

Infrastructure agility enabled by cloud-based networking



Service enhancement, elastic scale and new revenue opportunities

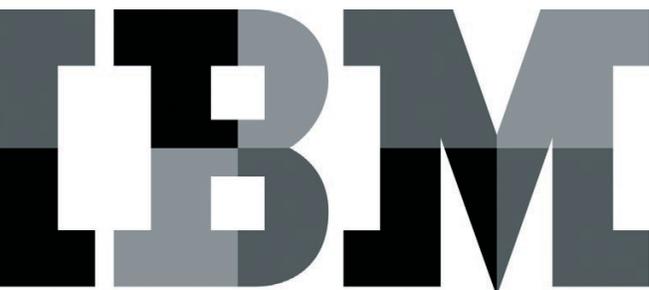
Introduction: Challenges and opportunities

Long-term, dramatic telecommunications shifts such as generally declining revenues, market erosion from disruptive players, expanding data volume issues and mobile workload volatility drive a need for communication service providers (CSPs) to meet disruptive trends and challenges with transformative strategies.

Revenue has decoupled from increasing traffic and rising cost. Massive network data volumes challenge today's network. Yet the data creates new opportunities to monetize the network with innovative technology. The result is that network costs must be radically reallocated, operational efficiency must be increased, and new sources of revenue must be enabled through innovation.

Cloud functions are moving into the network and networking is moving into the cloud, creating a convergence of cloud and network that opens the opportunity to shift costs for CSPs in both CAPEX and OPEX. Today's network infrastructures were not built to allow the innovation agility required for growth and next-generation applications. Infrastructure agility made possible through secure cloud-based networking allows new services to be brought online faster. That enables cost reductions in both CAPEX and OPEX.

Cloud-based networking allows the speed, performance, innovation, and capabilities of cloud computing to be applied to—and transform—networks by speeding service fulfillment. Transformation to cloud-based networking provides greater efficiencies and revenue opportunities, enabling CSPs to meet changing market demands and capitalize on expansion opportunities, that is, to gain infrastructure agility.



What is cloud-based networking?

Cloud-based networking brings software-defined cloud infrastructure to the world of function-specific or single-function hardware and appliances. It has network functions provisioned as virtual appliances linked together to provide network services. Cloud-based networking is based on software that limits capital investment in hardware. This cost advantage is achieved by combining general processing hardware with purpose-built hardware for performance when needed.

What it does

Cloud-based networking unlocks revenue opportunity by transforming networking business through infrastructure agility. Cloud-based networking offers simpler administration, faster deployment, more efficient pricing models—particularly as the hardware can be common across IT and network—and extreme, elastic scalability. As cloud technology evolves it carries forward legacy investments and extends the usefulness and capability of existing infrastructure.

Cloud-based networking solutions enable new capabilities and capacity through the network. Service enhancement, revenue generating activities and customer programs or improvements—which could have created weeks of delays due to network and equipment availability to scale to traffic increases—can now be deployed and managed in a matter of days, enabled by automated, scalable cloud-based networking solutions using common IT resources.

- The network engineering team uses pre-defined and tested patterns of software components to deploy a scalable cloud environment for new programs or enhancements.
- The network engineering team tests desired functions in a virtual lab, then rapidly moves to a production environment.
- Solutions are scaled through virtual orchestration functions. This allows for more capacity, more optimization and reconfiguration of the network based on network needs during the day as functions scale in-out and up-down.

The result is a transformed network with the agility to deploy quickly, enable new average revenue per user and scale at a much lower cost than in the past. For more about monetizing network capacity visit: ibm.com/industries/communications/.

Cloud-based networking summary

IBM cloud-based networking technology allows transformation of network infrastructure, business and operations. The benefits of cloud-based networking enable CSPs to:

- Increase infrastructure agility
 - Radically shift CAPEX and OPEX costs
 - Maximize network capacity
 - Monetize a new generation of network-based services
 - Deliver consistent high-quality customer experiences
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IBM cloud-based networking focus

IBM cloud-based networking focuses on enabling open, multivendor, cloud-based networking for the service provider by using resources that are common across IT and network, and which can be applied to either one as required. IBM enables the transformation, the technical cloud environment, the delivery—and the security—required for cloud based networking, designed for IT and communication technology, and provides integrated offerings across multiple delivery models.

Employing software defined networking (SDN) to connect virtualized functions and manage them through an analytics-driven, real-time operations support system (OSS), IBM cloud-based networking supports the network as a service (NaaS) model. As a leading cloud provider with an open ecosystem of network function IBM Business Partners, IBM is investing in the future needs of NaaS in the cloud by building smarter networks to lay the foundation for next generation cloud-based networking. IBM cloud-based networking also leverages the

deep IBM portfolio of security capabilities for cloud computing to provide needed identity, protection and insight for managing a secure cloud environment.

IBM also offers a suite of integrated offerings to help CSPs realize the benefits of cloud-based networking. As cloud and networking converge, premier orchestration and management capabilities from IBM enable flexible, innovative delivery models across network and IT requirements. IBM also brings a wealth of services for deployment, integration into business and technology, and ongoing management for cloud, networking, and mobility.

With a broad portfolio of analytics and automation, IBM enables analytics-driven management and orchestration, network monetization, and real-time customer care. Examples in the IBM portfolio of cloud-based networking solutions for CSPs include:

- IBM Cloud Orchestrator, which provides cloud management for IT services allowing accelerated service delivery. Based on open standards, IBM Cloud Orchestrator can manage public, private and hybrid clouds through a simple-to-use interface.
- IBM Tivoli® Netcool® software for service providers, which is designed for end-to-end service management, problem isolation, and automation to help service providers operate more effectively for greater service assurance.
- IBM Watson™ Foundations, which is a comprehensive set of analytics software that helps bring together silos of insight whether at rest or in real time, structured or unstructured. It provides visualization capability for faster reaction and proactive network operation for communication service providers.
- IBM software defined networking for virtual environments (SDN-VE), a version of the OpenDaylight project of which IBM is a founding member. SDN-VE creates a more responsive network infrastructure by creating virtual networks for dynamic workloads.

As cloud-based networking is much more than a technology shift, and represents a business operating transformation, IBM helps providers migrate their technology and supports the transformation with multiple business models. IBM offers business transformation services through IBM Global Business Services (GBS) Strategy and Change for Business Transformation, as well as transformation of the OSS to a real-time.

IBM Global Technology Services (GTS) helps with technology transformation and integration of multi-vendor cloud based network functions. GTS also provides managed infrastructure as a service (IaaS) for private and hybrid cloud, for monitoring, support and management of cloud environments and IT infrastructure services.

IBM Security Solutions provide dynamic cloud security for a secure cloud-based network. One example is the IBM QRadar® Security Intelligence Platform, for advanced, integrated security information about threats, anomalies, incident forensics, configuration and vulnerability management. Another is the IBM Security Identity Manager, which allows the creation of policy-based user provisioning and de-provisioning access. No one vendor has an end-to-end capability across all software enabled network functions. However, with the open IBM Business Partner ecosystem—and a tailored, extensive cloud portfolio—IBM helps clients begin the transformation to cloud-based networking.

Why IBM?

IBM is uniquely positioned to help clients transform to cloud-based networking. IBM offers deep core technical competencies to enable cloud computing in private, public or hybrid clouds for carriers and enterprises. IBM has worked with over 4,000 clients through open cloud solution delivery, providing a strong understanding of the cloud environment. IBM has significant resources, including our Business Partner relationships, to deliver comprehensive cloud-based networking solutions for CSPs.

For more information

To learn more about IBM cloud-based networking solutions for the telecommunications industry, please contact your IBM representative or IBM Business Partner, or visit the following website: ibm.com/industries/communications/

Additionally, IBM Global Financing can help you acquire the IT solutions that your business needs in the most cost-effective and strategic way possible. We'll partner with credit-qualified clients to customize an IT financing solution to suit your business goals, enable effective cash management, and improve your total cost of ownership. IBM Global Financing is your smartest choice to fund critical IT investments and propel your business forward. For more information, visit: ibm.com/financing

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