

## BLACKBERRY ACCELERATES SERVICE DELIVERY THROUGH AUTOMATION

### Summary

**Company:**  
BlackBerry

**Industry:**  
Technology

**Business Challenges:**  
Enable business units to deliver new services and features to customers more rapidly from a reliable, consistent global network infrastructure.

- Technology Solution:**
- MX Series 5G Universal Routing Platforms
  - QFX Series Switches
  - EX Series Ethernet Switches
  - Junos Automation
  - Resident Engineer
  - Training

- Business Results:**
- Accelerated service delivery with a network automation framework
  - Deployed new network code 80% faster, reducing delivery time from six months to five weeks
  - Improved global infrastructure reliability and security
  - Simplified operations with standard configurations
  - Created a culture that engages network engineers

BlackBerry ignited the mobile revolution, and today, its solutions are the foundation for secure enterprise mobility, emergency communications, and autonomous cars and trucks. BlackBerry is leading the way as businesses evolve from a mobile-first mindset to a things-first world. But successful business transformation also means transforming IT. To transform its global Juniper network and accelerate service delivery, BlackBerry created an open-source automation framework.

“BlackBerry pivoted from being a handset manufacturer to a trusted security software and services company that provides enterprises and governments with the technology they need to secure the Internet of Things,” says Paul Arsenault, manager of network architecture at BlackBerry. “We need to deliver software and services faster to our business units, who are our customers, to penetrate new markets and deliver the new features and services that the industry is demanding.”

### Transform the Business

To develop and deliver services faster, BlackBerry is embracing DevOps and is moving toward continuous integration/continuous deployment (CI/CD). The underlying global network must be similarly agile. “With the DevOps model, the developers are focused on delivering new features and services quickly,” says Arsenault. “If the network that the applications rely on is still being configured manually, then we become the bottleneck for service delivery. We’re trying to match their velocity by enabling a similar culture.”

Moving to automated network operations also enhances infrastructure security. With a brand reputation built on security, BlackBerry must protect its services in today’s hyper-connected world. Ensuring a secure global infrastructure means testing and certifying software patches faster and more efficiently—a resource-intensive process that most organizations struggle with.

“Like everyone else, we have resource constraints,” Arsenault says. “We need to do more with the same number of people, and automation helps us to do that.”

*“Automating our Juniper network has improved our service velocity. With smaller, more agile teams, we’re getting more done in the same amount of time.”*

- Paul Arsenault, manager of network architecture, BlackBerry

## A Bespoke Automation Framework

To accelerate service delivery and enhance the security and reliability of its global network infrastructure, BlackBerry created a bespoke automation framework to test, configure, and deploy the Juniper Networks infrastructure that powers its private cloud.

The automation platform leverages a variety of open-source tools. Git is the repository for code, templates, playbooks, and test reports. Ansible playbooks do the heavy lifting of configuration and testing. Python is used for scripting. Jenkins is used to orchestrate the actions, and it's integrated with Jira, its job ticketing system.

BlackBerry's automation framework leverages the Juniper Networks® Junos® operating system NETCONF API, which enables a secure connection to Junos OS devices to execute remote calls, as well as Juniper Ansible modules to automate configuration and testing. The Juniper Networks Junos Snapshot Administrator in Python (JSNAPy) captures and audits runtime environment snapshots of Juniper devices and verifies changes.

"You can really see the forethought that Juniper put into Junos OS automation," Arsenault says. "Juniper's commit checks, rollbacks, Ansible playbooks, and the integration with JSNAPy made automation a lot easier for us."

## Engineer Network Reliability

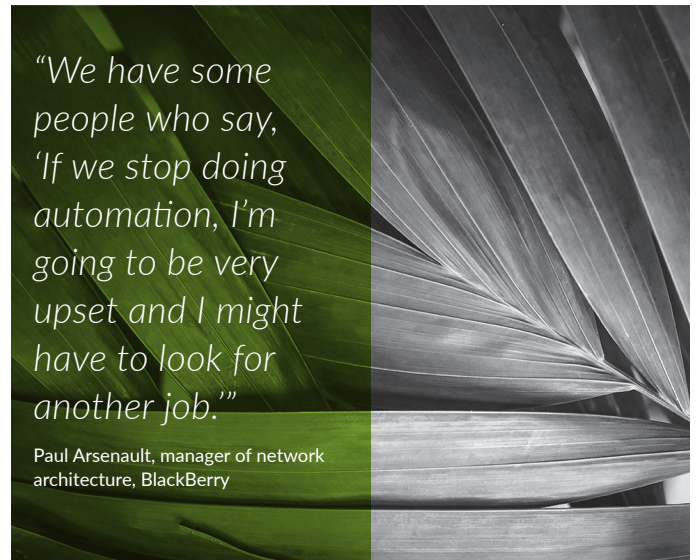
The foundation of automation is a highly reliable network. As Arsenault explains, "When embarking on automation, many people focus on the need for speed because of the business agility it provides. But before you can go faster, you must first ensure network reliability. BlackBerry's practice of automation focuses heavily on network reliability engineering. Our approach, inspired by site reliability engineering, puts reliability and the rigors of engineering first. Even more than DevOps, network reliability engineering really resonated with our network engineers."

According to Arsenault, BlackBerry built its automation using existing workflows to ensure the right teams were involved at the right time, with all the right approvals. When network devices need to be updated with new certified code, or when configurations need to be changed, the update is fully orchestrated. Change notifications are sent to stakeholders via an internal chat or through the job ticketing system. Once a change is approved, the ticket is populated. Traffic is shifted while the change is executed. Pre- and post-change tests run immediately. As the change moves through the workflow, the status is updated, reports are generated, and the ticket is closed.

"If we made the changes manually on the command line, it could take hours, depending on the complexity of the change," says Arsenault. Now, new code is thoroughly tested and delivered

to production at a much faster rate. A low-risk change may take only minutes, with the change coordinated and executed in near-real time.

New software and features go into production faster. On its primary platforms, BlackBerry has seen a 90% reduction in certification time for new code that patches vulnerabilities—from 10 weeks down to one week. New code is deployed 80% faster: just five weeks, compared to six months in the past.



## Accelerate Service Delivery

"Automating our Juniper network has improved our service velocity," says Arsenault. "With smaller, more agile teams, we're getting more done in the same amount of time."

The network team is free to focus on higher value work. "Automation has allowed us to focus on our customers, and work with them on how best to configure the network, with security and scalability in mind," Arsenault says.

When an issue arises, automation helps the network operations team react faster, reusing test cases as part of the investigation to take faster action. If, for example, the cybersecurity team identifies a compromised device, its network access can be blocked in minutes rather than spending hours hunting it down.

Automated network operating system deployments mean greater consistency and feature availability. They also eliminate manual errors and the variations that occur due to network engineers' personal styles. Standard configurations and templates are enforced by the automation framework. "Automation has enabled us to maintain consistent network configurations everywhere," says Arsenault. "Plus we put the best-practice standards into the automated configurations."

## Embrace a Culture Change

A shift to automation is a cultural change. “Automation takes time convincing people that they don’t have to do everything manually from the command line, because that’s where they’re comfortable,” Arsenault says.

BlackBerry worked with the innovators on the technical staff to lead the change. Some network engineers had software development experience, while others needed more training and education. Formal and on-the-job training helped technical staff learn a new craft that keeps them engaged.

Arsenault says that the Juniper Platform Automation and DevOps (JAUT) training, which explores how to automate Junos OS with DevOps automation tools, was invaluable for his technical team. “Engineers who picked up automation quickly then mentored other individuals,” he says.

The upside of eliminating command-line drudgery soon became apparent. “We have some people who say, ‘If we stop doing automation, I’m going to be very upset and I might have to look for another job.’”

## New Destinations Ahead

BlackBerry began its automation journey two years ago, and network automation is now part of the IT workflow. New network platforms and software are automatically tested and deployed before being released to production. Automation capabilities are required for any new network equipment purchases.

Arsenault and his team are forging ahead with ways to make the network more agile and responsive to the business. Virtual networking is next. The team is examining how to use SDN

and NFV to build its network topology dynamically and on demand. To do so, it is testing OpenStack for cloud computing, Kubernetes for container orchestration, and the Juniper Contrail® Platform for SDN-enabled control and management.

“We’re focused on SDN to continue to improve our service delivery model,” Arsenault says. “We can go from days down to minutes to enable our business units to launch new features and services and give them self-service capabilities.

“The automation we’ve built over the last two years has enabled us to make the leap from working manually from the command line to having a software component configure the network for us. We are looking forward to what’s next.”

## For More Information

To find out more about Juniper Networks products and solutions, please visit [www.juniper.net](http://www.juniper.net).

## About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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