



Secure Real-Time
Communications



Accelerate Deployment of Secure Cloud Services with a Next Generation of Intelligent Edge Capabilities

Distributed Intelligence to the Enterprise Edge helps Deliver Secure, Cost Effective and Reliable Cloud Communications and Connectivity Services with Visibility and Assurance

Executive Overview

Businesses are migrating applications and services to the cloud to improve agility and simplify operations. Communication Service Providers (CSPs) need new cloud-centric offers to remain relevant to their customers and stay in the value chain. CSPs are well positioned to compete and win; surveys show businesses trust service providers in terms of reliability and security. And CSPs are uniquely capable of delivering better services because they own and manage their own infrastructure from the core and cloud to the enterprise edge. Ribbon believes CSPs can exploit their inherent advantages to deliver demonstrably more secure and reliable UCaaS, Microsoft Teams collaboration, SIP trunking, contact center and data protection services today, and to support an entirely new generation of differentiated cloud-centric services of tomorrow that require enhanced analytics, business continuity and LTE failover options. They can also provide quality of service monitoring and reporting to deliver an end-to-end experience for their customers.

This paper explores how CSPs can move up the value chain and lay the foundation for a new wave of virtualized services and differentiated offerings by distributing intelligence to the edge of the enterprise network. Next-generation intelligent edge platforms can help CSPs deliver, protect, manage and proactively monitor a wide range of cloud-based communications, collaboration and security services for enterprises and SMBs. These extensible edge platforms let CSPs deliver new capabilities and services, quickly and cost-effectively, over the network, without truck rolls.



A next-generation intelligent edge solution can help CSPs:

- **Increase revenues and market share** by simplifying and accelerating the deployment of UCaaS, SIP trunks (including edge services for Microsoft Teams Direct Routing), SBC as a Service (SBCaaS) and an entirely new generation of cloud and virtualized services.
- **Contain costs and improve margins** with centralized operations, administration and management that extends visibility and control to the customer edge, reducing trouble tickets, time-to-resolution and site visits.
- **Increase customer satisfaction and retention** by protecting against fraud and abuse while proactively managing service quality.
- **Accelerate time-to-market, increase service velocity and free up resources** with remotely hosted and managed services options, zero-touch CPE provisioning and the ability to deliver new virtualized network functions to the enterprise edge.

Yes, CSPs can Monetize Digital Transformation

Businesses of every size and industry are transitioning applications and services to the cloud to optimize business processes and modernize customer interactions. Across the world, 85% of organizations are undertaking digital transformation initiatives to improve customer experiences and increase efficiencies.¹

Cloud services provide immediate access to new technology, eliminate infrastructure cost and complexity, and free up IT staff to focus on core business tasks. At the same time, digital technology brings new risks; cyberattacks and data breaches can tarnish a company's reputation and lead to costly fines and legal settlements. Industry analysts say the average total cost of a data breach is now \$3.9 million.²

¹ 2019 Connectivity Benchmark Report, MuleSoft

² 2019 Cost of a Data Breach Report, Ponemon Institute

From enterprises to SMBs, business and technology leaders understand they have no choice; they must adopt cloud technology to stay competitive. But they also understand the risks that come with innovation and want technology delivered by providers they know and trust.

Surveys show CSPs are consistently viewed as more trustworthy than many other technology providers. However, they don't always get the same high marks for service agility or innovation. To make the most of digital transformation, CSPs need to play up their strengths (security, reliability, availability) and address their perceived weaknesses (creativity, time-to-market).

To thrive in the cloud-first era CSPs must:

- Fully exploit their end-to-end ownership of connectivity and communications apps, and their well-established customer relationships and trust.
- Roll out cloud communication services and cloud connectivity services (SIP trunks, UCaaS, contact center, SD-WAN, web collaboration, etc.) quickly and cost-effectively.
- Turn up customers, provision services and manage infrastructure centrally—without on-site assistance—to accelerate service velocity, manage costs and stay competitive.
- Be ready for what's next and what's next after that. That means SIP trunks for Microsoft Teams, Session Border Controller as a Service (SBCaaS) offerings and a new generation of enterprise apps that haven't been conceived yet.

Forward-looking CSPs are deploying next-generation border devices that distribute intelligence to the edge of the enterprise network and lay the foundation for a wide range of virtualized services and differentiated offerings. Intelligent edge devices give CSPs visibility and control over the customer network, enabling a new generation of analytics-powered services that improve cybersecurity, application performance and network resiliency. By treating the edge security device as an extensible platform for innovation, rather than a simple demarcation element, CSPs can establish a foothold for future services and recurring revenue streams, while simplifying remote operations, administration and management.

Why an Intelligent Edge Matters for Digital Transformation

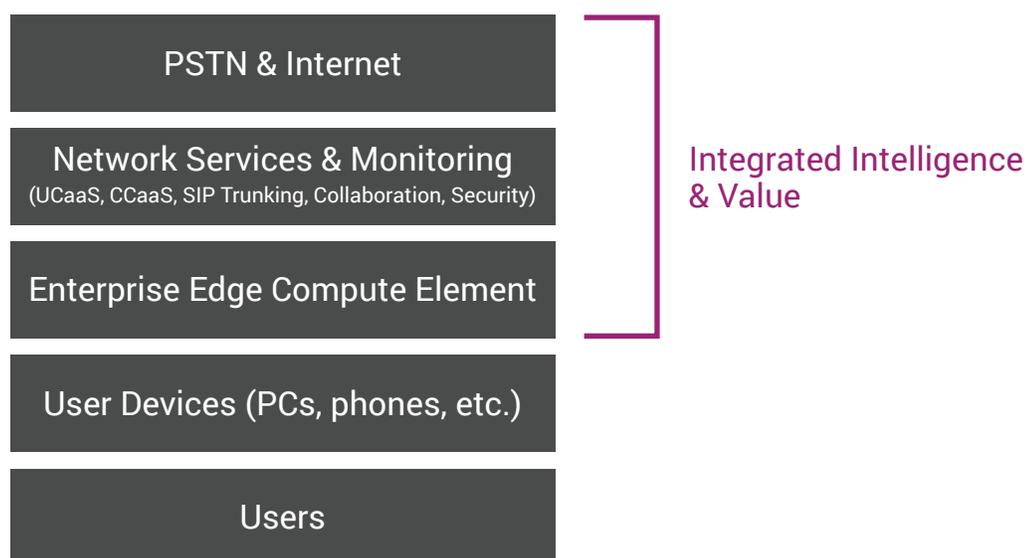
CSPs have an enormous advantage over other application providers; they own and manage the underlying infrastructure over which applications are delivered. Most cloud app providers (even the behemoths like Google or Amazon) rely on the public internet and have no way to manage traffic or influence service quality or network availability. Because CSPs operate the underlying network, they can tightly control network access, intelligently manage and steer traffic, provide service quality assurances and more. As enterprises move EVERYTHING to the cloud, these capabilities become considerably more important. More importantly, they represent major potential revenue opportunities for savvy CSPs.

The challenge for CSPs is finding innovative ways to fully leverage the value of their own networks. The solution lies at the edge of the enterprise network. For more than a decade, CSPs have been deploying simple edge devices to terminate SIP trunks and UCaaS offerings. These single-purpose edge appliances are inexpensive and efficient, but they provide limited functionality and offer little in the way of remote monitoring and management. In a UCaaS industry survey, service providers listed lack of customer network visibility, insufficient remote troubleshooting and too many truck rolls as their biggest technical challenges.³

³ Gatepoint Research Service Provider Survey, January 2018

Ribbon believes CSPs need a new generation of intelligent edge solutions that are less of an appliance and more of a local edge compute platform. By distributing intelligence to the border of the enterprise network—introducing rich instrumentation, executing call routing functions, implementing policy decisions at the edge—CSPs can dramatically improve visibility and control over the customer network. They can also deliver more compelling business continuity services. When combined with centralized analytics and service orchestration functionality in the core/cloud these new edge platforms lay the foundation for a wide array of value-added services that deliver unmatched performance, scalability and resiliency.

Rather than acting as a dumb demarcation device, the next-generation intelligent edge solution serves as a Multi-Services Business Gateway (MSBG) that is an extensible platform for services innovation; CSPs can introduce new services in software, quickly and easily, without on-site intervention. CSPs can use the intelligent edge device as a trojan horse, delivering traditional SIP trunking and UCaaS services today to establish a presence, and selling premium add-on services over time to improve customer retention and grow revenues.



Use a Next-Generation Intelligent Edge to Grow Margins and Revenues... Now

Next-generation intelligent edge solutions deliver immediate business benefits, helping CSPs breathe new life into existing offerings. They help CSPs increase short-term margins by improving visibility and control over existing services, by streamlining customer installations, and by reducing ongoing operations expenses. And they help CSPs increase short-term revenues by enabling new options like LTE failover.

Intelligent edge devices improve existing services:

- **SIP Trunking** – offer service-assured SIP trunking services that include proactive monitoring. Easily create a compelling and differentiated offer for businesses rolling out Microsoft Teams or other cloud-based communications and collaboration platforms.
- **SD-WAN** – offer software-defined WAN services that prioritize application traffic, increase resiliency and improve end-user experiences.
- **Wireless Business Continuity** – sell FXO/PRI failover services (redundant SBC uplinks) or LTE back-up to customers seeking high availability/survivability.
- **Routing and Firewall** – sell managed router and firewall services as part of high-speed internet, data networking or cloud connectivity offerings.
- **SBCaaS** – offer customers cloud-based enterprise SBCs as part of virtualized network service offerings for ultimate service velocity and agility.
- **UCaaS** – Provide a service-assured unified communications and collaboration solution—a premium solution that differentiates from lowest-cost providers.
- **CCaaS** – Provide a service-assured cloud contact center solution—a premium solution that differentiates from lowest-cost providers.

Next-generation intelligent edge platforms also make it easy to deliver new services, in software. No CPE. No truck rolls.

Intelligent edge devices enable future services:

- **Next-Generation Firewall** – offer deep-packet inspection firewall services that protect customer networks against a wider array of threats.
- **Proactive CyberSecurity** – use artificial intelligence and machine learning to proactively detect and mitigate sophisticated denial of service attacks and data breaches.
- **Network Optimization** – use advanced analytics to intelligently route calls to improve service quality, balance performance or contain costs.

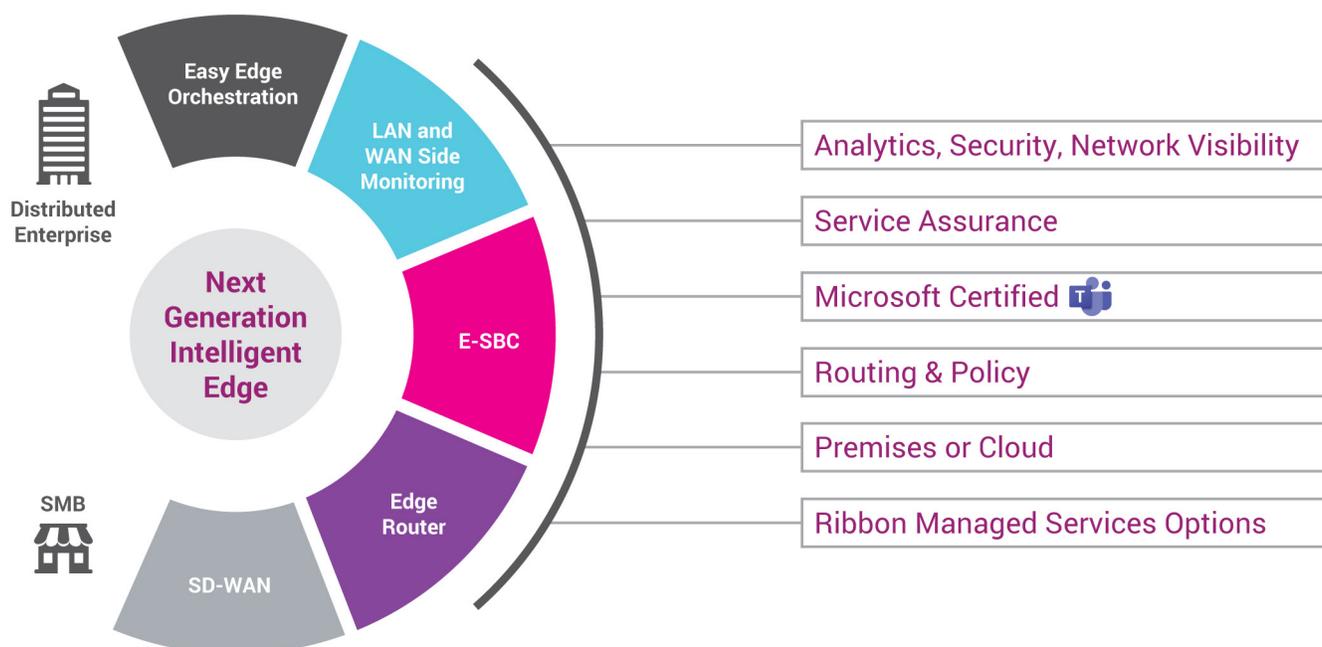
Why Ribbon's Next Generation Intelligent Edge

Ribbon's next-generation intelligent edge solution portfolio is specifically designed to enable digital transformation with secure and reliable delivery of IP voice, video and data services for enterprises and SMBs. The comprehensive portfolio of intelligent edge solutions supports the concept of a Multi-Services Business Gateway (MSBG) with an extensive set of features (e.g. SBC, edge router, LTE back-up, SD-WAN functionality) and satisfies a wide range of performance and capacity requirements.

The solution portfolio distributes intelligence to the edge of the enterprise network, improving visibility and control over customer environments, helping CSPs deliver, protect and manage a variety of cloud-centric communications, collaboration and security services. When combined with Ribbon analytics and service orchestration solutions in the core/cloud, Ribbon next-gen edge platforms enable a wide range of intelligent, value-added services that improve data security, application performance and network reliability. The comprehensive Ribbon solution portfolio helps CSPs take full advantage of their end-to-end network and fend off competitive threats from application and OTT providers.

Ribbon's edge solutions are designed using open standards, and tested with major brands of application servers, routers and PBXs. That interoperability is proven every day with hundreds of thousands of devices, deployed by major telecom providers, operating in heterogenous environments. In addition, Ribbon offers the industry's largest collection of Microsoft Teams-certified SBCs, giving CSPs instant access to the fastest-growing business app in the history of Microsoft.

CSPs can deploy Ribbon intelligent edge solutions as CPE or in the cloud to support diverse service delivery models and business strategies. And Ribbon offers a variety of managed-service options to help providers accelerate time-to-market, simplify operations and free up internal resources.



Ribbon's next-generation intelligent edge products are an integral component of Ribbon's field-proven, end-to-end service provider solution architecture. A global leader in secure real-time communications solutions, Ribbon has decades of experience supporting some of the world's largest service providers in over 80 countries. The tightly integrated family of edge, core and cloud communications products—with unified operations, administration and maintenance—helps service providers streamline service delivery, contain operations expenses and increase customer satisfaction.

Key features and capabilities of the Ribbon product family include:

- **Advanced data analytics** – Ribbon's innovative data analytics solutions transform raw data into meaningful insights, helping service providers analyze network trends and defend against toll fraud, robocalling and denial of service attacks.⁴
- **Zero-touch setup** – service providers can ship customers pre-provisioned edge devices for plug-and-play installation, avoiding truck roll delays and expenses.
- **Centralized remote device and network management** – CSP administrators can monitor, configure and control edge devices; manage QoS parameters and view call quality metrics (MOS scores); and troubleshoot problems from a central network operations center, reducing OPEX and improving customer service.

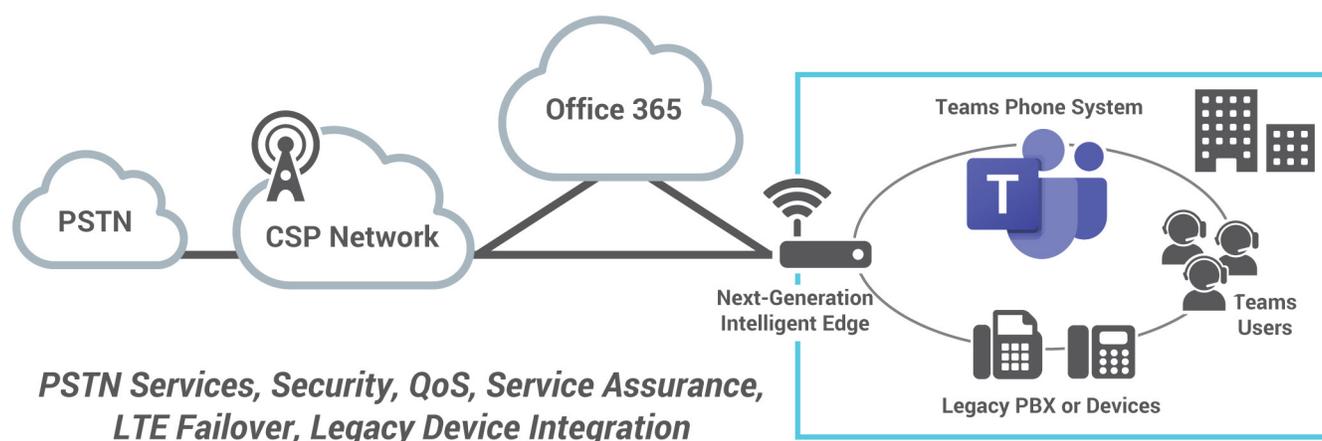
⁴ In a 2019 Ribbon survey of 4,800 technology decisionmakers, 56% of respondents said their companies have been victims of VoIP attacks, robocalling or toll fraud; and 65% of respondents believe the UC provider should protect them at no additional cost.

- **Rich, embedded edge intelligence** – Ribbon edge devices feature intelligent instrumentation that automatically detects and resolves issues (i.e. proactively redirects IP voice traffic to a secondary WAN uplink based on service quality metrics) to enforce SLAs and improve end-user experiences.
- **LTE back-up and survivability** – Ribbon edge devices support optional integral LTE modems for automatic wireless failover, as well as PBX survivability functionality for business continuity.
- **Containerized and cloud-native design** – architected for NFV and cloud deployment, Ribbon offers a lightweight, software-based intelligent edge solution that runs in a containerized environment for ultimate efficiency, simplicity and portability.
- **Policy and routing** – Ribbon’s centralized session management platform lets service providers intelligently manage communications sessions (e.g. routing paths, priority, admission controls) based on administratively defined policies to optimize performance, availability and service quality.
- **Integration with Ribbon UCaaS Platform** – Kandy, Ribbon’s carrier-grade UCaaS platform, includes a unified portal that lets CSPs provision and manage end-to-end services from a single pane-of-glass.

Adding Value to Microsoft Teams Phone System Using the Next Generation Intelligent Edge

Using Microsoft Teams as an enterprise phone system is a hot topic with CIOs and small business owners. Over 500,000 organizations and 91% of the Fortune 100 use Microsoft Teams.⁵ And 20 million people now use Teams every day—more than Slack.

Service providers can cash in on Teams’ popularity by selling SIP trunking services for Microsoft Teams Phone System. Microsoft’s Direct Routing option lets Teams customers connect to the PSTN using a qualified SBC and a SIP trunking service. Many CSPs will deploy Ribbon SBCs in their own network for an all-cloud-based solution (SBCaaS). Ribbon’s Next-Generation Intelligent Edge adds another layer of sophistication to a Microsoft Teams Direct Routing solution by offering local analog ports, LTE failover, business continuity, analytics and more.



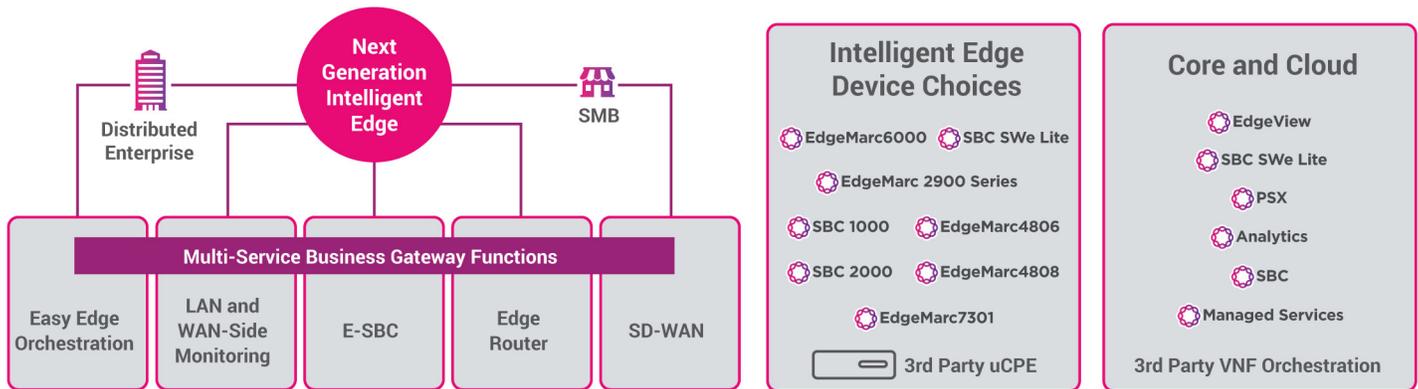
Microsoft Teams Direct Routing with Next-Generation Intelligent Edge

⁵ Source: Microsoft

Part of an End-to-End Ribbon Solution

Ribbon’s end-to-end solution portfolio let service providers deliver a wide variety of value-added services—quickly and cost-effectively. Ribbon’s comprehensive service provider product family includes:

- **Ribbon Analytics** – a suite of advanced analytics applications that leverage machine learning and artificial intelligence to help service providers improve security, fight fraud and abuse, and streamline operations.
- **Intelligent Edge Devices** – appliance-based and virtualized enterprise session border controllers that serve as the secure demarcation point for SMB and enterprise services.
- **EdgeView Service Control Center** – a centralized management platform for configuring, provisioning and controlling intelligent edge devices, monitoring network performance, and diagnosing and resolving problems.
- **Service Provider SBCs** – carrier-grade and virtualized session border controllers that protect the service provider network.



Ribbon’s End-to-End Solutions Architecture

Service provider network elements (PSX, EdgeView, Analytics, service provider SBCs) can be deployed in the core, in the cloud, or as a Ribbon-managed service to satisfy various business requirements and service delivery models. Ribbon’s product family is field-proven to interoperate seamlessly with a wide variety of cloud-based communications and collaboration platforms and is ideal for service providers reselling or private-labelling cloud solutions.

Summary

Enterprises and SMBs are transitioning applications to the cloud to improve business performance. CSPs can tap into the massive cloud market and stave off competitive threats by offering differentiated services that fully exploit the inherent advantages of owning and operating an end-to-end network.

Ribbon’s next-generation edge solutions distribute intelligence to the edge of the enterprise network, extending visibility and control, laying the foundation for a variety of advanced services. These extensible edge platforms provide the Multi-Service Business Gateway (MSBG) capabilities that help CSPs improve existing services and accelerate the introduction of new services.

Ribbon's end-to-end solution family helps CSPs:

- **Expand revenues** by offering business customers a wide variety of differentiated voice, data and cloud collaboration services.
- **Improve margins and accelerate turn-ups** by avoiding truck rolls, centralizing management, and leveraging virtualized edge devices and network elements.
- **Improve customer satisfaction and reduce churn** by maximizing uptime, enforcing SLAs, and preventing fraud and abuse.
- **Accelerate time-to-value** by leveraging Ribbon managed services options or by re-selling cloud-based communications or collaboration solutions.
- **Outpace the competition** by introducing future services, quickly and cost-effectively, in software, using an extensible edge platform.

To learn how Ribbon's next-generation intelligent edge portfolio can help your company tap into the massive cloud market, contactus@rbbn.com or visit us at www.ribboncommunications.com.

About Ribbon Communications

Ribbon Communications Inc. (Nasdaq: RBBN) delivers market-leading software solutions that secure and power many of the world's leading service provider and enterprise communications environments. Built on world-class technology and intellectual property, the company's cloud-native solutions deliver intelligent and secure real-time communications solutions for the cloud, network and enterprise edge. Ribbon's Kandy Cloud real-time communications software platform delivers advanced and embedded CPaaS and UCaaS capabilities enabling service providers to rapidly create and deploy high-value communications services. To learn more, visit www.ribboncommunications.com.