Insight

Unified Wired and Wireless Network Access: Benefits Emerge for the Enterprise

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IDC OPINION

Best practices from WLAN management and control platforms have translated into the development of unified wired and wireless network access architectures that continue to garner interest within enterprise IT. Over the past few years, offerings from several wired networking vendors including Alcatel-Lucent, Cisco, HP, and Extreme-Enterasys have gradually seen increased deployments. More recently, emerging vendors such as Huawei and Aerohive – both with very different roots – have embraced “unified access” as a strategy and rolled out platforms positioned at the enterprise network edge. These solutions generally offer common management, security policy, and QoS considerations while also providing integrated infrastructure, allowing new levels of simplicity and flexibility to network rollouts within the enterprise. However, there may be differentiation around how some of them handle the respective control and management planes. In addition:

- IDC expects the unified network access methodology to gradually evolve and grow more diverse as unified wired and wireless gets greater visibility across the enterprise. The introduction of switches by some pure-play WLAN vendors as well as the recently announced Juniper-Aruba integration partnership demonstrates the need and opportunity for multivendor unified access solutions. An improved understanding of benefits of unified access among network managers, coupled with the ongoing desire for some network managers to implement best-of-breed wired and wireless solutions, will continue to push the envelope in the multivendor unified network access space.

- Just as cloud-managed WiFi has emerged as a viable architectural option within the SME and midmarket WLAN segments, IDC sees unified wired and wireless access maturing and carving out its own space within the broader enterprise Ethernet switch and WLAN markets. Specifically, large enterprises, especially the Fortune 1000, should consider unified networking as an architectural option for network upgrades and greenfield rollouts.

IN THIS INSIGHT

This IDC Insight examines the market trends and opportunity for worldwide unified wired and wireless network access solutions. It covers solutions integrated with existing wired infrastructure as well as new standalone offerings. Also, this Insight examines unified networking as a paradigm shift in a segment of the broader enterprise networking market that has the potential to create a long-lasting impact on how enterprise campus networks are deployed in the future.
SITUATION OVERVIEW

As enterprise IT moves to the 3rd Platform (mobility, cloud, big data, and social business), the interconnection between different pillars of technology becomes more apparent. This, along with the increasing "leaness" of IT, has begun to break down many of the silos within enterprise IT, bringing about a new era of convergence. One area that has shown potential in becoming more seamlessly integrated is wired (Ethernet) and wireless (WLAN) networking.

In early rollouts of WiFi, enterprise IT deployed WLAN as an overlay to the wired network, providing access for laptops and other mobile devices, which, at the time, were less ubiquitous. Ethernet-connected desktop devices were most common, and IT designed campus networks accordingly. With the explosion of BYOD and smart mobile devices, many of which lacked Ethernet interfaces, many end users gravitated toward wireless as a primary access method, prompting IT and network managers to pay more attention to enterprise WLAN deployments. Fast forward to the postrecession lean IT era, where having a unified, single-pane-of-glass visibility becomes more important to network professionals as they increasingly divide their time between multiple domains.

Given the inherent level of complexity relative to wired networking, WLAN portfolios have long been developing comprehensive network access applications to optimize and manage security, policies, RF design and interference, and throughput, among other things. While traditional wired networking may seem less complex to manage, 3rd Platform and cloud trends still have implications for security and policies on the wired network. In addition, the evolution of WLAN access and management platforms demonstrated the tremendous strategic value of network intelligence. These factors have led to many of the wired and wireless networking vendors to invest in developing unified management platforms.

IDC believes that unified network access is a promising development for enterprise networks in this era of the 3rd Platform. And just as one can make a case for best-of-breed single or multivendor network architectures for wired and wireless, there is an equally strong argument for unified networking, which typically exists within a single-vendor framework. Enterprise IT, continually feeling the strain of tight budgets, stagnant or decreasing head count, security threats on all sides of the network, and the explosion of enterprise mobility, will increasingly look to unified network access for more efficient and automated campus network operations.

BYOD’s Effects Reverberate Through the Network

The exponential growth of the BYOD trend places unprecedented demands on the network — wireless as well as wired. Not only do administrators need to accommodate a greater amount of wireless traffic but now they must enable employees to access the corporate network without compromising network or application security. Unified network access solutions enable standardization of security and access policies independent of user access method or context and, in many cases, device as well.

Enterprise IT managers cite BYOD as a motivator for evaluating unified networking solutions. The most complete of these solutions will integrate and bring consistency to all aspects of the network edge of the enterprise campus, from the wiring closet to WLAN access points. In taking a holistic view of the enterprise network edge, networking vendors bring into play common management, security
policy, and QoS considerations while also providing integrated infrastructure that will deliver new levels of simplicity and flexibility to network rollouts within the enterprise campus.

**Emerging 802.11ac Will Drive Ethernet Upgrades**

The advent of the 802.11ac WiFi standard is prompting many IT decision makers to evaluate the state of their network infrastructure and determine if upgrades are necessary, especially in the realm of Ethernet switching. One of the primary benefits of Wave 1 802.11ac is its maximum throughput potential of 1.35Gbps, representing a threefold increase of the theoretical throughput capacity of 802.11n. Wave 2 802.11ac promises even greater gains in overall throughput. However, enterprises will not benefit from these faster data rates if underlying Ethernet switch infrastructure cannot support them — many enterprises are still using 100MbE switch ports, which effectively throttle wireless data rates down — thereby making the wireless standard and capacity irrelevant.

Thus 802.11ac, along with the bandwidth demands of 3rd Platform technologies, will likely drive Ethernet upgrades. Many enterprises will replace aging 100MbE switch ports with new 1GbE ports, while, in some cases, upgrades to 10GbE for aggregation now have the requisite business justification. With these impending wired refresh cycles, enterprise network decision makers are evaluating more advanced network intelligence capabilities than in past refresh cycles, many of which are embedded within or complement unified access platforms.

**IT Insights from Unified Access Deployments**

In conversations with enterprise network managers, IDC finds that some of them have deployed unified network access solutions to accommodate network challenges arising from the migration to mobile wireless access, with BYOD as the predominant reason for seeking a unified solution. One such view is that with the proliferation of mobile devices and advanced mobile applications, comprehensive monitoring and policy enforcement can only be achieved through a unified network access model. As wireless increases even further in importance (with wired access providing the underlying infrastructure), it is reasonable to believe that more IT managers will seek to evaluate or migrate to the unified model, especially where a wired upgrade is necessitated.

**Unified Networking Topology Varies Across Vendors**

There are a number of single and multivendor unified access solutions currently available for enterprise campus network deployments. The following is an illustrative list of a few solutions that fit within IDC’s taxonomy of unified access:

- **Alcatel-Lucent Enterprise (ALUE).** ALUE, which OEMs Aruba WLAN gear to round out its enterprise networking portfolio, has built unified networking capabilities into its OmniVista series of switches. In April 2014, ALUE announced updates to its platform in the realm of “application fluency” through enhanced network analytics capabilities. Of note is the solution’s support of unified management, security, and capabilities and the integration with ALUE’s voice solutions.

- **Cisco.** Cisco offers what it calls its Unified Access solution, integrating context-based policy management, network life cycle, and performance management as well as actual physical management through its One Policy, One Management, and One Network platforms. Security
and policy functions are enabled via its Identity Services Engine (ISE). An integral part of Cisco's wired and wireless solution is Prime Infrastructure, the company's network management platform.

- **Extreme-Enterasys.** Enterasys Networks introduced one of the first unified wired and wireless network access solutions several years ago. When Enterasys was acquired by Extreme Networks in 2013, the newly combined entity combined complementary strengths in wired and wireless networking, reshaping its NetSight platform accordingly. Network analytics capabilities through Extreme's Purview solution are now integrated into NetSight.

- **HP.** HP offers unified switches and compatible access points for a wide range of enterprises. The Intelligent Management Center (IMC) is a single-pane-of-glass management platform for a unified network infrastructure. As with other solutions within HP's enterprise networking portfolio, the unified network access platform is managed by IMC along with additional QoS and security/policy capabilities. IMC also integrates with HP TippingPoint's Next-Generation Intrusion Prevention System (NGIPS).

**Benefits of Unified Networking**

Enterprises will differ in terms of how unified networking will serve their unique deployment. Some may find simplicity in managing a single-vendor unified network; others will find that a best-of-breed multivendor solution with unified management suits them the best. And some enterprises may not find synergies in converging wired and wireless, preferring to stick with their existing wired and wireless solutions of choice. Regardless of what individual enterprises may find to work best for them, IDC believes there are some tangible benefits to taking a unified networking approach, these include:

- **Improved manageability.** Using a single-pane-of-glass approach to network management reduces the learning curve for IT staff in addition to allowing for unified troubleshooting. Having complete network access functionality on a single platform can increase productivity while reducing the risk of error.

- **Enhanced user experience.** Consistent security and QoS controls provide for a more seamless experience, regardless of which side of the network is being accessed.

- **Performance.** In a distributed wired and wireless data plane, all wireless traffic is terminated at the access switch, eliminating the need for traffic to be tunneled back to a centralized control point. Note that some wireless vendors offer this capability irrespective of the underlying wired network.

- **Application uniformity.** Similar to the benefits related to unified wired and wireless and BYOD, unified networking can streamline policy management for applications that can access the network via wired or wireless connections, such as unified communications and collaboration (UC&C) or video applications.

- **Pervasive security policies.** Unified networks can employ a single infrastructurewide security policy while achieving greater levels of resiliency with fast stateful recovery. Greater network visibility can lead to faster detection and remediation of security threats.
Challenges of Unified Networking

As with any IT solution, unified network access has a unique set of potential drawbacks. Some of these are related to the relative maturity of this deployment model. In any case, enterprise IT should carefully consider these potential challenges:

- **Evaluating the ROI of a solution.** As with any new solution, implementing a unified network involves time and equipment costs that affect the operating and capital budgets. IT decision makers should employ a careful cost/benefit analysis before undergoing an upgrade, especially where a new vendor/solution is being introduced that will bring about a learning curve. When evaluating the ROI of a unified network access solution, IT decision makers should consider the impact of process automation, security, and compliance.

- **Dealing with cultural change.** When moving from separate wireless and wired networks, IT staff may be learning a new side of networking with which they have not worked deeply. Wired engineers may need to learn nuances of wireless and vice versa — leadership will have to be attuned to and proactively manage the problems that may arise in this situation.

- **Potential timeline impact to cross-domain innovation.** Pure-play WLAN vendors may be more nimble with regard to some areas of innovation in the more rapidly evolving wireless side of networking. Incumbent wired vendors may lag behind in catching up with these innovations.

The Multivendor Challenge

As mentioned, one of the considerations to unified network access is that, in many cases, it leads to a single vendor providing infrastructure for both sides of the network — wired and wireless. Some network architects believe that this leads to a case of vendor lock-in, while others see this as a way to improve integration and simplicity and offer a more holistic approach to building enterprise networks. The former segment believes that a pure-play wired and WLAN solution from separate vendors better meets their needs and, in fact, can spur innovation. In this case, they will likely miss out on some of the efficiencies of unified access and management. IDC sees merit in both arguments and sees this status quo being maintained for the foreseeable future. Nonetheless, there are some solutions today that support some degree of integration across domains and vendors. For example, Extreme's switches and NAC solution can support non-Extreme switch infrastructure in the access layer.

To further illustrate the interest in unified access, earlier this year, Juniper and Aruba announced an agreement to offer a converged management solution, wherein Juniper explicitly supports Aruba WLAN integration with its wired backbone while developing a unified management offering. While this is in its nascence, IDC believes this announcement is an acknowledgement of the need for multivendor wired and wireless solutions and a harbinger for more of them to come. And if end-user interest in this deployment scenario increases, it is likely that we will see some pure-play WLAN vendors venturing into similar partnerships.

FUTURE OUTLOOK

Given the proliferation of mobile devices, BYOD, and network-attached devices, enterprise networks must handle greater levels of complexity. Inconsistent management tools and policies, however, can increase complexity while driving up costs. Given the mission-critical nature of today's enterprise
networks, IDC believes that enterprises should evaluate the pros and cons of unified access, when looking to refresh, upgrade, or grow their networks. A successfully unified network provides several opportunities to enterprise IT, including:

- **Accelerated business innovation and growth.** Enterprises that take advantage of the benefits of unified networking can achieve improved business agility, scale, faster service rollout, and better change management.

- **Greater IT efficiencies.** The advantages of simplicity can drive greater business efficiencies through the ability to implement converged infrastructures, greater network consistency, better data analytics, the introduction of open and programmable interfaces, and smarter network design and operations. IT’s expertise moves out of the silos, improving organizational learning and agility.

- **Enterprise IT demonstrating value-add to the organization.** IT has the opportunity to “look good” by implementing a more intelligent enterprise network that adds more value to the organization while showing that it is taking the long view of the enterprise network.

### Potential Impact of SDN

Interest in software-defined networking (SDN) is emerging as an architecture where the control plane is abstracted and centralized, allowing greater programmability and control over the network. Given that enterprise WLANs have essentially used a similar controller-based topology for many years, this will likely ensure that SDN will be a factor that will have some material impact on the unified access market besides impacting the wired and wireless domains individually. This segment of unified networking is in its infancy, although some vendors already offer SDN-enabled switches within a unified access framework. The addition of SDN capabilities, including OpenFlow, to WLAN controllers and access points holds a lot of promise vis-à-vis unified access. SDN protocols, based on open standards, create new opportunities for multivendor unified network access as well as for pure-play WLAN vendors such as Meru, which recently introduced an SDN-enabled WLAN solution. It is too soon to tell what the exact effect of SDN will be on unified campus networking, but look for the relevance of SDN to unified access to rise in the near term, just as it will across the wired and wireless domains.

### ESSENTIAL GUIDANCE

IDC believes that the unified network access and management space, while still a small segment of the broader enterprise networking domain, is positioned to grow while fueling network innovation in the near term. The benefits of unified network access including streamlined management, greater application and security visibility, and more flexible scaling apply to many enterprises. IT decision makers considering a unified network access rollout should consider the following:

- **Greenfield network implementations are well suited for unified networking.** A greenfield unified network access deployment provides the opportunity to architect an optimized and integrated wired and wireless topology built around 3rd Platform needs. While there is merit in retrofitting a preexisting network’s disparate elements into a unified network access environment, new deployments offer the chance to "build it right" the first time and operate the network in a truly unified fashion from day one. Network architects should conduct careful stakeholder analysis.
to develop a network that meets the entire enterprise's needs—wired and wireless, and design the network from a unified lens.

- **If upgrading an existing network, evaluate the net benefit of a unified networking migration.** Many enterprises achieve networking "nirvana" for their individual deployment needs using best-of-breed wired and wireless, foregoing a unified network access deployment. While unified access has benefits, it may not be the most optimal solution for all enterprises. Consider factors such as historical network performance, RF environment, and the synchrony between current and anticipated wired and wireless network applications to help with an ROI evaluation of the unified networking option.

- **If considering a unified deployment, create a bridge plan.** Where a unified network infrastructure is under consideration, it is important to balance and derive maximum value from existing network capex and opex investments. At least six months before a network upgrade or new rollout, evaluate existing investments to help determine which segments, if any, would be appropriate for a unified network rollout. Look for unified solutions that bridge the old with the new—in other words, solutions that provide effective tools to manage legacy wired and wireless network platforms while incorporating unified access deployments.

- **Organizational dynamics.** If the wired and wireless networks have long been managed and orchestrated separately, it is worth considering what efforts will need to be made in order to bring together wired and wireless in the same realm—not just from the technological perspective but also from the organizational perspective. Mandate that your wireless/RF and wired/IP teams those who focus on Ethernet and IP will need to learn the nuances of RF management and wireless security (and vice versa). With that goal in mind, IT should mandate that wireless/RF and wired/IP staff work jointly on the same team and, in the process, achieve the requisite cross-training that benefits the broader team.

**LEARN MORE**

**Related Research**

- *Worldwide Ethernet Switch and Router 2Q14 Market Share Update* (IDC #251247, September 2014)
- *Worldwide WLAN 2Q14 Market Share Update* (IDC #251248, September 2014)
- *Gigabit WiFi Is Coming with 802.11ac: What Enterprise IT Needs To Know* (IDC #244208, November 2013)
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