Don’t think “feeds and speeds” when planning upgrades; look at the big picture.

Network managers hear it in their sleep: Applications are a critical concern. Are they fast? Secure? Available and accessible? At the heart of this concern is the user experience, and by extension, user productivity. If trouble tickets aren’t mounting, the network professionals must be doing something right. If they weren’t, they’d be hearing about it.

 Organizations regularly assess their networks’ ability to optimize application performance. The trick for network administrators is to build a backbone infrastructure geared toward the needs of the existing portfolio that also can meet the needs of future applications.

 Smart network investments are the building blocks of “future-prooﬁng.” It takes a sound strategy to lay critical infrastructure groundwork when the ramifications of poor choices are potentially disastrous. But the alternative — a backbone that’s not ready to meet the organization’s changing needs — can be even worse, leaving the IT department to conduct an expensive rip and replace.

 Switching is the engine that keeps networks humming, so it’s not surprising that organizations focus their infrastructure upgrade investments on switches and routers. In CDW’s 2013 Surveying Your Network study, 35 percent of IT decision-makers planning upgrades named these as their ﬁrst priority. Tired, outdated network devices kill management efficiency. They can’t support current network requirements, much less the advances in technology, protocols and infrastructure design that come in the form of faster port speeds, new endpoint management features and the promise of software-deﬁned networking (SDN).

 The CDW survey respondents said that if money were no object they’d improve trafﬁc management and security by purchasing central controllers that manage switch conﬁguration, trafﬁc ﬂow and access points, as well as smarter switches and ﬁrewall devices. Smart switches include those that support intrusion detection systems (IDSs), intrusion prevention systems (IPSs), Power over Ethernet and Power over Ethernet-plus (PoE and PoE+), wireless termination points, multi-gigabit links and advanced routing protocols. Some are capable of handling the adoption of SDN technology and Internet Protocol version 6.

 “IT execs know they’ll have to deal with new applications and trafﬁc growth, so when investing in network design improvements, they’re paying close attention to whether the infrastructure will allow them to move up one or two steps in network speed,” says Jim Frey, vice president of research for network management at Enterprise Management Associates (EMA). “It’s all about ensuring they have an upgrade path to avoid forklift updates when they’re ready to make the next jump.”

 Though many are still focused on transitioning to 10 Gigabit Ethernet, they’re setting the table for 40 gig. For those farther along, 100 gig ﬁgures into planning scenarios. “If IT had to push the infrastructure to get from 1 gig to 10 gig, they know it can’t handle 40 gig,” says Frey. “So they’re buying new gear that will get them to a 40-gig core but will also support the leap to 100 gig. Meanwhile, 400-gig core looms.”

 As organizations make these decisions regarding network speeds, they should give equal thought to moving from the 802.11n standard
to 802.11ac for their wireless access networks, says Sachin Gupta, vice president of market strategy for enterprise networking at Cisco Systems. “This may have an even greater impact on the network, due to a ripple effect on the distribution and core networks. If you ignore what’s going on in the access network, and mobility is moving to 11ac, you’re ignoring one of most critical changes happening in networking.”

An equally important consideration is the app-centricity that drives network choices today, and the ability to execute business policies through context awareness around users and apps, he adds. To leverage SDN advances, for instance, “you need both sides of the equation,” says Gupta. “With a single architecture for the data center network, where you own the apps and the access network, you can administer policy throughout the environment by mapping user context to application context.”

As a future-proofing play, he says, IT departments should consider switches that support app-centric networking for integrated wired and wireless networks. Cisco’s Application Centric Infrastructure (ACI), for instance, leverages the company’s Nexus 9000 Series switches, which support application policy controllers for centralized automation of policy models.

Smart Build
Recent infrastructure upgrades within school districts reflect this strategy guided decision-making. West Islip Public Schools (WIPS) network infrastructure upgrade included new IP telephony and expanded wireless coverage. After running lean for years, Amit Pathak, network administrator for the Long Island, N.Y.-based school district, wanted an intelligent infrastructure that would improve connectivity speed and quality while accommodating the district’s needs well into the future. Among drivers for the upgrade was the growing number of teachers and administrators using web-based teaching tools.

The components of WIPS’ new smart switch-equipped infrastructure:
- Fiber-optic connections
- Cisco Gigabit Ethernet switches, which replaced 100 MB multi-vendor switches
- Cisco Catalyst 3750 switches, many PoE-enabled, for the data center
- Catalyst 2960 switches, many PoE-enabled, for school buildings
- Cisco wireless access points throughout the high school
- Cisco Unified Wireless Controllers for configuring, monitoring and managing the new 802.11n wireless network

Pathak’s advice: Thoroughly plan the upgrade strategy and bite off manageable chunks. Factor longevity and flexibility into switch and other hardware purchases, and install and configure the infrastructure so that it easily supports add-ons. An example of this future-proofing in action: WIPS deployed PoE switches during this upgrade, so it won’t need to swap out devices as its wireless networks expands.

Outside the Box
Jonathan Davidson, senior vice president and general manager for the campus and data center business unit at Juniper Networks, advises network.

802.11AC: GAME CHANGER?

The new 802.11ac standard gives network managers some wireless switch decisions to make. In future-proofing for mobility, administrators should perhaps factor 802.11ac into their switch considerations.

“We don’t build access point switches to last 12 months. We build them to last for five to seven years, with the understanding that the world is moving to mobility,” says Sachin Gupta vice president of marketing strategy, Cisco.

There’s a bigger question IT decision-makers are struggling to answer as they upgrade, says Jonathan Davidson senior vice president and general manager for Juniper Networks’ campus and data center business unit: With the potential ability to get gigabit connectivity to individual notebook PCs, do organizations need to refresh their distribution networks, core networks and campus environments?

Davidson believes a strong case can be made for upgrading the core and access networks for the simple reason that IT organizations will be able to offer new services over time that will fundamentally transform the way they manage their networks.
core networks or an enterprise upgrading its data center network, Juniper prescribes a combination of components along with a detailed blueprint for putting it all together. “Flexibility and agility are what help you future-proof your network investments,” says Davidson. “First, the architecture you’re selecting meets your business requirements, and second, it’s flexible and programmable to grow with you as things evolve.”

What’s Ahead: Ease Up
Lee Doyle, principal analyst at Doyle Research, agrees that a focus on plumbing doesn’t serve new, nimble business models. IT is “moving away from the feeds and speeds mentality” and making infrastructure decisions based on mission requirements, efficient network management and automation, he says. “The Number 1 thing IT wants is ease of network operations,” says Doyle. Organizations want to automate the provisioning of network resources, whether in the data center or on a wide-area network. By doing so an IT department essentially expands its staff and coverage by enabling employees to handle their own provisioning and similar tasks. That’s the promise of software innovation such as SDN, Doyle adds. “The exciting thing about SDN is that it gives organizations the flexibility to change network configurations more quickly,” says Frey. It’s still early though.

It’s nowhere near becoming a standard architecture, Frey adds. What will launch adoption of SDN, he says, is the implementation of systems at the orchestration layer that allow IT teams to automate the deployment of IP resources. “It will come when IT says, ‘We need to automate the process of deploying apps, and the servers, storage and network that support them, because we just can’t do this manually anymore.’”

SDN, says Davidson, is ultimately about network agility. The first step? “It’s infrastructure automation. And it’s important to remember that automation is a journey, not a destination.”

SDN TECHNOLOGY: USAGE STORAGE

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Source: Enterprise Management Associates, 2014