

## Connecting Mitel 3300 IP-PBX To BroadCloud SIP Trunk using AudioCodes Mediant™ E-SBC

Version 7.0





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## Notice

This document describes how to connect the IP-PBX and BroadCloud SIP Trunk using AudioCodes Mediant E-SBC product series.

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# 1 Introduction

This Configuration Note describes how to set up AudioCodes Enterprise Session Border Controller (hereafter, referred to as *E-SBC*) for interworking between BroadCloud's SIP Trunk and Mitel 3300 IP-PBX environment.

## 1.1 Intended Audience

The document is intended for engineers, or AudioCodes and BroadCloud Partners who are responsible for installing and configuring BroadCloud's SIP Trunk and IP-PBX for enabling VoIP calls using AudioCodes E-SBC.

## 1.2 About AudioCodes E-SBC Product Series

AudioCodes' family of E-SBC devices enables reliable connectivity and security between the Enterprise's and the service provider's VoIP networks.

The E-SBC provides perimeter defense as a way of protecting Enterprises from malicious VoIP attacks; mediation for allowing the connection of any PBX and/or IP-PBX to any service provider; and Service Assurance for service quality and manageability.

Designed as a cost-effective appliance, the E-SBC is based on field-proven VoIP and network services with a native host processor, allowing the creation of purpose-built multiservice appliances, providing smooth connectivity to cloud services, with integrated quality of service, SLA monitoring, security and manageability. The native implementation of SBC provides a host of additional capabilities that are not possible with standalone SBC appliances such as VoIP mediation, PSTN access survivability, and third-party value-added services applications. This enables Enterprises to utilize the advantages of converged networks and eliminate the need for standalone appliances.

AudioCodes E-SBC is available as an integrated solution running on top of its field-proven Mediant Media Gateway and Multi-Service Business Router platforms, or as a software-only solution for deployment with third-party hardware.

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## 2 Component Information

### 2.1 IP-PBX Version

**Table 2-1: IP-PBX Version**

<b>Vendor</b>	Mitel
<b>Model</b>	3300
<b>Software Version</b>	11.0.2.79
<b>Protocol</b>	SIP/UDP
<b>Additional Notes</b>	None

### 2.2 AudioCodes E-SBC Version

**Table 2-2: AudioCodes E-SBC Version**

<b>SBC Vendor</b>	AudioCodes
<b>Models</b>	Mediant 500 E-SBC Mediant 800 Gateway & E-SBC Mediant 1000B Gateway & E-SBC Mediant 3000 Gateway & E-SBC Mediant 2600 E-SBC Mediant 4000 E-SBC
<b>Software Version</b>	SIP_F7.00A.049.003
<b>Protocol</b>	SIP/UDP (to the both BroadCloud SIP Trunk and IP-PBX)
<b>Additional Notes</b>	None

### 2.3 BroadCloud SIP Trunking Version

**Table 2-3: BroadCloud Version**

<b>Vendor/Service Provider</b>	BroadCloud
<b>SSW Model/Service</b>	BroadWorks
<b>Software Version</b>	21
<b>Protocol</b>	SIP/UDP
<b>Additional Notes</b>	None

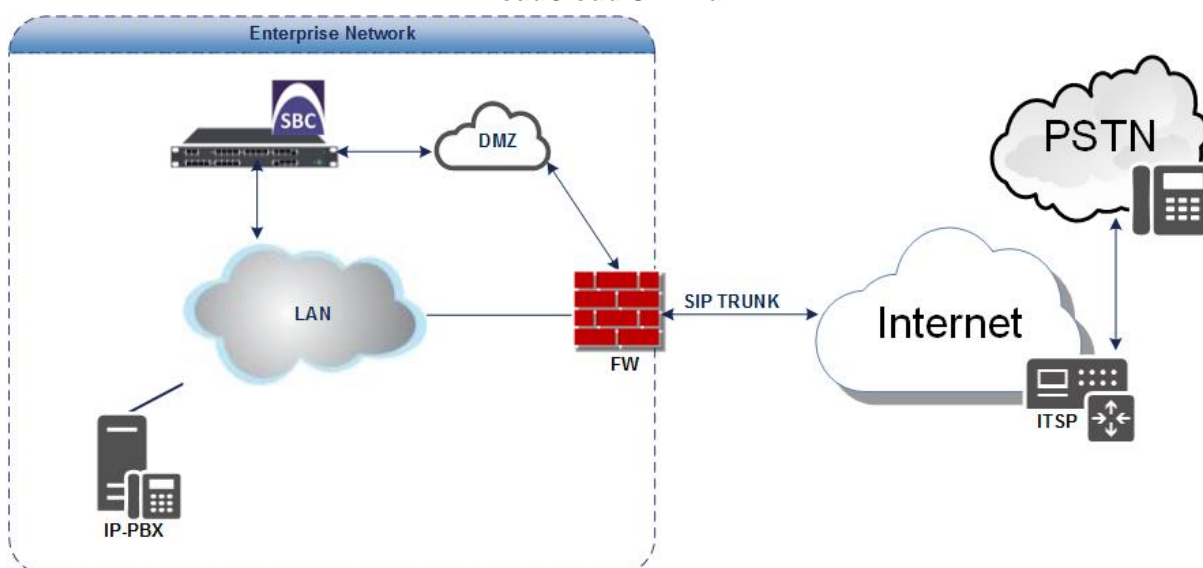
## 2.4 Interoperability Test Topology

The interoperability testing between AudioCodes E-SBC and BroadCloud SIP Trunk with IP-PBX was done using the following topology setup:

- Enterprise deployed with Mitel 3300 IP-PBX in its private network for enhanced communication within the Enterprise.
- Enterprise wishes to offer its employees enterprise-voice capabilities and to connect the Enterprise to the PSTN network using BroadCloud's SIP Trunking service.
- AudioCodes E-SBC is implemented to interconnect between the Enterprise LAN and the SIP Trunk.
  - **Session:** Real-time voice session using the IP-based Session Initiation Protocol (SIP).
  - **Border:** IP-to-IP network border between IP-PBX network in the Enterprise LAN and BroadCloud's SIP Trunk located in the public network.

The figure below illustrates this interoperability test topology:

**Figure 2-1: Interoperability Test Topology between E-SBC and Mitel 3300 IP-PBX with BroadCloud SIP Trunk**



## 2.4.1 Environment Setup

The interoperability test topology includes the following environment setup:

**Table 2-4: Environment Setup**

Area	Setup
<b>Network</b>	<ul style="list-style-type: none"> <li>▪ Mitel 3300 IP-PBX is located on the Enterprise's LAN</li> <li>▪ BroadCloud SIP Trunk is located on the WAN</li> </ul>
<b>Signaling Transcoding</b>	<ul style="list-style-type: none"> <li>▪ Mitel 3300 IP-PBX operates with SIP-over-UDP transport type</li> <li>▪ BroadCloud SIP Trunk operates with SIP-over-UDP transport type</li> </ul>
<b>Codecs Transcoding</b>	<ul style="list-style-type: none"> <li>▪ Mitel 3300 IP-PBX supports G.711A-law, G.711U-law, and G.729 coder</li> <li>▪ BroadCloud SIP Trunk supports G.711A-law, G.711U-law, and G.729 coder</li> </ul>
<b>Media Transcoding</b>	<ul style="list-style-type: none"> <li>▪ Mitel 3300 IP-PBX operates with RTP media type</li> <li>▪ BroadCloud SIP Trunk operates with RTP media type</li> </ul>

## 2.4.2 Known Limitations

There were no limitations observed in the interoperability tests done for the AudioCodes E-SBC interworking between Mitel 3300 IP-PBX and BroadCloud's SIP Trunk.

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### 3 Configuring Mitel

This chapter describes how to configure the basic parameters of the Mitel 3300 IP-PBX to operate with the AudioCodes E-SBC.



**Note:** For more complicated configuration parameters, refer to *User's Manual* for each IP-PBX.

#### 3.1 Basic Configuration Parameters

The screenshots below show the main parameters which should be configured for the Mitel 3300 to operate with the AudioCodes E-SBC.

➤ **To configure Mitel 3300:**

1. Connect to the Mitel via the Web Interface (**License and Option Selection SAT > License >**).

License and Option Selection Ensure that the MCD is equipped with sufficient SIP Trunking licenses for the connection to BroadSoft. This can be verified within the License and Option Selection form. The total number of licenses in the SIP Trunk Licenses field is the maximum number of SIP Trunk sessions that can be configured in the MCD to be used with all service providers and applications. The figure below shows that the system has three SIP Trunks available within the assigned Application Record.

**Figure 3-1: License and Option Selection**

License and Option Selection						
Licensed Options	Locally Consumed	Locally Allocated	Available for Allocation	Purchased	Local Limits	
					Licenses Allowed	Can be Over Allocated
<b>Users</b>						
IP Users	0	16	0	16	Unrestricted	Yes
External Hot Desk Users	0	10	0	10	Unrestricted	Yes
ACD Active Agents	0	10	0	10	Unrestricted	No
HTML Applications	0	0	20	0	Unrestricted	Yes
Analog Lines	0	16	0	16	Unrestricted	Yes
IP Console Active Operators	0	0	0	0	0	No
Multi-device Users	0	5	0	5	Unrestricted	Yes
Multi-device Suites	0	0	5	5	0	No
<b>Messaging</b>						
Embedded Voice Mail	0	16	0	16	Unrestricted	Yes
Embedded Voice Mail PMS	1	Yes	0	1	Unrestricted	Yes
<b>Trunking/Networking</b>						
Digital Links	0	1	0	1	Unrestricted	Yes
Compression		8	0	8	Unrestricted	Yes
FAX Over IP (T.38)		4	0	4	Unrestricted	Yes
SIP Trunks	3	3	0	3	Unrestricted	Yes
<b>Others</b>						
MCD IDS Connection	1	Yes	0	1	Unrestricted	Yes
MLPP	0	No	0	0	Unrestricted	No

2. Open the Class of Service Options are configured in the Class of Service Options page (**SAT > System Properties > System Feature Settings > Class of Service Options**).

The following table describes the set/selected for best service for the classes for the devices which use the BroadCloud SIP Trunk and for the SIP Trunk itself.

**Table 3-1: Class of Service Options**

Setting	Value
Busy Override Security	Yes
Call Forwarding (External)	Yes
Call Forwarding Accept	Yes
Disable Call Reroute Chaining On	No
Campon Tone Security / FAX Machine	Yes
Public Network Access via	Yes

3. Open the Network Element page (**Voice Network > Network Elements**).

A new Network Element needs to be created which defines the connection point on the BroadSoft platform for the MCD.

The following parameters should be set in the available fields.

**Table 3-2: Network Elements**

Setting	Value
Name	Give the Network Element a meaningful name e.g. BroadCloud.
Type	Other
FQDN or IP Address	This should be set to the Domain name set for the customer.
Zone	Select the desired zone for which the Network Element will reside within.
SIP Peer	Checked
SIP Peer Transport	UDP
External SIP Proxy FQDN or IP Address	The external SIP proxy should be set to the IP of the AudioCodes device.
SIP Peer Port	5060
SIP Registrar FQDN or IP Address	This should match the value you have entered for the FQDN or IP address
SIP Registrar Transport	UDP
SIP Registrar Port	5060
SIP Peer Status	Always Active

Figure 3-2: Network Elements

Network Elements	
Name	Broadsoft
Type	Other
FQDN or IP Address	demo.com
Local	False
Version	
Zone	1
ARID	
SIP Peer	<input checked="" type="checkbox"/>
SIP Peer Specific	
SIP Peer Transport	UDP
SIP Peer Port	5060
External SIP Proxy FQDN or IP Address	192.168.2.1
External SIP Proxy Transport	UDP
External SIP Proxy Port	0
SIP Registrar FQDN or IP Address	demo.com
SIP Registrar Transport	UDP
SIP Registrar Port	5060
SIP Peer Status	Always Active

4. Open the Trunk Attributes page (**Trunks > Trunk Attributes**).

In addition to the standard function of directing incoming calls to an answer point, we have used the Trunk Attributes page to modify the incoming called number to provide a match with the internally configured users.

In our example deployment, the users on the MCD make use of the last four digits of their full DDI as configured on the BroadCloud platform; as such the Trunk Attributes Service profile we setup removes the first eight digits.

The below image shows the setup of the Trunk Attributes Service profile in our example setup.

**Figure 3-3: Trunk Attributes**

Trunk Service Number	Release Link Trunk	Call Recognition Service	Class of Service	Class of Restriction	Baud Rate	Intercept Number
1	No	Off	1	1	300	1
2	No	Off	1	1	300	1
3	No	Off	1	1	300	1
4	No	Off	1	1	300	1
5	No	Off	1	1	300	1
6	No	Off	1	1	300	1
7	No	Off	1	1	300	1
8	No	Off	1	1	300	1
9	No	Off	1	1	300	1
10	No	Off	1	1	300	1

- Open the SIP Peer Profile page (**Trunks > SIP > SIP Peer Profile**).  
 The SIP Peer Profile defines the settings used by the MCD when communicating with the previously configured Network element.  
 Within the configuration for the new SIP Peer Profile, set as shown in the table below. Where a value is not discussed it should be left as the default value.  
 Earlier versions of MCD do not use a tab structure and instead all values are displayed in a single configuration page. In such scenarios, map the values where applicable.

**Table 3-3: SIP Peer Profile**

Setting	Value
SIP Peer Profile Label	Give the Peer Profile a meaningful label e.g. BroadCloud.
Network Element	Select the Name of the Network Element created previously.
Local Account Information	
Address Type	IP Address
Administration Options	
Trunk Service	This should match the Trunk Attributes Service setup previously.



Setting	Value
Maximum Simultaneous Calls	This should be set to a value matching that which is set for the Trunk Group in the Service Provider Portal
Authentication Options	
Authentication Option for Incoming Calls	This should always be set to No Authentication.

6. Select the **Call Routing** tab.

Unless advised otherwise, we recommend that the settings under this tab are left as their default as shown below.

**Figure 3-4: Call Routing**

Alternate Destination Domain Enabled	<input checked="" type="radio"/> No <input type="radio"/> Yes
Alternate Destination Domain FQDN or IP Address	<input type="text"/>
Enable Special Re-invite Collision Handling	<input checked="" type="radio"/> No <input type="radio"/> Yes
Only Allow Outgoing Calls	<input checked="" type="radio"/> No <input type="radio"/> Yes
Private SIP Trunk	<input checked="" type="radio"/> No <input type="radio"/> Yes
Reject Incoming Anonymous Calls	<input checked="" type="radio"/> No <input type="radio"/> Yes
Route Call Using To Header	<input type="radio"/> No <input checked="" type="radio"/> Yes

7. Select the **Calling Line ID** tab.

If in your site deployment, you wish all outbound calls to display a single number regardless of their source in the system. This tab allows you to define the number that is used.

In our deployment, each user was set to display its own DDI; therefore this page was not configured.

Values other than the **Default CPN** fields should be left as default as shown below.

**Figure 3-5: Default CPN**

Default CPN	<input type="text"/>
Default CPN Name	<input type="text"/>
CPN Restriction	<input checked="" type="radio"/> No <input type="radio"/> Yes
Public Calling Party Number Passthrough	<input checked="" type="radio"/> No <input type="radio"/> Yes
Use Diverting Party Number as Calling Party Number	<input type="radio"/> No <input checked="" type="radio"/> Yes

8. Select the **SDP Options** tab.

Unless advised otherwise, make sure that the settings under this tab match those shown below.

**Figure 3-6: SDP Options Tab**

Allow Peer To Use Multiple Active M-Lines	<input type="radio"/> No <input checked="" type="radio"/> Yes
Allow Using UPDATE For Early Media Renegotiation	<input checked="" type="radio"/> No <input type="radio"/> Yes
Avoid Signaling Hold to the Peer	<input checked="" type="radio"/> No <input type="radio"/> Yes
Enable Mitel Proprietary SDP	<input checked="" type="radio"/> No <input type="radio"/> Yes
Force sending SDP in initial Invite message	<input type="radio"/> No <input checked="" type="radio"/> Yes
Force sending SDP in initial Invite - Early Answer	<input checked="" type="radio"/> No <input type="radio"/> Yes
Limit to one Offer/Answer per INVITE	<input checked="" type="radio"/> No <input type="radio"/> Yes
NAT Keepalive	<input checked="" type="radio"/> No <input type="radio"/> Yes
Prevent the Use of IP Address 0.0.0.0 in SDP Messages	<input checked="" type="radio"/> No <input type="radio"/> Yes
Renegotiate SDP To Enforce Symmetric Codec	<input type="radio"/> No <input checked="" type="radio"/> Yes
Repeat SDP Answer If Duplicate Offer Is Received	<input checked="" type="radio"/> No <input type="radio"/> Yes
RTP Packetization Rate Override	<input checked="" type="radio"/> No <input type="radio"/> Yes
RTP Packetization Rate	20ms
Special handling of Offers in 2XX responses (INVITE)	<input checked="" type="radio"/> No <input type="radio"/> Yes
Suppress Use of SDP Inactive Media Streams	<input checked="" type="radio"/> No <input type="radio"/> Yes

9. Select the **Signalling and Header Manipulation** tab.

Unless advised otherwise, make sure that the settings under this tab match those shown in the figure below.

**Figure 3-7: Signalling and Header Manipulation Tab**

Trunk Group Label	<input type="text"/>
Allow Display Update	<input checked="" type="radio"/> No <input type="radio"/> Yes
Build Contact Using Request URI Address	<input checked="" type="radio"/> No <input type="radio"/> Yes
De-register Using Contact Address not *	<input checked="" type="radio"/> No <input type="radio"/> Yes
Disable Reliable Provisional Responses	<input type="radio"/> No <input checked="" type="radio"/> Yes
Disable Use of User-Agent and Server Headers	<input checked="" type="radio"/> No <input type="radio"/> Yes
E.164: Enable sending '+'	<input checked="" type="radio"/> No <input type="radio"/> Yes
E.164: Add '+' if digit length > N digits	0
E.164: Do not add '+' to Emergency Called Party	<input checked="" type="radio"/> No <input type="radio"/> Yes
E.164: Do not add '+' to Called Party	<input type="radio"/> No <input type="radio"/> Yes
Force Max-Forward: 70 on Outgoing Calls	<input type="radio"/> No <input type="radio"/> Yes
Ignore Incoming Loose Routing Indication	<input checked="" type="radio"/> No <input type="radio"/> Yes
Only use SDP to decide 180 or 183	<input checked="" type="radio"/> No <input type="radio"/> Yes
Require Reliable Provisional Responses on Outgoing Calls	<input checked="" type="radio"/> No <input type="radio"/> Yes
Use Privacy: none	<input checked="" type="radio"/> No <input type="radio"/> Yes
Use P-Asserted Identity Header	<input type="radio"/> No <input checked="" type="radio"/> Yes
Use P-Preferred Identity Header	<input checked="" type="radio"/> No <input type="radio"/> Yes
Use Restricted Character Set For Authentication	<input checked="" type="radio"/> No <input type="radio"/> Yes
Use To Address in From Header on Outgoing Calls	<input type="radio"/> No <input checked="" type="radio"/> Yes
Use user=phone	<input checked="" type="radio"/> No <input type="radio"/> Yes

10. Select the **Key Press Event** tab.

Unless advised otherwise, make sure that the settings under this tab match those shown below.

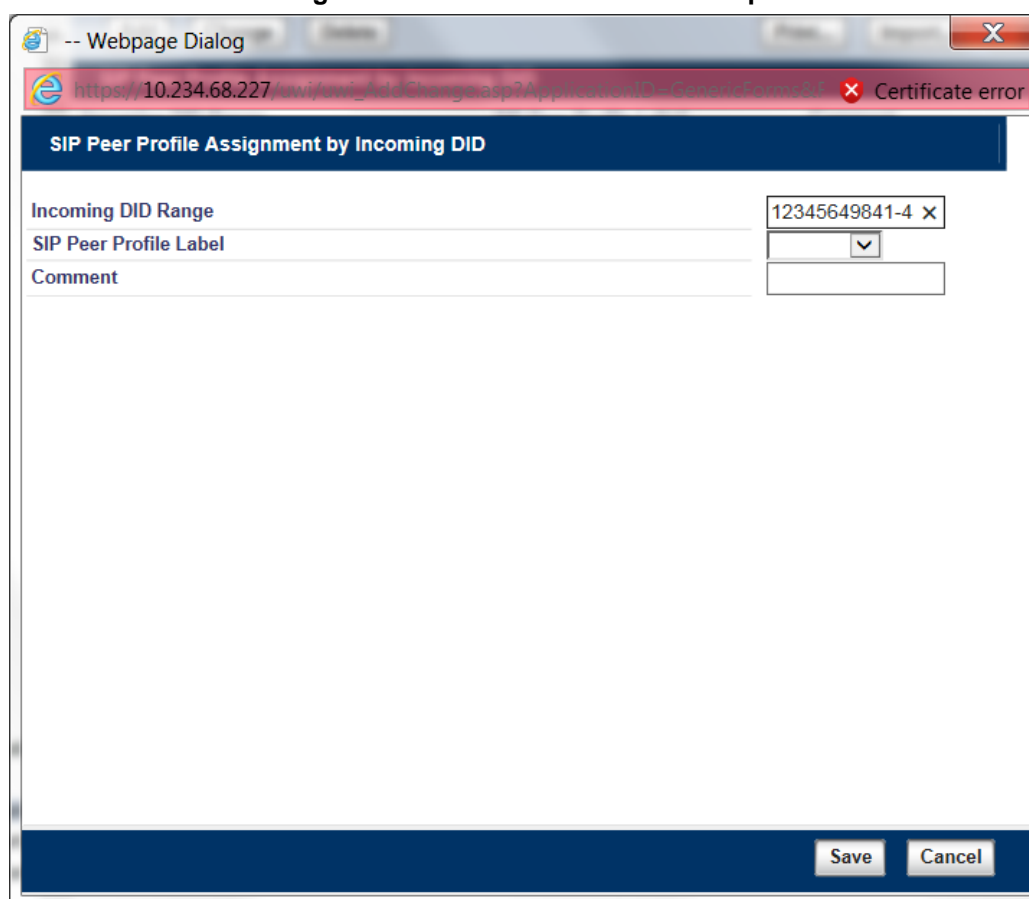
**Figure 3-8: Key Press Event Tab**

Allow Inc Subscriptions for Local Digit Monitoring	<input checked="" type="radio"/> No <input type="radio"/> Yes
Allow Out Subscriptions for Remote Digit Monitoring	<input checked="" type="radio"/> No <input type="radio"/> Yes
Force Out Subscriptions for Remote Digit Monitoring	<input checked="" type="radio"/> No <input type="radio"/> Yes
Request Outbound Proxy to Handle Out Subscriptions	<input checked="" type="radio"/> No <input type="radio"/> Yes
KPML Transport	default
KPML Port	0

11. Open the SIP Peer Profile Assignment by Incoming DID page (**Trunks > SIP > SIP Peer Profile Assignment by Incoming DID**).

The rules defined in this page are used to associate incoming calls to the appropriate SIP Peer Profile based on the received DDI.

**Figure 3-9: SIP Interconnection Setup**



12. Open the DID Ranges for CPN Substitution page (**Trunks > SIP > DID Ranges for CPN Substitution**).

You can use the profiles on this page to define DDI's displayed as the source number for calls from users on the MCD, map them to DDI's of the users setup on the BroadCloud platform i.e. these profiles can display numbers to the PSTN.

The transformation should mean that the number presented to BroadCloud is the number of the Trunk Group or associated Trunk User on the BroadCloud platform.

The example below shows a profile where the DID of each user is a direct mapping to the last 4 digits of that user's DDI on the BroadCloud platform.

**Figure 3-10: DID Ranges for CPN Substitution**

DID Ranges for CPN Substitution	
Index	1
DID Range	7890-7892
CPN Substitution	44123456xxxx

13. Open the ARS Digit Modification Plans (Optional) page (**Call Routing > Automatic Route Selection (ARS) > ARS Digit Modification Plans**).

Depending on the configuration of your MCD system and the dialing plan that is employed, it may be necessary to modify the called number for outbound calls to the BroadCloud platform i.e. dialing "9" for an outside line is used.

The below profile is an example where "9" is dialed to trigger an Outbound call to the SIP Trunk, i.e. "9" is removed before the call is passed to BroadCloud.

**Figure 3-11: ARS Digit Modification Plans**

ARS Digit Modification Plans	
Digit Modification Number	1
Number of Digits to Absorb	1
Digits to be Inserted	<input type="text"/>
Final Tone Plan/Information Marker	<input type="text"/>

- Open the ARS Routes page (**Call Routing > Automatic Route Selection (ARS) > ARS Routes**).

Each ARS Routes profile allows you to define an Outbound route for calls that will be referenced in the dialing plan of the MCD. The profile you create for calls to the BroadCloud platform should consist of the following.

**Figure 3-12: ARS Routes**

Route Number	Routing Medium	Trunk Group Number	SIP Peer Profile	PBX Number / Cluster Element ID	COR Group Number	Digit Modification Number	Digits Before Outpulsing
1	SIP Trunk				1	1	
2					1	1	4
3					1	1	4

- Open the ARS Digits Dialed page (**Call Routing > Automatic Route Selection (ARS) > ARS Digits Dialed**).

The ARS Digits Dialed profiles form the dial plan for the MCD system. In an existing MCD system, most of the required profiles should already be in place, in which case you will just need to change the Termination Number for each profile to the previously configured ARS Routes profile ID.

The below example shows a system where "9" must be dialed followed by any number of digits, the call is then routed to ARS Routes profile 1, which is setup to send calls to the BroadCloud SIP Peer.

Figure 3-13: ARS Digits Dialed

Change Range Programming - ARS Digits Dialed

This form allows you to change one or more records, starting at the following record:

Digits Dialed	Number of Digits to Follow	Termination Type	Termination Number
9	Unknown	Route	1

1. Enter the number of records to change:

2. Define the Change Range Programming Pattern:

Field Name	Change action	Value to change	Increment by
Digits Dialed	Change to	<input type="text" value="9"/>	<input type="text"/>
Number of Digits to Follow	Change to	Unknown	-
Termination Type	Change to	Route	-
Termination Number	Change to	<input type="text" value="1"/>	<input type="text"/>

When configuring a new MCD system for the sole purpose of working with the BroadCloud platform, carefully consider all required routes and the associated ARS Digits Dialed profiles.

- 16. Open the Codec Filter Settings page (**Maintenance and Diagnostics > Maintenance Commands**).

By default, the MCD system allows the use of several codecs by the IP handsets. These codecs are generally not supported on the BroadCloud platform.

This can cause certain call flows to fail due to the manner upon which Mitel answers specific SIP requests. To prevent this from occurring, you must disable use of the unsupported codecs using the **ADDCODECFILTER** command.

We recommend filtering the following codecs on the MCD:

Figure 3-14: Codec Filter Settings

G.722.1  
 L16-256  
 G.729b  
 G.729ab  
 G.723  
 G.723.1c  
 G.728

When you have added filters for all the above codecs, the command entry confirmation should appear as displayed in the figure below:

**Figure 3-15: System Response**

**System Response:**

```
Codec[G.728] filtering enabled.  
  
Enabled System Codec Filters:  
-----  
TERM_CAP_G722_1  
TERM_CAP_L16_256  
TERM_CAP_G729_ANNEXB  
TERM_CAP_G729_ANNEXA_w_ANNEXB  
TERM_CAP_G723  
TERM_CAP_G7231_ANNEXC  
TERM_CAP_G728
```

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## 4 Configuring AudioCodes E-SBC

This chapter provides step-by-step procedures on how to configure AudioCodes E-SBC for interworking between IP-PBX and the BroadCloud SIP Trunk. These configuration procedures are based on the interoperability test topology described in Section 2.4 on page 10, and includes the following main areas:

- E-SBC WAN interface – BroadCloud SIP Trunking environment
- E-SBC LAN interface – Mitel 3300 IP-PBX environment

This configuration is done using the E-SBC's embedded Web server (hereafter, referred to as *Web interface*).

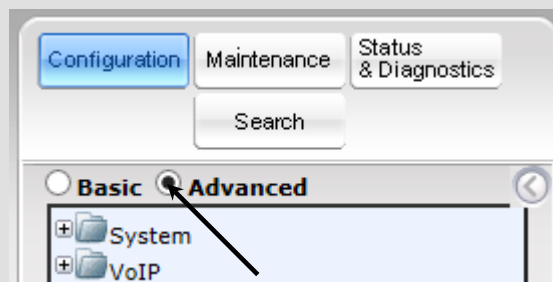
### Notes:

- For implementing IP-PBX and BroadCloud SIP Trunk based on the configuration described in this section, AudioCodes E-SBC must be installed with a Software License Key that includes the following software features:

- ✓ **SBC**
- ✓ **Security**
- ✓ **DSP**
- ✓ **RTP**
- ✓ **SIP**

For more information about the Software License Key, contact your AudioCodes sales representative.

- The scope of this interoperability test and document does **not** cover all security aspects for connecting the SIP Trunk to the IP-PBX 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 E-SBC, ensure that the E-SBC's Web interface Navigation tree is in Advanced-menu display mode. To do this, select the **Advanced** option, as shown below:



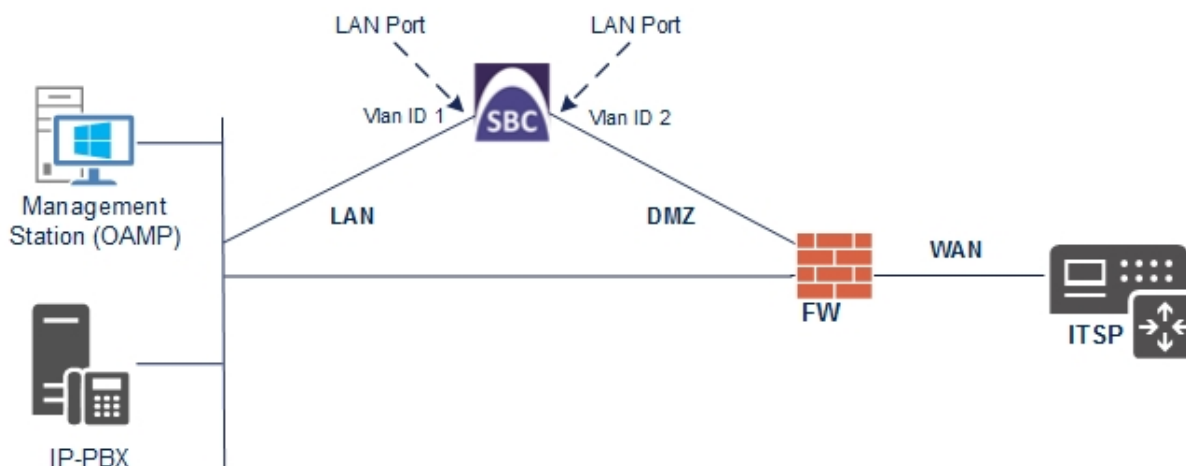
Note that when the E-SBC is reset, the Navigation tree reverts to Basic-menu display.

## 4.1 Step 1: IP Network Interfaces Configuration

This step describes how to configure the E-SBC's IP network interfaces. There are several ways to deploy the E-SBC; however, this interoperability test topology employs the following deployment method:

- E-SBC interfaces with the following IP entities:
  - Mitel IP-PBX, located on the LAN
  - BroadCloud SIP Trunk, located on the WAN
- E-SBC connects to the WAN through a DMZ network
- Physical connection: The type of physical connection to the LAN depends on the method used to connect to the Enterprise's network. In the interoperability test topology, E-SBC connects to the LAN and WAN using dedicated LAN ports (i.e., two ports and two network cables are used).
- E-SBC also uses two logical network interfaces:
  - LAN (VLAN ID 1)
  - WAN (VLAN ID 2)

**Figure 4-1: Network Interfaces in Interoperability Test Topology**



### 4.1.1 Step 1a: Configure VLANs

This step describes how to define VLANs for each of the following interfaces:

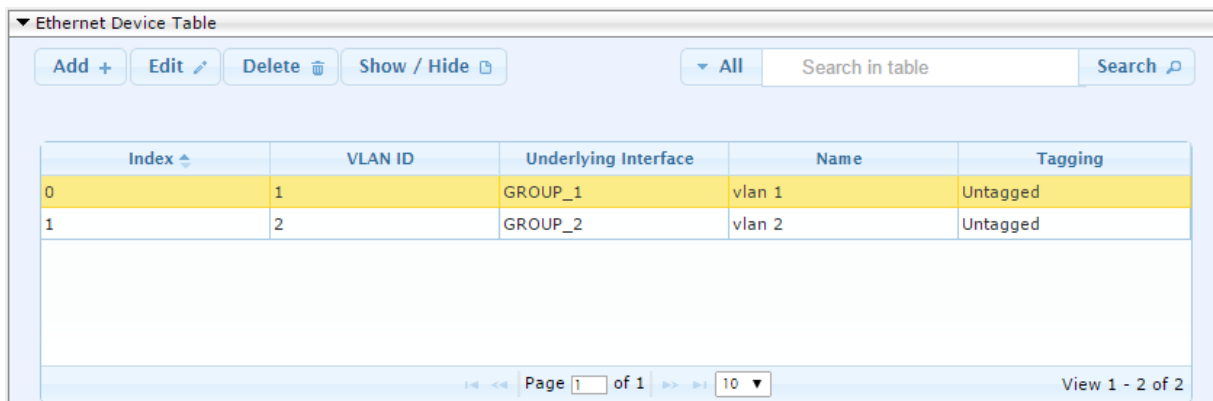
- LAN VoIP (assigned the name "Voice")
- WAN VoIP (assigned the name "WANSP")

➤ **To configure the VLANs:**

1. Open the Ethernet Device Table page (**Configuration** tab > **VoIP** menu > **Network** > **Ethernet Device Table**).
2. There will be one existing row for VLAN ID 1 and underlying interface GROUP\_1.
3. Add another VLAN ID 2 for the WAN side as follows:

Parameter	Value
Index	1
VLAN ID	2
Underlying Interface	GROUP_2 (Ethernet port group)
Name	vlan 2
Tagging	Untagged

Figure 4-2: Configured VLAN IDs in Ethernet Device Table



### 4.1.2 Step 1b: Configure Network Interfaces

This step describes how to configure the IP network interfaces for each of the following interfaces:

- LAN VoIP (assigned the name "Voice")
- WAN VoIP (assigned the name "WANSP")

➤ **To configure the IP network interfaces:**

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	<b>10.234.68.240</b> (IP address of E-SBC)
Prefix Length	<b>15</b> (subnet mask in bits for 255.255.255.0)
Default Gateway	<b>10.234.68.1</b>
VLAN ID	<b>1</b>
Interface Name	<b>Voice</b> (arbitrary descriptive name)
Primary DNS Server IP Address	<b>10.234.35.20</b>
Underlying Device	<b>vlan 1</b>

3. Add a network interface for the WAN side:

- a. Enter **1**, and then click **Add Index**.

- b. Configure the interface as follows:

Parameter	Value
Application Type	<b>Media + Control</b>
IP Address	<b>194.73.218.98</b> (WAN IP address)
Prefix Length	<b>3</b> (for 255.255.255.128)
Default Gateway	<b>194.73.218.97</b> (router's IP address)
VLAN ID	<b>2</b>
Interface Name	<b>WANSP</b>
Primary DNS Server IP Address	<b>8.8.8.8</b>
Secondary DNS Server IP Address	<b>0.0.0.0</b>
Underlying Device	<b>vlan 2</b>

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

The configured IP network interfaces are shown below:

**Figure 4-3: Configured Network Interfaces in IP Interfaces Table**

Index	Interface Name	Application Type	Interface Mode	IP Address	Prefix Length	Default Gateway	Primary DNS	Secondary DNS	Underlying Device
0	Voice	OAMP + Media + Co IPv4 Manual		10.234.68.240	15	10.234.68.1	10.234.35.20	0.0.0.0	vlan 1
1	WANSP	Media + Control	IPv4 Manual	194.73.218.98	3	194.73.218.97	8.8.8.8	0.0.0.0	vlan 2

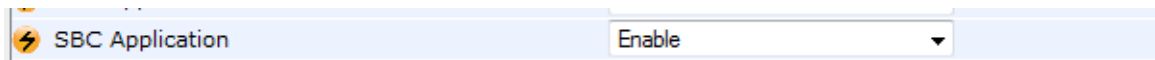
## 4.2 Step 2: Enable the SBC Application

This step describes how to enable the SBC application.

➤ **To enable the SBC application:**

1. Open the Applications Enabling page (**Configuration** tab > **VoIP** menu > **Applications Enabling** > **Applications Enabling**).

**Figure 4-4: Enabling SBC Application**



2. From the 'SBC Application' drop-down list, select **Enable**.
3. Click **Submit**.
4. Reset the E-SBC with a burn to flash for this setting to take effect (see Section 4.13 on page 62).

## 4.3 Step 3: Configure Media Realms

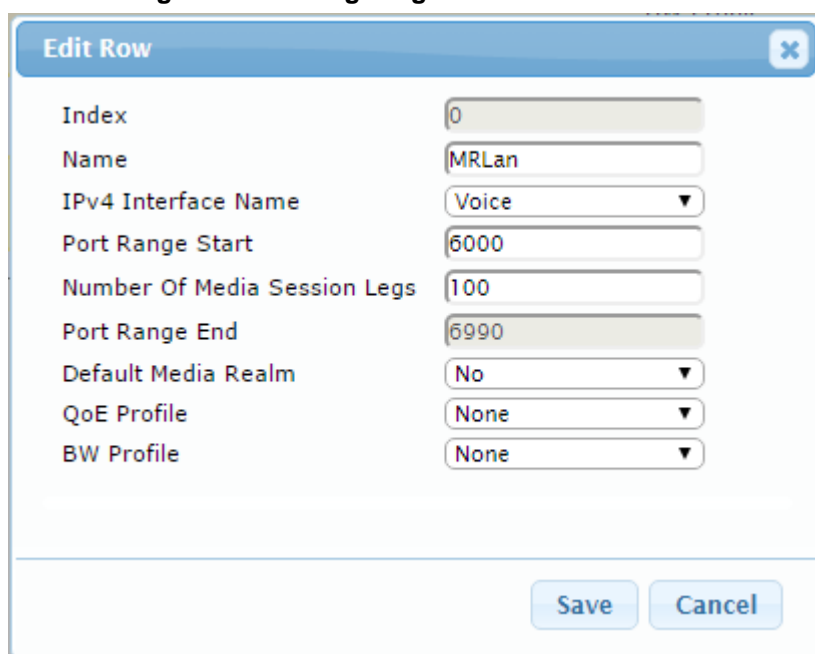
This step describes how to configure Media Realms. The simplest configuration is to create two Media Realms - one for internal (LAN) traffic and one for external (WAN) traffic.

➤ **To configure Media Realms:**

1. Open the Media Realm Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **Media Realm Table**).
2. Add a Media Realm for the LAN interface. You can use the default Media Realm (Index 0), but modify it as shown below:

Parameter	Value
Index	<b>0</b>
Media Realm Name	<b>MRLan</b> (descriptive name)
IPv4 Interface Name	<b>Voice</b>
Port Range Start	<b>6000</b> (as required by IP-PBX)
Number of Media Session Legs	<b>100</b> (media sessions assigned with port range)

**Figure 4-5: Configuring Media Realm for LAN**



Edit Row
✕

Index	<input type="text" value="0"/>
Name	<input type="text" value="MRLan"/>
IPv4 Interface Name	<input type="text" value="Voice"/>
Port Range Start	<input type="text" value="6000"/>
Number Of Media Session Legs	<input type="text" value="100"/>
Port Range End	<input type="text" value="6990"/>
Default Media Realm	<input type="text" value="No"/>
QoS Profile	<input type="text" value="None"/>
BW Profile	<input type="text" value="None"/>

3. Configure a Media Realm for WAN traffic:

Parameter	Value
Index	1
Media Realm Name	MRWan (arbitrary name)
IPv4 Interface Name	WANSP
Port Range Start	7000 (represents lowest UDP port number used for media on WAN)
Number of Media Session Legs	100 (media sessions assigned with port range)

Figure 4-6: Configuring Media Realm for WAN

The configured Media Realms are shown in the figure below:

Figure 4-7: Configured Media Realms in Media Realm Table

Index	Name	IPv4 Interface Name	Port Range Start	Number Of Media Session Legs	Port Range End	Default Media Realm
0	MRLan	Voice	6000	100	6990	No
1	MRWan	WANSP	7000	100	7990	No

## 4.4 Step 4: Configure SIP Signaling Interfaces

This step describes how to configure SIP Interfaces. For the interoperability test topology, an internal and external SIP Interface must be configured for the E-SBC.

➤ **To configure SIP Interfaces:**

1. Open the SIP Interface Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **SIP Interface Table**).
2. Add a SIP Interface for the LAN interface. You can use the default SIP Interface (Index 0); however, modify it as shown below:

Parameter	Value
Index	<b>0</b>
Interface Name	<b>IP-PBX</b> (see Note below)
Network Interface	<b>Voice</b>
Application Type	<b>SBC</b>
UDP Port	<b>5060</b>
TCP and TLS	<b>0</b>
Media Realm	<b>MRLan</b>

3. Configure a SIP Interface for the WAN:

Parameter	Value
Index	<b>1</b>
Interface Name	<b>BroadCloud</b> (see Note below)
Network Interface	<b>WANSP</b>
Application Type	<b>SBC</b>
UDP Port	<b>5060</b>
TCP and TLS	<b>0</b>
Media Realm	<b>MRWan</b>



The configured SIP Interfaces are shown in the figure below:

**Figure 4-8: Configured SIP Interfaces in SIP Interface Table**

Index	Name	SRD	Network Interface	Application Type	UDP Port	TCP Port	TLS Port	Encapsulating Protocol	Media Realm
0	IP-PBX	DefaultSRD	Voice	SBC	5060	0	0	No encapsulation	MRLan
1	BroadCloud	DefaultSRD	WANSP	SBC	5060	0	0	No encapsulation	MRWan



**Note:** Unlike in previous software releases where configuration entities (e.g., SIP Interface, Proxy Sets, and IP Groups) were associated with each other using table row indices, Version 7.0 uses the string **names** of the configuration entities. Therefore, it is recommended to configure each configuration entity with meaningful names for easy identification.

## 4.5 Step 5: Configure Proxy Sets

This step describes how to configure Proxy Sets. The Proxy Set defines the destination address (IP address or FQDN) of the IP entity server. Proxy Sets can also be used to configure load balancing between multiple servers.

For the interoperability test topology, two Proxy Sets need to be configured for the following IP entities:

- Mitel 3300 IP-PBX
- BroadCloud SIP Trunk

The Proxy Sets will be later applied to the VoIP network by assigning them to IP Groups.

### ➤ To configure Proxy Sets:

1. Open the Proxy Sets Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **Proxy Sets Table**).
2. Add a Proxy Set for the IP-PBX. You can use the default Proxy Set (Index 0), but modify it as shown below:

Parameter	Value
Proxy Set ID	0
Proxy Name	IP-PBX (see Note in Section 4.4)
SBC IPv4 SIP Interface	IP-PBX
Proxy Keep Alive	Using Options

Figure 4-9: Configuring Proxy Set for IP-PBX

Edit Row
✕

Index	<input type="text" value="0"/>
SRD	<input type="text" value="DefaultSRD"/>
Name	<input type="text" value="IP-PBX"/>
Gateway IPv4 SIP Interface	<input type="text" value="None"/>
SBC IPv4 SIP Interface	<input type="text" value="IP-PBX"/>
Proxy Keep-Alive	<input type="text" value="Using OPTIONS"/>
Proxy Keep-Alive Time [sec]	<input type="text" value="60"/>
Redundancy Mode	<input type="text"/>
Proxy Load Balancing Method	<input type="text" value="Disable"/>
DNS Resolve Method	<input type="text"/>
Proxy Hot Swap	<input type="text" value="Disable"/>
Keep-Alive Failure Responses	<input type="text"/>
Classification Input	<input type="text" value="IP Address only"/>
TLS Context Name	<input type="text" value="None"/>

3. Configure a Proxy Address Table for Proxy Set for Mitel 3300 IP-PBX:
  - a. Open the Proxy Address table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **Proxy Sets Table** > **Proxy Address Table**).

Parameter	Value
Index	<b>0</b>
Proxy Address	<b>10.234.68.227:5060</b> (IP-PBX IP address / FQDN and destination port)
Transport Type	<b>UDP</b>

**Figure 4-10: Configuring Proxy Address for IP-PBX**

The screenshot shows a modal dialog titled "Edit Row" with a close button (X) in the top right corner. Inside the dialog, there are three input fields:
 

- Index:** A text input field containing the number "0".
- Proxy Address:** A text input field containing the IP address and port "10.234.68.227:5060".
- Transport Type:** A dropdown menu with "UDP" selected.

 At the bottom right of the dialog, there are two buttons: "Save" and "Cancel".

4. Configure a Proxy Set for the BroadCloud SIP Trunk:

Parameter	Value
Proxy Set ID	<b>1</b>
Proxy Name	<b>BroadCloud</b> (see Note in Section 4.4)
SBC IPv4 SIP Interface	<b>BroadCloud</b>
Proxy Keep Alive	<b>Using Options</b>

Figure 4-11: Configuring Proxy Set for BroadCloud SIP Trunk

Index	1
SRD	DefaultSRD
Name	BroadCloud
Gateway IPv4 SIP Interface	None
SBC IPv4 SIP Interface	BroadCloud
Proxy Keep-Alive	Using OPTIONS
Proxy Keep-Alive Time [sec]	60
Redundancy Mode	
Proxy Load Balancing Method	Disable
DNS Resolve Method	SRV
Proxy Hot Swap	Disable
Keep-Alive Failure Responses	
Classification Input	IP Address only
TLS Context Name	None

Save Cancel

5. Configure a Proxy Address Table for BroadCloud SIP Trunk:
  - a. Open the Proxy Address Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **Proxy Sets Table** > **Proxy Address Table**).

Parameter	Value
Index	0
Proxy Address	nn6300southsipconnect.adpt-tech.com (IP-PBX IP address / FQDN and destination port)
Transport Type	UDP

Figure 4-12: Configuring Proxy Address BroadCloud SIP Trunk:

Index	0
Proxy Address	nn6300southsipconnec
Transport Type	UDP

Save Cancel

The configured Proxy Sets are shown in the figure below:

**Figure 4-13: Configured Proxy Sets in Proxy Sets Table**

The screenshot shows a web interface titled "Proxy Sets Table". At the top, there are buttons for "Add +", "Edit", "Delete", and "Show / Hide". To the right, there is a dropdown menu set to "All", a search box labeled "Search in table", and a "Search" button. Below these controls is a table with the following data:

Index	Name	SRD	Gateway IPv4 SIP Interface	SBC IPv4 SIP Interface	Proxy Keep-Alive Time [sec]	Redundancy Mode	Proxy Hot Swap
0	IP-PBX	DefaultSRD (#0)	None	IP-PBX	60		Disable
1	BroadCloud	DefaultSRD (#0)	None	BroadCloud	60		Disable

At the bottom of the table, there is a pagination control showing "Page 1 of 1" and a dropdown menu set to "10". On the far right, it says "View 1 - 2 of 2".

## 4.6 Step 6: Configure IP Profiles

This step describes how to configure IP Profiles. The IP Profile defines a set of call capabilities relating to signaling (e.g., SIP message terminations such as REFER) and media (e.g., coder and transcoding method).

In this interoperability test topology, IP Profiles need to be configured for the following IP entities:

- Mitel 3300 IP-PBX - to operate in non-secure mode using RTP and UDP
- BroadCloud SIP trunk - to operate in non-secure mode using RTP and UDP

➤ **To configure IP Profile for the IP-PBX:**

1. Open the IP Profile Settings page (**Configuration** tab > **VoIP** > **Coders and Profiles** > **IP Profile Settings**).
2. Click **Add**.
3. Click the **Common** tab, and then configure the parameters as follows:

Parameter	Value
Index	1
Name	IP-PBX (see Note in Section 4.4)

**Figure 4-14: Configuring IP Profile for IP-PBX – Common Tab**

The screenshot shows the 'Edit Row' dialog box with the following configuration:

- Index: 1
- Tab: Common
- Name: IP-PBX
- Dynamic Jitter Buffer Minimum Delay [msec]: 10
- Dynamic Jitter Buffer Optimization Factor: 10
- Jitter Buffer Max Delay [msec]: 300
- RTP IP DiffServ: 46
- Signaling DiffServ: 40
- Silence Suppression: Disable
- RTP Redundancy Depth: 0
- Echo Canceler: Line
- Broken Connection Mode: Ignore
- Input Gain (-32 to 31 dB): 0
- Voice Volume (-32 to 31 dB): 0
- Media IP Version: Only IPv4

- Click the **SBC Signaling** tab, and then configure the parameters as follows:

Parameter	Value
Remote Update Support	<b>Supported</b>
Remote re-INVITE Support	<b>Supported</b>
Remote Can Play Ringback	<b>No</b>

**Figure 4-15: Configuring IP Profile for IP-PBX – SBC Signaling Tab**

The screenshot shows a configuration window titled "Edit Row" with a close button (X) in the top right corner. Below the title bar, there is an "Index" field containing the number "1". There are four tabs: "Common", "GW", "SBC Signaling" (which is highlighted in orange), and "SBC Media". The "SBC Signaling" tab contains the following parameters and their values:

- PRACK Mode: Transparent
- P-Asserted-Identity Header Mode: As Is
- Diversion Header Mode: As Is
- History-Info Header Mode: As Is
- Session Expires Mode: Transparent
- Remote Update Support: Supported
- Remote re-INVITE: Supported
- Remote Delayed Offer Support: Supported
- User Registration Time: 0
- NAT UDP Registration Time: -1
- NAT TCP Registration Time: -1
- Remote REFER Mode: Regular
- Remote Replaces Mode: Standard

At the bottom of the window, there are "Save" and "Cancel" buttons.

5. Click the **SBC Media** tab, and then configure the parameters as follows:

Parameter	Value
Media Security Behavior	RTP

**Figure 4-16: Configuring IP Profile for IP-PBX – SBC Media Tab**

The screenshot shows the 'Edit Row' configuration window for the SBC Media tab. The 'Index' is set to 1. The 'SBC Media' tab is selected. The parameters and their values are as follows:

Parameter	Value
Transcoding Mode	Only If Required
Extension Coders	None
Allowed Audio Coders	None
Allowed Coders Mode	Restriction
Allowed Video Coders	None
Allowed Media Types	
SBC Media Security Mode	RTP
Media Security Method	SDES
Enforce MKI Size	Enforce
SDP Remove Crypto Lifetime	No
RFC 2833 Mode	As Is
Alternative DTMF Method	As Is
RFC 2833 DTMF Payload Type	0
Fax Coders	None

Buttons: Save, Cancel



- **To configure an IP Profile for the BroadCloud SIP Trunk:**
- 1. Click **Add**.
- 2. Click the **Common** tab, and then configure the parameters as follows:

Parameter	Value
Index	2
Profile Name	<b>BroadCloud</b> (see Note in Section 4.4)

**Figure 4-17: Configuring IP Profile for BroadCloud SIP Trunk – Common Tab**

The screenshot shows a configuration window titled "Edit Row" with a close button (X) in the top right corner. Below the title bar, there is a field for "Index" with the value "2". Below that are four tabs: "Common" (selected), "GW", "SBC Signaling", and "SBC Media". The "Common" tab contains the following parameters and values:

- Name: BroadCloud
- Dynamic Jitter Buffer Minimum Delay [msec]: 10
- Dynamic Jitter Buffer Optimization Factor: 10
- Jitter Buffer Max Delay [msec]: 300
- RTP IP DiffServ: 46
- Signaling DiffServ: 40
- Silence Suppression: Disable
- RTP Redundancy Depth: 0
- Echo Canceler: Line
- Broken Connection Mode: Ignore
- Input Gain (-32 to 31 dB): 0
- Voice Volume (-32 to 31 dB): 0
- Media IP Version: Only IPv4

At the bottom right of the window are "Save" and "Cancel" buttons.

3. Click the **SBC Signaling** tab, and then configure the parameters as follows:

Parameter	Value
P-Asserted-Identity Header Mode	<b>Add</b> (required for anonymous calls)

Figure 4-18: Configuring IP Profile for BroadCloud SIP Trunk – SBC Signaling Tab

The screenshot shows the 'Edit Row' configuration window for the SBC Signaling tab. The window has a title bar 'Edit Row' with a close button. Below the title bar is an 'Index' field with the value '2'. There are four tabs: 'Common', 'GW', 'SBC Signaling' (which is selected and highlighted in orange), and 'SBC Media'. The 'SBC Signaling' tab contains the following parameters and values:

- PRACK Mode: Transparent
- P-Asserted-Identity Header Mode: Add
- Diversion Header Mode: As Is
- History-Info Header Mode: As Is
- Session Expires Mode: Transparent
- Remote Update Support: Supported
- Remote re-INVITE: Supported
- Remote Delayed Offer Support: Supported
- User Registration Time: 0
- NAT UDP Registration Time: -1
- NAT TCP Registration Time: -1
- Remote REFER Mode: Regular
- Remote Replaces Mode: Standard

At the bottom of the window are 'Save' and 'Cancel' buttons.

- Click the **SBC Media** tab, and then configure the parameters as follows:

Parameter	Value
Media Security Behavior	RTP

**Figure 4-19: Configuring IP Profile for BroadCloud SIP Trunk – SBC Media Tab**

The screenshot shows the 'Edit Row' configuration window for the SBC Media tab. The 'Index' is set to 2. The 'SBC Media' tab is selected. The parameters and their values are as follows:

Parameter	Value
Transcoding Mode	Only If Required
Extension Coders	None
Allowed Audio Coders	None
Allowed Coders Mode	Restriction
Allowed Video Coders	None
Allowed Media Types	
SBC Media Security Mode	RTP
Media Security Method	SDES
Enforce MKI Size	Don't enforce
SDP Remove Crypto Lifetime	No
RFC 2833 Mode	As Is
Alternative DTMF Method	As Is
RFC 2833 DTMF Payload Type	0
Fax Coders	None

Buttons: Save, Cancel

## 4.7 Step 7: Configure IP Groups

This step describes how to configure IP Groups. The IP Group represents an IP entity on the network with which the E-SBC 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. Once IP Groups are configured, they are used to configure IP-to-IP routing rules for denoting source and destination of the call.

In this interoperability test topology, IP Groups must be configured for the following IP entities:

- Mitel 3300 IP-PBX located on LAN
- BroadCloud SIP Trunk located on WAN

### ➤ To configure IP Groups:

1. Open the IP Group Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **IP Group Table**).
2. Add an IP Group for the Mitel 3300 IP-PBX. You can use the default IP Group (Index 0), but modify it as shown below:

Parameter	Value
Index	<b>0</b>
Name	<b>IP-PBX</b> (see Note in Section 4.4)
Type	<b>Server</b>
Proxy Set	<b>IP-PBX</b>
IP Profile	<b>IP-PBX</b>
Media Realm	<b>MRLan</b>
SIP Group Name	

3. Configure an IP Group for the BroadCloud SIP Trunk:

Parameter	Value
Index	<b>1</b>
Name	<b>BroadCloud</b> (see Note in Section 4.4)
Type	<b>Server</b>
Proxy Set	<b>BroadCloud</b>
IP Profile	<b>BroadCloud</b>
Media Realm	<b>MRWan</b>
SIP Group Name	<b>interop.adpt-tech.com</b> (according to ITSP requirement)

The configured IP Groups are shown in the figure below:

**Figure 4-20: Configured IP Groups in IP Group Table**

Index	Name	SRD	Type	SBC Operation Mode	Proxy Set	IP Profile	Media Realm	SIP Group Name	Classify By Proxy Set	Inbound Message Manipulation Set	Outbound Message Manipulation Set
0	IP-PBX	DefaultSRD Server		Not Configure	IP-PBX	IP-PBX	MRLan		Enable	-1	-1
1	BroadCloud	DefaultSRD Server		Not Configure	BroadCloud	BroadCloud	MRWan	interop.adpt-	Enable	-1	4

## 4.8 Step 8: Configure IP-to-IP Call Routing Rules

This step describes how to configure IP-to-IP call routing rules. These rules define the routes for forwarding SIP messages (e.g., INVITE) received from one IP entity to another. The E-SBC selects the rule whose configured input characteristics (e.g., IP Group) match those of the incoming SIP message. If the input characteristics do not match the first rule in the table, they are compared to the second rule, and so on, until a matching rule is located. If no rule is matched, the message is rejected. The routing rules use the configured IP Groups to denote the source and destination of the call. As configured in Section 4.7 on page 37, IP Group 1 represents IP-PBX, and IP Group 2 represents BroadCloud SIP Trunk.

For the interoperability test topology, the following IP-to-IP routing rules need to be configured to route calls between IP-PBX (LAN) and BroadCloud SIP Trunk (WAN):

- Terminate SIP OPTIONS messages on the E-SBC
- Calls from IP-PBX to BroadCloud SIP Trunk
- Calls from BroadCloud SIP Trunk to Mitel 3300 IP-PBX

➤ **To configure IP-to-IP routing rules:**

1. Open the IP-to-IP Routing Table page (**Configuration** tab > **VoIP** menu > **SBC** > **Routing SBC** > **IP-to-IP Routing Table**).
2. Configure a rule to terminate SIP OPTIONS messages received from the LAN:
  - a. Click **Add**.
  - b. Click the **Rule** tab, and then configure the parameters as follows:

Parameter	Value
Index	<b>0</b>
Name	<b>Terminate OPTIONS</b> (arbitrary descriptive name)
Source IP Group	<b>Any</b>
Request Type	<b>OPTIONS</b>

**Figure 4-21: Configuring IP-to-IP Routing Rule for Terminating SIP OPTIONS – Rule Tab**

The screenshot shows the 'Edit Row' configuration window for a routing rule. At the top, the 'Index' is set to 0 and the 'Routing Policy' is 'Default\_SBCRouting'. Below this, there are two tabs: 'Rule' (selected) and 'Action'. Under the 'Rule' tab, the following parameters are configured:

- Name: Terminate OPTIONS
- Alternative Route Options: Route Row
- Source IP Group: Any
- Request Type: OPTIONS
- Source Username Prefix: \*
- Source Host: \*
- Destination Username Prefix: \*
- Destination Host: \*
- Message Condition: None
- Call Trigger: Any
- ReRoute IP Group: Any

At the bottom right of the window, there is a 'Classic View' link and 'Save' and 'Cancel' buttons.

c. Click the **Action** tab, and then configure the parameters as follows:

Parameter	Value
Destination Type	<b>Dest Address</b>
Destination Address	<b>internal</b>

Figure 4-22: Configuring IP-to-IP Routing Rule for Terminating SIP OPTIONS – Action Tab

3. Configure a rule to route calls from Mitel 3300 IP-PBX to BroadCloud SIP Trunk:
  - a. Click **Add**.
  - b. Click the **Rule** tab, and then configure the parameters as follows:

Parameter	Value
Index	1
Route Name	IP-PBX to ITSP (arbitrary descriptive name)
Source IP Group	IP-PBX



**Figure 4-23: Configuring IP-to-IP Routing Rule for IP-PBX to ITSP – Rule tab**

c. Click the **Action** tab, and then configure the parameters as follows:

Parameter	Value
Destination Type	<b>IP Group</b>
Destination IP Group	<b>BroadCloud</b>
Destination SIP Interface	<b>BroadCloud</b>

Figure 4-24: Configuring IP-to-IP Routing Rule for IP-PBX to ITSP – Action tab

4. To configure rule to route calls from BroadCloud SIP Trunk to Mitel 3300 IP-PBX:
  - a. Click **Add**.
  - b. Click the **Rule** tab, and then configure the parameters as follows:

Parameter	Value
Index	2
Route Name	ITSP to IP-PBX (arbitrary descriptive name)
Source IP Group	BroadCloud

Figure 4-25: Configuring IP-to-IP Routing Rule for ITSP to IP-PBX – Rule tab

c. Click the **Action** tab, and then configure the parameters as follows:

Parameter	Value
Destination Type	<b>IP Group</b>
Destination IP Group	<b>IP-PBX</b>
Destination SIP Interface	<b>IP-PBX</b>

Figure 4-26: Configuring IP-to-IP Routing Rule for ITSP to IP-PBX – Action tab

Edit Row
✕

Index

Routing Policy

Rule

Action

Destination Type

Destination IP Group

Destination SIP Interface

Destination Address

Destination Port

Destination Transport Type

Call Setup Rules Set ID

Group Policy

Cost Group

[Classic View](#)

The configured routing rules are shown in the figure below:

Figure 4-27: Configured IP-to-IP Routing Rules in IP-to-IP Routing Table

▼ IP-to-IP Routing Table

Add +
Edit ✎
Delete 🗑
Insert +
Up ↑
Down ↓
▼ All

Search 🔍

Index	Name	Routing Policy	Alternative Route Options	Source IP Group	Request Type	Source Username Prefix	Destination Username Prefix	Destination Type	Destination IP Group	Destination SIP Interface	Destination Address
0	Terminate OPTI	Default_SB	Route Row	Any	OPTIONS	*	*	Dest Address	None	None	internal
1	IP-PBX to ITSP	Default_SB	Route Row	IP-PBX	All	*	*	IP Group	BroadCloud	BroadCloud	
2	ITSP to IP-PBX	Default_SB	Route Row	BroadCloud	All	*	*	IP Group	IP-PBX	IP-PBX	

Page 1 of 1
10 ▼
View 1 - 3 of 3



**Note:** The routing configuration may change according to your specific deployment topology.

## 4.9 Step 9: Configure IP-to-IP Manipulation Rules

This step describes how to configure IP-to-IP manipulation rules. These rules manipulate the source and / or destination number. The manipulation rules use the configured IP Groups to denote the source and destination of the call. As configured in Section 4.7 on page 37, IP Group 0 represents Mitel 3300 IP-PBX, and IP Group 1 represents BroadCloud SIP Trunk.



**Note:** Adapt the manipulation table according to you environment dial plan.

For example, for this interoperability test topology, a manipulation was configured to add the prefix to the destination number for calls from the IP-PBX IP Group to the BroadCloud SIP Trunk IP Group for specific destination username prefix.

➤ **To configure a number manipulation rule:**

1. Open the IP-to-IP Outbound Manipulation page (**Configuration** tab > **VoIP** menu > **SBC > Manipulations SBC > IP-to-IP Outbound**).
2. Click **Add**.
3. Click the **Rule** tab, and then configure the parameters as follows:

Parameter	Value
Index	<b>0</b>
Name	<b>Add + for National Calls</b>
Source IP Group	<b>IP-PBX</b>
Destination IP Group	<b>BroadCloud</b>
Destination Username Prefix	<b>001</b>

**Figure 4-28: Configuring IP-to-IP Outbound Manipulation Rule – Rule Tab**

4. Click the **Action** tab, and then configure the parameters as follows:

Parameter	Value
Manipulated Item	<b>Destination URI</b>
Remove From Left	<b>2</b>
Prefix to Add	<b>+</b>

**Figure 4-29: Configuring IP-to-IP Outbound Manipulation Rule - Action Tab**

Edit Row
✕

Index

Routing Policy

Rule

Action

Manipulated Item

Remove From Left

Remove From Right

Leave From Right

Prefix to Add

Suffix to Add

Privacy Restriction Mode

[Classic View](#)

5. Click **Submit**.

The figure below shows an example of configured IP-to-IP outbound manipulation rules for calls between Mitel 3300 IP-PBX IP Group and BroadCloud SIP Trunk IP Group:

**Figure 4-30: Example of Configured IP-to-IP Outbound Manipulation Rules**

Index	Name	Routing Policy	Additional Manipulation	Source IP Group	Destination IP Group	Source Username Prefix	Destination Username Prefix	Manipulated Item	Remove From Left	Remove From Right	Leave From Right	Prefix to Add	Suffix to Add
0	Add + for Nati	Default_SBCR	No	IP-PBX	BroadCloud	*	001	Destination UF 2	2	0	255	+	
1	Mitel_Ext	Default_SBCR	No	BroadCloud	IP-PBX	*	*	Destination UF 9	0	0	255	44203409380	
2	For Anonymou	Default_SBCR	No	IP-PBX	BroadCloud	*	*	Source URI	0	0	255		
3	Change Outgc	Default_SBCR	No	IP-PBX	BroadCloud	*	*	Source URI	11	0	255	832562485	

## 4.10 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).

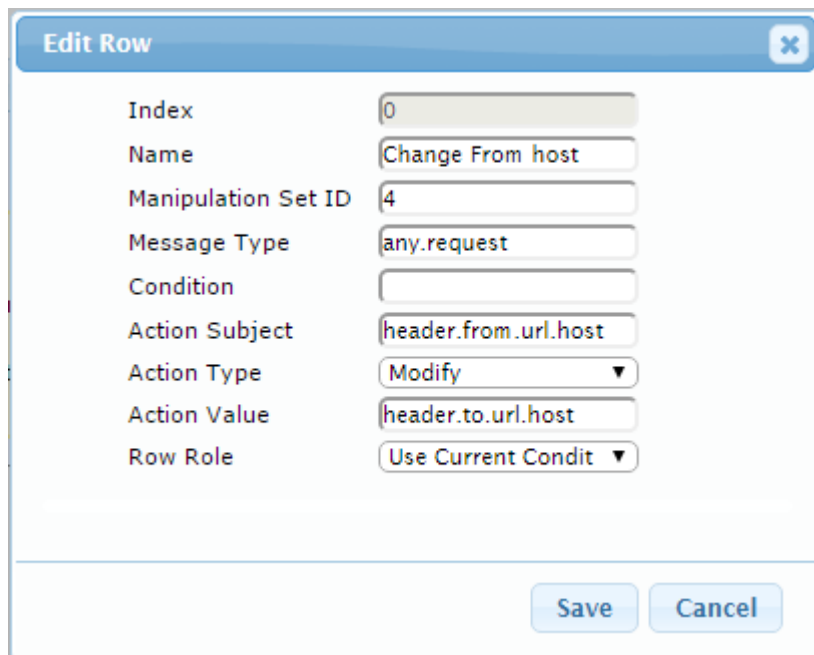
Once you have configured the SIP message manipulation rules, you need to assign them to the relevant IP Group (in the IP Group table) and determine whether they must be applied to inbound or outbound messages.

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

1. Open the Message Manipulations page (**Configuration** tab > **VoIP** menu > **SIP Definitions** > **Msg Policy & Manipulation** > **Message Manipulations**).
2. Configure a new manipulation rule (Manipulation Set 4) for BroadCloud SIP Trunk. This rule applies to messages sent to the BroadCloud SIP Trunk IP Group. This replaces the host part of the SIP From Header with the value from the SIP To Header.

Parameter	Value
Index	0
Name	Change From host
Manipulation Set ID	4
Message Type	any.request
Action Subject	header.from.url.host
Action Type	Modify
Action Value	header.to.url.host

Figure 4-31: Configuring SIP Message Manipulation Rule 0 (for BroadCloud SIP Trunk)



Edit Row
✕

Index	<input type="text" value="0"/>
Name	<input type="text" value="Change From host"/>
Manipulation Set ID	<input type="text" value="4"/>
Message Type	<input type="text" value="any.request"/>
Condition	<input type="text" value=""/>
Action Subject	<input type="text" value="header.from.url.host"/>
Action Type	<input type="text" value="Modify"/>
Action Value	<input type="text" value="header.to.url.host"/>
Row Role	<input type="text" value="Use Current Condit"/>



- Configure another manipulation rule (Manipulation Set 4) for BroadCloud SIP Trunk. This rule applies to messages sent to the BroadCloud SIP Trunk IP Group. This replaces the host part of the SIP P-Asserted-Identity Header with the value from the SIP To Header.

Parameter	Value
Index	1
Manipulation Name	Change P-Asserted host
Manipulation Set ID	4
Message Type	any.request
Condition	header.p-asserted-identity exists
Action Subject	header.p-asserted-identity
Action Type	Modify
Action Value	header.to.url.host

Figure 4-32: Configuring SIP Message Manipulation Rule 1 (for BroadCloud SIP Trunk)

Figure 4-33: Example of Configured SIP Message Manipulation Rules

Index	Name	Manipulation Set ID	Message Type	Condition	Action Subject	Action Type	Action Value	Row Role
0	Change From host	4	any.request		header.from.url.host	Modify	headerto.url.host	Use Current Condition
1	Change P-Asserted host	4	any.request	header.p-asserted-identity exists	header.p-asserted-identity	Modify	header.to.url.host	Use Current Condition

The table displayed below includes SIP message manipulation rules, which are bound together by commonality via the Manipulation Set ID 4, which are executed for messages sent to the BroadCloud SIP Trunk IP Group. These rules are specifically required to enable proper interworking between BroadCloud SIP Trunk and IP-PBX. Refer to the *User's Manual* for further details concerning the full capabilities of header manipulation.

Rule Index	Rule Description	Reason for Introducing Rule
0	This rule applies to messages sent to the BroadCloud SIP Trunk IP Group. This replaces the host part of the SIP From Header with the value from the SIP To Header.	BroadCloud SIP Trunk required that all messages should be from known hosts.
1	This rule applies to messages sent to the BroadCloud SIP Trunk IP Group. This replaces the host part of the SIP P-Asserted-Identity Header with the value from the SIP To Header.	

4. Assign Manipulation Set ID 4 to the BroadCloud SIP trunk IP Group:
  - a. Open the IP Group Table page (**Configuration** tab > **VoIP** menu > **VoIP Network** > **IP Group Table**).
  - b. Select the row of the BroadCloud SIP trunk IP Group, and then click **Edit**.
  - c. Click the **SBC** tab.
  - d. Set the 'Outbound Message Manipulation Set' field to **4**.

**Figure 4-34: Assigning Manipulation Set 4 to the BroadCloud SIP Trunk IP Group**

The screenshot shows a configuration window titled "Edit Row" with a close button in the top right corner. At the top, there are two fields: "Index" with the value "2" and "SRD" with a dropdown menu showing "DefaultSRD". Below these are three tabs: "Common", "GW", and "SBC", with "SBC" being the active tab. The SBC configuration includes the following fields and values:

- SBC Operation Mode: Not Configured (dropdown)
- Classify By Proxy Set: Enable (dropdown)
- SBC Client Forking Mode: Sequential (dropdown)
- Inbound Message Manipulation Set: -1 (text input)
- Outbound Message Manipulation Set: 4 (text input)
- Msg Man User Defined String1: (empty text input)
- Msg Man User Defined String2: (empty text input)
- Registration Mode: User Initiates Regis' (dropdown)
- Max. Number of Registered Users: -1 (text input)
- Authentication Mode: User Authenticates (dropdown)
- Authentication Method List: (empty text input)
- Username: (empty text input)

At the bottom right of the window are two buttons: "Save" and "Cancel".

- e. Click **Submit**.

## 4.11 Step 11: Configure Registration Accounts

This step describes how to configure SIP registration accounts. This is required so that the E-SBC can register with the BroadCloud SIP Trunk on behalf of IP-PBX. The BroadCloud SIP Trunk requires registration and authentication to provide service.

In the interoperability test topology, the Served IP Group is IP-PBX IP Group and the Serving IP Group is BroadCloud SIP Trunk IP Group.

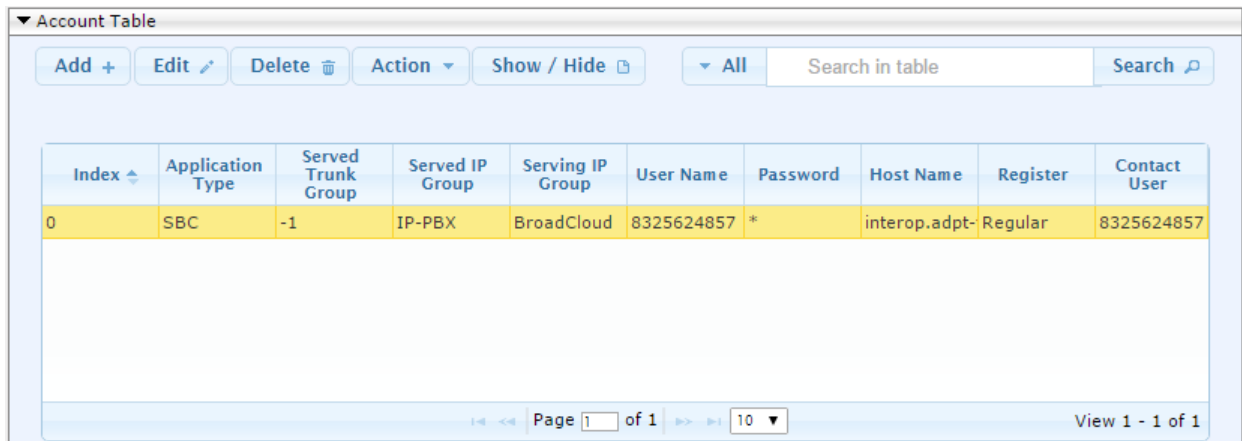
➤ **To configure a registration account:**

1. Open the Account Table page (**Configuration** tab > **VoIP** menu > **SIP Definitions** > **Account Table**).
2. Enter an index number (e.g., "0"), and then click **Add**.
3. Configure the account according to the provided information from , for example:

Parameter	Value
Application Type	<b>SBC</b>
Served IP Group	<b>IP-PBX</b>
Serving IP Group	<b>BroadCloud</b>
Username	As provided by BroadCloud
Password	As provided by BroadCloud
Host Name	<b>interop.adpt-tech.com</b>
Register	<b>Regular</b>
Contact User	<b>8325624857</b> (pilot number)

4. Click **Apply**.

**Figure 4-35: Configuring SIP Registration Account**



The screenshot shows a web interface titled "Account Table". At the top, there are buttons for "Add +", "Edit", "Delete", "Action", and "Show / Hide". There is also a search bar with "Search in table" and a "Search" button. Below the buttons is a table with the following columns: Index, Application Type, Served Trunk Group, Served IP Group, Serving IP Group, User Name, Password, Host Name, Register, and Contact User. The table contains one row with the following values: Index: 0, Application Type: SBC, Served Trunk Group: -1, Served IP Group: IP-PBX, Serving IP Group: BroadCloud, User Name: 8325624857, Password: \*, Host Name: interop.adpt-, Register: Regular, Contact User: 8325624857. At the bottom of the table, there is a pagination control showing "Page 1 of 1" and "View 1 - 1 of 1".

Index	Application Type	Served Trunk Group	Served IP Group	Serving IP Group	User Name	Password	Host Name	Register	Contact User
0	SBC	-1	IP-PBX	BroadCloud	8325624857	*	interop.adpt-	Regular	8325624857

## 4.12 Step 12: Miscellaneous Configuration

This section describes miscellaneous E-SBC configuration.

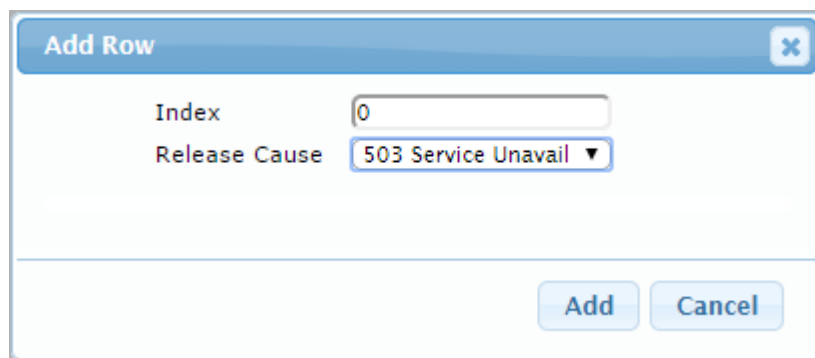
### 4.12.1 Step 12a: Configure SBC Alternative Routing Reasons

This step describes how to configure the E-SBC's handling of SIP 503 responses received for outgoing SIP dialog-initiating methods, e.g., INVITE, OPTIONS, and SUBSCRIBE messages. In this case E-SBC attempts to locate an alternative route for the call.

➤ **To configure SIP reason codes for alternative IP routing:**

1. Open the SBC Alternative Routing Reasons page (**Configuration** tab > **VoIP** menu > **SBC** > **Routing SBC** > **SBC Alternative Routing Reasons**).
2. Click **Add**; the following dialog box appears:

**Figure 4-36: SBC Alternative Routing Reasons Table - Add Record**



Index	Release Cause
0	503 Service Unavail

3. Click **Submit**.

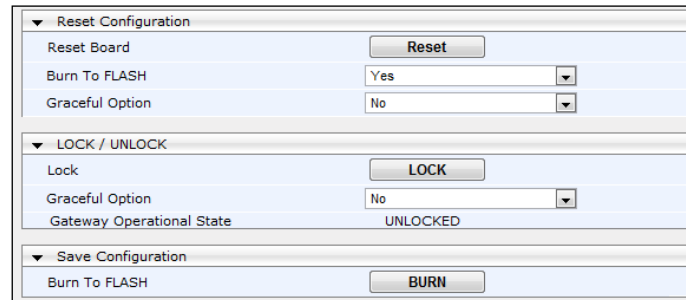
## 4.13 Step 13: Reset the E-SBC

After you have completed the configuration of the E-SBC described in this chapter, save ("burn") the configuration to the E-SBC'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 4-37: Resetting the E-SBC**



Reset Configuration	
Reset Board	<input type="button" value="Reset"/>
Burn To FLASH	Yes
Graceful Option	No
LOCK / UNLOCK	
Lock	<input type="button" value="LOCK"/>
Graceful Option	No
Gateway Operational State	UNLOCKED
Save Configuration	
Burn To FLASH	<input type="button" value="BURN"/>

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

## A AudioCodes INI File

The *ini* configuration file of the E-SBC, corresponding to the Web-based configuration as described in Section 4 on page 25, is shown below:



**Note:** To load and save an ini file, use the Configuration File page (**Maintenance** tab > **Software Update** menu > **Configuration File**).

```

;*****
;** Ini File **
;*****

;Board: Mediant 500 E-SBC
;HW Board Type: 69  FK Board Type: 85
;Serial Number: 8951962
;Slot Number: 1
;Software Version: 7.00A.049.003
;DSP Software Version: 5011AE3_R => 700.44
;Board IP Address: 10.234.68.240
;Board Subnet Mask: 255.254.0.0
;Board Default Gateway: 10.234.68.1
;Ram size: 496M  Flash size: 128M  Core speed: 300Mhz
;Num of DSP Cores: 0  Num DSP Channels: 0
;Num of physical LAN ports: 4
;Profile: NONE
;;;Key features:;Board Type: 85 ;Security: IPSEC MediaEncryption StrongEncryption
EncryptControlProtocol ;DSP Voice features: ;DATA features: ;Channel Type: RTP
DspCh=60 IPMediaDspCh=60 ;HA ;Coders: G723 G729 G728 NETCODER GSM-FR GSM-EFR AMR
EVRC-QCELP G727 ILBC EVRC-B AMR-WB G722 EG711 MS_RTA_NB MS_RTA_WB SILK_NB SILK_WB
SPEEX_NB SPEEX_WB OPUS_NB OPUS_WB ;Control Protocols: CLI TRANSCODING=60 CODER-
TRANSCODING=60 SBC-SIGNALING=60 SBC-MEDIA=60 WebRTC MGCP SIP SBC=60 ;Default
features:;Coders: G711 G726;

;----- HW components-----
;
; Slot # : Module type : # of ports
;-----
;-----

[BSP Params]

PCMLawSelect = 3
UdpPortSpacing = 10
EnterCpuOverloadPercent = 99
ExitCpuOverloadPercent = 95

[Analog Params]

[ControlProtocols Params]

AdminStateLockControl = 0

[MGCP Params]

[MEGACO Params]

EP_Num_0 = 0
EP_Num_1 = 1
EP_Num_2 = 1
EP_Num_3 = 0

```

```
EP_Num_4 = 0

[PSTN Params]

[SS7 Params]

[Voice Engine Params]

CallProgressTonesFilename = 'usa_tones_13.dat'

[WEB Params]

UseRproductName = 'Mediant 500 E-SBC'
LogoWidth = '145'
UseProductName = 1
HTTPSCipherString = 'RC4:EXP'

[SIP Params]

GWDEBUGLEVEL = 5
;ISPRACKREQUIRED is hidden but has non-default value
ENABLESBCAPPLICATION = 1
MSLDAPPRIMARYKEY = 'telephoneNumber'
MEDIACDRREPORTLEVEL = 1
SBCFORKINGHANDLINGMODE = 1
ENERGYDETECTORCMD = 587202560
ANSWERDETECTORCMD = 10486144
;GWAPPCONFIGURATIONVERSION is hidden but has non-default value

[SCTP Params]

[IPsec Params]

[Audio Staging Params]

[SNMP Params]

[ PhysicalPortsTable ]

FORMAT PhysicalPortsTable_Index = PhysicalPortsTable_Port, PhysicalPortsTable_Mode,
PhysicalPortsTable_SpeedDuplex, PhysicalPortsTable_PortDescription,
PhysicalPortsTable_GroupMember, PhysicalPortsTable_GroupStatus;
PhysicalPortsTable 0 = "GE_4_1", 1, 4, "User Port #0", "GROUP_1", "Active";
PhysicalPortsTable 1 = "GE_4_2", 1, 4, "User Port #1", "GROUP_1", "Redundant";
PhysicalPortsTable 2 = "GE_4_3", 1, 4, "User Port #2", "GROUP_2", "Active";
PhysicalPortsTable 3 = "GE_4_4", 1, 4, "User Port #3", "GROUP_2", "Redundant";

[ \PhysicalPortsTable ]

[ EtherGroupTable ]

FORMAT EtherGroupTable_Index = EtherGroupTable_Group, EtherGroupTable_Mode,
EtherGroupTable_Member1, EtherGroupTable_Member2;
EtherGroupTable 0 = "GROUP_1", 2, "GE_4_1", "GE_4_2";
EtherGroupTable 1 = "GROUP_2", 2, "GE_4_3", "GE_4_4";
EtherGroupTable 2 = "GROUP_3", 0, "", "";
EtherGroupTable 3 = "GROUP_4", 0, "", "";

[ \EtherGroupTable ]
```



```
[ DeviceTable ]

FORMAT DeviceTable_Index = DeviceTable_VlanID, DeviceTable_UnderlyingInterface,
DeviceTable_DeviceName, DeviceTable_Tagging;
DeviceTable 0 = 1, "GROUP_1", "vlan 1", 0;
DeviceTable 1 = 2, "GROUP_2", "vlan 2", 0;

[ \DeviceTable ]

[ InterfaceTable ]

FORMAT InterfaceTable_Index = InterfaceTable_ApplicationTypes,
InterfaceTable_InterfaceMode, InterfaceTable_IPAddress,
InterfaceTable_PrefixLength, InterfaceTable_Gateway, InterfaceTable_InterfaceName,
InterfaceTable_PrimaryDNSServerIPAddress,
InterfaceTable_SecondaryDNSServerIPAddress, InterfaceTable_UnderlyingDevice;
InterfaceTable 0 = 6, 10, 10.234.68.240, 15, 10.234.68.1, "Voice", 10.234.35.20,
0.0.0.0, "vlan 1";
InterfaceTable 1 = 5, 10, 194.73.218.98, 3, 194.73.218.97, "WANSP", 8.8.8.8,
0.0.0.0, "vlan 2";

[ \InterfaceTable ]

[ DspTemplates ]

;
; *** TABLE DspTemplates ***
; This table contains hidden elements and will not be exposed.
; This table exists on board and will be saved during restarts.
;

[ \DspTemplates ]

[ WebUsers ]

FORMAT WebUsers_Index = WebUsers_Username, WebUsers_Password, WebUsers_Status,
WebUsers_PwAgeInterval, WebUsers_SessionLimit, WebUsers_SessionTimeout,
WebUsers_BlockTime, WebUsers_UserLevel, WebUsers_PwNonce;
WebUsers 0 = "Admin",
"$1$juq+86Wi9veioKH7/aj4q/z8rcWUk5LB15TBnJqbmJrPzJmAh9HQhofSj4mOjImJiIyIpKDl0Pwm8vL
58P749Ks=", 1, 0, 2, 15, 60, 200, "5defa220d918d4a93d2ecba9436e766a";
WebUsers 1 = "User",
"$1$lKT0pqWhra6p/6Wmq8aZkZTFkpaTnJ+YyJibzJnW04GHhIPVgdyJiIjdjtqM+ffY9fP28PKq/qvz9PS
o/ejp5bY=", 1, 0, 2, 15, 60, 50, "11bb2bd9dc4e498f75e0277a53e49d5c";

[ \WebUsers ]

[ TLSContexts ]

FORMAT TLSContexts_Index = TLSContexts_Name, TLSContexts_TLSVersion,
TLSContexts_ServerCipherString, TLSContexts_ClientCipherString,
TLSContexts_OcspEnable, TLSContexts_OcspServerPrimary,
TLSContexts_OcspServerSecondary, TLSContexts_OcspServerPort,
TLSContexts_OcspDefaultResponse;
TLSContexts 0 = "default", 0, "RC4:EXP", "ALL:!ADH", 0, , , 2560, 0;

[ \TLSContexts ]

[ IpProfile ]
```

```

FORMAT IpProfile_Index = IpProfile_ProfileName, IpProfile_IpPreference,
IpProfile_CodersGroupID, IpProfile_IsFaxUsed, IpProfile_JitterBufMinDelay,
IpProfile_JitterBufOptFactor, IpProfile_IPDiffServ, IpProfile_SigIPDiffServ,
IpProfile_SCE, IpProfile_RTPRedundancyDepth, IpProfile_RemoteBaseUDPPort,
IpProfile_CNGmode, IpProfile_VxxTransportType, IpProfile_NSEMode,
IpProfile_IsDTMFUsed, IpProfile_PlayRBTone2IP, IpProfile_EnableEarlyMedia,
IpProfile_ProgressIndicator2IP, IpProfile_EnableEchoCanceller,
IpProfile_CopyDest2RedirectNumber, IpProfile_MediaSecurityBehaviour,
IpProfile_CallLimit, IpProfile_DisconnectOnBrokenConnection,
IpProfile_FirstTxDtmfOption, IpProfile_SecondTxDtmfOption, IpProfile_RxDTMFOption,
IpProfile_EnableHold, IpProfile_InputGain, IpProfile_VoiceVolume,
IpProfile_AddIEInSetup, IpProfile_SBCExtensionCodersGroupID,
IpProfile_MediaIPVersionPreference, IpProfile_TranscodingMode,
IpProfile_SBCAllowedMediaTypes, IpProfile_SBCAllowedCodersGroupID,
IpProfile_SBCAllowedVideoCodersGroupID, IpProfile_SBCAllowedCodersMode,
IpProfile_SBCMediaSecurityBehaviour, IpProfile_SBCRFC2833Behavior,
IpProfile_SBCAlternativeDTMFMethod, IpProfile_SBCAssertIdentity,
IpProfile_AMDSensitivityParameterSuit, IpProfile_AMDSensitivityLevel,
IpProfile_AMDMaxGreetingTime, IpProfile_AMDMaxPostSilenceGreetingTime,
IpProfile_SBCDiversionsMode, IpProfile_SBCHistoryInfoMode,
IpProfile_EnableQSIGTunneling, IpProfile_SBCFaxCodersGroupID,
IpProfile_SBCFaxBehavior, IpProfile_SBCFaxOfferMode, IpProfile_SBCFaxAnswerMode,
IpProfile_SbcPrackMode, IpProfile_SBCSessionExpiresMode,
IpProfile_SBCRemoteUpdateSupport, IpProfile_SBCRemoteReinviteSupport,
IpProfile_SBCRemoteDelayedOfferSupport, IpProfile_SBCRemoteReferBehavior,
IpProfile_SBCRemote3xxBehavior, IpProfile_SBCRemoteMultiple18xSupport,
IpProfile_SBCRemoteEarlyMediaResponseType, IpProfile_SBCRemoteEarlyMediaSupport,
IpProfile_EnableSymmetricMKI, IpProfile_MKISize, IpProfile_SBCEnforceMKISize,
IpProfile_SBCRemoteEarlyMediaRTP, IpProfile_SBCRemoteSupportsRFC3960,
IpProfile_SBCRemoteCanPlayRingback, IpProfile_EnableEarly183,
IpProfile_EarlyAnswerTimeout, IpProfile_SBC2833DTMFPayloadType,
IpProfile_SBCUserRegistrationTime, IpProfile_ResetSRTPStateUponRekey,
IpProfile_AmdMode, IpProfile_SBCReliableHeldToneSource, IpProfile_GenerateSRTPKeys,
IpProfile_SBCPlayHeldTone, IpProfile_SBCRemoteHoldFormat,
IpProfile_SBCRemoteReplacesBehavior, IpProfile_SBCSDPptimeAnswer,
IpProfile_SBCPreferredPTime, IpProfile_SBCUseSilenceSupp,
IpProfile_SBCRTPRedundancyBehavior, IpProfile_SBCPlayRBTtoTransferee,
IpProfile_SBCRTCPMode, IpProfile_SBCJitterCompensation,
IpProfile_SBCRemoteRenegotiateOnFaxDetection, IpProfile_JitterBufMaxDelay,
IpProfile_SBCUserBehindUdpNATRegistrationTime,
IpProfile_SBCUserBehindTcpNATRegistrationTime, IpProfile_SBCSDPHandleRTCPAttribute,
IpProfile_SBCRemoveCryptoLifetimeInSDP, IpProfile_SBCIceMode, IpProfile_SBCRTCPMux,
IpProfile_SBCMediaSecurityMethod, IpProfile_SBCHandleXDetect,
IpProfile_SBCRTPFeedback, IpProfile_SBCRemoteRepresentationMode,
IpProfile_SBCKeepVIAHeaders, IpProfile_SBCKeepRoutingHeaders,
IpProfile_SBCKeepUserAgentHeader, IpProfile_SBCRemoteMultipleEarlyDialogs,
IpProfile_SBCRemoteMultipleAnswersMode, IpProfile_SBCDirectMediaTag,
IpProfile_SBCAdaptRFC2833BWTtoVoiceCoderBW;
IpProfile 1 = "IP-PBX", 1, 0, 0, 10, 10, 46, 40, 0, 0, 0, 2, 0, 0, 0, 0, -1, 1,
0, 0, -1, 0, 4, -1, 1, 1, 0, 0, "", -1, 0, 0, "", -1, -1, 0, 0, 0, 0, 0, 8, 300,
400, 0, 0, 0, -1, 1, 0, 1, 3, 0, 2, 2, 1, 0, 0, 1, 0, 1, 1, 1, 0, 0, 0, 0, 0,
0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 300, -1, -1, 0, 0, 0, 0, 0, 0, 0,
-1, -1, -1, -1, 0, "", 0;
IpProfile 2 = "BroadCloud", 1, 0, 0, 10, 10, 46, 40, 0, 0, 0, 2, 0, 0, 0, 0, -1,
1, 0, 0, -1, 0, 4, -1, 1, 1, 0, 0, "", -1, 0, 0, "", -1, -1, 0, 2, 0, 0, 1, 0, 8,
300, 400, 0, 0, 0, -1, 1, 0, 1, 3, 0, 2, 2, 1, 0, 0, 1, 0, 1, 0, 0, 0, 0, 1, 0,
0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 300, -1, -1, 0, 0, 0, 0, 0,
0, 0, -1, -1, -1, -1, -1, 0, "", 0;

[ \IpProfile ]

[ CpMediaRealm ]

FORMAT CpMediaRealm_Index = CpMediaRealm_MediaRealmName, CpMediaRealm_IPv4IF,
CpMediaRealm_IPv6IF, CpMediaRealm_PortRangeStart, CpMediaRealm_MediaSessionLeg,

```

```

CpMediaRealm_PortRangeEnd, CpMediaRealm_IsDefault, CpMediaRealm_QoeProfile,
CpMediaRealm_BWProfile;
CpMediaRealm 0 = "MRLan", "Voice", "", 6000, 100, 6999, 1, "", "";
CpMediaRealm 1 = "MRWan", "WANSP", "", 7000, 100, 7999, 0, "", "";

[ \CpMediaRealm ]

[ SBCRoutingPolicy ]

FORMAT SBCRoutingPolicy_Index = SBCRoutingPolicy_Name, SBCRoutingPolicy_LCREnable,
SBCRoutingPolicy_LCRAverageCallLength, SBCRoutingPolicy_LCRDefaultCost,
SBCRoutingPolicy_LdapServerGroupName;
SBCRoutingPolicy 0 = "Default_SBCRoutingPolicy", 0, 1, 0, "";

[ \SBCRoutingPolicy ]

[ SRD ]

FORMAT SRD_Index = SRD_Name, SRD_BlockUnRegUsers, SRD_MaxNumOfRegUsers,
SRD_EnableUnAuthenticatedRegistrations, SRD_SharingPolicy, SRD_UsedByRoutingServer,
SRD_SBCOperationMode, SRD_SBCRoutingPolicyName, SRD_SBCDialPlanName;
SRD 0 = "DefaultSRD", 0, -1, 1, 0, 0, "Default_SBCRoutingPolicy", "";

[ \SRD ]

[ SIPInterface ]

FORMAT SIPInterface_Index = SIPInterface_InterfaceName,
SIPInterface_NetworkInterface, SIPInterface_ApplicationType, SIPInterface_UDPPort,
SIPInterface_TCPSPort, SIPInterface_TLSPort, SIPInterface_SRDName,
SIPInterface_MessagePolicyName, SIPInterface_TLSContext,
SIPInterface_TLSMutualAuthentication, SIPInterface_TCPKeepaliveEnable,
SIPInterface_ClassificationFailureResponseType,
SIPInterface_PreClassificationManSet, SIPInterface_EncapsulatingProtocol,
SIPInterface_MediaRealm, SIPInterface_SBCDirectMedia, SIPInterface_BlockUnRegUsers,
SIPInterface_MaxNumOfRegUsers, SIPInterface_EnableUnAuthenticatedRegistrations,
SIPInterface_UsedByRoutingServer;
SIPInterface 0 = "IP-PBX", "Voice", 2, 5060, 0, 0, "DefaultSRD", "", "default", -1,
0, 500, -1, 0, "MRLan", 0, -1, -1, -1, 0;
SIPInterface 1 = "BroadCloud", "WANSP", 2, 5060, 0, 0, "DefaultSRD", "", "default",
-1, 0, 500, -1, 0, "MRWan", 0, -1, -1, -1, 0;

[ \SIPInterface ]

[ ProxySet ]

FORMAT ProxySet_Index = ProxySet_ProxyName, ProxySet_EnableProxyKeepAlive,
ProxySet_ProxyKeepAliveTime, ProxySet_ProxyLoadBalancingMethod,
ProxySet_IsProxyHotSwap, ProxySet_SRDName, ProxySet_ClassificationInput,
ProxySet_TLSContextName, ProxySet_ProxyRedundancyMode, ProxySet_DNSResolveMethod,
ProxySet_KeepAliveFailureResp, ProxySet_GWIPv4SIPInterfaceName,
ProxySet_SBCIPv4SIPInterfaceName, ProxySet_SASIPv4SIPInterfaceName,
ProxySet_GWIPv6SIPInterfaceName, ProxySet_SBCIPv6SIPInterfaceName,
ProxySet_SASIPv6SIPInterfaceName;
ProxySet 0 = "IP-PBX", 1, 60, 0, 0, "DefaultSRD", 0, "", -1, -1, "", "", "IP-PBX",
"", "", "", "";
ProxySet 1 = "BroadCloud", 1, 60, 0, 0, "DefaultSRD", 0, "", -1, 1, "", "",
"BroadCloud", "", "", "", "";

[ \ProxySet ]

[ IPGroup ]

```

```

FORMAT IPGroup_Index = IPGroup_Type, IPGroup_Name, IPGroup_ProxySetName,
IPGroup_SIPGroupName, IPGroup_ContactUser, IPGroup_SipReRoutingMode,
IPGroup_AlwaysUseRouteTable, IPGroup_SRDName, IPGroup_MediaRealm,
IPGroup_ClassifyByProxySet, IPGroup_ProfileName, IPGroup_MaxNumOfRegUsers,
IPGroup_InboundManSet, IPGroup_OutboundManSet, IPGroup_RegistrationMode,
IPGroup_AuthenticationMode, IPGroup_MethodList, IPGroup_EnableSBCCClientForking,
IPGroup_SourceUriInput, IPGroup_DestUriInput, IPGroup_ContactName,
IPGroup_Username, IPGroup_Password, IPGroup_UIFormat, IPGroup_QOEProfile,
IPGroup_BWProfile, IPGroup_MediaEnhancementProfile, IPGroup_AlwaysUseSourceAddr,
IPGroup_MsgManUserDef1, IPGroup_MsgManUserDef2, IPGroup_SIPConnect,
IPGroup_SBCPSAPMode, IPGroup_DTLSContext, IPGroup_CreatedByRoutingServer,
IPGroup_UsedByRoutingServer, IPGroup_SBCOperationMode,
IPGroup_SBCRouteUsingRequestURIPort, IPGroup_SBCKeepOriginalCallID,
IPGroup_SBCDialPlanName;
IPGroup 0 = 0, "IP-PBX", "IP-PBX", "10.234.68.227", "", -1, 0, "DefaultSRD",
"MRlan", 1, "IP-PBX", -1, -1, -1, 0, 0, "", 0, -1, -1, "", "", "$1$gQ==", 0, "",
"", "", 0, "", "", 0, 0, "", 0, 0, -1, 0, 0, "";
IPGroup 1 = 0, "BroadCloud", "BroadCloud", "interop.adpt-tech.com", "", -1, 0,
"DefaultSRD", "MRwan", 1, "BroadCloud", -1, -1, 4, 0, 0, "", 0, -1, -1, "", "",
"$1$gQ==", 0, "", "", "", 0, "", "", 0, 0, "", 0, 0, -1, 0, 0, "";

```

[ \IPGroup ]

[ SBCAlternativeRoutingReasons ]

```

FORMAT SBCAlternativeRoutingReasons_Index =
SBCAlternativeRoutingReasons_ReleaseCause;
SBCAlternativeRoutingReasons 0 = 503;

```

[ \SBCAlternativeRoutingReasons ]

[ ProxyIp ]

```

FORMAT ProxyIp_Index = ProxyIp_ProxySetId, ProxyIp_ProxyIpIndex, ProxyIp_IpAddress,
ProxyIp_TransportType;
ProxyIp 0 = "0", 0, "10.234.68.227:5060", 0;
ProxyIp 1 = "1", 0, "nn6300southsipconnect.adpt-tech.com", 0;

```

[ \ProxyIp ]

[ Account ]

```

FORMAT Account_Index = Account_ServedTrunkGroup, Account_ServedIPGroupName,
Account_ServingIPGroupName, Account_Username, Account_Password, Account_HostName,
Account_Register, Account_ContactUser, Account_ApplicationType;
Account 0 = -1, "IP-PBX", "BroadCloud", "8325624857", "$1$SSg/LyUiDSA0NCFhZGRj",
"interop.adpt-tech.com", 1, "8325624857", 2;

```

[ \Account ]

[ IP2IPRouting ]

```

FORMAT IP2IPRouting_Index = IP2IPRouting_RouteName, IP2IPRouting_RoutingPolicyName,
IP2IPRouting_SrcIPGroupName, IP2IPRouting_SrcUsernamePrefix, IP2IPRouting_SrcHost,
IP2IPRouting_DestUsernamePrefix, IP2IPRouting_DestHost, IP2IPRouting_RequestType,
IP2IPRouting_MessageConditionName, IP2IPRouting_ReRouteIPGroupName,
IP2IPRouting_Trigger, IP2IPRouting_CallSetupRulesSetId, IP2IPRouting_DestType,
IP2IPRouting_DestIPGroupName, IP2IPRouting_DestSIPInterfaceName,
IP2IPRouting_DestAddress, IP2IPRouting_DestPort, IP2IPRouting_DestTransportType,
IP2IPRouting_AltRouteOptions, IP2IPRouting_GroupPolicy, IP2IPRouting_CostGroup,
IP2IPRouting_DestTags, IP2IPRouting_SrcTags;

```

```

IP2IPRouting 0 = "Terminate OPTIONS", "Default_SBCRoutingPolicy", "Any", "*", "*",
"*, "*", 6, "", "Any", 0, -1, 1, "", "", "internal", 0, -1, 0, 0, "", "", "";
IP2IPRouting 1 = "IP-PBX to ITSP", "Default_SBCRoutingPolicy", "IP-PBX", "*", "*",
"*, "*", 0, "", "Any", 0, -1, 0, "BroadCloud", "BroadCloud", "", 0, -1, 0, 0, "",
", ";
IP2IPRouting 2 = "ITSP to IP-PBX", "Default_SBCRoutingPolicy", "BroadCloud", "*",
"*, "*", 0, "", "Any", 0, -1, 0, "IP-PBX", "IP-PBX", "", 0, -1, 0, 0, "", "",
";

```

```
[ \IP2IPRouting ]
```

```
[ IPOutboundManipulation ]
```

```

FORMAT IPOutboundManipulation_Index = IPOutboundManipulation_ManipulationName,
IPOutboundManipulation_RoutingPolicyName,
IPOutboundManipulation_IsAdditionalManipulation,
IPOutboundManipulation_SrcIPGroupName, IPOutboundManipulation_DestIPGroupName,
IPOutboundManipulation_SrcUsernamePrefix, IPOutboundManipulation_SrcHost,
IPOutboundManipulation_DestUsernamePrefix, IPOutboundManipulation_DestHost,
IPOutboundManipulation_CallingNamePrefix,
IPOutboundManipulation_MessageConditionName, IPOutboundManipulation_RequestType,
IPOutboundManipulation_ReRouteIPGroupName, IPOutboundManipulation_Trigger,
IPOutboundManipulation_ManipulatedURI, IPOutboundManipulation_RemoveFromLeft,
IPOutboundManipulation_RemoveFromRight, IPOutboundManipulation_LeaveFromRight,
IPOutboundManipulation_Prefix2Add, IPOutboundManipulation_Suffix2Add,
IPOutboundManipulation_PrivacyRestrictionMode, IPOutboundManipulation_DestTags,
IPOutboundManipulation_SrcTags;
IPOutboundManipulation 0 = "Add + for National Calls", "Default_SBCRoutingPolicy",
0, "IP-PBX", "BroadCloud", "*", "*", "001", "*", "*", "", 0, "Any", 0, 1, 2, 0,
255, "+", "", 0, "", "";
IPOutboundManipulation 1 = "Mitel_Ext", "Default_SBCRoutingPolicy", 0,
"BroadCloud", "IP-PBX", "*", "*", "*", "*", "*", "", 0, "Any", 0, 1, 9, 0, 255,
"44203409380", "", 0, "", "";
IPOutboundManipulation 2 = "For Anonymous", "Default_SBCRoutingPolicy", 0, "IP-
PBX", "BroadCloud", "*", "*", "*", "*", "*", "", 0, "Any", 0, 0, 0, 0, 255, "", "",
0, "", "";
IPOutboundManipulation 3 = "Change Outgoing Source", "Default_SBCRoutingPolicy", 0,
"IP-PBX", "BroadCloud", "*", "*", "*", "*", "*", "", 0, "Any", 0, 0, 11, 0, 255,
"832562485", "", 0, "", "";

```

```
[ \IPOutboundManipulation ]
```

```
[ CodersGroup0 ]
```

```

FORMAT CodersGroup0_Index = CodersGroup0_Name, CodersGroup0_pTime,
CodersGroup0_rate, CodersGroup0_PayloadType, CodersGroup0_Sce,
CodersGroup0_CoderSpecific;
CodersGroup0 0 = "g711Alaw64k", 20, 255, -1, 0, "";

```

```
[ \CodersGroup0 ]
```

```
[ CodersGroup1 ]
```

```

FORMAT CodersGroup1_Index = CodersGroup1_Name, CodersGroup1_pTime,
CodersGroup1_rate, CodersGroup1_PayloadType, CodersGroup1_Sce,
CodersGroup1_CoderSpecific;
CodersGroup1 0 = "g711Alaw64k", 20, 0, -1, 0, "";
CodersGroup1 1 = "g711Ulaw64k", 20, 0, -1, 0, "";

```

```
[ \CodersGroup1 ]
```

```
[ CodersGroup2 ]
```

```
FORMAT CodersGroup2_Index = CodersGroup2_Name, CodersGroup2_pTime,
CodersGroup2_rate, CodersGroup2_PayloadType, CodersGroup2_Sce,
CodersGroup2_CoderSpecific;
CodersGroup2 0 = "g729", 20, 0, -1, 0, "";
CodersGroup2 1 = "g711Alaw64k", 20, 0, -1, 0, "";
CodersGroup2 2 = "g711Ulaw64k", 20, 0, -1, 0, "";
CodersGroup2 3 = "g7231", 30, 0, -1, 0, "";

[ \CodersGroup2 ]

[ CodersGroup4 ]

FORMAT CodersGroup4_Index = CodersGroup4_Name, CodersGroup4_pTime,
CodersGroup4_rate, CodersGroup4_PayloadType, CodersGroup4_Sce,
CodersGroup4_CoderSpecific;
CodersGroup4 0 = "t38fax", 255, 255, -1, 255, "";

[ \CodersGroup4 ]

[ AllowedCodersGroup1 ]

FORMAT AllowedCodersGroup1_Index = AllowedCodersGroup1_Name;
AllowedCodersGroup1 0 = "g711Ulaw64k";
AllowedCodersGroup1 1 = "g711Alaw64k";

[ \AllowedCodersGroup1 ]

[ AllowedCodersGroup2 ]

FORMAT AllowedCodersGroup2_Index = AllowedCodersGroup2_Name;
AllowedCodersGroup2 0 = "g711Alaw64k";

[ \AllowedCodersGroup2 ]

[ MessageManipulations ]

FORMAT MessageManipulations_Index = MessageManipulations_ManipulationName,
MessageManipulations_ManSetID, MessageManipulations_MessageType,
MessageManipulations_Condition, MessageManipulations_ActionSubject,
MessageManipulations_ActionType, MessageManipulations_ActionValue,
MessageManipulations_RowRole;
MessageManipulations 0 = "Change From host", 4, "any.request", "",
"header.from.url.host", 2, "header.to.url.host", 0;
MessageManipulations 1 = "Change P-Asserted host", 4, "any.request", "header.p-
asserted-identity exists", "header.p-asserted-identity.url.host", 2,
"header.to.url.host", 0;

[ \MessageManipulations ]

[ GwRoutingPolicy ]

FORMAT GwRoutingPolicy_Index = GwRoutingPolicy_Name, GwRoutingPolicy_LCREnable,
GwRoutingPolicy_LCRAverageCallLength, GwRoutingPolicy_LCRDefaultCost,
GwRoutingPolicy_LdapServerGroupName;
GwRoutingPolicy 0 = "GwRoutingPolicy", 0, 1, 0, "";

[ \GwRoutingPolicy ]

[ ResourcePriorityNetworkDomains ]
```

```
FORMAT ResourcePriorityNetworkDomains_Index = ResourcePriorityNetworkDomains_Name,  
ResourcePriorityNetworkDomains_Ip2TelInterworking;  
ResourcePriorityNetworkDomains 1 = "dsn", 1;  
ResourcePriorityNetworkDomains 2 = "dod", 1;  
ResourcePriorityNetworkDomains 3 = "drsn", 1;  
ResourcePriorityNetworkDomains 5 = "uc", 1;  
ResourcePriorityNetworkDomains 7 = "cuc", 1;  
  
[ \ResourcePriorityNetworkDomains ]
```

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