



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring the VTMpro Mobile Gateway and Avaya Communication Manager using EC500 with Avaya one-X Mobile Client through an IP (H.323) Trunk - Issue 1.0

Abstract

These Application Notes describe a compliance-tested configuration comprised of the VTMpro Mobile Gateway connected via a H.323 trunk to Avaya Communication Manager using EC500 and Avaya one-X Mobile. The VTMpro Mobile Gateway can augment landline connectivity to Avaya Communication Manager with wireless connectivity to the GSM network. The compliance testing assessed the ability of the VTMpro Mobile Gateway to route inbound/outbound calls to/from Avaya Communication Manager using EC500 and Avaya one-X Mobile Edition.

Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe a compliance-tested configuration comprised of the VTMpro Mobile Gateway with Avaya Communication Manager using EC500 and Avaya one-X Mobile. The VTMpro Mobile Gateway is a gateway that can augment landline connectivity to Avaya Communication Manager with wireless connectivity to the Global System for Mobile Communications (GSM) network. The compliance testing assessed the ability of the VTMpro Mobile Gateway to route outbound/inbound calls from/to Avaya Communication Manager using EC500 and Avaya one-X Mobile Edition. The solution equips Nokia S60 enterprise smart phones with access to Avaya Communication Manager via the Avaya one-X Mobile client, enabling users to be accessible via one business number whether the users are in the office or mobile. Users have access to the same enterprise communication capabilities found in the office such as call pickup, conferencing, transfer, all leveraging the corporate IP network. Avaya one-X Mobile also allows users to switch between personal and business calls, avoiding the need to manually separate the different calls for billing purposes.

1.1. VTMpro Mobile Gateway

The VTMpro Mobile Gateway is a multi-channel gateway that allows enterprises, domestic and international long-distance network operators, local network operators and prepaid card operators to cost-effectively route mobile radio calls on a large scale. The gateway system is connected via, T1 or VoIP. It offers up to 32 GSM, CDMA or 3G channels and can be integrated with a SIM Card Server (SCS). The VTMpro Mobile Gateway has routing software that can be controlled locally or remotely by a graphical user interface. The gateway provides statistics, trace and monitor functions. Call data files for billing can also be created and saved.

1.2. Avaya one-X Mobile Edition

Avaya one-X Mobile Edition lets workers put their office phone in their pocket. The solution enables users to be accessible via one business number and use a single voicemail system whether the users are in the office or mobile. Irrespective of the users work locations, users have access to the same enterprise communication capabilities found in the office such as call pickup, conferencing, and transfer, all leveraging the corporate IP network. The application also allows users to switch between personal and business calls, avoiding the need to manually separate the different calls for billing purposes. Avaya one-X Mobile Edition is specifically designed for Extension to Cellular by providing graphical interfaces on 'common' operating systems for mobile devices. From a mobile/wireless telephony user perspective, the Avaya one-X Mobile Edition product line provides:

- Traditional graphical user experience of the mobile platforms.
- Avaya specified interface themes and metaphors to enhance the user's experience.
- A dedicated graphical user interface for wireless users of Extension to Cellular services by anchoring graphical menus to Feature Name Extensions (FNE's) that previously had to be memorized or placed manually in speed dial lists.

1.3. Hardware Configuration

Figure 1 illustrates a sample configuration consisting of an Avaya S8300 Server, an Avaya G350 Media Gateway, Avaya IP Telephones, VTMpro Mobile Gateway and Nokia 6682 phones. Avaya Communication Manager runs on the Avaya S8300 Server; the solution described herein is also extensible to other Avaya Servers and Media Gateways. The Avaya G350 Media Gateway communicates with the VTMpro Mobile Gateway via a H.323 trunk. The VTMpro Mobile Gateway in turn communicates with the GSM network via Subscriber Identity Module (SIM) cards that reside on GSM boards inserted in the VTMpro Mobile Gateway.

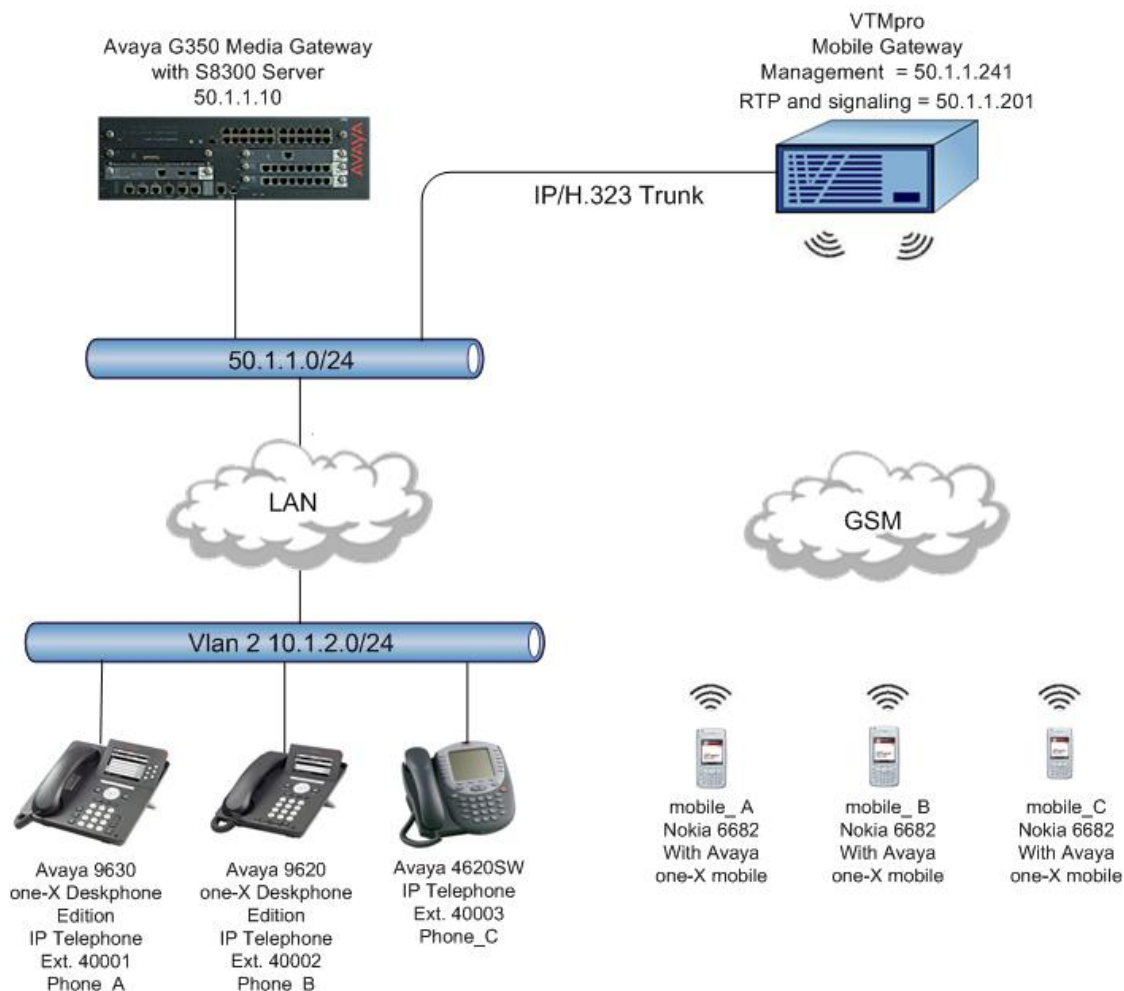


Figure 1: Network Diagram for Avaya Communication Manager and VTMpro Mobile Gateway

2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8300 Server	Avaya Communication Manager 3.1.2
Avaya G350 Media Gateway	25.28.0
Avaya 4620SW IP Telephone	2.5 (H.323)
Avaya 9630 one-X Deskphone Edition IP Telephone	1.1 (H.323)
Avaya 9620 one-X Deskphone Edition IP Telephone	1.1 (H.323)
Avaya one-X Mobile	V3.1.13
VTMpro Mobile Gateway Base Unit	Product Version 1.7.11
VTMpro Mobile Gateway E1/T1 card	SW 284
VTMpro Mobile Gateway GSM card	FW 8.86
VTMpro Mobile Gateway VoIP card	H.323 Stack version 1.17.1
Nokia 6682	Version number or N/A

3. Configure Avaya Communication Manager

This section describes the steps required for Avaya Communication Manager to support the configuration in **Figure 1**. The following pages provide step-by-step instructions on how to administer the required configuration parameters. The assumption is that the appropriate license and authentication files have been installed on the servers and that login and password credentials are available. It is assumed that the reader has a basic understanding of the administration of Avaya Communication Manager and has access to the System Administration Terminal screen. For detailed information on the installation, maintenance, and configuration of Avaya Communication Manager, please consult references 1 thru 8 in Section 10.

3.1. Verify Avaya Communication Manager Licensing

This section presents the **customer-options** forms used by the system. Use these forms to ensure the EC500 options are enabled.

Note: If these options are not set as indicated, contact an Avaya support representative.

At the SAT interface prompt, enter **display system-parameters customer-options** and press **Enter**. The system displays the first page of the form.

The following commands were entered on an Avaya Communication Manager System Access Terminal (SAT).

Step	Description
1.	<p>Issue the command display system-parameters customer-options to display the active licensed features. Go to Page 1 to ensure that the Maximum Off-PBX Telephones - EC500: value is equal to or greater than the number of endpoints projected in the configuration.</p> <pre> display system-parameters customer-options Page 1 of 10 OPTIONAL FEATURES G3 Version: V13 Location: 1 RFA System ID (SID): 1 Platform: 13 RFA Module ID (MID): 1 USED Platform Maximum Ports: 900 80 Maximum Stations: 450 29 Maximum XMOBILE Stations: 0 0 Maximum Off-PBX Telephones - EC500: 100 0 Maximum Off-PBX Telephones - OPS: 100 21 Maximum Off-PBX Telephones - SCCAN: 0 0 </pre>

Step	Description
2.	<p>Issue the command display system-parameters customer-options to display the active licensed features. Go to Page 4 to ensure that the Enhanced EC500 and Enhanced Conferencing values are set to y.</p> <pre> display system-parameters customer-options Page 4 of 10 OPTIONAL FEATURES Emergency Access to Attendant? y IP Stations? y Enable 'dadmin' Login? y Internet Protocol (IP) PNC? n Enhanced Conferencing? y ISDN Feature Plus? n Enhanced EC500? y ISDN Network Call Redirection? n Enterprise Survivable Server? n ISDN-BRI Trunks? n Enterprise Wide Licensing? n ISDN-PRI? y ESS Administration? n Local Survivable Processor? n Extended Cvg/Fwd Admin? n Malicious Call Trace? n External Device Alarm Admin? n Media Encryption Over IP? n Five Port Networks Max Per MCC? n Mode Code for Centralized Voice Mail? n Flexible Billing? n </pre>

3.1. IP Codec Set and IP Network Region

Step	Description
1.	<p>Enter the change ip-codec-set g command, where “g” is a number between 1 and 7, inclusive, and enter “G.711MU” for Audio Codec. Note that the Audio Codec and Packet Size must match the corresponding configuration on the VTMpro Mobile Gateway (see Section 5.3 Step 3). G.711 is required because inband DTMF over IP will be used. This IP codec set will be selected later in the IP Network Region form to define which codecs may be used within an IP network region.</p> <pre> change ip-codec-set 1 </pre> <p style="text-align: right;">Page 1 of 2</p> <pre> IP Codec Set Codec Set: 1 Audio Silence Frames Packet Codec Suppression Per Pkt Size(ms) 1: G.711MU n 2 20 2: </pre>

Step	Description
2.	<p>Enter the change ip-network-region h command, where “h” is a number between 1 and 250, inclusive. On page 1 of the ip-network-region form, set Codec Set to the number of the IP codec set configured in Step 1.</p> <pre> change ip-network-region 1 </pre> <p style="text-align: right;">Page 1 of 19</p> <pre> IP NETWORK REGION Region: 1 Location: 1 Authoritative Domain: dev4.com Name: 1 MEDIA PARAMETERS Intra-region IP-IP Direct Audio: yes Codec Set: 1 Inter-region IP-IP Direct Audio: yes UDP Port Min: 2048 IP Audio Hairpinning? n UDP Port Max: 3329 DIFFSERV/TOS PARAMETERS RTCP Reporting Enabled? y Call Control PHB Value: 46 RTCP MONITOR SERVER PARAMETERS Audio PHB Value: 46 Use Default Server Parameters? y Video PHB Value: 26 802.1P/Q PARAMETERS Call Control 802.1p Priority: 6 Audio 802.1p Priority: 6 Video 802.1p Priority: 5 AUDIO RESOURCE RESERVATION PARAMETERS H.323 IP ENDPOINTS RSVP Enabled? n H.323 Link Bounce Recovery? y Idle Traffic Interval (sec): 20 Keep-Alive Interval (sec): 5 Keep-Alive Count: 5 </pre>

3.2. Trunks and Signaling Groups to VTMpro Mobile Gateway

Step	Description
1.	<p>Enter the change node-names ip command. Specify node names and IP addresses. For the VTMpro Mobile Gateway, enter its management IP address.</p> <pre> change node-names ip Page 1 of 1 Name IP Address IP NODE NAMES Name IP Address SES 50 .1 .1 .50 default 0 .0 .0 .0 msgserver 50 .1 .1 .20 procr 50 .1 .1 .10 VTMpro 50 .1 .1 .241 </pre>

Step	Description
2.	<p>Enter the add trunk-group i command, where “i” is an available trunk group number. On Page 1 of the trunk-group form, configure the following:</p> <ul style="list-style-type: none"> • Group Type – set to isdn • Group Name – enter a meaningful name/description. • TAC – enter a Trunk Access Code that is valid under the provisioned dial plan. • Carrier Medium – set to H.323 • Service Type – set to tie <pre> add trunk-group 44 Page 1 of 21 TRUNK GROUP Group Number: 44 Group Type: isdn CDR Reports: y Group Name: H.323 to VTMpro COR: 1 TN: 1 TAC: 144 Direction: two-way Outgoing Display? n Carrier Medium: H.323 Dial Access? y Busy Threshold: 255 Night Service: Queue Length: 0 Service Type: tie Auth Code? n Member Assignment Method: manual </pre>

Step	Description
3.	<p>Enter the add signaling group j command, where “j” is an available signaling group number. On Page 1 of the signaling-group form, configure the following:</p> <ul style="list-style-type: none"> • Group Type – set to “h.323”. • Trunk Group for Channel Selection – enter the number of the trunk group configured in Step 4. • Near-end Node Name – enter the node name of a local C-LAN board, or “procr” if the local node is an Avaya S8300 Server. • Near-end Listen Port – specify the local listen port, typically 1720. • Far-end Node Name – enter the node name of the VTMpro Mobile Gateway configured in Step 1. • Far-end Listen Port – specify the listen port configured on the VTMpro Mobile Gateway (see Section 4.2 Step 3). • Far-end Network Region – enter the IP network region configured in Section 3.2 Step 2. • DTMF over IP – set to “in-band”. • Direct IP-IP Audio Connections – set to “n”.
	<pre> add signaling-group 44 Page 1 of 5 SIGNALING GROUP Group Number: 44 Group Type: h.323 Remote Office? n Max number of NCA TSC: 0 SBS? n Max number of CA TSC: 0 IP Video? n Trunk Group for NCA TSC: Trunk Group for Channel Selection: 44 Supplementary Service Protocol: a T303 Timer(sec): 10 Near-end Node Name: procr Far-end Node Name: VTMpro Near-end Listen Port: 1720 Far-end Listen Port: 1720 Far-end Network Region: 1 LRQ Required? n Calls Share IP Signaling Connection? n RRQ Required? n Bypass If IP Threshold Exceeded? n H.235 Annex H Required? n DTMF over IP: in-band Direct IP-IP Audio Connections? n IP Audio Hairpinning? n Interworking Message: PROgress DCP/Analog Bearer Capability: 3.1kHz </pre>

Step	Description
4.	<p>Enter the change trunk-group i command, where “i” is the number of the trunk group configured in Step 4. On Page 3 of the trunk-group form, set Send Calling Number to “y”.</p> <pre> change trunk-group 44 TRUNK FEATURES ACA Assignment? n Measured: none Internal Alert? n Maintenance Tests? y Data Restriction? n NCA-TSC Trunk Member: Send Name: n Send Calling Number: y Used for DCS? n Send EMU Visitor CPN? n Suppress # Outpulsing? n Format: public UUI IE Treatment: service-provider Replace Restricted Numbers? n Replace Unavailable Numbers? n Send Connected Number: n Hold/Unhold Notifications? n Modify Tandem Calling Number? n Send UUI IE? y Send UCID? n Send Codeset 6/7 LAI IE? Y </pre>

Step	Description
5.	<p>On Page 5 of the trunk-group form, add one or more trunk members by entering:</p> <ul style="list-style-type: none"> • “ip” for Port, and the number of the signaling group configured in Step 5 for Sig Grp. <pre> change trunk-group 44 TRUNK GROUP Administered Members (min/max): 0/0 Total Administered Members: 0 GROUP MEMBER ASSIGNMENTS Port Name Night Sig Grp 1: ip 2: ip 3: ip 4: ip 5: ip 6: ip </pre>

3.3. Extension Configuration for EC500

In the sample configuration described in these Application Notes, The phone extensions must have the following options set.

Step	Description
1.	<p>Enter change station n, where n is the number of the phone extension where a mobile extension shall be configured. Go to Page 3 and add BUTTON ASSIGNMENTS:</p> <ul style="list-style-type: none"> • ec500 • conf-dsp • no-hld-cnf <pre> change station 40000 Page 3 of 4 STATION SITE DATA Room: Headset? n Jack: Speaker? n Cable: Mounting: d Floor: Cord Length: 0 Building: Set Color: ABBREVIATED DIALING List1: List2: List3: BUTTON ASSIGNMENTS 1: call-appr 5: conf-dsp 2: call-appr 6: no-hld-cnf 3: call-appr 7: 4: ec500 Timer? n 8: </pre>

Step	Description
2.	<p>Enter change off-pbx-telephone station mapping n, where n is the number of the phone extension where a mobile extension shall be configured. Enter the following information:</p> <ul style="list-style-type: none"> • Station Extension = n • Application = EC500 • Phone Number = Phone Number of Cell Phone • Trunk Selection = Trunk used to the VTMpro Mobile Gateway • Configuration Set = 1 <pre> change off-pbx-telephone station-mapping 40000 Page 1 of 2 STATIONS WITH OFF-PBX TELEPHONE INTEGRATION Station Application Dial Phone Number Trunk Configuration Extension Set Prefix Selection Set 30000 EC500 - 7324567899 44 1 - - - </pre>

Step	Description
3.	<p>Enter change feature-access-codes. Add the following:</p> <p>EC500 Self-Administration Access Code: Enhanced EC500 Activation: Deactivation:</p> <p>Note: The FEATURE ACCESS CODE's (FAC) that can be used depends on the dial plan. For more information about individual features, reference, Avaya Feature Description and Implementation for Avaya Communication Manager in Section 9, (555-245-205).</p>
	<pre> change feature-access-codes Page 2 of 5 FEATURE ACCESS CODE (FAC) Contact Closure Pulse Code: Data Origination Access Code: Data Privacy Access Code: Directed Call Pickup Access Code: *23 Directed Group Call Pickup Access Code: Emergency Access to Attendant Access Code: EC500 Self-Administration Access Code: *35 Enhanced EC500 Activation: *38 Deactivation: #38 Enterprise Mobility User Activation: Deactivation: Extended Call Fwd Activate Busy D/A All: Deactivation: Extended Group Call Pickup Access Code: Facility Test Calls Access Code: Flash Access Code: Group Control Restrict Activation: Deactivation: Hunt Group Busy Activation: Deactivation: ISDN Access Code: Last Number Dialed Access Code: *24 Leave Word Calling Message Retrieval Lock: Leave Word Calling Message Retrieval Unlock: </pre>

3.4. Called Party Number Adjustments for Incoming Calls from the VTMpro Mobile Gateway

During compliance testing, the VTMpro Mobile Gateway was configured to require a 10-digit input from the caller, and to forward the call to Avaya Communication Manager with the 10-digit input as the Called Party Number. The 10-digit requirement was imposed only because of the test environment, so that outside callers who dial EC500 Feature Name Extensions (FNEs) would have the same dialing experience as when dialing FNEs via the landline (where outside callers also dialed 10-digit numbers for FNEs). Actual environments may vary. The 10-digit Called Party Numbers received from the VTMpro Mobile Gateway must be adjusted to conform to a valid extension (string and length) in the provisioned dial plan in Avaya Communication Manager. Enter the **change inc-call-handling-trmt trunk-group u** command, where “u” is a trunk group that contains the channels connected to the VTMpro Mobile Gateway. Note that both trunk groups in the compliance-tested configuration contain such channels.

Add an entry with a **Called Len** of “10” and configure **Called Number**, **Del**, and **Insert** as necessary. In the examples below, the entries match incoming 10-digit Called Party Numbers beginning with “73285”, delete the first five digits, and insert no digits.

change inc-call-handling-trmt trunk-group 44					Page	1 of	3
INCOMING CALL HANDLING TREATMENT							
Service/ Feature	Called Len	Called Number	Del	Insert	Per Call CPN/BN	Night Serv	
tie	10	73285		5			
tie							
tie							
tie							
tie							
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3.5. Configure Features Name Extensions

Assign an extensions to a feature within Avaya Communication Manager, this extension is called a Feature Name Extension (FNE). All extensions must fit the dial plan and these extensions are paired with feature access codes (FACs). When a user calls the extension, the feature access code activates the feature. Administer the FACs on the Feature Access Code (FAC) screen. For more information about individual features, see Reference 6 in Section 9. The Idle Appearance Select will be used in **Section 5.5**.

For this compliance test the FNE’s were configured as follows:

change off-pbx-telephone feature-name-extensions					Page	1 of	1
EXTENSIONS TO CALL WHICH ACTIVATE FEATURES BY NAME							
Active Appearance Select: 32001				Idle Appearance Select: 32018			
Automatic Call Back: 32002				Last Number Dialed: 32019			
Automatic Call-Back Cancel: 32003				Malicious Call Trace:			
Call Forward All: 32004				Malicious Call Trace Cancel:			
Call Forward Busy/No Answer: 32005				Off-Pbx Call Enable:			
Call Forward Cancel: 32006				Off-Pbx Call Disable:			
Call Park: 32007				Priority Call: 32911			
Call Park Answer Back: 32008				Send All Calls: 32912			
Call Pick-Up: 32009				Send All Calls Cancel: 32914			
Conference on Answer: 32010				Transfer On Hang-Up: 32026			
Calling Number Block:				Transfer to Voice Mail: 32027			
Calling Number Unblock:				Whisper Page Activation: 32028			
Directed Call Pick-Up: 32013							
Drop Last Added Party: 32014							
Exclusion (Toggle On/Off): 32015							
Extended Group Call Pickup:							
Held Appearance Select: 32017							

4. Configure Avaya one-X Mobile Edition

For installation, maintenance, and configuration of Avaya one-X Mobile Edition, reference Section 9, 10 and 11 .

The extension numbers associated with Feature Name Extensions are configured in the **Options** Menu of the Avaya one-X Mobile Edition application



For illustration purpose only.

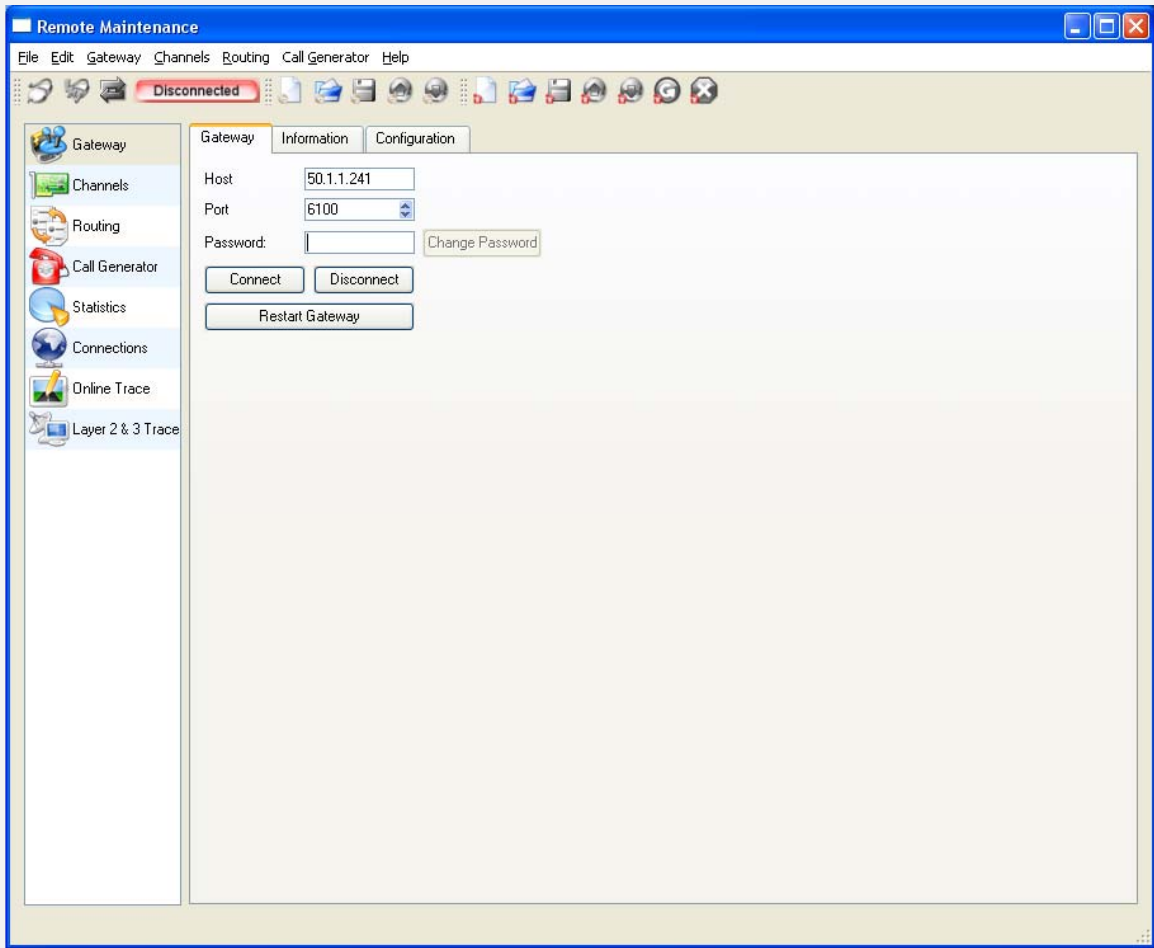
5. Configure the VTMpro Mobile Gateway

This section describes the steps for configuring the GSM boards, SIM cards, T1 ports, and outbound and inbound routing policies on the VTMpro Mobile Gateway. Users should visit <http://www.vna-gateways.com> for specific instructions.

5.1. Connecting to the VTMpro Mobile Gateway

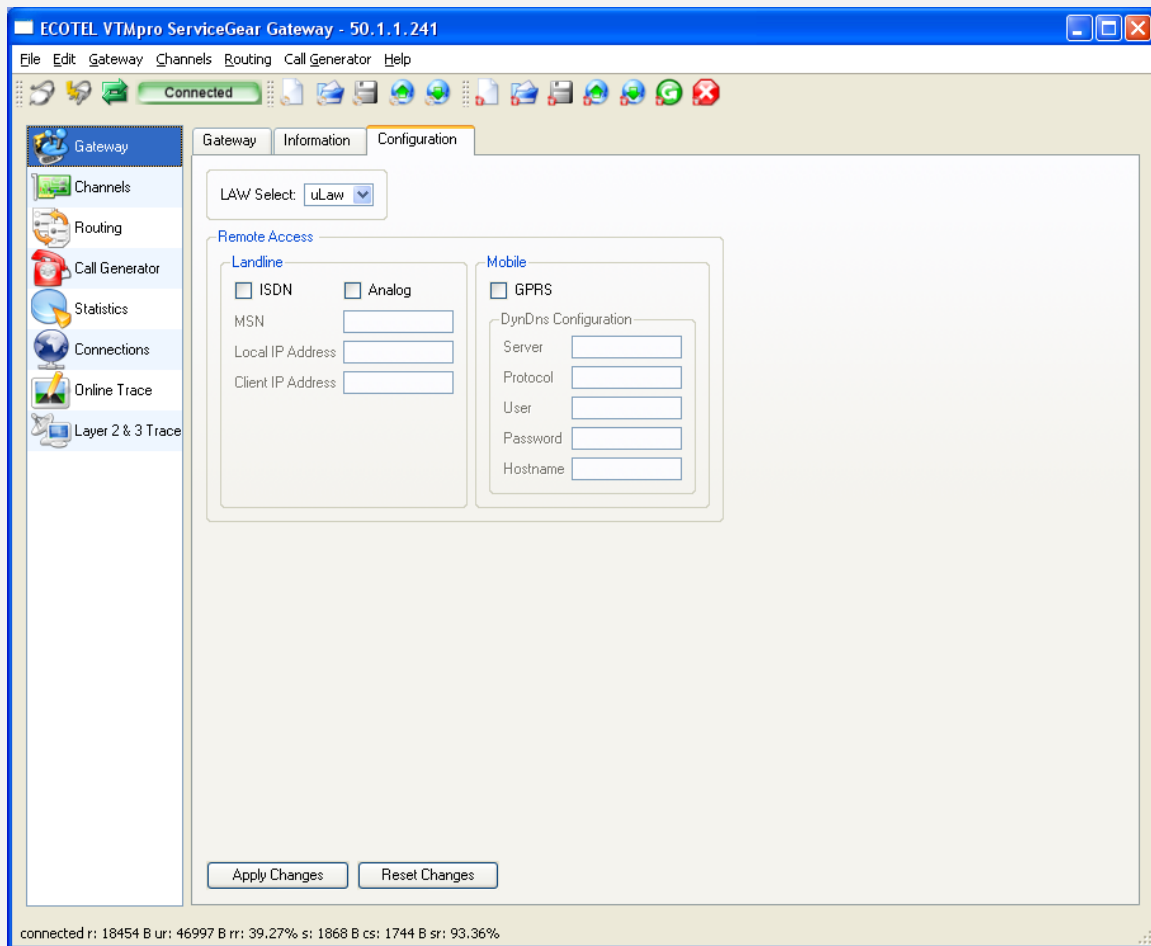
Step	Description
1.	Launch the VTMpro Mobile Gateway Linux or Microsoft Windows application and log in with the appropriate credentials.

5.2. Basic Configuration for use in the U.S.

Step	Description
1.	<p>Select Gateway in the left pane. In the Gateway tab, enter the management IP address of the VTMpro Mobile Gateway in the Host field and, if necessary, enter a Password. Click on Connect.</p>  <p>The screenshot shows the 'Remote Maintenance' application window. The left sidebar contains a tree view with the following items: Gateway (selected), Channels, Routing, Call Generator, Statistics, Connections, Online Trace, and Layer 2 & 3 Trace. The main area has three tabs: Gateway, Information, and Configuration. The 'Gateway' tab is active, displaying fields for Host (50.1.1.241), Port (6100), and Password (empty). There are buttons for 'Connect', 'Disconnect', 'Restart Gateway', and 'Change Password'. The status bar at the top indicates 'Disconnected'.</p>

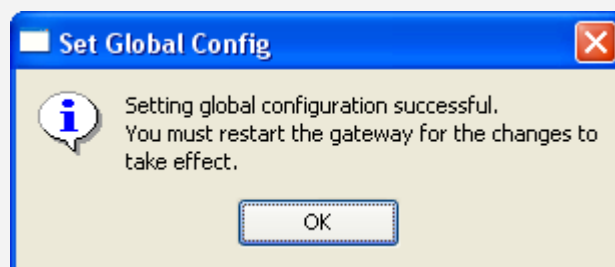
Description

Click on the **Configuration** tab. Select **uLaw** for **LAW Select** and click on **Apply Changes**.



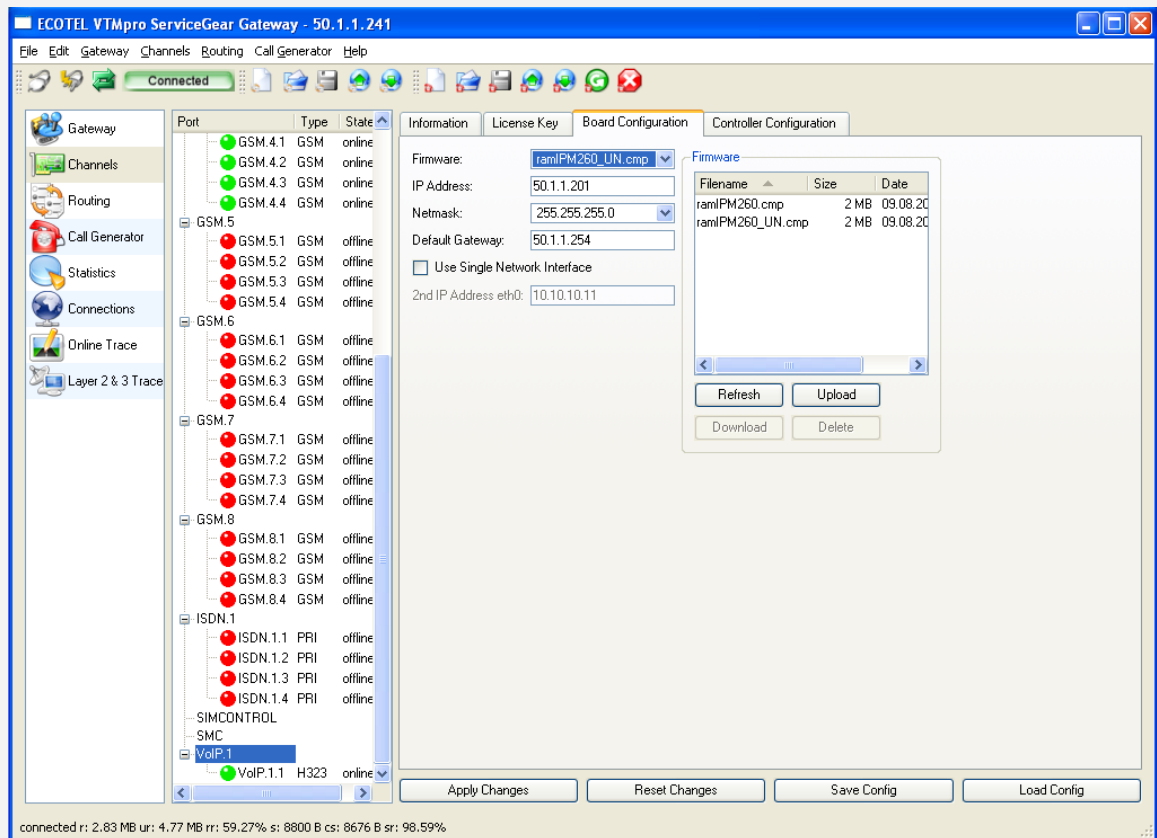
The following information box will appear. Click **OK** to continue.

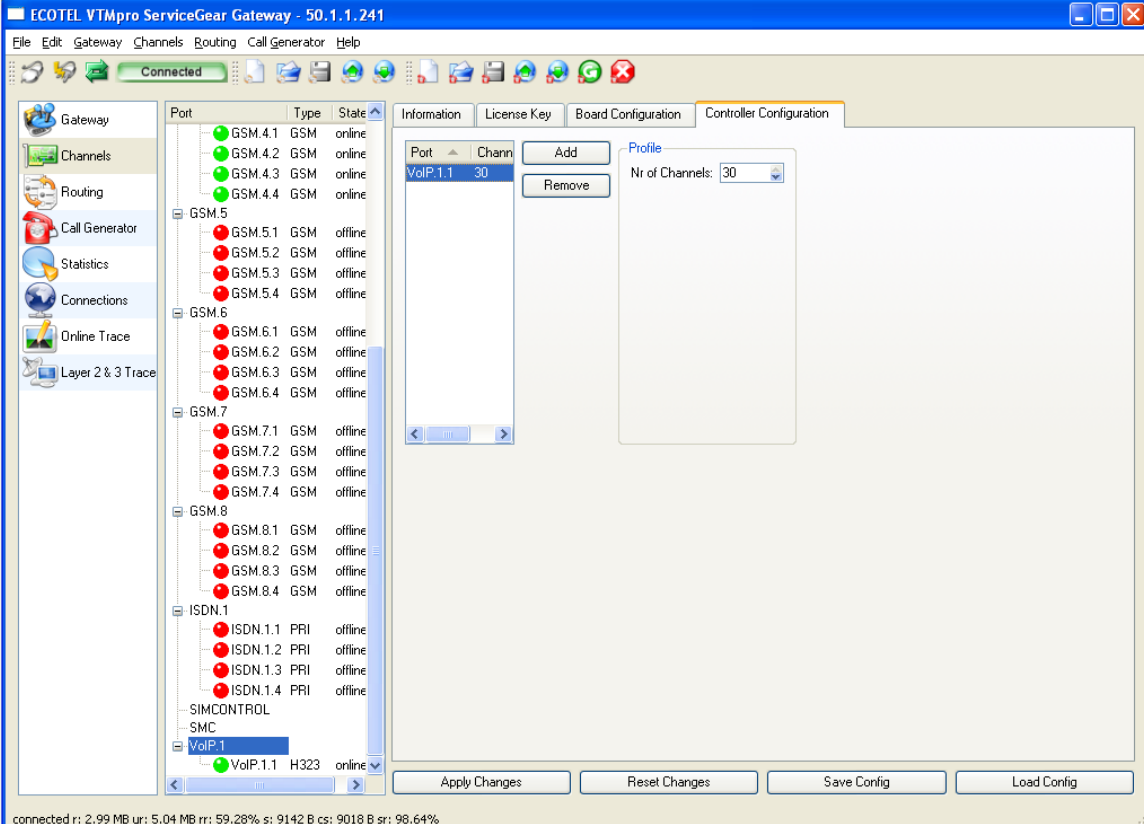
Note: the user can continue with the configuration but has to restart the application before the changes will take affect.

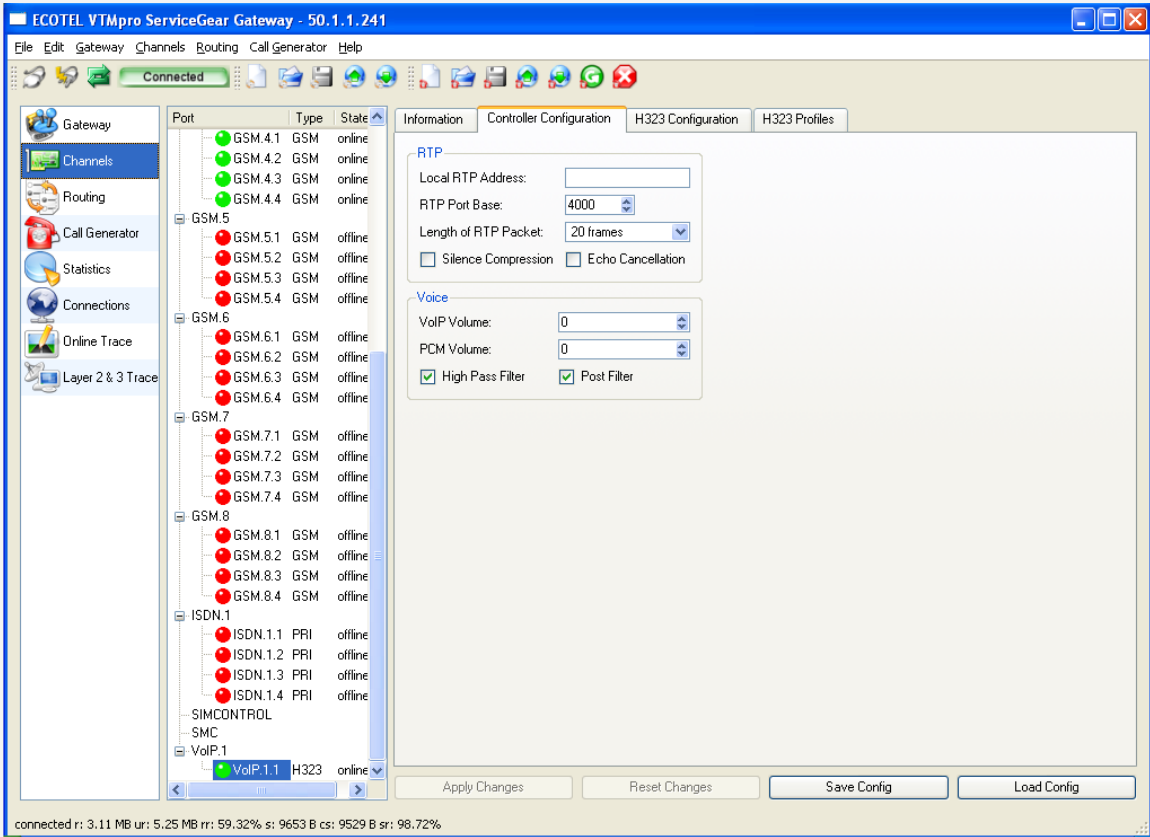


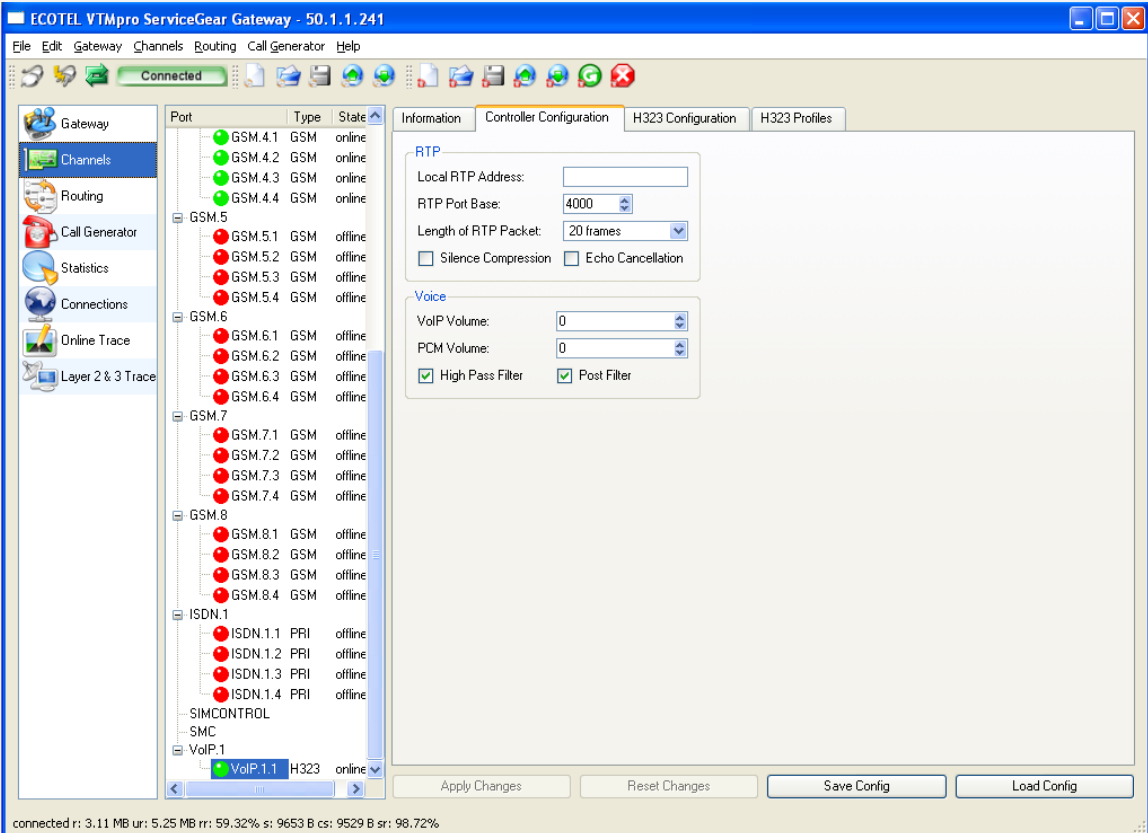
5.3. VoIP (H.323) Configuration

Step	Description
1.	<p>Select “Channels” in the left pane and then a VoIP board. Click on the “Board Configuration” tab. Select Firmware ramIPM260_UN.cmp from the dropdown menu, configure IP Address, Net Mask, and Default Gateway. This IP interface is for RTP traffic. The signaling traffic is handled on the management IP interface.</p>

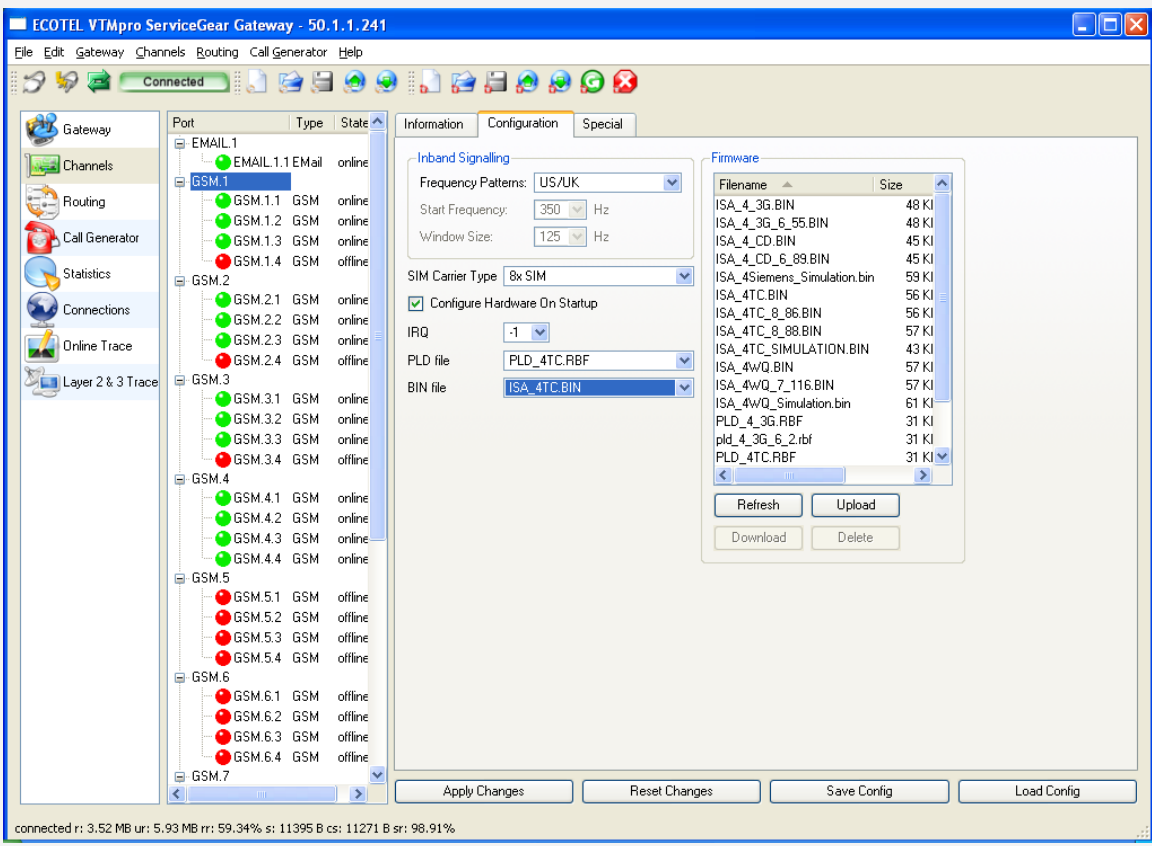


Step	Description
2.	<p>Select Controller Configuration. Verify the port is VoIP.1.1 with 30 channels.</p> 

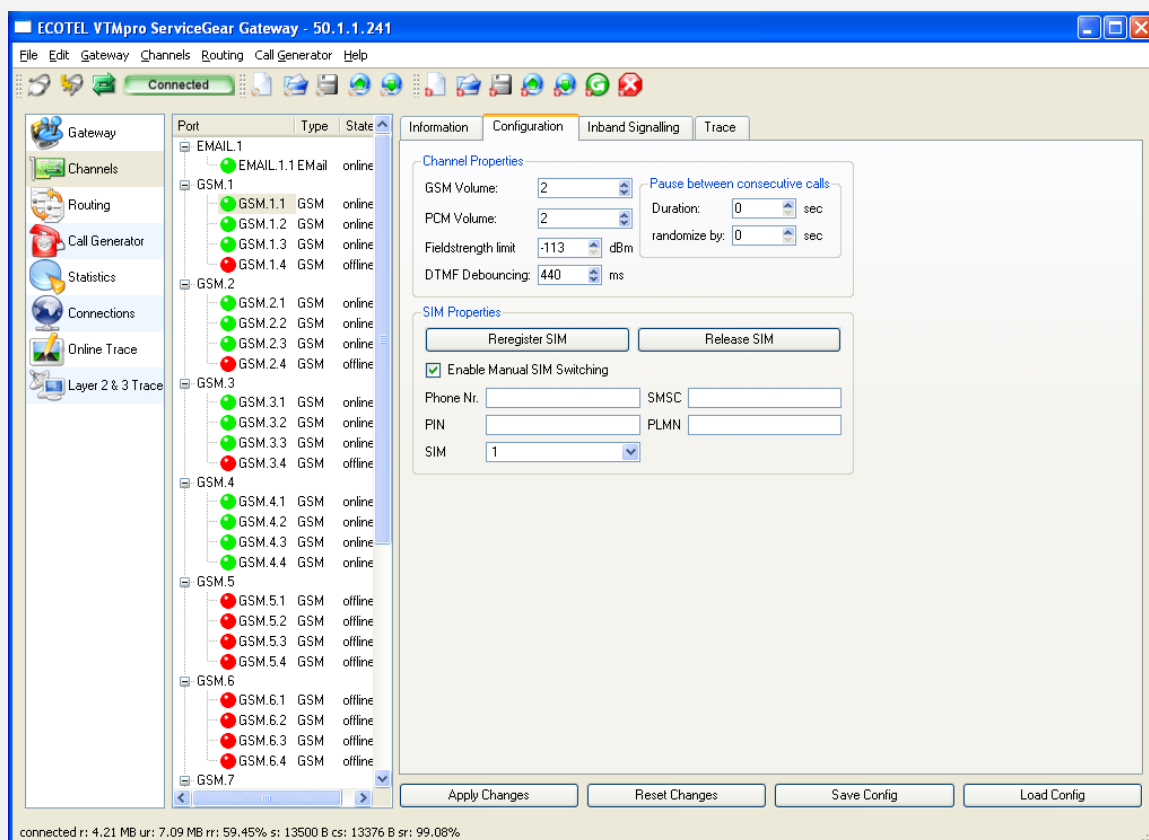
Step	Description
3.	<p>Select VoIP.1→ VoIP.1.1 → Controller Configuration. Ensure that Length of RTP Packet matches the codec configuration on Avaya Communication Manager (see Section 3.1) Click on “Apply Changes”.</p> 

Step	Description
4.	<p>Continue from previous step</p> <p>Select VoIP.1→ VoIP.1.1 → Controller Configuration. Ensure that Length of RTP Packet matches the codec configuration on Avaya Communication Manager (see Section 3.1) Click on “Apply Changes”.</p> <p>Select VoIP.1→ VoIP.1.1→H323 Profiles, select the Idx line. Check Faststart and Tunneling, Set Send DTMF as: Q.931 Keypad.</p> 

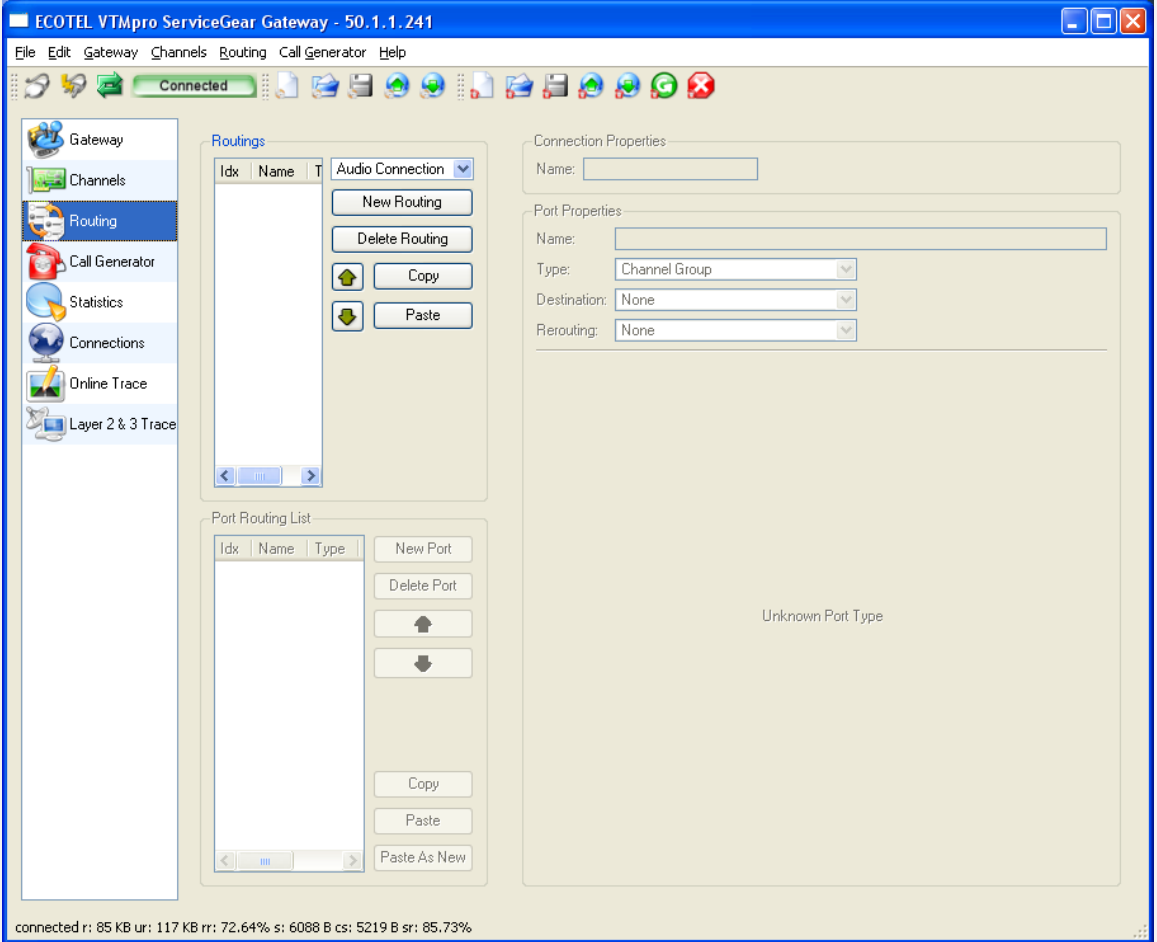
5.4. Configuration of the GSM Interface

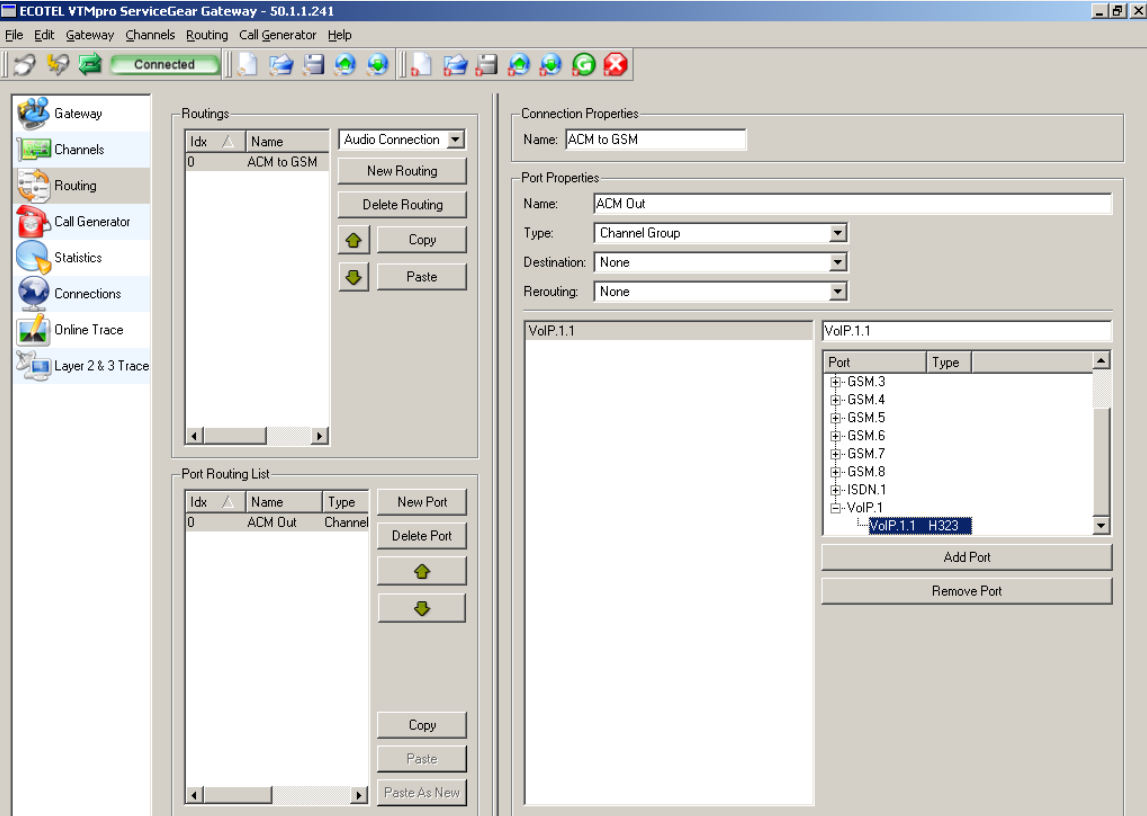
Step	Description
1.	<p>Select Channels → GSM.1 → Configuration. Change Frequency Patterns to US/UK and check the Configure Hardware On Startup checkbox. Change the PLD file to PLD_4TC.RBF and BIN file to ISA_4TC.BIN. Click Apply Changes to continue.</p> <p>Repeat this step for GSM.2 thru GSM.8</p> 

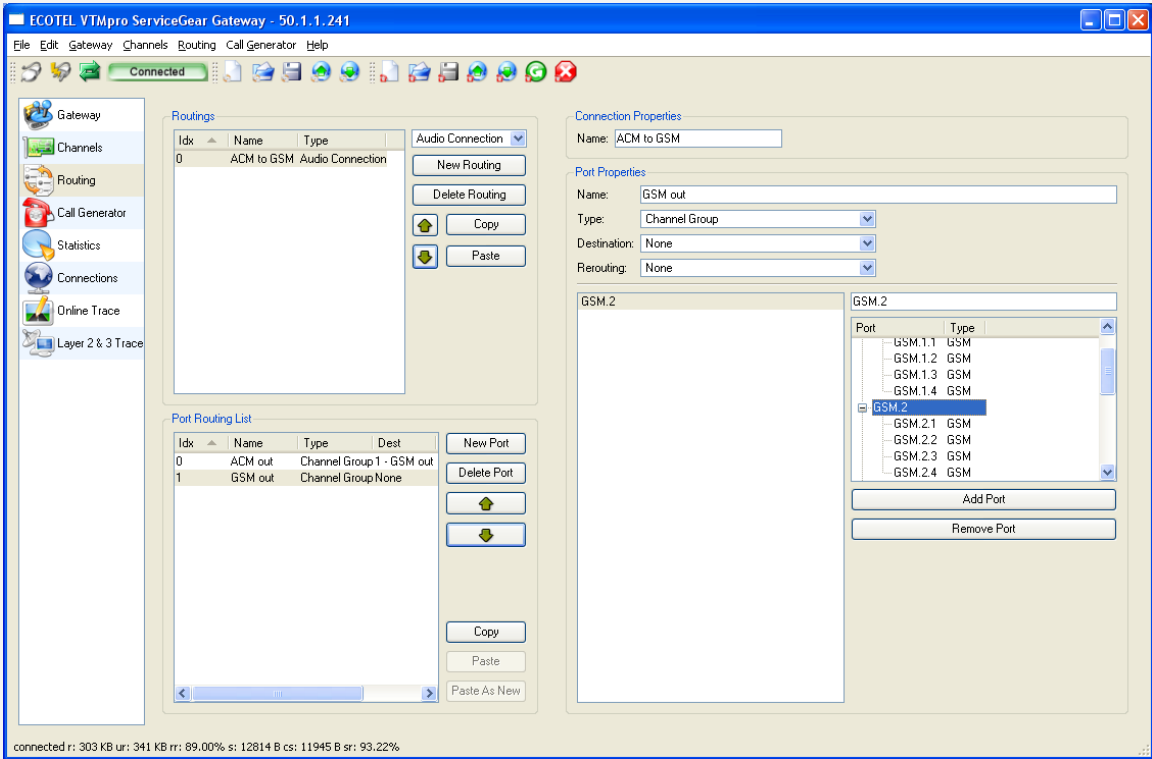
Step	Description
2.	<p>Select Channels→ GSM.1→ GSM.1.1→ Configuration. Under Channel Properties, change DTMF Debouncing to 440. Under SIM Properties, check the Enable Manual SIM Switching checkbox. Click Apply Changes to continue.</p> <p>Repeat this step for GSM.1.2 thru GSM.8.4</p>

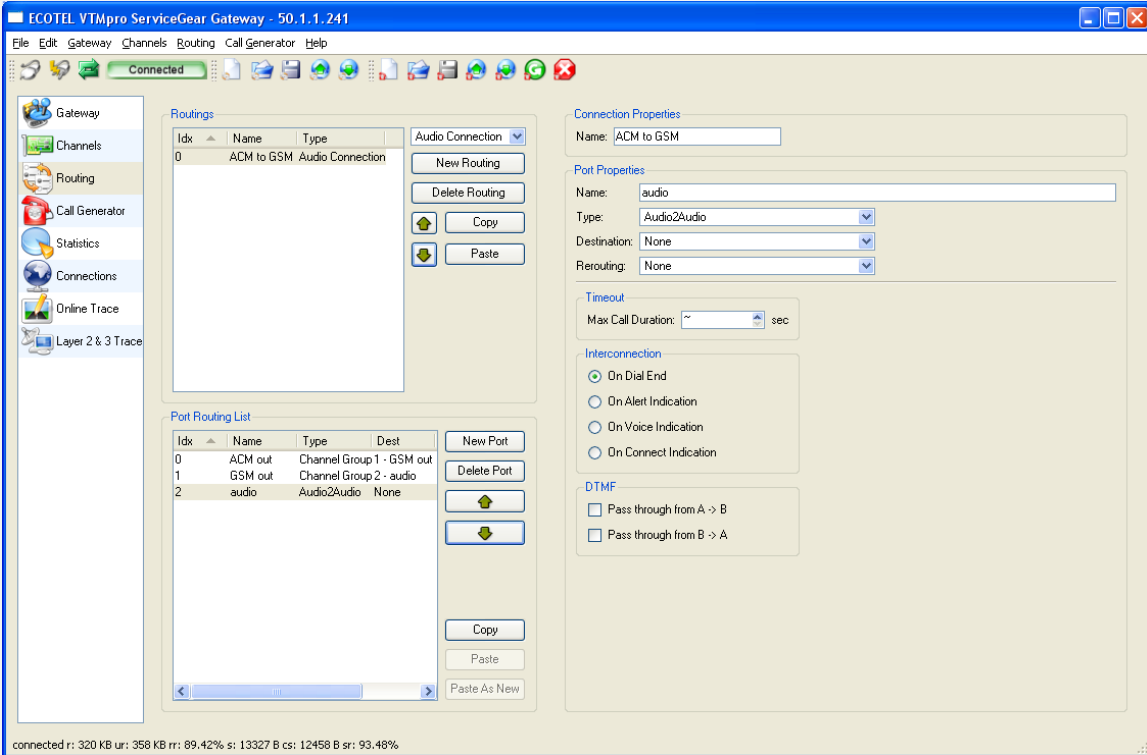



5.5. Routing Configuration for Outbound Calls

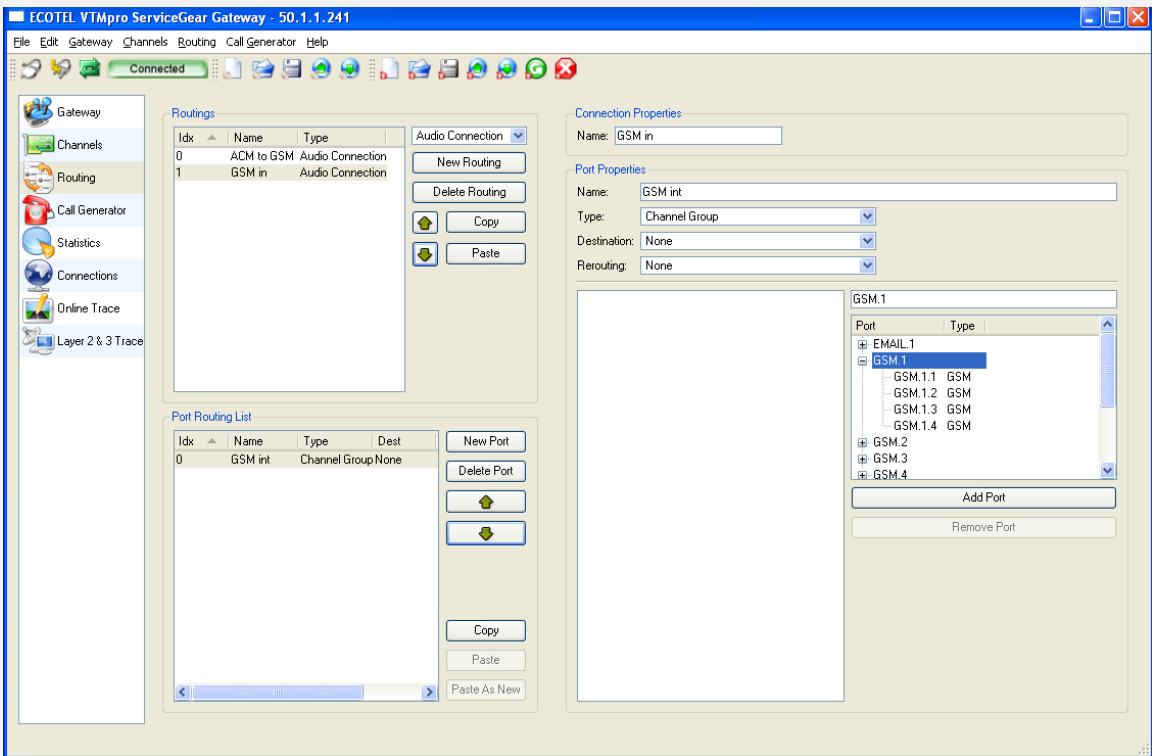
Step	Description
1.	<p>Add routing for calls from Avaya Communication Manager to GSM via ISDN.</p> <p>Select Routing → New Routing. Enter ACM to GSM as the Name under Connection Properties, select New Port under Port Routing List.</p> <p>Note, options will become active as the options are clicked through.</p> 

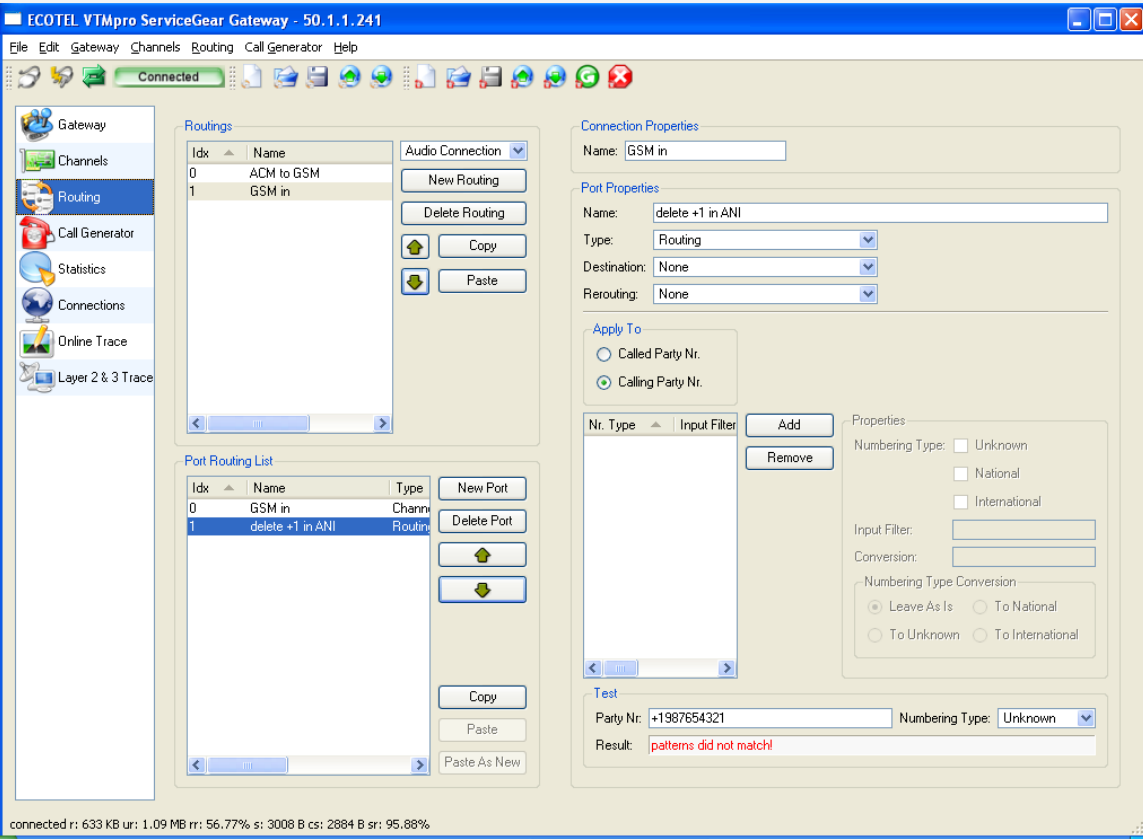
Step	Description
2.	<p>Select the port which is connected to Avaya Communication Manager.</p> <p>Change Port Properties → Name to ACM Out, change Type to Channel Group, click on VoIP.1 → VoIP.1.1 H.323, and then click Add Port.</p>  <p>connected r: 4.44 MB ur: 8.79 MB rr: 50.46% s: 13411 B cs: 13287 B sr: 99.08%</p>

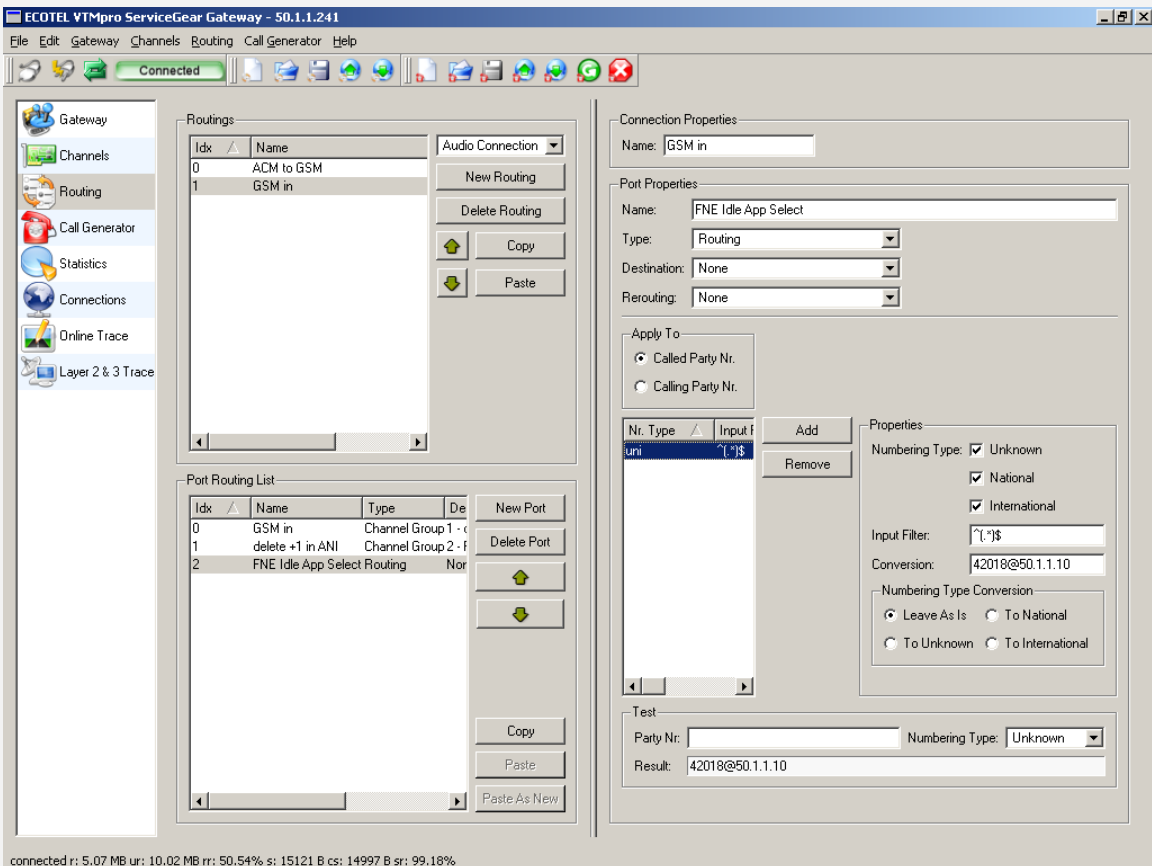
Step	Description
3.	<p>Select Ports for Connection to GSM.</p> <p>Select New Port under Port Routing List, change Port Properties → Name to GSM out, change Type to Channel Group, click on GSM.2, click Add Port.</p> 

Step	Description
<p>4.</p>	<p>Add Audio port.</p> <p>Select New Port and go to Port Properties. Change the port name to audio and change Type to Audio2Audio. Save the configuration to the VTMpro Mobile Gateway by clicking on Routing then Activate (not shown).</p> 
<p>5.</p>	<p>The following information box will appear. Press Ok to continue.</p> 

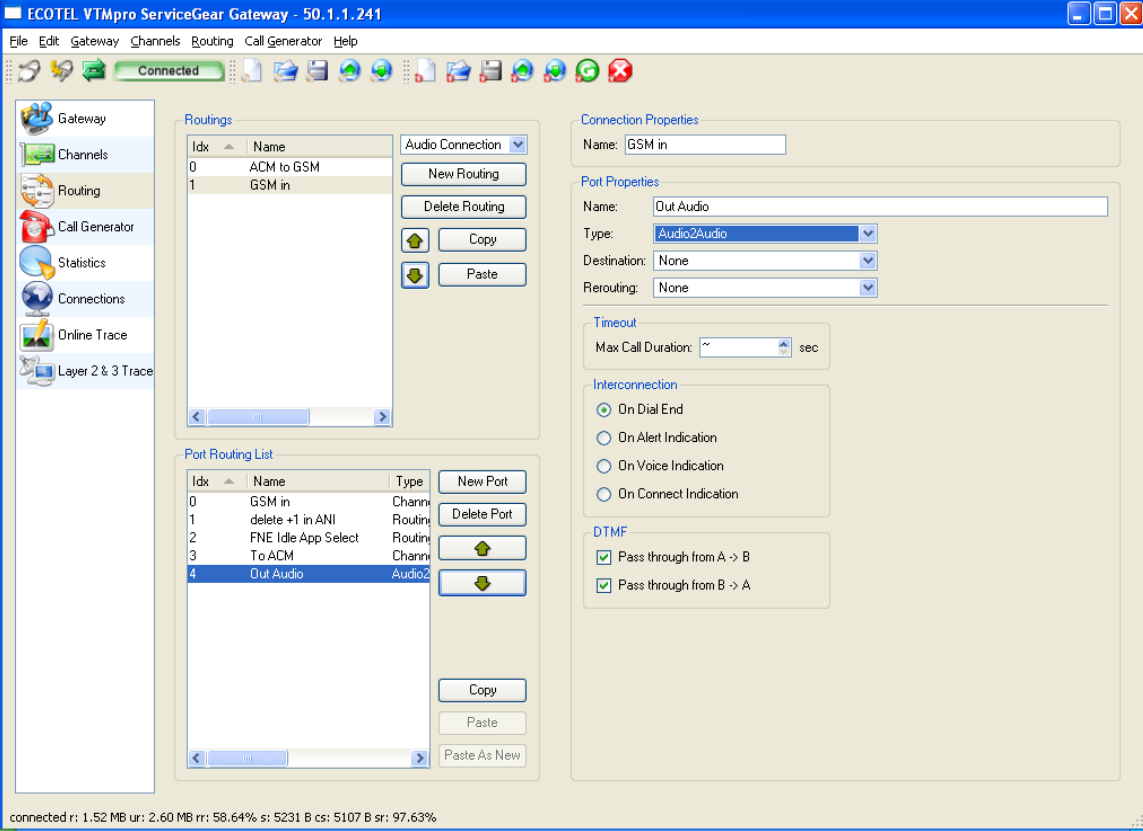
5.6. Routing Configuration for Inbound Calls for the FNE Idle Appearance Select

Step	Description
1.	<p>Configure routing for inbound GSM calls using the FNE Idle Appearance Select.</p> <p>Select New Routing, enter GSM in as the Name under Connection Properties. Click New Port under Port Routing List, enter GSM in as the Name under Port Properties, select Channel Group as the Type, select GSM.1 then click Add Port.</p> <p>Note: The phone number of the SIM-Card from GSM-Channel GSM.1.1 has to be entered in the part Idle Appearance Select.</p>  <p>The screenshot shows the ECOTEL VTMpro ServiceGear Gateway configuration window. The 'Routing' section on the left contains a table with two entries: '0' with name 'ACM to GSM' and type 'Audio Connection', and '1' with name 'GSM in' and type 'Audio Connection'. The 'Port Routing List' section below it contains a table with one entry: '0' with name 'GSM in' and type 'Channel Group'. The 'Connection Properties' section on the right shows 'Name: GSM in'. The 'Port Properties' section shows 'Name: GSM in', 'Type: Channel Group', 'Destination: None', and 'Rerouting: None'. A tree view on the right shows the hierarchy: GSM.1 > EMAIL.1 > GSM.1.1, GSM.1.2, GSM.1.3, GSM.1.4, GSM.2, GSM.3, GSM.4. The 'GSM.1' folder is expanded, and 'GSM.1.1' is selected.</p>

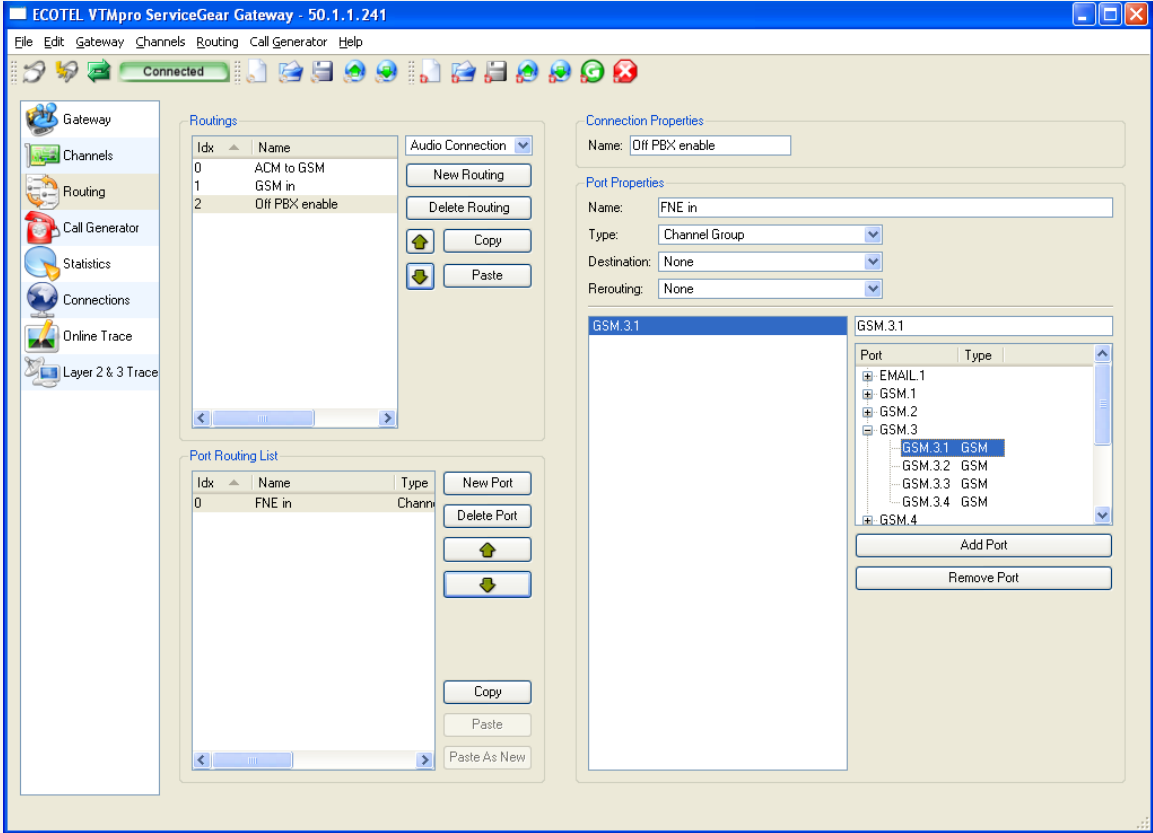
Step	Description
2.	<p>Remove the Country Code from US number.</p> <p>Under Port Routing List select New Port, set Name under Port Properties to delete +1 in ANI, change Type to Routing, select Calling Party Nr. in the Apply To box then click the Add button, change the Input Filter to ^\+?1?(.*)? and set conversion to %0.</p> <p>Note: Options will become active as the options are clicked through.</p> 

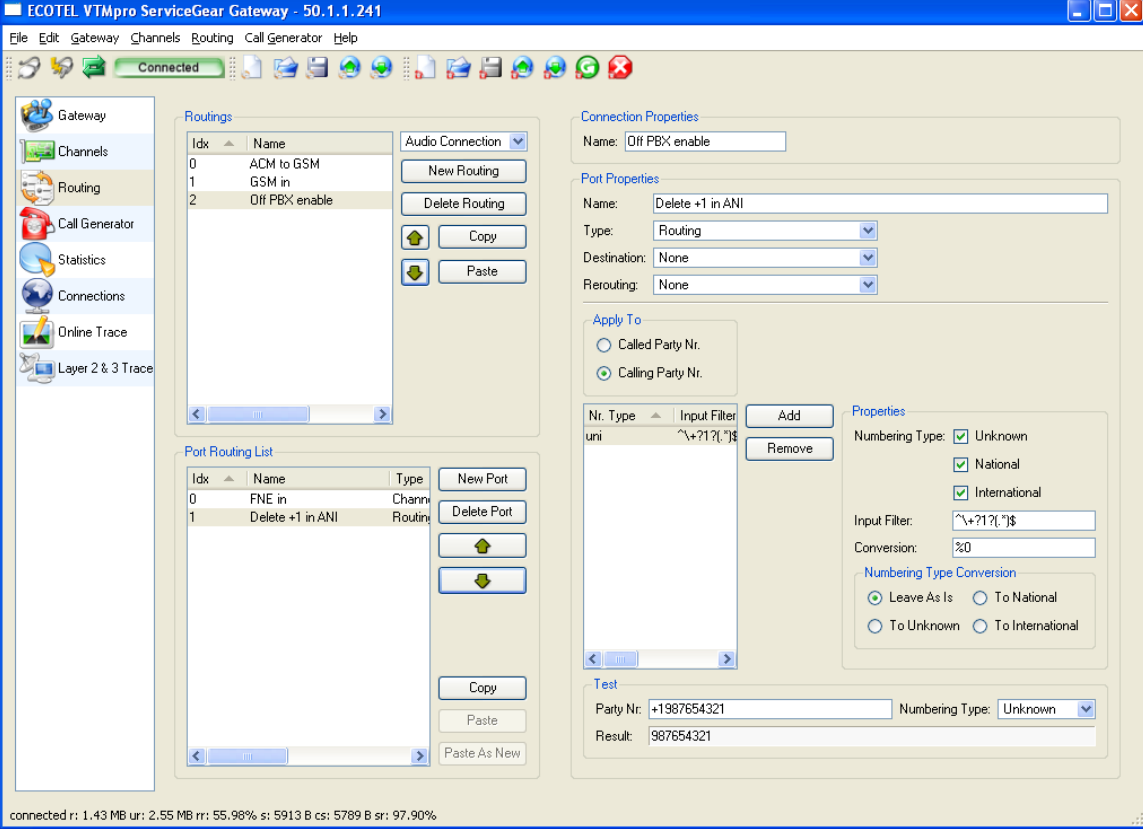
Step	Description
3.	<p>Set the Number for the FNE Idle Appearance Select.</p> <p>Select New Port under Port Routing List, set Name under Port Properties to FNE Idle App Select, change Type to Routing, check Called Party Nr. in the Apply To box, select the Add button, change the Input Filter to ^(.*)? and Conversion to 42018@50.1.1.10. (50.1.1.10 is the IP address of Avaya Communication Manager). See the Idle Appearance Select and change off-pbx-telephone feature-name-extensions in Sections 3 of this document and reference the Administrator Guide for Avaya Communication Manager in Section 9. Set Conversion to <FNE-Number>@<AVAYA IP>.</p>  <p>connected r: 5.07 MB ur: 10.02 MB rr: 50.54% s: 15121 B cs: 14997 B sr: 99.18%</p>

Step	Description
4.	<p>Set connection to Avaya Communication Manager.</p> <p>Press New Port under Port Routing List, set Name under Port Properties to To ACM, change Type to Channel Group, select VoIP.1.1, press the Add Port button.</p> <p>connected r: 5.00 MB ur: 9.89 MB rr: 50.53% s: 15007 B cs: 14883 B sr: 99.17%</p>

Step	Description
5.	<p>Select Routing → GSM in → New Port, set Port Properties name to Out Audio, change Type to Audio2Audio, and select Pass through from A -> B and Pass through from B -> A under DTMF. Save the configuration to the VTMpro Mobile Gateway by clicking on Routing then Activate (not shown)</p>  <p>connected r: 1.52 MB ur: 2.60 MB rr: 58.64% s: 5231 B cs: 5107 B sr: 97.63%</p>

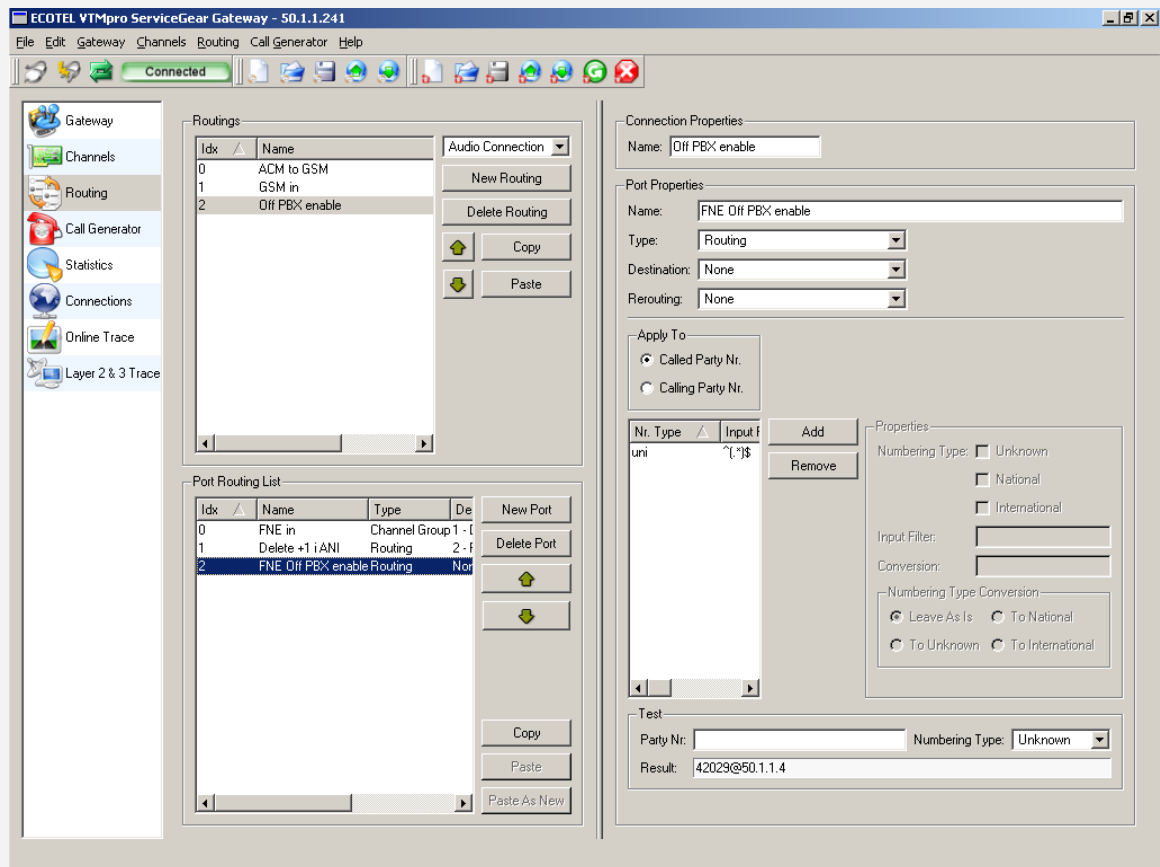
5.7. Routing Configuration for Inbound Calls for the FNE Off PBX enable

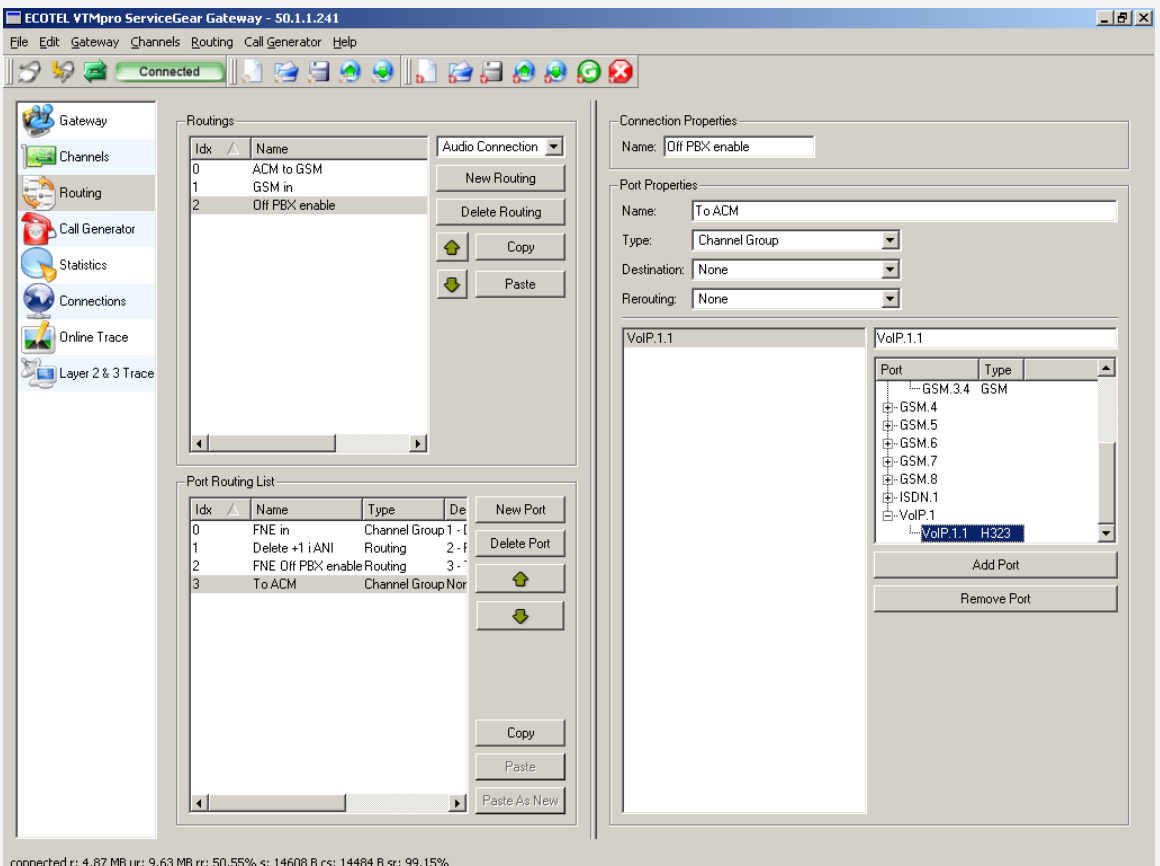
Step	Description
1.	<p>Select Routing → New Routing. Enter Off PBX enable as the Name under Connection Properties. Under Port Routing List, select New Port. Change Port Properties name to FNE in. Change Type to Channel Group, select GSM.3 → GSM.3.1 then click Add Port.</p>  <p>The screenshot displays the ECOTEL VTMpro ServiceGear Gateway interface. On the left, a navigation pane shows 'Gateway', 'Channels', 'Routing', 'Call Generator', 'Statistics', 'Connections', 'Online Trace', and 'Layer 2 & 3 Trace'. The 'Routing' section is active. The 'Routings' table shows three entries: '0 ACM to GSM', '1 GSM in', and '2 Off PBX enable'. The 'Port Routing List' table shows one entry: '0 FNE in'. The 'Port Properties' dialog is open, showing 'FNE in' as the name, 'Channel Group' as the type, and 'GSM.3.1' as the selected port. The 'Add Port' button is visible.</p>

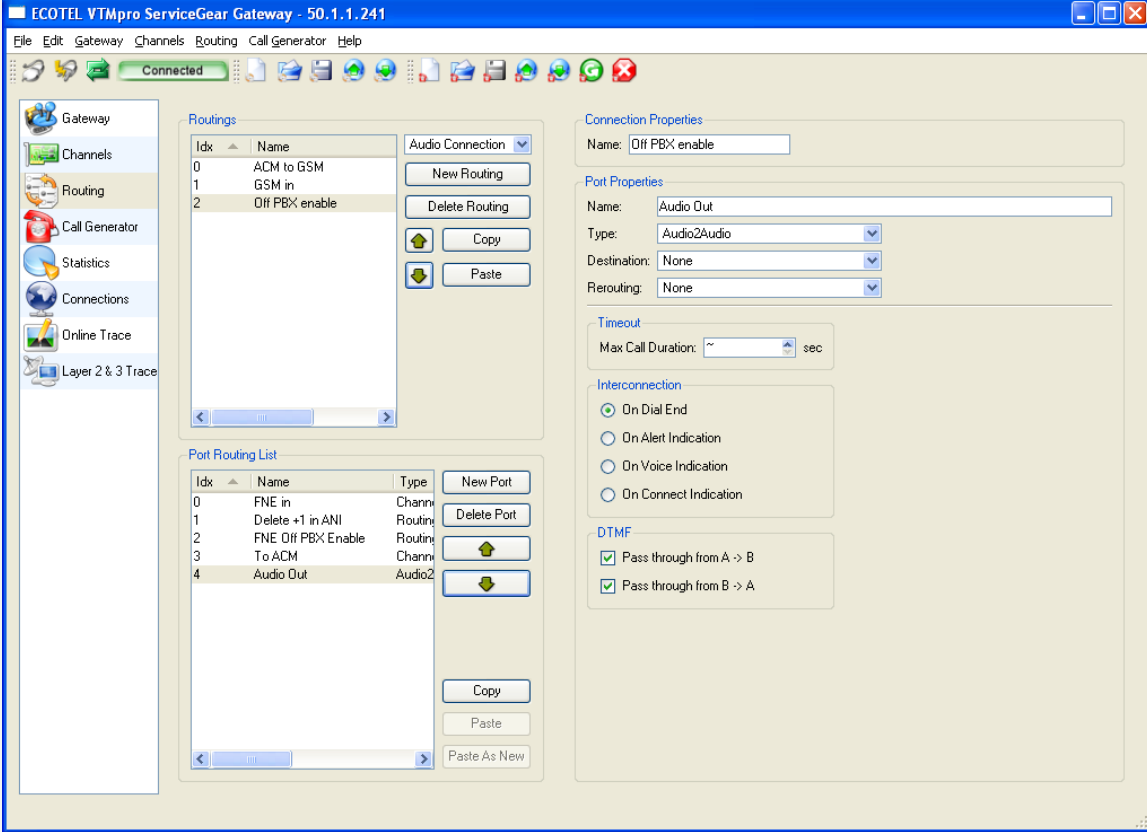
Step	Description
2.	<p>Select Routing → Off PBX enable, under Port Routing List, select New Port, change Port Properties name to Delete +1 in ANI, change Type to Routing, click on Calling Party Nr, press Add to change the Input Filter to ^\+?1?(.*)\$ and set Conversion to %0.</p> 

3. Set the Number for the FNE Off PBX Enable.

Select **New Port** under **Port Routing List**, set **Name** under **Port Properties** to **FNE OFF PBX enable**, change **Type** to **Routing**, check **Called Party Nr.** in the **Apply To** box, select the **Add** button, change the **Input Filter** to **^(.*)?.** See the **Idle Appearance Select** and **change off-pbx-telephone feature-name-extensions** in **Sections 3** of this document and reference the Administrator Guide for Avaya Communication Manager in **Section 9**. Set Conversion to **<FNE-Number>@<AVAYA IP>**.



Step	Description
4.	<p>Select Routing → Off PBX enable, under Port Routing List, select New Port, change Port Properties name to To ACM. Change Type to Channel Group, select VoIP.1 → VoIP.1.1.</p>  <p>connected r: 4.87 MB ur: 9.63 MB rr: 50.55% s: 14608 B cs: 14484 B sr: 99.15%</p>

Step	Description
5.	<p>Select Routing → Off PBX enable, under Port Routing List, select New Port, change Port Properties name to Audio Out, Change Type to Audio2Audio, Select Pass through from A -> B and Pass through from B -> A under DTMF. Save the configuration to the VTMpro Mobile Gateway by clicking on Routing then Activate (not shown).</p> 

6. Interoperability Compliance Testing

Testing was conducted via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab. The general test approach was to verify the integration between Avaya Communication Manager using EC500, Avaya one-X Mobile and the VTMpro Mobile Gateway. The ability to be accessible via one business number whether the users are in the office or mobile by enabling features in the Avaya one-X Mobile Client.

6.1. Feature Name Extensions (FNE) Tested

The following features were tested:

- Active Appearance Select
- Call Forward All
- Call Forward Cancel
- Call Forward Busy/No Answer
- Call Park
- Call Park answer Back
- Conference on Answer
- Idle appearance select
- Off-Pbx Call Enable
- Off-Pbx Call Disable
- Send All Calls
- Send All Calls Cancel
- Transfer On Hang-Up
- Held Appearance Select
- Drop Last Added Party

6.2. General Test Approach

All feature functionality test cases were performed manually. The general test approach entailed verifying the following:

- Enabling and disabling FNE's
- Placing calls between GSM phones
- Placing GSM calls to/from extensions on Avaya Communication Manager

6.3. Test Results

The VTMpro Mobile Gateway was able to route inbound/outbound calls to/from Avaya Communication Manager using EC500 and Avaya one-X Mobile Edition. All FNEs tested worked correctly and were able to switch from one to the other.

7. Verification Steps

This section provides the steps for verifying the Avaya Communication Manager, EC500, Avaya one-X Mobile Client and VTMpro Mobile Gateway in the Avaya/ VTMpro Mobile Gateway solution.

- Verify that enabling and disabling FNE's worked properly.
- Enable EC500 and verify that the call is being bridged to the cell phone.
- Place calls between GSM phones.
- Place GSM calls to extensions on/off of Avaya Communication Manager.

8. Conclusion

These Application Notes describe the configuration steps required for integrating the VTMpro Mobile Gateway over an H.323 Trunk into an Avaya Communication Manager solution using EC500 and Avaya one-X Mobile Client. For the configuration described in these Application Notes, the VTMpro Mobile Gateway was responsible for bridging landline connectivity to Avaya Communication Manager with the wireless connectivity to the GSM network. The functionality of the Avaya/ VTMpro Mobile Gateway solution was validated via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab. All feature functionality test cases passed.

9. Additional References

This section references the Avaya and VTMpro Mobile Gateway product documentation that are relevant to these Application Notes.

Product documentation for Avaya products may be found at <http://support.avaya.com>.

1. *Administrator Guide for Avaya Communication Manager*, Doc # 03-300509, Issue 3.1, February 2007
2. *Avaya Communication Manager Advanced Administration Quick Reference*, Doc # 03-300364, Issue 3, February 2007
3. *Administration for Network Connectivity for Avaya Communication Manager*, Doc # 555-233-504, Issue 12, February 2007
4. *Avaya IP Telephony Implementation Guide*, May 1, 2006
5. *Avaya EC500 Extension to Cellular Release 2 User Guide*, Issue 1, July, 2001 (210-100-700)
6. *Avaya Feature Description and Implementation for Avaya Communication Manager* (555-245-205)
7. *Avaya EC500 Extension to Cellular Release 4 Installation and Administration Guide*, Issue 4, July 2002 (210-100-500) Comcode 700211204
8. *Avaya EC500 Release 3 Extension to Cellular Installation and Administration Guide*, Issue 3, December 2001 (210-100-500) Comcode 700211204
9. *Avaya EC500 Release 2 Extension to Cellular Installation and Administration Guide*, Issue 2, July 2001 (210-100-500)
10. *Avaya EC500 Extension to Cellular Installation/Administration Guide*, Issue 1, February 8, 2001 (210-100-500)
11. *Avaya one-X Mobile Edition for Series 60 User Documentation Document Version 1.5* (16-601288)
12. *Avaya one-X Mobile Edition Version 3.1 - Software Downloads*
13. *Supported Avaya one-X Mobile Phones*: <http://support.avaya.com/elmodocs2/mobile>

The VTMpro Mobile Gateway product documentation can be found at:
<http://www.vna-gateways.com>

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