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# Ribbon SBC Edge V8.0.2 IOT SBC1K Deutsche Telekom DeutschlandLAN SIP Trunks

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# Document Overview


This document describes configuring the Ribbon **Session Border Controller (SBC) 1000/2000 series** when connecting to **Deutsche Telekom**. For additional information about Ribbon SBCs, visit <https://ribboncommunications.com/>.

## Introduction

The interoperability compliance testing focuses on verifying inbound and outbound call flows between the Ribbon SBC 1000 / 2000 and Deutsche Telekom "DeutschlandLAN" SIP trunks.

## Audience

This technical document is provided for use by telecommunications engineers and network administrators that understand networking concepts such as TCP/UDP, IP/Routing, and SIP/RTP, along with experience using industry-standard utilities and tools. The information in this guide describes configuring and operating Ribbon SBCs. Some information describes using third-party products when administering and troubleshooting SBC operation.

 This configuration guide is offered as a convenience to Ribbon customers. The specifications and information regarding the product in this guide are subject to change without notice. All statements, information, and recommendations in this guide are believed to be accurate but are presented without warranty of any kind, express or implied, and are provided "AS IS". Users must take full responsibility for the application of the specifications and information in this guide.

## Requirements

The following equipment and software are used in the reference configuration:

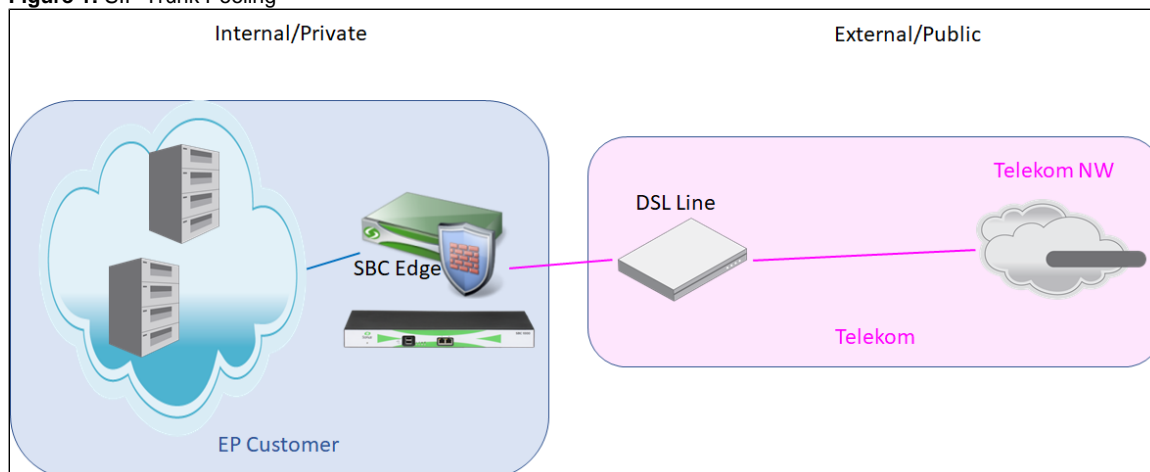
	Equipment	Software Version
<b>RIBBON Networks</b>	Ribbon SBC 1000	V8.0.2
<b>Third-party Equipment</b>	DSL Line	N/A
<b>OS</b>	N/A	N/A
<b>Other software</b>	N/A	N/A

## Reference Configuration

The following reference diagrams show connectivity between the Ribbon SBC 1000 / 2000 and third-party equipment that interoperates with the SBC. In this IOT we have two SIP trunks configuration:

1. SIP Trunk Pooling:
  - Internet Access and Telephony Services are both from Deutsche Telekom.

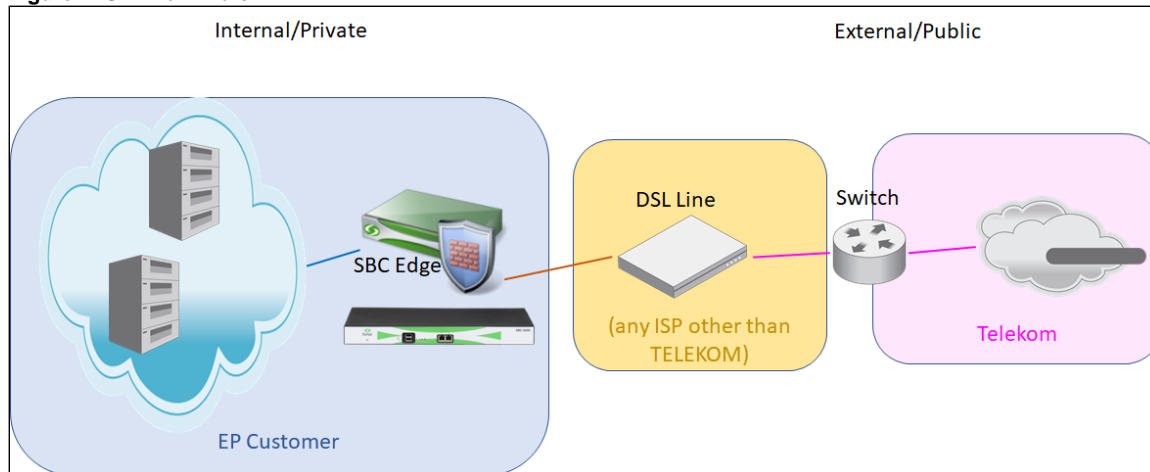
**Figure 1: SIP Trunk Pooling**



## 2. SIP Trunk Pure:

- Pure means without internet access from Deutsche Telekom.
- Use the telephony from Deutsche Telekom through a 3rd party ISP.

**Figure 2: SIP Trunk Pure**



### Note

In both cases the general setup is the same, except the ISP is a different one.

For questions about information in this document, contact Ribbon Support in either of the following ways:

- Global Support Assistance Center +1-978-614-8589 or +1-888-391-3434 (English language Support)
- Web: <https://ribboncommunications.com/services/ribbon-support-portal-login>

## Ribbon SBC Edge Configuration

The following steps provide an example of how to configure the Ribbon SBC 1000/2000.

[Media Profile](#)

[Message Manipulation](#)

[Remote Authorization Table](#)

[SIP Server Table](#)

[SIP Profile](#)

[SIP Contact Registration](#)

[SMM Rule](#)

[Signaling Group](#)

[Known Issues](#)

## 1. Media Profile

Select **Settings > Media > Media Profiles**.

Media Profiles specify the individual voice and fax compression codecs and their associated settings for inclusion into a Media List. Different codecs provide varying levels of compression, allowing the reduction of bandwidth requirements. We deactivated CNG/Fax Tone. Listed below are the media profiles of the voice codecs used for testing the SBC 2000:

**Note**

The Digit Relay Payload Type must be set to 101.

**Figure 3: Media List**

Description: Default Media List

Media Profiles List: Default G711A

Up, Down, Add/Edit, Remove

SDES-SRTP Profile: None

DTLS-SRTP Profile: None

Media DSCP: 46

RTCP Mode: RTCP

Dead Call Detection: Disabled

Silence Suppression: Enabled

Associated SIP SG Listen Ports should be TLS only.

\* [0..63]

**Figure 4: Telekom Media List**

**Gain Control**

Receive Gain: 0

Transmit Gain: 0

**Digit Relay**

Digit (DTMF) Relay Type: RFC 2833

Digit Relay Payload Type: 101

**Passthrough/Tone Detection**

Modem Passthrough: Enabled

Fax Passthrough: Enabled

CNG Tone Detection: Disabled

Fax Tone Detection: Disabled

DTMF Signal to Noise: 0

DTMF Minimum Level: -38

## 2. Message Manipulation

Configure Message Manipulation to change [reg.sip-trunk.telekom.de](https://reg.sip-trunk.telekom.de) to [sip-trunk.telekom.de](https://sip-trunk.telekom.de) in "To", "From", "URI", "PAI" and "PPI" headers.

Rule is applied as OUTPUT message manipulation in signaling group sgTELEKOM.

**Figure 5: Message Manipulation**

TELEKOM		
Admin State	Rule Type	Result Type
	Request Line Rule	Optional
	Header Rule	Optional
	Header Rule	Optional
	Header Rule	Optional
	Header Rule	Optional

Example rule for URI hostname:

Figure 6: Message Manipulation Example

Header Rule

Optional

Test Rule

Description

Condition Expression Add/Edit

Admin State Enabled

Result Type Optional

Header Action Modify

Header Name From

Header Value

Display Name Ignore

URI

URI Scheme Ignore

URI User Info Ignore

URI Host Modify Add/Edit sip-trunk.telekom.de

URI Port Ignore

URI Parameters

Total 0 SIPURIParam Rows

Name	Value	Action
-- Table is empty --		

If you do not configure the "Message Manipulation Table" settings listed in the next image, you will experience faulty calls (1-way audio, then cancel after 10 seconds) for outgoing calls to mobile phones in the Deutsche Telekom network because in PRACK packets, the request URI is also handled unless you limit the table to Register & Invite.

Figure 7: Message Manipulation One Way Audio

ribbon

Monitor

Tasks

Settings

Diagnostics

System

Welcome, admin | Logout | Help

Device Name: sbcdgberlin

Ribbon SBC 1000

Expand All | Collapse All | Reload

Call Routing

Signaling Groups

Linked Signaling Groups

Route Interfaces

Application Solution Module

System

Auth and Directory Services

Protocols

SP

Local Registers

Local / Pass-thru Auth Tables

SIP Profiles

SIP Server Tables

Trunk Groups

Not Qualified Profile Tables

Remote Authentication Tables

Contact Registration Table

Message Manipulation

Message Rule Tables

Table entry 1

Table entry 2

Table entry 3

Table entry 4

Table entry 5

Table entry 6

Telekom

Test number 103 to 200

CCE remove PAI URI

SIP Message Rule Table

Total 9 SIP Message Manipulation Table Rows

Description	Result Type	Message Type	Primary Key
Table entry 1	Optional	All	1
Table entry 2	Optional	All	2
Table entry 3	Optional	All	3
Table entry 4	Optional	All	4
Table entry 5	Optional	All	5
Table entry 6	Optional	All	6
Telekom	Optional	INVITE REGISTER	7
Test number 103 to 200	Optional	All	8
CCE remove PAI URI	Optional	All	9

Description Telekom

Applicable Messages Selected Messages

Invite

Register

Add/Edit

Remove

Message Selection

Table Result Type Optional

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### 3. Remote Authorization Table

Select **Settings > SIP > Remote Authorization Tables**.

Remote Authorization Tables entries contain information for responses to request message challenges by an upstream server.


Figure 8: Remote Authorization Table

Realm	Authentication ID	From URI User Match	Match Regex
	55112982XXXX	Regex	.*

### 4. SIP Server Table

Select **Settings > SIP > SIP Server Tables**.

SIP Server Tables contain information about the SIP devices connected to the SBC Edge. The entries in the tables provide information about the IP Addresses, ports, and protocols used to communicate with each server. The table entries also contain links to counters that are useful for troubleshooting.



When you configure a SIP server table entry with a DNS SRV record, Ribbon recommends that you do not configure another SIP server table entry with the IPs or FQDNs that the DNS SRV record resolves.

The SBC does not configure two Signaling Groups (SG) that face the same SIP server with a different Load Balancing setting, especially if the SIP server is sensitive on the SBC connection information (that is, the IP and port number of the SBC to send SIP messages).

Figure 9: Telekom SIP server Table

TELEKOM

Create SIP Server

Total 1 SIP Server Row

Host / Domain

Server Lookup

reg.sip-trunk.telekom.de

DNS SRV

Server Host

Server Lookup

DNS SRV

Host IP Version

IPv4

Domain Name/FQDN

reg.sip-trunk.telekom.de

Service Name

sip

Protocol

TCP

Transport

Monitor

None

Remote Authorization and Contacts

Remote Authorization Table

TELEKOM

Contact Registrant Table

TELEKOM

Clear Remote Registration on Startup

False

Contact URI Randomizer

False

Stagger Registration

False

Retry Non-Stale Nonce

True

Authorization on Refresh

True

Session URI Validation

Liberal

Connection Reuse

Reuse

True

Sockets

4

Reuse Timeout

Forever

SRV Servers

Total 3 SipSrvServer Rows

Server ID	FQDN/Domain Name	Protocol	Port	Time to Live	Priority	Weight
101	hh-lpr-a02.sip-trunk...	TCP	5060	3600	0	5
100	hh-lpr-a01.sip-trunk...	TCP	5060	3600	1	5
102	d-lpr-a02.sip-trunk...	TCP	5060	3600	10	5

## 5. SIP Profile

Select **Settings > SIP > SIP Profiles**.

SIP Profiles control how the SBC Edge communicates with SIP devices. The SIP Profile controls important characteristics such as the following: session timers, SIP header customization, SIP timers, MIME payloads, and option tags.

**Figure 10:** SIP Profile





This section is not applicable.

## 8. Signaling Group

Select **Settings > Signaling Groups**.

Signaling groups allow telephony channels to be grouped together for the purposes of routing and sharing configuration data. Calls are routed to signaling groups along with the location data used in Call Route selection. A signaling group also specifies the location from which Tone Tables and Action Sets are selected. For SIP, signaling groups specify protocol settings and link to server, media, and mapping tables.

Figure 12: Signaling Group

Description:

Admin State: Enabled

Service Status: Down

**SIP Channels and Routing**

Action Set Table: None

Call Routing Table: From\_Telekom

No. of Channels:  [1..800]

SIP Profile: Default SIP Profile

SIP Mode: Basic Call

Agent Type: Back-to-Back User Agent

Interop Mode: Standard

SIP Server Table: TELEKOM

Load Balancing: Priority: Register Active Only

**Media Information**

Supported Audio/Fax Modes: DSP Proxy Direct Add/Edit Remove

Supported Video/Application Modes: Disabled

Media List ID: Default Media List

Play Ringback: Auto on 180

Tone Table: Default Tone Table

Play Congestion: Disable

Load Balancing: Priority: Register Active Only

Channel Hunting: Most Idle

Notify Lync CAC Profile: Disable

Challenge Request: Disable

Outbound Proxy IP/FQDN:

Outbound Proxy Port:  [1..65535]

No Channel Available Override: 34: No Circuit/Channel Available

Call Setup Response Timer:  [180..750] secs

Call Proceeding Timer:  [24..750] secs

QoS Reporting: Disabled

Use Register as Keep Alive: Enable

Forked Call Answered Too Soon: Disable

Play Congestion Tone: Disable

Early 183: Disable

Allow Refresh SIP: Enable

Music on Hold: Disabled

RTCP Multiplexing: Disable

**Mapping Tables**

SIP To Q.850 Override Table: Default (RFC4497)

Q.850 To SIP Override Table: Default (RFC4497)

Pass-thru Peer SIP Response Code: Enable

Figure 13: Telekom Signaling Group

SIP Fallback Cause Codes:

Add/Edit Remove

**SIP IP Details**

Signaling/Media Source IP: Ethernet 1 IP (Dynamic)

Signaling DSCP:  [0..63]

**NAT Traversal**

ICE Support: Disabled

**Static NAT - Outbound**

Outbound NAT Traversal: None

**Static NAT - Inbound**

**Listen Ports**

Total 1 SIP Listen Port Row

☐ Port Protocol TLS Profile ID

☐ 5060 TCP N/A

**Federated IP/FQDN**

Total 0 SIP Federated IP Rows

☐ IP/FQDN Netmask/Prefix

-- Table is empty --

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Message Manipulation: Enabled

**Inbound Message Manipulation**

Message Table List

Up, Down, Add/Edit, Remove

**Outbound Message Manipulation**

Message Table List

TELEKOM

Up, Down, Add/Edit, Remove

Apply

## 9. Known Issues

There is a known limitation in cases where the ISP cuts the internet connection approximately every 24 hours and reassigns the IP.

When the ISP cuts the internet connection and changes the public IP, which can occur every 24 hours for some ISPs, the following has been observed:

- Existing calls may be lost.
- It can take up to 2 minutes until new calls can be established again.

Based on that, we recommend to configure the DSL modem so that the time when the internet connection or change of public IP address happens during the out of office hours or low traffic hours.

## Test Results

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This section is not applicable.

## Conclusion

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These Application Notes describe the configuration steps required for **Ribbon SBC 1000 / 2000** to successfully interoperate with **Deutsche Telekom**. All feature and serviceability test cases were completed and passed with the exceptions/observations noted in [Test Results](#).