Edge 8500

Intelligent Edge™ – Multi-Service Edge Router and SBC with Modular Gateway Choices

High quality, secure bandwidth is the lifeblood of business, especially as organizations move business and communications applications to the cloud. Collaboration, streaming video, data storage, and data back-up services all require greater bandwidth to operate effectively.

Service providers and business customers need an Intelligent Edge device that cost effectively delivers, manages, protects, and monitors high-capacity broadband connections.

Ribbon's Edge 8500 delivers superior value by offering a common platform that includes:

- A full-featured, multi-tenant, edge/provider-edge (PE) data router with up to 10 Gbps of throughput
- Market leading Session Border Controller (SBC SWe Edge) services to protect communications traffic
- Modular gateway choices for analog line and station ports, (FXO/FXS) and PRI (T1/E1)
- Option RedHat Operating System (OS) variant for Federal Information Processing Standard (FIPS) 140-3 compliance
- High Availability (HA) option for SBC services (Requires R25.1 software)
- Microsoft Teams Survivable Branch Appliance (SBA) integration and Zoom Phone Local Survivability (ZPLS) compliance

Too often organizations, especially multi-site organizations, are forced to choose between consumer-grade solutions that are not robust or pricier industrial-grade solutions Ribbon's Edge 8500 is different. It offers 2.5, 5, or 10 Gbps of routing throughput, with Session Border Control (SBC) options, including high availability options, and modular telecom gateway choices, all in one intelligent edge device. It leverages Ribbon's proven SBC SWe Edge software to assure communications security.

The Edge 8500 is also designed for what comes next. It includes VNF (Virtual Network Function) support to deliver uCPE-based services (centrally managed and strategically located at the edge of a customer's network) and an Application Services Module (ASM) to run additional services. (Note that the ASM module requires R25.1 or later software.). It's also avaialable with a RedHat OS for government or critical infrastructure provider that require or desire FIPS 140-3 compliance.

Key Capabilities

- Robust routing with data rates of up to 10 Gbps
- Multihoming with BGP for resilient/diverse links
- NAT support for multi-tenant use
- All physical interfaces (10 ports) can be provisioned as
- WAN or LAN (No fixed function for interfaces)
- SBC capacity of up to 960 concurrent calls

Certified for Popular Cloud Solutions

Key Connectivity Choices for Edge 8500	
Maximum Data Throughput	10Gb
Maximum Concurrent Calls	960
Maximum VLANs	100
SFP+ Ports 10Gb (requires SFP+ transceivers)	4
Ethernet Ports 10/100/1000	6
FXO/FXS/PRI Port Maximums	8/96/16
AC Power Options (hot swappable)	Single or Dual
DC Power Option (hot swappable)	Single or Dual

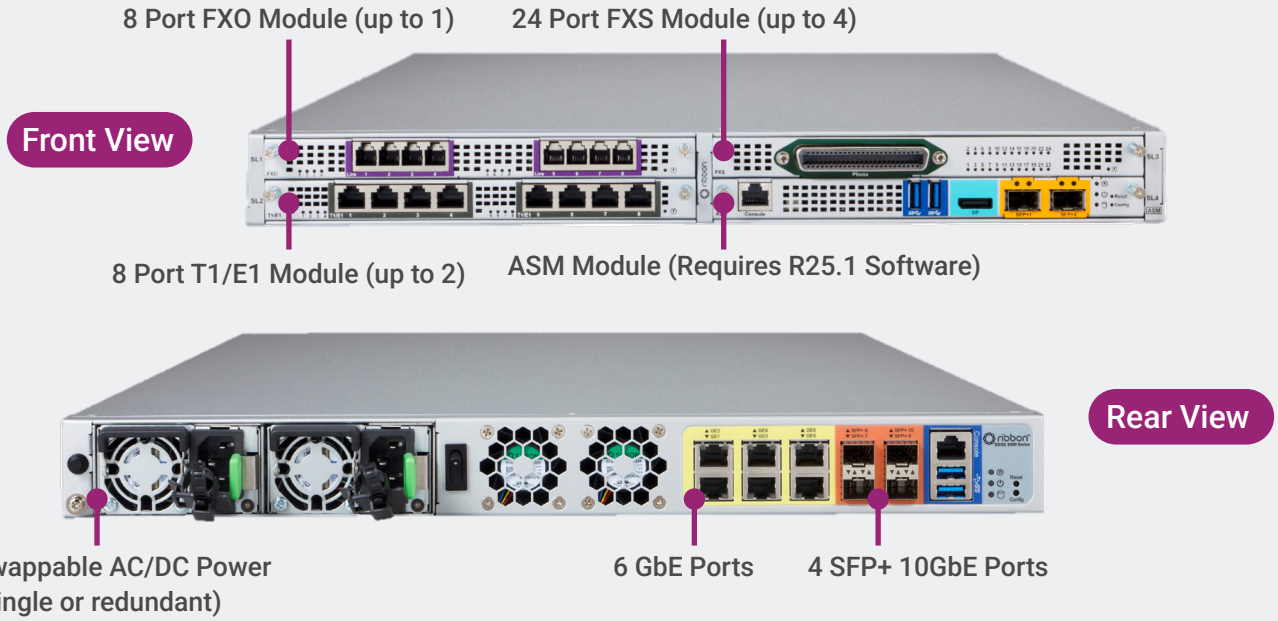
Telecom Connectivity – Modular Analog and Digital Port Options

Across the globe traditional PSTN services are being discontinued and/or prices are being increased on traditional analog or PRI- based services to encourage organizations to migrate to IP-based connectivity. While this makes sense strategically, it doesn't address the tens of millions of traditional devices (elevator phones, paging systems, alarm systems, door phones, etc.) that need to be maintained. Not to mention the need to replace traditional PBXs if they don't support SIP Trunks.

Ribbon's Edge 8500 offers an ideal solution. Its modular design can be configured to meet individual site requirements. The platform offers four modular bays that can be configured with four different options to deliver:

- Up to 16 T1/E1 ports
- Up to 8 analog trunk ports (FXO)
- Up to 96 analog station ports (FXS–standard loop length -1Km).
  - The four cards can also be configured to support up to 48 ports with extended loop length (FXS-long loop length -3Km).

Multi-site organizations and service providers can use the Edge 8500 as "Swiss Army Knife", deploying it in a wide variety of settings to handle routing, telecom security and interoperability across both IP-based and legacy telecom devices. Organizations can configure different sites for different capacities and different connectivity requirements, while maintaining a consistent edge device across hundreds or thousands of locations. The Edge 8500 delivers outstanding value by incorporating multiple solutions in a single 1U chassis. It also reduces total cost of ownership by providing remote access to a common set of services and trouble shooting tools.



ASM Module –Coming Soon

In addition to the Gateway Modules, the Edge 8500 offers an optional Application Services Module (ASM). The ASM is a separate compute module that can run 3rd party applications such as the Microsoft's Survivable Branch Appliance (SBA) software. The ASM has its own Operating System (OS), RAM and storage. The Module operates independently while retaining access to the platform's common backplane for connectivity and management.

Processing	16 vCPU (running at 1.9 GHz)
Memory	32GB of RAM
Storage	960GB SSD
External Network	4 x 10G SFP+ interfaces
External Display	1 x HDMI port
External Mgmt.	2 x USB 3.0 ports

SBC SWe Edge Software

The Edge 8500 leverages Ribbon's two decades of experience building Session Border Controllers (SBCs). The Edge 8500 runs Ribbon's market leading Session Border Controller Software Edition, Edge (SBC SWe Edge) as a virtual network function (VNF). In simple terms, the SBC acts as firewall for voice traffic, assuring that bad actors can't use the voice path to enter the network, eavesdrop on calls or launch a denial-of-service attack that disrupts communications.

The SBC SWe Edge software can be licensed for up to 960 concurrent sessions (simultaneous calls) and can be deployed in High Availability (HA) configurations for enhanced resiliency. The SBC SWe Edge protects communications infrastructure from Denial of Service (DoS)/ Distributed DOS (DDoS) attacks, maintains privacy, encrypts calls, and interworks with a wide variety of third-party SIP and legacy voice infrastructure devices/services, all while providing reliable, scalable performance that ensures maximum uptime and service availability.

Ribbon has been working closely with Microsoft for more than a decade so it should come as no surprise that the SBC SWe Edge software is Microsoft certified for Microsoft Direct Routing and supports Microsoft Survivable Branch Appliance (SBA).

The SBC SWe Edge software is also certified with Zoom Phone, Webex Local Gateway, Google Voice SIP Link, Cisco BroadSoft, Yealink, Poly and is tested with many other popular contact centers, and communications products.

Built-in Tools for Rapid Deployment

Ribbon has made it easy for enterprise or managed service providers to deploy an Edge 8500 with SBC SWe Edge instance. The SBC SWe Edge software includes a built-in Easy Configuration Wizard that is prepopulated with sought-after PBXs, cloud UC services, and service provider configurations, making deployments as simple as point and click. Most importantly, this software has been successfully deployed tens of thousands of times to secure communications for organizations of all sizes, across the globe.

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RAMP

Key Capabilities

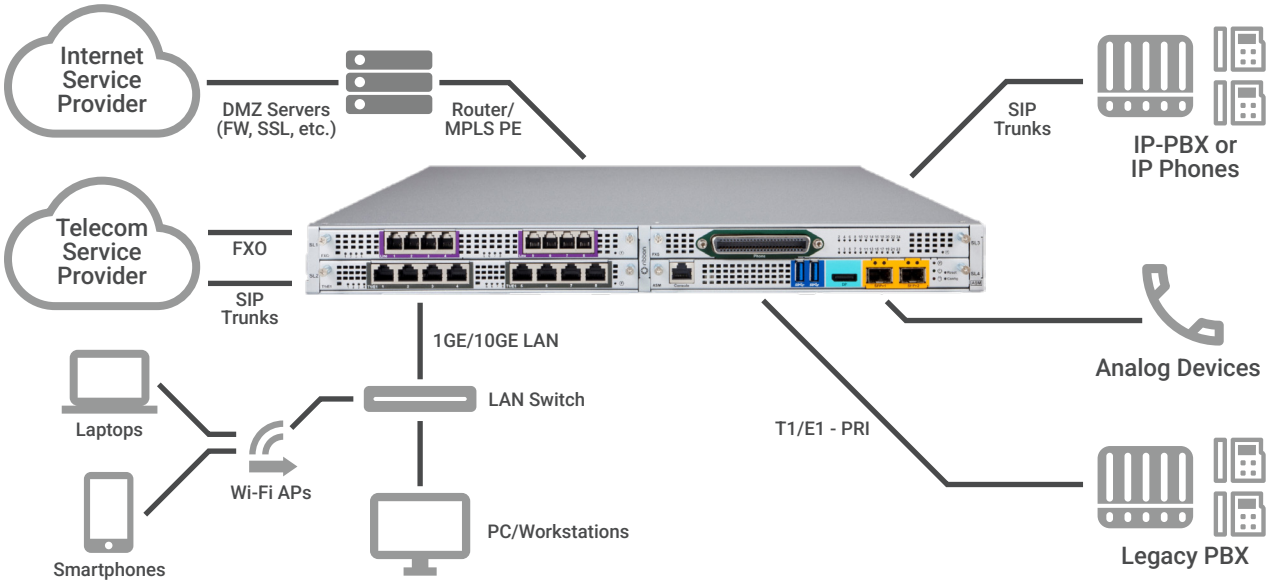
- Secure signaling, media, and management
- Licensed in five session increments – pay only for what you need
- Robust media processing including SILK & OPUS
- High Availability (HA) Configuration Options
- Denial-of-Service (DoS) and Distributed DoS (DDoS) attack prevention
- Easy Configuration Wizard
- Centralized management via Ribbon Application
- Management Platform (RAMP)
- Support for redundant SIP trunks
- Microsoft Phone System emergency calling support (E911, ELIN) and Microsoft SBA support

Edge 8500 Services	SBC SWe Edge
Maximum Concurrent Calls	960
Maximum Calls with Media Services (including SILK & OPUS high-fidelity voice)	960
Maximum Encrypted Calls	960
High Availability (HA) Configuration Option	**√ (R25.1)**
Call Recording Support (SIPREC)	**√**
Microsoft SBA Support	**√**
Session Resiliency	**√**

Multi-tenant Bandwidth Aggregation – Use case

High Performance SBC – Use case

Branch Office – Use case



Features and Capabilities	Specifications
Maximum data throughput	10 Gbps
Maximum number of registered devices (SIP endpoints)	5000
Maximum concurrent voice sessions (SIP sessions)	960
Telecom Gateway Ports and Modules	
Maximum Modules	The Edge 8500 has 4 slots that can be configured with multiple Gateway Modules & one ASM Module
Maximum FXO Ports	Up to 8, RJ-11 (one 8-port module)
Maximum FXS Ports (standard loop length – 1Km)	Up to 96 ports via four 24-port modules (24 per 50 pin telco connector – 1000m loop length, 5 REN)
Maximum FXS Ports (extended loop length – 3Km)	Up to 48 ports via four 24-port modules (12 per 50 pin telco connector – 3000m loop length, 5 REN)
Maximum PRI Ports (T1/E1)	Up to 16x RJ-48 (Up to two 8-port modules)
Data Ports	
Fiber 10G	4x SFP+ interface
LAN/NIC	6x 1Gbps, RJ-45, support SR-IOV
Application Services Module (ASM) - Requires R25.1 or later software	
ASM Architecture	An independent compute card with separate CPU, RAM & storage. The ASM runs its own OS while retaining access to the platform's backplane for connectivity and administration. The ASM will be supported in Release 25.1 or later
ASM Specifications	16 vCPU (running at 1.9 GHz), 32GB of RAM, 960GB SSD with 2 x 10G SFP+ interfaces, 2 x USB 3.0 port and an HDMI display port
Management Interfaces	
Remote	REST API – RAMP integration
Local USB	2x USB 2.0 Front Type-A & 1x USB 3.0 Type-A
Security	
Encryption and Authentication	TLS, SRTP, HTTPS, SSH
Encryption protocols supported	3DES, AES, SHA-256, MD5
FIPS 140-3 compliance	Optional - requires initial purchase of RedHat OS variant
System Management	
Local Device Management	CLI (SSH)
Remote upgrades, back-up, restore	SFTP, HTTPS
Firmware	Local firmware image for upgrade
Network Management	SNMPv1-3
Message Analytics	System monitoring and SIP statistics
Debug tools	Packet capture (tcpdump), traceroute, ping, syslog
Hardware Specifications	
Dimensions	635mm (25")L x 444.5mm (17.5")W x 43.9 mm (1.73", 1U)H
Weight (with 4 cards & 2x PSU)	12.5 kg (27.63 lbs)
Mounting Options	Shelf or rack mountable
Operating Temperature	0-40 deg. Celsius with 3 variable speed fans
Operating Relative Humidity	4% to 90% (non-condensing)

Features and Capabilities	Specifications
Hardware Specifications	
Compliance	RoHS 2.0, UL/cUL, CB, FCC part 15, FCC part 68, IC, CE, RCM and VCCI
Power	Single PSU 250W 110-240 VAC, 50-60 Hz. Optional dual 300W AC or 48V DC Power Supply
Hardware Warranty	1 year
Certifications	UL, FCC-15, FCC-68
Routing Services	
Network Throughput Options (bi-directional - offload throughput for UDP/TCP/GRE)	• 2.5G • 5G • 10G
Routing Protocol Support	• BGP4, BGP4+, BGP RPKI, BGP L3VPN • OSPFv2, OSPFv3 • RIPv1, RIPv2, RIPng • Static Routes • Path Monitoring for Static Routes • ECMP • PBR • MPLS • BFD • NHRP • VXLAN
L2 and Encapsulation	• VLAN (802.1Q QinQ) • VXLAN • Ethernet Bridge
IP Networking	• IPV6 Autoconfiguration • VRF • NAT • Multicast
Management & Monitoring Options	• SSHv2 • CLI • REST • SNMP • Syslogs • 802.1ab LLDP
Security	• ACLs
IP Services	• DHCP Server/ Client/ Relay • DNS Client/ Proxy • NTP
QoS Services	• Rate Limiting per Interface • Rate Limiting per VRF • Class-based QoS • Classifications: ToS/ IP/ DSCP/ CoS • Shaping and Policing • Scheduling: PQ, PB-DWRR, HTB
Logging Options	• Syslog
ALG Support	• SFTP • TFTP • PPTP
Additional Services	• Endpoint-Independent Mapping and Filtering • Address and Port-Dependent Mapping and Filtering
Traffic Prioritization & QoS	• Class-based QoS • Classification: ToS / IP / DSCP / CoS • Shaping and Policing • Scheduling: PQ, PB-DWRR, HTB

Features and Capabilities	Specifications
SBC Services	
DHCP	• Server/ Client/ Relay
VLANs	• 802.1Q (up to 100)
Security	• TLS (Transaction Layer Security) for signaling encryption - TLS 1.2 & 1.3 (RFC 5246) • Secure Real-time Transport Protocol (SRTP) & Control Protocol (SRTCP) for media and media control encryption (RFC 3711) • Multiple unique X.509 public key certificates/PKCS #12 files (up to 11) • Wildcard certificate support • Topology hiding; user privacy • Prevention of Denial-of-Service (DoS) and Distributed DoS (DDoS) attacks • Traffic separation (VLAN interface separation) • Malformed packet protection • Access Control Lists (ACLs) • NAT/NAPT and port forwarding; NAT traversal
Protocol Support	• SIP (RFC 3261) over UDP, TCP, TLS • RTP/RTCP/RTCP-XR (RFC 3550, 3551, 3611) • RTP/RTCP multiplexing over single UDP port (RFC 5761) • IPv4, IPv6, and IPv4/IPv6 interworking • DHCP server & client (RFC 2131) • Network Address Translation – NAT (RFC 2663) • SNMPv2c, SNMPv3 • HTTPS
Media Services	• G.711, G.722, G.722.2 (AMR-WB), G.723.1, G.726 (32 kbps), G.729A/B (8 kbps), T.38, SILK-NB/WB • media encoding • Video interworking • Session Recording Protocol support - SIPREC (RFC 7866) • DTMF support: RFC 4733, inband DTMF, SIP INFO (RFC 2833) • Voice Activity Detection (VAD) • G.168 Echo cancellation with standard 128 ms tail length • Comfort noise generation and packet loss concealment • Music on hold • RTP inactivity monitoring (inactive call detection)
Quality of Service (QoS)	• Bandwidth management • Call Admission Control (CAC) to deny inappropriate calls • P-time mediation for rate limiting • Per-call statistics • Diffserv/DSCP marking
Routing/Policy	• Interactive Connectivity Establishment (ICE), lite support (RFC 8445) • Active Directory®/LDAP-based call routing • Least cost, time of day and quality-based routing • On-board call forking (up to eight end points) • Supplementary services: call hold, call transfer (blind & assisted) and call forward • SIP routing based on source and destination IP address or Fully Qualified Domain Name (FQDN) • ITSP E911 support; 911 call preemption
Management Capabilities	• Single, secure, web-based GUI with real-time port monitoring • Easy Configuration Wizard, for quick provisioning between SIP trunks, SIP phones, SIP PBXs (e.g. • Avaya® Aura® or Cisco® Unified Communications Manager, Microsoft Direct Routing • Centralized management from Ribbon Application Management Platform (RAMP) • REST-based programmatic interface to remotely manage multiple SBCs • SNMP v2c/v3 for comprehensive network management using third-party management systems • Configuration backup and restore; upload from one site to another • CDR reporting and local logging for troubleshooting • Free Ribbon LX syslog server and log parser tool available • Authentication: local user (username/password), Active Directory®, RADIUS

Features and Capabilities	Specifications
SBC Services	
Certified SBC for Microsoft Phone System & Direct Routing (Teams)	• Supports integration with Teams Survivable Branch Appliance (SBA) • SILK-NB, SILK-WB codec support for improved Microsoft Teams user experience • Enhanced 911 (E911) and Emergency Location Identification Number (ELIN) Gateway Support • Media Bypass and Local Media Optimization support • Simplified migration from on-premises Skype for Business Server to Microsoft Teams • Support for multiple tenant-related Direct Routing deployments with Microsoft partners/PSTN carriers
Site Survivability	• Supports high-avaialability deployment of SBC SWe Edge • IP route redundancy to UC provider, in case of ISP or router failure • PSTN fallback in case of WAN failure • Built-in SIP registrar for site survivability for SIP clients including Yealink® Teams and Poly® UC phones and conference bridges • Multiple Spanning Tree Protocol, to prevent routing loops

About Ribbon

Ribbon Communications (Nasdaq: RBBN) delivers communications software, IP and optical networking solutions to service providers, enterprises and critical infrastructure sectors globally. We engage deeply with our customers, helping them modernize their networks for improved competitive positioning and business outcomes in today's smart, always-on and data-hungry world. Our innovative, end-to-end solutions portfolio delivers unparalleled scale, performance, and agility, including core to edge software-centric solutions, cloud-native offers, leading-edge security and analytics tools, along with IP and optical networking solutions for 5G. We maintain a keen focus on our commitments to Environmental, Social and Governance (ESG) matters, offering an annual Sustainability Report to our stakeholders. To learn more about Ribbon, please visit rbbn.com.

Contact Us We are here to help. Contact us about our Edge solutions.