Network-Powered BYOD

A Case Study in Simplicity

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Campus IT departments across the world are struggling to keep up with the rising tide of consumer devices flooding their networks. In fact, according to a 2011 IDC study that counted Apple devices, today's power user owns five to seven Internet-connected devices.[1] In a higher-education setting, that means you might have more devices connecting to your network than users. Students and staff want to access campus IT resources on their laptops, tablets and smartphones, whether on campus or off.

This demand for anytime, anywhere service can put enormous strain on IT infrastructure, as rising numbers of end-user devices increase traffic flow and consume ever-greater bandwidth. The trend also strains IT staff and budgets as pressure on the help desk increases. For example, preparing a Mac to work with a campus LDAP environment can require a great deal of painstaking manual configuration involving more than two-dozen steps — a process almost sure to frustrate most users and culminate in a call to the help desk.

This flood of personal devices — a trend called "bring your own device," or BYOD — has already inundated most higher-education organizations. The question is no longer whether to allow BYOD, but how to provide an acceptable level of service that meets users' needs without overwhelming the IT infrastructure and budgets.

In an attempt to do so, some organizations turn to virtual desktop infrastructure (VDI) solutions, in which centralized servers in the campus data center execute a standardized desktop image and transmit the output to (and receive input from) distributed user devices. While this approach

[1] Media Tablet Multi-Client Study, IDC, February 2011

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works well for limited-function desktops, such as those used in call centers, its shortcomings become apparent in more demanding end-user environments.

Additionally, VDI can be very costly, requiring significant capital expenditures for new servers and network devices. Then once the new infrastructure has been deployed, configuration is complicated, time-consuming and error-prone. At the end of the process, IT often finds that the end user's experience is disappointing, as increased network traffic or high server loads can render a centralized desktop unusable.

How to Tame BYOD

You can address these and other challenges of BYOD while empowering end users — without a large data center buildout and without overwhelming existing infrastructure and IT staff. Furthermore, within a day, you can have a solution that delivers a managed virtual workspace to users on a variety of devices, with little action required by IT staff or the end user.

The solution, BYOD Cloud, is made possible by Juniper's unique Hybrid Cloud Architecture, which efficiently delivers a high-performance end-user experience through Juniper QFabric and security software, along with Juniper switches configured with Virtual Chassis — a network infrastructure that Juniper-based campuses might already have in place.

BYOD Cloud Solution Components

MX Series	MX Series 3D Universal Edge Routers are high-performance routers capable of supporting demanding campus cores.
SRX Series	SRX gateways consolidate flexible network switching, a network router, QoS and advanced security options to support highly responsive and secure service operations.
EX Series	EX Series Ethernet Switches deliver high-performance solutions to meet the needs of today's converged branch, office and campus networks.
WLAN Series	Juniper wireless LAN (WLAN) solutions provide secure, scalable connectivity for mobile users and all their Wi-Fi-enabled devices.
Junos® Pulse	The Junos Pulse Mobile Security Suite protects smartphones from malware, loss or theft, physical compromise and other threats, and supports major mobile operating systems.
Junos® Pulse	Junos Space provides a suite of software tools to Juniper's routing, switching and security portfolios.

The solution enables greater efficiency in network and data center operations through a high degree of automation that paves the way to software-defined networking. Through automation, the Juniper solution can radically reduce configuration complexity and the potential for human error in deploying back-end support for BYOD. OneCommunity has experienced these benefits firsthand.

Real-World Success

OneCommunity is a nonprofit IT service provider that delivers Internet and transport-layer services to other nonprofit and public organizations in northeastern Ohio, including schools, libraries, government facilities and hospitals. OneCommunity serves more than 1,500 clients through 18 data centers with an IT staff of 20, and aims to help transform the economy and technological literacy of the region through its ultra-high-speed, fiber-optic broadband network.

IT departments at OneCommunity's educational customers were struggling with the rising costs of desktop management, exacerbated by the need to open up resources to user-owned devices. With a variety of end-user platforms in use on geographically dispersed campuses, including PCs, Macs and tablets, it was a challenge to provide a high-quality, cross-platform desktop experience that enhanced the educational experience instead of detracting from it. Several education clients approached Chuck Girt, OneCommunity's vice president of engineering, to request a centralized desktop solution that could be used at multiple locations for standardized educational activities, such as labs and testing modules.

"We tried a couple of popular VDI-type models, but they were slow and didn't provide a presentable user experience," Girt reported. The models were also extremely complicated to configure, and Girt's staff spent many days trying to figure out how to set up a back end that would support multiple applications and operating systems on the front end. "Our customers had Mac and PC operations, and to try to support those with Unix back-end services from one vendor was extremely difficult," he said. "In fact, we worked on it for months, and it never did deliver the user experience we needed to present."

Furthermore, the additional compute, storage and bandwidth requirements of these traditional VDI models made them cost-prohibitive. "We were looking at a large capital expense just for the compute capacity we needed with other vendors," said Girt. "Then you need a storage array, then software licenses. We found that to provide desktops at any kind of scale, the cost could quickly get out of hand."

Finally, Girt and his team looked to their networking infrastructure and shared their challenges with their Juniper representative. Together, they spoke with OneCommunity's educational clients to learn more about their needs and then deployed a BYOD-support platform powered by Juniper technologies.

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- Chuck Girt
Vice President of Engineering
OneCommunity

The Juniper solution is cloud-based and allows OneCommunity to leverage the intelligence and automation capabilities built into Junos-based devices. This approach makes the solution very easy to deploy. OneCommunity went from the shipping dock to a production-ready solution for

Macs in less than one day. "The Juniper solution had everything we were looking for," Girt said. "Deployment effort and horsepower needed were minimal. We didn't need huge capital investments in hardware, and because everything is loaded on the cloud, it had a very small data center footprint — including the power consumption."

With BYOD Cloud, the end user experiences none of the jitter or pixilation common with VDI solutions, and it requires little user involvement to get started. Users receive a token in email, which they paste into a simple client. The Juniper solution then delivers a virtual workspace over an HTML5 interface that runs on any device. Users can run applications in the cloud and on their own laptops, create and consume multimedia, and access campus resources without the costly and complicated back-end setup traditionally deployed to support BYOD policies. Juniper's efficient, cloud-based back end means data and applications are readily available at hundreds of locations, with no costly data replication required.

Girt estimated that Juniper's BYOD Cloud delivers up to a 70% savings over VDI solutions in hardware and maintenance costs alone, plus additional savings associated with simple, fast deployment. "With Juniper, everything is stored in the cloud and can be easily accessed from hundreds of locations, so we don't have to replicate data," he said. "This helps us keep our hardware footprint and costs down, and these are savings we pass on to our customers."

Additionally, BYOD Cloud allows OneCommunity to offer a niche service to its clients that meets the needs of users on various platforms while helping IT meet its service-level agreements. "BYOD Cloud lets us deliver a unified solution where the device at the end no longer really matters," said Girt. "Whatever users are running, they can pull up a desktop, resources and applications because they're in the cloud and delivered over an HTML interface. This unified, cloud-based back-end approach solves multiple problems for us on multiple fronts, and allows us to fill a need for our customers like no other provider can. As far as I'm concerned, this is the next-generation desktop. I don't see any other vendors that have really done it right yet."

Is BYOD Cloud Right For You?

If you have watched the flood of devices on your campus with anxiety, you will be glad to know that simple, efficient support for BYOD may be closer than you think. Juniper has a turnkey reference architecture, an implementation blueprint and a community of Juniper solution partners that can help you get started right away. Contact your Juniper representative today for help with assessing your BYOD support needs and conducting a proof of concept so you can see if the solution is right for your organization.

