As artificial intelligence (AI) continues to revolutionize industries and business operations, the focus is now shifting to the underlying infrastructure that will power this transformation: the network. AI's data-hungry applications require robust, high-speed networks capable of handling immense data flows, ensuring low latency, and maintaining security. But as businesses venture into this brave new world, the question remains: are current networks equipped to handle AI's growing demands? The answer is a resounding no. Networks must evolve, and businesses need to rethink their strategies to support the full potential of AI.

The explosion of AI-driven operations is pushing network infrastructure to its limits. According to Pierre-Marie Binvel, Director of Connectivity Product Marketing at Orange Business, "AI represents a paradigm shift for networks, similar to the internet boom of the late 1990s." He explains that networks are no longer just the connective tissue between data centers, devices, and the cloud. Today, they play a critical role in determining how effectively AI can be deployed across industries.

"Enterprises are investing heavily in AI and generative AI models, but without the network to support them, these investments will fall short," Binvel adds. "AI models require massive data transfers and real-time processing, both of which depend on a high-performance network that can handle low latency and congestion management."

Paul McMillan, an AI strategist, echoes this sentiment. "AI applications, particularly generative AI, are incredibly data-intensive, and they need agile, responsive networks. It's not just about bandwidth anymore; it's about speed, reliability, and the ability to scale quickly." McMillan emphasizes that AI models require networks to be as dynamic as the AI algorithms themselves.

As AI models grow more complex, they require more data and computational power. But the real bottleneck, according to Serge Lucio, VP at Broadcom Inc., lies not in computing power, but in the network. "AI systems are highly reliant upon the underlying network infrastructure. When AI data and workloads are distributed across multiple nodes, you need high bandwidth and low latency networks to ensure everything runs smoothly," he notes.

Lucio further explains that even as companies upgrade their computational resources with GPUs and TPUs, the performance of AI applications is only as good as the network supporting them. "It's not enough to focus on processing speed. Without a network that can efficiently distribute and process data, AI systems will hit a performance wall."

AI-driven applications operate on vast amounts of data. Whether it's training a machine

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learning model or deploying AI algorithms in real-time, the movement of data is crucial. The traditional data center-centric network model simply doesn't cut it anymore. "In the past, data mostly flowed from the cloud to a local site and back," says McMillan. "With AI, data is constantly moving from cloud to cloud, site to site, and cloud to site. The direction of travel has changed, and so must the network."

Binvel agrees, pointing out that decentralized data storage is becoming the norm. "Data is increasingly created and processed at the edge of networks, outside of traditional data centers. AI applications running on edge devices rely heavily on real-time data processing, which requires networks to have the capacity, bandwidth, and low latency to ensure seamless operations."

To create a network that can support AI's vast demands, businesses need to rethink their strategies. Pierre-Marie Binvel outlines four key considerations for building an AI-capable network:

1. Planning for the Future "Businesses need to plan for their AI use cases," Binvel asserts. "By understanding where AI is hosted and how it's used, enterprises can assess the network's transformation path." This planning requires an analysis of compute power, connectivity needs, and how data will be moved to optimize the total cost of ownership.

2. Prioritizing Privacy, Security, and Compliance AI's reliance on decentralized data storage presents significant security challenges. "With more data in transit, the complexity of securing this data increases," notes McMillan. Regulatory compliance becomes a priority, and businesses must ensure that their networks allow for secure, compliant data handling while still maintaining flexibility.

3. Governance and Visibility A network's ability to enable AI governance is critical to avoiding errors, breaches, and security exposures. "Good governance requires clear visibility into network infrastructure and how it handles data," says Binvel. Without trust in the network's ability to manage data securely, businesses may struggle to deploy AI confidently.

4. Managing Traffic and Congestion As AI applications scale, so too will network traffic. McMillan emphasizes the importance of congestion management: "More data on the network means more potential for bottlenecks. Businesses must implement systems that can handle traffic spikes, ensuring that AI applications run without disruption."

One key solution to AI's network demands is the development of on-demand networks. These networks are designed to adapt, flex, and scale as AI use cases evolve. According to Binvel, "The future of networking lies in building infrastructure that can respond dynamically to changing business needs, particularly those driven by AI." He describes how companies like Orange Business are creating "network-as-a-service" platforms, which allow enterprises to scale network capabilities based on demand without requiring significant hardware investments.

McMillan concurs, noting that on-demand networks will play a critical role in ensuring AI's success. "AI is pushing the boundaries of what networks can do, and on-demand solutions are the only way to keep up with the pace of AI innovation."

The future of AI is bright, but it hinges on the evolution of networks. As AI applications continue to grow in complexity, networks must adapt to handle the increased demand for data movement, low latency, and security. The brave new world of AI-leveraged networks will require businesses to rethink their strategies, prioritize network infrastructure, and invest in future-proof, on-demand solutions.

As McMillan aptly concludes, "AI is not just transforming businesses; it's transforming networks. And for companies to fully realize the benefits of AI, they must first ensure their networks are ready to support the revolution."

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