Ribbon Signaling Only Session Border Controller

Gain Network Interconnect Efficiencies for VoIP Traffic

Overview

Many communication service providers (CSPs) have converted their core networks to an all-IP infrastructure. And many of them are also completely interconnected with peer networks using IP. For these CSPs, their voice over IP (VoIP) interconnect traffic is likely going through a session border controller (SBC), handling both signaling and media, to ensure security, quality of service, and proper protocol interworking.

For these CSPs, especially those with large numbers of interconnect SBCs, managing and scaling IP network interconnections is a major challenge. Based upon design innovation for deploying a virtual session border controller (SBC) in multiple cloud environments, Ribbon is now offering its Signaling Only SBC (SO-SBC), which can significantly optimize the efficiency of network interconnection for VoIP traffic.

SO-SBC is a lightweight, virtual SBC, optimized to handle just the signaling associated with VoIP interconnects. Media processing would not be done at these SBCs. Instead the media (RTP) packets associated with each VoIP session would be direct routed with the interconnect carrier's network, with traffic originating/terminating on a core network SBC. Figure 1 shows a simplified SO-SBC deployment example. Also shown in Figure 1, is the policy routing function that is part of a SO-SBC deployment. Two options for policy routing from Ribbon are:

- The embedded routing engine (ERE) software which is included in the SO-SBC software build
- A virtualized policy server (PSX) to address high capacity deployments or to take advantage of advanced routing features

If a service provider already has a policy server, the SO-SBC can interwork with a 3rd party routing solutions using SIP.
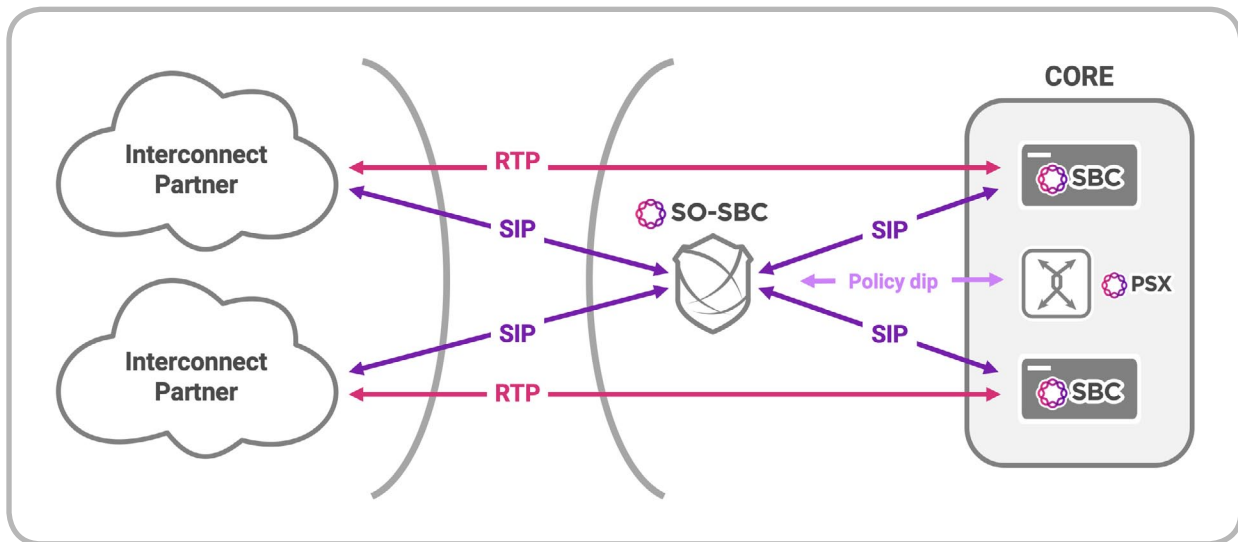

Figure 1. Signaling Only SBC Deployment

Benefits of deploying a SO-SBC for peering interconnect:

- Minimizes operations impact of IP addressing changes in the peer network
- Minimizes the impact of topology changes when migrating from TDM to IP interconnect

- Can be implemented for less cost than an SBC handling both signaling and media, because there is no need for resources to handle media or transcoding

- Easier to implement (configure and manage) as it is limited to signaling traffic only
- Achieve higher scale (number of concurrent sessions) per virtual machine since it is only handling signaling traffic

Primary Use Cases for Signaling Only SBC

There are three primary use cases for the SO-SBC, each of which will be covered in more detail below:

- Network to Network Interconnect
- Traffic Migration from TDM to IP for Peering
- Rich Communication Services (RCS) Interconnect

Network to Network Interconnection

This use case addresses the deployment of SO-SBC as a high-scale point of interconnect in front multiple SBCs or Gateways. Although it is not a requirement, it is also presumed the SO-SBC will be deployed in a high availability (HA) configuration. The SO-SBC can be used to address one of the biggest operational challenges CSPs face for interconnection - managing IP address changes in their peer networks. With the SO-SBC, the operational impact of peer network address changes will be significantly minimized since those changes only need to be accounted for at the SO-SBC rather than at each SBC handling peering traffic.

This use case is often an "associated" driver of the second use case we will discuss - migrating network interconnect from TDM to IP. Figure 2 below shows this use case.
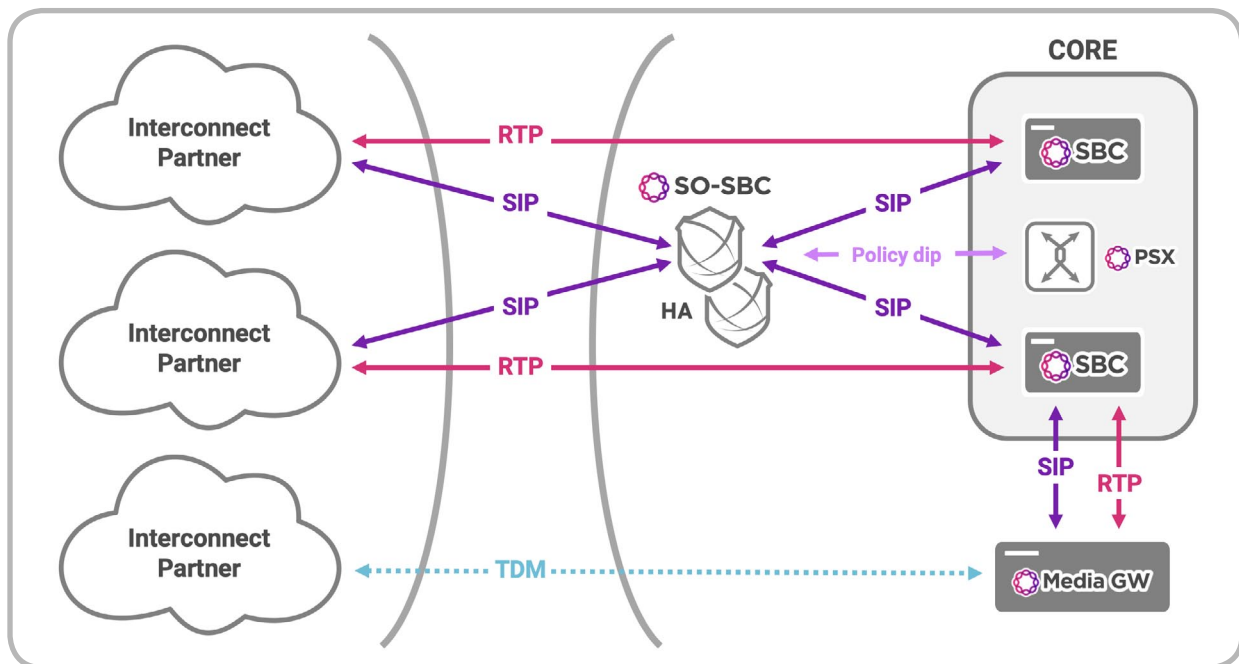

Figure 2. Network to Network Interconnect Use Case

Traffic Migration from TDM to IP for Peering

There are plenty of CSPs who still have TDM interconnects, for at least a portion, if not all, of their peering traffic. These CSPs will still be using TDM – IP gateways at their peering sites and most of them will be looking at migrating their interconnect traffic from TDM to IP because of the significant savings they can achieve. As part of this migration they should also consider the value of a SO-SBC to minimize the complexity of the TDM to IP migration.

While it is possible to do a flash cutover from legacy Gateways to SBCs, most service providers avoid this, in favor of a more methodical migration spread out over a longer time period. During this migration the SO-SBC can query PSX to support intelligent routing rules to enable graceful traffic management. Figure 3 shows this use case.
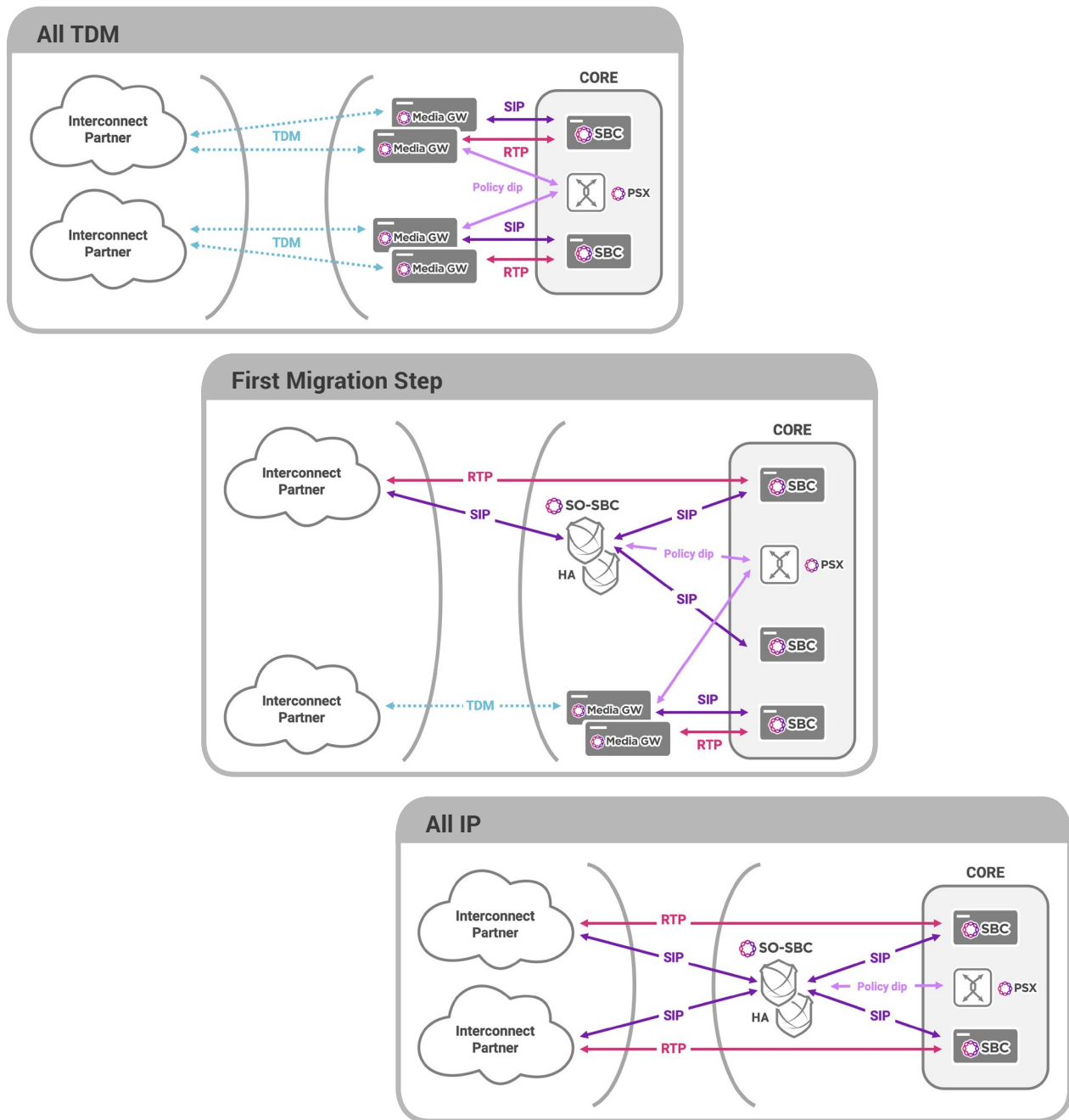

Figure 3. TDM to IP Migration for Peering

Rich Communication Services Interconnect

Rich Communication Services defines rich messaging, presence and address book services in addition to voice and video communication. RCS messaging, presence and address book services leverage SIP out of dialog signaling without any associated media channels. When carriers are interconnecting for RCS traffic, a SO-SBC is ideally placed to optimally address the RCS interconnection. Figure 4 below shows this use case.
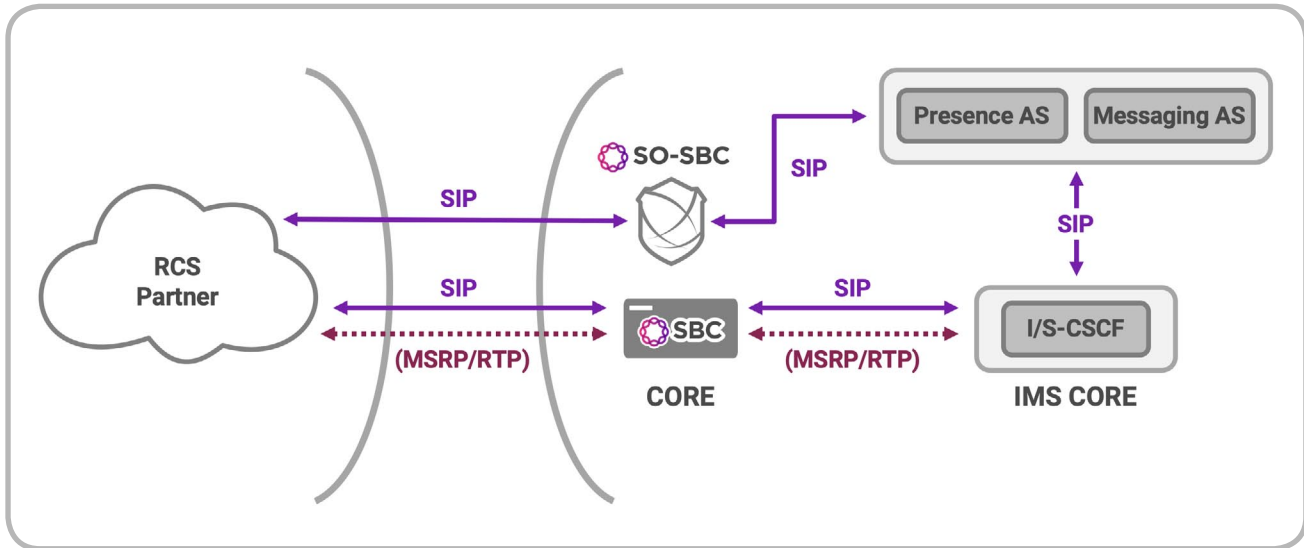

Figure 4. RCS Interconnect

Summary

Ribbon's Signaling Only SBC is designed to take advantage of Ribbon's 20+ year experience in providing secure, scalable, and efficient solutions for CSP network interconnection. The SO-SBC delivers high-scale, efficient, and secure connectivity for signaling traffic. It delivers a way to significantly minimize the operational impact of IP address changes in peer networks. It simplifies and enables a smooth migration path from TDM to IP migration peering interconnections. And it can be used to offload high volume signaling traffic for RCS.

With the SO-SBC, scale and operational efficiency can be gained without having to invest in the resources needed for a fully featured SBC that handles signaling, media and transcoding.

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