

6.40A – AudioCodes Mediant 800 MSBG

1. Important Notes

- Check the *SIP 3rd Party Validation Website* for current validation status. The *SIP 3rd party Validation Website can be viewed at:* <http://testlab.inin.com>
- Unlike other Mediant devices, no INI files will be provided with this document. The Mediant 800 requires two INIs to have a complete configuration. These INI files are interdependent and editing the DATA.INI file is not supported by AudioCodes.
- As this unit is a critical piece of the SIP infrastructure, it is highly recommended that DHCP not be used. A static IP address is the preferred method and is how the unit was configured during validation.
- The M800 will require 3 IP Addresses as a base configuration. One for the WAN interface and two for the internal interfaces (VoIP & Data).
- After a factory reset, the Mediant 800's default configuration has DHCP enabled, and the VOIP & Data IP addresses will be 192.168.0.1 and 192.168.0.2 respectively. The IP Address of the VoIP interface is the address of the Web Interface.
- If a configuration change is made that causes errors, the Mediant 800 will revert to the default IP & DHCP configuration. If this happens connect a PC to the Mediant 800 via crossover cable and undo any changes made.
- The Mediant 800 MSBG has two configuration sections that are controlled by two different INI files. Board.INI contains the VoIP/Gateway configuration. Data.ini contains the Firewall/Routing configuration.
- Any time you see -1 in a configuration this is mean “not configured”.
- While this device supports IPv6, IPv4 was used in the certification tests.

2. Vendor Documentation

Documentation can be found on the CD shipped with the Mediant 800.

3. Validated Firmware Version

6.40A.037.009

4. Install

Download the Mediant 800 files from the *3rd Party Validation Website*:

<http://testlab.inin.com>

Contained in the zip file will be the validated version of firmware (.cmp), as well as any supplemental configuration files.

5. Configuration

Methods:

- Manipulation of the supplied .ini file(s), then uploading it via the Web interface.
 - This method is not supported for the Mediant 800. The Mediant 800 requires two separate INI files that are interdependent and modifying the DATA.INI file manually is not supported by AudioCodes. As a result, no INI files have been provided with this document.
 - Backing up of the configuration by downloading the INIs and restoring them if the device fails is still supported.
- Web Interface
 - This method is the preferred method for all configuration needs.
 - **Please note:** Caution should be exercised and the AudioCodes documentation should always be referenced when using the Web interface configuration option.
- TFTP
 - This method of configuring the Mediant 800 has not been tested.

Contents

Initial Setup	4
Network Settings	4
VoIP Settings.....	10
General VoIP Settings.....	10
SBC VoIP Settings	20
TDM Configuration	27
TDM Fax Configuration.....	32
FXO/FXS Configuration.....	34
SBC Routing.....	35
Advanced Configuration.....	43
TLS	43
External User Agents.....	54

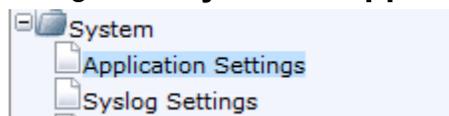
Initial Setup

Network Settings

1. Connect a Laptop/Desktop with its NIC configured for DHCP to the Mediant 800 via a crossover cable or a switch
2. Open a browser and navigate to 192.168.0.1 entering the default username and password
 - a. User: Admin
 - b. Pass: Admin
3. After logging in, always make sure the radio button next to **Full** is selected. Without this radio button selected you do not have access to all the possible configuration options



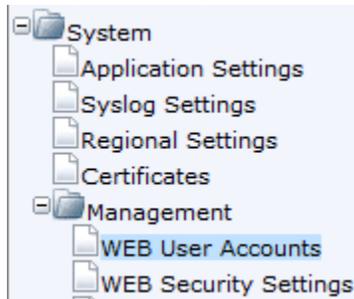
4. Navigate to **System > Application Settings**



5. Enter the appropriate information for your network

▼ NTP Settings			
NTP Server IP Address	<input type="text"/>		
NTP UTC Offset	Hours: <input type="text" value="0"/>	Minutes: <input type="text" value="0"/>	
NTP Updated Interval	Hours: <input type="text" value="24"/>	Minutes: <input type="text" value="0"/>	
▼ Day Light Saving Time			
Day Light Saving Time	<input type="text" value="Disable"/>		
Start Time	Jan <input type="text" value="01"/>	<input type="text" value="0"/> : <input type="text" value="0"/>	
End Time	Jan <input type="text" value="01"/>	<input type="text" value="0"/> : <input type="text" value="0"/>	
Offset [min]	<input type="text" value="60"/>		
▼ NFS Settings			
NFS Table			
▼ DHCP Settings			
Enable DHCP	<input type="text" value="Disable"/>		

6. Navigate to **System > WEB User Accounts**



7. Change the Admin user password and, if necessary, the user name

▼ Account Data for User: Admin	
User Name	<input type="text" value="Admin"/> <input type="button" value="Change User Name"/>
Access Level	<input type="text" value="Security Administratc"/>
▼ Fill in the following 3 fields to change the password	
Current Password	<input type="text"/>
New Password	<input type="text"/>
Confirm New Password	<input type="text"/> <input type="button" value="Change Password"/>

8. Navigate to **Data > WAN Access > Settings**



9. Change **Connection Type** to **Manual IP Address Ethernet Connection**



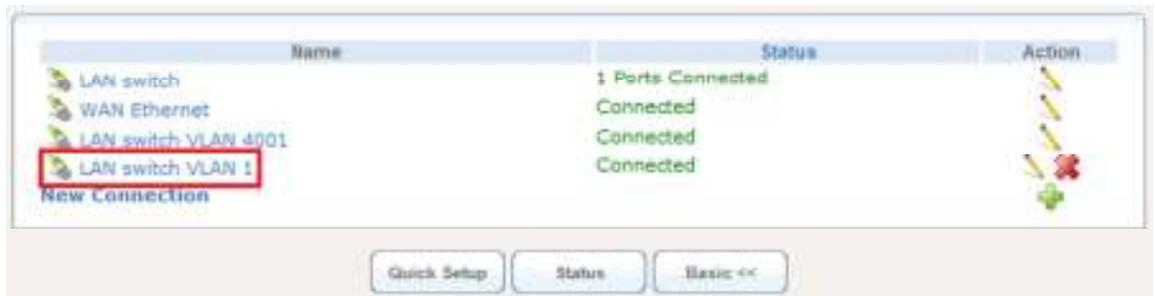
10. Enter the settings necessary to fit your network design.



11. Navigate to **Data > Data System > Connections**



12. Select **LAN Switch VLAN 1**



13. Select **Settings**

The screenshot shows the 'Settings' tab selected in a configuration window. The 'Name' field is 'LAN switch VLAN 1'. The 'Device Name' is 'eth0.1', 'Status' is 'Connected', 'Network' is 'LAN', 'Underlying Device/s' is 'LAN switch', and 'Connection Type' is 'Ethernet'.

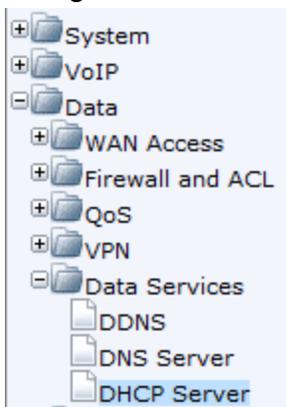
14. Enter the settings necessary to fit your network design.

The screenshot shows the 'Settings' tab with the following configurations:
- Device Name: eth0.1
- Status: Connected
- Schedule: Always
- Network: LAN
- Connection Type: Ethernet
- Physical Address: 00:90:8f:33:29:e8
- Underlying Connection: LAN switch
- Internet Protocol: Use the Following IP Address
- IP Address: 192.168.1.2
- Subnet Mask: 255.255.255.0
- DNS Server: Use the Following DNS Server Addresses
- Primary DNS Server: 192.168.1.12
- Secondary DNS Server: 0.0.0.0
Buttons: OK, Apply, Cancel

15. Click **OK** on this and the next page



16. Navigate to **Data > Data Services > DHCP Server**



17. Select **LAN switch VLAN 1**

Name	Service	Subnet Mask	Dynamic IP Range	Action
WAN Ethernet	Disabled			
LAN switch VLAN 1	DHCP Server	255.255.255.0	192.168.1.3 - 192.168.1.8	

18. If you do not wish to use the Mediant 800's DHCP server then change the highlighted (see below) drop down to **Disabled** and click **OK**. Otherwise, modify the settings to fit your network design.

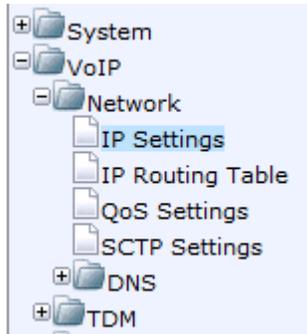
IP Address Distribution

DHCP Server

Start IP Address: 192.168.1.3

End IP Address: 192.168.1.8

19. Navigate to **VoIP > Network > IP Settings**



20. Click the radio button next to **Index 0**

Note: Select row index to modify the relevant row.

Index	Application Type	Interface Mode	IP Address	Prefix Length	Gateway	VLAN ID	Interface Name
0	QAMP + Media + Control	IPv4 Manual	192.168.1.1	16	192.168.1.2	1	Voice

WAN Interface Name: WAN Ethernet

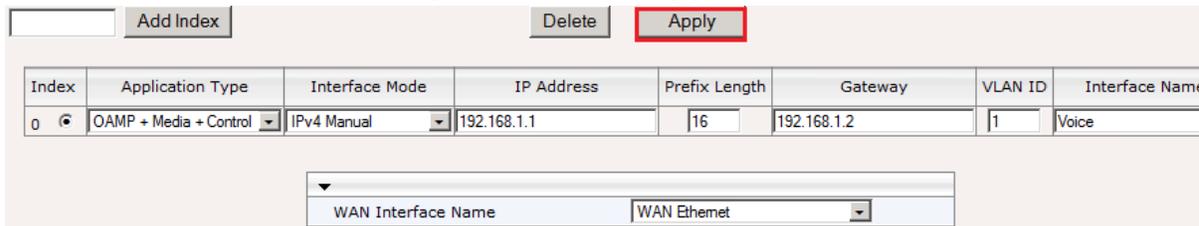
21. Click the **Edit** button that appears above the IP settings table

Index	Application Type	Interface Mode	IP Address	Prefix Length	Gateway	VLAN ID	Interface Name
0	QAMP + Media + Control	IPv4 Manual	192.168.1.1	16	192.168.1.2	1	Voice

WAN Interface Name: WAN Ethernet

22. Enter the information necessary to fit your network design. Also ensure that the **WAN Interface Name** has the proper

Interface selected in the drop down. Click **Apply**.



The screenshot shows a configuration interface with a table of interface settings and a dropdown menu for the WAN Interface Name.

Index	Application Type	Interface Mode	IP Address	Prefix Length	Gateway	VLAN ID	Interface Name
0	OAMP + Media + Control	IPv4 Manual	192.168.1.1	16	192.168.1.2	1	Voice

Below the table is a dropdown menu for 'WAN Interface Name' with 'WAN Ethernet' selected.

23. Click **Burn &** then **Yes** on the following dialog prompt.



24. Now that the configuration has been saved to memory and the Mediant 800 is configured to be on your LAN, put it in place and we'll continue in the next section with the configuration.

VoIP Settings

In this section we'll begin configuring the Mediant 800 to accept & route calls. The Mediant 800 uses an organizational structure where groups of settings are contained in a Signaling Routing Domain (SRD). For further description please see the **Configuring SRD Table** section of the **Mediant 800 MSBG User's Manual**.

There are several pieces that will need to be configured to construct the SRD. They are:

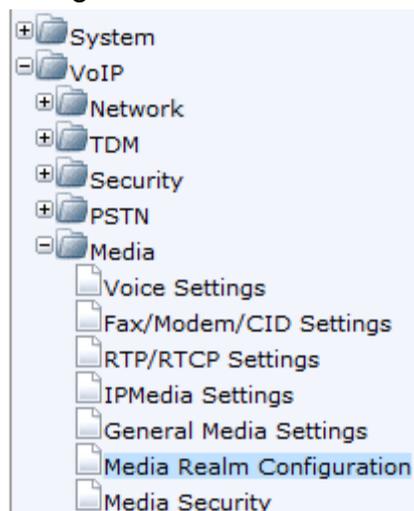
- 1) SIP Interface
- 2) Media Realm
- 3) IP Group
- 4) IP Profile
- 5) Proxy Set

After the Mediant 800 has been connected to your LAN and you have established connectivity, continue below. The MSBG has built in diagnostic tools (PING, ARP, & Traceroute) you can use to verify successful configuration. They are located under **Status & Diagnostics > Data Status > Diagnostics**.

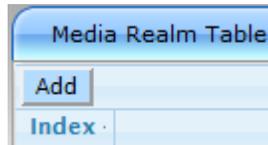
General VoIP Settings

These settings are for any of the M800 models and will be needed for SBC, TDM, or FXO/FXS functionality.

1. Navigate to **VoIP > Media > Media Realm Configuration**

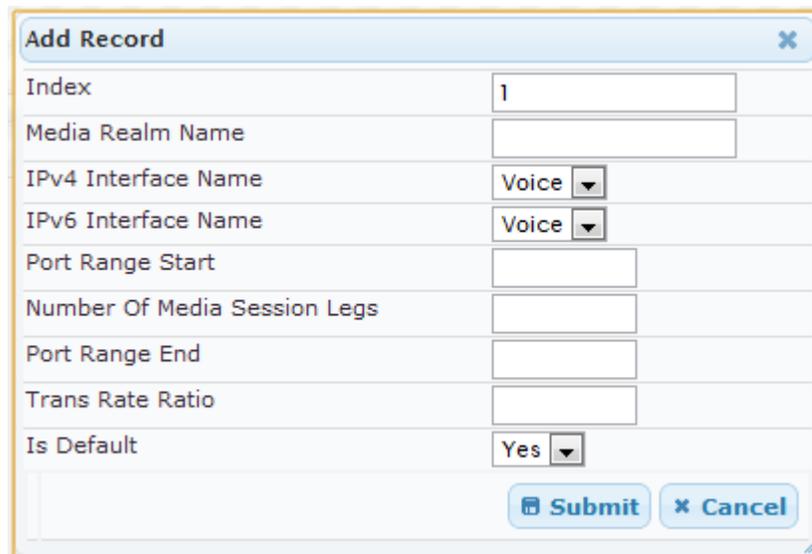


3. Click **Add**. For the purposes of this document, we will be considering Voice indexes to be between 1 & 10 and WAN indexes to be between 11 & 20.



Note: The default configuration has no media realms configured. You will need at least one Media Realm for TDM. If using SBC functionality, you will need another Media Realm for the WAN.

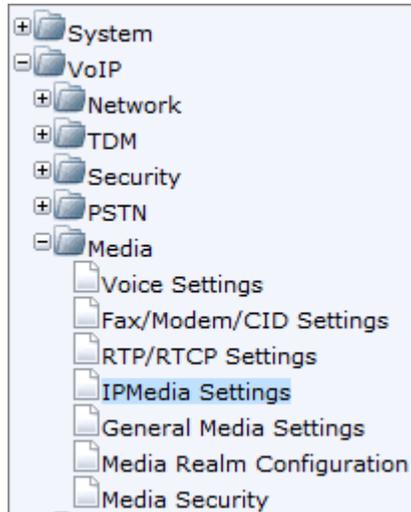
4. Enter the following settings as shown:

A screenshot of a dialog box titled "Add Record". The dialog box has a light blue header with a close button (X). Below the header, there are several fields: "Index" with the value "1", "Media Realm Name" (empty), "IPv4 Interface Name" with a dropdown menu showing "Voice", "IPv6 Interface Name" with a dropdown menu showing "Voice", "Port Range Start" (empty), "Number Of Media Session Legs" (empty), "Port Range End" (empty), "Trans Rate Ratio" (empty), and "Is Default" with a dropdown menu showing "Yes". At the bottom right of the dialog box, there are two buttons: "Submit" and "Cancel".

5. Click **Submit**. A dialog box appears telling you that you've configured an offline parameter. Ignore this for now as we will be rebooting later.



6. Navigate to **VoIP > Media > IPMedia Settings**



7. Enter in the **Number of Media Channels** necessary to meet the configuration needs. The number of channels should be double the maximum number of projected concurrent calls.



8. Click **Submit**



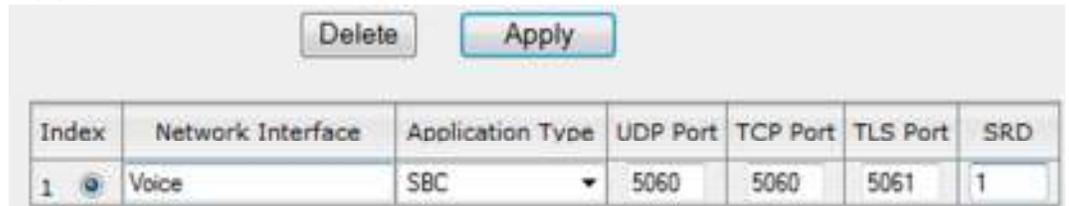
9. Navigate to **VoIP > Control Network > SIP Interface Table**



10. Enter 1 in the box next to **Add** and then click **Add**.



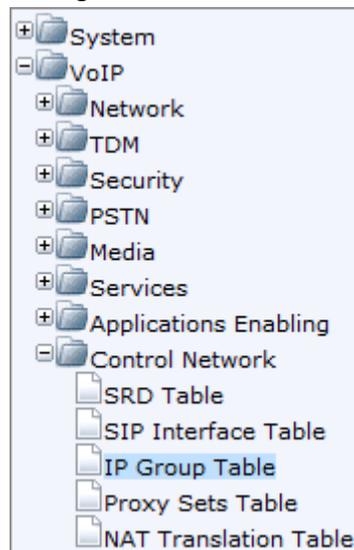
11. Enter a **Network Interface** name, **SIP Ports**, **SRD**, and choose an **Application Type** for the SIP Interface. Click **Apply**.



Index	Network Interface	Application Type	UDP Port	TCP Port	TLS Port	SRD
1	Voice	SBC	5060	5060	5061	1

Note: The Network Interface Name has to match, precisely, the name given to the VoIP Interface in **VoIP > Network > IP Settings**.

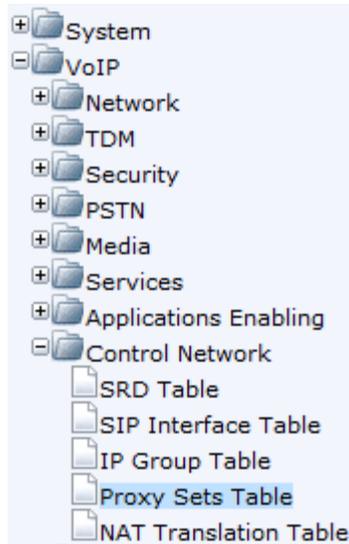
12. Navigate to **VoIP > Control Network > IP Group Table**



13. In the **IP Group Table** configure the following values for the LAN Group clicking **Submit** when settings are entered.

Index	1
▼ Common Parameters	
Type	SERVER
Description	Voice
Proxy Set ID	1
SIP Group Name	
Contact User	
Domain Name in Contact	
⚡ SRD	0
⚡ Media Realm	Voice
IP Profile ID	0
▼ Gateway Parameters	
Always Use Route Table	No
Routing Mode	Not Configured
SIP Re-Routing Mode	Standard
▼ SBC Parameters	
Classify By Proxy Set	Enable
Max Number Of Registered Users	-1
Inbound Message Manipulation Set	-1
Outbound Message Manipulation Set	-1
Registration Mode	User initiates registrations
Authentication Mode	User authenticates
Authentication Method List	
Enable SBC Client Forking	No

14. Navigate to **VoIP > Control Network > Proxy Sets**



15. You will need to create a proxy set for the IC Server(s). Configure the following values for the LAN Proxy Set clicking **Submit** when done.

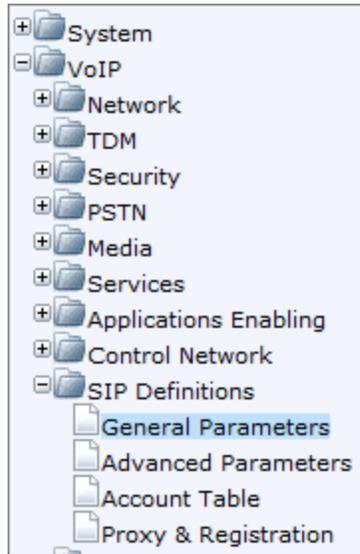
The screenshot shows the configuration form for a Proxy Set. The 'Proxy Set ID' is set to 1. The table below shows the configuration for the proxy addresses and transport types.

	Proxy Address	Transport Type
1	192.168.1.11:5060	TCP
2	192.168.1.13:5060	TCP
3		
4		
5		

Below the table, the following settings are configured:

- Enable Proxy Keep Alive: Using Options
- Proxy Keep Alive Time: 60
- Proxy Load Balancing Method: Disable
- Is Proxy Hot Swap: Yes
- Proxy Redundancy Mode: Homing
- SRD Index: 1
- Classification Input: IP only

16. Navigate to **VoIP > SIP Definitions > General Parameters**



17. There are many different combinations of settings you can use here. The main things that need configured are:

Enable Early Media: Configure as needed

Fax Signaling Method: T.38 Relay

SIP Transport Type: Configure as needed

SIP UDP Local Port: Same as Voice **SIP Interface**

SIP TCP Local Port: Same as Voice **SIP Interface**

SIP TLS Local Port: Same as Voice **SIP Interface**

Enable Sips: Please see the section on Enabling TLS.

SIP Destination Port: Matches protocol for **SIP Transport Type**

18. Once your changes are complete, click **Submit**



19. Navigate to **VoIP > Coders and Profiles > IP Profile Settings**



20. Here you can configure various settings to handle variations of the **SIP General Parameters**. You then assign these Profiles to their respective **IP Groups**.

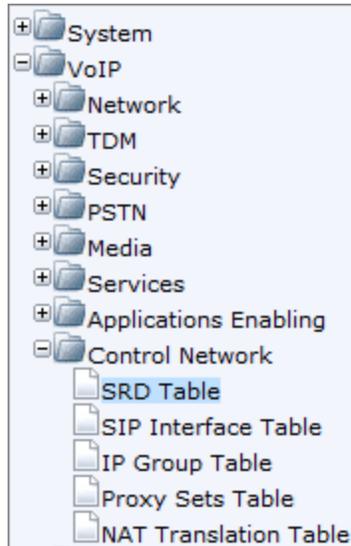
These profiles can be used to handle:

- a. Differences in DSCP from one network to another
- b. If one network uses SRTP and another uses RTP if Media Security is Enabled
- c. If one network uses T.38 Relay and another does not allow faxing
- d. If you set up Coder Groups you can assign them to the IP Profile and then assign the IP Profile to the proper IP Groups.
- e. Etc.

21. Once your configurations are complete, press **Submit** and, if necessary, assign them to the proper **IP Groups**.

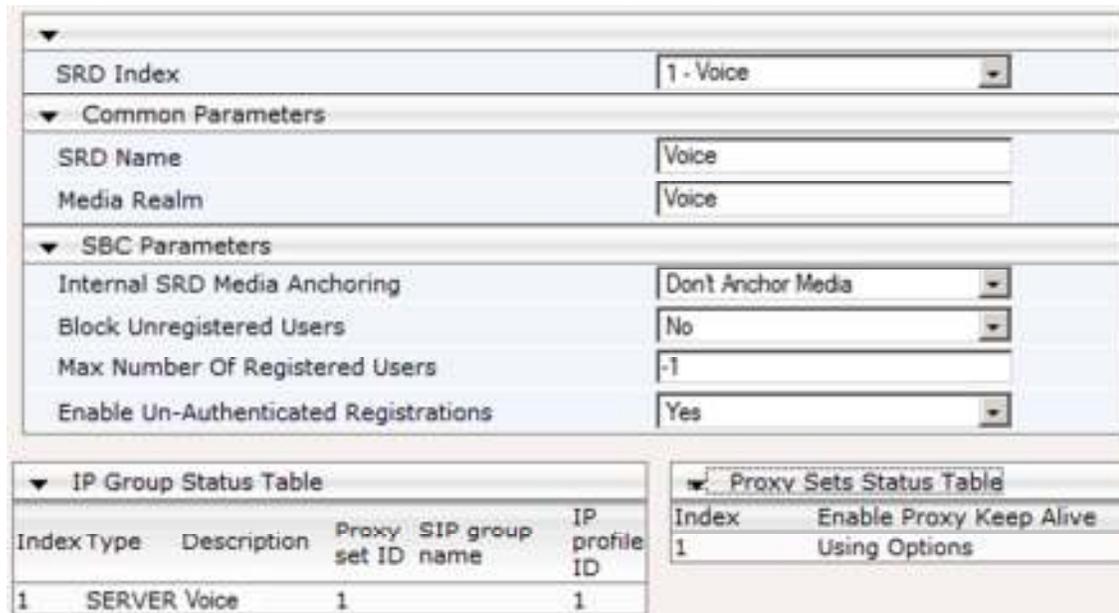


22. Navigate to **VoIP > Control Network > SRD Table**



23. Select **SRD Index: 1 – Not Exist**

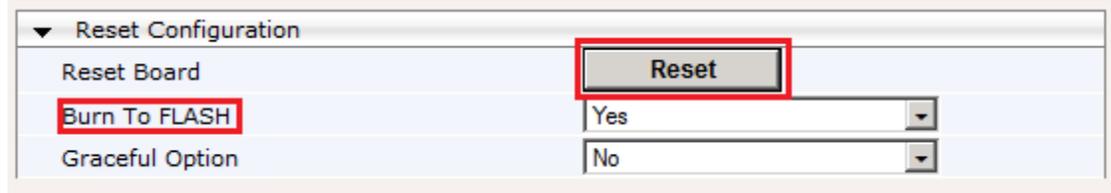
24. Configure the SRD to match the following image



25. Navigate to **Device Actions > Reset**



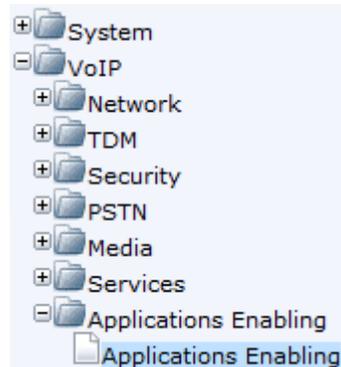
26. Ensure **Burn to Flash** is set to **Yes** and then click **Reset**



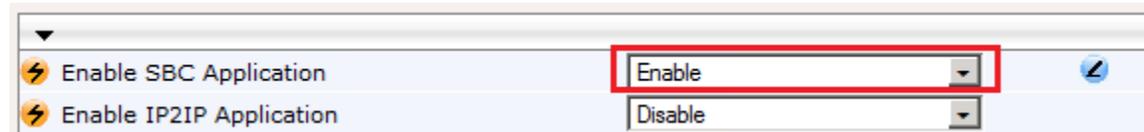
Reset Configuration	
Reset Board	<input type="button" value="Reset"/>
Burn To FLASH	Yes
Graceful Option	No

SBC VoIP Settings

1. Navigate to **VoIP > Applications Enabling > Applications Enabling**



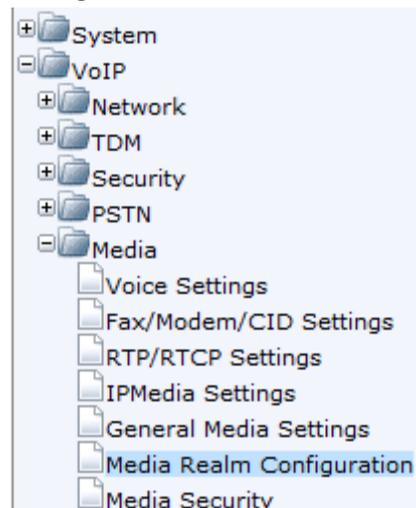
2. Change **Enable SBC Application** to **Enable**



3. Click **Submit**

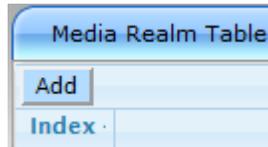


4. Navigate to **VoIP > Media > Media Realm Configuration**

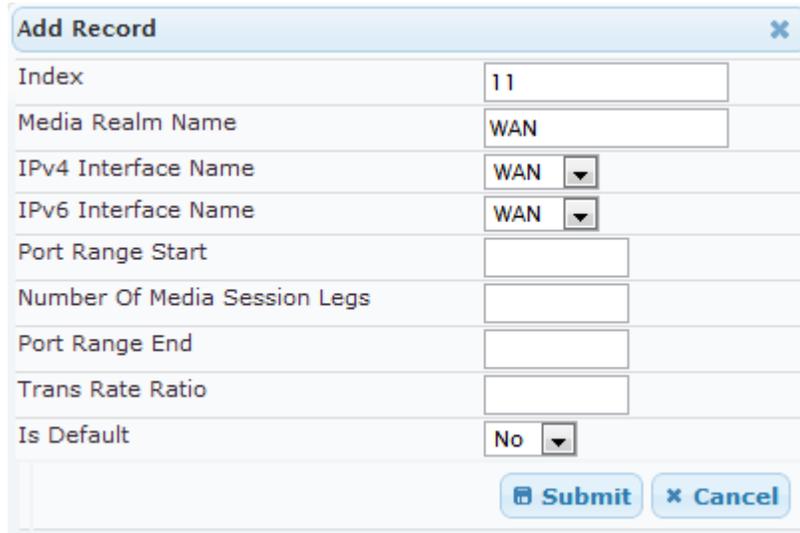


5. Click **Add**. For the purposes of this document, we will be considering Voice indexes to be between 1 & 10 and WAN

indexes to be between 11 & 20.



6. Enter the settings as shown:



7. Click **Submit**. A dialog box appears telling you that you've configured and offline parameter. Ignore this for now as we will be rebooting later.



8. Navigate to **VoIP > Control Network > SIP Interface Table**



9. Enter 11 in the box next to **Add** and then click **Add**.



10. Enter a Network Interface name, SIP Ports, SRD, and choose an application type (SBC) for the SIP Interface. Click **Apply**.

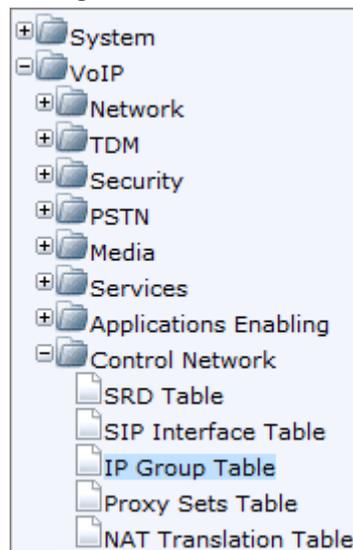


The screenshot shows a configuration table with columns: Index, Network Interface, Application Type, UDP Port, TCP Port, TLS Port, and SRD. There are two rows: index 1 with 'Voice' interface and index 11 with 'WAN' interface. The 'WAN' row is selected. Above the table are 'Delete' and 'Apply' buttons, with 'Apply' highlighted in blue.

Index	Network Interface	Application Type	UDP Port	TCP Port	TLS Port	SRD
1	Voice	SBC	5060	5060	5061	1
11	WAN	SBC	5060	5060	5061	11

Note: WAN is the default Network Interface name for the WAN port. It is not recommended to try changing this.

11. Navigate to **VoIP > Control Network > IP Group Table**

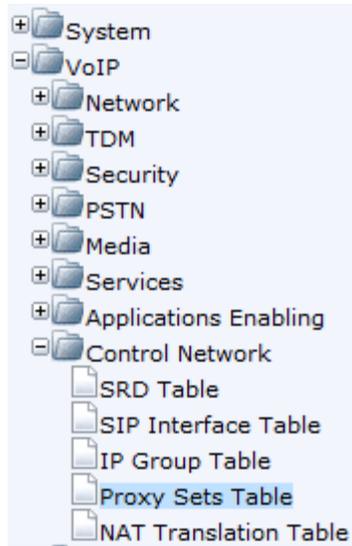


12. In the IP Group Table select and/or enter the following values for the WAN Group clicking Submit when settings

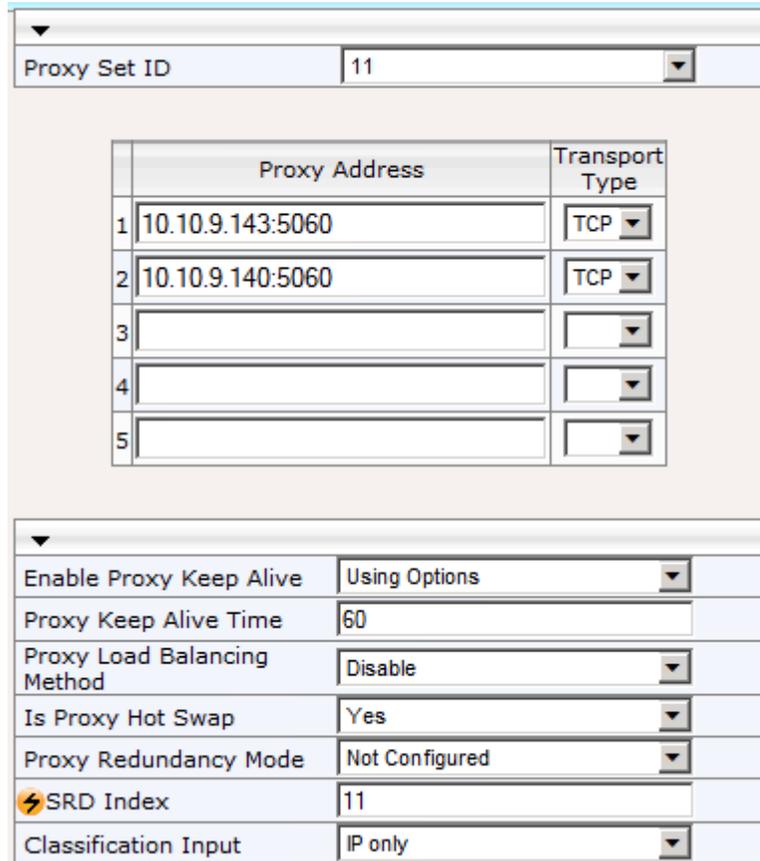
are entered.

Index	11
▼ Common Parameters	
Type	SERVER
Description	WAN
Proxy Set ID	11
SIP Group Name	
Contact User	
Domain Name in Contact	
⚡ SRD	0
⚡ Media Realm	WAN
IP Profile ID	2
▼ Gateway Parameters	
Always Use Route Table	No
Routing Mode	Not Configured
SIP Re-Routing Mode	Standard
▼ SBC Parameters	
Classify By Proxy Set	Enable
Max Number Of Registered Users	-1
Inbound Message Manipulation Set	-1
Outbound Message Manipulation Set	-1
Registration Mode	User initiates registrations
Authentication Mode	User authenticates
Authentication Method List	
Enable SBC Client Forking	No

14. Navigate to **VoIP > Control Network > Proxy Sets**



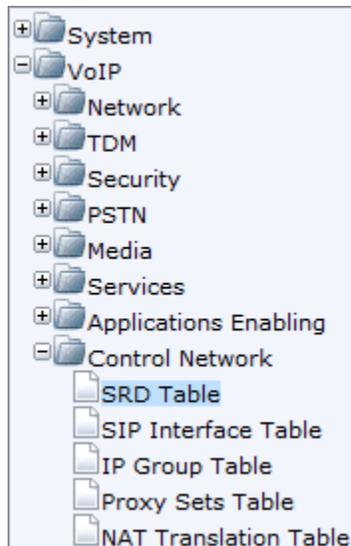
15. You will need to create a proxy set for the Remote Endpoint(s). Configure the values for the WAN Proxy Set, clicking **Submit** when done.



	Proxy Address	Transport Type
1	10.10.9.143:5060	TCP
2	10.10.9.140:5060	TCP
3		
4		
5		

Enable Proxy Keep Alive	Using Options
Proxy Keep Alive Time	60
Proxy Load Balancing Method	Disable
Is Proxy Hot Swap	Yes
Proxy Redundancy Mode	Not Configured
SRD Index	11
Classification Input	IP only

16. Navigate to **VoIP > Control Network > SRD Table**



17. Select **SRD Index: 11 – Not exist**

18. Expand all sections by clicking the ^s next to their names.
Configure as follows:

Index	Type	Description	Proxy set ID	SIP group name	IP profile ID
11	SERVER	WAN	11		2

Index	Enable Proxy Keep Alive
11	Using Options

19. Navigate to **Device Actions > Reset**

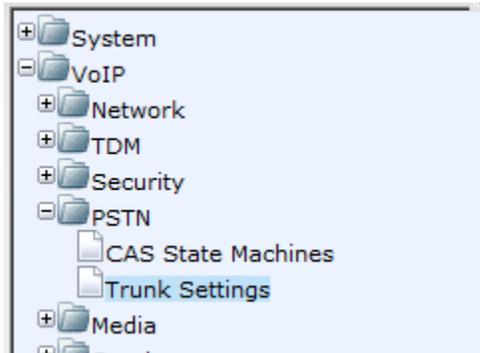
20. Ensure **Burn to Flash** is set to **Yes** and then click **Reset**

Reset Configuration	
Reset Board	Reset
Burn To FLASH	Yes
Graceful Option	No

TDM Configuration

Now that the SRDs & IP Groups have been configured we can move on to configuring the TDM Settings. For more details see the **GW and IP to IP** section of the **Mediant 800 MSBG SP User's Manual**.

1. Navigate to **VoIP > PSTN > Trunk Settings**



2. Choose the appropriate **Protocol Type**. NI2 will be used for this example.

General Settings	
Module ID	1
Trunk ID	1
Trunk Configuration State	Inactive
Protocol Type	NONE

3. Choose the appropriate **Clock Master, ISDN Termination Side**, and any other settings necessary to match your **Carrier**

Requirements

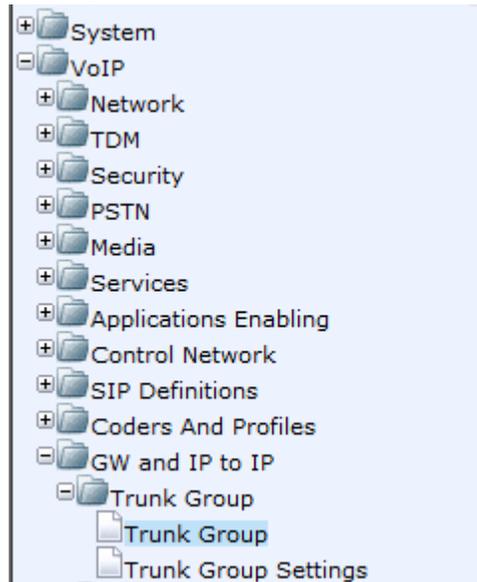
Trunk Configuration	
Clock Master	Recovered
Auto Clock Trunk Priority	0
Line Code	B8ZS
Line Build Out Loss	0 dB
Trace Level	Full ISDN Trace
Line Build Out Overwrite	OFF
Framing Method	T1 FRAMING ESF CRC6

ISDN Configuration	
ISDN Termination Side	User side
Q931 Layer Response Behavior	0x0
Outgoing Calls Behavior	0x400
Incoming Calls Behavior	0x11000
General Call Control Behavior	0x0
ISDN NS Behaviour 2	0x8
NFAS Group Number	0
IUA Interface ID	-1
NFAS Interface ID	255
D-channel Configuration	PRIMARY

4. Click **Apply Trunk Settings**



5. Navigate to **VoIP > GW and IP to IP > Trunk Group > Trunk Group**



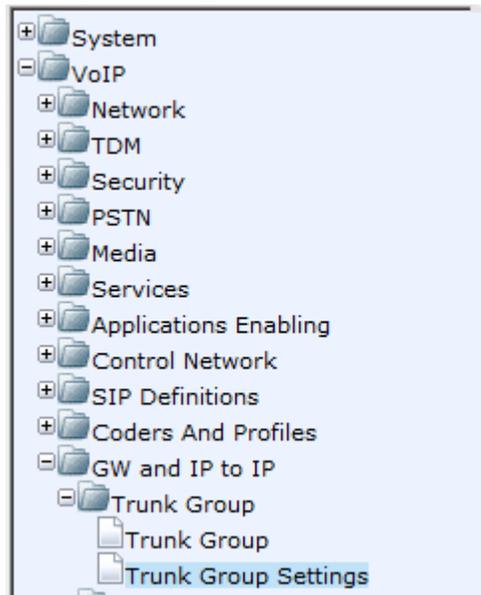
6. Enter the settings either as shown, or per **Carrier Requirements:**

Group Index	Module	From Trunk	To Trunk	Channels	Phone Number	Trunk Group ID	Tel Profi
1	Module 1 PRI	1	1	1-23	5555555	1	0

7. Click **Submit**



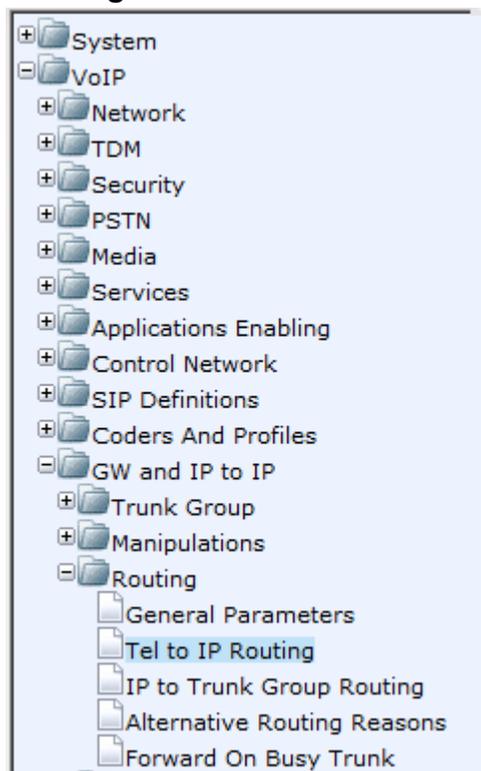
8. Navigate to **VoIP > GW and IP to IP > Trunk Group > Trunk Group Settings**



9. Enter the appropriate settings in the fields as shown:

Trunk Group ID	Channel Select Mode	Registration Mode	Serving IP Group ID	Gateway Name	Contact User
1	Cyclic Ascending				

10. Navigate to **VoIP > GW and IP to IP > Routing > Tel to IP Routing**



- Configure records in the **Tel to IP Routing** table as necessary. If all calls are going to the **SRD/IP Group** that were created in earlier sections, configure as shown.

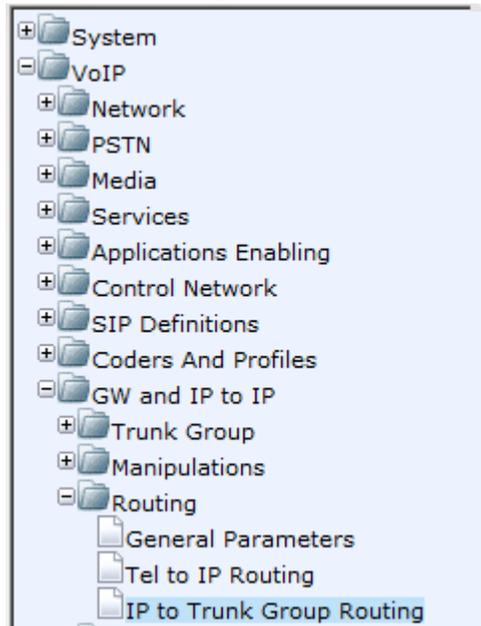
	Src. Trunk Group ID	Dest. Phone Prefix	Source Phone Prefix	->	Dest. IP Address	Port	Transport Type	Dest. C...
1	*	*	*				Not Configured	1

+ Type	Dest. IP Group ID	Dest. SRD	IP Profile ID	Cost Group ID
Not Configured	1	1	-1	None

- Click **Submit**



- Navigate to **VoIP > GW and IP to IP > Routing > IP to Trunk Group Routing**



- Configure the **IP to Trunk Group Routing** to route all SIP calls to the configured **Trunk Group**, as shown

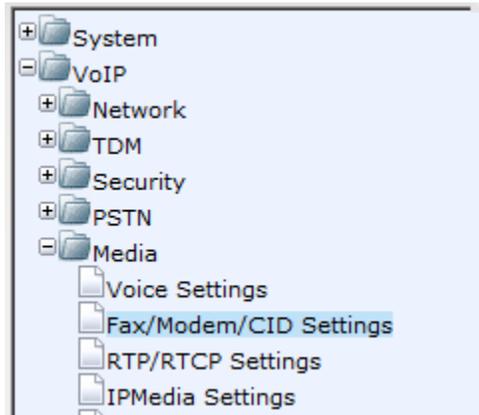
	Dest. Phone Prefix	Source Phone Prefix	Source IP Address	->	Trunk Group ID	IP Profile ID
1	*	*	*		1	0

- Click **Submit**



TDM Fax Configuration

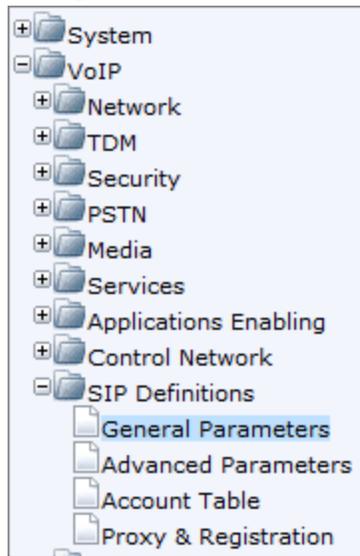
1. Navigate to **VoIP > Media > Fax/Modem/CID Settings**



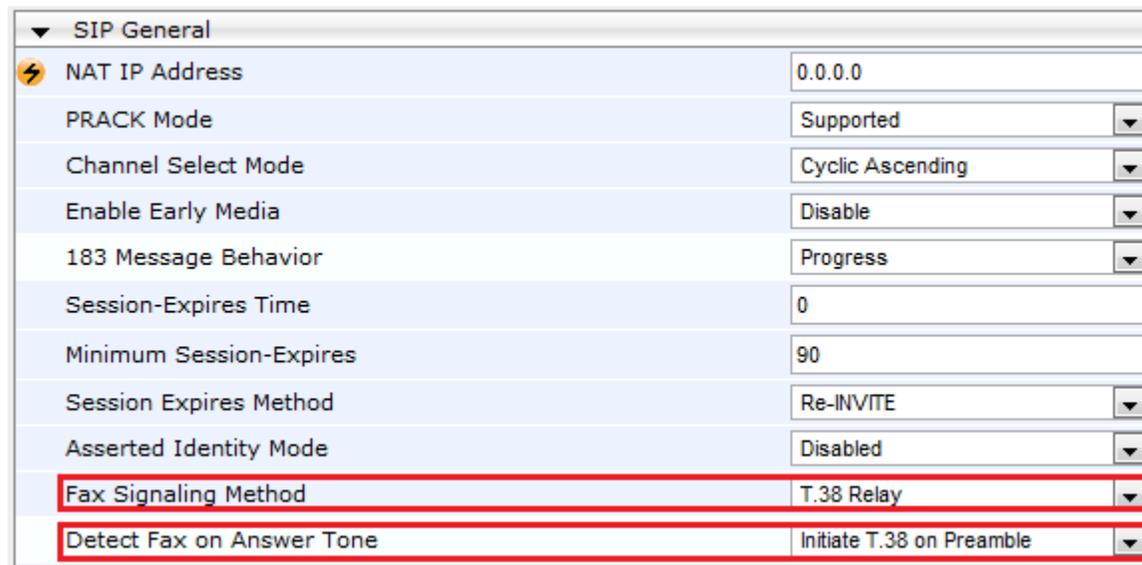
1. Configure the settings to match your needs. The following image contains the recommended settings for faxing.

▼ General Settings	
Fax Transport Mode	RelayEnable
Caller ID Transport Type	Mute
Caller ID Type	Standard Bellcore
V.21 Modem Transport Type	Enable Bypass
V.22 Modem Transport Type	Enable Bypass
V.23 Modem Transport Type	Enable Bypass
V.32 Modem Transport Type	Enable Bypass
V.34 Modem Transport Type	Enable Bypass
Fax CNG Mode	Doesn't send T.38 Re-INVITE
CNG Detector Mode	Relay
▼ Fax Relay Settings	
Fax Relay Redundancy Depth	2
Fax Relay Enhanced Redundancy Depth	4
Fax Relay ECM Enable	Enable
Fax Relay Max Rate (bps)	14400bps
T38 Version	T.38 version 0
▼ Bypass Settings	
Fax/Modem Bypass Coder Type	G711Mulaw
Fax/Modem Bypass Packing Factor	1
Fax Bypass Output Gain	0
Modem Bypass Output Gain	0

2. Navigate to **VoIP > SIP Definitions > General Parameters**



3. Set **Fax Signaling Method** to **T.38 Relay** and set **Detect Fax on Answer Tone** to **Initiate T.38 on Preamble**



FXO/FXS Configuration

In this section we will configure the Mediant 800 to accept & route calls using the FXO/FXS ports. Refer to FXO/FXS section of **Mediant 800 MSBG SIP User's Manual**.

1. Navigate to **GW and IP to IP > Analog Gateway > FXO**

Settings



2. Set **Dialing Mode to One Stage**.

NOTE: Two-Stage dialing will present a dial tone when the line is

opened and does not forward the dialed call.

Dialing Mode	One Stage
Waiting for Dial Tone	Yes
Time to Wait before Dialing [msec]	1000
Ring Detection Timeout [sec]	8
Reorder Tone Duration [sec]	255
Answer Supervision	No
Rings before Detecting Caller ID	1
Send Metering Message to IP	No
Disconnect Call on Busy Tone Detection (CAS)	Disable
Disconnect On Dial Tone	Disable
Guard Time Between Calls	1
FXO AutoDial Play BusyTone	Disable

3. Click **Submit**



4. Navigate to **VoIP > Coders And Profiles > Tel Profile Settings**



5. Enable **Current Disconnect**

Enable Digit Delivery	Disable
Enable Polarity Reversal	Disable
Enable Current Disconnect	Enable
MWI Analog Lamp	Disable
MWI Display	Disable

6. Click **Submit**



7. Navigate to **VoIP > GW and IP to IP > DTMF and Supplementary > DTMF & Dialing**



8. Set **Max Digits In Phone Num** to meet your regional needs.
NOTE: Example > To Dial Interactive Intelligence 18002671364,
max digits eleven (11) to meet carrier/regional requirements.

Max Digits In Phone Num	11
Inter Digit Timeout [sec]	4
Declare RFC 2833 in SDP	Yes
1st Tx DTMF Option	RFC 2833
2nd Tx DTMF Option	
RFC 2833 Payload Type	101
Hook-Flash Option	Not Supported
Digit Mapping Rules	
Dial Plan Index	-1
Dial Tone Duration [sec]	16
Hotline Dial Tone Duration [sec]	16
Enable Special Digits	Disable
Default Destination Number	1000
Special Digit Representation	Special

9. Click **Submit**



10. Navigate to **VoIP > GW and IP to IP > Hunt Group**



11. Select the **Module** you wish to configure eg **Module 1 FXS**

Group Index	Module	From Trunk	To Trunk	Channels	Phone Number	Trunk Group ID	Tel Profile ID
1	Module 1 FXS			1-4	2101	1	1
2	Module 2 FXO			1	3177154222	1	1

12. Configure the **Channels** you wish to use eg **1-4**

***See diagram step 11.**

13. For an FXS enter the First Station Extension to be used by the FXS devices (eg 2101) in the **Phone Number** field. For an FXO enter the external Phone Number in the **Phone Number** field.

***See diagram step 11.**

Note: The Device will automatically increment each Station Extension. If channels 1-3 are selected and 2101 is enter for the Phone Number, then Port 1 will be 2101, Port 2 will be 2102, etc. If the Station Extensions to be assigned are not sequential, a separate record for each port will need to be configured. This also applies to the FXO.

14. Enter the appropriate Trunk Group ID to meet your configuration needs.

Phone Number	Trunk Group ID	Tel Profile ID
2101	1	1
3177154222	1	1

Note: Multiple entries in the table can have the same Trunk Group ID.

15. Navigate to **VoIP > GW and IP to IP > Hunt Group Settings**



16. Enter a **Hunt Group ID** configured in step 14 in the Hunt Group ID field.

	Hunt Group ID	Channel Select Mode	Registration Mode	Serving IP Group ID
1	1	By Dest Phone Number	Per Endpoint	1
2	2	Cyclic Descending		1

17. Choose the **Channel Select Mode**:

NOTE: For an FXS this should be By Dest Phone Number.

18. For an FXS, configure Registration Mode as Per Endpoint if the station needs to register with IC. ***See diagram step 16.**

19. For an FXS, configure Servicing IP Group ID to be the IP Group of the IC Server(s). ***See diagram step 16.**

20. To route calls to the FXS, enter records to match the Destination Phone number.

	Dest. Host Prefix	Source Host Prefix	Dest. Phone Prefix	Source Phone Prefix	Source IP Address	Trunk Group ID
1	*	*	210[1-2]#	*	*	3
2	*	*	*	*	*	2
3	*	*	*	*	*	1

21. Click **Submit**



SBC Routing

Now that the SRDs & IP Groups have been configured we can move on to configuring routing between IP Groups. For more details see the Configuring **SBC IP-to-IP Routing** section of the **Mediant 800 MSBG SIP User's Manual**.

1. Navigate to **VoIP > SBC > General Settings**



2. Enter the WAN IP address configured earlier in the **WAN IP Address** field

WAN IP Address	<input type="text" value="10.10.220.30"/>
SBC Registration Time	<input type="text" value="0"/>
SBC GRUU Mode	<input type="text" value="AsProxy"/>
Allow Unclassified Calls	<input type="text" value="Reject"/>

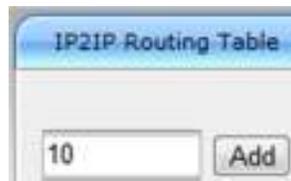
3. Click **Submit**



4. Navigate to **VoIP > SBC > Routing SBC > IP to IP Routing Table**



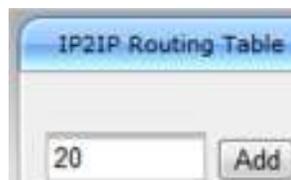
5. Enter a 10 in the text box next to Add. Click **Add**



6. Enter the following settings:
Source IP Group ID: 1
Destination IP Group ID: 11

Index	Source IP Group ID	Source Username Prefix	Source Host	Destination Username Prefix	Destination Host	RequestType	Destination Type
10	1	*	*	*	*	All	IP Group

7. Click **Apply**
8. Enter 20 in the text box next to Add. Click **Add**



9. Enter the following settings:
Source IP Group ID: 11

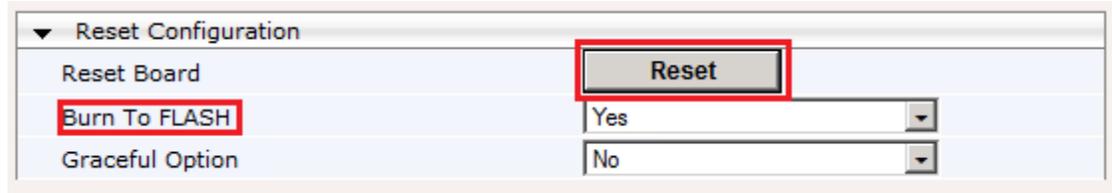
Destination IP Group ID: 1

Index	Source IP Group ID	Source Username Prefix	Source Host	Destination Username Prefix	Destination Host	RequestType	Destination Type
15	1	*	*	*	*	All	P-Group
20	11	*	*	*	*	All	P-Group

10. Click **Apply**
11. Select **Device Actions > Reset**



12. Ensure **Burn to Flash** is set to **Yes** and then click **Reset**



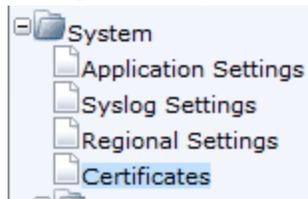
Advanced Configuration

TLS

Please note:

- If your traffic is moving between TLS & Non-TLS networks it is very important to create two IP Profiles, one for TCP/UDP and the other for TLS.

4. Navigate to **System > Certificates**



5. Enter the FQDN of the Mediant 800 gateway in **Subject Name**. Click **Generate CSR**

A screenshot of a web form titled 'Certificate Signing Request'. The 'Subject Name' field contains the text 'm800.contoso.com' and is highlighted with a red border. Below the field is a button labeled 'Generate CSR'.

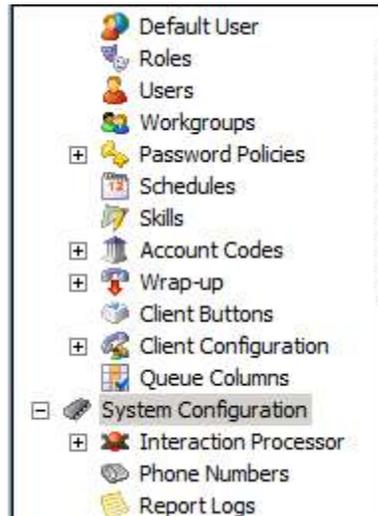
Note: It is necessary to use a **Subject Name** that is resolvable by all network elements, both Internal and External.

6. Copy all text from -----BEGIN CERTIFICATE REQUEST---
-- to -----END CERTIFICATE REQUEST----- including the section headers.

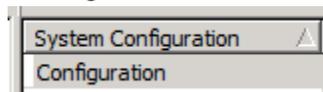
Copy the certificate signing request and send it to your Certification Authority for signing.

```
-----BEGIN CERTIFICATE REQUEST-----
MIIBWjCBxAIBADAbMRkwFwYDVQQDExBtODAwLmNvb3Rvc28uY29tMIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQDHkdOk1jpdSYJFy2kf0ftqIG+6WdGO+rxixp7v
qdQ8LKt01HtflcpBgItVHA8MuH6W090UWEFTaapo2pXcgfdGqcgMdq3mkUty+HaI
V4UbyMyOn/KJtwprlN3+53xoklLG0C822oiCjSCIpy+NAv2dgnHYo7Ma7xcMStn2
kJV6YQIDAQABoAAwDQYJKoZIhvcNAQEEBQADgYEADL1b3ruJ4DycYb9ZDMmoc4H/
Am99nma1YjLTLDCewcI5qjAEyO4DV/Vny1Z75Z1w6Tc+2ugasFAcoHhbGIgV6nqt
NUozUGKPWSX/s3E6q5pbaZ2RJXUcFydMKcmI/voMfli/KA81DMrqLd9i0nkfanlC
cVI47VIiO2dJxXmZao=
-----END CERTIFICATE REQUEST-----
```

7. Open **Interaction Administrator** and navigate to the **System Configuration** container:

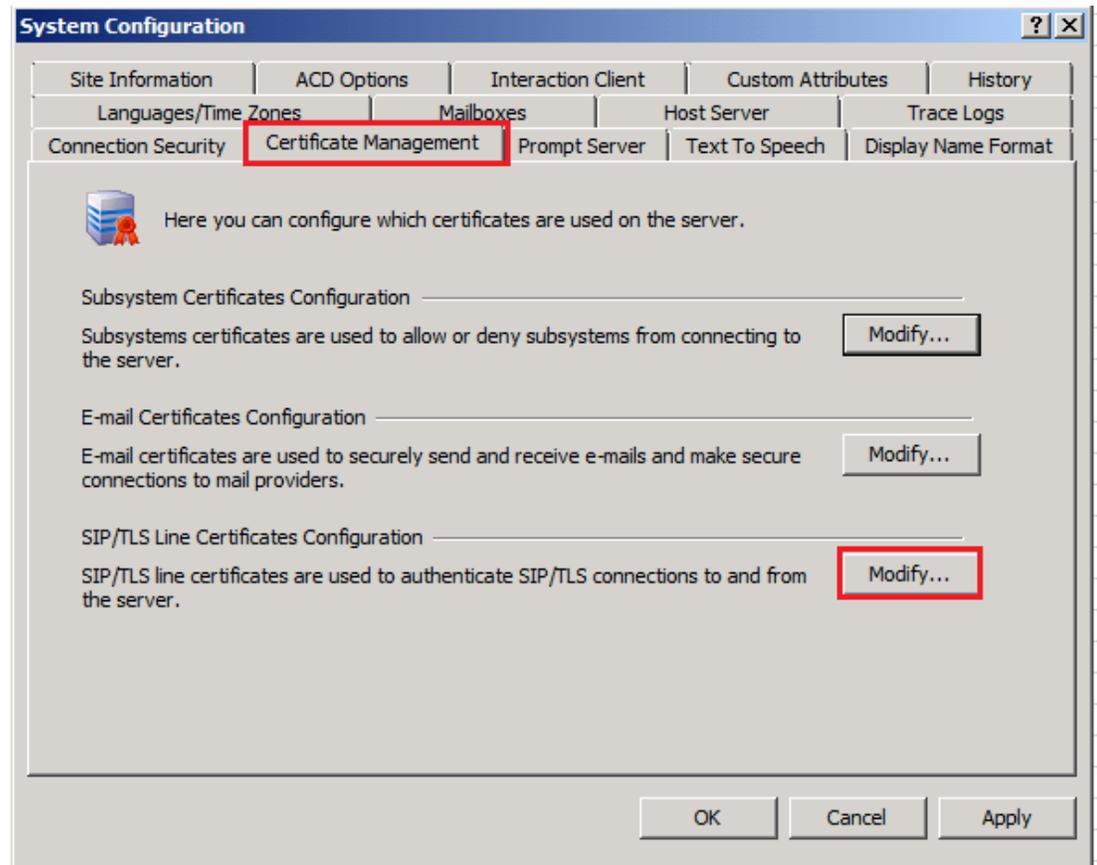


8. On right hand side double-click on **Configuration**



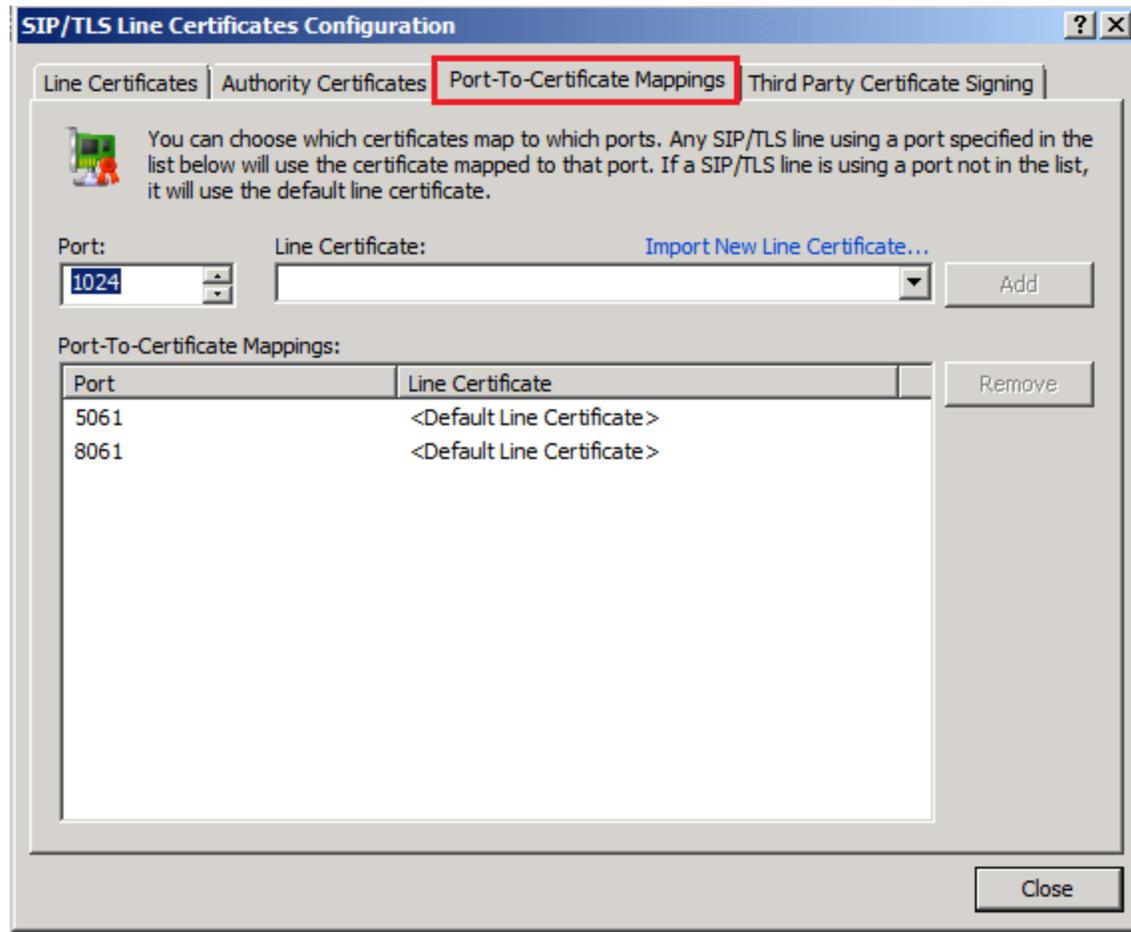
9. Open the **Certificate Management** tab and click the **Modify...** button for the **SIP/TLS Line Certificates**

Configuration



10. Click the **Port-To-Certificate Mappings** tab.
11. Remove all entries in the **Port-To-Certificate Mappings** box
12. Enter 5061 in the **Port** input box and choose **<Default Line Certificate>** in the **Line Certificate** drop down.

13. Click **Add** and then do the same for **8061**.



19. Click **Save As...** and save both certificates then return to the Mediant 800 Web Interface.
20. Return to **System > Certificates** and click **Browse...** under the **Trusted Root Certificate Store** section of **Certificate Files**. Once you've selected the **Signing Authority Certificate** you saved from Interaction Administrator, click **Send File**

▼ Upload certificate files from your computer

Private key pass-phrase (optional)

Send **Private Key** file from your computer to the device.
The file must be in either PEM or PFX (PKCS#12) format.
 No file chosen

Note: Replacing the private key is not recommended but if it's done, it should be over a physically-secure network link.

Send **Device Certificate** file from your computer to the device.
The file must be in textual PEM format.
 No file chosen

Send "**Trusted Root Certificate Store**" file from your computer to the device.
The file must be in textual PEM format.
 No file chosen

21. Once the file has been uploaded, do the same for **Device Certificate**. This is the **Signed Certificate**.

▼ Upload certificate files from your computer

Private key pass-phrase (optional)

Send **Private Key** file from your computer to the device.
The file must be in either PEM or PFX (PKCS#12) format.
 No file chosen

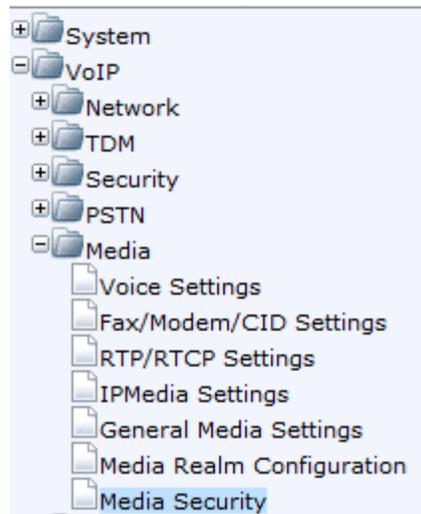
Note: Replacing the private key is not recommended but if it's done, it should be over a physically-secure network link.

Send **Device Certificate** file from your computer to the device.
The file must be in textual PEM format.
 No file chosen

Send "**Trusted Root Certificate Store**" file from your computer to the device.
The file must be in textual PEM format.
 No file chosen

Note: It is exceedingly important that you upload the certificates in the specified order.

22. Once the file has been uploaded go to **VoIP > Media > Media Security**



23. Change **Media Security** to **Enable** and put a check next to all applicable cipher suites in **SRTP offered Suites**

A screenshot of the configuration page for Media Security. The page is divided into three sections: General Media Security Settings, SRTP Setting, and SRTP offered Suites. The 'Media Security' setting is set to 'Enable' and has a checkmark icon. The 'SRTP offered Suites' section is expanded and shows four cipher suites with checkmarks in the 'Offered' column.

General Media Security Settings	
Media Security	Enable
Media Security Behavior	Preferable
Authentication On Transmitted RTP Packets	Active
Encryption On Transmitted RTP Packets	Active
Encryption On Transmitted RTCP Packets	Active

SRTP Setting	
Master Key Identifier (MKI) Size	0

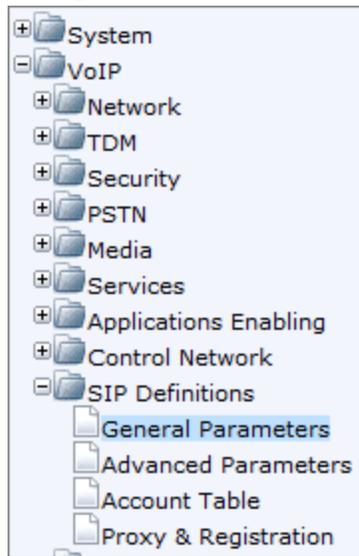
SRTP offered Suites	
CIPHER SUITES AES CM 128 HMAC SHA1 80	<input checked="" type="checkbox"/>
CIPHER SUITES AES CM 128 HMAC SHA1 32	<input checked="" type="checkbox"/>
CIPHER SUITES ARIA CM 128 HMAC SHA1 80	<input checked="" type="checkbox"/>
CIPHER SUITES ARIA CM 192 HMAC SHA1 80	<input checked="" type="checkbox"/>

24. Click **Submit**



25. Click OK on the following prompt notifying you of the offline parameter change.

26. Navigate to **VoIP > SIP Definitions > General Parameters**



27. Change the following settings:

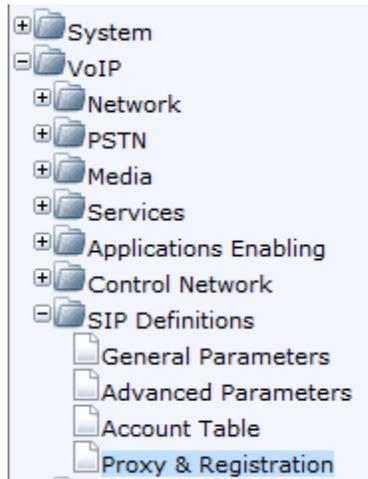
A screenshot of the SIP General configuration page. The page contains a list of settings with their current values and a 'Submit' button. The following settings are highlighted with red boxes:

Setting	Value
NAT IP Address	0.0.0.0
PRACK Mode	Supported
Channel Select Mode	Cyclic Ascending
Enable Early Media	Disable
183 Message Behavior	Progress
Session-Expires Time	0
Minimum Session-Expires	90
Session Expires Method	Re-INVITE
Asserted Identity Mode	Disabled
Fax Signaling Method	No Fax
Detect Fax on Answer Tone	Initiate T.38 on Preamble
SIP Transport Type	TLS
SIP UDP Local Port	5060
SIP TCP Local Port	5060
SIP TLS Local Port	5061
Enable SIPS	Enable
Enable TCP Connection Reuse	Enable
TCP Timeout	0
SIP Destination Port	5061
Use user=phone in SIP URL	Yes
Use user=phone in From Header	No
Use Tel URI for Asserted Identity	Disable

28. Click **Submit**



29. Navigate to **VoIP > SIP Definitions > Proxy & Registration**



30. Enter the **Subject Name** used in generating the **CSR** in the **Gateway Name & Proxy Name** fields

A screenshot of the Proxy & Registration configuration page. The page contains various configuration fields. Two fields are highlighted with red boxes: 'Proxy Name' and 'Gateway Name'. Both fields contain the value 'm800.corisco.com'. Other fields include 'Use Default Proxy' (No), 'Redundancy Mode' (Parking), 'Proxy IP List Refresh Time' (60), 'Enable Fallback to Routing Table' (Disable), 'Prefer Routing Table' (No), 'Always Use Proxy' (Disable), 'Redundant Routing Mode' (Routing Table), 'SIP ReRouting Mode' (Standard Mode), 'Enable Registration' (Disable), 'Registration Time' (180), 'Re-registration Timing [%]' (50), 'Registration Retry Time' (30), 'Registration Time Threshold' (0), 'Re-register On INVITE Failure' (Disable), 'Re-register On Connection Failure' (Disable), 'Gateway Registration Name', 'DNS Query Type' (A-Record), 'Proxy DNS Query Type' (A-Record), 'Number of RTX Before Hot-Swap' (3), 'Use Gateway Name for OPTIONS' (No), 'User Name', 'Password' (Default_Passwd), 'Nonce' (Default_Nonce), 'Registration Mode' (Per Gateway), 'Challenge Caching Mode' (None), and 'Mutual Authentication Mode' (Optional).

Use Default Proxy	No
Proxy Name	m800.corisco.com
Redundancy Mode	Parking
Proxy IP List Refresh Time	60
Enable Fallback to Routing Table	Disable
Prefer Routing Table	No
Always Use Proxy	Disable
Redundant Routing Mode	Routing Table
SIP ReRouting Mode	Standard Mode
Enable Registration	Disable
Registration Time	180
Re-registration Timing [%]	50
Registration Retry Time	30
Registration Time Threshold	0
Re-register On INVITE Failure	Disable
Re-register On Connection Failure	Disable
Gateway Name	m800.corisco.com
Gateway Registration Name	
DNS Query Type	A-Record
Proxy DNS Query Type	A-Record
Number of RTX Before Hot-Swap	3
Use Gateway Name for OPTIONS	No
User Name	
Password	Default_Passwd
Nonce	Default_Nonce
Registration Mode	Per Gateway
Challenge Caching Mode	None
Mutual Authentication Mode	Optional

31. Click **Submit**



32. Change your **Proxy Set** to use **TLS**
33. Select **Device Actions > Reset**



34. Ensure **Burn to Flash** is set to **Yes** and then click **Reset**



35. Log back in after reboot
36. Navigate to **VoIP > Control Network > Proxy Sets Table**
37. Ensure that the proper proxy set has the **Transport Type** set to **TLS** for each entry in its **Proxy Address** table. Also put the **SIPS** communication port on the end of each IP Address.
38. If one of your proxy sets does not communicate using TLS ensure that that **Proxy Set** has the **SIP** communication port on the end of each of its **IP Addresses**.

39. Navigate to **VoIP > Coders & Profiles > IP Profile Settings**



40. Create one **IP Profile** for **TLS** and one for **TCP/UDP**.
- a. For **TCP/UDP** set:
 - Gateway Parameters > Media Security Behavior** to **Disable**
 - SBC > Media Security Behavior** to **RTP**
 - b. For **TLS** set:
 - Gateway Parameters > Media Security Behavior** to **Preferrable**
 - SBC > Media Security Behavior** to **SRTP**
41. Assign the **IP Profiles** to **IP Groups** as needed to control their **Media Security** behavior.
42. Click **Submit**

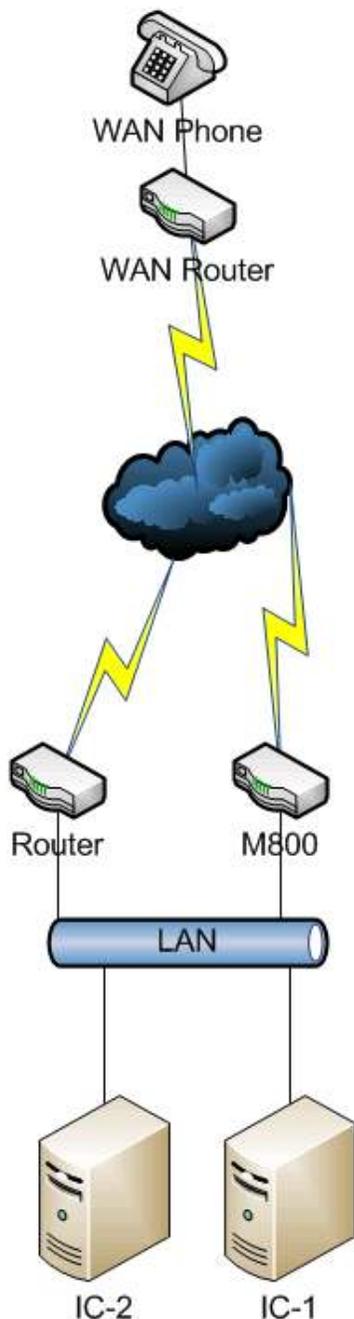


43. Click **Burn**



External User Agents

If you wish to have VoIP stations outside your network that connect back to IC and place calls without using VPN, there are several things you will need to configure. Primarily you cannot use the Mediant 800 for your primary Data router. You will instead need a Secondary router that will handle the HTTP(S) traffic from the WAN Phones. See the diagram below:



For IC to function properly with a WAN Phone & Switchover, all HTTP(S) traffic will need to be routed through a separate device. Ports 8088 and 8089 will need to be sent through your firewall using port forwarding, static NATs, or a separate method of your choosing.

The end result being that a WAN phone can contact either server for its configuration files, depending on which server is Active, and that the HTTP(S) traffic does not go through the M800.

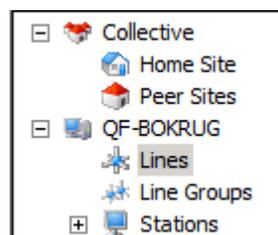
The reason for this is due to a limitation of the Mediant 800. If a DNS record returns more than one IP, the first IP returned is the only IP Address used.

One other thing to note is that this configuration disallows provisioning managed phones by end users, and rebooting the phones remotely. All phones will need their MAC addresses entered at the time of creation.

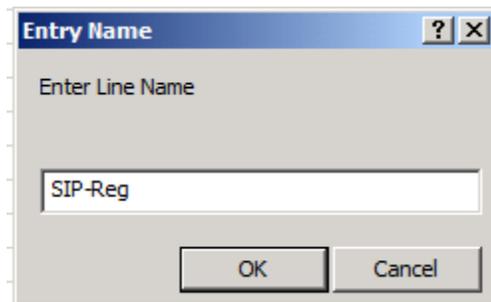
There will need to be several changes in Interaction Administrator before changes are made to the Mediant 800. There will need to be:

- A line for phones to register on, either 5060 or 5061 depending on the usage of TLS
- A registration group dedicated to WAN phones
- A location dedicated to WAN phones

1. Open **Interaction Administrator** and navigate to the **Lines** Container

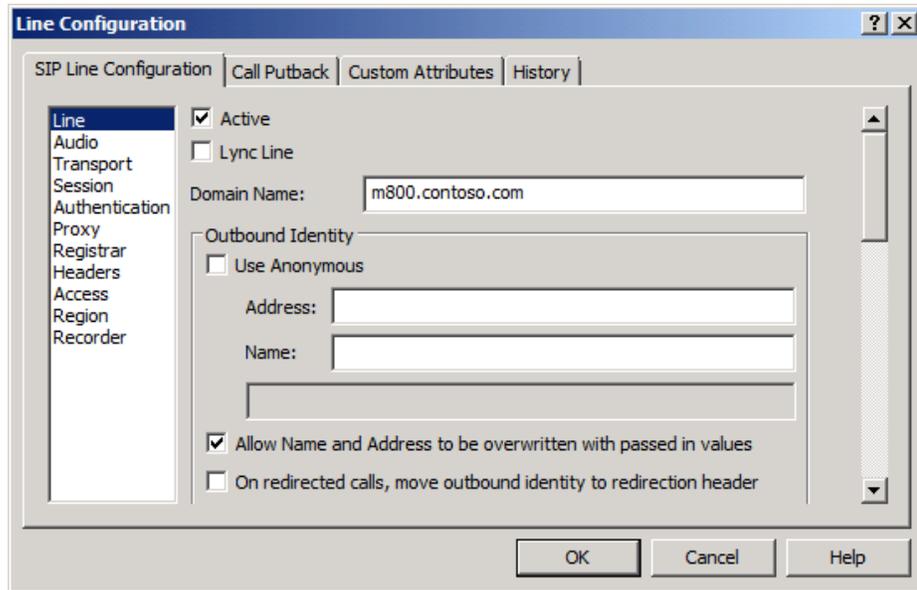


2. Click **File > New** and enter a meaningful name for the Line

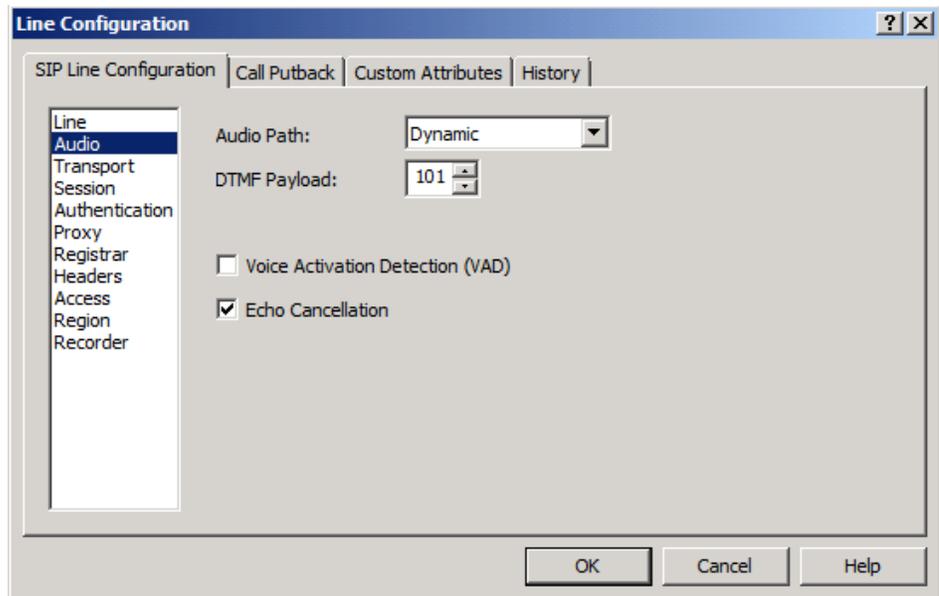


3. Enter the FQDN the WAN Phones will use to contact IC in the **Domain Name** field. Enter something in the **Address**

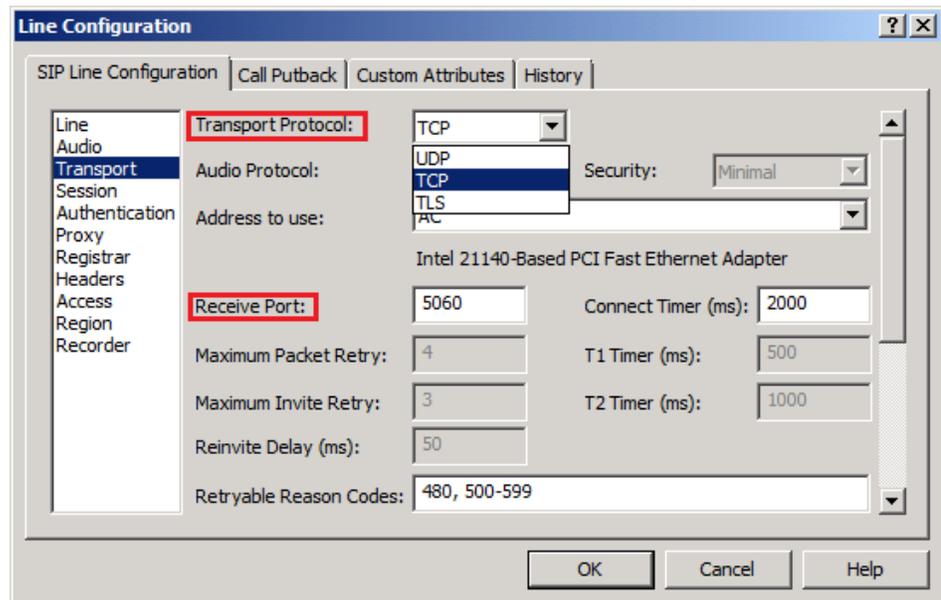
field. This can be your main DID or another number.



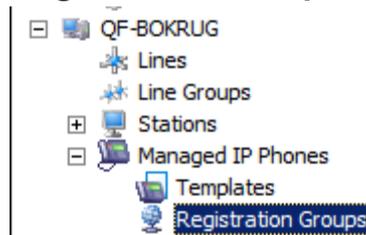
4. Change any settings necessary in the **Audio** section



5. Change any settings necessary in the **Transport** section



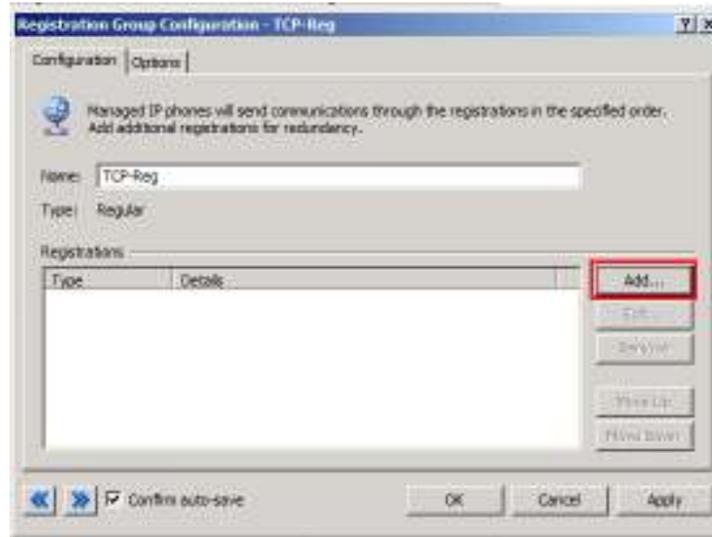
6. Click **OK**
7. Click **[Server Name] > Managed IP Phones > Registration Groups**



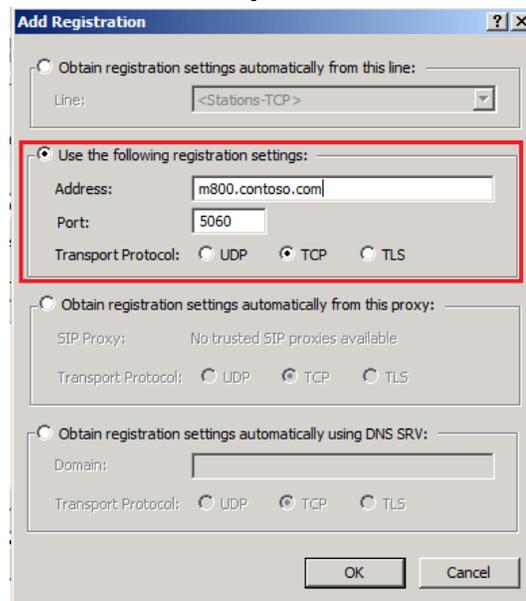
8. Click **File > New** and enter a name in the **New Registration Group** window



9. Click **Add..** in the **Registrations** section of the **Registration Group Configuration** window



10. Click the **Use the following registration settings:** radio button.
11. Enter the external FQDN of your Mediant 800, the name entered in the **Subject Name** of the CSR, and change **Port** and **Transport Protocol** as necessary.



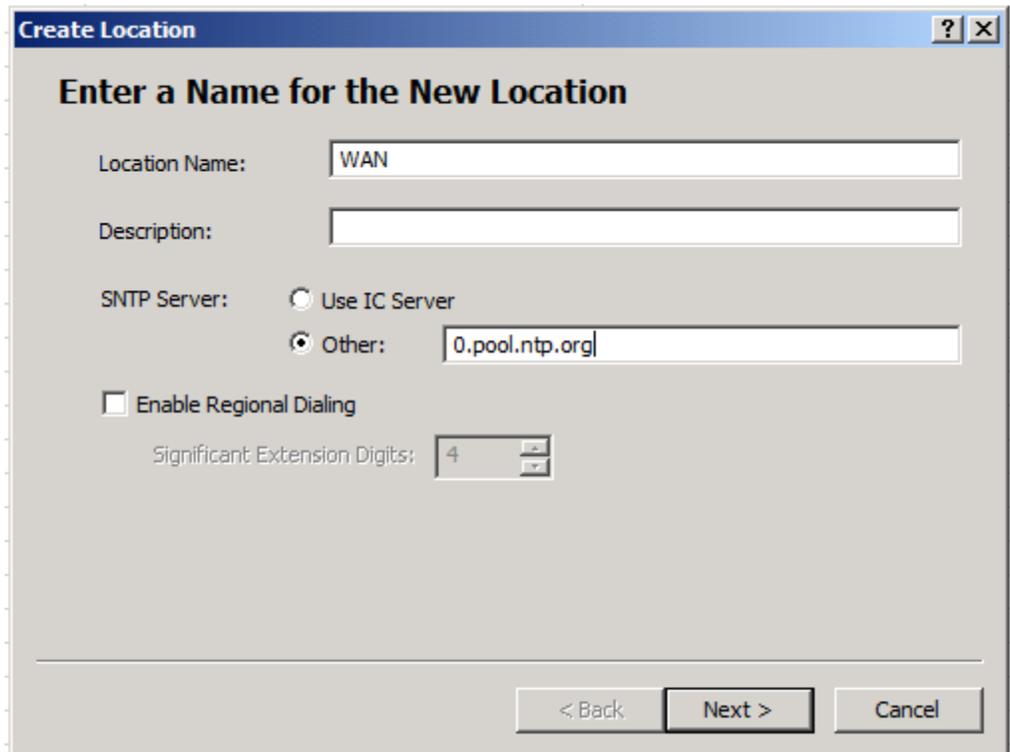
12. Click **OK**

13. Click **[Server Name] > Regionalization > Locations**



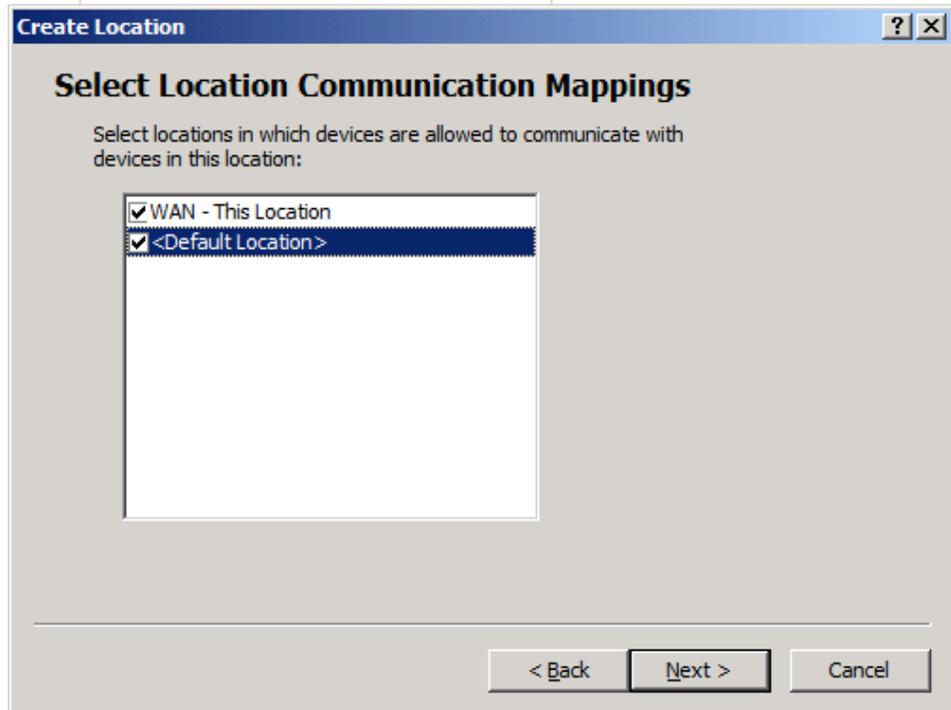
14. Click **File > New**

15. Enter a meaningful **Location Name** and, if there is no way to route NTP back to your network from the WAN, choose **Other** for **SNTP Server** and enter the IP or FQDN of a public NTP server.

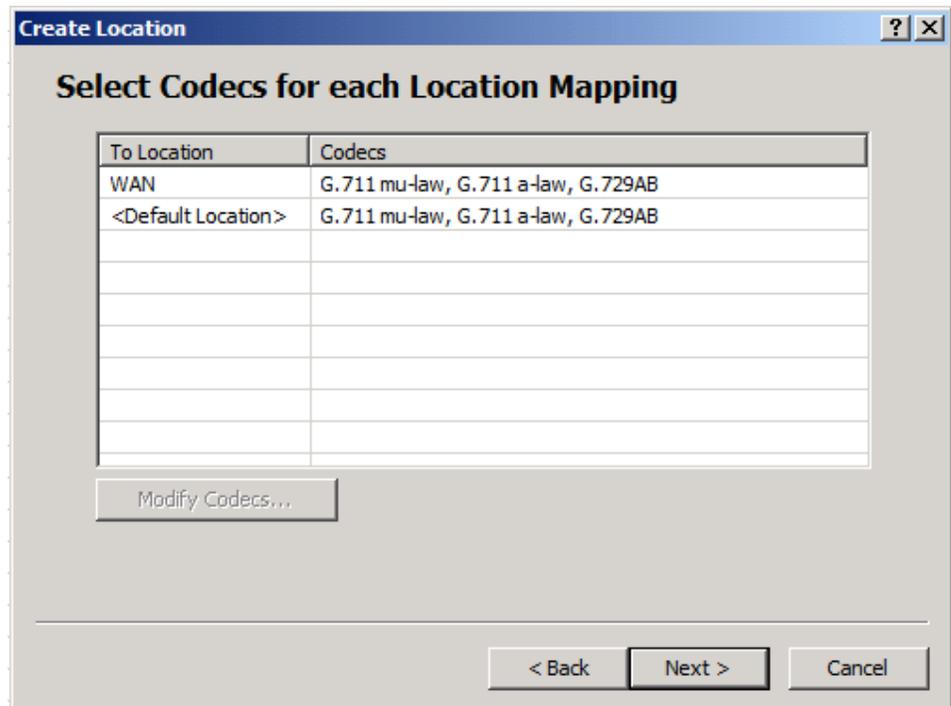


16. Click **Next**

17. Select the other **Location(s)** this **Location** needs to be able to communicate with

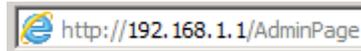


18. Click **Next**
19. Choose the **Codecs** available at each **Location**



20. Click **Next**
21. Click **Finish**

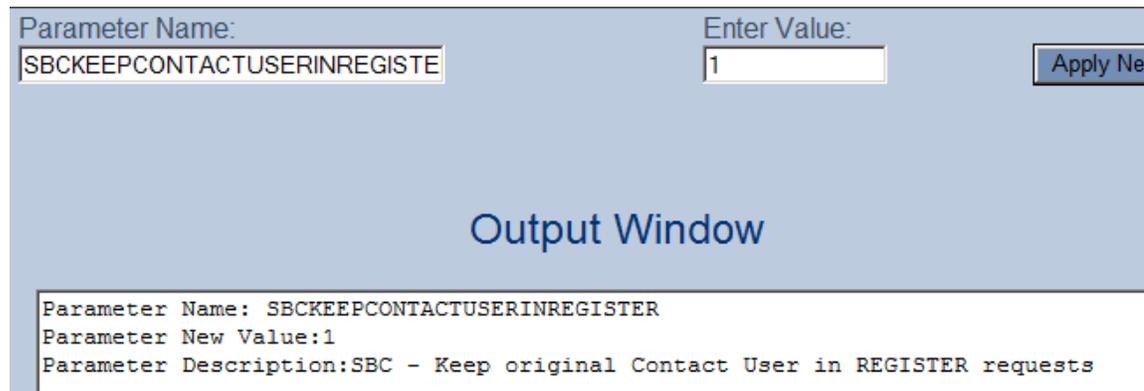
22. Create some Managed Phones/Stations and place them in the WAN region.
23. Open the Mediant 800's WEB Interface
24. Change the URL replacing **Index** with **AdminPage** (this is case sensitive)



25. Select **ini Parameters**



26. Enter **SBCKeepContactUserInRegister** in the **Parameter Name** field and **1** in the **Enter Value** field, click **Apply New Value**

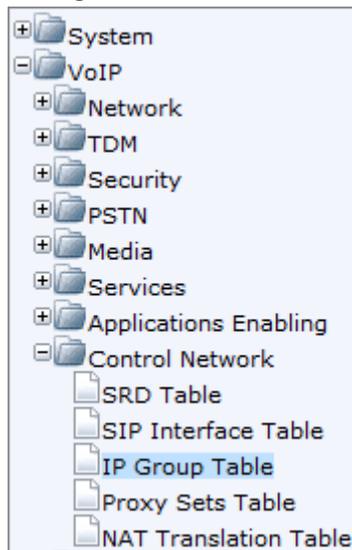
A screenshot of a configuration form. At the top, there are two input fields: "Parameter Name:" and "Enter Value:". The "Parameter Name:" field contains the text "SBCKEEPCONTACTUSERINREGISTE". The "Enter Value:" field contains the number "1". To the right of the "Enter Value:" field is a button labeled "Apply Ne". Below these fields is a large blue area labeled "Output Window". At the bottom of the "Output Window" is a text area containing the following text:

```
Parameter Name: SBCKEEPCONTACTUSERINREGISTER  
Parameter New Value:1  
Parameter Description:SBC - Keep original Contact User in REGISTER requests
```

27. Click **Back to Main** to return to the regular configuration page.



28. Navigate to **VoIP > Control Network > IP Group Table**



29. Select **Index 12** and enter the following settings:

Type: USER

Description: WAN Users (or something more meaningful)

SRD: 11

Media Realm: WAN

IP Profile ID: Choose the appropriate IP Profile unless none used

Index	12
Common Parameters	
Type	USER
Description	WAN_Users
Proxy Set ID	
SIP Group Name	
Contact User	N/A
SRD	11
Media Realm	WAN
IP Profile ID	0
Gateway Parameters	
Always Use Route Table	No
Routing Mode	Not Configured
SIP Re-Routing Mode	Standard
SBC Parameters	
Classify By Proxy Set	Enable
Max Number Of Registered Users	-1
Inbound Message Manipulation Set	-1
Outbound Message Manipulation Set	-1

30. Click **Submit**

31. Navigate to **VoIP > SBC > Routing SBC > Classification**

Table



32. Enter 12 in the text box next to **Add** and click **Add**

 A screenshot of the 'Classification Table' configuration window. It features a blue header with the text 'Classification Table'. Below the header, there is a note: 'Note: Select row index to'. Underneath the note is a text input field containing the number '12' and an 'Add' button.

33. Enter

- a. **Source SRD ID: 11**
- b. **Source IP Group ID: 12**

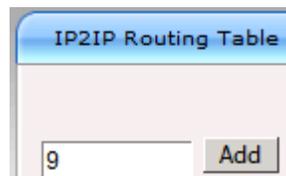
Index	Source SRD ID	Source IP Address	Source Username Prefix	Source Host Prefix	Destination Username Prefix	Destination Host Prefix
12	11		*	*	*	*

34. Click **Apply**

35. Navigate to **VoIP > SBC > Routing SBC > IP to IP Routing Table**



36. Enter a **9** in the box next to **Add**



37. Enter the following Settings:

Source IP Group ID: 1

Destination Username Prefix: WANPhoneXXX

- i. A strict naming convention will have to be adopted for all phones that are going to be on the WAN so that this naming mask will be effective.
- ii. This naming mask will handle any phone named WANPHONE(001-999) as X is wild card for a single digit, 0-9.

Destination IP Group: 12

Index	Source IP Group ID	Source Username Prefix	Source Host	Destination Username Prefix	Destination Host	RequestType	Destination Type
9	1	*	*	WANPhoneXXX	*	All	IP Group
10	1	*	*	*	*	All	IP Group
20	11	*	*	*	*	All	IP Group

38. Click **Apply**

39. Enter a **19** in the box next to **Add**

The screenshot shows a window titled "IP2IP Routing Table". Below the title bar, there is a text input field containing the number "19" and an "Add" button to its right.

40. Enter the following Settings:
 a. **Source IP Group ID: 12**
 b. **Destination IP Group: 1**

Index	Source IP Group ID	Source Username Prefix	Source Host	Destination Username Prefix	Destination Host	RequestType	Destination Type
9	11	-	-	WANPhone/XX	-	All	IP Group
10	11	-	-	-	-	All	IP Group
19	12	-	-	-	-	All	IP Group
20	11	-	-	-	-	All	IP Group

41. Click **Apply**

42. Select **Device Actions > Reset**

The screenshot shows the AudioCodes Mediant 800 web interface. At the top, there are buttons for "Submit" and "Burn". Below that, there are tabs for "Configuration", "Maintenance", and "Status & Diagnostics". The "SRD Settings" section is active. On the right side, a "Device Actions" menu is open, showing options: "Load Configuration", "Save Configuration", "Reset" (highlighted in blue), and "Software Upgrade".

43. Ensure **Burn to Flash** is set to **Yes** and then click **Reset**

The screenshot shows a "Reset Configuration" dialog box. It has three rows of settings:

- Reset Board**: A "Reset" button is highlighted with a red box.
- Burn To FLASH**: A dropdown menu is set to "Yes", with the text "Burn To FLASH" highlighted in red.
- Graceful Option**: A dropdown menu is set to "No".