IP private line + X helps CSPs to become digital network MSPs

Communication service providers (CSPs) embrace digital transformation and growth as digital network managed service providers (MSPs)

In the digital transformation era, enterprises, including SMEs and industry verticals, accelerate their efforts to optimize access to cloud-based digital applications and services as part of their cloudification journey. In a fully connected digital metaverse economy, future enterprises, SMEs, and the verticals industry all aim to deliver any digital product, anytime, and the way the customer wants it before customers know they need it.

Omdia forecasts that the global enterprise services market size will increase from $2.0tn in 2022 to $3.3tn by 2027 with a 10.2% CAGR from 2023–27 for all enterprise services, driven by emerging technologies, multi-cloud, security, and business process outsourcing (BPO).

The growth of the digital economy, with enterprises' strong wish to adopt hybrid or multi-cloud digital services, has a heightened appreciation for the cloud that drives capacity and performance. The conceptual merging of campus LAN with WAN makes the campus network wireless and increases WAN traffic. However, the public internet with traditional MPLS infrastructure will not be capable of meeting enterprise stringent data privacy requirements, security compliance, and guaranteed network performance assurances. Therefore, service providers must provide an SRv6-enabled intelligent IP bearer network with dedicated slicing to ensure enterprise and vertical industry one-hop connection to multiple clouds and data centers. It also ensures that service providers run their numerous business applications on one network smoothly.

Considering these business requirements and the trending of the enterprise and verticals industry digitalization, it is now time for CSPs (as long-term strategic "connectivity" providers of enterprises) to step forward and help enterprises (SMEs or SMBs) and verticals in orchestrating their dreams of digital transformation. This is especially necessary for the SME sector, which lacks skilled IT network staffing and capital resources for their business network connectivity and value-added service maintenance.

B2B has become a new revenue growth engine. It has become service providers' new spin off business bet that guarantees an incremental revenue opportunity for them in the digital era. Digital services become a unique revenue growth point with increasing interest and investments from enterprises and verticals in cloud and network upgrades. Catalyzing IP access, aggregation, and core network bandwidth requirements will play a critical role.

To grab this proposal of digital service growth point of the B2B landscape, CSPs will have to re-brand their image from traditional simple connectivity provider partners to digital service providers (DSPs) or digital network MSPs with differentiated value-added offerings to win multi-trillion B2B contracts. CSPs integrated intelligent IP bearer network infrastructure with predictive network management. AIOps, as service cloud predictive management, will provide managed services to enterprise customers and significantly reduce onsite service issues.

The digital suite of integrated IP bearer's private line + X boosts CSPs' business revenue growth

Enterprises, especially SMEs, do not have the capabilities and capex to hire in-house skilled IT staff for E2E management of their networks. Employing third-party providers, including internet cloud providers or IT-managed service providers with high costs of managing their digital and security services, makes their business unsustainable.

CSPs, now being digital service providers or DSPs, must demonstrate their relevance to large SMEs by leveraging their skilled talent, tools, and assurance of automated processes for cloud-centric networking services. Otherwise, they risk losing to IT service or managed service providers.

CSPs' ability to win multi-million business contracts depends on their ability to capitalize and use their underlay next-generation integrated IP bearer infrastructure and bundle it with a digital suite of consulting and managed value-added services.

The bundling of premium IP private line + X (where X can either be managed premium SLAs, managed LAN or WAN, SD-WAN multi-cloud interconnection, or security) with network-as-a-service (NaaS), AIOps-enabled, customer-centric delivery will stimulate new business growth.

- **Private line + premium SLAs:** The digital suite of IP private line + premium SLAs ensures the holistic upgrading of traditional IP MPLS private lines to E2E SRv6 enablement and fully automated tenant-level slicing. These ensure a higher service quality and serve as the backbone of interconnection requirements.

- **Private line + managed LAN or WAN:** The digital suite of IP private line + managed LAN ensures one-click efficient IP network and cloud synergy; management; and integration of enterprises and verticals' LAN, Wi-Fi, and industrial IoT resiliencies.

- **Private line + enhanced SD-WAN:** The scope of traditional IP MPLS private lines will be upgraded and extended with the holistic bundling of SD-WAN with private lines. The premium IP private line +

SD-WAN digital suite ensures faster, flexible, and one-click cloud access connections to enterprises and verticals for existing and new branch locations, boosting new B2B business growth.

- **Private line + managed security:** The digital suite of IP private line + managed security offers secure AI-based proactive threat detections and immediate response capabilities that safeguard enterprises, verticals, and emerging business services and operations.

Unleashing the Net5.5G framework to achieve IP bearer's private line + X

Diversified network emerging services from 2025 onward requires robust, next-gen IP bearer network infrastructure. Net5.5G innovation capabilities span from the Internet of Everything (IoE) to the intelligent IoE, which proposes several innovations around the IPv6 standards that extend internet network infrastructure from "consumer internet" to "all-industry and all-factor industrial internet".

The Net5.5G vision is ubiquitous, seamless, and intelligent IP connectivity (IP on everything); intelligent management allows emerging applications to use computing power from the multi-cloud, at lower costs with greater agility and flexibility.

The chief characteristics of Net5.5G technology are capabilities supporting diverse application scenarios, and a holistic upgrade of integrated IP bearer network infrastructure (access to the backbone) is necessary for realizing the digital suite of private line + X portfolio.

- Converged edge for unified RAN access with 50GE site and 100GE uplink

- Full-service converged metro with 100GE downlink and 400GE uplink

- Full-service converged core for 800GE interconnections.

- E2E SRv6, telemetry, tenant-level slicing, and the entire network automation lifecycle

- Modernization of generalized computing power to AI-enabled computing levels

Net5.5G evolves and focuses on six fundamental network capabilities and architectural innovations

The six fundamental network capabilities and architectural innovations are as follows:

- Green ultra-broadband (GUB) networks

- Multidomain network AI (MNA) – Intelligent network

- Ubiquitous trusted networks (UTN) IPv6 enhanced E2E SRv6 networking capabilities

- High resilience and low-latency (HRL) deterministic networking

- Heterogeneous massive IoT (HMI) to unleash the potential of the industrial internet

Green ultra-broadband (GUB) networks: Bandwidth is an essential feature of the future network and will be continuously upgraded in the next decade. Net5.5G evolution suggests continuous access, aggregation, and backbone bandwidth improvements. Some highlighted updates for achieving GUB networks include the following:

- Campus wireless network upgrades on peak rates from Wi-Fi 6 (10Gbps) to Wi-Fi 7 (30Gbps)

- Wired site access upgrades and supporting 10Gbps to 50Gbps to meet the following:

    – The interface rate of the data center network ranging from 400GE to 800GE

    – WAN provides flexible ultra-broadband and high throughput for cross-region computing collaborations, such as east-west traffic and computing; the network must be capable of matching enormous computing capabilities with the computing capabilities of a single data center, increased from E to 100E

    – The interface rate of the backbone transmission network ranging from 400GE to 800GE to meet future diversified traffic requirements

Multidomain network AI (MNA) – Intelligent network: Net5.5G helps autonomous driving networks (ADNs) to combine connections and intelligence to develop self-organizing, self-healing, self-fulfilling, and fully autonomous networks. These networks deliver zero-wait, zero-touch, and zero-trouble experiences to vertical industries and enterprises and enhance enterprise digitalization. Net5.5G targets upgrading L3 (conditional autonomous) to L4 (highly autonomous) networks or, in later stages, to L5 for fully intelligent ADNs.

Ubiquitous trusted networks (UTN): Network threats are increasingly complex and challenging to manage because of exponential developments in cloud computing and enterprise digitalization. Net5.5G suggests an intelligent and proactive AI-enabled ubiquitous network security system that protects cloud networks, edge, and device integrations.

IPv6 enhanced E2E SRv6 networking capabilities: Net5.5G, leveraging on IPv6-based IETF protocols innovations, aims to fine tune IPv6 functionalities defined in IETF and helps build an enhanced, large-scale IPv6 network. IPv6 enhanced with SRv6 (segment routing) protocol ensures simplified and unified E2E IP addressing and tunnelling signaling capabilities; reaches data centers, end systems, and campus networks; and reduces cross-domain conversions. Therefore, Net5.5G ensures increased reachability, simplified networking, and network programmability, marking a landmark evolution in IP network history.

High resilience and low-latency (HRL) deterministic networking: Net5.5G ensures a deterministic and intelligent IP networking experience with improvements in low latency for IIoT for mission-critical applications of 5.5G data center networks (DCNs). It also helps to ensure the following:

- Reduced static delay in DCNs from 1µs to 200ns

- Highly scalable and technology-driven advanced Dragonfly topology, enabling DCNs at a scale of million servers

- Network jitter improvement from ms to µs, with reliability reaching a 99.9999% industrial demand

Heterogeneous massive IoT (HMI) to unleash the potential of the industrial internet: Heterogeneous IoT is an emerging field that transforms future living in smart homes, smart cities, the industrial internet, smart agriculture, smart hospitals, and intelligent transportation. With the network's scale expanding, its connection capability will be enhanced continuously, and the number of devices on it will increase, requiring fast processing at the network edge. Deploying Wi-Fi 7 with one converged, IPv6-enabled bearer network (using network slicing to divide the physical network into many logical networks) ensures service quality of experience (QoE) It prevents slice congestion while ensuring high bandwidth and reliability for heterogeneous IIoT scenarios. Furthermore, one-click operations, predictive analysis, and fault diagnosis enhance operational efficiencies.

Conclusion

In a nutshell, enterprise digital transformation is a real blessing for telco businesses and a good opportunity with loads of incremental revenue chances to boost service providers' declining revenue and ARPU. NaaS empowers their enterprise and vertical customers to deliver at a faster time to market and provide new emerging business and mission-critical services. Intelligent IP bearer networks in intelligent cloud-network synergy will link the value chain in deepening enterprise and vertical industries' digital transformation and multi-cloud adoption.

A thriving ecosystem is required to achieve Net5.5G, defined simply as "IP on everything." CSPs' holistic upgrade of their traditional IP MPLS VPN private lines offerings to the digital suite of the private line + X portfolio will ultimately boost their B2B revenue growth and transform them into digital network MSPs.

Appendix

Further reading

Read the following topic on details of NE5.5G.

The research on the trends of Data Communication Network for 2030 :: Omdia (informa.com)

Author(s)

Sameer Malik, Senior Principal Analyst, Service Providers Transport Network Switching and Routing

askananalyst@omdia.com

Omdia Commissioned Research

This piece of research was commissioned by Huawei.

Citation policy

Request external citation and usage of Omdia research and data via citations@omdia.com.

Omdia consulting

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 you. For more information about Omdia's consulting capabilities, please contact us directly at consulting@omdia.com.

Copyright notice and disclaimer

CONTACT US

omdia.com

customersuccess@omdia.com