HEWLETT PACKARD ENTERPRISE

REDEFINING ENTERPRISE CONNECTIVITY WITH THE SECURE AI-NATIVE NETWORK

SUMMARY

Networking has evolved dramatically over the past five decades. The birth of the first network in the late 1960s brought with it the power to connect computational devices intended to improve productivity and collaboration. The creation of Ethernet in the 1970s streamlined networking, as did other efforts to standardize connectivity on a wide scale for personal computers and servers in the 1980s. Public access to the internet in the 1990s redefined the ability to connect people, places, and things, as did cellular mobile networks in the 2000s, delivering higher levels of untethered access and data capacity with the advent of the 3G standard. Within the past decade, machine learning and AI have dramatically improved network operational performance, resiliency, and availability—with business outcomes optimized through software-defined advancements and intent-based network design.

Today, new and exciting applications of AI, including generative AI, are poised to radically transform enterprise workflows. Unsurprisingly, many infrastructure providers are focusing on computational platforms, integrating GPUs and NPUs from the likes of AMD, Intel, and NVIDIA to take advantage of the vast market opportunity. However, networking is an equally crucial element. It is the connective tissue that moves data across multiple domains for the training and inferencing of large language models and for facilitating next-generation cloud-native AI applications such as ChatGPT. With the rise of AI PCs, gen AI will also be enabled at the network edge and require robust front- and back-end connectivity support.

There is a significant opportunity to leverage AI to deliver exceptional connectivity while meeting the demands of next-generation AI applications and hybrid workloads at scale. HPE's combination of the HPE Aruba Networking business unit and its recent Juniper Networks acquisition is poised to redefine enterprise networking by creating a software-defined, AI-native, and highly secure network platform. Moor Insights & Strategy believes that HPE is in a unique position to accelerate networking to new heights with AI that can scale from cloud to on-premises to edge deployments. This is supported by a newly forged and expansive engineering capability to enable innovation and self-optimization. The result is a complete networking stack that spans custom silicon for programmability, software tools that facilitate agility, cloud and as-a-service offerings

that provide consumption flexibility, hardened security, and proven leadership in connectivity and edge infrastructure.

THE EVOLUTION OF NETWORK CONNECTIVITY AND HPE'S CONTRIBUTIONS

The late 1960s saw the invention of the first network—the Advanced Research Projects Agency Network. ARPANET was the first packet-switched wide area network. Hosted among the United States, the United Kingdom, and Norway, it was intended to enable resource sharing between remote computers for academic and, eventually, military research purposes. As one of the first networks to utilize TCP/IP protocols, it is the foundation for today's internet.

One of the most significant early contributions to the scale-out of network connectivity was the birth of the Ethernet standard in the early 1970s and its maturity a decade later. Today, Ethernet is enjoying a renaissance, imbued by the efforts of the Ultra Ethernet Consortium—including HPE—to advance its capabilities in the physical, link, transport, and software layers. UEC working groups, as well as cross-collaboration with the Open Compute Project and other alliances, have firmly established Ethernet as a cost-effective, highly performant interconnect for today's AI applications and workloads.

"You've got mail" could be considered a rallying cry for the consumer internet in the 1990s. Although slow and unreliable at times, dial-up connectivity signaled a transformative network capability. As the internet moved from academia to the masses, its power to connect the world transformed people's everyday lives, revolutionized business operations, and created explosive economic impacts. Today, Hewlett Packard Labs continues to play a significant role in the internet's evolution by providing infrastructure and device security, digital manufacturing technologies, and IoT enablement for operational technology environments, cloud-to-edge computing, and more.

The birth of cellular mobile networks occurred in the late 1970s with the launch of the 1G standard by NTT in Japan. However, it took nearly two decades for network capacity and data transfer speeds to mature to the point that cellular could serve as a viable telecommunications option. Many pundits credit Apple for a watershed moment with its launch of the iPhone 3G in the late 2000s. The company's smartphone entry set the bar with not only its groundbreaking usability, but also the ability to leverage the enhanced data connectivity provided by the 3G standard. Today, cellular connectivity—especially through smartphones—plays a vital role in most people's daily lives, providing

untethered personal communication and professional collaboration. For large organizations, private 4G LTE and 5G networks are unlocking newfound efficiencies in manufacturing automation, transportation and logistics, energy production, healthcare, and other industries. HPE continues to make significant contributions to both public and private cellular networks through its orchestration and automation intellectual property, as well as its own end-to-end private 5G offering anchored by its integration of Athonet, the core infrastructure provider acquired in 2023, into HPE GreenLake.

In the last decade, AI ops has significantly improved network reliability, performance, availability, and observability, unlocking the power of data and analytics to steer traffic more intelligently and improve business outcomes. HPE is a proven leader in this regard through HPE Aruba Networking. Before its acquisition by HPE, Aruba was early to recognize the power of Wi-Fi communications as a complement to wired networks. More recently, it has reinforced its leadership with the Aruba Networking Edge Services Platform launched in 2020. The company continues to evolve its portfolio, maturing its SD-WAN and SASE offerings through the acquisition of SD-WAN provider Silver Peak in 2020 and SSE provider Axis Security in 2023. The potential that HPE's acquisition of Juniper Networks presents with its Mist AI and Apstra intent-based network design and deployment capability is compelling, further strengthening the company's portfolio depth and breadth in AI-native, software-defined networks.

The Potential Impact of Generative AI

Next-generation AI applications represent this decade's most disruptive emerging technical innovation. Gen AI and the use of copilots and autopilots have the potential to dramatically improve developer, networking, and security operations and resulting business outcomes. Despite some recent doubts about gen AI's economic impact, use cases are emerging that point to its potential. The applications include assistive coding, content creation, accelerated applied research, enhanced cybersecurity and risk management, enhanced customer service support, and more.

Undoubtedly, networking will play an instrumental role in AI. Many infrastructure providers, including HPE, are focusing the lion's share of their efforts on the compute side, integrating GPUs and NPUs with software-defined functionality to unlock use cases. However, networks will also have to keep pace given the vast amounts of data used to train large language models in the cloud and smaller ones at the edge and to facilitate needed inferencing functions. Taking a commodity approach to networking in this AI era is not enough, and those infrastructure providers that invest the necessary resources stand to gain by delivering a complete, end-to-end AI infrastructure stack.

Prioritizing secure AI-native networking brings considerable benefits. It will improve developer operations, resulting in faster time-to-innovation. It will also enable transformative digital experiences realized through highly available and reliable connectivity. This should lead to improved individual knowledge worker productivity, enhanced collaboration, and improved security postures. The application of AI also has great promise in refining operational control to reduce trouble tickets, facilitate faster upgrades, and reduce mean time to resolution of network issues.

MI&S believes that HPE is in a unique position to capitalize on the promise of secure AI-native networking, integrating its and Juniper Networks' engineering abilities and product portfolios to create new solutions that are potentially greater than the sum of the parts. This is evidenced by the significant intellectual property and engineering resources that the combination will bring to market, as well as HPE's continued leadership in edge infrastructure and IT consumption services.

HPE AND JUNIPER'S CREATION OF THE SECURE AI-NATIVE NETWORK

HPE has architected a vision of what it refers to as the "Secure AI-Native Network" on the heels of its acquisition of Juniper Networks. Some parties have questioned the solution portfolio overlap, and indeed the company will need to rationalize its current and future priorities and roadmaps. However, digging deeper, each organization brings highly complementary strengths to fulfilling the company's vision.

HPE Aruba Networking boasts strengths in campus and branch connectivity, buoyed by a robust AI ops platform in HPE Aruba Networking Central, which offers deployment flexibility with on-premises and purpose-built, discrete network-as-a-service offerings, including private 5G networks for operational technology environments. HPE has also invested significantly in security through both its organic roadmap development efforts and acquisitions that include Axis Security. Simultaneously, Juniper Networks adds demonstrated depth in datacenter routing and switching, programmable custom silicon, a communication service provider portfolio anchored by numerous wins with global public mobile network operators, and AI leadership evidenced by the success of its Mist AI virtual network assistant powered by its data science investments. Furthermore, the importance of Juniper's Apstra solution, which supports robust intent-based network design and deployment, should not be underestimated, especially considering the software-defined nature of today's enterprise networks.

HPE is also a proven leader in the cloud, supported by the success of the HPE GreenLake cloud and hybrid cloud offerings, its recent HPE Private Cloud AI offering,

and other services. Additionally, the company's recent acquisitions of Morpheus and OpsRamp facilitate AI workloads across cloud, datacenter, and network edges with easy-to-consume as-a-service offerings. OpsRamp also provides the flexibility to manage third-party infrastructure within HPE Aruba Networking Central, providing a single pane of glass that eases network operational management and control. Furthermore, HPE Edgeline solutions consolidate OT and enterprise-class IT compute functionality in a single, power-efficient form factor that brings resources closer to where data is created.

MI&S believes that uniting HPE's existing solution portfolio with Juniper's has the promise of delivering secure AI-native networking at scale. This is supported by the combined depth and breadth of portfolio capabilities and the provision of a single management console that eases AI-infused network deployment and operations cross-domain. Additionally, a combined IT partner sales and marketing ecosystem can deliver improved connectivity and security outcomes anchored by a zero-trust architecture.

AI FOR NETWORKS AND NETWORKS FOR AI

AI is unique in that it can enable multiple efficiencies for networking. When it comes to AI for networks, both AI ops and gen AI can deliver new levels of assurance and resiliency that foster improved user experiences, unlock new applications, and improve business and security outcomes. With respect to networks for AI, workload demands make it critical to have connectivity infrastructure that can support vast amounts of data, support algorithmic and large language model needs with high throughput and low latency, and facilitate training and inference in the cloud, on premises, or at the network edge.

MI&S believes that the combination of HPE and Juniper Networks can accomplish both objectives through a supercharged engineering capacity tied to one of the broadest AI-infused portfolios that includes routing, switching, firewalls, compute, and storage. Even better, HPE also provides a powerful set of automation and network assurance capabilities that facilitate the design, deployment, and management of highly performant AI training, inference, and storage clusters.

AI IS SET TO SHAPE THE FUTURE OF ENTERPRISE NETWORKING

The application of generative AI and next-generation AI ops will transform enterprise networking. HPE's decision to acquire Juniper Networks to augment the Aruba Networking portfolio could accelerate its ability to capitalize on this transformation. This

moonshot effort includes a deeper set of AI capabilities, broader domain coverage, and a fortified engineering team. Furthermore, both Aruba Networking and Juniper offer significant depth in cybersecurity and tight architectural integration within connectivity infrastructure. It is a powerful combination, one that is poised to redefine enterprise connectivity through the manifestation of a secure AI-native network.

CONTRIBUTOR

Will Townsend, Vice President & Principal Analyst, Networking & Security Practices

PUBLISHER

Patrick Moorhead, CEO, Founder and Chief Analyst at Moor Insights & Strategy

INQUIRIES

Contact us if you would like to discuss this report, and Moor Insights & Strategy will respond promptly.

CITATIONS

This paper can be cited by accredited press and analysts but must be cited in-context, displaying author's name, author's title, and "Moor Insights & Strategy." Non-press and non-analysts must receive prior written permission by Moor Insights & Strategy for any citations.

LICENSING

DISCLOSURES

Hewlett Packard Enterprise commissioned this paper. Moor Insights & Strategy provides research, analysis, advising, and consulting to many high-tech companies mentioned in this paper. No employees at the firm hold any equity positions with any companies cited in this document.

DISCLAIMER

The information presented in this document is for informational purposes only and may contain technical inaccuracies, omissions, and typographical errors. Moor Insights & Strategy disclaims all warranties as to the accuracy, completeness, or adequacy of such information and shall have no liability for errors, omissions, or inadequacies in such information. This document consists of the opinions of Moor Insights & Strategy and should not be construed as statements of fact. The opinions expressed herein are subject to change without notice.

Moor Insights & Strategy provides forecasts and forward-looking statements as directional indicators and not as precise predictions of future events. While our forecasts and forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could cause actual results to differ materially. You are cautioned not to place undue reliance on these forecasts and forward-looking statements, which reflect our opinions only as of the date of publication for this document. Please keep in mind that we are not obligating ourselves to revise or publicly release the results of any revision to these forecasts and forward-looking statements in light of new information or future events.