

Guaranteed Enterprise Fax Service over SIP Trunks

E-SBC support for fax transcoding becomes essential when moving to SIP trunks

Executive Summary

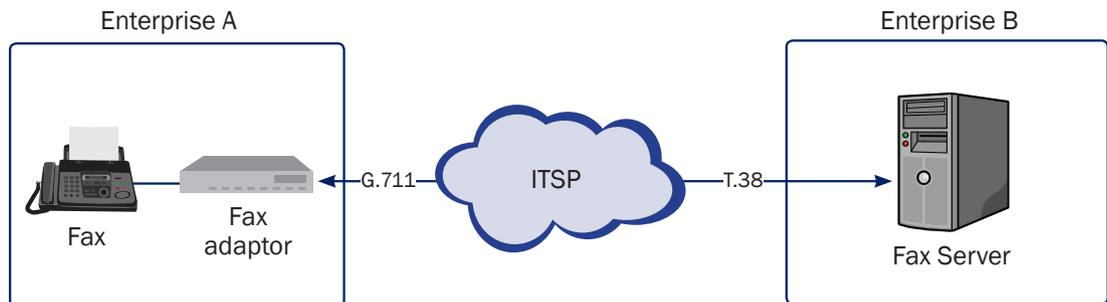
The rise of SIP trunking provides enterprises with many advantages in areas of pricing, features and scalability. However, when it comes to fax service, an enterprise connected to a SIP trunk may suffer from poor quality or even complete failure of its fax service. This issue is a result of differences in the fax protocols used by the SIP service provider and the enterprise. AudioCodes Enterprise Session Border Controllers (E-SBCs) help overcome the fax interoperability challenge by applying intelligent fax transcoding.

Background

The two common ways to transport fax over IP are the T.38 standard and the G.711 vocoder. T.38 is a fax relay standard that allows faxes to be transported across IP networks between Fax Group 3 (G3) terminals. T.38 sends the fax data digitally to overcome impairments associated with IP networks (such as delay, jitter and packet lost) and provides highly reliable and quality fax transport.

G.711, on the other hand, samples the analog fax signal, codes it as a voice signal and transports it over IP. However, unlike voice, fax is very susceptible to the IP network impairments described above, therefore the use of G.711 may yield poor fax service, particularly over WAN connections.

A typical fax network topology might look like this:



The problem is that if one end supports only T.38 (such as the fax server in the figure above) and the other end supports only G.711 (the fax adaptor), fax transport between the two ends cannot be supported, assuming no fax transcoding is done in the ITSP. Another issue would arise if the enterprise side supports only G.711 and the service provider supports both T.38 and G.711. In this case, if no fax transcoding is applied, G.711 will be used all the way through, and fax quality may be degraded due to IP network impairments that are common on the Internet.

The reasons for the differences in fax transport protocol support are numerous:

1. Some service providers support only T.38 or only G.711
2. Fax servers support only T.38. This is because it eliminates the need to demodulate the modem's carrier signal, a task that typically relies on DSP capability
3. Some hybrid PBXs and analog gateways, particularly the ones that run old software versions, may also support only one of the two protocols

The Solution

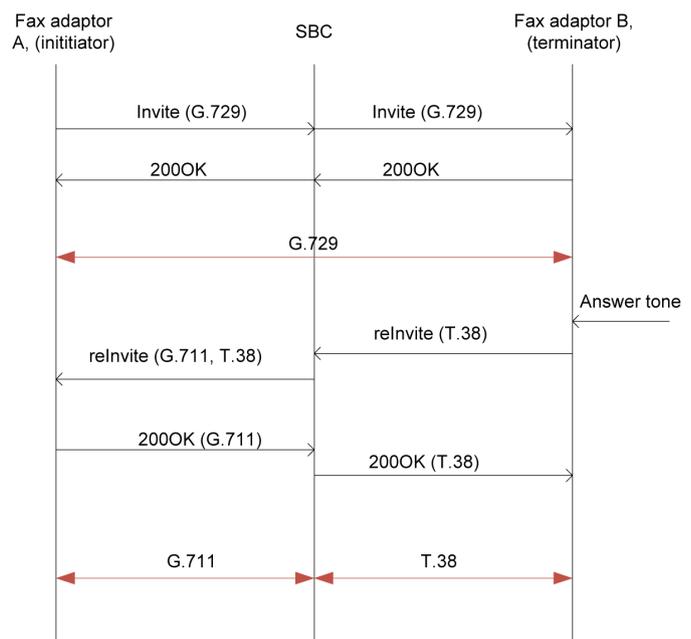
An Enterprise Session Border Controller (E-SBC) is used by enterprises and managed service providers for interoperability, security, service assurance and quality of experience.

AudioCodes Mediant E-SBCs are capable of seamlessly supporting fax transcoding to resolve fax incompatibility issues. Placed at the enterprise or the service provider's edge, the E-SBC detects if transcoding is required and inserts a Digital Signal Processor (DSP) into the call path to perform transcoding between G.711 and T.38.

In addition, the Mediant E-SBC can be set up to drive the connection to T.38 whenever both ends support both T.38 and G.711, to assure optimal fax quality.

Although this may sound trivial, proper detection of fax protocol mismatch involves sophisticated handling of multiple call scenarios, as shown in the following example:

- A call is placed on a fax connected to Fax adaptor A
- Fax adaptor A initiates a call to Fax adaptor B
- Call starts as a normal G.729 call
- Fax connected to Fax adaptor B sends a fax answer tone, Fax adaptor B sends a reinvite with only T.38 on SDP
- E-SBC adds a G.711 option to the existing T.38 reinvite
- Fax adaptor A responds with 200OK containing only G.711 on SDP
- E-SBC forwards the 200OK, this time with T.38 as it knows that side B only supports T.38
- Fax transcoding takes place



AudioCodes E-SBC Fax Advantages

AudioCodes Mediant E-SBCs provide the following advantages for enterprise fax service:

- Enterprises and service providers no longer need to worry about fax interoperability issues
- AudioCodes E-SBCs have a wide interoperability with hundreds of fax machines
- Improve fax quality by minimizing the use of G.711 for fax transport over the internet (WAN)
- Extra fast fax transfers through support of V.34. AudioCodes is one of the only E-SBC vendors to support V.34 fax modem. This protocol supports fast fax speeds of 33600 bps
- AudioCodes offers a unique and complete solution which includes both SBC and fax adaptors (analog gateways) on the same platform, or as separate platforms

About AudioCodes

AudioCodes Ltd. (NasdaqGS: AUDC) designs, develops and sells advanced Voice over IP (VoIP) and converged VoIP and Data networking products and applications to Service Providers and Enterprises. AudioCodes is a VoIP technology market leader focused on converged VoIP & data communications and its products are deployed globally in Broadband, Mobile, Cable, and Enterprise networks. The company provides a range of innovative, cost-effective products including Media Gateways, Multi-Service Business Gateways, Session Border Controllers (SBC), Residential Gateways, IP Phones, Media Servers and Value Added Applications. AudioCodes' underlying technology, VolPerfectHD™, relies on AudioCodes' leadership in DSP, voice coding and voice processing technologies. AudioCodes High Definition (HD) VoIP technologies and products provide enhanced intelligibility and a better end user communication experience in Voice communications.

International Headquarters

1 Hayarden Street, Airport City
Lod 70151, Israel
Tel: +972-3-976-4000
Fax: +972-3-976-4040

AudioCodes Inc.

27 World's Fair Drive,
Somerset, NJ 08873
Tel:+1-732-469-0880
Fax:+1-732-496-2298

Contact us: www.audiocodes.com/info
Website: www.audiocodes.com

©2011 AudioCodes Ltd. All rights reserved. AudioCodes, AC, AudioCoded, Ardito, CTI2, CTI², CTI Squared, HD VoIP, HD VoIP Sounds Better, InTouch, IPmedia, Mediant, MediaPack, NetCoder, Netrake, Nuera, Open Solutions Network, OSN, Stretto, TrunkPack, VMAS, VoicePacketizer, VolPerfect, VolPerfectHD, What's Inside Matters, Your Gateway To VoIP and 3GX are trademarks or registered trademarks of AudioCodes Limited. All other products or trademarks are property of their respective owners. Product specifications are subject to change without notice.

Ref. # LTRM-09067 10/11 V.1

