Prosody X Evo

19-inch rack-mounted chassis

Introduction

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PSTN connectivity and media processing in a 1U chassis

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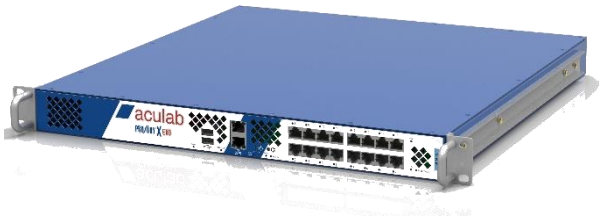

Prosody X Evo is provided in a 1U, 19-inch rack-mount chassis, and is remotely controlled from an application server using Aculab's telephony APIs – the same APIs that are used for the previous generation of Prosody X hardware. The configuration presents a distributed, service-oriented architecture that offers both resilience and ready scalability. An added benefit of deploying Prosody X in a separate chassis is that it enables more cost-effective provisioning of your application platform, together with software virtualisation. Additionally, load balancing and automatic failover mechanisms can be implemented to render a solution fault tolerant – from the low-level media processing up to your application or service layer.

This in-chassis implementation of Prosody X leverages Aculab's core expertise in combining telephony media processing technologies into a powerful and flexible proposition. The Prosody X hardware portfolio presents renowned, reliable, deployment proven technology that offers a comprehensive set of functionality, which can be used to create a wide range of telephony-based applications for enterprises and service providers. Typical applications include IVR, conferencing, diallers, prepaid platforms, self-service voice portals, unified communications, fax broadcast, VoIP gateways and telephony media servers.

Signalling protocols

The Prosody X Evo chassis offer the same wide choice of signalling protocols as previous variants. Call or session control protocols are available for VoIP, PSTN and mobile networks. These fully integrated and configurable signalling stacks and firmwares include many varieties of MFC-R2 CAS, global support for ISDN PRI, national and international variants of ISUP SS7, TCAP, SIP V2.0 and SIGTRAN M3UA and M2PA.

Media processing functions

Aculab's Prosody X Evo chassis has a simplified resource presentation, with a single high-power media processing module preloaded with a comprehensive range of algorithms.

Essential media processing resources include IP-to-TDM conversion, record and playback with a range of audio compression formats, including HD Voice codecs, DTMF tone handling, echo cancellation, and popular data transmission protocols. Each algorithm can be used separately or in combination to develop more sophisticated solutions, making Prosody X the clear hardware choice for advanced, telephony-based application development.

In addition to the standard media processing functions, as with all products in the Prosody X family, Prosody X Evo also support a broader set of higher-level technologies. These include transcoding between various speech codecs, n-way (both wideband and narrowband) conferencing, Group 3 and T.38 fax processing at up to V.34 speeds, call progress analysis, and live speaker (answering machine) detection.

Benefits of a Prosody X Evo architecture

- Available with 4, 8 or 16 trunks
- Single, high-capacity media processing module
- Single card presentation across all variants
- Single clock source per chassis.
- Ability to split media and control traffic over different networks
- Up-to 128 SS7 signalling links per chassis

Technical summary

		Prosody X Evo chassis
TDM and VoIP functionality		
Audio/voice channel capacity		**TDM**: Up to 480 **IP**: Up to 1920
Telephony protocols and approvals		We have a wide range of host independent approvals and global TDM protocol coverage – see website for further details
Tone signalling (CAS)		Included; integral
SS7		Integrated MTP, ISUP, SCCP, TCAP, redundant MTP3, distributed ISUP, flexible ISUP, SS7 monitoring, distributed TCAP, SIGTRAN M3UA and M2PA Support for high level applications – please contact Aculab for further information
VoIP protocols	**Signalling**	SIP 2.0, SIPS[1], SDP – see website for further details
	Media	RTP, Secure RTP[1], RTCP, RTCP XR; with variable frame size
Voice compression[8]		G.711 Annex I & II, G.723.1A, G.726, G.728, G.729A, G.729AB, OKI and IMA ADPCM, GSM-FR, GSM-EFR, MS-GSM, AMR-NB, EVRC, iLBC, Speex, TETRA, G.722, G.722.1, licensed from Polycom®, G.722.2/AMR-WB Additional codecs supported – please contact Aculab for further information
Data modems and interfaces		V.8, V.17, V.18, V.21, V.23, V.27ter, V.29, V.34HD, Bell 103, Bell 202, configurable FSK modem
Jitter buffer		Adaptive, with configurable upper limit
Additional functionality		User-configurable DSCP (ToS byte); DHCP; Transparent data over RTP (IETF RFC 4040)
Media processing functionality		
G.711 A-law and µ-law encoding conversion		**Included; integral**
IP-to-TDM gateway		**Independent, simultaneous voice, fax and data channels**
Conferencing		N-way matrix conferencing; narrowband and wideband modes; mixing loudest/active speakers; independent volume and gain control for each participant; personalised mix for each participant (e.g., for call centre coaching, network gaming, voice chat, etc.); active speaker detection; active speaker notification via CSRC; DTMF events suppression; HD Voice
Predictive dialling / call progress analysis		Robust and accurate live speaker detection (e.g., differentiating between a human response and that from an answering machine); simultaneous signal categorisations on a per channel basis; DTMF, tone and call progress (ringing, busy/engaged, fax, SIT etc.) detection; speech energy detection; complete cause code functionality
Audio recording and playback		Recording & playback to local & remote hosts; multiple file formats; fast/slow pitch invariant replay
Audio gain control		Automatic (AGC) or programmable for each channel
Transcoding		Any-to-any voice codec[2]; full-duplex channels; rate matching; narrowband/wideband conversion (up/down sampling)
Fax handling		T.30 & T.38 fax termination at up to V.34 speed, pass-through, relay and gateway; fax over G.711; automatic fax detection and notification.
Echo cancellation		G.168 compliant with configurable tail of 40, 72, 104, 136, 168, 200ms[2]
DTMF handling		DTMF detection and generation; inband; pass-through; DTMF relay and user indications (RFC 2833; RFC 4733[9]); DTMF out-of-band (SIP INFO, RFC 2976)
Stream connection		CALEA / lawful intercept support for RTP streams;

	packet forking, switching and media replication (fan out)
Additional functionality	Tone generation; universal tone detection; call progress tone detection; pulse/rotary dial detection; grunt detection; voice activity detection (VAD); comfort noise generation (CNG); packet loss concealment (PLC); silence suppression; live speaker detection
Physical and environmental	
Operating systems supported[3]	Operating system support for Linux and Windows; see http://www.aculab.com/downloads for more details
Chassis type	1U high, 19-inch wide, rack-mount chassis[4,10]
Chassis dimensions – height, width, depth (excluding handles)[5]	44mm x 435mm x 550mm
Ethernet interfaces	Dual redundant Gigabit Ethernet, via RJ45 connectors
TDM network line interfaces	8 or 16 E1/T1 trunks
TDM network terminations	E1/T1 (75R, 100R or 120R) – software selectable
Rich media resources	1 High-capacity media processing module
Chassis control	Remote (from application server) via Ethernet
Configuration	Aculab ACT and Aculab Resource API
Remote chassis management	HPI Manager, including SNMP V2c; and Aculab Configuration Tool (ACT)
Power supply	110-240V AC (50-60Hz); -48V DC; dual redundant hot swappable
Power consumption	250W max, 125W typical, 2W standby
Weight (without packaging)	8-10 kg
Operating environment[6]	Operating (ambient) temperature: 0 to +40°C; storage temperature: -20°C minimum; humidity: 20 to 80% RH non-condensing operational, 10 to 90% storage
EMC standards	Meets mandatory international standards: European EMC Directive 2014/30/EU; FCC part 15
Safety standards	Meets international certification schemes: UL62368-1; EC Low Voltage Directive 2014/35/EU
Regulatory	EC Directive 2012/19/EC (WEEE); EC Directive 2015/863 (RoHS 3)
Telecoms	Host independent approvals: Europe and USA[7]
Other functionality	
Software licensing	SIGTRAN M3UA is licensed on a per host basis; options range from 100 to 25600 transmit messages per second

NOTES

1. This functionality is based on 'Strong Encryption'; its availability is restricted due to export laws and regulations – contact your Account Manager for details.
2. Can affect channel density.
3. Application server specific (for e.g., APIs and libraries).
4. Suitable for mounting on a shelf or with fixed side rails in a standard 19in. rack or cabinet as per IEC 60297-3-105.
5. For overall dimensions, allow additional depth for front panel handles and cables at rear.
6. Preliminary values; subject to change – contact your Account Manager for latest information.
7. Contact your Account Manager for additional country specific requirements.
8. Aculab does not grant the right to practice the following standards: G.722.1, licensed from Polycom®, G.722.2 (AMR-WB), G.726, AMR-NB, EVRC, iLBC, GSM-FR, GSM-EFR and MS-GSM. To seek the right to practice the standards please contact the appropriate intellectual property rights (IPR) holders. For IPR related to the G.722.2, AMR-NB and EVRC codecs, please contact the VoiceAge Corporation (licensing@voiceage.com). For IPR related to the G.723.1A and G.729AB codecs, please contact Sipro Lab Telecom (www.sipro.com) or the DSP Group (www.dspg.com). For IPR related to the ITU-T G.722.1 codec, licensed from Polycom®, please contact Polycom (www.polycom.com); if you or your customer is a conference service provider, you must display Polycom's Licensed Trademark in your product.
9. RFC4733 support - DTMF handling - the optional event codes defined in RFC4733 are not yet supported
10. Slide rails are available as an option at time of purchase

Channel counts summary – Prosody X Evo

Features	Feature detail		Max resources per Evo chassis [1]
MOH playback	With DTMF detection; G.711, TDM[4]		480
	With DTMF detection; G.711, RTP		1920
Play and record (simultaneous)	Full duplex channels; G.711, TDM[4]		480
	Full duplex channels (RTP)	Narrowband codecs	
		G.711	1920
		G.723.1A	1200
		G.728	600
		G.726	1920
		G.729AB	1920
		GSM-FR	1920
		GSM-EFR	1200
		EVRC	600
		iLBC	720
		OPUS (NB)	1200
		AMR-NB	1200
		TETRA	400
		Wideband codecs	
		OPUS (WB)[3]	960
		G.722.2 (AMR-WB)[2]	144
		G.722	1800
		G.722.1	1920
Media gateway	VoIP/TDM, DTMF handling (IETF RFC 2833); 40ms echo cancellation[4]	Narrowband codecs	
		G.711	480
		G.723.1A	480
		G.726	480
		G.729AB	480
		GSM-FR	480
		GSM-EFR	480
		EVRC	400
		iLBC	280
		OPUS (NB)	480
		Wideband codecs	
		OPUS (WB)[3]	360
		G.722.2 (AMR-WB)[2]	110
		G.722	480
		G.722.1	480
DTMF detection	Can be used in parallel with play or record		480
Matrix conferencing	G.711; DTMF handling; 40ms echo cancellation		480
Group 3 fax transmit	T.30	V.27ter; V.29; V.17	960/480
		V.34	960/480
Group 3 fax receive	T.30	V.27ter	960/480
		V.29	720/480
		V.17	600/480
		V.34	960/480
Fax over IP	T.38 termination		1920
Echo cancellation	Figures are for use in parallel with record, playback and DTMF detection e.g., to enable barge-in with ASR; echo tail 40ms		480
Live speaker detection	Identify human or answering machine speech		1920/480
Data communications (TDM)	Raw bearer channel HDLC or configurable FSK modulated HDLC frames		480
Analogue display services interface (ADSI)	Library using above FSK modem allows support for GR-1273-CORE		480

NOTES	
1.	These are maximum channel counts provided for illustration; actual channel counts will depend upon the simultaneous combination of functions used. Where two values are shown, the values are IP (RTP) / TDM.
2.	Varies according to bit rate, figure shown is worst case with bit rate set to 23.85kbit/s
3.	Varies according to bit rate, figure shown is bitrate appropriate for wideband usage - 24kbit/s.
4.	Maximum channels counts are limited by available TDM timeslot capacity.

For more information, please contact your Account Manager or view our website.

Owing to the dynamic nature of our business, specifications are constantly being changed and therefore this product overview. This is for informational purposes only. Aculab makes no warranties, express or implied, in this document. E&OE.

Contact us

Phone

+44 (0) 1908 273800 (UK)
+1 (781) 352 3550 (USA)

Email

info@aculab.com
sales@aculab.com
support@aculab.com

Socials

@aculab

aculab

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