

Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure

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By Mike Toussaint, Christian Canales, **and 1 more**

Enterprise wired and wireless networks must support business and technical use cases, many of which are ill-defined and unforeseen. I&O leaders must select a vendor that delivers pervasive network intelligence, prioritizes end-user experience and supports the full spectrum of user and IoT devices.

Strategic Planning Assumptions

Network opex costs will rise by at least 15%, every year for the next five years, for 70% of enterprises for lack of a plan to mitigate network hardware supply chain issues.

Over 90% of enterprises purchasing Wi-Fi 6e access points will realize no calculable return on investment until at least 2024 due to a lack of devices supporting the new standard.

Market Definition/Description

Gartner defines the enterprise wired and wireless LAN infrastructure market as that of vendors supplying, at a minimum, wired and wireless networking hardware and the related network software. Products in this market enable devices and end users to connect to the enterprise wired LAN or Wi-Fi network in support of the required organizational mission. Supported network devices include end-user-operated devices such as laptops, smartphones and networked office equipment; and non-user-operated devices such as Internet of Things (IoT) devices.

Hardware — The core capabilities of physical network elements include:

- Wi-Fi access points
- Ethernet network switches suitable for deployment at the network access, distribution and core network layers
- Wi-Fi controllers (physical, virtual or cloud-based)

Software — Network service applications that are cloud-, appliance- or virtual-appliance-based. The core capabilities include, but are not limited to:

- Network management
- Network monitoring
- Guest access portals
- Self-service device onboarding services
- Network security integration (for example, IPS, IDS, 802.1X, DNS security and Anomaly detection)
- Network policy enforcement/integration
- WLAN location services
- Application visibility and/or performance management
- AI- and ML-enabled network assurance tools
- Network automation tools
- Dedicated non-user device (IoT) management and security mitigation
- Natural language troubleshooting interface

However, the enterprise wired and wireless LAN infrastructure market has evolved beyond its traditional role of merely providing network connectivity for devices. The market now comprises vendors delivering not only wired and wireless networking hardware, but also the inter-related network management, analytics and security applications. This tight integration of network hardware and software delivers the mission agility, pervasive security and increased levels of experience required by end users across all types of connected applications and devices.

Additionally, core integration of artificial intelligence (AI) and machine learning (ML) are integral to correlating the flood of resultant data. They present the data points necessary to optimize the network in support of digital business requirements while also becoming a source of business-relevant data useful to I&O and business leadership.

It is important to note that this research is not inclusive of wired and wireless networking infrastructure devices that primarily are used to support adjacent markets such as public venues, industrial settings or point-to-point WAN offerings.

Magic Quadrant

Figure 1: Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure



Vendor Strengths and Cautions

ALE

Alcatel-Lucent Enterprise (ALE) is a Niche Player in this Magic Quadrant. Its OmniSwitch switches, OmniAccess Stellar wireless access points and associated network software products broadly address the enterprise network market. ALE's operations are mostly focused in EMEA. The company prioritizes the midsize enterprise (MSE) business market segment, and its clients are primarily in the healthcare, government and education verticals. Gartner expects ALE to continue to invest in its OmniVista network management capabilities; significantly expand its sales and support capabilities into other verticals; and expand operations outside the EMEA region.

Strengths

- **Intelligent Fabric:** ALE's Intelligent Fabric technology automates the deployment of large network installations, enabling a simplified framework, including policy enforcement and IoT onboarding.
- **Pervasive network management:** ALE provides a wide range of network management options with OmniVista, including a recently introduced Wi-Fi assurance module, baseline Wi-Fi location analytics and free network access control (NAC) functionality with OmniVista Cirrus.
- **Specific vertical expertise:** Clients with complex networking requirements in ALE's key target verticals (education, government, healthcare and transportation) will benefit from its industry-specific expertise.

Cautions

- **Trailing in advanced network security capabilities:** Buyers with an emphasis on network security found that ALE lags in advanced NAC and wired anomaly detection capabilities.
- **Stagnant market execution:** ALE lags in sales execution. The vendor was unable to grow its global WLAN revenue share in 2021, despite its focus on verticals such as healthcare and education where WLAN technologies have become critical to their business operations.
- **Small market footprint:** ALE has one of the smallest enterprise network market footprints of all vendors in this research. The company has pockets of market penetration in EMEA and APAC, but there is very little enterprise network market penetration outside these areas.

Arista Networks

Arista Networks is a Visionary in this Magic Quadrant. The company addresses the enterprise networking market with its 700 series leaf switches and 7000 series enterprise spine switches; Cognitive Wi-Fi 200 and 300 series access points; and CloudVision management platform. Arista's operations are primarily based in North America and APAC. Most of its customers are located in North America and are in the high technology, financial, retail and healthcare sectors. Gartner expects Arista to continue to invest in its CloudVision network automation; integrated security and AI and ML capabilities; and in expanding its wireless and enterprise switching portfolio, which remains highly skewed toward large-enterprise environments.

Strengths

- Unified network operations tools: Arista's CloudVision management platform is unified for both data center and enterprise switching. Therefore, existing Arista data center network customers will have a minimal learning curve while managing enterprise switching products.
- Advanced AI and ML capabilities: CloudVision AIOps includes the Autonomous Virtual Assist (AVA) platform for natural language processing in addition to automated trouble ticketing, incident severity classification and issue remediation, and predictive and prescriptive analytics.
- Integrated network management and security: CloudVision CUE offers functionality with network security, WAN, LAN and WLAN components managed as a single integrated construct for each site. Multiple branch locations can then be interconnected for centralized management and security policy enforcement.

Cautions

- Leaf-spine topology-focused switching portfolio: Arista's enterprise switching portfolio is largely derived from the leaf-spine architecture of its data center networking switches. While Arista switches can scale down to midsize enterprise networks, leaf-spine topologies are often unnecessary in most midsize enterprise LANs, which don't have the performance, scalability and network traffic mitigation requirements of larger deployments.
- Limited wireless Wi-Fi 6 LAN portfolio: Arista's Cognitive Wi-Fi portfolio is limited, with four enterprise grade 802.11ax indoor access points.
- Limited exposure outside North America: Arista has limited sales and support resources available for global deployments, deriving significantly more than half of its enterprise wired and wired revenue inside North America.

Cambium Networks

Cambium Networks is a Niche player in this Magic Quadrant. The company addresses the enterprise market with its Wi-Fi 6/6e, cnPilot, Xirrus series access points and cnMatrix wired Ethernet switches. Additionally, Cambium offers its cnMaestro cloud-based and on-premises network management platform. Cambium focuses on customers in the hospitality, education, government and healthcare sectors, and its operations are geographically diverse. Gartner expects Cambium to continue to invest in its cnMaestro network management platform in addition to growing its policy-based network overlay/underlay fabric capabilities and switching platform selection.

Strengths

- Cloud management platform: cnMaestro X network management platform delivers simplified wired, wireless and security policy configuration with little need to use the command line interface for complex configurations. cnMaestro X includes a voice- and text-based natural language assistant for troubleshooting.
- Robust IoT security: Cambium offers specific IoT device threat assessment, profiling, virtual network segmentation and policy-based automation, which occur automatically when such devices are detected on the network.
- Enterprise grade, MSE friendly: Cambium's wired and wireless hardware, cnMaestro, and EasyPass security ecosystems deliver enterprise-grade features and performance in a platform that is relatively easy to configure and maintain.

Cautions

- Limited enterprise vertical exposure: Cambium has limited visibility in the enterprise space outside the hospitality, education and healthcare verticals. Cambium's exposure at deployment scales above MSE is also very limited.
- Weak wired switch portfolio: Cambium does not offer switching platforms with performance above the medium-density network access layer. Additionally, most Cambium switches lack true stacking capabilities, high-capacity access and switching capabilities at the core and distribution layers, including the lack of capability for supporting leaf-spine architectures.
- Limited AIOps functionality: Cambium's wired and wireless products do not offer true AI and ML functionality, and are limited to basic functionality such as automated Wi-Fi channel selection, application and device identification, and intrusion detection.

Cisco

Cisco is a Leader in this Magic Quadrant. Its Catalyst and Meraki wired and wireless products deliver one of the most comprehensive hardware and application portfolios that can address enterprise network requirements for all scales. Cisco's operations are geographically diversified, and the company has the largest channel partner footprint among all network equipment vendors. Cisco continues to invest in the capabilities of Cisco DNA Center, its on-premises network management and orchestration platform, which is inclusive of its software-defined architecture (SDA). Cisco announced its Cisco+ offering in 2021, which primarily offers an alternative consumption model for its enterprise hardware. In June 2022, Cisco announced monitoring and limited configuration capabilities of its Catalyst portfolio with Meraki

Dashboard. Therefore, the vendor will be investing in increasing functionalities, achieving use-case parity and delivering experience consistency across the two portfolios.

Strengths

- Vast wired and wireless portfolio: The breadth and scope of Cisco's wired and wireless hardware and software products, and ancillary device ecosystems, enable the company to address use cases across nearly all scenarios.
- Strong global channel ecosystem: Cisco's global internal sales and partner channel enables it to address and support enterprise presales engineering and procurement requirements, irrespective of location.
- DNA Center management platform: Primarily an on-premises deployment option via either a physical or a virtual form factor. DNA provides an AI/ML-enabled network management platform that can help reduce configuration burden, improve troubleshooting and decrease operational complexities for customers across the Catalyst wired and wireless portfolio.

Cautions

- Mandatory DNA licensing: All new purchases of Catalyst wired switching products require mandatory DNA licensing for 36 months, whether the customer intends to use Cisco DNA Center or not. This results in many Catalyst customers paying for features and functionalities that they will not use.
- Overlapping product lines and tools: Catalyst products cater to various segments, ranging from large enterprises to midsize enterprises. However, Meraki also targets many of the same market segments. Additionally, Cisco has two separate management products: Cisco's DNA Center and Meraki Dashboard, neither of which currently fully monitors or provides full cross-platform configuration functions.
- Lackluster Cisco+ Offering: Cisco announced its Cisco+ hardware "as a service" in 2021; however, it is largely relegated to a consumption and managed services model. Cisco has not invested in dedicated hardware that would support true NaaS cloud-like technical feature flexibility. Therefore, interest and adoption of Cisco+ remains in the low single digits.

CommScope (RUCKUS)

RUCKUS, owned by CommScope, is a Niche Player in this Magic Quadrant. The company addresses the market with its RUCKUS brand ICX wired switches, R series wireless access points and RUCKUS Analytics — its AIOps and network management platform. RUCKUS operates globally and focuses primarily on the federal, state and local government and education segments of the enterprise network market. Gartner expects that RUCKUS will continue to invest in the AIOps capabilities of its RUCKUS Analytics platform, its Melissa virtual network assistant, and expanding its Wi-Fi 6 and 6e portfolio.

Strengths

- Detailed root cause analysis tools: RUCKUS Analytics offers detailed root cause analysis across the wired and wireless network. Users are presented with the data used to arrive at the root cause, any alternatives and expected results of applying the directed resolution.
- Line of business specificity: The RUCKUS line of business dashboard presents data that is specifically optimized for various business use cases of the enterprise network. This offers business leaders metrics that measure how efficiently the current operation of the network aligns with the operational intent.
- Strong wired and wireless portfolio: The wireless access point portfolio offers 802.11ax access points, which meets most performance requirements, and wired switches, which meet most access and aggregation cases up to 100 Gbps. The company covers enterprise use cases of all sizes across a single unified portfolio.

Cautions

- Limited experience outside its focused market segments: RUCKUS has limited experience in, and shows limited growth into, large and complex enterprise network environments outside the government and education markets. This is especially apparent for deployments outside the wired and wireless network access layer.
- Lack of modular switches: With no modular chassis product, the RUCKUS portfolio cannot adequately address high-density access or high-speed core/distribution use cases in which a common high-speed backplane and redundant management and power supplies in a single chassis are highly desirable.

- No 802.11ac access points: RUCKUS has retired all 802.11ac (Wi-Fi 5) access points, which will limit its ability to address opportunities where cost is a primary driver for the Wi-Fi deployment.

Extreme Networks

Extreme Networks is a Leader in this Magic Quadrant. Its Extreme Cloud products deliver a broad portfolio of cloud-managed and on-premises-managed network applications and services in conjunction with its end-to-end wired switching and WLAN products. Its operations are geographically diversified. Extreme Networks services clients in all markets, from SMBs to large enterprises with specific focus on state and local government, education, healthcare, manufacturing and retail. Extreme Networks continues to invest in its universal platform, security, fabric innovation and digital twin initiatives.

Strengths

- Network fabric automation: Extreme Networks has invested heavily in automated network fabric functionality. Therefore, enterprises requiring network fabric topologies should experience less manual configuration burden and time to deployment versus competing vendor products.
- Digital twin: Extreme Network's digital twin capabilities are unique among enterprise network vendors. They enable operations teams to test configuration changes in a virtual representation of the production network environment.
- Multivendor integration into Extreme Cloud: Extreme Network's management platform performs basic management of multivendor network equipment, and includes some essential operational functionality such as firmware updates, configuration backup and task scripting as part of a multivendor migration strategy.

Cautions

- Global reach challenges: Extreme Networks has gaps in its presence in regions such as Asia and Latin America.
- Subpar channel training: Customers and prospects report confusion with Extreme Networks' channel and direct sales product demonstrations, which hampers the company's ability to ensure the correct product alignment for given technology and business use cases.

- Migration issues: Customers report being challenged with an unclear and limited migration strategy of features and functionality from acquired vendors while the integration into Extreme Network's larger portfolio is in progress.

Fortinet

Fortinet is a Visionary in this Magic Quadrant. Its FortiAP and FortiSwitch products are broadly focused on tight integration with network security capabilities leveraging its FortiGate security appliances and FortiCloud, and FortiLAN cloud-based management platforms. Fortinet's operations are geographically diversified, and its clients range from MSEs to large enterprises across various sectors. Fortinet continues to invest in integrating and consolidating its network and security portfolio into its cloud and virtual server management platforms. Additionally, Fortinet is investing in native AI and ML functionality across its portfolio, a feature that is almost absent today outside the specific FortiAIOps module in FortiManager.

Strengths

- Tightly integrated portfolio: Fortinet delivers an architecture in which LAN, WLAN and security are tightly integrated under a unified operating system (FortiOS) and cloud management platform.
- Dedicated AI operations module: The FortiAIOps AI engine provides network assurance (event correlation and issue remediation) across security, wired and wireless by leveraging data feeds from the FortiGate portfolio.
- Security-focused networking: FortiOS has NAC functionality for IoT onboarding, and the licensed FortiNAC offering provides anomaly detection capabilities for advanced threat security.

Cautions

- Lack of large-enterprise experience: Fortinet's networking footprint is significantly lower than its revenue share in the firewall market. Fortinet's switching portfolio cannot adequately support the high-density enterprise network, distribution or core switching required at large-enterprise scales.
- Product inventory for return merchandise authorizations: Fortinet's customers may find that the company has insufficient inventory to support RMAs for certain products. This means that customers may experience long replacement times in the event of a Fortinet hardware failure.
- Overlapping products, tools and licenses: Fortinet has a confusing set of "Forti" branded products with overlapping functionality. The result is an expansive and confusing mix of tools and licenses.

HPE (Aruba)

HPE (Aruba) is a Leader in this Magic Quadrant. The company offers a comprehensive portfolio of CX switches in addition to its 500/600 series Wi-Fi 6/6e access points. Wired and wireless networking is managed primarily through Aruba Central, available both on-premises and via cloud, and inclusive of the pervasive AIOps and analytics technologies. The vendor's operations are geographically diverse, and it addresses clients of all sizes in all major markets. HPE (Aruba) will continue to invest in feature parity between cloud and on-premises offerings, and increasing AIOps functionality in its Aruba Central platform. Additionally, Aruba has announced that NaaS will be a core aspect of its go-to-market strategy, which will cause the company to invest heavily in refining its current offering and deploying the necessary service management infrastructure and resources.

Strengths

- Cloud-based campus management: Aruba ESP delivers a unified automation and security platform that manages its wired, wireless and WAN portfolio, and includes deep AI and ML network and endpoint (IoT, bring your own device [BYOD]) profiling features.
- Integrated leasing and managed network consumption model: HPE (Aruba) has invested heavily in delivering an integrated leasing and managed network option to market. It has one of the largest user bases using this consumption model of all enterprise networking vendors.
- Accurate Wi-Fi location technologies: Investments by HPE (Aruba) in GPS integration for its wireless access points offer expanded internal and external capabilities for hyperaccurate location and indoor wayfinding services. This also offers an open location framework that third parties can leverage.

Cautions

- Struggles to meet Gartner's definition of NaaS (see Note 1): HPE (Aruba) struggles to align its current network portfolio, targeted at meeting legacy consumption and operational requirements, with NaaS, which requires an evolved set of NaaS-specific features and functionality. This disjointed approach limits its NaaS strategy to being primarily a leasing and managed services consumption model.
- Lack of parity between cloud and on-premises offerings: Aruba Central and Aruba Central On-Premises still have not achieved feature parity. Therefore, customers must ensure that the required functionality is available in their preferred deployment model.

- Limited experience in large core switch deployments: HPE (Aruba) is predominantly known for its access layer wired and wireless enterprise network infrastructure and lags some of its competitors in large core switching infrastructure deployments.

Huawei

Huawei is a Leader in this Magic Quadrant. This is its first year in the Leader's quadrant for this research. This is largely due to strong market execution, despite adverse geopolitical conditions, and progress in its marketing strategy, which has allowed it to remain the third-largest provider in this market (in terms of global revenue share). The company has also weathered supply chain issues better than other vendors. Its CloudEngine S series switches, AirEngine wireless APs and associated network software products are broadly focused on addressing a wide range of use cases. Huawei's operations are globally diverse, with clients across multiple verticals and sizes. However, geopolitical issues cause Huawei to have virtually no presence in North America and limited penetration in a few other countries, such as Australia and the U.K., where it ceased operations of its own accord. Gartner expects Huawei to continue to invest in AI and ML functionality, in addition to automation and network orchestration capabilities across its portfolio.

Strengths

- Comprehensive product portfolio: Huawei has a comprehensive wired and wireless product portfolio. This allows it to address all customer use cases and price competitively compared to most of its competitors.
- AI- and ML-enabled network management platform: The iMaster NCE-Campus network management platform provides AI-driven Wi-Fi, wired and WAN network assurance services, and user policy orchestration, plus the ability to simulate, test and verify network planning.
- Wireless-first support: Huawei is focused on supporting firms that are adopting a "wireless-first" strategy. A focus on integrated features that support ease of management and high levels of end-user experience has contributed to growth in Wi-Fi revenue of over 50% in 2021.

Cautions

- Geopolitical challenges: Ongoing geopolitical challenges and questions around the security integrity of its network portfolio limits Huawei's exposure in some regions, including North America, the U.K. and Australia.

- Weak product branding recognition in some markets: Gartner has observed that potential buyers interested in adopting Huawei in some markets outside the APAC region ask about the company and its products in generalities and, usually, in relation to pricing rather than specific products or technologies.
- Less influential on technical market direction than other market leaders: Despite having the third-largest market share by revenue (behind Cisco and HPE, respectively), Huawei does not deliver groundbreaking innovation that would shape the market on its own terms.

Juniper

Juniper is a Leader in this Magic Quadrant. Its Juniper AI-driven enterprise (AIDE) offering includes EX series switches, QFX series switches and Mist AI access points, which address most use cases across large-enterprise and MSE markets. Juniper's client base is globally diverse, with particular focus on the general enterprise market as well as retail, education, government and healthcare. The company continues to invest in integrated AI and ML operations, as well as cloud-based security capabilities. Gartner expects that Juniper will also invest significantly in bringing a NaaS offering to market.

Strengths

- AI-driven automation: Juniper continues to invest in the differentiation of its cloud-managed enterprise network portfolio automation, orchestration AI, ML The Marvis Virtual Network Assistant (VNA) and the Marvis client provide additional AI algorithm support for automation actions and recommendations.
- Strong marketing messaging: Juniper Mist AI "experience-first networking" and "Self-Driving Network" market messaging continue to educate the market on its differentiation that documents clients lowering ongoing operational costs and maximizing IT efficiencies.
- Mist assurance: Juniper's network equipment provides rich data while Junos OS provides telemetry data that allows Juniper to provide customizable service-level expectations (SLEs) and a highly rated end-user experience.

Cautions

- Global sales reach challenges: Juniper continues to extend its global sales reach; however, its presence in some areas of Asia and Latin America can vary widely.

- Cloud-dependent management platform: The Juniper Mist AI network management platform is primarily a cloud-based offering, which could be problematic for customers in areas requiring a fully on-premises system. Those looking for a fully on-premises offering are relegated to Mist Edge and/or Junos Space Network Management Platform, which is functionally lagging compared with the Juniper Mist AI platform.
- Pricing: Gartner inquiry and subsequent pricing analysis indicates that Juniper's bills of material are often quoted higher than customers expect and compared with other major network vendors.

TP-Link

TP-Link is a Niche Player in this Magic Quadrant. Its Omada WLAN, T series wired switches and associated network software products mainly focus on addressing the needs of the small and midsize enterprises. Its operations are geographically diversified, with the bulk of its revenue generated from EMEA, followed by Asia/Pacific and North America. Gartner expects that TP-Link will continue to invest in the ease of configuration and operations requirements of MSE customers by adding to the capabilities of its GUI web-based configuration and cloud-management platforms.

Strengths

- Scalable network management offering: The Omada network management offering is bundled with its access network hardware, which provides unified monitoring for an unlimited number of TP-Link APs, campus switch and security gateway products.
- Wi-Fi 6 portfolio: TP-Link has a comprehensive portfolio of Wi-Fi 6 access points, all of which are supported by RF optimization features, which can improve overall end-user experience and the ability to troubleshoot the wireless network infrastructure.
- Highly competitive pricing: TP-Link's pricing is among the lowest of its competitors, which aligns with the needs of most MSEs. More broadly, this strategy is particularly attractive to organizations having basic network connectivity needs and where cost is the primary determinant.

Cautions

- Lack of enterprise focus on innovation: Despite products that meet all traditional levels of enterprise network technology, TP-Link lags behind other

vendors in its support of advanced network operations technologies such as network assurance, automation and AIOps functionality.

- Basic network security and location features: TP-Link provides only basic network policy enforcement, and very limited IoT containment and indoor location services.
- Limited product capabilities: TP-Link's enterprise network portfolio lags the competition in its lack of aggregation and high-density access layer switches. Additionally, TP-Link's portfolio lacks support of next-generation networking features such as network fabrics, leaf-spine topologies and dynamic segmentation.

Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant 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.

Added

No vendors were added to this Magic Quadrant.

Dropped

The following vendors were dropped:

- H3C: Gartner was unable to validate inclusion criteria for this year's Magic Quadrant.
- Allied Telesis: Gartner was unable to validate inclusion criteria for this year's Magic Quadrant.

Inclusion and Exclusion Criteria

Gartner's clients utilize the Magic Quadrant and Critical Capabilities research to identify and analyze the most relevant network vendors' business strategy, overall vision, products and services within the marketplace. Gartner uses, by default, an upper limit of 15 vendors to support the identification of the most relevant vendors in the global enterprise wired and wireless network market. On some specific occasions, the upper limit may be extended when limiting the number of vendors might diminish the research's value to our clients. As such, the inclusion criteria

represent the specific attributes that analysts believe are necessary for inclusion in this research.

To qualify for inclusion, vendors must:

- Demonstrate relevance to Gartner clients in the enterprise wired and wireless networking market by offering a robust Ethernet switching and wireless LAN (Wi-Fi) hardware portfolio that addresses at least two of the three network layer (core, access, and/or distribution) requirements as outlined in the Market Definition section.
- Manufacture and deliver enterprise networking products that provide mechanical and/or virtual stackable wired networking for general availability as of 30 April 2022. All components must be publicly available for purchase, exist in inventory, and be available for shipping and included on the vendor's publicly published price list. Products shipping after this date will only have an influence on the Completeness of Vision axis.
- Have at least 400 customers that have greater than 500 employees and have deployed network products in their production environments as of 30 April 2022.
- Have a cloud and/or on-premises based network discovery, identification, configuration, security, management and monitoring platform that includes integrated network automation tools, the minimum of which is zero-touch provisioning (ZTP). Such tools must also demonstrate visibility into network connected applications and end-user-specific connection data/issues.
- Provide integrated network security tools that offer, at a minimum, device and user segmentation with specific remediation for guest users/devices, and IoT devices.
- Have no more than 60% of revenue generated in a single region (of the five regions noted in the Market Definition section).

Evaluation Criteria

Ability to Execute

Table 1: Ability to Execute Evaluation Criteria

Enlarge Table

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

Source: Gartner (December 2022)

Completeness of Vision

Table 2: Completeness of Vision Evaluation Criteria

Enlarge Table

Evaluation Criteria	Weighting
Market Understanding	High
Marketing Strategy	High
Sales Strategy	Medium
Offering (Product) Strategy	High

Evaluation Criteria	Weighting
Business Model	Medium
Vertical/Industry Strategy	Medium
Innovation	High
Geographic Strategy	Medium

Source: Gartner (December 2022)

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 its enterprise network product family. Leaders will have the ability to shape the market and provide complete and differentiating enterprise network applications, as well as global service and support. Leaders should have demonstrated the ability to maintain strong relationships with their channels and customers, and have no obvious gaps in their portfolios.

Challengers

A vendor in the Challengers quadrant demonstrates sustained execution in the marketplace. It will have clear and long-term viability in the market, but may not have a complete enterprise network portfolio for either products or network applications. Additionally, Challengers may not have shown the ability to shape and transform the market with differentiating innovation or functionality, or have the ability to serve a broad, global customer base.

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 enterprise network technologies (for example, security, management or operational efficiency). The ability to apply differentiating functionality across an entire enterprise network infrastructure will affect its position.

Niche Players

A vendor in the Niche Players quadrant demonstrates a near-complete product offering. However, it may not be able to control development or provide differentiating functionality because it relies on a strategic partner to offer part of the offering, whether it is a hardware component or a network application. Niche Players may also lack strong go-to-market capabilities that would enhance 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.

Context

Gartner's perspective of the enterprise wired and wireless Ethernet infrastructure marketplace emphasizes the continued and accelerating shift from merely providing foundational network connectivity to technologies that also include application performance, end-user experience and the overall support of business requirements across the entire network fabric. This market view is based on the preceding 12-month time period ending May 2022.

Gartner's research indicates that investments by companies in enterprise Ethernet networking technology caused the market to grow by 12.7% year over year (YoY) through June 2022 (see Market Share: Enterprise Network Equipment by Market Segment, Worldwide, 2021). Following the impact of the COVID-19 pandemic, the wireless LAN (WLAN) market encountered a boom in revenue growth in 2021. Campus wired switching market revenue grew at 10% YoY, and the enterprise wireless network (Wi-Fi) market grew at 22.2% YoY. Gartner forecasts that global campus network revenue will grow at approximately 3.1% compound annual growth rate (CAGR) through 2026, while wireless LAN access points will grow at approximately 5.6% CAGR. The biggest pressure on enterprise networking growth continues to be a global chip shortage specific to network equipment, in addition to supply chain disruptions due to labor shortages. Orders continue to be strong, but the network equipment vendors' inability to fulfill orders in a timely manner will cause increased order cancellations as organizations either move to alternative vendors able to provide more attractive lead times or seek equipment from gray market vendors.

The reliance on diverse suites of technologies to support digital business has placed significant emphasis on understanding application performance, user experience requirements and security postures across the entire network fabric. This realignment to business outcomes and away from traditional network

connectivity has exposed the significant impact of the historic propensity to accumulate technical debt in enterprise networking. Many organizations are approaching the “end of support” period of their network equipment life cycles, thus exacerbating the pressure on the market. It should be noted that network equipment vendors are not currently extending the end of support dates despite the inability to deliver new equipment, which has left enterprises scrambling for alternative offerings to the issue.

Disruptive network technologies that focus on application performance and end-user experience drive the majority of innovation in the overall enterprise networking market. But core connectivity technologies are also driving network refresh projects. The most visible of the connection-oriented technologies is Wi-Fi 6 (802.11ax), which operates at 2.4 and 5 GHz, and, Wi-Fi 6e (802.11ax 6 GHz), which is still a draft standard and operates in the less crowded 6 GHz spectrum. However, the majority of contemporary end-user devices, such as laptops, tablets and smartphones, are still limited to 802.11ac and 802.11ax, and cannot use the 6 GHz spectrum.

What Has Changed?

Microchip Shortages

Microchip shortages are having a moderate to severe impact on network hardware lead times across all enterprise network market segments. Recent Gartner inquiries on networking hardware purchases have indicated that lead times vary widely. While 180 days is average, lead times exceeding 365 days are not uncommon. I&O leaders in charge of networking must factor in the costly effect of extended delivery times on network projects. Gartner inquiries indicate that mitigating these long lead times is proving problematic, and organizations are often skeptical of overly excessive lead times. Organizations should expect procurement of network equipment to be challenging through 2024 and mitigate this by proactively forecasting procurement requirements and budgeting 18 to 24 months in advance (see Quick Answer: What Are My Options for Dealing With Long Lead Times on Network Equipment?). Additionally, some vendors don't have sufficient stock to cover device failure replacements (RMAs), so organizations should consider alternatives in the event of an outage and no stock to replace the hardware with the existing model.

Postpandemic Operations

The COVID-19 Omicron variant has had less of an overall disruptive impact on enterprises than the preceding variants. As a result, many companies are beginning to mandate that employees physically return to the office at least three days per

week. However, with millions of positions remaining unfilled amid the “Great Resignation,” employees are pushing back against return-to-office mandates. Organizations are realizing that mandating a full return to the office may be problematic, so they must continue to support flexible work arrangements. Therefore, organizations should be prepared to support at least a part-time disaggregated workforce for the foreseeable future.

Organizations are scaling their enterprise network projects appropriately to support the reality that two-thirds of the workforce will work remotely at least part time. As such, WLAN and wired LAN products are still required to support the permanent reliance on high-bandwidth, real-time applications such as HD videoconferencing and off-premises, cloud-based SaaS applications. Additionally, enterprises are refreshing older WLANs (e.g., 802.11n) to Wi-Fi 6 access points as a future-proofing measure. However, enterprises that have recently deployed 802.11ac access points have little reason to immediately upgrade to Wi-Fi 6.

Focus on Business Outcomes

Gartner inquiries indicate that organizations have grown weary of complex, perpetual network projects and the associated high operational costs of enterprise networks. Enterprises want the network to “get out of the way” so they can focus on running their business and not running the network. Therefore, the shift from delivering only network connectivity to actually supporting business outcomes continues to accelerate. Network equipment vendors are responding by introducing AIOps, GUI and natural language interfaces, and cloud-native platforms that speed time to deployment and drastically reduce operational tasks even across complex enterprise networks.

Zero Trust Network Access (ZTNA) Emerging for Campus Networks

Over the past year, Gartner has observed an early-stage pattern, with strong disruptive potential. As employees are returning to offices after being remote for over 18 months, they are reporting that on-campus security is more complex and laborious than it is for remote workers. Remote clients can utilize cloud-based ZTNA services, and organizations like the security, visibility and flexibility of the as-a-service model. Therefore, many Gartner clients are asking about the ability to utilize the same offering they’re using to deliver connectivity to their remote employees in their on-premises campus and branch environments. The result would be a single software offering versus separate disparate offerings for campus/remote workers. It would enable a single security policy that spans remote workers and campus workers, a common experience for end users irrespective of their location, simplified troubleshooting, and greater economics and efficiency at scale.

Interest is primarily from forward-leaning enterprises that must support very large enterprise footprints. From a supplier perspective, the vendor offerings are immature; therefore, cloud-based ZTNA vendors offer only basic on-campus functionality today, but are evolving quickly to address this emerging trend (see Campus Network Security and NAC Are Ripe for Market Disruption).

Market Overview

The enterprise wired and wireless LAN infrastructure market is now composed of vendors not only delivering wired and wireless Ethernet networking hardware, but also tightly integrating network management software that resides on-premises or in the cloud. This combination of network hardware and powerful software is integral for addressing organizational mission agility, pervasive security and the increased levels of performance required by end users across all categories of connected applications and devices.

These integrated software tools speed time to completing enterprise network deployments, reduce time to identify and resolve network and application issues, and deliver pervasive automation tools that reduce network administrator workloads.

Additionally, core integration of AI and ML are integral to correlating the flood of generated data, thereby presenting key data points necessary to optimize the network in support of digital business requirements. This technology is also becoming a valuable source of business-relevant data that is useful to I&O and overall business leadership.

The enterprise networking market includes vendors with the following capabilities:

- The vendor develops and manufactures its own enterprise-grade wired and wireless infrastructure components, network applications, and services.
- The vendor develops and manufactures its own comprehensive portfolio of wired and/or wireless components, but also uses a strategic partner to fill gaps in its portfolio, supporting its ability to deliver an end-to-end, enterprise-grade network offering.

The market defined above is inclusive of vendors providing and supporting enterprise wired and wireless LAN infrastructure globally in at least four of the five main geographies identified by Gartner:

- Asia/Pacific
- Latin America
- Middle East and North Africa

- Europe
- North America

How Buyers Shape Their Buying Decisions

Incumbency

Organizations tend to stay with their current enterprise network vendor if it offers a technology portfolio that is “good enough” to meet its needs and functions within reasonable expectations. Since the network market is relatively conservative and risk-averse, incumbent relationships often survive even when technology alignment is suboptimal, due to high vendor switching costs.

Traditional Network Technology Capabilities

Enterprise networking has been shaped by more than 30 years of primarily delivering connectivity and resiliency at Layer 2 and Layer 3 of the OSI network model. As a result, buyers expect robust traditional Layer 2 switching features, appropriate power over Ethernet to support VoIP and AP hardware, quality of service (QoS), and sufficient uplink speeds to support various traffic requirements. At the wired access layer of the network, customers expect the necessary Wi-Fi power, performance and throughput to support the client connection densities and bandwidth requirements. Finally, the network core and distribution layers must deliver the redundancy and high-speed routing and switching capacity to support dramatically increased north-south traffic, much of which is destined for the cloud and other off-network locations.

Perpetual and Subscription Licensing

Network hardware continues to be relatively commoditized, and true differentiation across vendors is reliant on the capabilities of network software features and functionality. However, as network vendors adopt the stance of software vendors, there are diminishing options for traditional perpetual licensing. Vendors realize new revenue streams by shifting to subscription-based licensing, but the shift is often confusing and continues to be a source of frustration for I&O leaders. Subscription licensing may make sense for some organizations. However, a preponderance of Gartner clients continues to express a preference for having a choice of licensing options instead of being forced into licensing that is often inclusive of features they don't need.

AI, ML, Automation and Management Suites

Enterprise network vendors now offer tools utilizing various degrees of artificial intelligence, machine learning, a natural language interface, automatic issue identification, and remediation to reduce network administration and operational workloads. These tools are unified for management and security at all layers of the

network. However, adoption of these essential toolsets in production environments is very slow. Initially, there were concerns about the maturity of the tools as well as their ability to increase the productivity of network operations teams. As tools mature, there is less concern about the capabilities to operate in the production network environment.

Currently, there are varying degrees of self-driving capabilities enabled by machine learning (see Quick Answer: What Functionality Should I Expect From Network AIOps Features). Artificial intelligence will drive more business-relevant network outcomes as routine issues are quickly and automatically resolved. Additionally, configurations are more tightly aligned to the original strategic or tactical business intent. Therefore, vendors that successfully deliver products with meaningful automation of network functions enable network teams to meet SLAs for increased overall application performance and user satisfaction. Going forward, organizations must invest in offerings that will increase the capabilities of the enterprise network to support all levels of the business. However, enterprises must thoroughly test and verify that a vendor's stated capabilities meet or exceed AI, ML and automation hype.

How Providers Package, Market and Deliver

Traditional Consumption

Buyers generally source their wired/wireless LAN infrastructure through an authorized vendor channel partner, with relatively few purchases occurring directly from the network vendor. Hardware expenditures are usually a one-time cost, which is inclusive of a firmware end-user licensing agreement. These initial costs include updates to resolve certain firmware bugs that adversely affect the use of the hardware or security vulnerabilities that would expose the end user to significant damage if left unpatched. Future operating system updates, feature upgrades or security patches are a function of a firmware maintenance contract that is purchased separately, either at the time of purchase or at a future date. Vendors charge for hardware and software licenses either as a perpetual license or as a subscription license but, as mentioned previously, the market is trending away from perpetual licensing.

Network management platforms have become ubiquitous, so access usually requires separate management licensing with various functionality assigned to higher levels. However, some vendors offer enterprise networking solutions that are 100% reliant on the management platform for all functionalities. In such cases, the network management platform is included and various security and/or feature license levels are offered.

Network as a Service

NaaS has emerged in the enterprise network market over the last 18 months. The ultimate goal of NaaS is to deliver similar speed of adoption of technical services and features to the cloud. This should speed the time to business relevancy and allow organizations to add and remove network services as required by business need. As such, NaaS is based on a term subscription consumption model and includes deployment and managed services, flexible feature licensing and specific performance SLAs, and the vendor or partner maintains ownership of the equipment throughout the subscription period. True NaaS should present a transparent backbone infrastructure model, similar to cloud, thereby making the network device models, topologies and protocols behind the scenes irrelevant as long as they meet the business outcome and SLA requirements.

However, Gartner has observed that legacy network equipment vendors are struggling to deliver NaaS to market beyond simply a managed services and leasing model. The reason is that they are addressing the market with equipment designed for per-box consumption, which focuses on individual product sales, and not as-a-service consumption, which stresses the feature adoption and business alignment. These companies also are limited by expected product margins, whereas NaaS requires margins based on total service, not product. Therefore, to truly elevate their NaaS offerings beyond consumption models, legacy network equipment vendors must develop and innovate NaaS-specific products, but none have done so at the time of this writing.

New enterprise network market entrants, such as Nile and its Nile Access Service announced on 14 September 2022, are attempting to disrupt the legacy, box-focused, enterprise market with service offerings specifically designed for NaaS. Nile states its service delivers the network completely as a service, guarantees network performance backed by SLAs, with a singular pay-per-user consumption model. If Nile and the other new market entrants that are sure to follow can meet their stated business outcome and reliability service levels, then there will be a significant opportunity to establish relevance and drive growth of the nascent NaaS market segment. The market has received only lukewarm interest in enterprises, evidenced by market adoption of less than 2%; however, by the end of 2024, it is expected that 15% of all enterprises will adopt NaaS (see [What Is NaaS, and Should I Adopt It?](#)).

Evidence

This research was informed by more than 1,500 client interactions in enterprise wired and wireless networking technologies 2021-2022, data from vendor briefings,

vendor surveys, vendor demos, Peer Insights, practitioner interviews and previously published Gartner research.

Note 1: Gartner's Definition of Network as a Service

NaaS is a standardized and highly automated delivery model for networking functionality. It offers support for dynamic scaling up and down of network resources. The NaaS vendor primarily owns and operates NaaS offerings. Pricing is on a pay-for-use basis or as a subscription based on use metrics. Typically, self-service interfaces — including an API and a GUI — are exposed directly to customers.

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.

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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