standards and best practices and when you have a truly verified reference tested in a real system."

– **Dmitry Valdman,**
IP Transport PLM, Ribbon

The Solution: NETCONF & YANG Automation Testing

As Ribbon's team grappled with this issue, they were also building a Network Element Driver (NED) in order to allow customers to integrate Neptune platforms with Cisco Network Services Orchestrator (NSO). Ribbon reached out to Tail-f/Cisco's Programmability Team. The Tail-f/Cisco experts quickly built a rock-solid NED for the devices. In the process, they also identified a perfect solution to Ribbon's broader testing conundrum: the [NETCONF & YANG Automation Testing \(NYAT\)](#) program.

NYAT provides in-depth resources and technical support to validate NETCONF and YANG interoperability in network devices, as well as industry best practices for automation. The program uses Cisco NSO and other tools to test NETCONF/YANG implementations—even when users don't have Cisco NSO in their own environment—all provided online at no charge. By thoroughly testing implementations in more production-like scenarios, NYAT helps NEPs like Ribbon identify issues before deploying with customers, instead of scrambling to patch them after the fact.

"The NYAT program was much stricter and more sophisticated than the tools we were using to test our implementations previously," says Deepak Jain, Verification & Validation Department Manager, Ribbon. "We identified and fixed several issues we hadn't realized were there, which significantly raised the quality of our product in terms of YANG qualifications. Having that level of validation was extremely helpful, and is becoming essential for tier-1 production deployments."

Ribbon found the NYAT program particularly helpful in validating the Neptune product's interoperability for multi-vendor environments—a key requirement for many customers.

"Our customers expect devices using open interfaces to be compatible with any other product on the market using those interfaces," says Raunak Sachdeva, Software Development Technical Lead, Ribbon. "NYAT helped us bring our product much closer to that ideal. We can now assure customers that our devices can be managed by multiple vendors using these standards."

The Results

Today, Ribbon uses NYAT to validate NETCONF/YANG implementations in every software release for the Neptune product line, with plans to extend it to other products soon. The reason is simple: by ensuring that all Neptune devices have a validated implementation, they know the products will perform as expected in customers' production networks.

"We're incorporating NYAT testing into every feature we're working on," says Rajesh Venmanad, Software Development Group Manager, Ribbon. "It gives us the confidence that we will identify problems ahead of time and provide bug-free solutions to our customers."

The NYAT program has already reduced the development cycles Ribbon previously devoted to patching integration issues discovered after the fact—usually under tight timelines, in high-pressure scenarios as customers scrambled to turn up new services. More importantly though, Ribbon and their customers know they can rely on the programmability of Neptune devices in the most complex, dynamic tier-1 operator environments.

"In the age we're moving into, our customers want and demand vendor-agnostic environments," says Valdman. "When you can validate that you are aligned with the standards and best practices, when you have a truly verified reference that's been tested in a real system, you can stand behind your product. You can be sure you have a solid NETCONF and YANG implementation across your devices."

For more information about how NYAT can benefit your business, contact nyat_info@cisco.com.



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