ABI RESEARCH COMPETITIVE RANKING

WLAN FOR CAMPUS AREA NETWORKS

RUCKUS®
COMMSCOPE

OVERALL: 78.6 | INNOVATION: 75.4 | IMPLEMENTATION: 81.7 | RANK: 4

RUCKUS COMMSCOPE

LEADER
ABIresearch.

TOP INNOVATOR
ABIresearch.

TOP IMPLEMENTER
ABIresearch.

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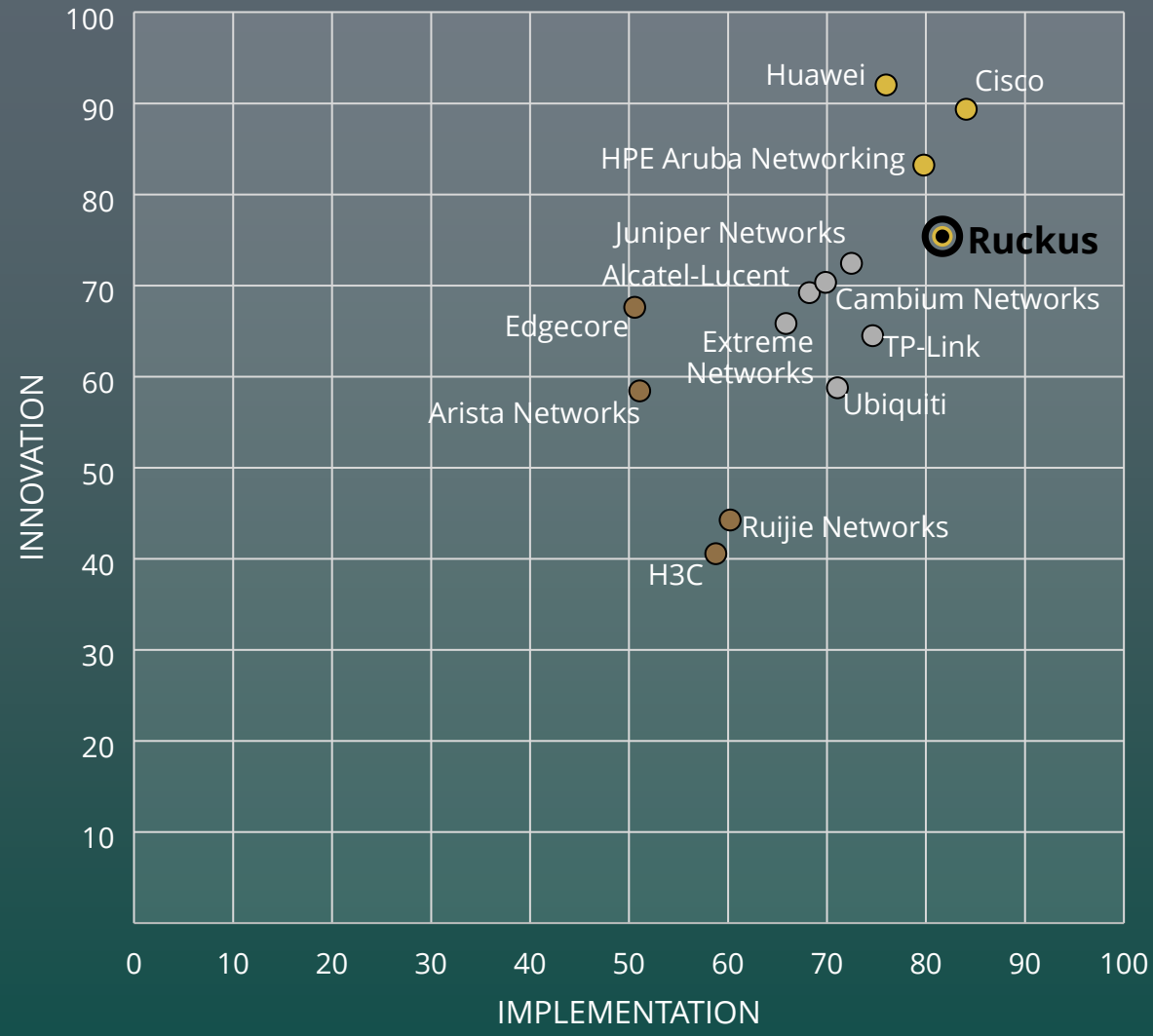
INNOVATION VERSUS IMPLEMENTATION MATRIX



INNOVATION

INNOVATION SCORE: 75.4

RUCKUS Networks, the enterprise networking division of CommScope, has developed a range of highly innovative technical innovations aimed at optimizing WLAN performance for complex campus environments that are high density, have unpredictable client behavior, and have a high degree of client roaming. One of the company's most renowned innovations is BeamFlex, a patented software-controlled smart antenna technology that enables antennas to adapt automatically and dynamically to shifting client locations and environmental conditions. BeamFlex helps optimize RF signals for each client, improving performance and range, and is well suited to address the needs of the hospitality, education, large public venue, and MDU verticals. Another notable feature is RUCKUS patented ChannelFly, which implements Automatic RF channel selection and interference mitigation. Recently, RUCKUS added several innovative features to its offering for campuses. These include AI-Driven Cloud Radio Resource Management (RRM), which uses AI-powered automated channel selection to improve throughput, and AI-driven AppInsights, for visibility into wired, wireless, and application server performance over time. RUCKUS is also heavily involved in industry initiatives aimed at improving user experience in campus environments, including OpenRoaming. Most recently, RUCKUS was instrumental in launching the Enterprise Connectivity Forum, alongside the Wi-Fi Broadband Alliance (WBA), which aims to deliver optimal connectivity experience to end customers in a variety of industries.

One of RUCKUS' current priorities for investment is AI, in the belief that this will drive the next wave of converged networking innovation. One key innovation in this area is RUCKUS AI cloud services, which have been integrated natively into the RUCKUS One platform. RUCKUS AI cloud services offer advanced AI-driven recommendations for proactive resolution and network optimization, as well as AI-powered detection, triaging, and root cause remediation of network issues, resulting in significant reductions to the mean time required for anomaly detection. Furthermore, RUCKUS leverages advanced AI concepts to deliver application QoE to ensure the best end user experience at the application level and not just at the network connectivity level.

A major facet of RUCKUS' compelling value proposition is its broad portfolio of solutions addressing all the major needs of campuses, with options for all budgets. A recent addition to its portfolio was the AI-driven RUCKUS R770 AP, one of the first Wi-Fi 7 APs to hit the market. This AP offers a maximum throughput of 12.22 Gbps, with 2x2:2 2.4 GHz, 4x4:4 5 GHz, and 2x2:2 6 GHz. Deployment for all the company's APs is via SmartMesh technology, which offers one-click automatic establishment of wireless mesh connections between APs. Also enhancing its value proposition for campuses is the ICX suite of stackable campus switches, a range originating from Brocade. RUCKUS Networks has since expanded its stackable switch portfolio, and on campuses today, it supports scalability by enabling customers to expand capacity by simply adding a new switch to the rack, as opposed to upgrading the entire chassis platform. Recent additions include the RUCKUS ICX 8200 line of switches, one of the broadest multi-gig offerings on the market at the entry level with three different multi-gig models, including a compact multi-gig switch.

INNOVATION

INNOVATION SCORE: 75.4

Alongside integrating IoT radios into virtually all of its wireless APs, RUCKUS has also built up an entire ecosystem around the IoT to stimulate its adoption and use on campuses. This includes a broad range of IoT integrations, such as with Salto and ASSA ABLOY for door locks. The company's proprietary DPSK technology allows for the secure onboarding of users and devices, and its IoT insights platform enables rich insights on the IoT network, including automated troubleshooting and timestamped events.

RUCKUS One is an advanced converged network management and assurance, service delivery, and Business Intelligence (BI) platform designed to address the core requirements of campuses. The unified microservices architecture supports campuses by enabling visibility and control throughout the network, extending support to devices through any network access layer. The RUCKUS Cloudpath Enrollment System then guarantees secure Network Access and policy systems for Bring-Your-Own-Device (BYOD) and guest devices. To support MSPs, which play a vital role in RUCKUS' core verticals, the SmartZone controller platform has been equipped with features including automated network discovery and provisioning, AI-powered network automation and analytics, REST-APIs for integrating third-party applications, personalized tenant dashboards, virtual/physical network controller options for complex service levels, and multi/tiered-tenant, tenant/sub-tenant segmentation.

RUCKUS Networks is unique among the profiled vendors in this report in that it has a close partnership with another CommScope subsidiary dedicated to spectrum management—Comseach—an AFC service provider. With this close partnership, RUCKUS is well positioned to enable unlicensed access to the 6 GHz band by coordinating shared spectrum access between all licensed incumbents currently operating in the 6 GHz band and the unlicensed operators. RUCKUS is also in the process of launching its own AFC system. The advantages of handling spectrum management in-house, instead of relying on a third-party entity, include improved communication and troubleshooting should issues arise after launch, an ability to build tighter integration, and the means to deliver more value to end customers. Given these abilities, RUCKUS Networks is well positioned to deliver a highly competitive standard power 6 GHz solution.

IMPLEMENTATION

RUCKUS COMMSCOPE

IMPLEMENTATION SCORE: 81.7

RUCKUS Networks has a rich legacy in WLAN networking. Through the development of many unique proprietary technologies (e.g., BeamFlex), and the merging of its portfolio with that of other complementary networking vendors (notably, the introduction of the ICX range of switches following Brocade's purchase of RUCKUS in 2016), RUCKUS has created a highly competitive value proposition for campus networks, which is widely respected for its performance, reliability, and high cost-efficiency.

While RUCKUS' solutions are equipped to address all campus verticals, many of its unique innovations make it particularly competitive in sectors that have dynamic, irregular RF environments, alongside diverse and unpredictable client-side capacity and performance demands. These include the hospitality, MDU, education, government, municipal, large public venues, and industrial verticals. One of the fastest growing verticals for RUCKUS at present is MDUs, with a particular success in the built-to-rent market. Its strength in this sector rests on its BeamFlex technology, which greatly improves the range of APs alongside the spectrum efficiency in congested MDU environments, and the RUCKUS One platform, which enables it to offer a property-wide network with 1 Service Set Identifier (SSID), which the MSP can then subdivide to tenants. In 1Q 2023, two new ceiling-mounted Wi-Fi 6E APs, the RUCKUS R760 and R560, were released for this vertical. RUCKUS is also witnessing robust expansion in the education and hospitality verticals, in part thanks to its comprehensive portfolio of solutions optimized for outdoor environments. Additionally, RUCKUS empowers MSPs by enabling them to build their own cloud or leverage RUCKUS One, an AI-driven cloud platform by RUCKUS.

In addition to improving the performance, capacity, and flexibility of the network, many of RUCKUS' unique features also help lower the TCO for the network. For example, the company's proprietary BeamFlex technology enables more capacity per node, lowering the TCO for the entire networks. Moreover, AI-driven Cloud RRM can free up capacity by reducing interference. RUCKUS' stackable campus switches also help lower the costs of network expansion, because instead of having to upgrade the entire chassis platform in order to scale up, customers can simply add the required additional switches to their rack.

The core network management demands of RUCKUS' target campus verticals are satisfied through the RUCKUS One platform. The platform is equipped with powerful AI automations, and is notable for its high degree of flexibility, with equal support for both on-premises and cloud-native. To this end, to ensure that AI-powered analytics and troubleshooting is available both on the cloud and on-premises, RUCKUS AI cloud services have been natively integrated into the RUCKUS One platform. RUCKUS also maintains a separate network management platform targeted at SMBs, named RUCKUS Unleashed. This platform has been optimized for quick installation and simplified management, with a free mobile app for accessibility.

IMPLEMENTATION

RUCKUS COMMSCOPE

IMPLEMENTATION SCORE: 81.7

NaaS delivery is facilitated through the highly scalable, multi-tenanted SmartZone controller platform. The platform's use of virtual appliances helps engender scalability and flexibility, while georedundant clusters boost reliability. The world's leading MSPs have used SmartZone to host a private cloud for their customers, and one MSP is using the SmartZone platform to manage 500,000 APs. RUCKUS Networks has also devised a fully turnkey NaaS solution for the industrial vertical, with its 24/7 NAC assisting with maintenance of the network.

RUCKUS Networks relies on its expansive network of partners to go-to-market and integrate its networks, with 10,000 active channel partners at any one time. Extensive resources are dedicated to supporting these partners, with recent developments, including a revamping of the RUCKUS BIG DOGS Partner Program in 2022, which involved introducing new industry-specific specialisms, and training programs in areas including Wi-Fi, cloud management, and AIOps. RUCKUS AI cloud services have also been designed to assist MSPs with the rapid triaging and root cause analysis of issues, and a 40% reduction in help desk tickets following its implementation has been reported. RUCKUS Professional Services are also available to provide extra insights, experience, and resources to campus network deployments, upgrades, or expansions.

CRITERIA AND METHODOLOGY

VENDOR MATRIX

Methodology: After individual scores are established for innovation and implementation, an overall company score is established using the Root Mean Square (RMS) method:

$$Score = \sqrt{\frac{innovation^2 + implementation^2}{2}}$$

The resulting overall scores are then ranked and used for percentile comparisons.

The RMS method, in comparison with a straight summation or average of individual innovation and implementation values, rewards companies for standout performances.

For example, using this method, a company with an innovation score of nine and an implementation score of one would score considerably higher than a company with a score of five in both areas, despite the mean score being the same. ABI Research believes that this is appropriate as the goal of these matrices is to highlight those companies that stand out from the others.

RANKING CRITERIA

Leader: A company that receives a score of **75 or above** for its overall ranking

Mainstream: A company that receives scores **between 60 and 75** for its overall ranking

Follower: A company that receives a score of **60 or below** for its overall ranking

Innovation Leader: A company that receives a score of **75 or above** for its innovation ranking.

Implementation Leader: A company that receives a score of **75 or above** for its implementation ranking.

INNOVATION CRITERIA

Technological Leadership & Influence: Vendors developing leading-edge 802.11 solutions for campus networks will score highly in this criterion. Such vendors will have evidenced significant product differentiation through 802.11 innovation and are pushing the boundaries of what the technology is capable of. Being at the vanguard of 802.11 innovation often goes hand in hand with influence on the development of the technology, so vendors' contributions to standardization efforts, involvement in technology trials, or participation in industry initiatives will also be considered.

Campus-Specific Innovations: This criterion is an assessment of proprietary technologies that have been designed to meet the demands of campus networks. These solutions do not necessarily have to be cutting-edge and could potentially be existing technologies that have been reengineered for campus use cases. The key is that these innovations are unique and have been developed with the explicit purpose of effectively addressing campus-related challenges.

Simplicity & Ease of Management: Growing network complexity is raising the need for tools that simplify the management experience for campus operators, and this category will analyze a vendor's ability to deliver these resources, not only regarding network control, but also in aspects such as network intelligence and scalability. The grading will look favorably upon management platforms that can provide unified control of the network, can support operations with insights, analytics, and automations, and those that are seamlessly scalable. Innovations made to support Managed Service Providers (MSPs) in managing the campus networks of their clients will also be considered.

IoT & Cellular Technology Integration: A successful integration of WLAN with the Internet of Things (IoT) or 5G hinges on the ability to ensure that the integration is frictionless, and that the advantages of multiple technologies can be effectively leveraged to resolve campus challenges. A vendor scoring highly in this field can demonstrate its ability to provide unified and centralized management of the integrated technologies and can highlight innovative use cases for which the converged solutions are applied.

Services & Applications for Campus: Additional value-added services on top of platforms, such as location-based services or digital twins, can unlock new abilities that support the operations of campus networks. Such services may be included within product licenses or can be sold separately via application marketplaces. The final criterion in the innovation section will assess the provision of such services by WLAN vendors, with a focus on those that have been engineered specifically for campus networks. Vendors scoring highly will be those with especially innovative services optimized for delivering campus optimizations or addressing campus-specific challenges.

IMPLEMENTATION CRITERIA

Fulfillment of Next-Generation Campus Demands: Rapid increases in client density, higher performance requirements, growing demand for roaming, and the introduction of new ultra-high reliability applications are just some of the trends with which next-generation campus networks must grapple. This criterion will assess a vendor's capacity to satisfy these advanced performance demands, and whether they can support Information Technology (IT) departments and MSPs in delivering the guaranteed Quality of Service (QoS) necessary for modern campus Service-Level Agreements (SLAs).

Business & Service Model Innovation: Accelerating technological innovation, growing network complexity, shrinking IT budgets, and challenges in sourcing qualified network engineers are straining the ability of businesses and public sector bodies globally to manage campus WLAN networks. WLAN vendors will also be graded on their ability to support their customers in facing these challenges with innovative business and service models, including the implementation of Hardware-as-a-Service (HaaS) or NaaS packages.

Campus Vertical Coverage: Campus networks are used in an extensive range of different industries, each of which poses its own unique and distinct requirements. Key sectors include traditional enterprise, SMBs, education, government, hospitality, retail, large public venues, healthcare, and industrial. On account of the differing strategies of ecosystem vendors, high scoring vendors in this category will either have a broad breadth of vertical coverage or can demonstrate leadership in their target vertical(s).

Overall Value Proposition: This criterion grades the complete value-proposition of a vendor's solution for campus environments, taking into consideration several key factors. The first indicator of a strong value proposition is Total Cost of Ownership (TCO) competitiveness and evidence of offering a strong Return on Investment (ROI). A second metric is the ability to provide an E2E solution for campus networks, delivered either through a vendor's own proprietary platforms or via strategic partnerships. Also encompassed in this category is support for lifecycle management of the campus network.

Strength of Partnerships: Strategic partnerships are key for both enhancing a vendor's competitive edge and for executing the go-to-market of products. Therefore, the final category will analyze the relationships that a vendor maintains with third parties, and how effectively it can leverage these partnerships for the needs of campus networks. Examples of strategic partners include MSPs, System Integrators (SIs), hardware component suppliers, or value-added service vendors.

VENDOR ECOSYSTEM

Virtually all major enterprise WLAN vendors have solutions that target campus networking, although given the broad range of verticals and applications that a campus encompasses, and the increasing complexity of campus demands, many vendors have adopted unique strategies aimed at capturing specific opportunities within select verticals or through the application of innovative technologies. Analysis of the divergent strategies implemented by the enterprise WLAN vendors reveals four distinct groupings of vendors.

The first category are the all-rounders, which have expansive portfolios addressing virtually all campus verticals. This includes incumbent, market-leading vendors such as Cisco, HPE Aruba Networking, and CommScope Ruckus, which guard their campus business through a combination of strong brand reputations, technological leadership, and deep and long-standing partnerships with industry integrators, distributors, and value-added resellers. Also adhering to the all-rounder strategy is Huawei, which matches its disruptive innovation with aggressive pricing.

The second grouping is the vertically focused that prioritize developing highly optimized E2E solutions for specific campus verticals. Examples in this subset include Arista (large enterprise campuses) and Extreme Networks (large public venues). These vendors may opportunistically serve other verticals, but their hardware and software capabilities, marketing, and partnerships have all been targeted toward their key markets.

The third category is the technology specialists that differentiate their offerings through a focus on the application of unique or highly innovative technologies. Companies in this subset may also intersect with the “all-rounders” or “vertically focused.” For example, Juniper Networks concentrates on implementing cutting-edge AI in its solutions for all campus verticals, whereas Cambium Networks leverages its strength in outdoor and Point-to-Point (PtP)/Point-to-Multipoint (PtMP) WLAN toward its core markets of education, hospitality, retail, large public venues, Multi-Dwelling Units (MDUs), and healthcare.

VENDOR ECOSYSTEM

The final grouping is the SMB targeted, with SMB defined as campuses with fewer than 200 WLAN Access Points (APs). These vendors typically have a history of supplying the residential Wi-Fi market, and subsequently expanded into enterprises from this foundation. Examples include NETGEAR and D-Link. In many ways, the SMB market functions as a separate campus market, as cost-efficiency and simplicity are prioritized over advanced features and the handling of complex use cases. For this reason, the major SMB-orientated enterprise WLAN vendors are not included in this competitive assessment.

Each of the four campus strategies discussed above has its advantages and disadvantages. While the all-rounder approach offers the greatest Total Addressable Market (TAM), the portfolio may lack focus and vertical-specific optimizations, making it hard to compete directly with the vertically focused and technology specialists on their home turf. One the other hand, while the vertically focused can become the trusted supplier of a particular industry, making them highly competitive in that sector, they may lack the capabilities to address opportunities outside of their niche, and so are tied to the fortunes of their target market. Similarly, although technology specialists are well positioned to capture opportunities tied to specific technologies, they remain vulnerable, as their success is contingent on the fortunes of their chosen technology. Finally, the targeted SMB operates in a market that, although offering a low barrier to entry, suffers from lower margins due to price sensitivity.

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