Dialogic® IMG 1010 Integrated Media Gateway: VoIP Transcoding

Overview

Traditionally, service providers have relied on TDM interconnections to move voice traffic on and off their networks, in part because of the high quality and reliable interconnections inherent in the technology. Now, however, recent advances in VoIP-based technology present a lower-cost alternative that offers a quality and reliability rivaling TDM networks. VoIP networks have an added benefit of supporting advanced capabilities, such as point to multipoint interconnection, not available in TDM offerings. This combination of the increased quality/reliability, advanced features, proliferation of VoIP-based networks, and the lower cost of VoIP is prompting service providers to use VoIP peering solutions for network interconnection.

With this transition to all-VoIP networks, many challenges can arise. The use of the public Internet brings up questions of security, quality, media interworking, and trust. Session Border Controllers (SBCs) and media gateways are the edge devices well suited to address these challenges. SBCs provide the security for VoIP network interconnection through topology hiding and user authentication. SBCs can also address the concerns of trust and signaling interworking. Another challenge on the edge of VoIP networks is media interworking. H.323 to SIP signaling interworking can be handled by the media gateway or by the SBC. RTP layer transcoding is handled well by a hardware DSP-based media gateway (see Figure 1).

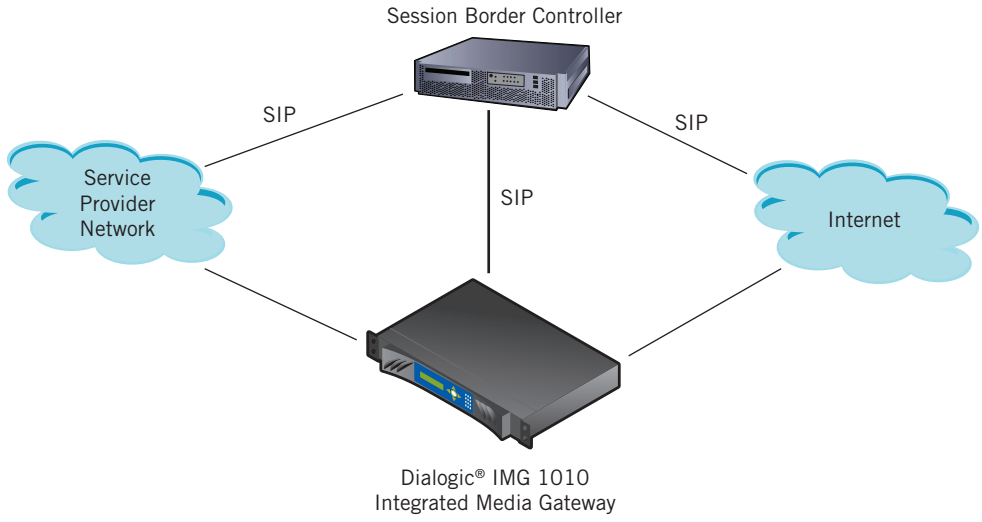

Figure 1. VoIP Carrier Network Edge

Transcoding Implementations

With increasing numbers of service providers moving to VoIP, demands for transcoding are expected to increase. For ease of network engineering and operation, service providers usually select one or two coders to be used in the core of their network. Large service providers that own long haul transport may select the high-quality, but bandwidth-consuming G.711, whereas service providers using the Internet for transport may select G.729 or iLBC due to their high-quality and low-bandwidth consumption. Other vendors' early implementations of transcoding were costly and required the installation of two media gateways connected back to back (see Figure 2).

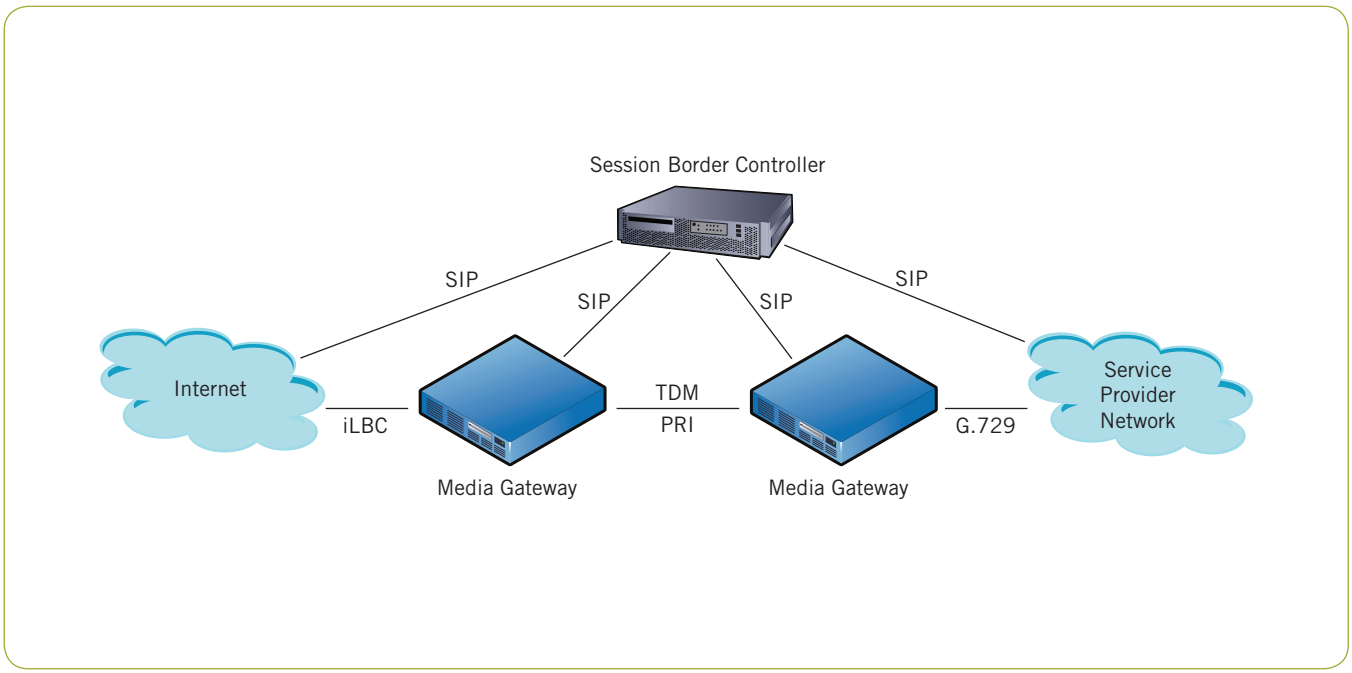

Figure 2. First Implementation of Transcoding

Functionally, this configuration meets the need for transcoding, but it is an inefficient, expensive solution. Since transcoding requires two TDM ports and two IP ports, the cost is very high for each session. The TDM stage also lowers voice quality and increases latency. In addition, management of the two discrete devices increases maintenance costs. Route lists need to be updated and maintained to coordinate the flow of traffic between the two gateways.

Dialogic® IMG 1010 Integrated Media Gateway

The Dialogic® IMG 1010 Integrated Media Gateway addresses the concerns of the first implementation (see Figure 2) in a compact 1U high form factor. The IMG 1010 supports SIP, H.323, SS7, and ISDN, providing true "any-to-any" voice network connectivity. The IMG 1010 supports simultaneous TDM and IP hairpins. The ability to support IP hairpins enables not only IP signaling translation, but media translation as well. As VoIP networks evolve and move away from the PSTN, wideband coders will be well positioned to gain popularity. Table 1 lists the IMG 1010's supported coders. The IMG 1010, if coupled with an SBC, can bridge islands of VoIP traffic.

Supported Coders	Maximum Sessions
G.711	512
G.723.1	512
G.729 a/b	512
G.726	512
T.38 IP Fax	512
iLBC	336
GSM-AMR	336
GSM-FR	336

Table 1. Transcoding Densities

Implementation Example

A major company in the international VoIP industry had a requirement to connect to a VoIP carrier that only supported G.723, while the company's core network supported G.729. The company's solution included an IMG 1010 integrated with its existing SBC to provide topology hiding, protocol interworking, and security. The IMG 1010's high-density transcoding capability, combined with the compatibility of the company's SBC, made it easy for this company to select and deploy it in its network (see Figure 3).

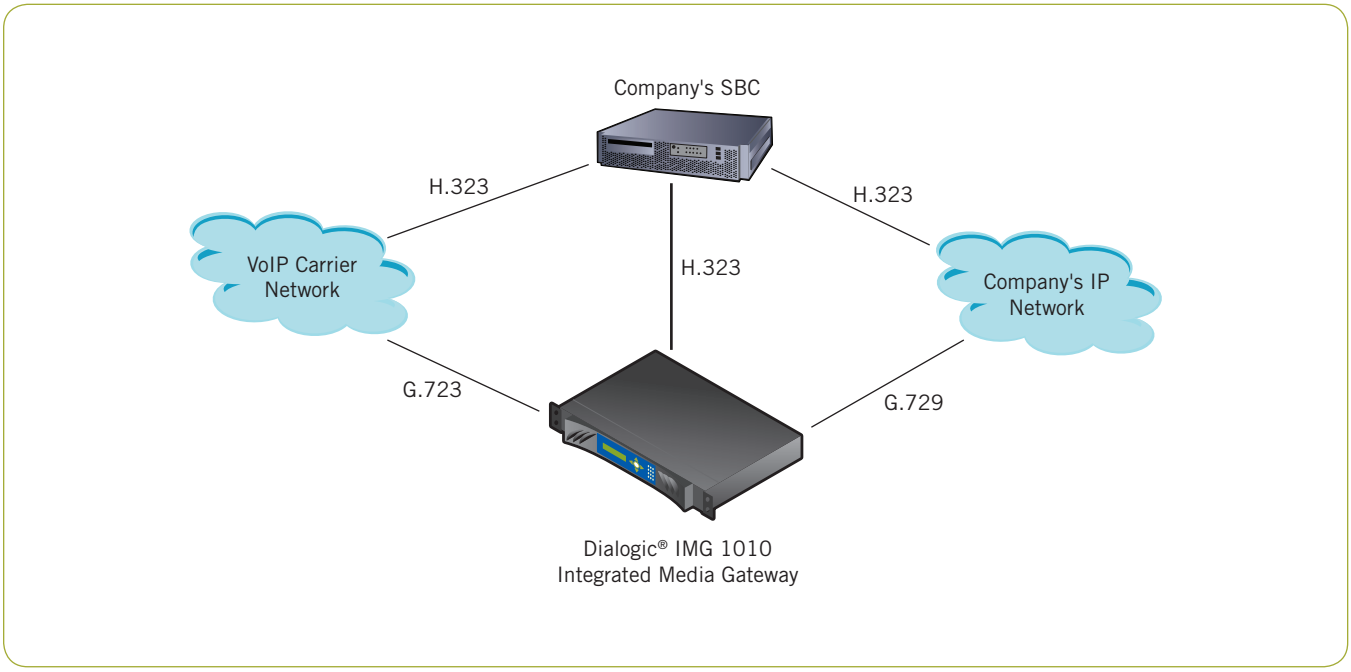

Figure 3. Implementation Example Network Architecture

Summary

The rapid proliferation and growth of VoIP networks present challenges for service providers. The replacement of TDM interconnection with VoIP peering requires SBCs for session management and media gateways for transcoding. The IMG 1010 enables a single solution by providing integrated transcoding in a single gateway. With its high-density wireless and wireline coder support in a 1U form factor, the IMG 1010 is an efficient VoIP transcoding option for service providers using next-generation networks.

Dialogic®

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