Introduction to SBC Core and Azure Communication Services direct routing

In this section:

This article introduces Azure Communication Services direct routing, Ribbon SBC Core, and describes the configuration prerequisites.

About Azure Communication Services direct routing

Azure Communication Services direct routing (referred as ACS direct routing in this guide) is a set of rich communication APIs offered by Microsoft using the Azure cloud. It allows the user to build rich communication experiences with the same secure platform capabilities used by Microsoft Teams. For more details refer to https://azure.microsoft.com/en-us/services/communication-services/.

ACS direct routing allows connecting SBC Core, or a customer-provided SBC, to a Microsoft Azure. You can connect the SBC to almost any telephony trunk, or connect it with third-party PSTN equipment. For more details on ACS direct routing provisioning, refer to https://docs.microsoft.com/en-us/azure/communication-services/concepts/telephony-sms/direct-routing-provisioning.

About Ribbon SBC Core

Ribbon's Session Border Controllers (SBCs) provide robust security, simplified interoperability, advanced session management, and carrier-grade reliability for enterprises and service providers. Ribbon's SBCs offer powerful deployment flexibility that meets or exceeds the demanding levels of security and service quality for applications such as SIP Trunking, Unified Communications, Network-Network Interconnection, VoLTE, VoWiFi, and RCS.

The Ribbon SBC Core supports ACS direct routing on the SBC 5110/5210/5400, SBC 7000, as well as the SBC SWe on KVM and VMware.

Validated Ribbon SBC Version

ACS successfully conducted validation tests with Ribbon SBC Core version 9.2. Other firmware versions may run successfully. However, ACS did not test such versions. For the updated list, refer to https://docs.microsoft.com/en-us/azure/communication-services/concepts/telephony-sms/certified-session-border-controllers.

Network Architecture

Ribbon SBC Prerequisites

Before starting configuration, ensure that the following prerequisites are fulfilled:

- To enable the direct routing, you need to create an ACS direct routing resource. For more information on ACS resource creation, refer to https://docs.microsoft.com/en-us/azure/communication-services/quickstarts/create-communication-resource?tabs=windows&pivots=platform-azp.
- Signaling Encryption and Media Encryption licenses are installed on the SBC.
- For allocating DSP resources with licenses, or playing ring back tones without the DSP licenses, refer to the sections "Configure DSP Resource Allocation" and "Configure Ring Back Tone (without DSP)" respectively in Ribbon Configurations with ACS Direct Routing - Common SBC Configuration.

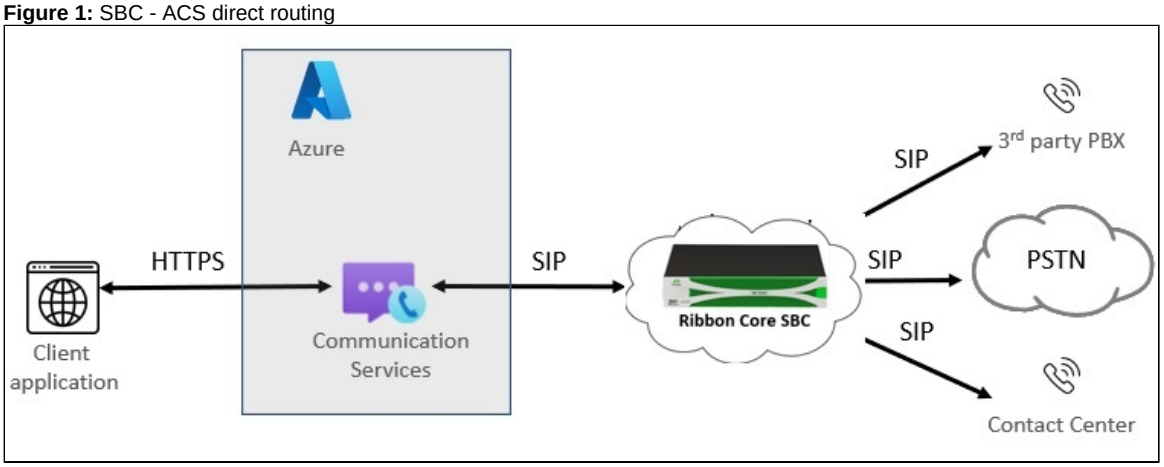
Caution
Limitations when not using the DSP resources:

- No comfort noise support - this can lead to RTP inactivity in the PSTN network if an ACS user mutes the call.
- Only certain codecs are supported for playing tones as announcements. For more details, refer to Tones and Announcements.

Reference Configuration

The following illustration represents the network architecture used for this guide.

Figure 1: SBC - ACS direct routing



The SBC performs a failover to another datacenter site when the primary data center site is down. Currently, the Microsoft Azure DNS uses the below-listed sites.

- `sip.pstnhub.microsoft.com`
- `sip2.pstnhub.microsoft.com`
- `sip3.pstnhub.microsoft.com`

The current ACS release supports only Outbound calls.

Equipment and Software

The configuration examples in this solution guide use the following equipment, elements, and software:

Table 1: Requirements

Product	Equipment	Software Version
Ribbon Elements	SBC PSX	V09.02.02-R002 V12.02.00-R000
Third-party Equipment	ACS	SDK Version: webpack 4.46.0
Administration and Debugging Tools	Wireshark	3.2.0

Infrastructure Prerequisites

For information on infrastructure prerequisites and the below-listed topics, refer to the "Infrastructure requirements" in https://docs.microsoft.com/en-us/azure/communication-services/.

- Session Border Controller (SBC)
- Telephony trunks connected to the SBC
- ACS direct routing tenant
- User registrar
- Domains
- Public IP address for the SBC
- Fully Qualified Domain Name (FQDN) for the SBC
- Public DNS entry for the SBC
- Public trusted certificate for the SBC
- Connection points for ACS direct routing
- Firewall IP addresses and ports for ACS direct routing media
- Media transport profile
- Firewall IP addresses and ports for ACS direct routing media

References:

- **ACS** – For a list of certified Ribbon SBC products supported for ACS, refer to the following page on Microsoft's website - https://docs.microsoft.com/en-us/azure/communication-services/concepts/telephony-sms/certified-session-border-controllers.
- **Ribbon** – For more information, refer to the following page on Ribbon's website - https://ribboncommunications.com/solutions/enterprise-solutions/cloud-and-edge/microsoft-solutions-teams-direct-routing.