The Symbiotic Relationship Between AI and Mobile Networks

Why “Networks for AI” matters most

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AI and networks: A two-way relationship redefining telecoms

As a telecommunications analyst observing the rapid evolution of both mobile networks and artificial intelligence (AI), I have witnessed a fascinating convergence that promises to reshape the digital telecom landscape. While much attention has focused on how AI can optimize network operations, the more transformative opportunity lies in how networks enable AI services—what we call “Networks for AI.”

The dual relationship between AI and mobile networks operates in two directions. “AI for Networks” uses AI to optimize network operations—predicting traffic patterns, automating maintenance, and enhancing security. These applications improve efficiency and performance. However, “Networks for AI” represents the more revolutionary paradigm. This perspective recognizes mobile networks as the critical infrastructure enabling widespread AI service delivery.

As AI applications become increasingly sophisticated and ubiquitous, the demand on network infrastructure is growing exponentially. The network is no longer merely a passive conduit but an active enabler that determines which AI services can realistically reach consumers.

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Why "Networks for AI" takes precedence

"Networks for AI" deserves our primary focus for several compelling reasons.

First, AI's computational demand increasingly requires distributed processing across edge and cloud resources. Only advanced networks can orchestrate this complex data movement while maintaining the low latency essential for real-time AI applications.

Second, as AI services proliferate, they reshape data patterns. For instance, consumer and business AI applications will require faster upload throughput. At the same time, networks must evolve to handle these new data patterns while maintaining the quality of service (QoS) for all data flows.

Third, the democratization of AI depends entirely on network accessibility. Without robust, widespread connectivity, the benefits of AI remain confined to privileged regions and users, widening the digital divide rather than narrowing it.

The proliferation of AI on devices will drive demand for AI-ready networks

On-device AI is rapidly becoming a popular choice for OEMs as they seek to differentiate their products and augment customer experiences. AI offers a wide range of applications that run AI models directly on hardware rather than relying on cloud servers. However, in many instances—most notably Apple Intelligence—only some of the most basic AI functions are performed on-device, while the most complex tasks are performed in the cloud, requiring a rapid connection, low latency, and greater upload capabilities from mobile networks.

In consumer devices, applications include voice recognition assistants on smartphones; image processing tools that can edit photos locally; health monitoring in wearables that analyze vital signs in real time; and cameras that can analyze images for home monitoring or facial recognition. Industries leverage on-device AI for autonomous driving, manufacturing systems that detect defects on production lines and create digital twins to improve overall performance, and retail solutions that track inventory and analyze customer behavior.

Most recently, augmented reality (AR) and virtual reality (VR) with real-time environment mapping, gaming with adaptive gameplay mechanics, and education apps offering personalized learning experiences have emerged.

All these applications and use cases will increasingly require made-for-AI network infrastructure.

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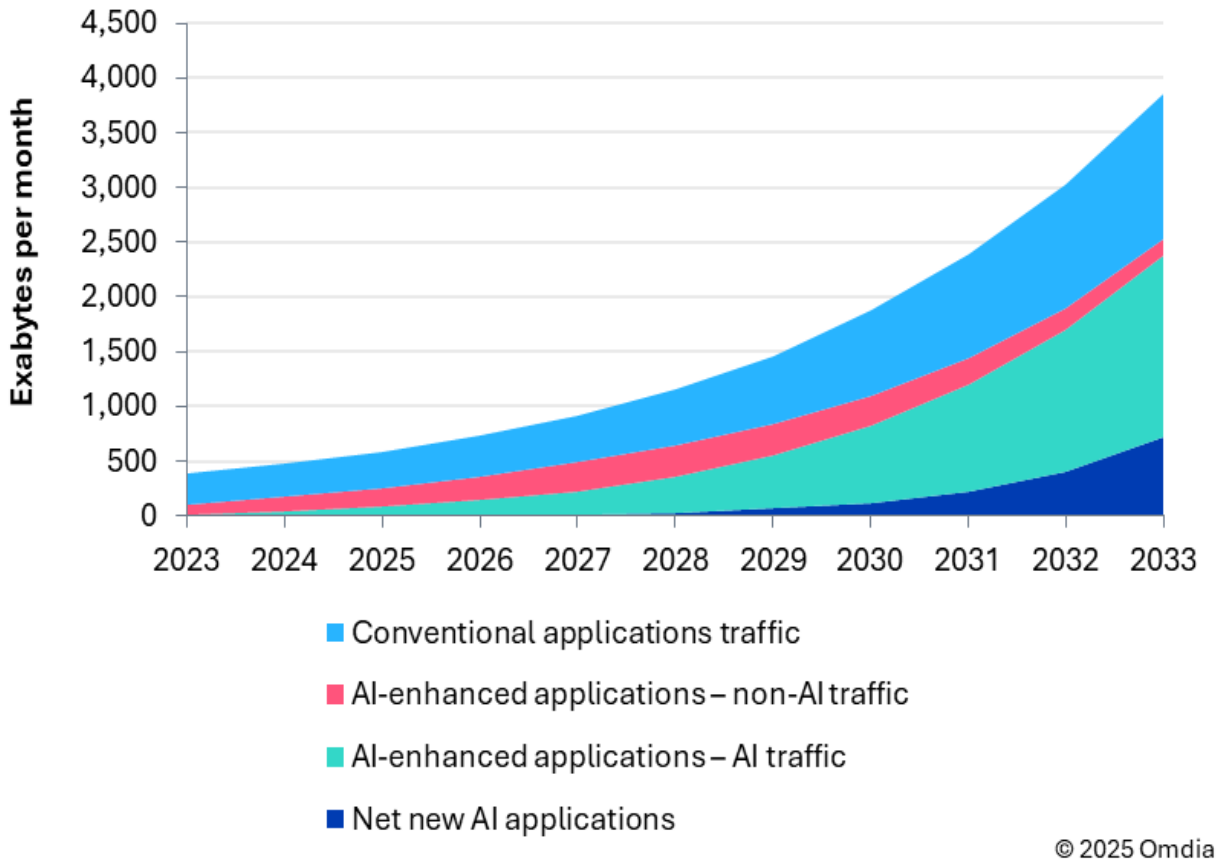
Finding a path to support AI: 5G-A

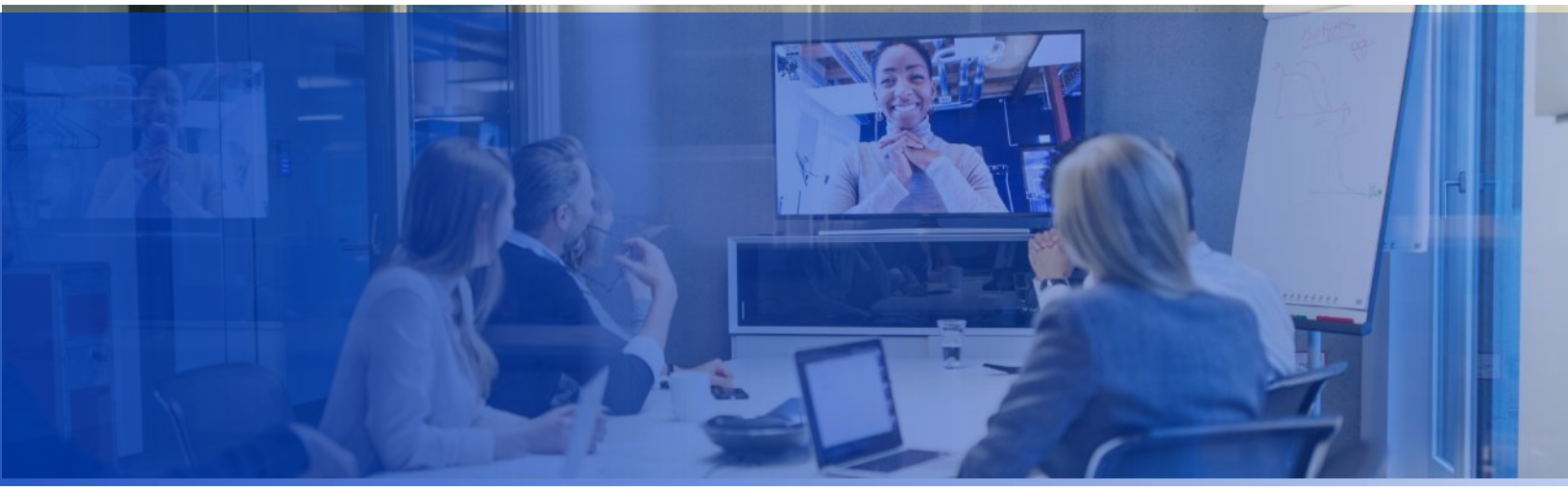
The proliferation of AI applications drives the growth of AI-related traffic. Omdia forecasts that AI traffic will have a CAGR of about 73% in 2025–33. Omdia forecasts 2031 as the crossover point when global AI network traffic exceeds conventional traffic. Smaller, cost-effective open models, such as DeepSeek, are expanding AI innovation and competition, particularly driving AI deployments on edge equipment. Therefore, Omdia forecasts that net new AI traffic destined for the network edge will grow at a CAGR of 130% in 2025–33.

Several telecom operators are now embedding, bundling, and developing AI services for consumers and enterprises. In the near future, not only humans will require networks capable of delivering AI-ready experiences. This year, China Mobile, in collaboration with Leju Robotics, jointly unveiled a humanoid robot equipped with 5G-Advanced (5G-A) technology, using 5G-A to enable large-scale data collection, which accelerates development cycles and helps adapt the humanoid robot's deep learning models.

Figure 1: Total network traffic, AI and non-AI, 2023–33



Source: Omdia



Conclusions

While AI offers valuable tools for optimizing network operations, the true transformation lies in how networks enable AI services to reach their full potential.

As 5G continues to evolve and we look toward 5G-A, networks must be designed with AI enablement as a primary consideration, not an afterthought. Telecom operators that recognize this paradigm shift and invest accordingly will position themselves at the center of the AI revolution, delivering unprecedented value to customers and establishing themselves as indispensable partners in the AI ecosystem. The future will belong not only to those who develop AI, but also to those who build networks that make AI universally accessible.

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Appendix

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Omdia consulting

Omdia is a market-leading data, research, and consulting business focused on helping digital service providers, technology companies, and enterprise decision makers thrive in the connected digital economy. Through our global base of analysts, we offer expert analysis and strategic insight across the IT, telecoms, and media industries.

We create business advantage for our customers by providing actionable insight to support business planning, product development, and go-to-market initiatives.

Our unique combination of authoritative data, market analysis, and vertical industry expertise is designed to empower decision-making, helping our clients profit from new technologies and capitalize on evolving business models.

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We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help your company identify future trends and opportunities.

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