Tenor AX

Ribbon Tenor AX Series VoIP MultiPath Switch

The Ribbon Communications Tenor AX Series VoIP MultiPath Switch puts enterprises and regional service providers on a smarter path to better communications: superior voice over IP sound quality, reliable security, cost-saving features and seamless integration with your existing phones, PBXs and network equipment. The AX Series switch supports any-to-any connectivity between TDM (analog), H.323 and SIP devices, enabling enterprises and service providers to rapidly migrate analog phones onto SIP-based networks and connect with Ribbon session border controllers (SBCs) for richer, SIP-based services. Each AX Series switch supports up to 60 endpoints and 1,800 calls per hour, making it an ideal choice for multi-protocol communications in small enterprises, large branch offices and regional POPs (points of presence).

The Tenor AX Series is available in four unique configurations depending on its application and location in the network:

- The **Tenor AXM MultiPath Switch** is designed for enterprise communications between the PSTN and PBX, and supports both FXS and FXO connections on a single chassis.
- The **Tenor AXT Trunking VoIP Gateway** is designed as a trunking solution between TDM- and VoIP-based networks, and supports FXO connections to be able to receive dial tone from a PBX or the PSTN and integrate with an IP network.
- The **Tenor AXG VoIP Gateway** is designed for communications between the PBX and the VoIP network, and supports FXS connections to be able to provide dial tone and VoIP-enable station side devices into an IP network.

Technical Specifications

System Capabilities (per Switch)

- Sessions
  - Up to 48 simultaneous VoIP calls
  - Maximum call rate: 1,800 calls per hr.
  - Up to 30 simultaneous IP to IP calls
- Business Continuity/Survivability (for AXM and AXT Series only)
  - SIP outbound proxy
  - Supports up to 60 SIP endpoints
- Configurations
  - Choice of 8, 16 and 24 FXS/FXO or 48 FXO configurations (see table below)

Management Capabilities

- Operations, Administration &Management
  - Auto-provisionable
  - GUI-based Configuration Manager for multiple, remote switches
  - SNMPv2 Agent
  - Command Line Interface (CLI) configuration via Telnet or RS-232 connection
  - Call Detail Record (CDR) generation
- Authentication
- IVR/RADIUS server support for AAA with integrated multilingual IVR+
  - ANI authentication (Types 1 and 2)

Media Services

- Auto codec negotiation: G.711, G.723.1, G.726, G.729a/b
- Modem support with G.711
- G.168 Echo Cancellation with standard 128 ms tail length
- Adaptive Voice Activity Detection (VAD)
- Comfort Noise Generation (CNG)
- Fax support: Group III at 2.4, 4.8, 7.2, 9.6 and 14.4 Kbps using industry standard T.38 (Super G3 compatible up to 33.6 Kbps)
- Automatic call type detection – voice, fax or modem

Tenor AX Series	MultiPath AXM Series	Station AXG Series	Trunk AXT Series
8 VoIP calls	8 FXS/8 FXO	8 FXS/0 FXO	0 FXS/8 FXO
16 VoIP calls	16 FXS/16 FXO	16 FXS/0 FXO	0 FXS/16 FXO
24 VoIP calls	24 FXS/24 FXO	24 FXS/0 FXO	0 FXS/24 FXO
48 VoIP calls	n/a	n/a	0 FXS/48 FXO

Signaling

- Any-to-any connectivity: SIP<->SIP, SIP<->H.323, H.323<->H.323, TDM<->TDM, SIP<->TDM, H.323<->TDM
- Tandem/TDM switching
- Support for multiple SIP User Agents (RFC 3261)
- SIP supplementary services
- DTMF signaling via RFC 2833 or SIP Info
- SIP header manipulation: automatic appending and stripping of digits to dialed numbers
- Loop Start, Reverse Battery and Battery Disconnect
- Coding: A law, I law

Protocol Support

- DHCP
- DNS
- H.323
- SIP
- SNMP
- TCP
- UDP

Routing/Policy

- Transparent MultiPath Call Routing
- Least Cost Routing (via Ribbon PSX™ Centralized Routing and Policy Server)
- Forced IP routing and IP port mapping
- Four types of configurable routing databases: Bypass Directory Numbers, Hunt Local Directory Numbers, Hop-Off Directory Numbers and Static Routes
- Multiple dial plan options: public/private dial plan, user-programmable dial plan
- Answer and disconnect supervision
- Pass-through support for calls to tollfree, local and special service numbers (e.g., emergency services)
- Type 1 Caller ID/Name Support (Telcordia, ETSI, NTT and DTMF)
- SIP REFER method

Security

- NATAccess™ network address translation firewall protection
- IP packet filtering

Quality of Service

- Adaptive jitter buffer
- Packet loss concealment
- IP Type of Service (TOS) and DiffServ support
- PacketSaver™ multiplexing technology: Reduces bandwidth consumption up to 57% by combining voice packets from multiple calls into a single packet

Hardware Specifications

Front Panel

- Status Indicators Front Panel LEDs
  - Power
  - Operational Status
  - LAN Link Status
  - LAN Link Rate
  - LAN Activity
  - Analog FXO/FXS Port Activity

Rear Panel

- One Fast Ethernet port (10/100 BASE-T)
- Standard RJ-45 LAN Interface (IEEE 802.3) for 10 BASE-T or 100 BASE-TX connections
- RS-232 connector for PC console
- DIAG for software diagnostics
- RESET for system reset
- AC power receptacle
- Analog output via Male 50-pin RJ-21 telco connectors

Chassis

- 1U, rack mount
- Inches: 17.375 Wide x 1.75 High x 10.75 Deep
- Centimeters: 44.5 Wide x 4.5 High x 27.6 Deep

AC Power Option

- 100-240 VAC, 50-60 Hz
- Max power consumption: 60W

Operating Altitude

- 10,000 ft. (3,000 m.)

Weight Maximum Fully Populated

- 10.0 lbs. (4.55 kg)

Environmental

- 5˚ to 40˚ C operating
- -10˚ to 60˚ storage
- 20 to 80% non-condensing operating humidity

Industry Standards Support

- Telco: FCC Part 68, TS-016, TBR4, TS-038, CS03
- EMC: FCC Part 15 EN55022, EN55024, EN61000-2-3, EN61000-3-3, AS/NZS3260
- Safety: UL60950, EN60950, AS/NZS60950

About Ribbon Communications

Ribbon is a company with two decades of leadership in real-time communications. Built on world class technology and intellectual property, Ribbon delivers intelligent, secure, embedded real-time communications for today's world. The company transforms fixed, mobile and enterprise networks from legacy environments to secure IP and cloud-based architectures, enabling highly productive communications for consumers and businesses. With locations in 28 countries around the globe, Ribbon's innovative, market-leading portfolio empowers service providers and enterprises with rapid service creation in a fully virtualized environment. The company's Kandy Communications Platform as a Service (CPaaS) delivers a comprehensive set of advanced embedded communications capabilities that enables this transformation.

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