

SIP

Mediant 1000

Configuration Note

**AudioCodes' Mediant VoIP Gateway and
Avaya's Modular Messaging**

with

Siemens HiPath 4000 using T1 QSIG Interface

AVAYA

 **AudioCodes**
Connecting Networks

Table of Contents

1	Components Information.....	7
1.1	PBX or IP-PBX.....	7
1.2	AudioCodes Gateway	7
1.3	Avaya Modular Messaging Version.....	7
2	Prerequisites	9
2.1	Gateway Prerequisites.....	9
2.2	PBX Prerequisites.....	9
2.3	Cabling Requirements.....	9
3	PBX Setup Notes.....	11
3.1	PBX Configuration.....	11
3.2	Special Instructions for PBX Configuration	11
3.3	Other Comments.....	11
4	Gateway Setup Notes.....	13
4.1	Configuration Files	13
4.2	Configuring AudioCodes Gateway	13
5	Avaya Modular Messaging Configuration.....	27
6	Summary and Limitations	33
6.1	Detailed Description of Limitations.....	33
7	Troubleshooting.....	35
7.1	Configuring AudioCodes Gateway for Syslog Server	35
A	AudioCodes ini File.....	37

Reader's Notes

Disclaimer

This PBX Configuration Note is designed to be a general guide reflecting AudioCodes and Avaya experience in configuring their systems. These notes cannot anticipate every configuration possibility, given the inherent variations in hardware and software products. Therefore, if you experience a problem not detailed in this document, please notify AudioCodes' Technical Support at support@audiocodes.com, and if appropriate, we will include it in our next document revision. AudioCodes Ltd. and Avaya Inc. accept no responsibility for errors or omissions contained herein.

This document is subject to change without notice.

Date Published: March-25-2009

Version Information

Version	Date of Modification	Details of Modification
01	March 2009	Initial version by AudioCodes

Overview

This document describes the configuration required to setup Siemens HiPath 4000 and AudioCodes' Mediant 1000 gateway, using T1 QSIG as the telephony signaling protocol to an Avaya Modular Messaging system connected to the gateway using SIP.

Targeted Audience

This document is intended for Avaya Installation Engineers or Avaya Business Partners who are installing Modular Messaging using AudioCodes gateway.

Reader's Notes

1 Components Information

1.1 PBX or IP-PBX

PBX Vendor	Siemens
Model	HiPath 4000
Software Version	Version 2.0
Telephony Signaling	T1 QSIG
Additional Notes	None

1.2 AudioCodes Gateway

Gateway Vendor	AudioCodes
Model	Mediant 1000
Software Version	5.60A.012.007
VoIP Protocol	SIP
Additional Notes	None

1.3 Avaya Modular Messaging Version

Version	Avaya Modular Messaging Release 5.0
----------------	-------------------------------------

Reader's Notes

2 Prerequisites

2.1 Gateway Prerequisites

None

2.2 PBX Prerequisites

Refer to Section 3.1.

2.3 Cabling Requirements

Refer to Section 3.1.

Reader's Notes

3 PBX Setup Notes

3.1 PBX Configuration

Configure the PBX as specified in the Avaya Modular Messaging PBX Configuration Note "CN88029.pdf" Section 5.0.

You can obtain this Configuration Note from **Avaya** Web sites <http://support.avaya.com>

3.2 Special Instructions for PBX Configuration

Refer to Section 3.1.

3.3 Other Comments

Refer to Section 3.1.

Reader's Notes

4 Gateway Setup Notes

This section describes the configuration of AudioCodes' gateway required for integration with both the PBX and the Avaya Modular Messaging System.

You can configure the gateway using one of the following methods:

- Uploading an *ini* configuration file (*.ini file) – refer to Section 4.1
- Configuring the gateway via the Web interface – refer to Section 4.2

4.1 Configuration Files

For initial setup and configuration, you can upload an *ini* file (*.ini) to AudioCodes gateway that includes the template *ini* file settings shown in Appendix A. Simply create a new text file (e.g., using Microsoft Notepad) with the file extension *.ini, copy and paste the *ini* file settings from Appendix A into the text file, and then upload the file to the gateway.

Typically, for interoperability with the deployed PBX interfaces and Avaya Modular Messaging, it's sufficient that you use the this *ini* file template. However, due to specificity of site deployment, you may need to modify or define certain parameters (such as IP addresses and Trunk settings) after uploading the *ini* file.

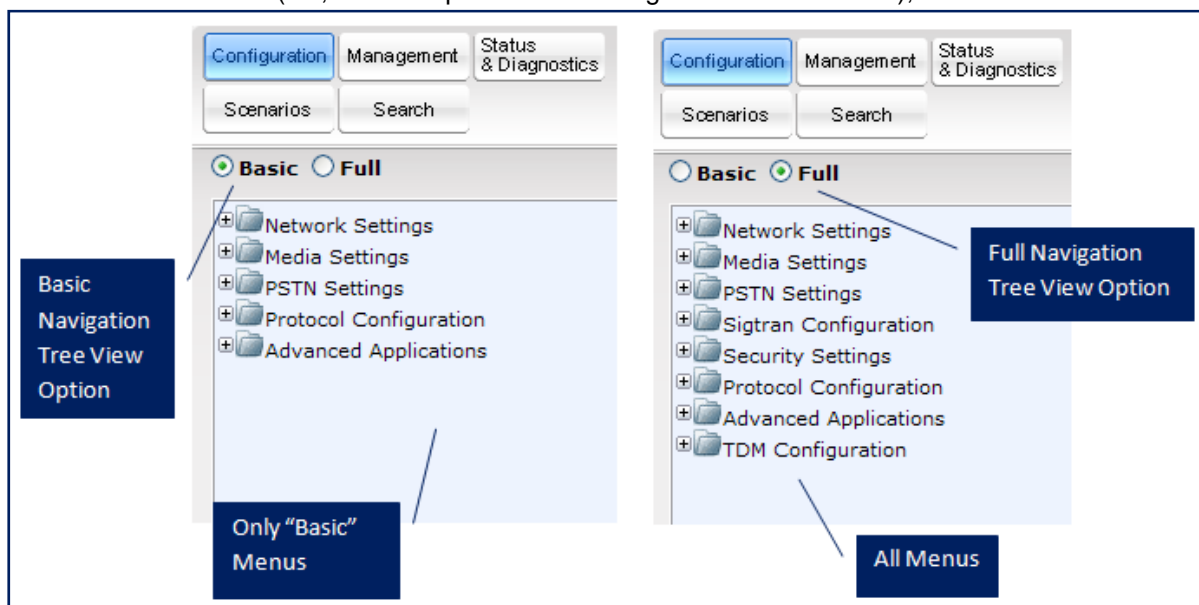
4.2 Configuring AudioCodes Gateway

This section provides step-by-step procedures for configuring AudioCodes' gateway, using the Web interface. Ensure that you configure the gateway according to the configuration settings displayed in the screenshots provided in this section.

The procedures describe how to setup Avaya Modular Messaging with the gateway implementing SIP over TLS **with** and **without** SRTP.

Note the following Web interface guidelines:

- When making configuration changes for each procedure, ensure that you click the **Submit** button to save your changes; unless otherwise instructed.
- Some of the changes may require a gateway reset for these changes to take effect. Therefore, (and to save time), reset the gateway only after you complete all of the gateway configurations.
- The procedures described in this section are performed using the gateway's Web-based management tool (i.e., embedded Web server). Before you begin configuring the gateway, ensure that the Web interface's Navigation tree is in full menu display mode (i.e., the Full option on the Navigation bar is selected), as shown below:



Step 1: Trunk Setting Setup

Open the 'Trunk Settings' page (**Configuration** tab: **PSTN Settings > Trunk Settings**).

The screenshot displays the configuration interface for a trunk. At the top, there is a navigation bar with a yellow '1' and a '2' in a box, and a '0' on the right. Below this is the 'General Settings' section with the following parameters:

Module ID	1
Trunk ID	1
Trunk Configuration State	Inactive
Protocol Type	T1 QSIG

The 'Trunk Configuration' section is expanded and shows:

Clock Master	Recovered
Auto Clock Trunk Priority	0
Line Code	B8ZS
Framing Method	T1 FRAMING ESF CRC6

The 'ISDN Configuration' section is expanded and shows:

ISDN Termination Side	User side
Q931 Layer Response Behavior	0x40000000
Outgoing Calls Behavior	0x400
Incoming Calls Behavior	0x0
General Call Control Behavior	0x20
NFAS Group Number	0
IUA Interface ID	-1
NFAS Interface ID	255
D-channel Configuration	PRIMARY

The bottom section, partially expanded, shows:

PSTN Alert Timeout	-1
QSIG Transfer Mode	Disable
Local ISDN Ringback Tone Source	PBX
Set PI in Rx Disconnect Message	Not Configured
ISDN Transfer Capabilities	Not Configured
Progress Indicator to ISDN	Not Configured
Enable Receiving of Overlap Dialing	Disable
B-channel Negotiation	Not Configured
Out-Of-Service Behavior	Default
Play Ringback Tone to Trunk	Not Configured

Before you can modify parameters on this page, you need to click the **Stop Trunk** button to de-activate the trunk.

After you modify the parameters, click the **Apply Trunk Settings** button, and then wait for the trunk settings to be applied. Once the trunk settings are applied, the trunk status icons at the top of the page change to green for all trunks that are connected to the PBX.

In case of more than one trunk connection between the PBX and gateway, repeat Step 1 for each of the trunks, or click the **Apply to All Trunks** button.

Step 2: SIP Environment Setup

Open the 'SIP General Parameters' page (**Configuration** tab: **Protocol Configuration** > **Protocol Definition** > **SIP General Parameters**).

▼ SIP General	
PRACK Mode	Supported
Channel Select Mode	Ascending
Enable Early Media	Disable
Session-Expires Time	0
Minimum Session-Expires	90
Session Expires Method	Re-INVITE
Asserted Identity Mode	Disabled
Fax Signaling Method	T.38 Relay
SIP Transport Type	TLS
SIP UDP Local Port	5060
SIP TCP Local Port	5060
SIP TLS Local Port	5061
Enable SIPS	Disable
SIP Destination Port	5061
Enable Remote Party ID	Disable
Enable History-Info Header	Disable
Play Ringback Tone to IP	Don't Play
Play Ringback Tone to Tel	Play According to Early Media
Enable Reason Header	Enable
▼ Retransmission Parameters	

It is recommended that you configure the gateway and Avaya's Modular Messaging to use TLS. If you prefer to use TCP, then ensure that you configure the gateway settings relating to TLS (in the screen above) to use TCP:

- **SIP Transport Type:** "TCP"
- **SIP TCP Local Port:** "5060"
- **SIP Destination Port:** "5060"

Step 3: Configuring SRTP

Open the 'Media Security' page (**Configuration** tab: **Media Settings** > **Media Security**).

▼ General Media Security Settings	
Media Security	Enable
Media Security Behavior	Mandatory
Disable Authentication On Transmitted RTP Packets	0
Disable Encryption On Transmitted RTP Packets	0
Disable Encryption On Transmitted RTCP Packets	0
▼ SRTP Setting	
Master Key Identifier (MKI) Size	0

If you are using SIP over TLS **with** SRTP, then set the SRTP Setting parameters as follows:


- **Media Security:** "Enable"
- **Media Security Behavior:** "Mandatory"
- **Disable Encryption On Transmitted RTCP Packets:** "1"

If you are using SIP over TLS **without** SRTP, then set the SRTP Setting parameters as follows:

- **Media Security:** "Disabled"
- **Media Security Behavior:** "Mandatory"
- **Disable Encryption On Transmitted RTCP Packets:** "0"

Step 4: Routing, PBX-to-IP Routing, SIP Environment and Gateway Name Setup

Open the 'Proxy & Registration' page (**Configuration** tab: **Protocol Configuration** > **Protocol Definition** > **Proxy & Registration**).

Use Default Proxy	Yes
Proxy Set Table	
Proxy Name	
Redundancy Mode	Parking
Proxy IP List Refresh Time	60
Enable Fallback to Routing Table	Disable
Prefer Routing Table	No
Use Routing Table for Host Names and Profiles	Disable
Always Use Proxy	Disable
Enable Registration	Disable
Gateway Name	
Gateway Registration Name	
User Name	
Password	Default_Passwd
Cnonce	Default_Cnonce
Authentication Mode	Per Gateway

Assign an FQDN name to the gateway (for example, mygateway.mynet1.mynet.com). Any gateway name that corresponds to your network environment is applicable, but it must meet requirements for FQDNs.

Proxy Set ID: 0

	Proxy Address	Transport Type
1	10.15.10.11	TLS
2		
3		
4		
5		

Enable Proxy Keep Alive: Disable
 Proxy Keep Alive Time: 60
 Proxy Load Balancing Method: Round Robin
 Is Proxy Hot Swap: No

1. In the 'Proxy Address' field, enter either the IP address or FQDN of the Avaya Modular Messaging MAS. If your Avaya Modular Messaging system includes multiple MAS's, then enter multiple IP addresses or FQDNs for the MAS's - one MAS per table row. It is recommended that you use FQDNs.
2. From the 'Transport Type' drop-down list, select the transport type for each MAS. **Note:** When not configured, the value of the parameter 'SIPTransportType' is used.
3. From the 'Proxy Load Balancing Method' drop-down, select "Round Robin" to load balance the calls across all MAS's in your Avaya Modular Messaging System.

Step 5: Coder Setup

Open the 'Coders Table' page (**Configuration** tab: **Protocol Configuration** > **Protocol Definition** > **Coders**).

Coder Name	Packetization Time	Rate	Payload Type	Silence Suppression
G.711U-law	20	64	0	Disabled

Configure the Coders table to contain only G.711U-law.

Step 6: Digit Collection Setup

Open the 'DTMF & Dialing' page (**Configuration** tab: **Protocol Configuration > Protocol Definition > DTMF & Dialing**).

Max Digits In Phone Num	30
Inter Digit Timeout for Overlap Dialing [sec]	4
Declare RFC 2833 in SDP	Yes
1st Tx DTMF Option	RFC 2833
2nd Tx DTMF Option	
RFC 2833 Payload Type	96
Digit Mapping Rules	
Default Destination Number	serveduser
Special Digit Representation	Special

Set the following fields to the value indicated:

- **Default Destination Number:** "serveduser"

Step 7: General Setup

Open the 'Advanced Parameters' page (**Configuration** tab: **Protocol Configuration** > **SIP** > **Advanced Parameters** > **Advanced Parameters**).

▼ General	
IP Security	Disable
Filter Calls to IP	Don't Filter
⚡ Enable Digit Delivery to Tel	Disable
⚡ Enable Digit Delivery to IP	Disable
RTP Only Mode	Disable
PSTN Alert Timeout	180
▼ Disconnect and Answer Supervision	
Disconnect on Broken Connection	No
Broken Connection Timeout [100 msec]	3
Disconnect Call on Silence Detection	No
⚡ Silence Detection Period [sec]	120
⚡ Silence Detection Method	Voice/Energy Detectors
Enable Fax Re-Routing	Disable
▼ CDR and Debug	
CDR Server IP Address	
CDR Report Level	None
Debug Level	5
▼ Misc. Parameters	
Progress Indicator to IP	Not Configured
Enable X-Channel Header	Disable
Enable Busy Out	Disable

From the 'Disconnect on Broken Connection' drop-down list, select 'No'.

Step 8: Trunk Group Setup

Open the 'Trunk Group Table' page (**Configuration** tab: **Protocol Configuration > Trunk/IP Group > Trunk Group**).

Add Phone Context As Prefix		Disable					
Trunk Group Index		1-12					
Group Index	Module	From Trunk	To Trunk	Channels	Phone Number	Trunk Group ID	IP Profile ID
1	Module 1 PRI	1	1	1-24	2000		0
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

The 'Phone Number' field must match the pilot number of the QSIG trunk.
 If more than one trunk is used, in the 'To Trunk' field, enter the last trunk number (e.g., 2) pertaining to the Trunk Group and then in the 'Channel' field, enter the number of channels (e.g., 1-48) accordingly.

Step 9: TDM BUS Settings

Open the 'TDM Bus Settings' page (**Configuration** tab: **TDM Configuration > TDM Bus Settings**).

PCM Law Select	MuLaw
TDM Bus Type	Framers
Idle PCM Pattern	85
Idle ABCD Pattern	0x0F
TDM Bus Local Reference	2
TDM Bus PSTN Auto Clock	Disable
TDM Bus Clock Source	Network

From the 'PCM Law Select' drop-down list, select 'MuLaw'.

From the 'TDM Bus Clock Source' drop-down list, select 'Network'.

Step 10: Application Settings

Open the 'Application Settings' page (**Configuration** tab: **Network Settings > Application Settings**).

DNS Settings	
DNS Primary Server IP	10.1.1.11
DNS Secondary Server IP	10.1.1.10

Set the following fields to the value indicated:

- **DNS Primary Server IP:** set the IP address of the first DNS server.
- **DNS Secondary Server IP:** set the IP address of the second DNS server.

Step 11: CNG Detector Mode

Open the 'Fax/Modem/CID Settings' page (**Configuration** tab: **Media Settings** > **Fax/Modem/CID Settings**).

Fax Transport Mode	RelayEnable	▼
Caller ID Transport Type	Mute	▼
Caller ID Type	Standard Bellcore	▼
V.21 Modem Transport Type	Disable	▼
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 Relay Redundancy Depth	0	
Fax Relay Enhanced Redundancy Depth	4	
Fax Relay ECM Enable	Enable	▼
Fax Relay Max Rate (bps)	14400bps	▼
Fax/Modem Bypass Coder Type	G711Mulaw	▼
Fax/Modem Bypass Packing Factor	1	
Fax Bypass Output Gain	0	
Modem Bypass Output Gain	0	
Fax CNG Mode	Disable	▼
CNG Detector Mode	Disable	▼

From the 'CNG Detector Mode' drop-down list, select 'Disable'.

Step 12: Add Internal DNS Table

Open the 'Internal DNS Table' page (**Configuration** tab: **Protocol Configuration** > **Routing Tables** > **Internal DNS Table**).

	Domain Name	First IP Address	Second IP Address	Third IP Address	Fourth IP Address
1	anonymous.invalid	10.15.10.7	0.0.0.0	0.0.0.0	0.0.0.0
2	stockleyg3.com	10.15.10.7	0.0.0.0	0.0.0.0	0.0.0.0
3					
4					
5					
6					
7					

Set the following fields to the value indicated:

- **Domain Name '1':** "anonymous.invalid"
- **Domain Name '2':** "stockleyg3.com"
- **First IP Address:** set the IP address of the Mediant 1000 (e.g., 10.15.10.7) in both lines.

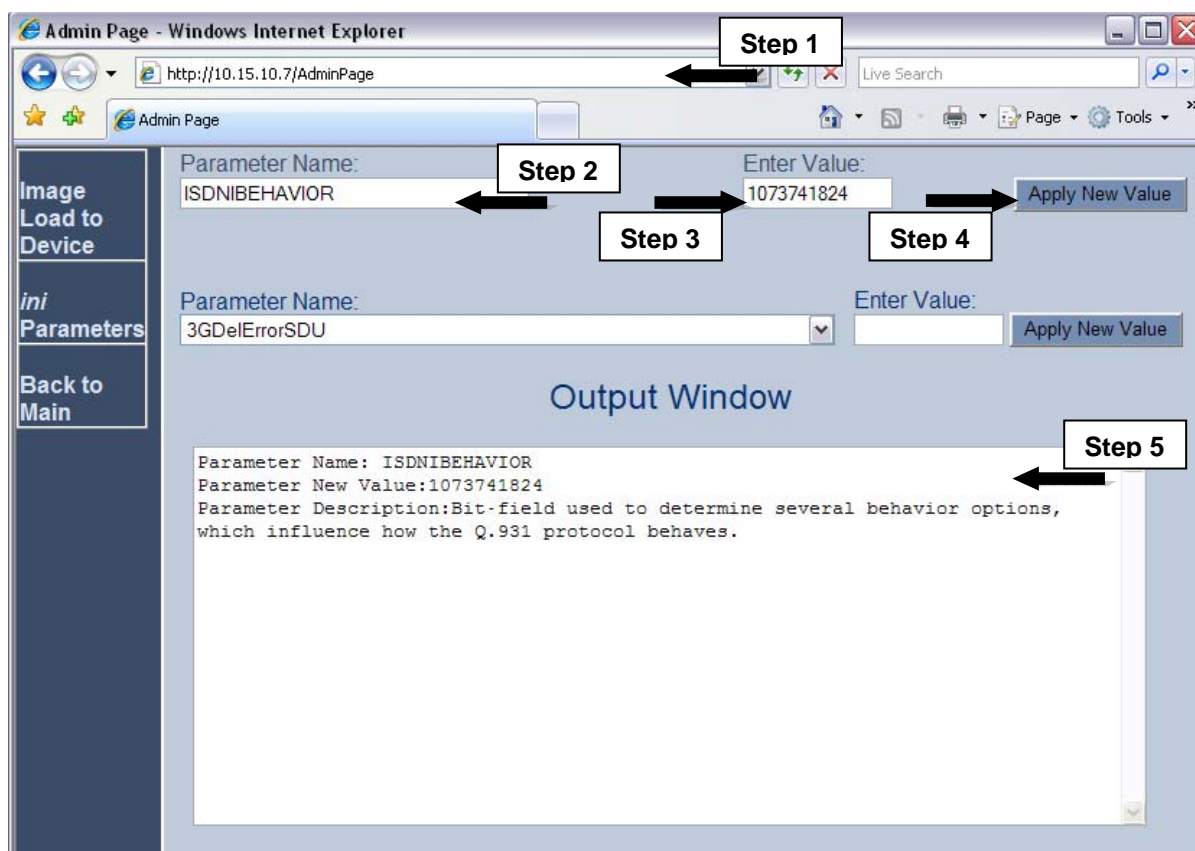
Step 13: Modify Parameters in the AdminPage

The following changes need to be made in the AdminPage:

- **ISDNIBehavior:** "1073741824"
- **EnableMWI:** "1"
- **ECNLPMODE:** "1"
- **SubscriptionMode:** "1"
- **MWISIGMSGCENTRELDIDPARTYNUMBER:** "209849"
- **VoiceMailInterface:** "6"
- **TrunkTransferMode_x:** "0" (where, x denotes the trunk number - for example, for the first trunk, set TrunkTransferMode_0 = 0)

➤ **To modify parameters:**

1. Open the 'AdminPage' page at the following URL (case-sensitive):
http://<gateway's IP address>/AdminPage
2. In the 'Parameter Name', enter the parameter's name.
3. In the 'Enter Value', enter the parameter's value.
4. Click the **Apply New Value** button.
5. Check the output.



Step 14: Reset the Mediant 1000 Gateway

After you have completed the gateway configuration as described in the steps above, burn the configuration to the gateway's flash memory and reset the gateway.

Click the **Reset** button to burn the configuration to flash and reset the gateway (ensure that the 'Burn to FLASH' field is set to "Yes").

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

For Reset Board :
If you choose not to burn the device's configuration into flash memory, all changes made since the last time the configuration was burned will be lost after the device is reset.

For Save Configuration: Saving configuration to flash memory may cause some temporary degradation in voice quality, therefore, it is recommended to perform this during low-traffic periods

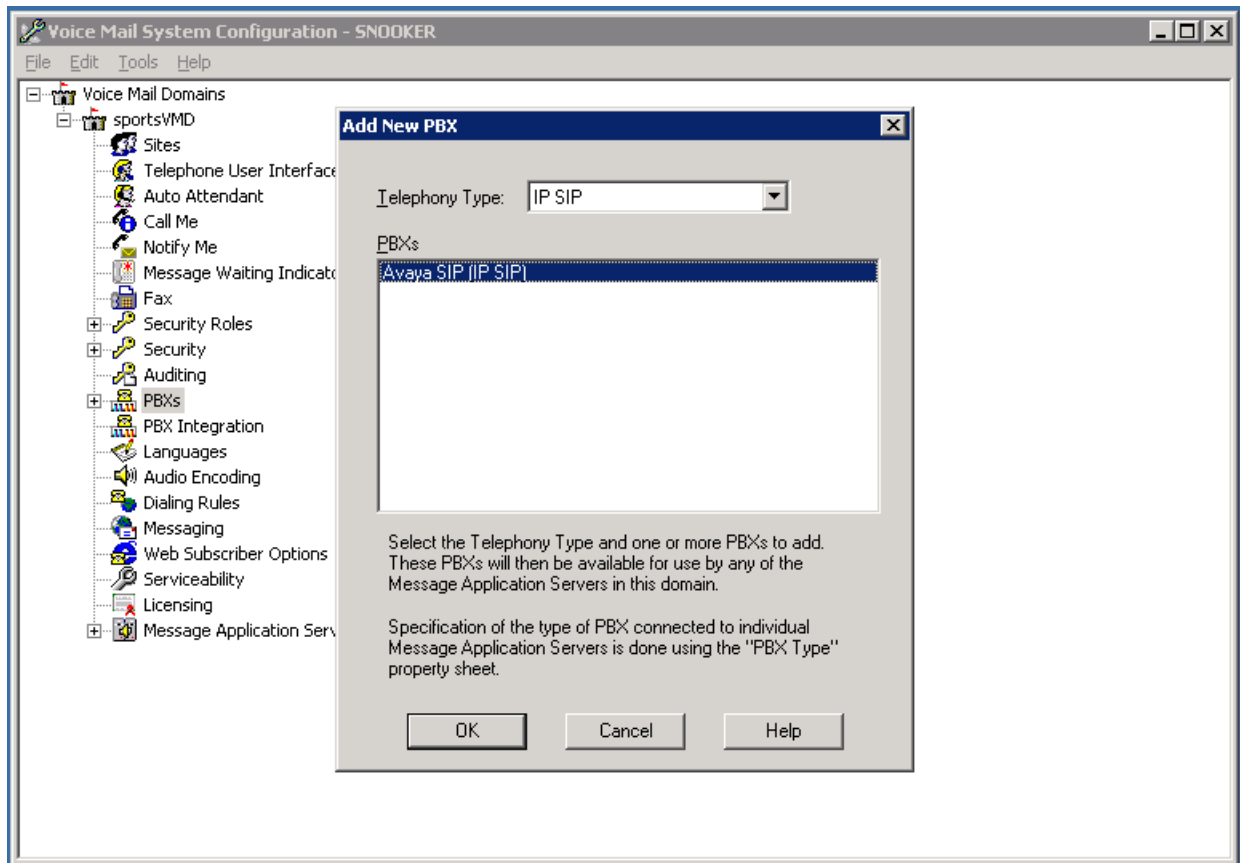
Reader's Notes

5 Avaya Modular Messaging Configuration

Complete the following steps to configure Avaya's Modular Messaging MAS for integration with AudioCodes' gateway.

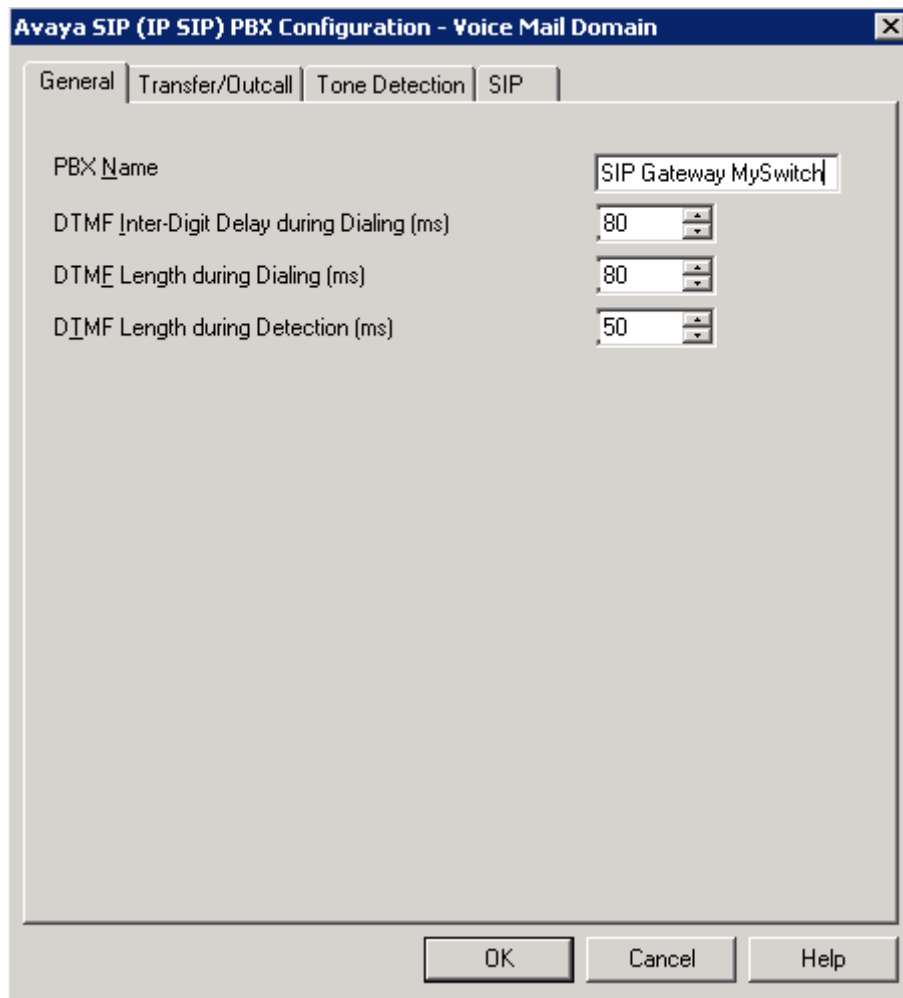
If required, use Voice Mail System Configuration (VMSC) to create a new SIP PBX for the Avaya Modular Messaging Voice Mail Domain (VMD):

1. Launch VMSC.
2. Expand your VMD tree.
3. Right-click **PBXs**, and then select **Add New PBX**.
4. From the drop-down list, select "IP SIP".



5. From the list of available PBXs, select "Avaya SIP (IP SIP)", and then click **OK**.

6. Open the Properties for the newly added SIP PBX.



7. Change the PBX Name to a unique name that reflects the AudioCodes gateway you are installing.

8. Select the **SIP** tab.

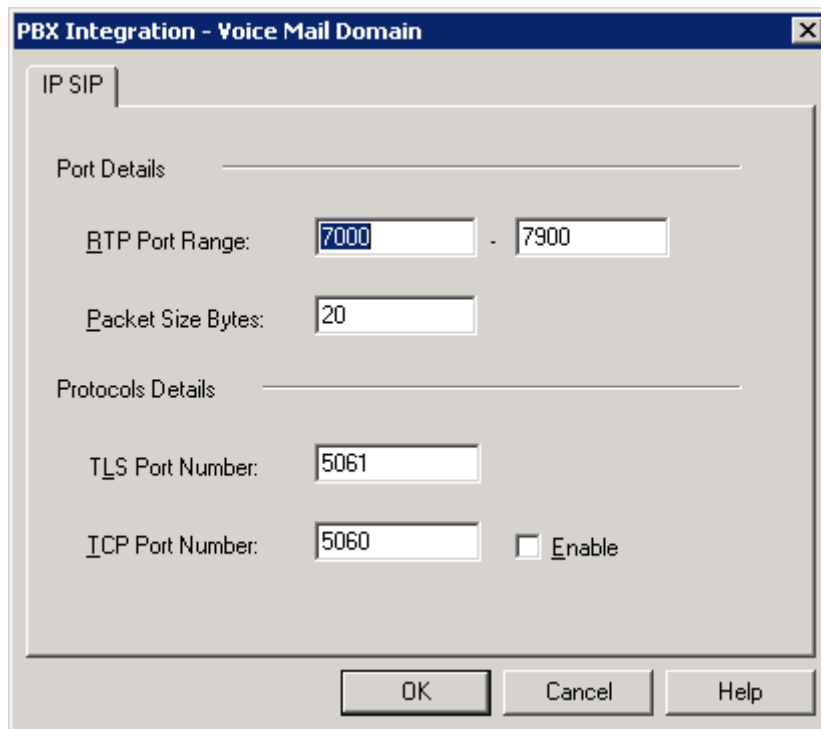
The screenshot shows the 'Avaya SIP (IP SIP) PBX Configuration - Voice Mail Domain' dialog box with the 'SIP' tab selected. The 'Gateways' section contains a table with one entry:

	Address/FQDN	Protocol	MWI	SRTP
<input checked="" type="checkbox"/>		TLS	<input checked="" type="checkbox"/>	None

Below the table are input fields for 'SIP Domain' and 'P-Asserted-Identity'. The 'Phone Number Translation Rules' section includes a 'Configure...' button and a note: 'Translation rules are effective only after MultiSite has been enabled.' At the bottom are 'OK', 'Cancel', and 'Help' buttons.

9. Enter the following details on the SIP configuration page:
- Enter the FQDN or IP address of the AudioCodes gateway you are installing.
 - Select the protocol for the AudioCodes gateway.
- Note:** It is recommended to use TLS.
- Select "MWI" if the AudioCodes gateway handles MWI requests.
 - Select the SRTP configuration required for the AudioCodes gateway:
 - ◆ If using SIP over TLS with SRTP, then select the required SRTP level.
 - ◆ If using SIP over TLS without SRTP, then select "None".
 - Enter a unique SIP Domain to be used with the AudioCodes gateway.
 - Click **OK**.

10. Select the VMD PBX Integration.



The image shows a dialog box titled "PBX Integration - Voice Mail Domain". It has a tab labeled "IP SIP". The dialog is divided into two sections: "Port Details" and "Protocols Details".

Port Details:

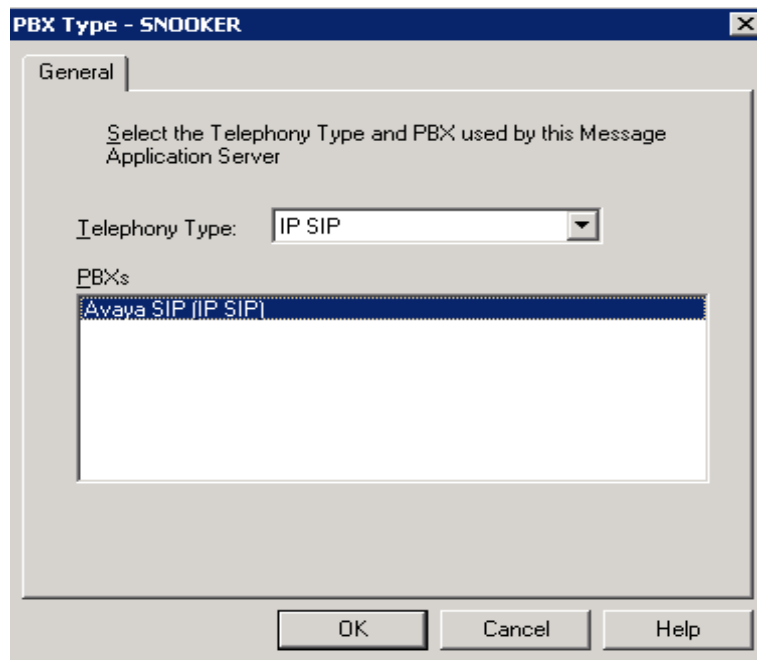
- RTP Port Range: 7000 - 7900
- Packet Size Bytes: 20

Protocols Details:

- TLS Port Number: 5061
- ICP Port Number: 5060 Enable

At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

11. Configure the IP SIP settings as required, and then click **OK**, (the figure above shows the default settings).
Note: If you are using SIP over TCP, then select the 'TCP Enable' check box.
12. Expand the Message Application Servers (MAS) item.
13. From the drop-down list, select the Telephony Type IP SIP.



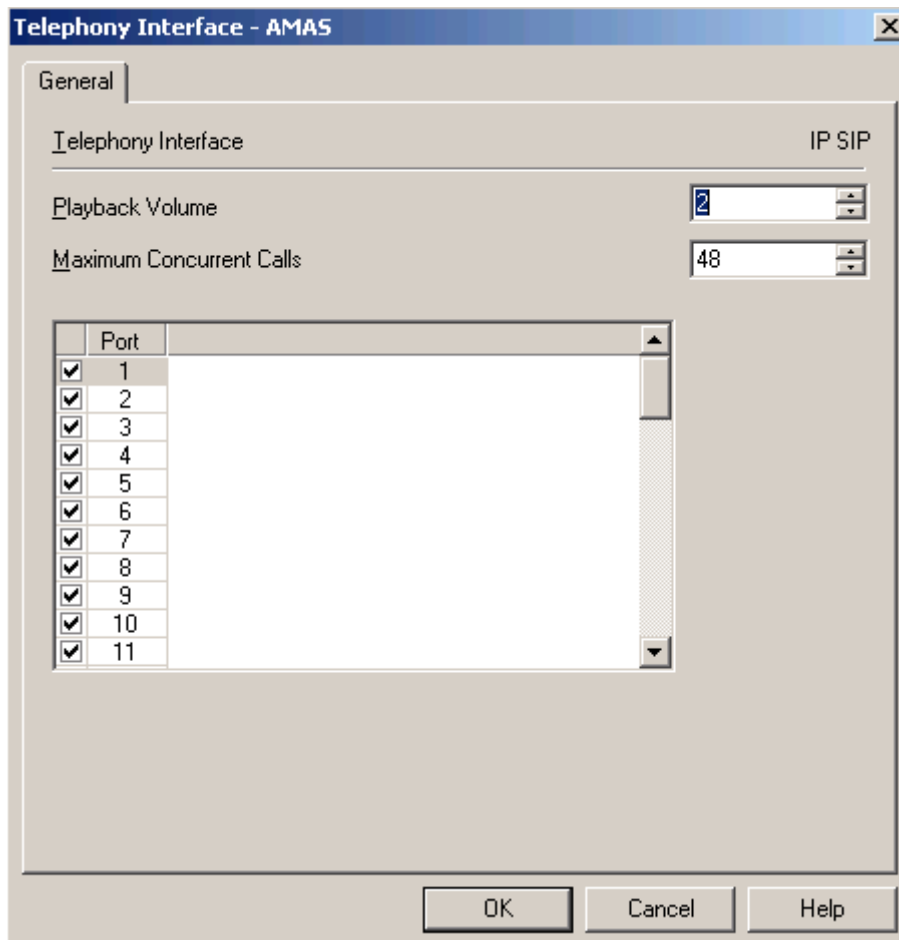
The image shows a dialog box titled "PBX Type - SNOOKER". It has a tab labeled "General". The dialog contains the following elements:

- Text: "Select the Telephony Type and PBX used by this Message Application Server"
- Telephony Type: A dropdown menu with "IP SIP" selected.
- PBXs: A list box containing "Avaya SIP (IP SIP)".

At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

14. From the list of IP SIP PBXs, select the new PBX, and then click **OK**.

15. Select the Telephony Interface Item.

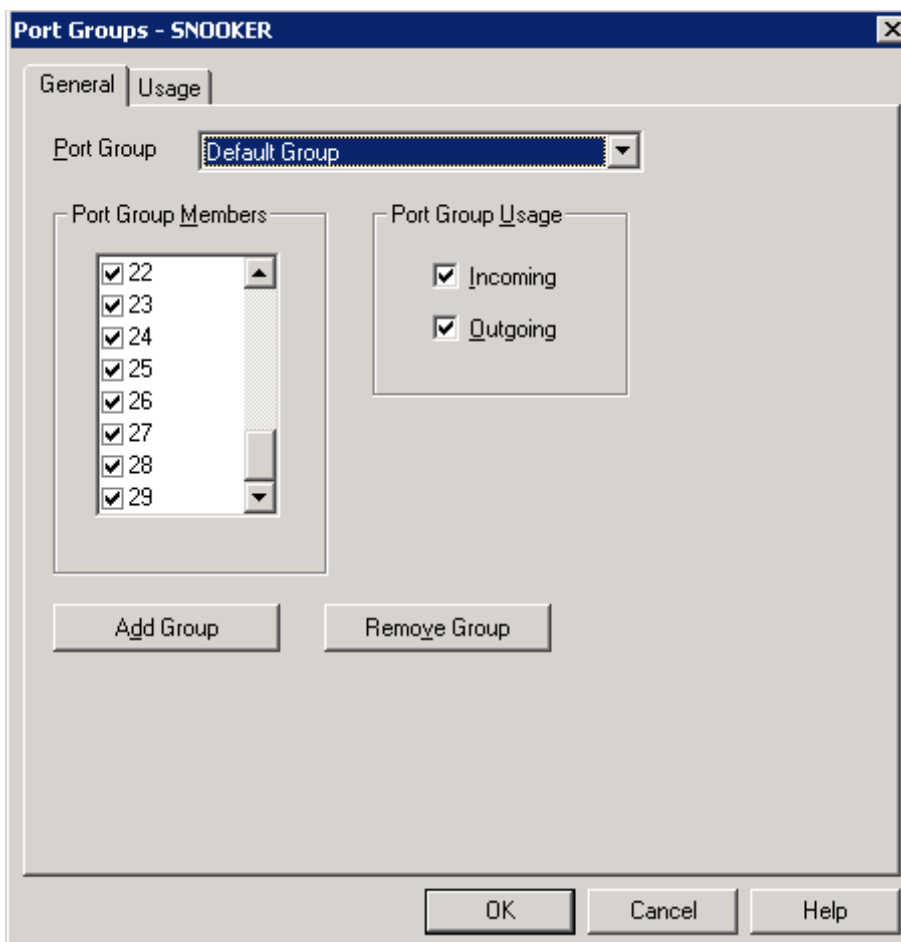


16. Set the Maximum Concurrent Calls to match the number of Channels that you want on this MAS, and then click **OK**.

Note: If your Avaya Modular Messaging system is running in a non-Multisite environment, then the Maximum Concurrent Calls value should match the number of telephony channels on your AudioCodes gateway. Therefore, if you have one QSIG E1 Trunk connected to the gateway, then enter 29 in the Maximum Concurrent Calls field.

If your Modular Messaging system is running in a Multisite environment, then you should configure the Maximum Concurrent Calls value to 48 (this is the default value for SIP integrations with Modular Messaging).

17. Select the Port Groups Item.



18. Ensure that all the Port Group Members for the Default Group are selected and Incoming and Outgoing usages are selected.
19. Add a new Port Group called 'MWI Group'.
20. Add just the upper most port to this group and ensure the Incoming and Outgoing usages are selected.
21. Click **OK**.
22. Restart the Message Application Server Service using the Services Applet to apply these changes to the MAS.

6 Summary and Limitations

6.1 Detailed Description of Limitations

Failure Point	None
Phone Type (if phone-specific)	Analog Phone
Call Scenarios Associated with Failure Point	None
List of UM Features Affected by Failure Point	None
Additional Comments	MWI – Working from version 111111

Reader's Notes

7 Troubleshooting

The tools used for debugging include network sniffer applications (such as Wireshark) and AudioCodes' Syslog protocol.

7.1 Configuring AudioCodes Gateway for Syslog Server

The Syslog client, embedded in the AudioCodes gateway sends error reports/events generated by the gateway application to a Syslog server, using IP/UDP protocol.

➤ **To activate the Syslog client on the AudioCodes gateways:**

1. Set the parameter 'Enable Syslog' to "Enable".
2. Use the parameter 'Syslog Server IP Address' to define the IP address of the Syslog server you use.

Note: The Syslog Server IP address must be one that corresponds with your network environment in which the Syslog server is installed (for example, 10.15.2.5).

The screenshot shows the 'Management Settings' page. The left sidebar has 'Basic' selected. The main content area is titled 'Management Settings' and contains several sections:

- Syslog Settings:**
 - Syslog Server IP Address: 10.15.2.5 (labeled Step 2)
 - Syslog Server Port: 514
 - Enable Syslog: Enable (labeled Step 1)
 - Trunks Filter: -1
- SNMP Settings:**
 - SNMP Trap Destinations: [Add]
 - SNMP Community String: [Add]
 - SNMP V3 Table: [Add]
 - SNMP Trusted Managers: [Add]
 - Disable SNMP: No
 - Trap Manager Host Name: [Empty]
- Activity Types to Report via 'Activity Log' Messages:**
 - Parameters Value Change:
 - Auxiliary Files Loading:
 - Device Reset:
 - Flash Memory Burning:
 - Device Software Update:
 - Access to Restricted Domains:
 - Non-Authorized Access:
 - Sensitive Parameters Value Change:

A 'Submit' button is located at the bottom right of the form.

3. To determine the Syslog logging level, use the parameter 'Debug Level' and set this parameter to "5".
4. Change the 'CDR Report Level' to "End Call" to enable additional call information.

The screenshot displays the 'Advanced Parameters' configuration page for the AudioCodes Mediant 1000 Gateway. The interface is divided into several sections:

- General:** Includes parameters like IP Security (Disable), Filter Calls to IP (Don't Filter), Enable Digit Delivery to Tel (Disable), Enable Digit Delivery to IP (Disable), RTP Only Mode (Disable), and PSTN Alert Timeout (180).
- Disconnect and Answer Supervision:** Includes parameters like Disconnect on Broken Connection (No), Broken Connection Timeout [100 msec] (3), Disconnect Call on Silence Detection (No), Silence Detection Period [sec] (120), Silence Detection Method (None), and Enable Fax Re-Routing (Disable).
- CDR and Debug:** This section is highlighted. It contains:
 - CDR Server IP Address (empty field)
 - CDR Report Level (End Call) ← **Step 4**
 - Debug Level (5) ← **Step 3**
- Misc. Parameters:** Includes Progress Indicator to IP (Not Configured), Enable X-Channel Header (Disable), Enable Busy Out (Disable), and Default Release Cause (3).

The 'CDR Report Level' and 'Debug Level' fields are specifically marked with arrows and labels 'Step 4' and 'Step 3' respectively, indicating the current configuration steps.

AudioCodes has also developed the following advanced diagnostic tools for high-level troubleshooting:

- **PSTN Trace:** used for monitoring and tracing PSTN elements (E1/T1) in AudioCodes digital gateways (Mediant 1000). These utilities are designed to convert PSTN trace binary files into textual form.
- **DSP Recording:** used for monitoring the DSP operation (e.g., RTP packets and events).

A AudioCodes ini File

```

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

;Board: Mediant 1000
;Serial Number: 469831
;Slot Number: 1
;Software Version: 5.60A.012.007
;DSP Software Version: 624AE3 => 560.11
;Board IP Address: 10.15.10.7
;Board Subnet Mask: 255.255.0.0
;Board Default Gateway: 10.15.0.1
;Ram size: 128M Flash size: 32M
;Num DSPs: 12 Num DSP channels: 72
;Profile: NONE
;Key features;;Board Type: Mediant 1000;DSP Voice features: ;Channel Type: RTP ATM
PCI DspCh=120 ;Coders: G723 G729 G728 NETCODER GSM-FR GSM-EFR AMR
EVRC-QCELP G727 ILBC EVRC-B AMR-WB G722 H263 H264 MPEG4 EG711 ;Security:
IPSEC MediaEncryption StrongEncryption EncryptControlProtocol ;IP Media: VXML
;E1Trunks=4;T1Trunks=4;Control Protocols: MGCP SIP ;Default features;;Coders: G711
G726;

;----- Mediant-1000 HW components-----
;
; Slot # : Module type : # of ports
;-----
; 1 : FALC56 : 2
; 2 : Empty
; 3 : Empty
; 4 : Empty
; 5 : Empty
; 6 : Empty
;-----

[SYSTEM Params]

TLSVersion = 1

[BSP Params]

PCMLawSelect = 3
TDMBusClockSource = 4
StorageServerNetworkAddress = 255.255.255.255

```

[ATM Params]

[Analog Params]

MinFlashHookTime = 100

[ControlProtocols Params]

AdminStateLockControl = 0

[MGCP Params]

[MEGACO Params]

EP_Num_0 = 0

EP_Num_1 = 1

EP_Num_2 = 0

EP_Num_3 = 0

EP_Num_4 = 0

[PSTN Params]

TraceLevel = 1

TDMBusPSTNAutoClockEnable = 1

ProtocolType_0 = 23

ProtocolType_1 = 0

FramingMethod_0 = D

FramingMethod_1 = 0

LineCode_0 = 0

LineCode_1 = 2

ISDNIBehavior = 1073741824

ISDNGeneralCCBehavior = 32

PSTNReserved3 = 8

[SS7 Params]

[Voice Engine Params]

VoicePromptsFileName = "

FarEndDisconnectSilenceMethod = 0

ECNLPMMode = 1

BrokenConnectionEventTimeout = 3

FaxModemBypassCoderType = 1

DTMFDetectorSensitivity = 1

```
[WEB Params]

HTTPSCipherString = 'RC4:EXP'

[SIP Params]

ISPROXYUSED = 1
SIPDESTINATIONPORT = 5061
RADDEBLEVEL = 2
CHANNELSELECTMODE = 2
RADLOGOUTPUT = 1
GWDEBUGLEVEL = 5
ISDNRXOVERLAP_0 = 1
ISDNRXOVERLAP_1 = 0
ISDNRXOVERLAP_2 = 0
ISDNRXOVERLAP_3 = 0
ISDNRXOVERLAP_4 = 0
ISDNRXOVERLAP_5 = 0
ISDNRXOVERLAP_6 = 0
ISDNRXOVERLAP_7 = 0
ISDNRXOVERLAP_8 = 0
ISDNRXOVERLAP_9 = 0
ISDNRXOVERLAP_10 = 0
ISDNRXOVERLAP_11 = 0
ISDNRXOVERLAP_12 = 0
ISDNRXOVERLAP_13 = 0
ISDNRXOVERLAP_14 = 0
ISDNRXOVERLAP_15 = 0
ISDNRXOVERLAP_16 = 0
ISDNRXOVERLAP_17 = 0
ISDNRXOVERLAP_18 = 0
ISDNRXOVERLAP_19 = 0
DEFAULTNUMBER = 'serveduser'
DISCONNECTONBROKENCONNECTION = 0
ENABLEMWI = 1
ISFAXUSED = 1
TRUNKTRANSFERMODE_0 = 2
TRUNKTRANSFERMODE_1 = 0
TRUNKTRANSFERMODE_2 = 0
TRUNKTRANSFERMODE_3 = 0
TRUNKTRANSFERMODE_4 = 0
TRUNKTRANSFERMODE_5 = 0
TRUNKTRANSFERMODE_6 = 0
TRUNKTRANSFERMODE_7 = 0
TRUNKTRANSFERMODE_8 = 0
TRUNKTRANSFERMODE_9 = 0
```

```
TRUNKTRANSFERMODE_10 = 0
TRUNKTRANSFERMODE_11 = 0
TRUNKTRANSFERMODE_12 = 0
TRUNKTRANSFERMODE_13 = 0
TRUNKTRANSFERMODE_14 = 0
TRUNKTRANSFERMODE_15 = 0
TRUNKTRANSFERMODE_16 = 0
TRUNKTRANSFERMODE_17 = 0
TRUNKTRANSFERMODE_18 = 0
TRUNKTRANSFERMODE_19 = 0
SUBSCRIPTIONMODE = 1
SIPTRANSPORTTYPE = 2
PLAYRBTONE2TRUNK_0 = 0
PLAYRBTONE2TRUNK_1 = -1
PLAYRBTONE2TRUNK_2 = -1
PLAYRBTONE2TRUNK_3 = -1
PLAYRBTONE2TRUNK_4 = -1
PLAYRBTONE2TRUNK_5 = -1
PLAYRBTONE2TRUNK_6 = -1
PLAYRBTONE2TRUNK_7 = -1
PLAYRBTONE2TRUNK_8 = -1
PLAYRBTONE2TRUNK_9 = -1
PLAYRBTONE2TRUNK_10 = -1
PLAYRBTONE2TRUNK_11 = -1
PLAYRBTONE2TRUNK_12 = -1
PLAYRBTONE2TRUNK_13 = -1
PLAYRBTONE2TRUNK_14 = -1
PLAYRBTONE2TRUNK_15 = -1
PLAYRBTONE2TRUNK_16 = -1
PLAYRBTONE2TRUNK_17 = -1
PLAYRBTONE2TRUNK_18 = -1
PLAYRBTONE2TRUNK_19 = -1
MEDIASECURITYPEHAVIOUR = 1
VoiceMailInterface = 6
MWIQSIGMSGCENTRELDIDPARTYNUMBER = '209849'
```

[SCTP Params]

[VXML Params]

[IPsec Params]

[Audio Staging Params]


```
; *** TABLE CoderName ***
[ CoderName ]
FORMAT CoderName_Index = CoderName_Type, CoderName_PacketInterval,
CoderName_rate, CoderName_PayloadType, CoderName_Sce;
CoderName 0 = g711Ulaw64k, 20, 0, 255, 0;
[ \CoderName ]

;
; *** TABLE TrunkGroup ***
[ TrunkGroup ]
FORMAT TrunkGroup_Index = TrunkGroup_TrunkGroupNum, TrunkGroup_FirstTrunkId,
TrunkGroup_FirstBChannel, TrunkGroup_LastBChannel,
TrunkGroup_FirstPhoneNumber, TrunkGroup_ProfileId, TrunkGroup_LastTrunkId,
TrunkGroup_Module;
TrunkGroup 0 = 0, 0, 1, 24, 2000, 0, 0, 1;
[ \TrunkGroup ]

;
; *** TABLE Dns2Ip ***
[ Dns2Ip ]
FORMAT Dns2Ip_Index = Dns2Ip_DomainName, Dns2Ip_FirstIpAddress,
Dns2Ip_SecondIpAddress, Dns2Ip_ThirdIpAddress, Dns2Ip_FourthIpAddress;
Dns2Ip 0 = anonymous.invalid, 10.15.10.7, 0.0.0.0, 0.0.0.0, 0.0.0.0;
[ \Dns2Ip ]

;
; *** TABLE ProxyIp ***
[ ProxyIp ]
FORMAT ProxyIp_Index = ProxyIp_IpAddress, ProxyIp_TransportType,
ProxyIp_ProxySetId;
ProxyIp 0 = 10.15.10.11, -1, 0;
[ \ProxyIp ]

;
; *** TABLE TxDtmfOption ***
[ TxDtmfOption ]
FORMAT TxDtmfOption_Index = TxDtmfOption_Type;
TxDtmfOption 0 = 4;
[ \TxDtmfOption ]

;
; *** TABLE ProxySet ***
[ ProxySet ]
FORMAT ProxySet_Index = ProxySet_EnableProxyKeepAlive,
ProxySet_ProxyKeepAliveTime, ProxySet_ProxyLoadBalancingMethod,
ProxySet_IsProxyHotSwap;
ProxySet 0 = 0, 60, 0, 0;
[ \ProxySet ]
```

SIP

Mediant 1000

Configuration Note

**AudioCodes' Mediant VoIP Gateway and
Avaya's Modular Messaging**

with

Siemens HiPath 4000 using T1 QSIG Interface