

Magic Quadrant for the Wired and Wireless LAN Access Infrastructure

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VIEW SUMMARY

We evaluate a variety of LAN vendors providing converged access layer connectivity. Vendors are increasingly able to provide integrated hardware and network application solutions. Enterprises are expanding how users connect to the infrastructure, and vendors are providing new ways to differentiate.

Market Definition/Description

The access layer market consists of vendors that supply wired and wireless LAN (WLAN) hardware and software components that provide the first connectivity to the infrastructure access layer, from the edge of the enterprise network to the end users or connected devices. The market consists of three types of access layer vendors:

Those that provide their own wired and wireless infrastructure connectivity, network service applications, and services (such as Cisco, HP Networking, Avaya, Adtran, D-Link, Extreme Networks and Huawei).

Those that mainly focus on a specific connectivity option, often offering solutions for one or more vertical markets or deployment solutions that address a unique set of market requirements (such as Motorola Solutions, Aruba Networks and Aerohive).

Those that use a strategic partner to provide a portion of the access solution. It is important that these vendors provide differentiating functionality that shows why the vendors collectively provide a better offer to enterprises, rather than being considered separately (such as Dell, Juniper and Alcatel-Lucent Enterprise).

Today, the access layer market continues to evolve from two separate decisions, one being wired and the other being wireless, to a single unified access layer decision. Organizations continue to express a desire for a unified wired/WLAN access infrastructure in which the access is user-centric and incorporates location, time/date and duration of the connection, as well as what application the user or device is accessing to determine whether or not it will be allowed. During inquiries, enterprise clients continue to say that they do not want to have to make trade-offs between the security, policy enforcement and management of their wired and wireless access networks. With limited growth in IT resources, administrators require one network management application, one access security solution, one guest access application or one policy enforcement solution with the flexibility to be deployed in a public cloud, private cloud or on-premises. This integration reduces the costs associated with the upfront capital expense of multiple network service applications — each dedicated to either the wired infrastructure or the wireless or cloud components. This savings is also extended to the ongoing software maintenance costs of all access layer management, security and policy enforcement components, whether a single vendor implements the entire solution or the client has a multivendor environment. A single network service application for the access layer not only reduces operational overhead, but also eliminates the potential for conflicting policies as users access the network with an increasing number of diverse devices in diverse enterprise locations.

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What's Changed?

During the past 12 months, the access layer market has continued to evolve — including hardware, software and applications that are needed for an end-to-end solution. From a wireless standpoint in the industry, we saw the ratification of the 802.11ac standard and the introduction of 802.11ac Wave 1 products by vendors in the enterprise (see "Enterprises Should Optimize the Timing of 802.11ac Adoption"). Additionally, several vendors introduced hardware and software to improve application performance (for example, to adjust the network for latency-sensitive applications while maintaining their aging WLAN controller architectures).

While there has been less overall change on the wired side, vendors made both hardware and software innovations to improve management and provisioning of wired campus infrastructure, including support for switch extenders and software-defined networking (and related) technologies.

As vendors increasingly focused on the midmarket and small or midsize businesses (SMBs) for wireless deployments, we saw them shift from large, one-size-fits-all network service application suites to line-item applications that provided specific business value, such as guest access, policy management, onboarding and network management (see "Network Access for Guests or Contractors Requires More than an Open Network, Coffee Shop Strategy").

Several vendors also made acquisitions around WLAN as well as location-aware functionality, as location of the user continues to be important to the retail and healthcare vertical markets, but now also to the hospitality market. In addition to location, we saw the introduction of analytics applications that looked at not only network data, but also collected and correlated user data as they attached to the network. In the past year, these applications were deployed to clients not only as an on-premises application, but also



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EVALUATION CRITERIA DEFINITIONS

Ability to Execute

Product/Service: Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability: Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

Market Responsiveness/Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

in the cloud, private or public, in single tenant and multitenant environments.

As a result, we are seeing fewer RFPs from client inquiries focusing on the speeds and feeds of access layer connectivity as hardware prices continue to decline (see "Forecast: Enterprise Network Equipment by Market Segment, Worldwide, 2011-2018, 1Q14"). Clients often site network applications and unified access layer management not only as market drivers, but also as key differentiators when evaluating vendor proposals.

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What's Required in the Wired and Wireless Access Layer?

During the past couple of years, we have seen the increase in total access layer bandwidth that is the result of the rampant introduction of bring your own device (BYOD) strategies (based on Gartner's 2013 Data Center Summit survey, as well as 2013 and 2014 wired and WLAN access infrastructure customer reference surveys). While the amount of bandwidth needed has not changed per user, the sheer number of devices is causing enterprises to rethink their overall bandwidth needs, as well as how all these devices will be used and managed.

This trend has exposed two important vendor requirements. First, vendors must provide connectivity solutions for not only 802.11n, but also 802.11ac Wave 1, as well as a migration path and road map for 802.11ac Wave 2. Second, BYOD has exposed the suboptimal network service applications that vendors have been using to meet business requirements, such as guest access and policy enforcement. There is a growing need to increase the granularity of managing these devices with primitives that include not only device and user, but also location, duration and time/date. Additionally, management applications must extend beyond configuration and provisioning to device profiling that can be used to create access layer policies that tune the network. We also expect the introduction of new primitives and management functionality as the access layer market continues to move toward guaranteed uptime and SLAs, which will spur adoption of complete managed services offerings at the edge of the network.

Network administrators are looking for network service applications that address wired and wireless clients, including access layer services such as:

- Policy enforcement that provides access to applications and parts of the network based on credentials, as well as context-aware variables, such as location and device profiling. This is particularly useful in BYOD scenarios.

- Integrated network management that is aware of wired components and is WLAN-vendor-independent for configuration and provisioning.

- Onboarding services, including device authentication and user authorization services for BYOD programs that support many operating systems and device postures.

- Analytics applications that look not only at the network, but also at the end-user data.

- Network forensics tools to determine what is happening across the entire access layer in addition to security functionality.

- Support for voice and video applications by adding features such as reduced jitter, awareness and monitoring of voice and video quality, and fixed mobile convergence capabilities.

- Location-based services, context-oriented services and asset management.

- The ability to provide managed services when additional IT resources are needed.

As vendors continue to expand functionality, they will provide additional information about usage and traffic to administrators, enabling enterprises to maximize the productivity and ROI of all access layer connectivity.

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Magic Quadrant

Figure 1. Magic Quadrant for the Wired and Wireless LAN Access Infrastructure

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.



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Vendor Strengths and Cautions

Adtran

Adtran has a strong presence in the service provider market and sells its enterprise offering through distribution partners, with an extensive reseller channel that deploys access layer solutions to a distributed enterprise market. The vendor has a complete end-to-end access layer solution represented by its virtual WLAN (vWLAN) and NetVanta products in its Internetworking portfolio. Adtran continues to leverage a strong VMware relationship, and has recently made a strong push to provide a complete and flexible cloud offering. Target markets include state and local governments, education, healthcare, and the VMware installed base, independent of vertical market.

Adtran should be considered for state and local government, education, and healthcare access layer opportunities, and also for solutions for distributed enterprises and managed service offerings.

Strengths

Adtran has a strong, flexible deployment solution and presence in enterprises that have multiple-location branch or remote offices that can be managed centrally with on-premises management, in a private cloud or through its hosted ProCloud Wi-Fi managed service offering.

The vendor uniquely offers an a la carte professional services suite to deliver site surveys, installation, maintenance and end-user help desk services from a single vendor.

Adtran's broad range of NetVanta Ethernet switches addresses a wide range of applications. Its ActivChassis solution satisfies high-density, geographically diverse deployments. Legacy vertical-market-specific requirements (such as Power Over Ethernet [PoE] over Category 3 [Cat3] cables or even voice-grade copper) are satisfied with its unique ActivReach solution.

Cautions

The vendor has an extensive North American direct and channel organization, where 71% of its products are sold. Organizations should request references for implementation and service of applicable Adtran solutions outside of North America.

Adtran continues to execute well on the core functionality needed in its key enterprise vertical markets, but does not currently provide capabilities in areas of emerging requirements, such as location awareness and application visibility.

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Aerohive

Aerohive continues to grow faster than the overall industry in terms of revenue, with estimated growth of 47% year over year (see "Market Share: Enterprise Network Equipment by Market Segment, Worldwide, 4Q13 and 2013"). The vendor, which raised its profile with an initial public stock offering in 1Q14, remains focused on WLAN which accounts for more than 87% of its business and wired switching platforms as well as small branch router/VPN devices for a complete access layer solution.

Aerohive's key differentiator continues to be its distributed intelligence, controllerless architecture and unified HiveManager network service applications, supporting a cloud- or on-premises-based single control

point for onboarding, monitoring, and managing both the WLAN and wired switches as a unified network. The vendor's predominant markets continue to be North America and EMEA, accounting for 89% of revenue, which it serves through a 100% indirect sales force. Enterprises should consider Aerohive for all overlay WLAN deployments, especially in the education, retail and healthcare sectors.

Strengths

Aerohive's cooperative control architecture can provide a more competitive total cost of ownership versus legacy controller-based systems, since it eliminates the primary controller platform as well as the often-required high-availability backup controller.

Aerohive's HiveManager Online and Mobility Suite provide cloud-based options for enterprise-scale network management, guest management, client onboarding and device management. Clients report that the context-based visibility, policy enforcement and analytics capabilities have good user interfaces and ease of use.

Aerohive customers gave high marks for its experience, including sales, support and performance of the solution. The vendor's solutions are typically the most cost-effective, based on the bids that Gartner reviews.

Cautions

Currently, HiveManager manages only Aerohive products, although, when integrated with the Client Management mobile device management (MDM) solution, it can manage multivendor client status. Multivendor monitoring requires an enterprise to use the Mobility Suite, which includes Client Management and the ID Manager guest management system.

Enterprises need to be aware that some applications, such as ID Manager, are currently available only in the cloud, which can limit the deployment options of this functionality.

Although it is now a public company, Aerohive is still one of the smaller access layer vendors with respect to geographical footprint. Clients outside of North America and Europe should make sure that their sales and support requirements can be adequately addressed.

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Alcatel-Lucent Enterprise

On 6 February 2014, Alcatel-Lucent announced its intent to sell an estimated 85% interest in its enterprise business to China Huaxin, which has indicated that it plans increased investments in the enterprise portfolio. These investments potentially include greater development of solutions specific to the education, hospitality, healthcare and other vertical markets, and greater emphasis on the geographic regions it identifies as high growth. However, like any large corporate transaction, the deal raises the risk of potential disruption to customers as the newly separated enterprise business attempts to maintain seamless relationships with other Alcatel-Lucent divisions with which it cross-sells technology into large vertical markets, such as service providers, government, utilities and transportation. The agreement between China Huaxin and Alcatel-Lucent, which includes 15% retention of Alcatel-Lucent Enterprise, may mitigate this risk.

Alcatel-Lucent Enterprise continues to target its flagship Converged Campus Network solution predominantly at midsize and large enterprises, generating just over half of its revenue in EMEA. Enterprise customers, as well as global service providers and transportation, utilities, energy and other public-sector organizations, should consider the vendor for wireless and wired access infrastructure.

Strengths

Alcatel-Lucent Enterprise continues to enhance its application-fluent network strategy with unified wired and wireless network access capabilities and network analytics technology via deep packet inspection and enforcement of application policies at the edge of the network.

The vendor uses Aruba's ClearPass access management technology to provide a consistent set of BYOD services across both its own and third-party WLAN and wired LAN equipment, including device provisioning; guest management; device fingerprinting and policy enforcement.

Alcatel-Lucent offers a mature unified communications/Internet Protocol telephony solution that integrates with its WLAN and wired LAN access products, and its unified management platform.

Cautions

Customers should vet local support and investment by China Huaxin as more details become available of its specific plans for the Alcatel-Lucent Enterprise business.

Compared with leading competitive offerings in this research, Alcatel-Lucent has a limited ability to provide management services available as SaaS or a cloud-based product until it enhances its OmniVista platform for those capabilities in 3Q14.

Alcatel-Lucent Enterprise's dependence on Aruba's WLAN technology for its access layer solution limits the vendor's ability to structure its offering based on the requirements of markets that may be a priority for China Huaxin, but not necessarily for Aruba.

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Aruba

Aruba focuses primarily on mainstream enterprise wireless, which accounts for more than 85% of its revenue. Aruba has grown to be the No. 2 WLAN vendor in terms of revenue, and offers a well-thought-out architecture that supports both pay-as-you-grow pricing and mixing/matching of components across product lines. Aruba networking gear can be run in either controller or controllerless mode (branded as Aruba Instant), and can be provisioned via Aruba's new SaaS-based management offering, Aruba Central, or the vendor's traditional AirWave network management software. Network service applications are delivered via Aruba's ClearPass software, which provides guest access, device profiling, posture assessment, onboarding, etc. In addition to launching Aruba Central's cloud provisioning capability, Aruba has released new 802.11ac access points, and has added several software features to improve WLAN performance, authentication, analytics, and security during the past 12 months. Aruba's strong WLAN solution is in a "meet in the channel" model relationship with Juniper Networks and Brocade, and it is also rebranded by Alcatel-Lucent and Dell. Enterprises should consider Aruba for all WLAN deployments globally, and specifically with their strategic partners as part of an integrated access layer solution.

Strengths

Gartner clients report a high degree of satisfaction with Aruba's ClearPass for onboarding and guest access, which also includes a REST API and integration with leading MDM vendors, such as Citrix, AirWatch and MobileIron.

Aruba has a simplified product architecture that allows enterprises flexibility in terms of how they manage, deploy and scale their environments.

Aruba's ClientMatch technology addresses "sticky client" issues that occur as mobile roaming clients move from one access point to another.

Aruba has increased its focus on network security, including an intrusion prevention system (IPS), an embedded mobility firewall and established partnerships with leading security vendors, like Palo Alto Networks.

ClearPass and AirWave support non-Aruba devices, which simplifies orchestration within multivendor environments.

Cautions

Aruba's wired portfolio can meet many enterprise use cases, but lacks the brand awareness and hardware/software depth and breadth of its leading competitors. The vendor has less than a 0.5% share of total 1G port shipments, and derives only 3% to 5% of revenue from wired switching. As a result, Aruba is not considered a trusted wired switching vendor by most Gartner clients.

Since 97% of Aruba's sales are generated by indirect channels, enterprises must verify that resellers/distributors have the ability to support the entire Aruba access layer solution through verified resources.

Aruba access points running in Instant mode lack some capabilities of controller-based architectures, and Gartner clients have reported confusion over which mode to run the access points in.

[Return to Top](#)**Avaya**

Avaya provides its unified access solution across a global footprint. It has a particular strength in the U.S. and EMEA regions, with an emphasis on education, healthcare, hospitality and local/state government verticals. The vendor continues to provide a strong offering across wireless and wired access technologies, with a marketing perspective that the WLAN is now the primary network access mechanism in the enterprise. The global Avaya Connect channel program accounts for about 80% of annual networking sales.

Avaya's Identity Engines application portfolio is the identity and network access control solution, providing unified multivendor wireless and wired network management. Tools include the Guest Manager, Access Portal and Client Access to the Secure Enterprise (CASE) Wizard solutions, enabling fast, self-service guest access. The vendor's updated IP Office Release 9.0 adds single sign-on based on the SAML protocol for Web-based applications, to unify network and access management control. Avaya also differentiates itself with its Diagnostic Server, also called SLAMon, which allows network managers to simulate different traffic types to detect potential problems before application performance is degraded. The vendor's comprehensive portfolio warrants consideration in any access layer opportunities in its target markets.

Strengths

Avaya's extensive unified communications presence provides a strong installed customer base complementary to its unified access business.

The vendor's new WLAN 9100 802.11n access points are software upgradable to 802.11ac, avoiding the need to change out the radio, as required by other vendors, once the enterprise migrates to 802.11ac Wave 1.

Avaya's unified access platform provides application control capabilities supporting guest access and BYOD, by enabling IT managers to enforce application quality of service (QoS) by prioritizing business apps at the wireless access point, as well as policy controls like permission, prioritization, throttling and blocking policies specific to more than 1,300 different apps.

Cautions

Avaya's managed service portfolio covers overall IT infrastructure, including unified communications, contact center and video, but there is no separate access layer solution for customers that may not need the additional services.

Combined Asia/Pacific and Latin America access layer sales remain less than 15% of total revenue, indicating that awareness of Avaya's networking solutions may remain low among customers in those regions.

While the vendor continues to invest in its networking portfolio, we see a decline in its enterprise data/access layer sales relative to the market, which it must address in order for enterprises to consider the solution for long-term strategic investments.

[Return to Top](#)**Cisco**

Cisco continues to be the largest vendor and market share leader, with a broad product portfolio in the enterprise wired and wireless infrastructure market. A strong channel, combined with a global presence, means that the vendor continues to be on the shortlist for all access layer opportunities.

Cisco has a complete line of access layer solutions, including core network service application functionality in network management, security and policy enforcement for both wired and wireless enterprise connectivity. The vendor has taken a leadership position with its location-based services as part of its Connected Mobile Experiences (CMX), which enables new applications based on network analytics to create business relevance in targeted vertical markets. Cisco's ability to address and deploy in in-store retail, as well as in manufacturing/logistics environments, gives it a large solution footprint that can be deployed globally. Cisco focuses on the public sector, healthcare, education, hospitality and retail markets. Cisco should be considered for any large enterprise or midmarket opportunity.

Strengths

Cisco's "One Policy, One Management, One Network" is a strong marketing message that leverages its Identity Services Engine (ISE) and Prime Network management applications across wired and wireless access layer components. For many enterprise environments, these applications, combined with Cisco's wired switching and wireless access points, provide strong functionality to address enterprise requirements.

Cisco developments in location services are moving the market and meeting the enterprise need for submeter accuracy for Wi-Fi, without the requirement of supplemental beaconing or a separate overlay for the location-aware solution.

Cisco Meraki is a strong solution for midmarket customers seeking cloud-managed solutions.

Cisco access layer innovation simplifies network operations and management via the Catalyst 6800i, which connects to Cisco 6500 and 6800 series core switches for management as a single switch domain. The vendor additionally provides application visibility, investment protection through access point modularity, and device and network analytics, as well as EnergyWise and TrustSec.

Cautions

Enterprises need to be aware that Cisco currently has at least four separate access layer connectivity architectures that are developed by separate development teams, and does not have a consistent user interface between solutions that often have different functionality for security, guest, network management and policy enforcement. Whether it is ISE, controller-based, Meraki cloud-based or the SMB solution, enterprises need to verify the infrastructure functionality being proposed against their requirements, and whether multiple applications may require multiple training sessions.

Cisco ISE, which may be deployed in the enterprise, has a limited ability to deploy and enforce policy to the Meraki cloud-based solution, which may be proposed for branch or remote offices. The same issue applies in that Cisco Prime is limited in regard to managing Meraki assets.

Cisco 3602 and 3702 access points with High Density Experience (HDX) technology (such as ClientLink and CleanAir Technology) cannot be used with the Cisco Meraki solution. Similarly, the Meraki access points cannot be used with other Cisco access layer solutions.

The vendor tends to present the highest-cost solution, based on list price. It is important that enterprises compare vendor prices for equivalent functionality in order to ensure that the price is competitive.

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Dell

Dell is the No. 4 wired switching vendor and is growing significantly faster than market rates, as measured via revenue. The vendor's wireless portfolio is derived via an OEM relationship with Aruba, which it rebrands as W-Series. The majority of Dell's sales are direct, and the vendor focuses heavily on midmarket enterprise, higher education and public institutions. During the past 12 months, Dell has completely refreshed its wired switching portfolio, including the release of its N-Series fixed-form factor and C-Series modular switches. Dell should be considered for all access layer opportunities, particularly in the midmarket.

Strengths

Dell recently overhauled its campus switching portfolio with N-Series fixed-form factor and C-Series modular switches, which meet the full breadth of enterprise wired use cases and are energy efficient versus leading competitors.

Dell has a history of strong support, and its managed service offering allows enterprises to deploy access layer technology without requiring dedicated IT resources.

The Dell architecture is largely based on open standards and includes the ability to operate in multivendor environments, which can simplify management in heterogeneous networks.

Cautions

The vendor's weak WLAN growth, as well as its reliance on Aruba for its wireless portfolio, means Dell lacks direction and control over its WLAN portfolio. This could result in an inability to respond quickly to changing market demands.

Currently, Dell adds limited differentiating value on top of Aruba's product offering. This reduces the value proposition of acquiring W-Series wireless products from Dell versus Aruba.

Many organizations in Dell's target market look for turnkey SaaS-based cloud management, but Dell's cloud management capability (Dell Cloud Dedicated) is infrastructure as a service (IaaS)-based, not SaaS-based, which requires additional operating expenditure.

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D-Link

D-Link has a broad portfolio of low-cost wired/WLAN networking hardware. The vendor focuses on the education and SMB markets, and is the leader in both stand-alone access point shipments (46% share) and 100 Mbps wired port shipments (28% share), with a majority of its business derived outside the U.S. and Europe. D-Link provides on-premises management via the D-View platform, which includes guest access to support BYOD. During the past 12 months, D-Link has added 802.11ac-capable access points, enhanced the capacity of its WLAN controllers, and added integration capability between surveillance cameras and their access network products. SMBs with basic wired/WLAN networking requirements should consider D-Link.

Strengths

D-Link offers a broad hardware portfolio of wired and WLAN components, which range from 5-port unmanaged Layer 2 Gigabit switch to 8-slot L3 chassis-based switch, as well as 802.11ac access points.

The vendor automates and simplifies initial network configuration via the D-Link Network Assistant (DNA).

D-Link executes well in its target markets, and is growing faster than market rates in the WLAN area.

Cautions

D-Link lacks the mainstream brand reputation as an enterprise-class networking vendor, and seldom comes up in conversations with Gartner clients.

Many organizations in D-Link's target SMB market look for turnkey SaaS-based cloud management, but D-Link's SaaS capability (CloudCommand, delivered by PowerCloud Systems) is limited to a small subset of its portfolio, and currently doesn't include any wired switches or 802.11ac-capable access points.

D-Link's products lack the enterprise features of leading competitors. Enterprises considering D-Link should validate that the network service applications they require are available and meet their requirements.

During the past year, D-Link has lost approximately 10% market share (based on revenue) in the wired networking segment, as the wired access layer market continues to be competitive and commoditized.

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Extreme Networks (Enterasys Networks)

Extreme Networks returns to this Magic Quadrant after a one-year hiatus. The acquisition of Enterasys Networks in November 2013, which included the IdentifiFi Wireless portfolio of access points and network service applications, in addition to Extreme's own product portfolio, allows the vendor to meet the inclusion criteria. The acquisition has doubled Extreme's revenue, and has allowed the vendor to focus investments where it can further differentiate products (R&D) and/or where a significant need existed (marketing). While it is a positive move, the next six to 12 months will be crucial, as Extreme must execute on its integration strategy while maintaining the combined revenue stream. Extreme provides a broad portfolio of wired and wireless products that can meet a wide range of needs, from SMBs to service providers. In addition to acquiring Enterasys, during the past 12 months, Extreme has released several new products, including 802.11ac-capable access points, stackable X430 wired switches and the Purview analytics application, and has enhanced its NetSight centralized management platform. Consider Extreme for "greenfield" access networking opportunities, as well as when refreshing existing installations.

Strengths

Extreme's NetSight is a single console that provides centralized management, onboarding, guest access and analytics, and integrates with leading MDM providers (such as AirWatch and MobileIron). NetSight includes management of the full wired and wireless portfolio, and supports non-Extreme products as well.

To eliminate the need to upgrade to PoE+ for higher-performing access points — and, therefore, the need to also upgrade the access layer switches — Extreme was one of the first vendors to deliver a 3x3 802.11ac access point that can operate in an 802.3af power budget.

Extreme's Purview analytics engine software provides insight into who is on the network, what applications they are accessing, where they are located and what devices they are on.

Cautions

Extreme lacks a SaaS-based management option for its networking products, which several leading competitors have implemented.

While the vendor has increased marketing efforts over the past 12 months, and there has been an increase in client inquiries, it lacks brand awareness among Gartner clients (versus leading competitors), and consequently does not show up as often on client shortlists.

While Extreme continues to expand its channel organization, enterprises should work with resellers to ensure that it can provide the necessary level of support in their specific geographies or markets.

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HP Networking

HP Networking has global distribution with a strong presence in China through its wholly owned subsidiary, H3C Technologies. The vendor continues to win customers in the education, healthcare, hospitality and state/local government segments, reflecting its strong global sales channel that accounts for about 90% of its networking revenue.

HP Networking's FlexCampus and FlexBranch architectures provide a comprehensive wired and wireless solution encompassing unified management of multivendor networks, and integrated network security and policy enforcement, scalable for large enterprise deployments. The vendor continues to enhance the solutions with new elements, such as the HP Cloud Managed Network Solution, enabling multisite management of the vendor's 802.11n and 802.11ac access points, and innovations such as an 802.11ac unified wall jack and a dual-band, single-radio 802.11a/b/g/n/ac access point. Large enterprises and SMBs globally should consider HP Networking in network evaluations of all sizes.

Strengths

HP Networking has a complete enterprise campus and branch portfolio with broad global reach for multinational enterprises.

HP Networking provides integrated network and BYOD management that enables device onboarding, provisioning, monitoring, policy enforcement and device security.

The vendor's hosted cloud-managed offering provides redundancy and global reach by leveraging more than one cloud provider to provide enterprise, WAN and cloud solutions.

HP Networking has announced a location-aware software-defined networking application that leverages patented HP Labs technologies to provide deterministic real-time location of wireless devices and assets on the network.

Cautions

HP Networking has the ability to deploy a controllerless solution through its HP 830 Unified Wired-WLAN Switch Series. However, this solution is designed primarily for SMB and enterprise branch offices, and may not scale to support very large enterprise campus environments. Enterprises need to evaluate the scalability requirements of their networks.

While the HP Intelligent Management Center (IMC) application brings benefits as single-pane-of-glass management for network management, guest access, policy enforcement, etc., enterprises and SMBs need to be aware of pricing options and server requirements, which may be an issue in competitive environments.

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Huawei

Huawei's Enterprise Business Group (EBG) is a global solution provider that has a strong presence in the Asia/Pacific region, including Japan, Russia and India, as well as China, where 72% of its access layer revenue was deployed last year. Huawei's EBG targets healthcare, education, financial services and the public sector/government.

The vendor's agile network solution offers its vision of end-to-end campus networking. With its strong carrier heritage, we traditionally see Huawei in the data center or core of large enterprises, but its access layer products and network service applications show its focus on the access layer. Huawei should be considered for service providers, as well as for enterprise access layer opportunities where it has a geographical presence.

Strengths

Huawei has invested in the ability to detect and maintain network quality awareness and accurately locate network problems across the entire access layer with its Packet Conservation Algorithm for Internet (IPCA), resulting in the ability to quickly resolve network issues.

Huawei has implemented a soft radio technology in its access points that allows them to be converted from 2.4GHz to 5GHz to allow a single radio to service either band. This capability allows enterprises to implement wireless bridging only when needed, and provides capital expenditure savings. The soft configuration of the radio can also be applied to high-transaction dense environments.

Huawei has made significant improvements in wired and wireless convergence. Its virtual fabric, eSight Unified Network Management Platform, Unified Security Gateway, Policy Center and AnyOffice applications have a focus on ease of use, which allows them to address the core functionality of the enterprise network.

Cautions

Huawei solutions are technically capable; however, limited marketing communications continue to limit enterprise awareness in the vendor's target markets.

The vendor has an extensive Asia/Pacific direct and channel organization, where 72% of its products are sold. Enterprises should request references for implementation and service of applicable Huawei solutions outside of the Asia/Pacific region.

Huawei continues to execute well on the core functionality needed in its key enterprise vertical markets, but does not currently provide capabilities in areas of emerging requirements, such as location-aware or application visibility.

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Juniper Networks

Juniper Networks provides a broad and scalable access layer solution, and focuses on large, carpeted enterprise, financial services and higher education markets. It is the No. 3 wired switching vendor and is growing faster than market rates measured via revenue, but accounts for only 1% of market share in enterprise WLAN. Juniper recently announced an agreement with Aruba on joint product development and go-to-market collaboration, where the vendors' channels will have the opportunity to offer joint Juniper-Aruba solutions. During the past 12 months, Juniper has released a new EX4300 switching line, new WLAN controllers and enhancements to its Junos Space Network Director management system. Juniper should be considered for all wired campus networking deployments and/or where existing Juniper WLAN technology is being refreshed.

Strengths

Juniper has a comprehensive solution for enterprise campus networks, including the ability to provide switches, routers, wireless, security, management and network service applications.

The vendor can apply security and QoS at the access point, which improves security and performance, versus applying policy at a centralized control point further upstream in the network.

Juniper's Virtual Chassis technology allows up to 10 switches to be managed as a single entity, supports differing switching models and can span geographic locations, which simplifies network operations and increases network availability.

Juniper's EX Series switching line can be used in the campus or data center, which provides architectural consistency and can lead to investment protection.

Cautions

Juniper lacks a SaaS-based management option for its products, which several leading competitors provide.

The vendor's current WLAN products lack brand awareness, and do not show up often on client shortlists, versus the leading competitors.

Juniper has introduced a virtualized controller supporting on-premises, off-premises and cloud control of deployment. Juniper's WLAN architecture may require a hardware controller, which can increase the total cost of ownership (TCO) of the WLAN solution. Gartner recommends that clients calculate the TCO of solutions, and that they do not pay extra for controller-based architectures.

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Motorola Solutions

Motorola Solutions announced during our Magic Quadrant research process that it has entered into an agreement to be acquired by Zebra Technologies. Motorola will continue as a wireless overlay vendor with

limited wired port connectivity that can provide end-to-end solutions through internal offerings, as well as strategic wired partnerships. The vendor has a strong global channel organization that delivers over 80% of its revenue.

Motorola Solutions is a global leader in WLAN within the in-store retail, transportation, logistics and government verticals, but it also services hospitality, manufacturing and healthcare. The vendor should be on the shortlist for any WLAN opportunities in in-store retail, government and other verticals that have data collection, security (including guest access), location and analytical requirements.

Strengths

Motorola Solutions extends beyond the enterprise network infrastructure requirements to meet the needs of its vertical market clients by providing push-to-talk voice over WLAN (VoWLAN) capabilities between mobile clients, wall plate access points that provide power over existing phone lines, advanced indoor location services, client analytics and deep packet inspection functionality.

The virtual controller capabilities built into all Motorola access points remove the need for controllers where the number of access points is less than 24. This solution plays well for small retail sites and addresses the SMB enterprise market.

Motorola's One Point Wireless Suite, coupled with its vertical market knowledge, delivers an end-to-end solution with an uptime SLA that is needed for process improvement applications in retail, manufacturing and logistics.

Cautions

Motorola has filled many of the product gaps associated with an end-to-end access layer solution, but as it moves outside of its traditional stronghold markets (where there are intangible benefits), enterprises need to ensure that the selected channel partner has the ability to propose, design, deliver and service a competitive solution.

Less than 5% of Motorola's access layer revenue is attributed to switching. As a result, it is not considered a trusted wired switching vendor by most Gartner clients.

After the acquisition by Zebra Technologies is completed, we expect to see continued investment and growth in the retail, transportation, manufacturing and healthcare vertical markets. Enterprises need to get assurance that any new direction in products and support will meet the needs of the broader enterprise market.

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Xirrus

Xirrus continues to invest in its access layer solution, and has a portfolio of two-radio access points in addition to its modular Array product line, supporting from two to 16 integrated radios and integrated controllers to rightsize the network and better support enterprise environments. Integrated application control across the product line helps ensure a consistent wireless user experience. In 2013, Xirrus added 24-port and 48-port switches, and a three-port wall plate switch, to continue to enforce its enterprise message. The Xirrus Modular Array architecture allows customers to add capacity to an existing Array, or upgrade to 11ac Wave 1 and Wave 2 without replacing the Array platform. The Xirrus Access Manager application provides guest access and BYOD onboarding, and the Xirrus Management System provides network management and analytics. Both can be implemented on-premises or can be cloud-based, plus there is an automatic provisioning service, Xirrus Mobilize, in the cloud for zero-touch registration and initial device configuration. The vendor has implemented a programmable RESTful API for integration with enterprise applications, such as AirWatch for MDM/mobile application management (MAM), and Euclid for retail analytics.

Xirrus sells through direct and indirect channels in the education, healthcare, retail and hospitality verticals, primarily in North America and EMEA, as well as having a presence in Asia. The vendor is also strong in outdoor coverage events, such as stadiums, and in highly dense user environments, such as classrooms, auditoriums and entertainment venues where the Modular Array can provide a large coverage area, and can service high-density and performance needs.

Strengths

The modularity of the Xirrus Arrays (access points) allows the radio to be upgraded from 802.11n to 802.11ac Wave 1 with only a software license upgrade, which saves time and eliminates the need to "rip and replace." Arrays can also be upgraded to 802.11ac Wave 2 support through a radio upgrade that allows enterprises to leverage the existing Array platform.

With access point scalability from two to 16 radios, Xirrus addresses scalability and coverage needs while reducing switch ports, needing fewer cable runs and translating to a lower TCO. Software-programmable radios in the Xirrus products reduce costs and simplify the move to 5GHz/11ac wireless networks.

The Xirrus cloud-based Mobilize service can provide automatic license activation and zero-touch provisioning of the entire access layer for enterprises moving applications to the cloud, and looking to leverage the ease of use and centralized management capabilities.

Cautions

Enterprises need to ensure that channel partners can provide the necessary level of support for any new geography or market where Xirrus does not have name recognition (such as Latin America and Asia). The vendor is addressing this through new strategic OEM relationships, global distributors and new channel partners.

Xirrus' switching product line is new, and enterprises need to understand their usage scenarios and test the proposed solution to make sure that they are getting the documented benefits, as well as the integration of advanced features such as deep packet inspection for end to end solutions.

Since the Xirrus Array architecture is different from competitive offerings, enterprises need to understand that the number of Arrays may differ from the number of access points, because an Array may contain more than one or two radios.

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Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants and MarketScopes as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant or MarketScope may change over time. A vendor's appearance in a Magic Quadrant or MarketScope one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

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Added

Extreme Networks (through the acquisition of Enterasys Networks)

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Dropped

Fortinet

Netgear

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Inclusion and Exclusion Criteria

Vendors in the Magic Quadrant must be able to demonstrate a clear understanding of enterprise access layer networking requirements. They must have a minimum of \$100 million in 2013 revenue in enterprise-class product revenue for wired and wireless access layer hardware and software solutions, of which a minimum of \$40 million is derived from enterprise WLAN solutions. All hardware and software components must be available on the vendor's published price list. A minimum of 80% of access layer product revenue must be generated from vendor-manufactured or OEM components. Product revenue must be from enterprise office environments, which may include in-store retail, healthcare, and grade school, high school and university education. Product revenue may not include convention centers, hotels, or cellular offloading for outdoor environments or public venues, including stadiums and train or bus stations. Vendors must provide factual details on how they meet these criteria.

Vendor solutions must be able to address the following criteria:

Vendor must minimally sell and support a 24- or 48-port PoE, chassis or stackable switch.

Vendor must minimally sell and support 802.11n and have a road map for 802.11ac.

Vendor must support a guest access application with the ability to minimally support:

Ability to provide Web authentication credentials via SMS, email or printout for Windows, iOS and Android clients

More than one captive portal

Vendor must be able to minimally support the following security functionality:

Device authentication for Windows, Android and iOS devices via 802.1X, as well as an authentication method for supporting devices that cannot support a supplicant

Ability to detect wired or wireless intrusion

Vendor must be able to minimally support the following policy enforcement functionality:

Ability to create access policies that minimally include device and user for wired and wireless connectivity

Ability to traffic shape/rate limit and content filter trusted clients, as well as guest-access-connected clients; the solution may be internally developed or a strategic alliance

Vendor must be able to minimally support network management:

Ability to minimally discover and manage wired and wireless access layer infrastructure, including supported switches and access points

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Evaluation Criteria

Ability to Execute

We continue to adjust the weighting and criteria for this Magic Quadrant as buyers' requirements and market forces shift what is important for vendors to provide.

Gartner evaluates technology providers on the quality and efficacy of the processes, systems, methods and procedures that enable IT provider performance to be competitive, efficient and effective, and to have a positive effect on revenue, retention and reputation. Technology providers are ultimately judged on their ability and success in capitalizing on their vision.

Product or Service: We evaluate access layer infrastructure products and services consisting of switches, access points and related components, such as external antenna and outdoor enclosures needed for the end-to-end solutions in various vertical markets. We also look at network services, such as management, monitoring, guest access, policy enforcement and security applications. We consider product and architectural migration strategies from legacy implementations, whether from an incumbent vendor or a new solution provider. We also look at maintenance and deployment service capabilities.

Overall Viability: This includes an assessment of the vendor's overall financial health, and the financial and practical success of the business. We also evaluate whether the vendor continues to invest in access-layer-related business, including technology and product development, as well as solution delivery to the market, including sales channels, marketing communication and service delivery.

Sales Execution/Pricing: This involves the vendor's capabilities in presales activities and the structure that supports them. This criterion includes deal management, pricing and negotiation, presales support (including communication of differentiating functionality), and the overall effectiveness of the sales channel, both direct and indirect.

Marketing Responsiveness and Track Record: This includes the quality and effectiveness of the vendor's marketing messages in communicating to the market the advantages and differentiating capabilities of its product lines, company and supporting partners/services. This evaluation also includes the history of the vendor's marketing messages and its ability to react to changes in market requirements in its target markets.

Marketing Execution: This criterion focuses on how the vendor is perceived in the market, and how well its marketing programs are recognized. For access layer infrastructure, the evaluation focused on how well the vendor was able to influence the market around key messages and attributes. An additional indicator for this criterion is how often Gartner clients consider a vendor as a possible supplier in a shortlist evaluation. The change in momentum in this indicator is particularly important.

Customer Experience: We assess how customers and partners view the vendor. This evaluation includes significant input from Gartner clients in the form of inquiries, face-to-face meetings and written responses about the vendors. A key component in this category is the vendor's ability to provide strong presales and postsales support, especially aligned with vertical requirements.

Table 1. Ability to Execute Evaluation Criteria

Evaluation Criteria	Weighting
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	Medium
Market Responsiveness/Record	High
Marketing Execution	Medium
Customer Experience	High
Operations	Not Rated

Source: Gartner (June 2014)

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Completeness of Vision

Gartner evaluates technology providers on their ability to convincingly articulate logical statements about current and future market directions, innovation, customer needs, and competitive forces. Vendors are ultimately rated on their understanding of how to exploit market forces to create opportunities for themselves.

Marketing Understanding: This criterion includes an assessment of whether the vendor's marketing message articulates a clear, understandable message that answers the market requirements for technologies and services. We also look at whether the vendor's message and supporting products lead the access layer market requirements or merely fulfill them.

Market Strategy: We evaluate the ability of the vendor to look into the future and drive/influence the direction of the market through product road maps and offerings. We also look at messaging and marketing campaigns and their ability to communicate differentiating functionality and value proposition. Are the issues that are being communicated and addressed meeting the trends in the market and the needs of end users? Are vendors focusing on building their core competencies or are they investing in random technologies?

Offering (Product) Strategy: For this criterion, we look at whether the current and future planned product line meets the needs of buyers now, and how it will do so in the future. We evaluate whether the vendor is simply building products that the buyer is asking for, or if it is anticipating the issues that buyers will face and allocating resources to address them.

Vertical/Industry Strategy: We evaluate whether the vendor's strategy, direct resources, skills and offerings meet the needs of market segments, including vertical industries. In this market, can the vendor differentiate itself with solutions that are specifically developed for the unique requirements of many verticals, such as healthcare, logistics, manufacturing, retail, hospitality, etc.?

Innovation: This criterion assesses what the vendor has done to address the future requirements of access layer infrastructure, including the need for tighter integration with wired networking products, voice, video and application support. Has the vendor successfully differentiated the current and future product lines, to better address customer requirements, both now and two to five years out?

Geographic Strategy: This criterion is an evaluation of whether the vendor meets the needs of global enterprises for products and support.

Table 2. Completeness of Vision Evaluation Criteria

Evaluation Criteria	Weighting
Market Understanding	Medium
Marketing Strategy	Medium
Sales Strategy	Not Rated
Offering (Product) Strategy	High
Business Model	Not Rated

Vertical/Industry Strategy	Medium
Innovation	High
Geographic Strategy	Low

Source: Gartner (June 2014)

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Quadrant Descriptions

Leaders

A vendor in the Leaders quadrant will have demonstrated an ability to fulfill a broad variety of customer requirements through the breadth of their access layer product family. Leaders will have the ability to shape the market and provide complete and differentiating access layer applications, as well as global service and support. Leaders should have demonstrated the ability to shape the market, maintain strong relationships with their channels and customers, and have no obvious gaps in their portfolios.

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Challengers

A vendor in the Challengers quadrant will have demonstrated sustained execution in the marketplace, and will have clear and long-term viability in the market, but may not have a complete access layer product portfolio for either products or network applications. Additionally, Challengers may not have shown the ability to shape and transform the market with differentiating functionality.

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Visionaries

A vendor in the Visionaries quadrant demonstrates an ability to increase features in its offering to provide a unique and differentiated approach to the market. A Visionary will have innovated in one or more of the key areas of access layer technologies within the enterprise (e.g., convergence, security, management or operational efficiency). The ability to apply differentiating functionality across the entire access layer will affect the Visionary's position.

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Niche Players

A vendor in the Niche Players quadrant demonstrates a near-complete product offering, but may not be able to control development or provide differentiating functionality because part of the solution is being offered through a strategic partnership, whether it is a hardware component or a network application. Niche Players may also lack strong go-to-market capabilities that limit their regional or global reach or service capabilities in their product offerings. Niche Players often have deep vertical knowledge and will be an appropriate choice for users in the specific vertical markets where they have specialized offerings and knowledge.

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Context

In the access layer, our inquiries with clients show that enterprises are making the decision to go with wireless as the first option for client connectivity for mobile devices (that includes BYOD as well as enterprise-issued devices). Many are considering wireless for the first connection for all devices by addressing the security and performance issues with network printers, and considering softphones or VoWLAN desk phones as rightsizing the number and type of switch ports at the edge of the network continues to change. While the amount of bandwidth needed for each user has not changed, the number of wireless connections, prioritization of the application and the sheer number of high-transaction dense areas are requiring vendors to educate their channel resellers to address not only wireless issues, but also the potential for aggregation issues for upstream connectivity from the wiring closet switch.

As wireless connectivity continues to expand, there is a need for new service applications, such as location awareness and application performance; latency monitoring, multivendor capabilities and device/network analytics are providing a better view of the access layer. The decision to move provisioning, management or security to the cloud is based on the enterprise use case, typically depending on the broadband connectivity to the site or the propensity to have other enterprise applications in the cloud.

Overall, we have found that functionality that traditionally differentiated vendors that were leading the market is now absolutely required, and thus is part of all RFPs. Network service applications can continue to provide some differentiation between vendors, but guest access, policy enforcement and network management are functionality boxes that are checked by all vendors. This means that the separation between vendors has narrowed in our evaluation as vendors look for new ways to provide differentiation.

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Market Overview

The march in the enterprise toward access layer vendors, instead of wired- or wireless-only vendors, continued. While we saw some opportunities where a single technology was evaluated, it was typically for new markets, such as cellular offloading or special situations where the access layer switch vendor selected did not have a wireless component. We saw the adoption of 802.11ac Wave 1, access layer decisions had to address both wired and wireless, as IT administrators found connecting multiple 1 Gbps access points to a single wiring closet switch needed to take into account the aggregation.

We evaluated vendors on their ability to provide the entire end-to-end solution, because it is difficult to sit in the seat of the IT administrator when vendors focus on one specific technology or the other. Over half of our evaluation was of the vendors' network service applications capability to provide onboarding,

security, guest access, policy enforcement, network management and other access layer benefits. These applications reduce enterprise complexity and costs to provision, manage, authenticate and even locate end users across one or multiple enterprise facilities. Vendors continue to provide innovation around network services that are not only wired and wireless, but also support multiple vendors.

In our research, we found that enterprises also want choices of architecture deployment options, whether for on-premises, private cloud or public cloud deployment capabilities. Additionally, controller-based or controllerless WLAN is a vendor implementation option, not an enterprise requirement, and enterprises with defined usage scenarios should look for pricing based on market-equivalent functionality that meets their usage needs.

Moving forward, flexible pricing and packaging will also be important as small and midmarket enterprises expect the same functionality as larger enterprises and vendors attempt to close the gap that historically seemed to exist in functionality and ease of use. Additional services that provide improvements in indoor location, analytics, deep packet inspection and application visibility are just the beginning for new application capabilities as vendors search for new areas of differentiation.

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