

Vodafone SIP Trunk using AudioCodes Mediant™ MSBR BRI Gateway

Version 6.8

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Notice

This document describes how to connect the Vodafone SIP Trunk using AudioCodes Mediant Gateway product series.

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Documentation Feedback

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1 Introduction

This Configuration Note describes how to set up AudioCodes Gateway for interworking between Vodafone's SIP Trunk environments.

1.1 Intended Audience

The document is intended for engineers, or AudioCodes and Vodafone Partners who are responsible for installing and configuring Vodafone's SIP Trunk for enabling VoIP calls using the AudioCodes Gateway.

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2 Component Information

2.1 AudioCodes MSBR Gateway Version

Table 2-1: AudioCodes MSBR Gateway Version

SBC Vendor	AudioCodes
Models	<ul style="list-style-type: none"> ▪ Mediant 500L MSBR & GW ▪ Mediant 500 MSBR & GW ▪ Mediant 800 MSBR & GW
Software Version	SIP_6.80A.335.005
Protocol	<ul style="list-style-type: none"> ▪ SIP/UDP (to the Vodafone SIP Trunk) ▪ Euro-ISDN over BRI (to the PSTN PBX)
Additional Notes	None

2.2 Vodafone SIP Trunking Version

Table 2-2: Vodafone Anlagen-Anschluss Plus

Vendor/Service Provider	Vodafone
Protocol	SIP
Additional Notes	http://www.vodafone.de/media/downloads/pdf/VF-SIP-Trunking-local-gateway-Interface-Specification-V1.0.pdf

2.3 Unify IP-PBX Version

Table 2-3: Unify IP-PBX Version

Vendor	Unify
Model	OpenScape Business V2 X5
Software Version	v2_R2.1.0_269
Protocol	SIP
Additional Notes	None

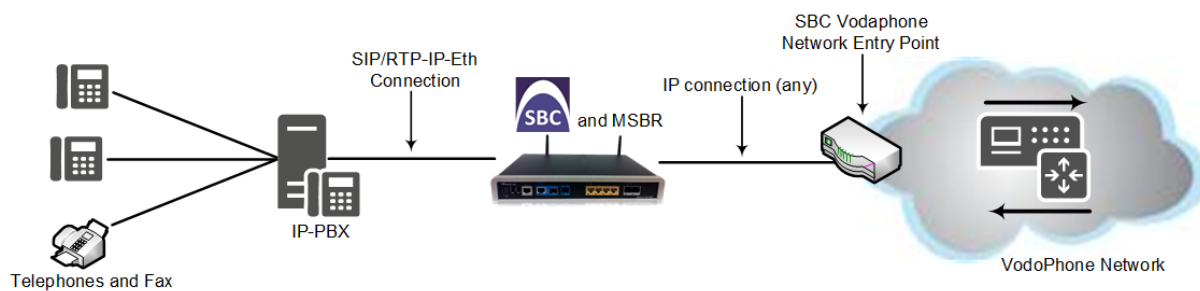
2.4 Interoperability Test Topology

The interoperability testing between AudioCodes Gateway and Vodafone Anlagen-Anschluss Plus was done using the following topology setup:

- Enterprise ISDN PBX
- AudioCodes Gateway is implemented to interconnect between the Enterprise PBX and the SIP Trunk using a MSBR with xDSL

The figure below illustrates this test topology:

Figure 2-1: Test Topology between ISDN PBX with Vodafone SIP Trunk



3 Configuring AudioCodes Gateway

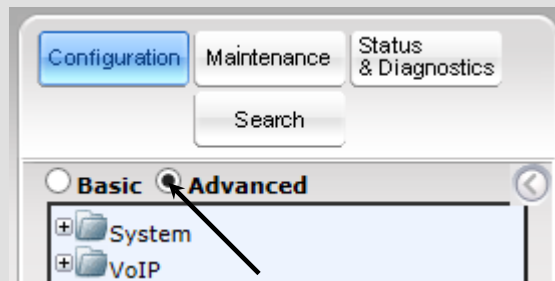
This chapter provides step-by-step procedures on how to configure the AudioCodes MSBR Gateway for interworking with the Vodafone SIP Trunk. These configuration procedures are based on the test topology described in Section 2.4 on page 10, and includes the following main areas:

- Gateway MSBR WAN interface - Vodafone SIP Trunking environment
- Gateway ISDN interface - PBX environment

This configuration is mostly used for the Gateway's embedded Web server (hereafter, referred to as *Web interface*). The WAN data interface was configured through the Command-line interface (hereafter, referred to as CLI).

Notes:

- For implementing Vodafone SIP Trunk based on the configuration described in this section, the AudioCodes MSBR Gateway must be installed with a Software License Key.
- The scope of this interoperability test and document does **not** cover all security aspects for connecting the SIP Trunk environment. Comprehensive security measures should be implemented per your organization's security policies. For security recommendations on AudioCodes' products, refer to the *Recommended Security Guidelines* document.
- Before you begin configuring the Gateway, ensure that the Gateway's Web interface Navigation tree is in Advanced-menu display mode. To do this, select the Advanced option, as shown below:



- When the Gateway is reset, the Navigation tree reverts to Basic-menu display.

3.1 Step 1: IP Network Interfaces Configuration

This section describes how to configure the device's IP network interface.

3.1.1 Step 1a: Configure LAN IP Network Interface

This step describes how to configure the IP network interface for the LAN VoIP interface (assigned the name "Voice").

➤ **To configure the LAN IP network interface:**

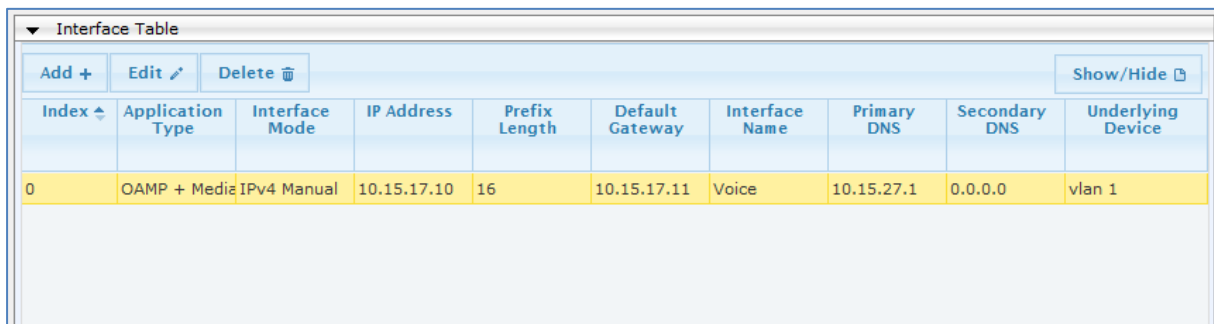
1. Open the IP Interfaces Table page (**Configuration** tab > **VoIP** menu > **Network** > **IP Interfaces Table**).
2. Modify the existing LAN network interface:
 - a. Select the 'Index' radio button of the **OAMP + Media + Control** table row, and then click **Edit**.
 - b. Configure the interface as follows:

Parameter	Value
IP Address	10.15.17.10 (LAN IP address of Gateway)
Prefix Length	16 (subnet mask in bits for 255.255.0.0)
Default Gateway	10.15.17.11 (MSBR Data vlan 1 IP address)
Interface Name	Voice (arbitrary descriptive name)
Primary DNS Server IP Address	10.15.27.1
Underlying Device	vlan 1

3. Click **Apply**, and then **Done**.

The configured IP network interface is shown below:

Figure 3-1: Configured Network Interface in IP Interfaces Table



Interface Table									
Index	Application Type	Interface Mode	IP Address	Prefix Length	Default Gateway	Interface Name	Primary DNS	Secondary DNS	Underlying Device
0	OAMP + Media	IPv4 Manual	10.15.17.10	16	10.15.17.11	Voice	10.15.27.1	0.0.0.0	vlan 1

3.1.2 Step 1b: Configure WAN IP Network Interface

This step describes how to configure the IP network interface for the WAN data Interface. Configuration of the WAN data interface depends on the physical interface. The example below describes a VDSL connection type.

➤ **To configure the WAN IP network interface:**

1. Access the device's CLI (either through Telnet/SSH or console).
2. Access the Enable Mode (# prompt)
3. Enter the following commands to set the VDSL configuration:

```
configure data
  interface dsl 0/2
    mode VDSL
    auto-switch-attempts vdsl 3 vdsl-v43 0 adsl 3
    no shutdown
  exit
  interface EFM 0/2
    no ip address
    no service dhcp
    ip dns server auto
    no shutdown
  exit
  interface ATM 0/0
    encapsulation ethoa-snap
    pvc 1/32
   ubr
    no ip address
    ip dns server auto
    napt
    firewall enable
    mtu auto
  exit
  interface pppoe 0
    firewall enable
    napt
    mtu auto
    ppp user vodafone.dsl/YOURUSER pass YOURPASS
    ppp authentication chap
    ppp authentication ms-chap
    ppp authentication ms-chap-v2
    ppp authentication pap
    ppp lcp-echo 6 5
    no ppp compression
    ip address auto
    ip dns server auto
    underlying EFM 0/2
    no shutdown
  exit
  interface pppoe 1
    firewall enable
    napt
```

```
mtu auto
ppp user vodafone.dsl/YOURUSER pass YOURPASS
ppp authentication chap
ppp authentication ms-chap
ppp authentication ms-chap-v2
ppp authentication pap
ppp lcp-echo 6 5
no ppp compression
ip address auto
ip dns server auto
underlying ATM 0/0
no shutdown
exit
```

4. Enter the following commands to configure default routes.

```
ip route 0.0.0.0 0.0.0.0 PPPOE 0 1
ip route 0.0.0.0 0.0.0.0 PPPOE 1 1
exit
```

5. Enter the following command to burn the configuration.

```
write
```

3.2 Step 2: Signaling Routing Domains Configuration

This section describes how to configure Signaling Routing Domain (SRD) which represents a logical VoIP network. Each logical or physical connection requires an SRD. For example, the Gateway interfaces with the WAN.

The SRD is composed of the following:

- **Media Realm:** Defines a UDP port range for RTP/SRTP (media) traffic on a specific logical IP network interface of the Gateway.
- **SIP Interface:** Defines a listening port and type (UDP, TCP, or TLS) for SIP signaling traffic on a specific logical IP network interface of the Gateway.

3.2.1 Step 2a: Configure a Media Realm

This step describes how to configure a Media Realm. The configuration is to create one Media Realm for external (WAN) traffic.

➤ **To configure a Media Realm:**

1. Open the Media Realm Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **Media Realm Table**).
2. Configure a Media Realm for WAN traffic:

Parameter	Value
Index	0
Media Realm Name	MR_WAN (arbitrary name)
IPv4 Interface Name	WAN (a reserved word for MSBR WAN I/F)
Port Range Start	6000 (represents the lowest UDP port number used for media on the WAN)
Number of Media Session Legs	100 (media sessions assigned with port range)

Figure 3-2: Configuring Media Realm for WAN

The screenshot shows a configuration window titled "Edit Record #0" with a close button (X) in the top right corner. The window contains the following fields and values:

- Index: 0
- Media Realm Name: MR_WAN
- IPv4 Interface Name: WAN (dropdown menu)
- IPv6 Interface Name: None (dropdown menu)
- Port Range Start: 6000
- Number Of Media Session Legs: 100
- Port Range End: 6990
- Default Media Realm: Yes (dropdown menu)
- QoS Profile: None (dropdown menu)
- BW Profile: None (dropdown menu)

At the bottom right of the window, there are two buttons: "Submit" (with a checkmark icon) and "Cancel" (with an X icon).

The configured Media Realm is shown in the figure below:

Figure 3-3: Configured Media Realm in Media Realm Table

Index	Media Realm Name	IPv4 Interface Name	IPv6 Interface Name
0	MR_WAN	WAN	None

3.2.2 Step 2b: Configure an SRD

This step describes how to configure an SRD.

➤ **To configure an SRD:**

1. Open the SRD Settings page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **SRD Table**).
2. Configure an SRD for the Gateway's external interface (toward the Vodafone SIP Trunk):

Parameter	Value
Index	0
Name	SRD_WAN
Media Realm Name	MR_WAN

Figure 3-4: Configuring WAN SRD

Edit Record #0	
Index	0
Name	SRD_WAN
Media Realm Name	MR_WAN
Media Anchoring	Enable
Block Unregistered Users	NO
Max. Number of Registered Users	-1
Enable Un-Authenticated Registrations	Disable
<input checked="" type="button" value="Submit"/> <input type="button" value="Cancel"/>	

The configured SRD is shown in the figure below:

Figure 3-5: Configured SRDs in SRD Table

The screenshot shows a web interface for the SRD Table. At the top left, there is a dropdown menu labeled 'SRD Table' and an 'Add +' button. Below this is a table with the following structure:

Index	Name	Media Realm Name	Media Anchoring
0	SRD_WAN	MR_WAN	Enable

At the bottom of the table, there is a pagination control showing 'Page 1 of 1' and 'Show 10 records per page'. On the far right, it says 'View 1 - 1 of 1'.

3.2.3 Step 2c: Configure a SIP Signaling Interface

This step describes how to configure a SIP Interface. For the interoperability test topology, an external SIP Interface must be configured for the Gateway.

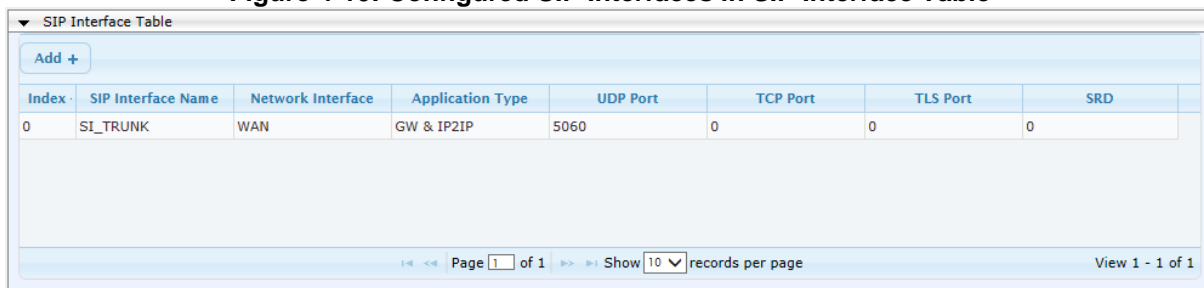
➤ **To configure a SIP Signaling Interface:**

1. Open the SIP Interface Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **SIP Interface Table**).
2. Configure a SIP interface for the WAN:

Parameter	Value
Index	0
Interface Name	SI_TRUNK (arbitrary descriptive name)
Network Interface	WAN
Application Type	GW & IP2IP
UDP Port	5060
TCP and TLS Ports	0
SRD	0

The configured SIP Interface is shown in the figure below:

Figure 4-10: Configured SIP Interfaces in SIP Interface Table



The screenshot shows a web interface titled "SIP Interface Table". It features an "Add +" button and a table with the following columns: Index, SIP Interface Name, Network Interface, Application Type, UDP Port, TCP Port, TLS Port, and SRD. The table contains one row with the following values: Index: 0, SIP Interface Name: SI_TRUNK, Network Interface: WAN, Application Type: GW & IP2IP, UDP Port: 5060, TCP Port: 0, TLS Port: 0, and SRD: 0. At the bottom of the table, there is a pagination control showing "Page 1 of 1" and "Show 10 records per page".

Index	SIP Interface Name	Network Interface	Application Type	UDP Port	TCP Port	TLS Port	SRD
0	SI_TRUNK	WAN	GW & IP2IP	5060	0	0	0

3.3 Step 3: Configure a Proxy Set

This step describes how to configure a Proxy Set. The Proxy Set defines the destination address (IP address or FQDN) of the IP entity server.

For the test topology, the Proxy Set needs to be configured for the Vodafone SIP Trunk. The Proxy Set will be later applying to the VoIP network by assigning them to IP Groups.

➤ **To configure a Proxy Set:**

1. Open the Proxy Sets Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **Proxy Sets Table**).
2. Add a Proxy Set for the Vodafone SIP Trunk as shown below:

Parameter	Value
Proxy Set ID	1
Proxy Address	sbc-pool1.sipt.vf-office.net
Proxy Name	sipt.vf-office.net (arbitrary descriptive name)
Enable Proxy Keep Alive	Using Options
DNS Resolve Method	SRV
Is Proxy Hot Swap	Yes
Proxy Redundancy Mode	Parking
SRD Index	0

Figure 3-6: Configuring a Proxy Set for Vodafone SIP Trunk

The screenshot shows the configuration interface for a Proxy Set. At the top, there is a dropdown for 'Proxy Set ID' with the value '1'. Below this is a table with two columns: 'Proxy Address' and 'Transport Type'. The first row of the table has 'sbc-pool1.sipt.vf-office.net' in the 'Proxy Address' column and a dropdown arrow in the 'Transport Type' column. Rows 2 through 10 are empty. Below the table is a list of configuration parameters:

- Proxy Name: sipt.vf-office.net
- Enable Proxy Keep Alive: Disable
- Proxy Keep Alive Time: 60
- KeepAlive Failure responses: (empty)
- DNS Resolve Method: SRV
- Proxy Load Balancing Method: Disable
- Is Proxy Hot Swap: Yes
- Proxy Redundancy Mode: Parking
- SRD Index: 0
- Classification Input: IP only
- TLS Context Index: 0

3.4 Step 4: Configure an IP Group

This step describes how to configure an IP Group. The IP Group represents an IP entity on the network with which the Gateway communicates. This can be a server (e.g., IP PBX or ITSP) or it can be a group of users (e.g., LAN IP phones). For servers, the IP Group is typically used to define the server's IP address by associating it with a Proxy Set. In this test topology, IP Group configured for the Vodafone SIP Trunk.

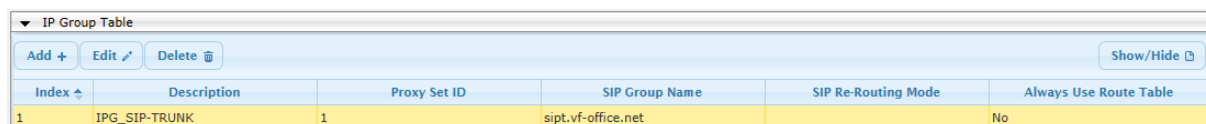
➤ **To configure an IP Group:**

1. Open the IP Group Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **IP Group Table**).
2. Add an IP Group for the Vodafone SIP Trunk as shown below:

Parameter	Value
Index	1
Type	Server
Description	IPG_SIP-TRUNK (arbitrary descriptive name)
Proxy Set ID	1
SIP Group Name	sipt.vf-office.net
SRD	0
Media Realm Name	MR_WAN
IP Profile ID	1

The configured IP Group is shown in the figure below:

Figure 3-7: Configured IP Groups in IP Group Table



Index	Description	Proxy Set ID	SIP Group Name	SIP Re-Routing Mode	Always Use Route Table
1	IPG_SIP-TRUNK	1	sipt.vf-office.net		No

3.5 Step 5: Configure Coders

The procedure below describes how to configure Coders to ensure that Voice and FAX are negotiated with the Vodafone SIP Trunk while use the coders in specific order.

➤ **To set coders for the Vodafone SIP Trunk:**

1. Open the Coders Group page (**Configuration** tab > **VoIP** menu > **Coders and Profiles > Coders**).
2. Configure Coders as follows:

Coder Name	Payload Type
G.711A-law	8
G.711A-Law_VBD	118
Transparent	56

Figure 3-8: Configuring Coders for Vodafone SIP Trunk

Coder Name	Packetization Time	Rate	Payload Type	Silence Suppression	Coder Specific
G.711A-law	20	64	8	Disabled	
G.711A-law_VBD	20	64	118	N/A	
Transparent	20	64	56	Disabled	

3.6 Step 6: Configure PSTN Trunk Settings

This step shows how to configure PSTN trunk settings.

3.6.1 Step 6a: Configure the BRI PSTN Interface

This step shows how to configure the BRI PSTN Interface.

➤ **To configure the BRI PSTN interface:**

1. Open the Trunk Settings page (**Configuration** tab > **VoIP** > **PSTN** > **Trunk Settings**).
2. Configure following parameters:

Parameter	Value
Protocol Type	BRI EURO ISDN
ISDN Termination Side	Network side (for BRI PBX connection)
BRI Layer2 Mode	Point To Point
Q931 Layer Response Behavior	0x8000000
Outgoing Calls Behavior	0x402
Incoming Calls Behavior	0x80011000
ISDN Transfer Capabilities	Speech
Select Receiving of Overlap Dialing	Local Receiving
Play Ringback Tone to Trunk	Play Local Until Remote Media Arrive
Call Rerouting Mode	ISDN Rerouting Enabled

Figure 3-9: Configuring BRI PSTN Interface

Trunk Settings Advanced Parameter List ▼

1 | 2

0

General Settings	
Module ID	2
Trunk ID	1
Trunk Configuration State	Active
Protocol Type	BRI EURO ISDN ▼

BRI Configuration	
Auto Clock Trunk Priority	0
Trace Level	Full ISDN Trace ▼
ISDN Termination Side	Network side ▼
BRI Layer2 Mode	Point To Point ▼
Q931 Layer Response Behavior	0x8000000
Outgoing Calls Behavior	0x402
Incoming Calls Behavior	0x80011000
General Call Control Behavior	0x0
ISDN NS Behaviour 2	0x0

PSTN Alert Timeout	
PSTN Alert Timeout	-1
Local ISDN Ringback Tone Source	PBX ▼
Set PI in Rx Disconnect Message	Not Configured ▼
ISDN Transfer Capabilities	Speech ▼
Progress Indicator to ISDN	Not Configured ▼
Select Receiving of Overlap Dialing	Local Receiving ▼

Submit Stop Trunk

3. Repeat for all BRI ports available on the device.

3.6.2 Step 6b: Configure the TDM Bus

This section shows how to configure the Gateway's TDM bus.

➤ **To configure the TDM bus:**

1. Open the TDM Bus Settings page (**Configuration** tab > **VoIP** menu > **TDM** > **TDM Bus Settings**).

Figure 3-10: TDM Bus Settings Page

TDM Bus Settings	
PCM Law Select	ALaw
TDM Bus Clock Source	Internal
TDM Bus PSTN Auto FallBack Clock	Disable
TDM Bus PSTN Auto Clock Reverting	Disable
TDM Bus Local Reference	1

2. Configure the TDM bus parameters per your deployment requirements. Below is example:

Figure 3-11: TDM Bus Settings

Parameter	Value
PCM Law Select	ALaw
TDM Bus Clock Source	Internal

3.7 Step 7: Configure Trunk Group Parameters

This step shows how to configure the device's channels, which includes assigning them to Trunk Groups. A Trunk Group is a logical group of physical trunks and channels. A Trunk Group can include multiple trunks and ranges of channels. To enable and activate the device's channels, Trunk Groups must be configured. Channels not configured in this table are disabled. After configuring Trunk Groups, use them to route incoming IP calls to the Tel side, represented by a specific Trunk Group (ID). You can also use Trunk Groups for routing Tel calls to the IP side.

3.7.1 Step 7a: Configure the BRI Trunk Group

This section shows how to configure the BRI Trunk Group. If your device does not have BRI, skip this step.

➤ **To configure the BRI Trunk Group Table:**

1. Open the Trunk Group Table page (Configuration tab > VoIP > GW and IP to IP > Trunk Group > Trunk Group).

Figure 3-12: Configuring BRI Trunk Group Table

Group Index	Module	From Trunk	To Trunk	Channels	Phone Number	Trunk Group ID	Tel Profile ID
1	Module 2 BRI	1	2	1-2	BRI1	1	0

2. Configure each Trunk Group as required. If more than one BRI port is available, on line 1 of the table above, set "To Trunk" to the last BRI port to be used for incoming / outgoing calls between Vodafone and the PBX.

3.7.2 Step 7b: Configure Trunk Group Settings

The Trunk Group Settings page allows you to configure the following per trunk group:

- Channel Select Mode by which IP-to-Tel calls are assigned to the Trunk Group's channels

➤ **To configure the Trunk Group Settings:**

1. Open the Trunk Group Table page (**Configuration** tab > VoIP > GW and IP to IP > Trunk Group > Trunk Group Settings).
2. Configure the following parameters:

Parameter	Value
Trunk Group ID	1
Channel Select Mode	Channel Cyclic Ascending

Figure 3-13: Configured Trunk Group Settings

Index	Trunk Group ID	Channel Select Mode	Registration Mode	Serving IP Group	Trunk Group Name	Admin State	Status
1	1	Channel Cyclic Ascending	-1			Unlocked	In Service

3.8 Step 8: Configure Routing Rules

This step describes how to configure IP-to-Tel and Tel-to-IP call routing rules. These rules define the routes for forwarding SIP messages (e.g., INVITE) received from one IP entity to the Trunk Group and vice versa.

3.8.1 Step 8a: Configure Inbound IP Routing

This section describes how to configure Mediant BRI/PRI Gateway Inbound (IP-to-Tel) Routing, where all calls from the Vodafone SIP Trunk are routed to Trunk Group 1.

➤ **To configure IP-to-Tel or Inbound IP Routing Rules:**

1. Open the Inbound IP Routing Table page (**Configuration** tab > **VoIP** menu > **GW and IP to IP** > **Routing** > **IP to Hunt Group Routing**).

Figure 3-14: Configuring Inbound IP Routing Rules

Route Name	Dest. Phone Prefix	Source Phone Prefix	Source IP Address	Source SRD ID	Trunk Group ID	Source IP Group ID
1	towards PBX	*		-1	1	-1

2. Configure a rule for all incoming IP calls, with any destination prefix assigned, route them to 'Trunk Group ID' 1 (connected to the PBX).
3. Click **Submit** to apply.

3.8.2 Step 8b: Configure Outbound IP Routing

This section describes how to configure Mediant BRI/PRI Gateway Outbound (Tel-to-IP) Routing, where all calls from the Trunk Group 1 (i.e., PSTN) are routed to the Vodafone SIP Trunk.

➤ **To configure Tel-to-IP or Outbound IP Routing Rules:**

1. Open the Outbound IP Routing Table page (**Configuration** tab > **VoIP** menu > **GW and IP to IP** > **Routing** > **Tel to IP Routing**).

Figure 3-15: Configuring Inbound IP Routing Rules

Dest Host Prefix	Src. Trunk Group ID	Dest. Phone Prefix	Source Phone Prefix	Dest. IP Address	Port	Transport Type	Dest. IP Group ID	Dest. SRD	IP 1
1	1	*	*			Not Configured	1	-1	0

2. Configure a rule for all incoming IP calls, with 'Trunk Group ID' 1, route them to 'Dest. IP Group ID' 1 (connected to the Vodafone).
3. Click **Submit** to apply.

3.8.3 Step 8c: Configure Routing General Parameters

This section identifies the device configuration needed in the Routing General Parameters configuration.

➤ **To configure Routing General Parameters:**

1. Open the Routing General Parameters page (**Configuration** tab > **VoIP** menu > > **GW and IP to IP > Routing > Routing General Params**).

Figure 3-16: General Parameters Page

General Parameters	
Add Trunk Group ID as Prefix	No
Add Trunk ID as Prefix	No
Replace Empty Destination with B-channel Phone Number	No
Add NPI and TON to Called Number	Yes
Add NPI and TON to Calling Number	Yes
IP to Tel Remove Routing Table Prefix	No

2. From the 'Add NPI and TON to Called Number' dropdown, select **Yes**. As a consequence of this setting the called number will receive a two digit prefix to indicate which NPI and TON was signaled by the PBX for the called number. This prefix is used in the number manipulation rules shown in Step 9.
3. From the 'Add NPI and TON to Calling Number' dropdown, select **Yes**. As a consequence of this setting the calling number will receive a two digit prefix to indicate which NPI and TON was signaled by the PBX for the calling number. This prefix is used in the number manipulation rules shown in Step 9.
4. Click **Submit**.

3.9 Step 9: Configure Normalization Rules for E.164 Format for PBX/PSTN Connectivity

Vodafone implements the standard E.164 format, while the PBX or PSTN implements other number formats for dialing. If the Gateway is connected to a PBX or directly to the PSTN, it may need to perform number manipulations for the called and/or calling number to match the PBX or PSTN dialing rules or to match Vodafone E.164 format.

The Gateway entity must therefore be configured with manipulation rules to translate (i.e., normalize) numbers dialed in standard E.164 format to various formats, and vice versa. Manipulation must be performed for outbound calls and inbound calls.

Number manipulation (and mapping of NPI/TON to SIP messages) rules are configured in the following Manipulation Tables:

For Tel-to-IP calls:

- Destination Phone Number Manipulation Table for Tel-to-IP Calls
- Source Phone Number Manipulation Table for Tel-to-IP Calls

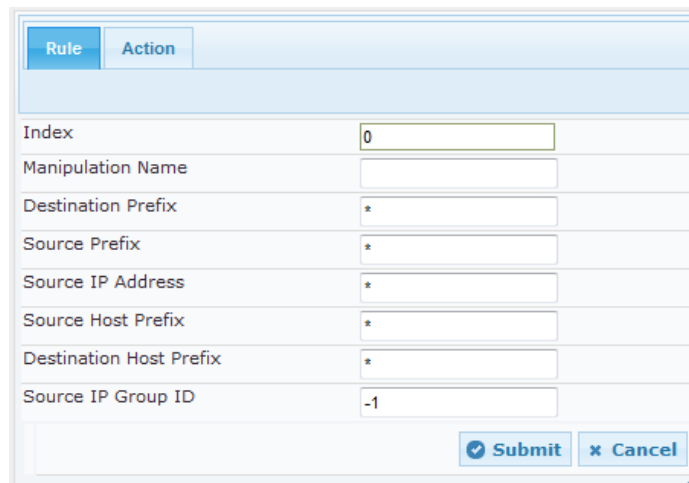
For IP-to-Tel calls:

- Destination Phone Number Manipulation Table for IP-to-Tel Calls
- Source Phone Number Manipulation Table for IP-to-Tel Calls

➤ **To configure number manipulation rules:**

1. Open the required Number Manipulation page (**Configuration** tab > **VoIP** menu > **GW and IP to IP** submenu > **Manipulations** > **Dest Number IP->Tel** or **Dest Number Tel->IP** or **Source Number IP->Tel** or **Source Number Tel->IP**); the relevant Manipulation table page is displayed.
2. Click the **Add** button; this screen is displayed:

Figure 3-17: Example Dest Number IP->Tel Number Manipulation Rule



Rule	Action
Index	0
Manipulation Name	
Destination Prefix	*
Source Prefix	*
Source IP Address	*
Source Host Prefix	*
Destination Host Prefix	*
Source IP Group ID	-1

3. Click the **Rule** tab, and then configure the matching characteristics.
4. Click the **Action** tab, and then configure the manipulation operation.
5. Click **Submit** to apply your changes.

3.9.1 Number Manipulation Examples

Two examples are provided below for number manipulation.

3.9.1.1 Number Manipulation IP to Tel Example

The example below shows a manipulation rule that removes "+49" from the destination number when the destination number prefix "+49". In addition, it assigns TON as **National-Level1 Regional** and NPI as **E.164 Public**.

Figure 3-18: Destination Number Manipulation Rule for IP→Tel Calls

Field	Value
Index	5
Manipulation Name	Strip Int. Prefix
Destination Prefix	+49
Source Prefix	*
Source IP Address	*
Source Host Prefix	*
Destination Host Prefix	*
Source IP Group ID	-1

Field	Value
Index	5
TON	National-Level1 Reg
NPI	E.164 Public
Stripped Digits From Left	3
Stripped Digits From Right	0
Number of Digits to Leave	255
Prefix to Add	
Suffix to Add	
Presentation	

3.9.1.2 Number Manipulation Tel to IP Example

The example below shows a National manipulation rule that removes the "100" or "000" prefix and adds "+49" to the destination number, when the destination number prefix is "100" or "000".

Figure 3-19: Destination Number Manipulation Rule for Tel→IP Calls

Field	Value
Index	5
Manipulation Name	National
Destination Prefix	[1,0]00
Source Prefix	*
Source Trunk Group	-1
Destination IP Group	-1

Field	Value
Index	5
TON	National-Level1 Reg
NPI	E.164 Public
Stripped Digits From Left	3
Stripped Digits From Right	0
Number of Digits to Leave	255
Prefix to Add	+49
Suffix to Add	
Presentation	



Note: Adapt the Manipulation Table according to your environment's dial plan.

3.10 Step 10: Configure Message Manipulation Rules

This step describes how to configure SIP message manipulation rules. SIP message manipulation rules can include insertion, removal, and/or modification of SIP headers. Manipulation rules are grouped into Manipulation Sets, enabling you to apply multiple rules to the same SIP message (IP entity).

Once you have configured the SIP message manipulation rules, you need to assign them to the Gateway and determine whether they are applied to inbound or outbound messages.

➤ **To configure SIP message manipulation rules:**

1. Open the Message Manipulations page (**Configuration** tab > **VoIP** menu > **SIP Definitions** > **Msg Policy & Manipulation** > **Message Manipulations**).
2. Configure new manipulation rules (Manipulation Set 1) for Vodafone SIP Trunk according to the table below:

Index	MMS Rule Name	Specific Configuration					
		Set ID	Message Type	Condition	Action Subject	Action Type	Action Value
2		1			header.p-preferred-identity.url.user	Modify	'+496945001990'
3		1			header.p-preferred-identity.url.host	Modify	'MSBR'
4		1			header.from.url.host	Modify	'MSBR'
5		1			header.diversion.url.user	Modify	header.to.url.user
6		1			header.diversion	Remove	
7	Correct Contact	1	any.response	header.to.url.user != header.contact.url.user and header.to.url.user contains header.contact.url.user	header.contact.url.user	Modify	header.to.url.user



Note: The +496945001990 number represents the pilot number for the customer's SIP trunk.

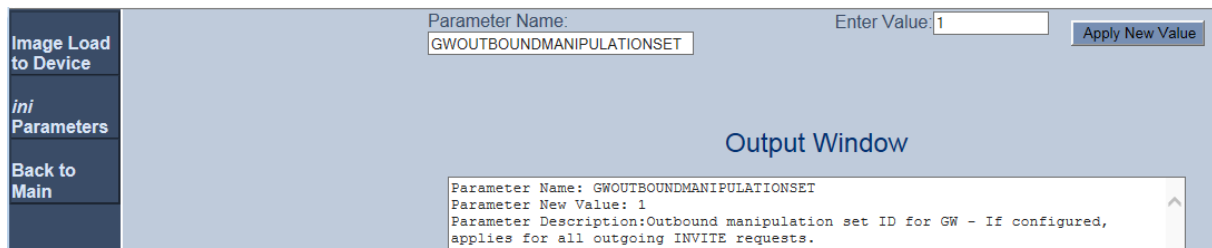
Figure 3-20: Configured SIP Message Manipulation Rules

Index	Manipulation Name	Manipulation Set ID	Message Type	Condition	Action Subject	Action Type	Action Value
2		1			header.p-preferred-ide	Modify	'+496945001990'
3		1			header.p-preferred-ide	Modify	'MSBR'
4		1			header.from.url.host	Modify	'MSBR'
5		1	invite.response.302		header.diversion.url.us	Modify	header.to.url.user
6		1			header.diversion	Remove	
7	Correct Contact	1	any.response	header.to.url.user != header.contact.url.use	header.contact.url.use	Modify	header.to.url.user

3. Assign Manipulation Set ID 1 to the Gateway outbound messages:
 - a. Open the Admin page.
 - b. Append the case-sensitive suffix 'AdminPage' to the device's IP address in your Web browser's URL field (e.g., http://10.15.17.10/AdminPage).
 - c. In the left pane of the page that opens, click **ini Parameters**.

- d. In the 'Parameter Name' field, enter "GWOUTBOUNDMANIPULATIONSET".
- e. In the 'Enter Value' field, enter "1".

Figure 3-21: Assigning Manipulation Set 1 to the GWOUTBOUNDMANIPULATIONSET



The screenshot shows a configuration window with a sidebar on the left containing the following options: "Image Load to Device", "ini Parameters", and "Back to Main". The main area contains a form with the following fields and controls:

- Parameter Name:** A text input field containing "GWOUTBOUNDMANIPULATIONSET".
- Enter Value:** A text input field containing "1".
- Apply New Value:** A button located to the right of the "Enter Value" field.
- Output Window:** A text area displaying the following text:

```
Parameter Name: GWOUTBOUNDMANIPULATIONSET
Parameter New Value: 1
Parameter Description: Outbound manipulation set ID for GW - If configured,
applies for all outgoing INVITE requests.
```

- f. Click **Apply New Value**.

3.11 Step 11: Configure Miscellaneous Settings

This section describes how to configure miscellaneous Gateway settings.

3.11.1 Step 11a: Configure Advanced Parameters

This step identifies the device configuration needed in the Advanced Parameters configuration.

1. Open the Advanced Parameters page (**Configuration** tab > **VoIP** menu > **SIP Definitions** > **Advanced Parameters**).

Figure 3-22: Advanced Parameters Page

▼ General	
IP Security	Secure Incoming calls
Filter Calls to IP	Don't Filter
Enable Digit Delivery to Tel	Disable
Enable Digit Delivery to IP	Disable
DID Wink	Disable
Delay Before DID Wink	0
Reanswer Time	0
PSTN Alert Timeout	180
QoS Statistics in Release Msg	Disable
▼ Disconnect and Answer Supervision	
Send Digit Pattern on Connect	
Polarity Reversal	Disable
Current Disconnect	Disable
Broken Connection Mode	Ignore

2. From the 'IP Security' dropdown, select **Secure Incoming calls**.
3. From the 'Broken Connection Mode' dropdown, select **Ignore**.
4. Click **Submit**.

3.11.2 Step 11b: Configure SIP General Parameters

This step identifies the device configuration needed in the SIP General Parameters configuration.

➤ **To configure the SIP General parameters:**

1. Open the SIP Proxy & Registration Parameters page (**Configuration** tab > **VoIP** > **SIP Definitions** > **General Parameters**).

Figure 3-23: General Parameters Page

▼ SIP General	
NAT IP Address	0.0.0.0
PRACK Mode	Supported
Channel Select Mode	Cyclic Ascending
Enable Early Media	Enable
183 Message Behavior	Progress
Session-Expires Time	0
Minimum Session-Expires	90
Session Expires Method	re-INVITE
Asserted Identity Mode	Add P-Preferred-Identity
Fax Signaling Method	G.711 Transport
Detect Fax on Answer Tone	Initiate T.38 on Preamble

2. From the 'Enable Early Media' dropdown, select **Enable**.
3. From the 'Asserted Identity Method' dropdown, select **Add P-Preferred-Identity**.
4. From the 'Fax Signaling Method' dropdown, select **G.711 Transport**.
5. Click **Submit**.

3.11.3 Step 11c: Configure DTMF & Dialing Parameters

This step identifies the device configuration needed in the DTMF & Dialing configuration.

- **To configure the DTMF & Dialing parameters:**
 1. Open the SIP DTMF & Dialing Parameters page (**Configuration** tab > **VoIP** > **GW and IP to IP** > **DTMF and Supplementary** > **DTMF & Dialing**).

Figure 3-24: DTMF & Dialing Page

Max Digits In Phone Num	30
Inter Digit Timeout for Overlap Dialing [sec]	4
Declare RFC 2833 in SDP	Yes
1st Tx DTMF Option	RFC 2833
2nd Tx DTMF Option	
RFC 2833 Payload Type	101
Default Destination Number	1000

2. From the '1st Tx DTMF Option' drop-down list, select **RFC 2833**.
3. From the 'RFC 2833 Payload Type' drop-down list, select **101**.
4. Click **Submit**.

3.11.4 Step 11d: Configure Parameters using the AdminPage

This step describes how to configure additional Gateway parameters needed using the AdminPage.

- **To configure parameters using the AdminPage:**
 1. Open the AdminPage.
 2. Append the case-sensitive suffix 'AdminPage' to the device's IP address in your Web browser's URL field (e.g., <http://10.15.17.10/AdminPage>).
 3. In the left pane of the page that opens, click *ini* Parameters.

Figure 3-25: Configuring a Parameter in AdminPage

Parameter Name: Enter Value: Apply New Value

Output Window

```
Parameter Name: ENABLEUUITEL2IP
Parameter New Value: 1
Parameter Description:Enable User-User IE to pass in Setup from ISDN to IP
```

4. Enter these values in the 'Parameter Name' and 'Enter Value' fields:

Parameter	Value	Parameter Description
EnableUUITel2IP	1	Enable User-User IE to pass in Setup from ISDN to IP.
TransparentCoderOnDataCall	1	In case the transfer capability of a call from ISDN is data open with transparent coder.

AddNPIandTON2RedirectNumber	1	Add NPI and TON as prefix to Redirect number.
ISO8859CharacterSet	0	Defines the ISO 8859-character set type for representing the alphanumeric string of the calling name.

5. Click the **Apply New Value** button for each parameter.

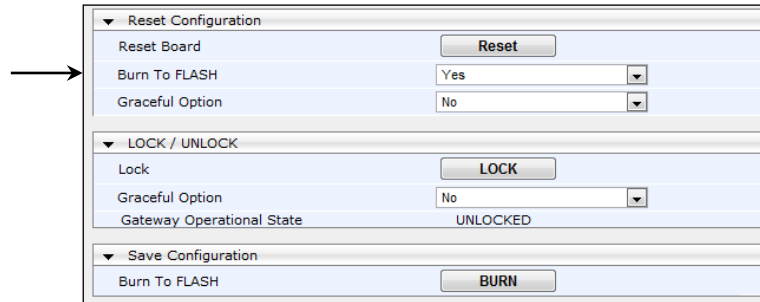
3.12 Step 12: Reset the Gateway

After you have completed the configuration of the Gateway described in this chapter, save ("burn") the configuration to the Gateway's flash memory with a reset for the settings to take effect.

➤ **To save the configuration to flash memory:**

1. Open the Maintenance Actions page (**Maintenance** tab > **Maintenance** menu > **Maintenance Actions**).

Figure 3-26: Resetting the Gateway



The screenshot displays a web-based configuration interface for a gateway. It is divided into three main sections:

- Reset Configuration:** Contains a 'Reset Board' button, a 'Burn To FLASH' dropdown menu (set to 'Yes'), and a 'Graceful Option' dropdown menu (set to 'No').
- LOCK / UNLOCK:** Contains a 'Lock' button, a 'Graceful Option' dropdown menu (set to 'No'), and a 'Gateway Operational State' field showing 'UNLOCKED'.
- Save Configuration:** Contains a 'Burn To FLASH' button labeled 'BURN'.

An arrow points to the 'Burn To FLASH' dropdown menu in the 'Reset Configuration' section.

2. Ensure that the 'Burn to FLASH' field is set to **Yes** (default).
3. Click the **Reset** button.

This page is intentionally left blank.

A AudioCodes CLI Script File

The AudioCodes MSBR CLI example script file is shown below:

```
# Running Configuration Mediant 500L - MSBR

## VoIP Configuration

configure voip
  tls 0
    name default
    tls-version tls-v1.2
    ciphers-server "ALL:!aNULL:!ADH:!eNULL:!LOW:!EXP:+HIGH:+MEDIUM"
    ciphers-client "ALL:!aNULL:!ADH:!eNULL:!LOW:!EXP:+HIGH:+MEDIUM"
    ocsf-server disable
    ocsf-port 2560
    ocsf-default-response reject
  exit
coders-and-profiles coders-group-0 0
  name "g711Alaw64k"
  p-time 20
  rate 0
  activate
exit
coders-and-profiles coders-group-0 1
  name "g711AlawVbd"
  p-time 20
  rate 0
  payload-type 118
  activate
exit
coders-and-profiles coders-group-0 2
  name "Transparent"
  p-time 20
  rate 0
  payload-type 56
  activate
exit
interface network-dev 0
  name "vlan 1"
  activate
exit
interface network-if 0
  ip-address 10.15.17.10
  prefix-length 16
  gateway 10.15.17.11
  name "Voice"
  primary-dns 10.15.27.1
  underlying-dev "vlan 1"
  activate
exit
access-list 0
  source-ip "145.253.48.138"
  prefixLen 32
```

```
use-specific-interface enable
network-interface-name "WAN"
activate
exit
access-list 1
source-ip "139.7.154.22"
prefixLen 32
use-specific-interface enable
network-interface-name "WAN"
activate
exit
access-list 2
source-ip "116.31.116.21"
prefixLen 32
use-specific-interface enable
network-interface-name "WAN"
allow-type "Block"
activate
exit
voip-network realm 0
name "MR_WAN"
ipv4if "WAN"
port-range-start 6000
session-leg 100
port-range-end 6990
is-default true
activate
exit
voip-network srd 0
name "SRD_WAN"
media-realm-name "MR_WAN"
enable-un-auth-registrs disable
activate
exit
voip-network sip-interface 0
interface-name "SI_TRUNK"
network-interface "WAN"
tcp-port 0
tls-port 0
activate
exit
voip-network proxy-set 0
proxy-name ""
activate
exit
voip-network proxy-set 1
proxy-name "sipt.vf-office.net"
is-proxy-hot-swap yes
tls-context-index "0"
proxy-redundancy-mode parking
dns-resolve-method srv
activate
exit
voip-network ip-group 1
description "IPG_SIP-TRUNK"
proxy-set-id 1
```

```
    sip-group-name "sipt.vf-office.net"
    media-realm-name "MR_WAN"
    ip-profile-id 1
    outbound-mesg-manipulation-set 1
    activate
exit
interface bri 2/1
    call-re-rte-mode isdn-rerouting-enabled
    ovrp-rcving-type local-receiving
    isdn-xfer-cab speech
    play-rbt-to-trk play-local-until-remote-media-arrives
    isdn-termination-side network-termination-side
    isdn-bits-ns-behavior 134217728
    isdn-bits-incoming-calls-behavior 2147553280
    isdn-bits-outgoing-calls-behavior 1026
    trace-level full-isdn
    protocol 50
    activate
exit
interface bri 2/2
    call-re-rte-mode isdn-rerouting-enabled
    ovrp-rcving-type local-receiving
    isdn-xfer-cab speech
    play-rbt-to-trk play-local-until-remote-media-arrives
    isdn-termination-side network-termination-side
    isdn-bits-ns-behavior 134217728
    isdn-bits-incoming-calls-behavior 2147553280
    isdn-bits-outgoing-calls-behavior 1026
    trace-level full-isdn
    protocol 50
    activate
exit
gw hunt-or-trunk-group trunk-group 0
    trunk-group-id 1
    first-trunk-id 1
    first-b-channel 1
    last-b-channel 2
    first-phone-number "BR11"
    last-trunk-id 2
    module 2
    activate
exit
gw routing tel2ip-routing 0
    route-name "towards SIP trunk"
    ip-profile-id 0
    dst-ip-group-id 1
    src-trunk-group-id 1
    activate
exit
gw routing ip2tel-routing 0
    route-name "towards PBX"
    dst-phone-prefix "*"
    trunk-group-id 1
    activate
exit
gw routing general-setting
```

```
npi-n-ton-to-cld-nb 1
npi-n-ton-to-cng-nb 1
activate
exit
gw manipulations src-number-map-tel2ip 0
manipulation-name "Empty SRC"
src-prefix "xxBRi"
num-of-digits-to-leave 0
prefix-to-add "+496945001990"
activate
exit
gw manipulations src-number-map-tel2ip 1
manipulation-name "Default"
num-of-digits-to-leave 2
prefix-to-add "+49694500199"
activate
exit
gw manipulations src-number-map-ip2tel 0
manipulation-name "Subscriber NPI/TON"
src-prefix "+4969"
ton subscriber-level0-regional
npi e164-public
remove-from-left 5
activate
exit
gw manipulations src-number-map-ip2tel 1
manipulation-name "National NPI/TON"
src-prefix "+49"
ton national-level1-regional
npi e164-public
remove-from-left 3
activate
exit
gw manipulations src-number-map-ip2tel 2
manipulation-name "Internation. NPI/TON"
src-prefix "+"
ton international-level2-regional
npi e164-public
remove-from-left 1
activate
exit
gw manipulations redirect-number-map-tel2ip 0
manipulation-name "302 div Internat."
dst-prefix "RN"
redirect-prefix "00"
ton international-level2-regional
npi e164-public
remove-from-left 2
prefix-to-add "+"
src-trunk-group-id 1
activate
exit
gw manipulations redirect-number-map-tel2ip 1
manipulation-name "302 div National"
dst-prefix "RN"
redirect-prefix "0"
```



```
ton national-level1-regional
npi e164-public
remove-from-left 1
prefix-to-add "+49"
src-trunk-group-id 1
activate
exit
gw manipulations redirect-number-map-tel2ip 2
manipulation-name "302 div unknown"
dst-prefix "RN"
redirect-prefix ""
prefix-to-add "+49"
src-trunk-group-id 1
activate
exit
gw manipulations redirect-number-map-tel2ip 5
manipulation-name "302 div-TO Internat."
dst-prefix "DN"
redirect-prefix "00"
ton international-level2-regional
npi e164-public
remove-from-left 2
prefix-to-add "+"
src-trunk-group-id 1
activate
exit
gw manipulations redirect-number-map-tel2ip 6
manipulation-name "302 div-TO National"
dst-prefix "DN"
redirect-prefix "0"
ton national-level1-regional
npi e164-public
remove-from-left 1
prefix-to-add "+49"
src-trunk-group-id 1
activate
exit
gw manipulations redirect-number-map-tel2ip 7
manipulation-name "Dest Subscriber"
dst-prefix "DN"
redirect-prefix "x"
ton subscriber-level0-regional
npi e164-public
prefix-to-add "+49<Vorwahl>"
src-trunk-group-id 1
activate
exit
gw manipulations redirect-number-map-tel2ip 10
manipulation-name "Dest International"
redirect-prefix "[1,0]000"
ton international-level2-regional
npi e164-public
remove-from-left 4
prefix-to-add "+"
src-trunk-group-id 1
activate
```

```
exit
gw manipulations redirect-number-map-tel2ip 11
  manipulation-name "Dest National"
  redirect-prefix "[1,0]00"
  ton national-level1-regional
  npi e164-public
  remove-from-left 3
  prefix-to-add "+49"
  src-trunk-group-id 1
  activate
exit
gw manipulations redirect-number-map-tel2ip 12
  manipulation-name "Dest Special Numbers"
  redirect-prefix "[1,0]011"
  ton unknown
  npi e164-public
  remove-from-left 2
  src-trunk-group-id 1
  activate
exit
gw manipulations redirect-number-map-tel2ip 13
  manipulation-name "Dest Subscriber"
  redirect-prefix "[1,0]0"
  ton subscriber-level0-regional
  npi e164-public
  remove-from-left 2
  prefix-to-add "+49<Vorwahl>"
  src-trunk-group-id 1
  activate
exit
gw manipulations redirect-number-map-tel2ip 14
  manipulation-name "TON international"
  redirect-prefix "11"
  remove-from-left 2
  prefix-to-add "+"
  src-trunk-group-id 1
  activate
exit
gw manipulations redirect-number-map-tel2ip 15
  manipulation-name "TON national"
  redirect-prefix "12"
  remove-from-left 2
  prefix-to-add "+49"
  src-trunk-group-id 1
  activate
exit
gw manipulations redirect-number-map-tel2ip 16
  manipulation-name "TON subscriber"
  redirect-prefix "14"
  remove-from-left 2
  prefix-to-add "+49<Vorwahl>"
  src-trunk-group-id 1
  activate
exit
gw manipulations redirect-number-map-tel2ip 17
  manipulation-name "unknown"
```

```
    remove-from-left 2
    activate
  exit
  gw manipulations general-setting
    outbound-map-set 1
    activate
  exit
  gw manipulations dst-number-map-tel2ip 1
    manipulation-name "International"
    dst-prefix "[1,0]000"
    remove-from-left 4
    prefix-to-add "+"
    activate
  exit
  gw manipulations dst-number-map-tel2ip 2
    manipulation-name "National"
    dst-prefix "[1,0]00"
    remove-from-left 3
    prefix-to-add "+49"
    activate
  exit
  gw manipulations dst-number-map-tel2ip 3
    manipulation-name "Special Number Codes"
    dst-prefix "[1,0]011"
    remove-from-left 2
    activate
  exit
  gw manipulations dst-number-map-tel2ip 4
    manipulation-name "Short Codes"
    dst-prefix "[1,0]0[*,#]"
    remove-from-left 2
    activate
  exit
  gw manipulations dst-number-map-tel2ip 5
    manipulation-name "Subscriber"
    dst-prefix "[1,0]0"
    remove-from-left 2
    prefix-to-add "+4969"
    activate
  exit
  gw manipulations dst-number-map-tel2ip 6
    manipulation-name "int TON"
    dst-prefix "11"
    remove-from-left 2
    prefix-to-add "+"
    activate
  exit
  gw manipulations dst-number-map-tel2ip 7
    manipulation-name "nat. TON"
    dst-prefix "12"
    remove-from-left 2
    prefix-to-add "+49"
    activate
  exit
  gw manipulations dst-number-map-tel2ip 8
    manipulation-name "lokal TON"
```

```
dst-prefix "14"
remove-from-left 2
prefix-to-add "+4969"
activate
exit
gw manipulations dst-number-map-tel2ip 9
manipulation-name "alles andere"
remove-from-left 2
activate
exit
gw manipulations dst-number-map-ip2tel 0
manipulation-name "Strip Int. Prefix"
dst-prefix "+49"
ton national-level1-regional
npi e164-public
remove-from-left 3
activate
exit
gw hunt-or-trunk-group trunk-group-setting 1
trunk-group-id 1
channel-select-mode channel-cyclic-ascending
registration-mode per-account
activate
exit
gw dtmf-and-suppl dtmf-and-dialing
dtmf-options 0
type rfc-2833
activate
exit
telephony-events-payload-type-tx 101
activate
exit
gw digitalgw rp-network-domains 1
name "dsn"
activate
exit
gw digitalgw rp-network-domains 2
name "dod"
activate
exit
gw digitalgw rp-network-domains 3
name "drsn"
activate
exit
gw digitalgw rp-network-domains 5
name "uc"
activate
exit
gw digitalgw rp-network-domains 7
name "cuc"
activate
exit
gw digitalgw digital-gw-parameters
np-n-ton-2-redirnb enable
answer-detector-cmd 10486144
uii-ie-for-tel2ip standard
```

```
energy-detector-cmd 587202560
iso8859-charset no-accented
transparent-coder-on-data-call on
activate
exit
ldap
  ldap-search-server-method sequentially
  activate
exit
media udp-port-configuration
  udp-port-spacing 10
  activate
exit
media security
  media-sec-bhviior preferable-single-media
  activate
exit
media RTP-payload-types
  telephony-events-payload-type-tx 101
  activate
exit
qos vlan-mapping 0
  diff-serv 46
  vlan-priority 6
  activate
exit
qos vlan-mapping 1
  diff-serv 48
  vlan-priority 6
  activate
exit
qos vlan-mapping 2
  diff-serv 26
  vlan-priority 4
  activate
exit
qos vlan-mapping 3
  diff-serv 10
  vlan-priority 2
  activate
exit
qos application-mapping
  control-qos 48
  activate
exit
sbc manipulations message-manipulations 2
  manipulation-set-id 1
  action-subject "header.p-preferred-identity.url.user"
  action-type modify
  action-value "'+496945001990'"
  activate
exit
sbc manipulations message-manipulations 3
  manipulation-set-id 1
  action-subject "header.p-preferred-identity.url.host"
  action-type modify
```

```
    action-value "'MSBR'"
    activate
  exit
  sbc manipulations message-manipulations 4
    manipulation-set-id 1
    action-subject "header.from.url.host"
    action-type modify
    action-value "'MSBR'"
    activate
  exit
  sbc manipulations message-manipulations 5
    manipulation-set-id 1
    message-type "invite.response.302"
    action-subject "header.diversion.url.user"
    action-type modify
    action-value "header.to.url.user"
    activate
  exit
  sbc manipulations message-manipulations 6
    manipulation-set-id 1
    action-subject "header.diversion"
    action-type remove
    activate
  exit
  sbc manipulations message-manipulations 7
    manipulation-name "Correct Contact"
    manipulation-set-id 1
    message-type "any.response"
    condition "header.to.url.user != header.contact.url.user and
header.to.url.user contains header.contact.url.user"
    action-subject "header.contact.url.user"
    action-type modify
    action-value "header.to.url.user"
    activate
  exit
  services least-cost-routing routing-rule-groups 0
    lcr-default-cost highest-cost
    activate
  exit
  sip-definition proxy-and-registration
    dns-query srv
    registration-time 600
    activate
  exit
  sip-definition general-settings
    asserted-identity-m add-p-preferred-identity
    crypto-life-time-in-sdp on
    early-media on
    fax-sig-method g.711-transport
    activate
  exit
  sip-definition advanced-settings
    disc-broken-conn ignore
    set ldap-primary-key "telephoneNumber"
    ip-security secure-incoming-calls
    activate
  exit
```

```
tdm
  pcm-law-select alaw
  activate
exit
voip-network proxy-ip 0
  proxy-address "sbc-pool1.sipt.vf-office.net"
  proxy-set-id 1
  activate
exit
exit

## System Configuration

configure system
cli-terminal
  wan-ssh-allow off
  ssh on
  override-ssh-acl-for-lan on
  activate
exit
clock
  summer-time
  summer-time on
  set end "10:SUN/05:03:00"
  set start "03:SUN/05:02:00"
  activate
exit
exit
logging
  syslog on
  debug-level detailed
  syslog-ip 192.168.1.21
  activate
exit
ntp
  set secondary-server "1.europe.pool.ntp.org"
  set primary-server "ntp1.t-online.de"
  utc-offset 3600
  activate
exit
radius
  set shared-secret "$1$woS2sLC0opqIjoKZng=="
  activate
exit
snmp
  no activate-keep-alive-trap
  activate
exit
web
  wan-https-allow off
  override-web-acl-for-lan on
  set https-cipher-string
  "ALL:!aNULL:!ADH:!eNULL:!LOW:!EXP:+HIGH:+MEDIUM"
  activate
exit
hostname "Mediant 500L - MSBR"
configuration-version 2017050201
```

```
exit
configure data
interface GigabitEthernet 0/0
  no ip address
  mtu auto
  desc "WAN Copper"
  no ipv6 enable
  speed auto
  duplex auto
  no service dhcp
  ip dns server static
  no shutdown
exit
interface dsl 0/2
  #DSL configuration is automatic
  #Termination cpe
  mode ADSL
  auto-switch-attempts vdsl 3 vdsl-v43 0 adsl 3
  no shutdown
exit
interface EFM 0/2
#This interface is DISABLED due to physical layer configuration
  no ip address
  mtu 1568
  desc "VDSL"
  no ipv6 enable
  no service dhcp
  ip dns server static
  no shutdown
exit
interface GigabitEthernet 1/1
  speed auto
  duplex auto
  switchport mode trunk
  switchport trunk native vlan 1
  no shutdown
exit
interface GigabitEthernet 1/2
  speed auto
  duplex auto
  switchport mode trunk
  switchport trunk native vlan 1
  no shutdown
exit
interface GigabitEthernet 1/3
  speed auto
  duplex auto
  switchport mode trunk
  switchport trunk native vlan 1
  no shutdown
exit
interface GigabitEthernet 1/4
  speed auto
  duplex auto
  switchport mode trunk
  switchport trunk native vlan 1
```



```
no shutdown
exit
interface ATM 0/0
  encapsulation ethoa-snap
  pvc 1/32
 ubr
  no ip address
  no ipv6 enable
  ip dns server auto
  napt
  firewall enable
  mtu auto
exit
interface VLAN 1
  ip address 192.168.1.200 255.255.255.0
  mtu auto
  desc "LAN switch VLAN 1"
  no ipv6 enable
  no service dhcp
  ip dns server static
  no napt
  no firewall enable
  no link-state monitor
  no shutdown
exit
interface pppoe 0
  #This interface is DISABLED due to physical layer configuration
  firewall enable
  napt
  mtu auto
  ppp user vodafone.dsl/YOURUSER pass YOURPASS
  ppp authentication chap
  ppp authentication ms-chap
  ppp authentication ms-chap-v2
  ppp authentication pap
  ppp lcp-echo 6 5
  no ppp compression
  ip address auto
  no ipv6 address
  ip dns server auto
  underlying EFM 0/2
  no shutdown
exit
interface pppoe 1
  firewall enable
  napt
  mtu auto
  ppp user vodafone.dsl/YOURUSER pass YOURPASS
  ppp authentication chap
  ppp authentication ms-chap
  ppp authentication ms-chap-v2
  ppp authentication pap
  ppp lcp-echo 6 5
  no ppp compression
  ip address auto
  no ipv6 address
```

```
ip dns server auto
underlying ATM 0/0
no shutdown
exit
interface pppoe 2
firewall enable
napt
mtu auto
ppp user vodafone.dsl/YOURUSER pass YOURPASS
ppp authentication chap
ppp authentication ms-chap
ppp authentication ms-chap-v2
ppp authentication pap
ppp lcp-echo 6 5
no ppp compression
ip address auto
no ipv6 address
ip dns server auto
underlying GigabitEthernet 0/0
no shutdown
exit
ip nat translation udp-timeout 120
ip nat translation tcp-timeout 3600
ip nat translation icmp-timeout 6
# Note: The following WAN ports are in use by system services,
#       conflicting rules should not be created:
#       Ports 82 - 82 --> TR069
# A     Ports 6000 - 6990 --> RealmPortPool::MR_WAN
#       Ports 5060 - 5060 --> SIPUDP#0
# Note: The following NAT rules are in effect for system services,
#       conflicting rules should not be created:
#       RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP
176.95.129.188 ports 6000-6990, interface PPPOE 1
#       SIPUDP#0: LAN ports 5060-5060 to WAN IP 176.95.129.188 ports
5060-5060, interface PPPOE 1
ip route 0.0.0.0 0.0.0.0 PPPOE 0 1
ip route 0.0.0.0 0.0.0.0 PPPOE 1 1
ip route 0.0.0.0 0.0.0.0 PPPOE 2 1
ip domain name home
ip domain localhost msbr
pm sample-interval minute 5
pm sample-interval seconds 15
exit
```

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