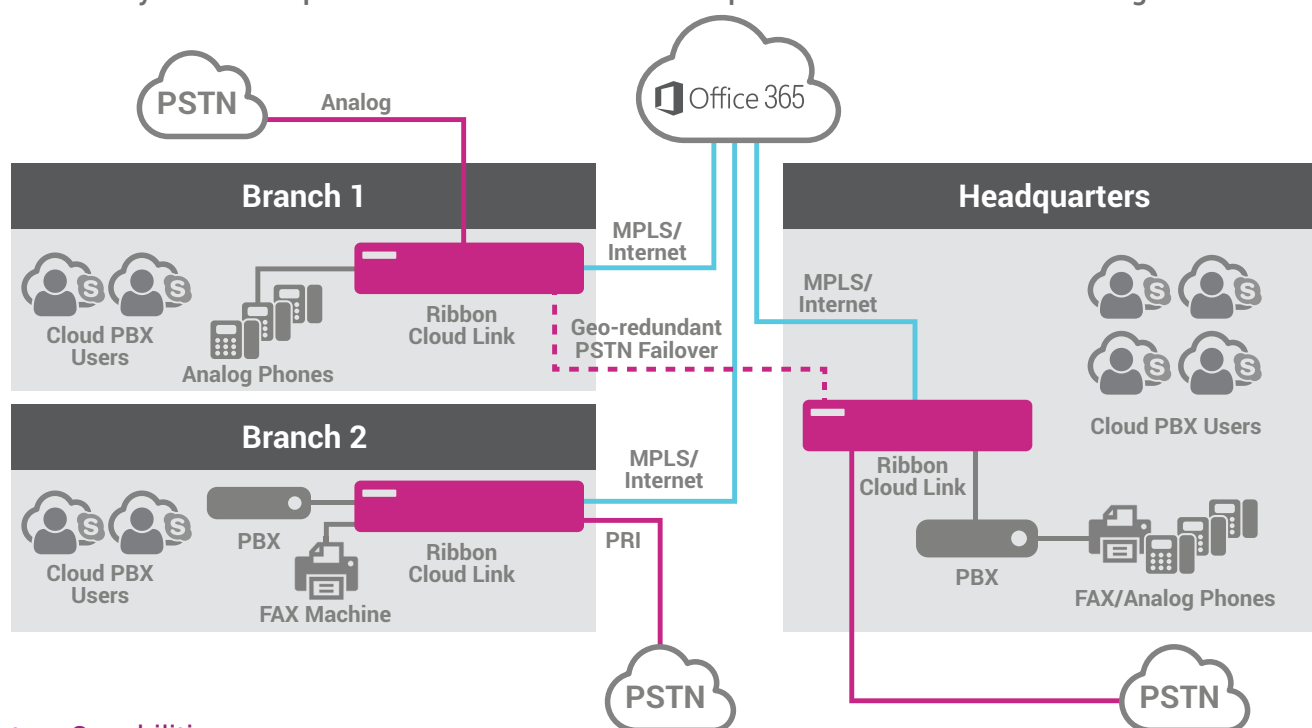


# Ribbon Cloud Link

Integrated Cloud Connector Edition Appliance for Skype for Business



Ribbon Communications' Cloud Link integrates Microsoft® Skype® for Business Cloud Connector Edition in a single, flexible and secure appliance that reduces cost and complexity associated with server hardware and software procurement and implementation. Ribbon Cloud Link scales to 500 concurrent Cloud Connector Edition calls, and preserves existing PSTN connectivity, supports legacy PBXs, analog devices, while providing enterprise-wide legacy dial plan integration to facilitate migration to Office 365® Cloud PBX. Powered by the Ribbon SBC 1000 and SBC 2000 session border controllers, Ribbon Cloud Link delivers robust security features to prevent unauthorized access and preserve communications through hacker attacks.



## System Capabilities

### Sessions

- Maximum number of total concurrent calls for Cloud Connector Edition: 500

### Business Continuity

- Bypass relays (PRI-PRI, FXS-FXO) for emergency calls (e.g., 911)
- PSTN fallback when WAN is down
- Local survivability with BroadWorks
- Multiple SIP trunking service provider support for redundancy
- Site survivability through built-in SIP registrar
- ITSP E911 Support
- 911 Call Preemption
- Rapid Ethernet Port Fail-over, to maintain inprogress calls in the event of an Ethernet port or switch problem
- Multiple Spanning Tree Protocol, to prevent network routing loops

## Management Capabilities

### Operations, Administration and Management

- Single, secure, web-based GUI with real-time monitoring
- 3 step Easy Configuration Wizard, for quick provisioning between:
  - Service Provider SIP trunks & Customer Premise SIP phones, ISDN-based PBXs, and common SIP-based PBXs such as the Avaya® Aura® Communication Manager Release 6.3/7.x and the Cisco® Unified Communications Manager (Call Manager) Version 10.5/11.x
  - Customer Premise/Cloud-based Microsoft Skype for Business ↔ Service Provider SIP trunks, ISDN PRI/BRI, or FXO ports
- 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; Configuration upload from one site to another; Partial configuration import/export through REST
- CDR reporting
- Syslogs for troubleshooting, with support for free Ribbon LX syslog server and log parser tool
- Historical Stats and TCAs

### Authentication

- Local user (User name/password)
- Active Directory®
- RADIUS

### Media Services

- G.711, G.722, G.722.2 (AMR-WB), G.723.1 (5.3 kbps, 6.3 kbps), G.726 (32 kbps), G.729A/B (8 kbps), T.38
- Transcoding
- Video
- T.38 with CNG tone detection
- DTMF/RFC4733; 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
- Automatic call type detection — voice, fax or modem
- Music on-hold
- Generate call progress tones — ringback, busy, re-order
- RTP inactivity monitoring (dead call detection)
- RTP pass-through and media bypass
- RTCP/RTCP-XR
- Caller ID support

### Signaling

- Maximum number of signaling groups: 100
- TDM Signaling (ISDN): AT&T 4ESS/5ESS, Nortel
- DMS100, Euro ISDN (ETSI 300-102), QSIG, NTT InsNet (Japan), ANSI National ISDN-2 (NI-2)
- TDM Signaling (CAS): T1 CAS (E&M, Loop start); E1 CAS (R2)
- Back-to-Back User Agent (B2BUA)
- SIP (UDP/TCP/TLS) to/from SIP (UDP/TCP/TLS)
- SIP (UDP/TCP/TLS) to/from CAS/PRI/FXS
- CAS/PRI/FXS to/from CAS/PRI/FXS
- SIP Message Manipulation (SMM)

### Protocol Support

- SNMPv2c, SNMPv3
- NTP
- HTTPS
- RTP/RTCP, SRTP/SRTCP
- SIP over UDP, TCP, TLS
- DNS • IPv4, IPv6, and IPv4/IPv6 interworking
- RIPv2, OSPF as dynamic IP routing protocols
- DHCP server
- DHCP client
- Asynchronous DNS for SIP
- NAT
- Support for Reason Header
- Microsoft Lync® E911 support; SIP/PIDF-LO passthrough and ELIN Gateway
- One number fax support (single DID for voice and fax)

### Routing/Policy

- Active Directory/LDAP-based call routing
- Routing based on quality metrics
- Least cost routing
  - Event-based action set
- On-board call forking (up to eight end points)
- Supplementary services
  - Call hold
  - Call transfer (blind & assisted)
  - Call forward
- Embedded policy/routing engine
- Optional centralized policy/routing via Ribbon Centralized Policy Server (PSX Server) using SIP
- Screening, blocking, routing, presentation, call type filters
- Route prioritization
- Leading digit routing; International routing; URI-based routing
- Digit manipulation (name/number manipulation using regular expression and Active Directory lookup)
- SIP routing
  - Based on source and destination IP address
  - Fully Qualified Domain Name (FQDN)
  - Detect proxy failure and route to alternate paths
  - Re-route on failure based on full Cause Code rerouting on T1/E1 trunks

### Quality of Service (QoS)

- Bandwidth management
- Call Admission Control (CAC) (deny excessive calls based on static configuration for bandwidth management)
- P-time mediation for rate limiting
- Per-call statistics
- Diffserv/DSCP marking

### Security

- TLS 1.2 for signaling encryption
- Secure RTP (SRTP) for media encryption
- Built-in VoIP firewall
- Topology hiding; User privacy
- Prevention of Denial-of-Service (DoS) and Distributed DoS (DDoS) attacks
- Dialed Number Identification Service (DNIS), Calling Line Identification (CLID), Call type pre-authentication
- Traffic separation (VLAN interface separation)
- Malformed packet protection
- Access Control Lists (ACLs)
- IPsec VPN tunnel
- NAT/NAPT and port forwarding, NAT traversal
- 2 GB on-board eUSB memory for secure Active Directory replication

### Packet Network Time Source

- Network Time Protocol (NTP) per RFC1708

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## Microsoft Skype for Business Support

- Qualified as a Survivable Branch Appliance (SBA) for Microsoft Lync 2010, Lync 2013, and Skype for Business deployments
- Qualified as an Enhanced Gateway for Lync 2013, Lync 2010 & Skype for Business deployments
- Lync 2013 and Lync 2010 qualified for SBC and E-911 ELIN Gateway
- Microsoft Office 365 Exchange Unified Messaging qualified
- Non-Lync SIP client user state reporting (e.g., presence, user busy, etc.) to Lync clients
- Microsoft SCOM support
- Lync Quality of Experience (QoE) monitoring collects call RTP stream data and sends to Lync QoE server
- Round Trip Delay
- Jitter (max, mean)
  - Packet Loss (max, mean)
  - Packet Loss Rate (max, mean)
  - Burst (density, gap density)
  - MOS-LQ, MOS-CQ
  - Signal/Noise Level
  - Microsoft Systems Center 2012 R2
- Skype for Business SDN API 2.2 support
- Integration with Nectar Unified Communications Management Platform (UCMP)

## Server Module

### Memory

- 32 GB of DDR4 with ECC (Error-Correcting Code)

### CPU

- Intel® Xeon® Processor: Broadwell family, eight cores, 16 threads, 1.7 GHz

### Storage

- 512 GB SSD

### Capabilities

- Maximum number of concurrent calls deployed as Cloud Connector Appliance: 500

## Additional Hardware Specifications

### Front Panel

- Status Indicators Front Panel LEDs
  - Power
  - Alarm
  - Peer Node
  - Ready
- Dual USB 2.0 interface for main SBC board
- Additional dual USB 2.0 ports for ASM
- Administration Port
  - 1 x 10/100/1000 BASE-T Ethernet port

### Chassis Mounting Options

- EIA-standard 19" equipment rack with 2 or 4 posts

### Cooling System

- Internal forced convection

### Environmental

- 5 to 40° C Operating
- -40 to 70° C Storage
- 5 to 85% non-condensing operating humidity

Ribbon Cloud Link Model Type	SBC 1000	SBC 2000
Maximum number of concurrent Cloud Connector calls	500*	500
Maximum number of encrypted SBC sessions	192	600
Maximum number of SIP-to-SIP calls	192	600
Maximum number of TDM/FXx-to-SIP calls	144	480
Maximum number of call route entries	1,000	15,000
WAN and LAN interfaces	3 x 10/100/1000 BASE-T Ethernet ports with VLAN support	4 x 10/100/1000 BASE-T Ethernet ports with VLAN support
Physical PSTN interfaces	Up to 4 PRI, 12 BRI, 24 FXS, or 12 FXO ports	Up to 16 PRI and/or 48 FXS ports
Power supply	Single power supply	Redundant power supply
Chassis dimensions	1U, rack mount Inches: 17.5" wide x 1.75" high x 12" deep Centimeters: 44.4 wide x 4.4 high x 30.5 deep	1U, rack mount Inches: 17.5" wide x 1.75" high x 21" deep Centimeters: 44.4 wide x 4.4 high x 53.4 deep
AC Power Option	<b>Input Voltage:</b> 100-240 VAC nominal, auto-switching, 47-63 Hz <b>AC Maximum Input Current:</b> 1.25A at 115 VAC; 0.63A at 230 VAC <b>AC Input Voltage Range (Nominal):</b> 100-127 VAC and 200-240 VAC <b>Max Power Consumption:</b> 144 W	<b>Input Voltage:</b> 100-240 VAC nominal, auto-switching, 47-63 Hz <b>AC Maximum Input Current:</b> 3.0A at 115 VAC; 1.6A at 230 VAC <b>AC Input Voltage Range (Nominal):</b> 100-127 VAC and 200-240 VAC <b>Max Power Consumption:</b> 360 W

\* Additional SBC/gateway required to route traffic loads over 192 sessions to/from onboard CCE

## 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](https://rbbn.com).

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