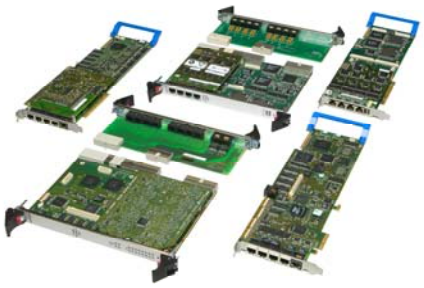
Rich media processing boards and software for IP and TDM applications

For IP and converged telephony solutions, Aculab's Prosody product range provides feature rich, hardware- and software-based media processing, call control signalling and PSTN connectivity. The portfolio has been specifically designed to enhance a range of communications platforms and solutions.



Reliable, deployment proven technology, the family of media processing products offers a comprehensive set of functionality used to create a wide range of enterprise and telco level service applications, including voicemail, interactive voice response (IVR), conferencing, prepaid platforms, voice portals, unified messaging, fax bureaux, VoIP gateways and media servers.

The product range enables delivery of feature-rich solutions that address the demands of the IP communications era. To ensure maximum deployment flexibility and 'fit for purpose' cost-effectiveness, a wide choice of hardware and software variants with different media processing capacity, optional E1/T1 trunks, operating system support, and a selection of industry standard form factors, is offered. The Prosody family of enabling technology products is ideal for IP and converging VoIP and TDM applications, providing the ultimate ROI for a wide range of solutions.

The product range leverages Aculab's core expertise in combining complex technologies into a powerful and flexible proposition that assures developers a simple, clear migration path. Those looking to develop multimodal communications solutions, with video, voice and data, will benefit from the 'future-ready' architecture of the product line, which is already capable of handling multimedia call sessions.

Target applications

- Announcement servers
- Conference servers
- Contact and call centres
- Fax bureaux
- IMS compliant MRF and MGCF/MGW functions
- IP media servers with transcoding capabilities
- IVR servers and voice portals
- Media and signalling gateways
- Online gaming platforms
- Quality monitoring and test equipment
- Session border controllers
- Unified communications platforms

'Best in class' with outstanding value

Aculab's Prosody range offers a complete portfolio of call control signalling and media processing functions, including SIP, H.323, SS7 and MRCP protocol stacks, VoiceXML and CCXML scripting language interpreters, high density TDM/IP gateway, voice recording/playback, DTMF handling, echo cancellation, N-way matrix conferencing, transcoding with a wide choice of voice codecs, Group 3 and T.38 fax, Asterisk channel driver, and many other advanced functions. With the software development kit (SDK) available under a cost free licence, a range of technical support options and competitive pricing – outstanding value for money is guaranteed!

Product features

- The widest variety of media processing resources for a complete range of communication solutions including: IVR, call centres, fax broadcast, conferencing and military applications
- Up to 1200 media processing channels per board or many hundreds of full duplex host media processing channels per host, depending upon host CPU performance
- Telco grade form factor and functionality, including hot swap and automatic failover
- On-board IP architecture
- Distributed architecture – can be controlled remotely via Ethernet
- Dual redundant 10/100 BASE-T or 1Gb Ethernet ports
- The broadest range of codecs including: G.711; G.723.1; G.726; G.728; G.729 AB; G.729i; iLBC; GSM-FR; AMR-NB; AMR-WB (G.722.2); EVRC; SPEEX; ITU-T G.722.1, licensed from Polycom®, G.722
- SIP, H.323, MRCP, and an extensive selection of SS7, ISDN and CAS protocols
- SIP authentication, SIP over TLS (SIPS), STUN, Secure RTP and symmetric signalling
- Unrestricted number of SIP Bridge channels for third party call control
- Optional TDM module – 1, 2, 4, 8 or 16 software selectable E1/T1 trunks

Product benefits

- Best fit from SME/SMB up to telco grade applications
- Provides 99.999% availability, system reliability and resilience – enabling service continuity
- Allows implementation of N+1 or 1+1 protection schemes with redundancy management
- Widest range of media processing functions (boards or software) – enables creation of highly functional solutions and reduces product variants needed
- Unrivalled benchmarks in density and price – improves margins and reduces board count
- Aculab software is available under a cost free licence – improves margins and ROI[1]
- Foreseeable longevity – reduces long term OPEX
- Distributable amongst different chassis – cost-effective use of resources
- Ease of use through a single coherent and consistent API – faster time to market
- 'Future-ready' architecture for video, IMS and mobility solutions
- A wide range of codecs enables connection to many endpoint device types
- Applications can be expanded or scaled to suit end-user channel count requirements
- Deploy software only solutions in a choice of servers – use the platform best suited to the business need
- The low entry cost of a software-only option opens up new markets and increases margins in a competitive environment – lower cost of ownership and faster ROI
- Reliable, deployment proven technology means systems can be confidently specified for all application purposes
- Outstanding value for money is guaranteed through readily available software, a range of support options and competitive pricing

Note:

1. Excludes Prosody S and SIGTRAN M3UA.

Prosody X media processing boards

Prosody X boards are based on a unique IP-centric architecture, which means they are designed for media processing in IP-based networks. This common, product family architecture enables the creation of flexible, resilient and scalable solutions, which can be distributed amongst different chassis.

Prosody X offers the capabilities needed to implement reliable, high availability platforms and solutions with unrivalled benchmarks in density and price. The highly configurable boards provide developers, integrators and telecommunications equipment manufacturers with a durable competitive advantage for fourth generation IP communications, based on the leadership of Aculab's technology.

The boards offer low and medium to very high density IP media processing options, with a range of 'mix and match' software modules to scale a wide range of applications. They are suitable for implementation in communication solutions spanning SME/SMB to large enterprise and telco grade densities.

The variants combine support for rich media processing resources, VoIP telephony and, recognising there is still a need, optional E1/T1 PSTN connectivity. This means a single board type can perform media processing operations in either IP or TDM environments, or simultaneously, such as for gateway applications. All of which helps to future proof solutions as they move to IP.

Prosody S host media processing software

Prosody S is a host media processing (HMP) software package that gives developers and integrators a viable alternative to using DSP boards to integrate VoIP into their solutions. It brings granular scalability and cost-efficiencies to those familiar with traditional, enabling technology board-based designs and offers the prospect of adding complementary voice features to online platforms, such as gaming and social networks.

In a purely IP context, Prosody S offers the same essential architecture as the board members of the product family and provides the same comprehensive mix of features as Prosody X boards for rich media processing in IP networks. It also enables the creation of flexible, resilient and scalable solutions, which can be distributed amongst different chassis and controlled by remote application servers.

Prosody S is licensed on a per channel basis, giving options from as low as a single channel up to very high densities, limited only by the performance of the host server. The product can be run on any host CPU (X86 or AMD) that is capable of running an operating system (Windows or Linux), which can be a PC, 1U industrial server, blade server, embedded system or laptop. This flexibility means solution providers can select the server that best suits their application, deployment environment, target market and price points.

Unrivalled density and feature set

Aculab's Prosody range offers a comprehensive selection of software modules or firmware algorithms that can run independently on board-based DSPs in the case of Prosody X or on a host CPU in the case of Prosody S HMP.

For Prosody X boards, up to 8 DSPs can be selected to run the algorithms and with each DSP capable of supporting up to 150 channels, a total of 1200 channels per board is achievable. On Prosody X boards, whether transported by IP or TDM, all media is handled by the same DSPs, thus giving a truly flexible platform. Because Prosody X can perform all available functions on a single board, stock holding and the maintenance cost of spares is greatly reduced.

For Prosody S, the channel count is largely dependent upon the host CPU performance and benchmark tests for simple playback indicate a total significantly in excess of 2000 channels is possible.

Media processing functions

Assuming the appropriate hardware and software configuration, key media processing resources include IP-to-TDM 'gatewaying', record and playback with a range of compressions, DTMF tone handling, echo cancellation, and data transmission protocols. Each algorithm can be used separately or in combination to develop more sophisticated solutions, making Prosody the clear choice for advanced speech processing development.

In addition to standard media processing functions the Prosody family of products also supports a broader set of higher-level technologies, including transcoding between various speech codecs, N-way (both wideband and narrowband) conferencing, Group 3 and T.38 fax processing, call progress analysis, live speaker detection and packet forking.

Being the enabling technology for a wide range of applications, from IMS, through convergence of IP with mobile or cable networks, to mobile messaging and video, the products are capable of accommodating the comprehensive feature set required for creation of many sophisticated solutions.

Signalling protocols

The product range also offers a broad choice of signalling protocols used for call control in VoIP, PSTN, IMS and mobile networks. Aculab offers a complete implementation of SIP and H.323 under a cost free licence and integration with 3rd party speech engines is enabled through the MRCP protocol. In addition, developers are given an option of using 3rd party signalling stacks to facilitate multi-vendor solutions integration.

Application programming interfaces

All functionality is accessed via a consistent set of APIs, which are designed to maintain backward compatibility as far as possible in order to protect investments in existing application code. Although very different types of enabling technology, all variants share some essential qualities – API, media processing and call control functionality, as well as the same development team. Consequently, an application developed using Aculab's API can be easily ported to any of the products in the Prosody portfolio.

Scalability

Scalability is essential for every telecom service application, to support future growth of usage capacity with minimal added costs. Prosody X and Prosody S products, supporting IP media and signalling, feature linear scalability, therefore, allowing seamless growth from one to thousands of channels in a solution. In addition, a unique capability of these products allows creating solutions with distributed physical architecture, making the solutions scale cost-effectively beyond a single node.

Furthermore, Prosody S software has flexible licensing mechanisms, allowing users to purchase a license for the exact channel count they need for a system and cost-effectively scale to higher density when needed. A great advantage of Prosody S is that it doesn't preclude solution providers who only require a few channels. It gives solution providers the flexibility to scale from single channels up to many hundreds of full duplex, full function channels per system.

IP-based architecture

At the heart of Prosody X is an Ethernet switch, which is complemented by the TDM matrix used by previous generations of Prosody. This change acknowledges and accommodates the relentless shift toward an IP-based communications transport infrastructure and the benefits this can bring. The on-board IP architecture enables Prosody X to be distributed amongst different chassis platforms offering resilience and scalability as well as helping future proof solutions as they move to IP. A dual redundant 10/100 BASE-T or 1Gb Ethernet interface provides the external IP connection, while the host's PCI bus will view Prosody X as if it were a NIC.

Prosody S also allows solution providers to base IP platforms on commodity, rather than specialist hardware, components. This brings a number of advantages including: reduced dependence on hardware; less need for specialist installation and configuration expertise; wider availability of products from multiple vendors; ability to benefit from rapid improvements in technology and open standards.

Impressive TDM options

It is widely recorded that the circuit switched network will continue to be a great workhorse for many years to come, with the transition to IP-based transport happening over a period of years. To complement the comprehensive VoIP support, Prosody X provides the option of E1/T1 trunk interfaces, via daughter board modules or point of sale base board options, to ensure traditional TDM connectivity using Aculab's renowned worldwide protocol suite. The use of CAS/SS7 protocols is enabled through PMXC modules or further base board options, enabling a reduction in product cost where these protocols are not required.

Protocols include ISDN, CAS and SS7 – Aculab's SS7 protocol stack coverage provides signalling messages for MTP, ISUP, SCCP and TCAP procedures and is constantly being upgraded. Taking advantage of the latest telephony software features, each trunk's configuration may be made individually, allowing for different protocols on different trunks, which may be E1 or T1 set with different terminating impedances. This flexibility is unmatched and includes reconfigurations without the need to restart a system, bringing great value to solution providers. Options from 1 to 16 E1/T1 trunks per board are available, providing up to 496 usable channels.

Telco grade functionality

Prosody meets the particular functionality demands of ISPs and voice carriers by providing the reliability, resilience and scalability necessary for these customers. The basic requirement for the creation of resilient solutions is eliminating single points of failure by introducing redundant functional components. DSP boards provide hot swap and board protection mechanisms, and both Prosody X and Prosody S support sophisticated redundancy management to allow the creation of applications with 'five 9s' availability (99.999%), independent of the final solution scale or channel count.

Distributed architecture

All variants of the Prosody family allow the flexible allocation of media processing resources, which can be shared between several high level control applications, where one of them could be on the local host and others on remote machines, connected to the enterprise LAN. In case of failure of the main high level application, application control can be switched to a remote standby alternative, providing service continuity by implementation of either N+1 or 1+1 protection schemes. Additionally, Prosody X and Prosody S products can be distributed between several physical hosts and load balancing software may be implemented to minimise the impact of a failover event. Automatic failover mechanisms are also supported by the Prosody family, making the solution failure tolerant, from the low level telephony hardware level up to the application part.

Keeping high service continuity as the paramount objective, Prosody utilises the inherent strengths of the distributed IP architecture to provide, as applicable, effective board, link and application protection mechanisms. To facilitate the remote management of the end user equipment, support for SNMP is offered to help manage Prosody X with appropriate information usually provided via the API being made available via the MIB. This provides a standards-based capability for remote control and in-field service. Both Net-SNMP and Microsoft's SNMP are offered to provide choice and the host-based solution allows one agent to report on multiple boards.

Prosody variants

Prosody family of media processing platforms

Product line	Physical type	Media and signalling support	Maximum channel count	Digital network access	Platform or form factor
Prosody X	DSP-based boards	IP and TDM	1200 channels	Optional, up to 16 E1/T1 trunks	PCI, PCIe, cPCI
Prosody S	HMP software	IP only	Unrestricted; depends on host CPU	Requires an external gateway	User choice

Note:

Due to the architecture, applications can be designed to be portable from one Prosody platform to another with minimal modification. Systems will clearly need appropriately matching device drivers, but on a per channel basis the API is identical.

Technical summary

		Product variant			
VoIP and telephony functionality		**Prosody X PCI**	**Prosody X cPCI**	**Prosody X PCIe**	**Prosody S**
Audio/voice channel capacity		Up to 600 per board	Up to 1200 per board	Up to 300 per board	CPU dependent, see table below
VoIP protocols	Signalling and control	SIP, SIPS, SDP, STUN[1], H.323, MRCP, VoiceXML, CCXML – see website for further details			
	Media	RTP, Secure RTP, RTCP, RTCP XR[1]; with variable frame size			
Telephony protocols and approvals		We have a wide range of host independent approvals and global TDM protocol coverage – see website for further details			Not applicable; use Prosody X
Voice compression		G.711 Annex I & II, G.723.1A, G.726, G.728, G.729A, G.729AB, G.729D, G.729E, G.729i, OKI and IMA ADPCM, GSM-FR, GSM-EFR, MS-GSM, AMR-NB, EVRC, iLBC, Speex, TETRA[1], iSAC[1], MELPe[1], Skype SILK[1], 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.32, V.34HD, V.110, V.110 RLP or HDLC, V.150.1 (gateway), Bell 103, Bell 202, configurable FSK modem			Not applicable; use Prosody X
Jitter buffer		Adaptive, with configurable upper limit			
Lawful intercept support (LI/CALEA)		Yes, via RTP forking and packet replication			
Tone signalling (CAS)		Via PMXC module		Via CAS/SS7 DSP module	Not applicable; use Prosody X
SS7		Integrated MTP, ISUP, SCCP, TCAP, redundant MTP3, distributed ISUP, flexible ISUP, SS7 monitoring, distributed TCAP, SIGTRAN M3UA Support for high level applications – please contact Aculab for further information			Not applicable; use Prosody X
Interoperability with Asterisk™		Supported via an open source channel driver			Not applicable; use Prosody X
Additional functionality		User-configurable DSCP (ToS byte); DHCP; Transparent data over RTP (IETF RFC 4040)			
Media processing functionality		**Prosody X PCI**	**Prosody X cPCI**	**Prosody X PCIe**	**Prosody S**
IP-to-TDM gateway		Independent, simultaneous voice, fax and data channels			Not applicable; use Prosody X
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 and playback to local and 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 and T.38 fax termination at up to V.34 speeds, pass-through, relay and gateway; fax over G.711; automatic fax detection and notification; interoperability with HylaFAX systems using open source plug-in			
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[1]); DTMF out-of-band (SIP INFO, RFC 2976)			

Speech - ASR, TTS SVI	Integration with 3rd party voice engines via MRCP v1 and v2; Interoperability tested with Loquendo, Lumenvox, Nuance, Telisma and Verbio			
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; voice morphing/pitch change			
G.711 A-law and µ-law encoding conversion	Via PMX or PMXC module		Via CAS/SS7 DSP module	Not applicable; use Prosody X
Physical and environmental	**Prosody X PCI**	**Prosody X cPCI**	**Prosody X PCIe**	**Prosody S**
Operating systems supported	Operating system support for Linux, SPARC Solaris and Windows; see http://www.aculab.com/support/software-downloads for more details			
Board format	Full size, single slot PCI board	6U size, single slot cPCI board	Full size, single slot PCIe board	
Bus type	PCI 32 Universal (3V3/5V); 32 bit; 66MHz	PICMG 2.0 cPCI (3V3/5V)	PCISIG 1.1; electrical/mechanical x4	
Ethernet interfaces	Dual redundant 10/100 BASE-T via RJ45 connector	Dual 1GbE RJ45 on rear panel or cPSB PICMG 2.16 on the backplane	Dual redundant 10/100 BASE-T via RJ45 connector	
TDM network line interfaces	0, 1, 2, 4 or 8 E1/T1 trunks via PMX or PMXC modules[3]	0, 4, 8 or 16 E1/T1 trunks via PMX or PMXC modules[3]	0, 1, 2 or 4 E1/T1 trunks on board, CAS/SS7 via DSP module[3]	
TDM network terminations	E1/T1 (75R, 100R or 120R) – all software selectable			
CT board interconnections	H.100 CT bus; loading factor [1]	H.110 CT bus; loading factor [1]	H.100 CT bus; loading factor [1]	
Base board rich media DSP resources	1, 2 or 4 DSPs	2, 4 or 8 DSPs	1 or 2 DSPs	
Board control	Host-based via PCI/PCIe bus or remote via Ethernet			
Remote board management	SNMP V1; SNMP V2c; Aculab ACT and remote control toolset			
Power consumption (maximum)	25W	45W (5A at 5V, 6A at 3V3)	14W	
Operating environment	Operating temperature: 0 to +50°C; storage temperature: -20 to +70°C; humidity: 10 to 95% RH non-condensing; altitude: 0 to 2500m			
EMC standards	Meets all mandatory international standards			
Safety standards	Meets all international certification schemes e.g., CB, UL, CUL			
RoHS compliance	Fully compliant			
Other functionality	**Prosody X PCI**	**Prosody X cPCI**	**Prosody X PCIe**	**Prosody S**
Software licensing	SIGTRAN M3UA is licensed on a per host basis; options range from 100 to 6400 transmit messages per second			Granular channels per host; no upper limit[5]

Notes:

1. Planned release. May not be available for Prosody S – contact your Account Manager for details.
2. Could affect channel density.
3. Most combinations of DSPs and trunks are available – contact your Account Manager for details.
4. 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. If you intend to use the iLBC codec, you must register with GIPS (info@globalipsound.com). 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.
5. Maximum achievable channel count on a host depends on CPU performance and memory resources

Channel counts summary – Prosody X

Features	Feature detail		Max resources per DSP[1]	Max resources per PCI board[1]	Max resources per cPCI board[1]	Max resources per PCIe board[1]
MOH playback	With DTMF detection; G.711		150	600	1200	300
Play and record	Full duplex channels; G.711		150	600	1200	300
Media gateway	VoIP/TDM, DTMF handling (IETF RFC 2833); 40ms echo cancellation	G.711	126	504	1008	252
		G.723.1A	86	344	688	172
		G.726	60	240	480	120
		G.729AB	96	384	768	192
		GSM-FR	126	504	1008	252
		GSM-EFR	48	192	384	96
		EVRC	32	128	256	64
		iLBC	32	128	256	64
DTMF detection	Can be used in parallel with play or record		150	600	1200	300
Matrix conferencing	G.711; DTMF handling; 40ms echo cancellation		128	512	1024	256
Group 3 fax transmit	T.30	V.27ter; V.29; V.17	120	480	960	240
		V.34	40	160	320	80
Group 3 fax receive	T.30	V.27ter	90	360	720	180
		V.29	64	256	512	128
		V.17	35	140	280	70
		V.34	20	80	160	40
Fax over IP	T.38 termination		100	400	800	200
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		128	512	1024	256
Live speaker detection	Identify human or answering machine speech		170	680	1360	340
Data communications	V.110, V.110 RLP or HDLC, configurable FSK modem		150	600	1200	300
Modem over IP (MoIP) gateway	V.150.1 (V.32)[2]		20	80	160	40
	V.150.1 (V.34)[2]		18	76	152	36
Analogue display services interface (ADSI)	Library using above FSK modem allows support for GR-1273-CORE		150	600	1200	300

Note:

1. These are maximum channel counts provided for illustration; actual channel counts will depend upon the simultaneous combination of functions used
2. These figures are provisional

Channel count summary – Prosody S version 3

Typical figures tested on Intel Core 2 Extreme (X6800) running at 2.93GHz[2]

Windows XP, service pack 3

Features	Feature detail	Voice codecs[1]									Fax
		G.711	G.723.1A	G.726	G.728	G.729AB	AMR-NB	EVRC	iLBC	TETRA	T.38
Music on hold playback	10 different music replays	2200	130	650	100	400	180	260	170	100	-
Session recording	2-party conversation	350	55	155	25	115	70	90	70	40	-
Recording and playback	Full-duplex channels	630	115	310	55	230	135	175	135	85	-
	Full-duplex channels, with DTMF detection	580	115	300	55	220	130	170	130	80	-
Matrix conferencing[3]	Full-duplex channels	730	120	310	55	250	140	180	150	90	-
Transcoding	To/from G.711 codec, full-duplex channels	N/A	115	300	55	210	145	170	130	85	-
Fax		-	-	-	-	-	-	-	-	-	750

SUSE Linux version 10.3

Features	Feature detail	Voice codecs[1]									Fax
		G.711	G.723.1A	G.726	G.728	G.729AB	AMR-NB	EVRC	iLBC	TETRA	T.38
Music on hold playback	10 different music replays	4000	130	750	115	650	205	270	185	155	-
Session recording	2-party conversation										-
Recording and playback	Full-duplex channels	850	120	310	65	310	155	195	145	130	-
	Full-duplex, with DTMF detection	750	120	300	65	310	150	190	145	125	-
Matrix conferencing[3]	Full-duplex channels	800	120	320	65	360	150	195	155	130	-
Transcoding	To/from G.711 codec, full-duplex	-	120	340	65	340	165	200	155	130	-
Fax		-	-	-	-	-	-	-	-	-	1600

Notes:

1. 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. If you intend to use the iLBC codec, you must register with GIPS (info@globalipsound.com). 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.
2. Maximum achievable channel count on a host depends on CPU performance and memory resources.
3. Conferencing tests were carried out using 32-party conferences.

For more information, please contact your Account Manager or view our website:
http://www.aculab.com