

Network Automation for Education Networks

Use Popup Campus Workflow to Simplify Network Deployment and Troubleshooting, Improve Uptime, Add Capacity More Easily, and Reduce OpEx.



Education Popup Campus Automated Workflow Solution Overview

Digital learning tools, Internet resources, and collaboration have become an essential part of education today. In K-12 schools, blended learning and one-to-one computing programs are reshaping the classroom and engaging today's tech-savvy children. In higher education, bring-your-own-device (BYOD) is the norm, and students expect to use their smartphones, tablets, laptops, game consoles, and other Wi-Fi devices in classrooms, dorm rooms, and everywhere in between.

Educational institutions can meet the unprecedented demand for connectivity with high-performance, highly reliable campus network solutions from Juniper Networks. By taking advantage of Juniper's automated network configuration and deployment capabilities, schools can deliver the network experience students, faculty, and administrators expect while simplifying network operations and lowering operational expenses (OpEx).

Challenges

An explosion of mobile devices, a growing appetite for applications and media, and rising security concerns are placing new burdens on education networks. To meet these challenges, schools are expanding their networks to meet student and faculty expectations for high-performance and highly reliable, always-on connectivity.

The school network is mission-critical, and downtime cannot be tolerated when class assignments, lectures, research projects, or even late-night gaming parties are involved. The diversity and richness of educational applications are growing as learning increasingly leverages interactive curricula, collaboration tools, streaming media, and social media. The success of the Common Core assessments depends on connectivity, too. In higher education, universities and colleges that have poor quality Wi-Fi—or none at all—quickly discover that this is affecting their enrollment rates.

The number of Wi-Fi devices and the types of devices that students bring to a university or college campus are exploding. Students commonly have three or more devices—smartphone, tablet, laptop, gaming device, or streaming media player—and expect flawless connectivity. In addition, higher education is deploying wireless IP phones for better communications, IP video cameras to enhance physical security, and sensors for a more efficient environment. The projections for the Internet of Things, which will connect hundreds of billions of devices in a few short years, are nothing short of staggering.

Trends

With student, faculty, and administrator expectations for connectivity rising, the cost of networking has become a hot-button issue. IT budgets are tight, and technology requirements are expanding faster than funding.

Most educational institutions built their campus networks long before pervasive mobility, digital learning, and the cloud. Their networks have evolved over time, and components have been added ad hoc to address the need du jour.

What if schools took a step back and had a unique opportunity to proactively design their campus networks to meet their challenges today and tomorrow? What if deploying the network was easy, not a manual, time-consuming chore? What if networks were easier to plan and build, configure and deploy, visualize and monitor—and had automated troubleshooting and comprehensive reporting?

It's time to modernize how educational institutions design, build, and maintain networks, taking advantage of automation and modern management tools to simplify the job.

Juniper Networks Automation Solution for Education Networks

Juniper Networks® Popup Campus automated workflow helps educational institutions simplify network deployment and troubleshooting, improve uptime, add capacity more easily, and reduce OpEx.

Popup Campus automation workflow uses zero-touch provisioning with Juniper campus and branch solutions, including wireless LAN solutions from Juniper or one of our wireless partners, EX Series Ethernet Switches, QFX Series Switches, Junos® Space Network Director, and other Juniper platforms running Juniper Networks Junos operating system.

With the Popup Campus automated workflow, educational institutions can simplify their networking into five easy stages: plan and build, configure and deploy, visualize and monitor, automated troubleshooting, and reporting (see Figure 1).

Juniper Networks' Popup Campus Design Rather Than Evolve

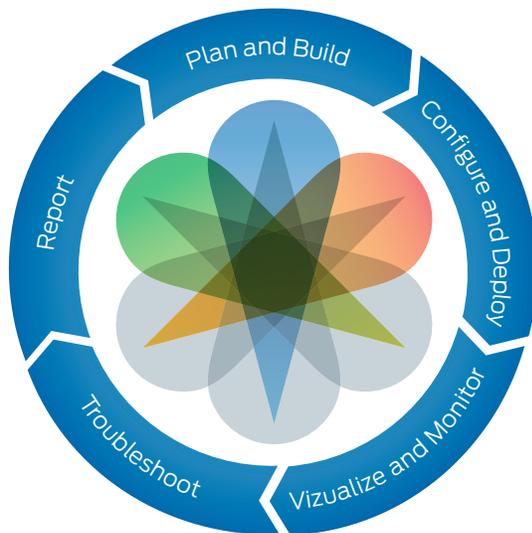


Figure 1: Schools can use Juniper's Popup Campus automated workflow to simplify their networking across the complete life cycle from planning and building to troubleshooting and reporting.

Solution Planning, Implementation, and Deployment

Plan and Build the Campus Network

A proactive plan for the campus network helps schools meet current and future education and administration requirements more easily. Begin with an assessment of the campus network requirements, including access for student, faculty, and guest mobile devices. Schools should model the Wi-Fi capacity and coverage, user onboarding, and endpoint security.

A site survey is typically performed to identify onsite radio frequency (RF) requirements and challenges, map out the number and placement of wireless access points and controllers, and determine the RF channels. This in turn will help determine the number of access ports that will be needed today and allow for growth. Creating a comprehensive design document can help the network scale to meet future requirements without having to redesign the network or create new challenges with ad hoc growth.

Configure and Deploy the Campus Network

The Popup Campus automated workflow vastly simplifies the configuration and deployment of the wired and wireless network, and allows network engineers to focus their time on strategic work like network design rather than deployment tasks.

Automating network configuration and deployment is straightforward with Junos Space and Juniper's suite of management applications, EX Series Ethernet Switches, QFX Series Switches, and WLAN solutions from Juniper or one of our wireless partners. With zero-touch provisioning, new Juniper switches and access points can be provisioned automatically and without manual intervention.

Once on the network, Junos Space and Juniper's suite of management applications can push pre-provisioned templates that were built in the design phase for common switch and access point configurations such as dormitories, academic buildings, or cafeterias. Using these templates accelerates deployment and reduces errors. With Junos Space and Juniper's suite of management applications, administrators have a single-pane-of-glass view into both the wireless and wired campus network, as well as full life cycle management tools.

Visualize and Monitor the Campus Network

Administrators can optimize the network with extensive performance management tools, identify problems with fault management, and resolve issues quickly with correlated event management. Because Junos Space and Juniper's suite of management applications automate troubleshooting, administrators can shift from maintenance to more strategically important work.

Automate Troubleshooting

Junos Space and Juniper's suite of management applications, in conjunction with Junos Space Service Now and Junos Space Service Insight, helps educational institutions proactively maintain and monitor their unified wired and wireless networks. With automation, an incident that might have taken two days to resolve can be fixed in 15 minutes.

Junos Space Service Now simplifies obtaining technical support from Juniper or Juniper partners and eliminates time-consuming manual tasks by using the automation embedded into Junos OS platforms to automatically detect issues and collect relevant diagnostic information when a problem occurs. Automated troubleshooting accelerates proactive problem resolution. Junos Space Service Now is available with all Juniper support contracts. If a device failure should occur, Service Now allows for quick problem resolution, while zero-touch provisioning allows for a quick replacement of the device without using expensive design resources.

Junos Space Service Insight helps mitigate downtime and enables proactive network maintenance, maximizes uptime, and enables institutions to manage their networks faster and more effectively through actionable network intelligence and automated impact analysis specific to each school's network. This includes end-of-life and end-of-support impact analysis and product bug notification.

Comprehensive Reporting

Ringmaster provides extensive reporting to show success or to plan for improvements on both the wired and wireless networks. It also gives visibility to device inventory, network usage, capacity, and more.

Table 1. Popup Campus Solution: Key Components for Network Automation

Domain	Juniper Solution
Junos Space and Juniper's suite of management applications	Provides a single-pane-of-glass view into the wired and wireless networks and creates a holistic, full life cycle management solution for the network. Delivers the ability to configure zero-touch provisioning components and to pre-provision device templates for common configurations that accelerate rollouts and reduce deployment errors.
EX Series Ethernet Switches QFX Series Switches Juniper or Partner WLAN solution	Juniper or partners offer a full suite of wired and wireless LAN products that work together to provide the highest density and superior performance to meet your BYOD needs.
DHCP/TFTP server base configuration	Configuration Protocol (DHCP) server and a Trivial File Transfer Protocol (TFTP) server, services most schools already have.

Summary—Save Time with Automated Deployment

Free IT staff from time-consuming network configuration and monitoring tasks with Juniper Networks Popup Campus automated workflow. By taking advantage of Juniper's automated network configuration and deployment capabilities, schools can deliver the network experience students, faculty, and administrators expect, while simplifying network operations and lowering operational expenses.

It's time to modernize how educational institutions design, build, and maintain networks, taking advantage of automation and modern management tools to simplify the job. Popup Campus automation makes it easier to deliver the always-on, ultra-reliable connectivity that students, faculty, and administrators need today, and will continue to need into the future.

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.

Corporate and Sales Headquarters
Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or +1.408.745.2000
Fax: +1.408.745.2100
www.juniper.net

APAC and EMEA Headquarters
Juniper Networks International B.V.
Boeing Avenue 240
1119 PZ Schiphol-Rijk
Amsterdam, The Netherlands
Phone: +31.0.207.125.700
Fax: +31.0.207.125.701

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