

Digital innovation is paramount to success in today's hyper-competitive business environment, and enterprises are rapidly embracing the integration of artificial intelligence, particularly generative AI. This transformative technology is reshaping the landscape of enterprise connectivity, including at the network edge.

## *Impact of Generative AI on Enterprise Connectivity and Edge Computing*

February 2024

**Questions posed by:** Comcast Business

**Answers by:** Paul Hughes, Research Director, Future of Connectedness

### **Q. How do you see the integration of AI, specifically GenAI, at the network edge creating dynamic, context-rich experiences? How does this align with business goals around data and customer satisfaction?**

Generative artificial intelligence (GenAI) hype is already having a profound impact on enterprise IT and will soon be impacting networking strategy and planning. IDC's 2023 *GenAI Awareness, Readiness, and Commitment Survey* data shows that 83% of IT leaders believe that the use of GenAI models leveraging their own business' data will give them a significant advantage over competitors, with improving customer/user experience seen as the top benefit today. While still somewhat early stage in terms of business significance, 40% of enterprises expect that GenAI will impact network and connectivity strategies using capabilities that target and improve the customer experience. Furthermore, 29% of enterprises see current investments being allocated to AI-specific server and storage hardware in on-premises/colocation datacenters as well as remote edge locations.

As enterprises adopt more bandwidth-heavy services like augmented reality (AR) and virtual reality (VR) and connect more devices to the network, the demand for faster compute and lower latency will be critical to delivering rich experiences for customers and employees. Positioning edge servers and datacenters near the point of transmission is already making it easier for organizations to support customers and deliver increased performance to eliminate network congestion and latency. Where GenAI will have its greatest impact at the network edge will be in providing greater insights for network capacity planning and security optimization, thus helping businesses to improve their network management processes.

## Q. How do you envision enterprise edge computing needs transforming with the integration of GenAI??

Most data creation within the enterprise happens locally, whether at a branch office, or at a retail location, or at a remote work site, or by remote employees out in the field. Leveraging edge computing to manage data collection, manipulation, and aggregation already provides operational and performance benefits for maximizing the value of localized data today. While the impact of GenAI on edge-related data creation, movement, and utilization is minimal today, over time, the edge will become a critical point for data ingestion and input for GenAI processes. As data volumes continue to grow in a local, decentralized fashion, most edge computing–powered applications today will become more influential in guaranteeing the operational efficiency benefits that GenAI can enable.

Over the next two to three years, enterprises will need to align and scale edge computing infrastructure to support increased workload demands from GenAI use cases, especially those designed to have real-time impact on efficiency and productivity. As organizations increase usage of data- and bandwidth-intensive applications, this will also increase the demand for faster data manipulation and real-time consumption. Customer-centric applications like personalized, voice-assisted support in retail, customer sentiment analysis, and any autonomous decision-making application will be time sensitive and will require low latency to be effective. This is now more viable as low-cost computing can be more easily deployed at the edge.

For internal business use cases like software code generation and testing or generative product design and knowledge management, the benefits of edge-based compute performance and low latency will also ensure faster outcomes for organizations with localized workforces and teams, requiring enterprises to map edge computing infrastructure to support distributed workload demands. As these and other use cases embrace GenAI, and capabilities scale as the language models scale, these revolutionary changes will force enterprises to increase usage of edge computing to facilitate and optimize business processes.

## Q. What are the top network and connectivity areas enterprises should expect GenAI to impact the most?

IDC's *Future Enterprise Resiliency and Spending Survey* data shows that enterprises expect GenAI to have an almost equivalent impact on five key areas of network and connectivity strategy. In detail:

- » 41% expect GenAI to play an impactful role in optimizing network security.
- » 40% expect GenAI to play an impactful role in helping improve the customer experience.
- » 40% expect GenAI to help accelerate network planning and optimization.
- » 39% expect accelerated automation of network management processes.
- » 38% expect to see improved personalization of employee experiences in areas like call centers and customer interaction.

Network security demands keep every enterprise constantly on guard for ever-changing threats that can attack across all areas of the network fabric. Where GenAI already shows the benefit for learning and replicating patterns in content and text, it will evolve to learn cyberthreat patterns or predict network vulnerabilities. The long-term benefits will be an even more proactive approach to network security.

GenAI is already seen to play a significant role in improving customer experience by helping businesses access, consume, and analyze information which will impact the speed and quality of customer-specific decision-making. It can also improve marketing use cases, enabling brands to accelerate the delivery of personalized content to their target audience. As GenAI accelerates businesses processes, it also increases the importance of keeping critical data in motion. As such, speed and agility in this case must be aligned with connectivity demands.

Meeting customer and business demands must be aligned with enterprise network capacity, management, planning, and automation requirements. Here, the enterprise can benefit from GenAI algorithms that leverage a wide source of business data to analyze network operations and limitations, analyze peak traffic pattern times and sources, and help reduce network latency at peak times.

Last, GenAI will bring greater automation and personalization of key customer engagement functions. Early stage AI functions are already being used in unified communications and contact-center applications to enable greater use of knowledge management and automated conversation capture in order to help accelerate decisions and time to resolution.

## **Q. How should enterprises be rethinking connectivity transformation timelines based on the impact of GenAI?**

To date, enterprise exploration, and the eventual expenditure of GenAI on connectivity programs, is at a very early stage. IDC predicts that the starting point for the technology at the network/connectivity levels will be focused on expanding capabilities of existing network data-intensive, AI/ML-related functions. Successful outcomes with GenAI in areas like customer experience and product development will be the catalyst for further expansion of generative AI across the enterprise and should be under consideration today. However, we expect the road map and timelines for connectivity-related projects to be somewhat longer, complex, and likely tactical in nature for the foreseeable future.

For large enterprises, the ability to leverage autonomous network-type functions in which AI or ML models are already being used for network management and optimization will help increase agility. We also expect it to be used by network managers and IT leaders to gain greater insights into network traffic and aid in long-term network security, capacity planning, and performance.

## **Q. What strategies would you recommend to optimize IT infrastructure and resources to support the full potential of GenAI?**

First and foremost, businesses must take a holistic look across their data layer and infrastructure layer, review their current plan for on-premises, cloud, and edge investments and, of course, the orchestration needs across them. This should then provide a foundational framework and plan for the next steps as GenAI becomes more pervasive across the

business. The successful integration of GenAI will require careful consideration of security and privacy as well as ongoing monitoring to ensure the technology delivers its intended benefits while minimizing risks.

Second, dedicated applications that benefit from GenAI must be aligned with an enterprise's edge computing strategy, thus requiring significant business case development, technology alignment, and outcome expectations.

Third, as businesses look to develop contextual experiences based on edge-enabled, real-time data intelligence, they should consider integration of GenAI as part of the workflow of edge computing use cases. GenAI will help enable a deeper analysis of customer experience and relate it to their personal motivations, outcomes, and whether it was delivered according to their expectations.

Last, work with strategic connectivity partners to help address the three GenAI-related areas mentioned previously, and if resources are sparse, consider a managed services agreement with strict SLAs. This reduces the stress on IT and networking teams and allows key resources to focus more on strategic business outcomes and less on tactical fixes or operations.

## About the Analyst



### ***Paul Hughes, Research Director, Future of Connectedness***

Paul Hughes is a Research Director leading IDC's Future of Connectedness Agenda program. He is also a key member of IDC's larger Worldwide Telecom Research team. In this role, Paul is responsible for research related to the future innovation and transformation of how data and connectivity impact people, things, applications, and processes used by enterprises and end users. Paul brings over 20 years of experience in telecommunications services, software, digital transformation research, product marketing, and strategy to IDC.

## MESSAGE FROM THE SPONSOR

**Comcast Business: Powering Possibilities**

Comcast Business is helping enterprises navigate their digital transformation journeys and prepare for what comes next. [Learn more today.](#)

 **IDC Custom Solutions****IDC Research, Inc.**

140 Kendrick Street

Building B

Needham, MA 02494

T 508.872.8200

F 508.935.4015

Twitter @IDC

idc-insights-community.com

www.idc.com

This publication was produced by IDC Custom Solutions. The opinion, analysis, and research results presented herein are drawn from more detailed research and analysis independently conducted and published by IDC, unless specific vendor sponsorship is noted. IDC Custom Solutions makes IDC content available in a wide range of formats for distribution by various companies. A license to distribute IDC content does not imply endorsement of or opinion about the licensee.

External Publication of IDC Information and Data — Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

Copyright 2024 IDC. Reproduction without written permission is completely forbidden.