

Ribbon EdgeMarc 2900A R15.7 Interop with Company Flex: Interoperability Guide



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Interoperable Vendors



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Document Overview

This document depicts the configuration details for Ribbon EdgeMarc 2900A interworking and compliance against Deutsche Telekom CompanyFlex SIP Trunking solution. This is a general reference document that requires user input during the configuration of Ribbon EdgeMarc 2900A.

This guide contains the following configuration sections:

[Section A: Ribbon EdgeMarc 2900A Configuration](#)

- Captures general Ribbon EdgeMarc SBC configurations for deploying with Deutsche Telekom CompanyFlex SIP Trunking solution.

[Section B: Emulated PBX Configuration](#)

- Captures the Phonerlite configuration which is used as an Emulated PBX.

Deutsche Telekom is a telecommunications company that offers a range of fixed-network services, such as voice and data communication services based on fixed-network and broadband technology. They also sell terminal equipment, other hardware, and services to resellers.

Non-Goals

It is not the goal of this guide to provide detailed configurations that will meet the requirements of every customer. Use this guide as a starting point and build the SBC configurations in consultation with network design and deployment engineers.

Audience

This is a technical document intended for telecommunications engineers with the purpose of configuring both the Ribbon SBCs and the third-party product.

Steps will require navigating the third-party product as well as the Ribbon product using graphical user interface (GUI) or command line interface (CLI).

Understanding of the basic concepts of TCP/UDP/TLS, IP/Routing, and SIP/RTP/RTCP is needed to complete the configuration and any necessary troubleshooting.



Note

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.

Pre-Requisites

The following aspects are required before proceeding with the interop:

- Ribbon EdgeMarc 2900A SBC
- DT Digitalisierungsbox Premium

Product and Device Details

The following equipment and software were used for the sample configuration provided:

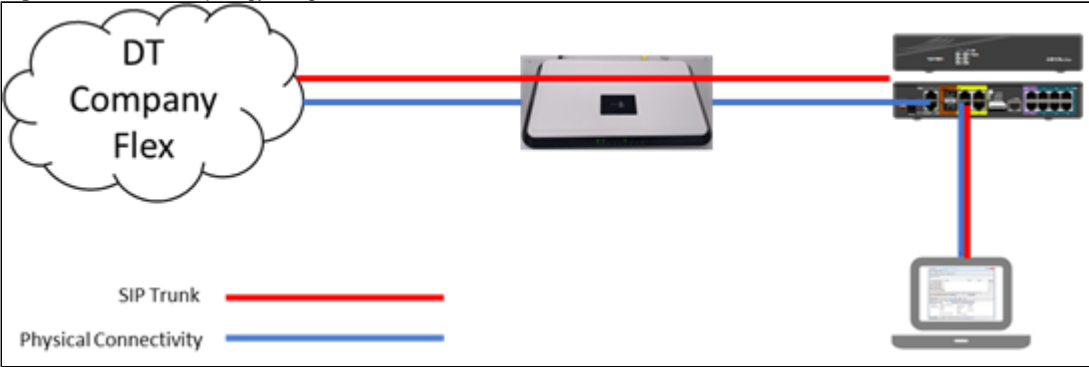
Table 1: Requirements

	Equipment	Software Version
Ribbon Communications	Ribbon EdgeMarc 2900A	V15.7.0
Deutsche Telekom	Company Flex SIP Trunk	1.5
Third-party Equipment	Phonerlite	2.48

Network Topology Diagram

The following network topology diagram shows connectivity between DT Company Flex and Ribbon EdgeMarc 2900A.

Figure 1: Network Topology Diagram



Section A: Ribbon EdgeMarc SBC Configuration


The following EdgeMarc configurations are included in this section:

1. [Login](#)
2. [Network](#)
3. [VoIP](#)
4. [SIP Settings](#)
5. [Survivability](#)
6. [B2BUA Trunking Configuration](#)

1. Login

- Login to EdgeMarc and change the GUI and SSH Password.

Figure 2: Admin Login


Admin
[Help](#) [Sign Out](#)

Configuration Menu

- Admin
 - [Encryption Key](#)
 - [Backup / Restore](#)
 - [Upgrade Firmware](#)
 - [RADIUS Settings](#)
 - [TACACS+ Settings](#)
 - [Services Configuration](#)
 - [System Information](#)
 - [System Analysis](#)
 - [Time Settings](#)
 - [User Commands](#)
 - [File Download](#)
 - [File Server](#)
 - [SD Card](#)
 - [Reboot System](#)
- + [Network](#)
- + [Users](#)
- + [Security](#)
- + [SD-WAN](#)
- + [VoIP](#)
- + [VPN](#)
- + [GRE](#)

Software Version:
Version 15.7.0 -- Mon Dec 16 15:45:54 PST 2019

Hostname:
2900A

Model:
EdgeMarc 2900A with IPv6 support

Vendor:
Ribbon

LAN Interface MAC Address:
54:39:68:1B:5B:E5

Registration Status:
The ALG feature is registered. View [license key](#).

System:
Date : 02/18/2020 15:10:55 UTC
Erase Button : Enabled

Change Administrative Password:
The password of the read-write administrative user can be [changed](#).

Change Read-Only Password:
The password of the read-only user can be [changed](#).

- Optional: Connect with EdgeView by navigating to **Admin > Services Configuration**.


Figure 3: EdgeView

Current EMPath Management Server:	evd1.emea.rbbn.com
Set EMPath Management Server:	<input type="text" value="evd1.emea.rbbn.com"/>

2. Network

- Configure the network to use DHCP on primary WAN port.

Figure 4: EdgeMarc Network


ribbon

[Help](#)
[Sign Out](#)

Network

Networking configuration information for the public and private networks.

LAN Interface Settings:

IP Address:

Subnet Mask:

IPv6 Address/Prefix:

Enable VLAN support: ☐

Default VLAN ID:

WAN Interface IPv6 Settings:

Select the type of IPv6 WAN Interface to use:

- ☒ Disabled
- ☐ DHCP
- ☐ Static IP (ethernet)
- ☐ IPv6 in IPv4 Tunnel
- ☐ VLAN

WAN Interface IPv4 Settings:

Select the type of IPv4 WAN Interface to use:

- ☐ Disabled
- ☐ PPPoE
- ☒ DHCP
- ☐ Static IP
- ☐ VLAN

To see the IP address given to the WAN port, check the [Network Information page](#).

DHCP client monitor link state ☒

DNS servers:

Note: In case of dynamic links, if the manual override checkbox is not checked the address provided will be used.

Manually set DNS: ☐

Primary DNS Server:

Secondary DNS Server:

Configuration Menu

- + Admin
- Network
 - + NAT
 - + VLAN
 - + WAN VLAN
 - + 802.1X Supplicant
 - + High Availability
 - + DHCP Relay
 - + DHCP Server
 - + Traffic Shaper
 - + Pass-Through Rules
 - + Subinterfaces
 - + Proxy ARP
 - + Switch Ports
 - + Static Routes
 - + Dynamic DNS
 - + Network Information
 - + Network Restart
 - + Network Test Tools
 - + WAN Failover
 - + Router Advertisement
 - + IP Multicast
- + Users
- + Security
- + SD-WAN
- + VoIP
- + VPN
- + GRE

3. VoIP

1. Navigate to **VoIP > B2BUA Options**, and select "Route all SIP signaling through B2BUA".
2. This allows EdgeMarc to act as a back to back user agent and modify signaling exchange according to requirements.

Figure 5: VoIP

Configuration Menu

- + Admin
- + Network
- + Users
- + Security
- + SD-WAN
- VoIP
 - H.323
 - + SIP
 - Survivability
 - Clients List
 - Test UA
- + VPN
- GRE

Help

Sign Out

VoIP

VoIP ALG allows the system to recognize and register network devices.

Enable LLDP:

☒

LLDP Broadcast Interval (sec):

30

IPv4 only.

TFTP Server IP address:

In some cases, the ALG addresses will not correspond to the addresses of the LAN or the WAN ports. The addresses will be alias addresses that have been configured on the ports. In general, the user should leave this feature disabled.

Use ALG Alias IP Addresses:

☐

ALG LAN Interface IP Address:

192.168.1.1

ALG LAN Interface IPv6 Address:

ALG WAN Interface IP Address:

192.168.2.101

ALG WAN Interface IPv6 Address:

Public NAT WAN IP address:

Private NAT LAN IP address:

Do strict RTP source check:

☐

Enable Client List lockdown:

☐

Allow Shared Usernames:

☐

Strip G.729 from calls:

☐

B2BUA Options:

Route all SIP signalling through B2BUA:

☒

Enable Microsoft Feature:

☐

Enable Comfort Noise Generation (CNG):

☐

Enable User-Agent header pass-through:

☐

Media Security:

Enable SRTP support:

☐

Enable MKI support:

☐

Configure the range of TCP ports to use for handling H.225 and H.245 TCP connections.


H.225/H.245 Port Range:

14085 - 15084

4. SIP Settings

1. Navigate to **VoIP > SIP Settings** to configure the SIP settings.
2. Configure the primary and secondary registrar FQDN as supplied and select custom domain to add the supplied SIP server domain.
3. Choose required transport protocol and port number for signaling.

Figure 6: SIP

 ribbon

SIP Settings

[Help](#) [Sign Out](#)

Configuration Menu

+ Admin

+ Network

+ Users

+ Security

+ SD-WAN

- VoIP

• H.323

- SIP

• ALG

• B2BUA

+ SIP UA

• SIP GW

• Trunking Group

Availability

• Media Server

• Survivability

• Clients List

• Test UA

+ VPN

• GRE

SIP protocol settings.

The SIP Server settings specify the address and port that all client traffic shall be forwarded to.

SIP Server Transport

TCP

Use Custom Domain:

☒

SIP Server Domain:

tel.t-online.de

List of SIP Servers

Select: [All](#) [None](#) [Delete](#)

	Lookup Status	Priority	SIP Server Address/FQDN	Port
<input type="checkbox"/>		0	551134275265.primary.companyflex.de	5060
<input type="checkbox"/>		1	551134275265.secondary.companyflex.de	5060

Add a new SIP Server

IP Address/FQDN:

Port:

Add

Reset

Enable Multi-homed Outbound Proxy Mode:

☒

Enable Transparent Proxy Mode:

☐

Limit Outbound to listed SIP Servers:

☒

Limit Inbound to listed SIP Servers:

☒

Include UPDATE In Allow:

☒

PRACK Support:

☒

GEOLOCATION Support:

☐

Call Audit Support:

☐

TCP

Port:

5060

Timeout (minutes):

10

Enable SIP Statistics:

☒

Registration Rate-Pacing parameters are available on the [Survivability page](#).

Submit

Reset

Apply Later

5. Survivability

- Check and confirm SIP connectivity is shown for proxy registrars under **VoIP > Survivability**.

Figure 7: Survivability

Survivability

[Help](#)
[Sign Out](#)

Configuration Menu

- + Admin
- + Network
- + Users
- + Security
- + SD-WAN
- VoIP
- + H.323
- + SIP
- + Survivability
- + Clients List
- + Test UA
- + VPN
- + GRE

Survivability is a collection of features that enable the system to extend the availability of VoIP services. These features include support for redundant Softswitches/IP PBX's and local call control in the event of WAN link failure, Softswitch/IP PBX failure, or during periods of network congestion that result in loss of connectivity to a remote Softswitch/IP PBX. [Click here for more.](#)

The system is using a dynamic WAN link. Enabling Survivability when using a dynamic WAN link is not a recommended configuration. See the [Help](#) link for more details.

Current Status

SIP Server Reachability:

Domain	Name	Address	Port	P	W	Transport	Lost	Rcvd	Status
551134275265.primary.companyflex.de	f-ecp-600.edns.t-ipnet.de	217.0.21.70	5060	10	0	tcp	0	0	Active
551134275265.secondary.companyflex.de	f-ecp-600.edns.t-ipnet.de	217.0.21.70	5060	10	0	tcp	0	0	Idle
551134275265.primary.companyflex.de	d-ecp-600.edns.t-ipnet.de	217.0.28.38	5060	20	0	tcp	0	0	Idle
551134275265.secondary.companyflex.de	h2-ecp-600.edns.t-ipnet.de	217.0.29.40	5060	20	0	tcp	0	0	Idle
551134275265.secondary.companyflex.de	d-ecp-600.edns.t-ipnet.de	217.0.28.38	5060	30	0	tcp	0	0	Idle
551134275265.primary.companyflex.de	h2-ecp-600.edns.t-ipnet.de	217.0.29.40	5060	30	0	tcp	0	0	Idle

SIP Server Update Received at 16:36:58

Current Call Control is: Remote

6. B2BUA Trunking Configuration

1. Navigate to **VoIP > B2BUA** to configure SIP Trunk on LAN to PBX and WAN to DT Registrar.
2. In the test setup, PBX on LAN was the Phonerlite client on the laptop that had its IP address allocated by EM acting as DHCP server.

Figure 8: B2BUA Trunk Configuration

B2BUA Trunking Configuration

[Help](#)
[Sign Out](#)

Configuration Menu

- + Admin
- + Network
- + Users
- + Security
- + SD-WAN
- VoIP
- + H.323
- SIP
- + ALG
- + B2BUA
- + SIP UA
- + SIP GW
- + Trunking Group
- + Availability
- + Media Server
- + Survivability
- + Clients List
- + Test UA
- + VPN
- + GRE

This page supports only IPv4 addressing.

In order for changes to this page to be applied, you must click the "Submit" or "Apply Later" button at the bottom of the page

Trunking Devices

Name	Address	Port	Group	Username	Registration Status	Transport
LANPBX	192.168.1.150	5060				UDP

[New Entry](#)

Name:

Model:

Address(IP/FQDN):

Use DNS SRV: ☐

Port:

Transport:

Source FQDN:

Username:

Password:

Authenticate Registration: ☐

[Update](#)

- The first set of credentials are for the 401 upon registration.

Figure 9: Credentials and Registration-1

Credentials and Registration

AOR	Auth-User	Password	Registrar	Status	Transport
+49199296000000009710		is set	default	OK	TCP
default	+49199296000000009710@tel.t-online.de	is set			

New Entry

Credentials

Username: +49199296000000009710 Auth-User:

Edit Password: ☐

Password:

Confirm Password:

Use as default: ☐

Registrar

☐ Don't Register

☒ Default SIP Proxy

Custom URI Domain:

☐ Domain:

Address (optional): Port:

Transport:

Register Options (Optional)

Default Expires: sec. Renew interval: %

- The second set of credentials are for 407 received when sending INVITE.

Figure 10: Credentials and Registration-2

Credentials and Registration

AOR	Auth-User	Password	Registrar	Status	Transport
+49199296000000009710		is set	default	OK	TCP
default	+49199296000000009710@tel.t-online.de	is set			

New Entry

Credentials

Username: Auth-User: +49199296000000009710

Edit Password: ☐

Password:

Confirm Password:

Use as default: ☒

Registrar

☒ Don't Register

☐ Default SIP Proxy

Custom URI Domain:

☐ Domain:

Address (optional): Port:

Transport:

Register Options (Optional)

Default Expires: sec. Renew interval: %

- Action to send incoming calls to LAN PBX.

Figure 11: Actions 1

Actions

Name	Send	Prio	Hunt	Header	Refer-To-ReINV
SENDTOLANPBX	✓				
ADDPHEADER	✓			✓	

New Entry

Name: SENDTOLANPBX

Send To: * Trunking Device: LANPBX

Client:

URI:

Response:

Prioritize: ☐

Serial Hunting:

Refer to Re-INVITE: ☐

E.164 Conversion rule: None

Conversion mode: Add

Header Manipulations:

Header	Value
Request-URI	

Add

Update

- Action to add P-Preferred Identity Header to outgoing calls as required from LAN PBX to DT Trunk.

Figure 12: Actions 2

Actions

Name	Send	Prio	Hunt	Header	Refer-To-ReINV
SENDTOLANPBX	✓				
ADDPHEADER	✓			✓	

New Entry

Name: ADDPHEADER

Send To: * Trunking Device: None

Client:

URI:

Response:

Prioritize: ☐

Serial Hunting:

Refer to Re-INVITE: ☐

E.164 Conversion rule: None

Conversion mode: Add

Header Manipulations:

Header	Value
P-Preferred-Identity	"sip:" + \$from.uri.user + "@tel-t-online.de;user-phone"

Add

Update

- First rule for sending all incoming calls to LAN PBX.

Figure 13: Match 1

Match

Direction	Mode	Def	Called		Calling		Source	Action
			Match	Pattern	Match	Pattern		
Inbound	BothModes	✓					Any	SENDTOLANPBX
Outbound	BothModes		matches	.			Any	ADDPHEADER

New Entry

Direction: Inbound

Mode: BothModes

* default

Pattern: Called

Called Party: matches

Calling Party: matches

Source: Any

Action: SENDTOLANPBX

Update

- Second rule for adding PPI Header to all outgoing calls.

Figure 14: Match 2

Match

Direction	Mode	Def	Called		Calling		Source	Action
			Match	Pattern	Match	Pattern		
Inbound	BothModes	✓					Any	SENDTOLANPBX
Outbound	BothModes		matches				Any	ADOPPHDHEADER

New Entry

Direction: Outbound

Mode: BothModes

☐ default

☒ Pattern: Called

Called Party: matches

Calling Party: matches

Source: Any

Action: ADOPPHDHEADER

Update

Submit Reset Apply Later

Section B: Emulated PBX Configuration

Phonerlite is used as an Emulated PBX in the current setup.

Figure 15: Phonerlite 1

PhonerLite

Action Options Help

Destination number

1 2 3
4 5 6
7 8 9
* 0 #

Number Duration Codecs

Logbook Phonebook Neighbours Configuration Statistics

EM_LANPBX New Rename Delete Save as... Save

Server User Network Codecs Certificate Sound

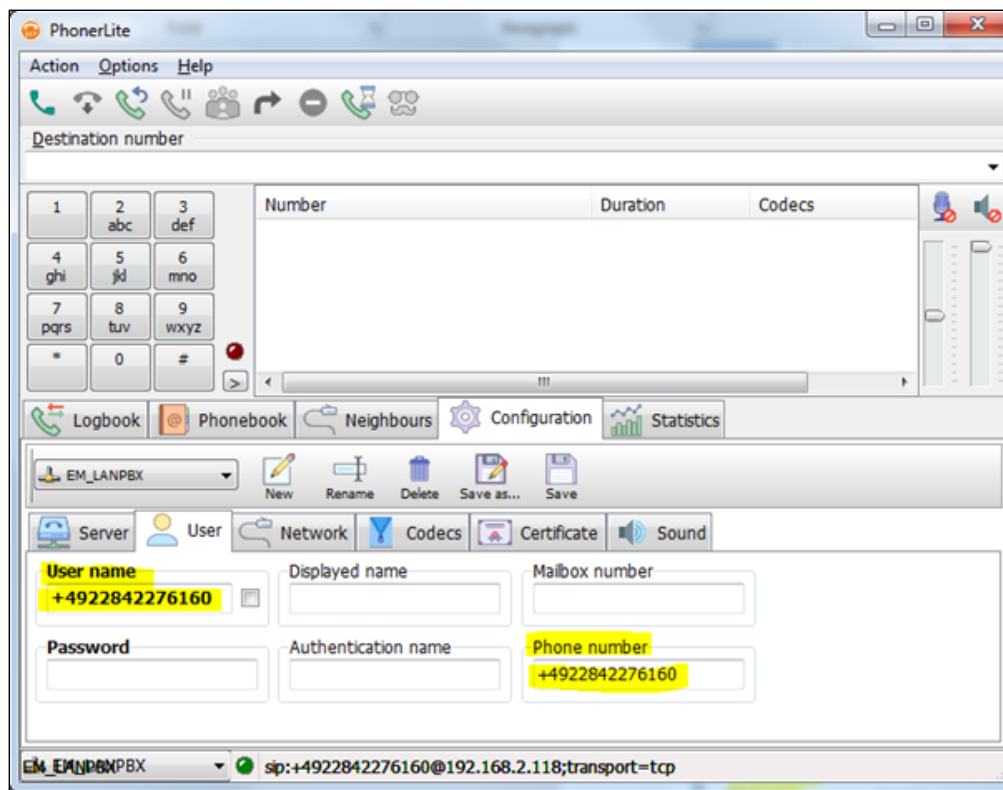
Proxy/Registrar
192.168.1.1
Register MWI
900 seconds

STUN server
Domain/Realm

EM_LANPBX sip:+4922842276160@192.168.2.118;transport=tcp

Figure 16: Phonerlite 2

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Supplementary Services and Features Coverage

The following checklist depicts the set of services/features covered through the configuration defined in this Interop Guide.

Sr.No.	Supplementary Features/Services	Coverage
1	Basic Registration	✓
2	Basic Inbound Call	✓
3	Basic Outbound Call	✓

Legend

Item	Definition
✓	Supported
✗	Not Supported
N/A	Not Applicable

Support

For any support related queries about this guide, contact your local Ribbon representative, or refer to the following details:

- Sales and Support: 1-833-742-2661
- Other Queries: 1-877-412-8867
- Website: <https://ribboncommunications.com/about-us>

References

For detailed information about Ribbon products and solutions, visit: <https://ribboncommunications.com/products>

For detailed information about Deutsche Telekom products and solutions, visit: <https://www.telekom.com/>

Conclusion

This Interoperability Guide describes a successful configuration covering Deutsche Telekom Company Flex interop involving the Ribbon EdgeMarc SBC. All the necessary features and serviceability aspects stand covered as per the details provided in this interoperability document.

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