



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring QuesCom 400 IP/GSM Gateway with Avaya Communication Manager and Avaya SIP Enablement Services – Issue 1.0

Abstract

These Application Notes describe a compliance-tested configuration using a QuesCom 400 IP/GSM gateway, Avaya Communication Manager, and Avaya SIP Enablement Services. The QuesCom 400 IP/GSM is an IP-GSM gateway, supporting outgoing and incoming GSM calls. All GSM calls made from Avaya Communications Manager will be routed via the SIP Enablement Services server to the QuesCom 400 IP/GSM gateway to the GSM network. The QuesCom 400 IP/GSM can also receive calls from the GSM network and route the calls to Avaya SIP Enablement Services.

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 using a QuesCom 400 IP/GSM gateway, Avaya Communication Manager 3.1, and Avaya SIP Enablement Services (SES) 3.1.

The QuesCom 400 IP/GSM is an IP-GSM gateway, supporting outgoing and incoming GSM calls. All GSM calls made from Avaya Communications Manager will be routed via the Avaya SES to the QuesCom 400 IP/GSM gateway to the GSM network. The QuesCom 400 IP/GSM can also receive calls from the GSM network and route the calls to the Avaya SES. The QuesCom 400 IP/GSM can provide a backup route for the PSTN and also be backed up by the PSTN. This can be configured in Avaya Communication Manager using Automatic Route Selection (ARS). These Application Notes focus on a configuration where a SIP trunk connects Avaya SIP Enablement Services and the QuesCom 400 IP/GSM.

Avaya Communication Manager runs on the Avaya S8500 Media Server; the solution described herein is also extensible to other Avaya Media Servers and Media Gateways. The Avaya G650 Media Gateway is connected to the PSTN via an E1 ISDN-PRI line. The Avaya SIP Enablement Services server is networked with Avaya Communication Manager and the QuesCom 400 via SIP trunking. The QuesCom in turn connects to the GSM network via Subscriber Identity Module (SIM) cards that reside on GSM boards inserted in the QuesCom 400 IP/GSM.

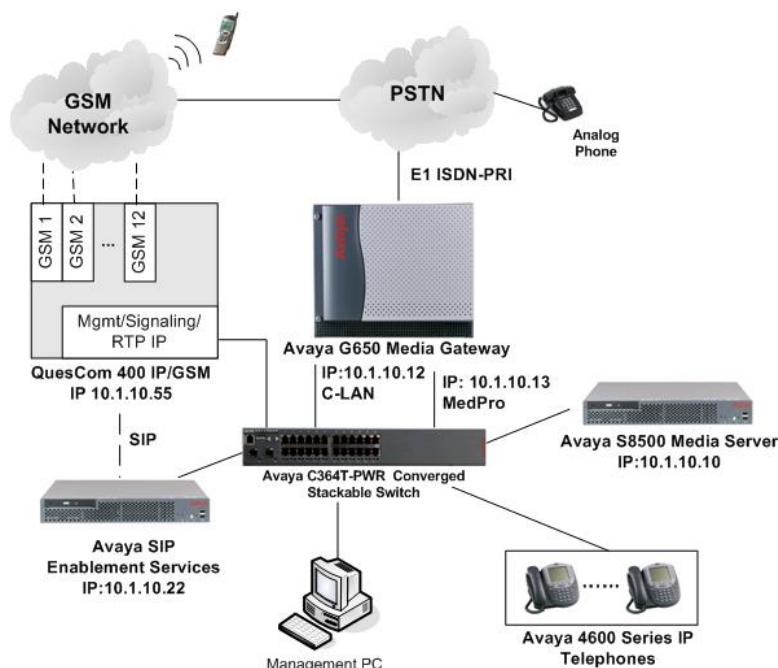


Figure 1: Avaya Communication Manager and Avaya SIP Enablement Services with QuesCom IP/GSM 400

2. Equipment and Software Validated

Equipment	Software
Avaya S8500 Media Server – Avaya Communication Manager	3.1.2 (03.1-01.0.632.1)
Avaya SIP Enablement Services	3.1(18)
Avaya C364T-PWR Converged Stackable Switch	4.3.12
Avaya 4620SW IP Telephones	2.2.3 (H.323)
Avaya G650 Media Gateway	-
TN2312BP IP Server Interface	30
TN799DP C-LAN Interface	17
TN2302AP IP Media Processor	110
TN464CP DS1 Interface	18
QuesCom 400 IP/GSM Additional patch	IAD04.20 B029 P006 SIP.dll version 4.20.017

3. Configure Avaya Communication Manager

Basic configuration of Avaya Communication Manager and Avaya SIP Enablement Services are beyond the scope of these Application Notes. See Section 10 for Avaya documentation references. The steps in this section verify the SIP trunks between Avaya Communication Manager and the Avaya SES. The steps are performed from the System Access Terminal (SAT) interface.

3.1. PSTN E1 ISDN-PRI

This section displays the PSTN E1 ISDN-PRI configuration on Avaya Communication Manager in the sample configuration of **Figure 1**. See Section 10 for Avaya documentation references.

Step	Description
1.	<p>Enter display ds1 <board location> to display the PSTN DS1 Circuit Pack configuration.</p> <pre>display ds1 01A12 DS1 CIRCUIT PACK Location: 01A12 Name: PRI to BT Bit Rate: 2.048 Line Coding: hdb3 Signaling Mode: isdn-pri Connect: network TN-C7 Long Timers? n Country Protocol: etsi Interworking Message: PROGRESS Protocol Version: b Interface Companding: alaw CRC? y Idle Code: 01010100 DCP/Analog Bearer Capability: 3.1kHz T303 Timer(sec): 4 Slip Detection? n Near-end CSU Type: other</pre>

Step	Description
2.	<p>Enter display trunk-group <number> to display the PSTN trunk-group configuration.</p> <div> display trunk-group 19 Page 1 of 22 </div> <div> TRUNK GROUP </div> <div> Group Number: 19 Group Type: isdn CDR Reports: y Group Name: PRI to BT COR: 1 TN: 1 TAC: 719 Direction: two-way Outgoing Display? n Carrier Medium: PRI/BRI Dial Access? y Busy Threshold: 255 Night Service: Queue Length: 0 Service Type: public-ntwrk Auth Code? n TestCall ITC: rest Far End Test Line No: TestCall BCC: 4 </div> <div> display trunk-group 19 Page 2 of 22 </div> <div> Group Type: isdn </div> <div> TRUNK PARAMETERS Codeset to Send Display: 6 Codeset to Send National IEs: 6 Max Message Size to Send: 260 Charge Advice: none Supplementary Service Protocol: a Digit Handling (in/out): enbloc/overlap Trunk Hunt: cyclical QSIG Value-Added? n Digital Loss Group: 13 Incoming Calling Number - Delete: Insert: Format: Bit Rate: 1200 Synchronization: async Duplex: full Disconnect Supervision - In? y Out? n Answer Supervision Timeout: 0 </div> <div> display trunk-group 19 Page 3 of 22 </div> <div> TRUNK FEATURES ACA Assignment? n Measured: both Wideband Support? n Maintenance Tests? y Data Restriction? n NCA-TSC Trunk Member: Send Name: n Send Calling Number: y Send EMU Visitor CPN? n Used for DCS? n Suppress # Outpulsing? y Format: public Outgoing Channel ID Encoding: preferred UII IE Treatment: shared Maximum Size of UII IE Contents: 128 Replace Restricted Numbers? n Replace Unavailable Numbers? n Send Connected Number: y Hold/Unhold Notifications? y Modify Tandem Calling Number? n BSR Reply-best DISC Cause Value: 31 Dsl Echo Cancellation? n Send UII IE? y Send UCID? n Send Codeset 6/7 LAI IE? y Apply Local Ringback? n US NI Delayed Calling Name Update? n Network (Japan) Needs Connect Before Disconnect? n </div>

Step	Description
	<pre> display trunk-group 19 Page 6 of 22 TRUNK GROUP Administered Members (min/max): 1/5 GROUP MEMBER ASSIGNMENTS Total Administered Members: 5 Port Code Sfx Name Night Sig Grp 1: 01A1201 TN2464 C 2: 01A1202 TN2464 C 3: 01A1203 TN2464 C 4: 01A1204 TN2464 C 5: 01A1205 TN2464 C </pre>
3.	<p>Enter display signaling-group <number> to display the PSTN signaling-group configuration.</p> <pre> display signaling-group 19 Page 1 of 5 SIGNALING GROUP Group Number: 19 Group Type: isdn-pri Associated Signaling? y Max number of NCA TSC: 5 Primary D-Channel: 01A1216 Max number of CA TSC: 5 Trunk Group for NCA TSC: 19 Trunk Group for Channel Selection: 19 X-Mobility/Wireless Type: NONE Supplementary Service Protocol: a </pre>

3.2. SIP Trunks and Signaling Groups

The steps in this section verify the SIP trunk between Avaya Communication Manager and Avaya SIP Enablement Services.

Step	Description
1.	<p>Enter the change node-names ip command. Specify node name and IP address for the QuesCom 400. The node names and IP Addresses relevant to the compliance-tested configuration are shown in bold below.</p> <pre> change node-names ip Page 1 of 1 IP NODE NAMES Name IP Address Name IP Address AEServer 10 .1 .10 .20 Abacus 10 .1 .10 .31 IPO412a_DC1 10 .1 .20 .10 Quescom 10 .1 .10 .55 S8300a_DC1 10 .1 .30 .10 S8500_Val1 10 .1 .10 .14 SEServer 10 .1 .10 .22 clan1a_DC1 10 .1 .10 .12 default 0 .0 .0 .0 medprola_DC1 10 .1 .10 .13 procr 10 .1 .10 .10 </pre>
2.	<p>Enter the display signaling-group n command, where “n” is the SIP trunk group number to Avaya Communication Manager. On Page 1 of the SIGNALING GROUP form, verify the following:</p> <pre> display signaling-group 30 Page 1 of 1 SIGNALING GROUP Group Number: 30 Group Type: sip Transport Method: tls Near-end Node Name: clan1a_DC1 Far-end Node Name: SEServer Near-end Listen Port: 5061 Far-end Listen Port: 5061 Far-end Network Region: 1 Far-end Domain: devconuk.avaya.com Bypass If IP Threshold Exceeded? n DTMF over IP: rtp-payload Direct IP-IP Audio Connections? n IP Audio Hairpinning? y Session Establishment Timer(min): 120 </pre>



Step	Description
3.	<p>Enter the display trunk-group n command, where “n” is an appropriate trunk group number. The following screen illustrates the configuration used in the compliance-tested configuration.</p> <pre> display trunk-group 30 Page 1 of 21 TRUNK GROUP Group Number: 30 Group Type: sip CDR Reports: y Group Name: SIP TRUNK COR: 1 TN: 1 TAC: 730 Direction: two-way Outgoing Display? n Dial Access? n Night Service: Queue Length: 0 Service Type: tie Auth Code? n Signaling Group: 30 Number of Members: 5 </pre>
4.	<p>On the GROUP MEMBER ASSIGNMENTS screen (Page 5 of the trunk-group form). Verify the following group member assignments. The number of ports configured should be coordinated with the number of SIM cards available in the QuesCom 400 gateway.</p> <pre> display trunk-group 30 Page 5 of 21 TRUNK GROUP Administered Members (min/max): 1/5 GROUP MEMBER ASSIGNMENTS Total Administered Members: 5 Port Name 1: T00001 SIP TRUNK 2: T00002 SIP TRUNK 3: T00003 SIP TRUNK 4: T00004 SIP TRUNK 5: T00005 SIP TRUNK 6: </pre>

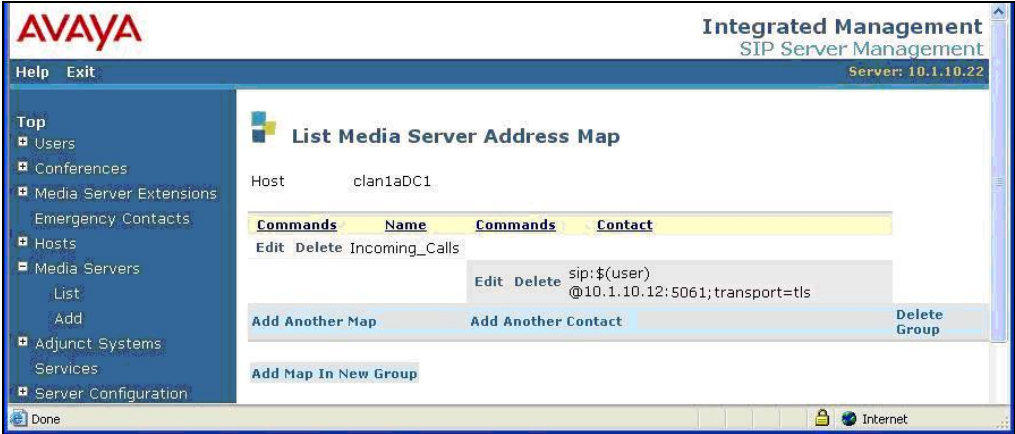

3.3. ARS Tables and Route Patterns


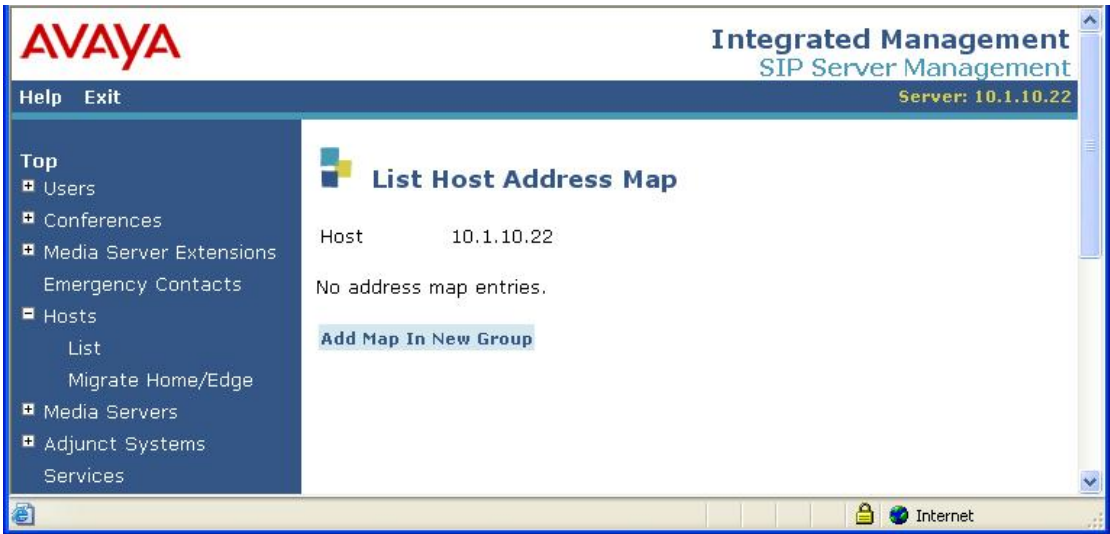
When placing outbound calls to the public network, stations on Avaya Communication Manager must first dial the ARS Feature Access Code (FAC) before dialing an external number. The single digit “9” was used as the ARS FAC in the compliance-tested configuration (not shown).

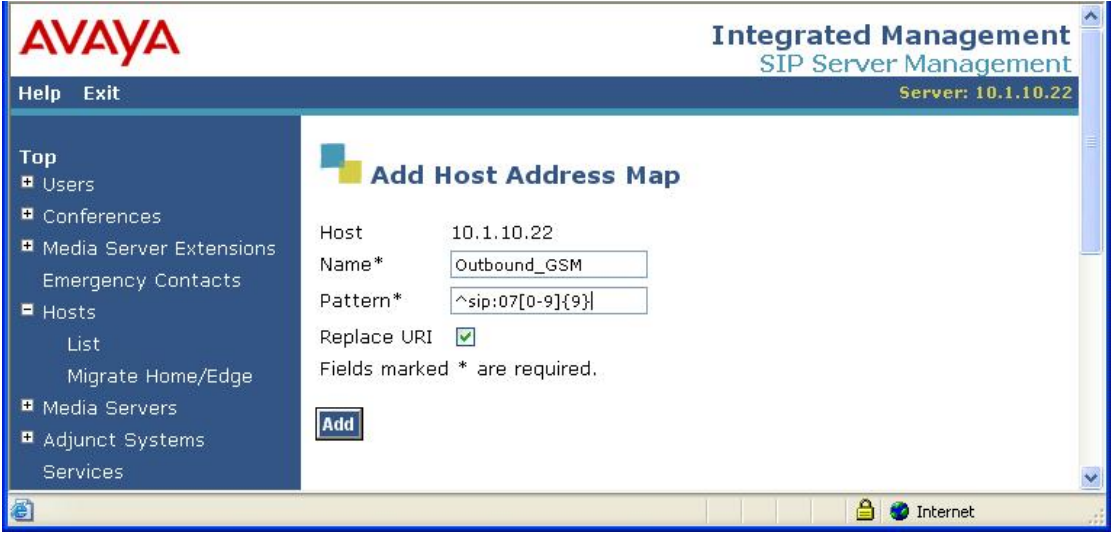

Step	Description																																																																																																																																																																																																																												
1.	<p>Enter the change ars analysis 0 command. Configure Dialed String entries according to customer requirements. In the example below, the entries match dialed numbers as follows:</p> <ul style="list-style-type: none">The “079” Dialed String matches 11-digit dialed numbers that begin with 079, and routes calls to Route Pattern 79.																																																																																																																																																																																																																												
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2.	<p>Enter the change route-pattern n command, where “n” is the route pattern that processes dialed numbers configured in Step 1. Add two routing preference entries as follows:</p> <p>1) First Routing Preference – SIP IP trunk to QuesCom 400</p> <ul style="list-style-type: none">Grp No – enter the trunk group number routed to the QuesCom 400 gateway (Section 3.2, Step 3)FRL - assign a Facility Restriction Level to this routing preference.LAR - set Look Ahead Routing to “next” to rehunt within the next routing preference if calls are rejected. LAR allows Avaya Communication Manager to re-attempt the call on another channel if the call is rejected with certain SIP response codes. <p>2) Second Routing Preference – PSTN E1 ISDN-PRI</p> <ul style="list-style-type: none">Grp No – enter the trunk group that contains trunk members from the PSTN E1 ISDN-PRI (Section 3.1, Step 2).FRL - assign a Facility Restriction Level to this routing preference.																																																																																																																																																																																																																												
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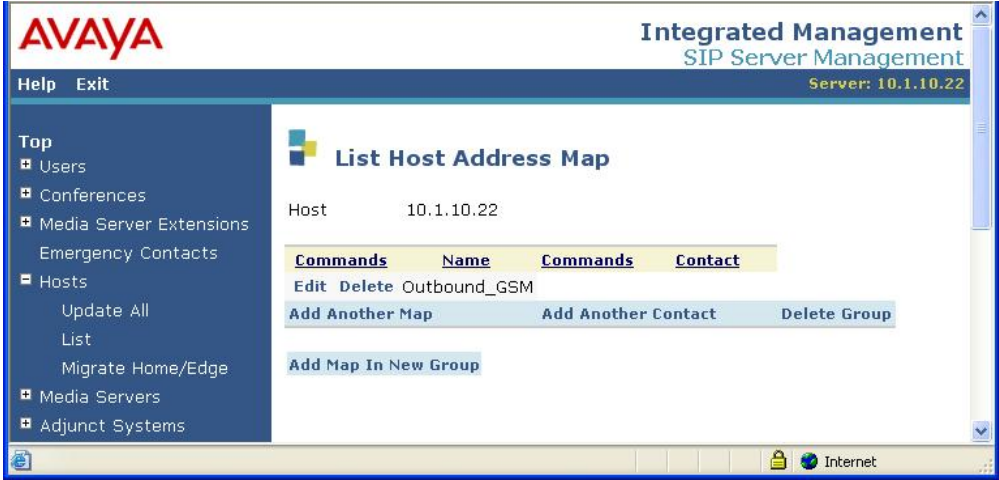

4. Configure Avaya SIP Enablement Services

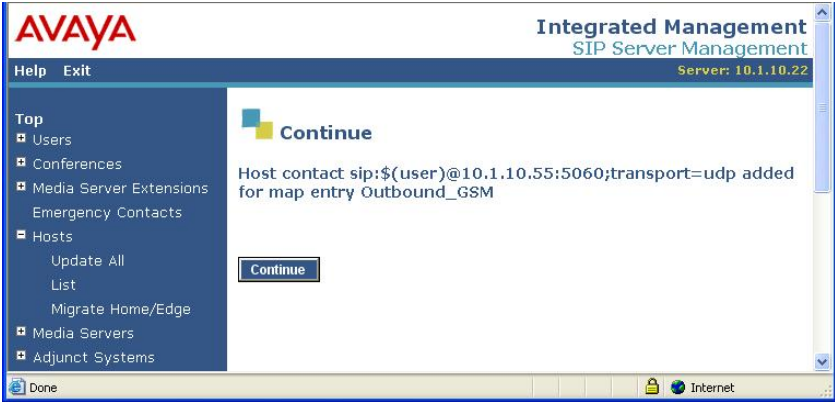
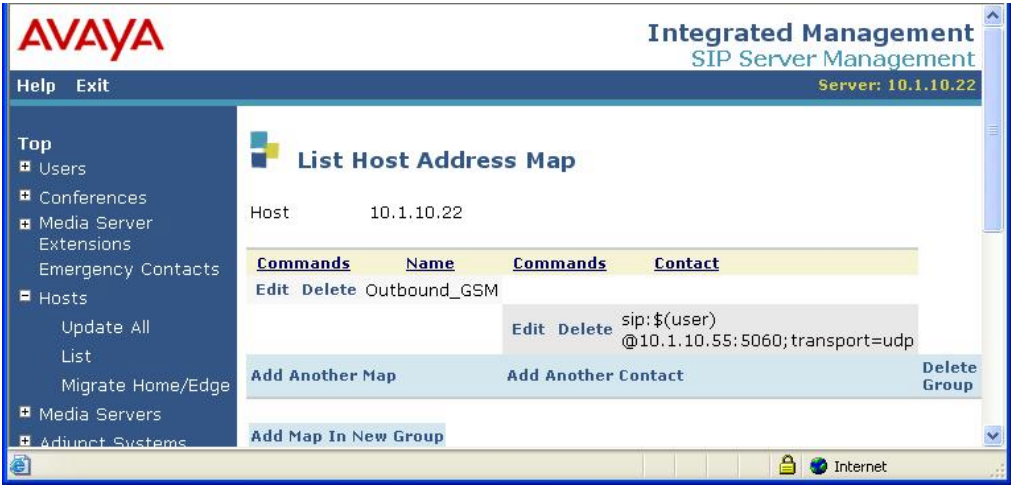
Step	Description
1.	<p>Access the SES Administration web interface, by entering <a href="http://<ip-addr>/admin">http://<ip-addr>/admin as the URL in an Internet browser, where <ip-addr> is the IP address of Avaya SIP Enablement Services. Log in with the appropriate credentials and then select the Launch Administration Web Interface link from the main screen as shown below.</p> 
2.	<p>From the left pane of the Administration web interface, expand the Server Configuration option and select Media Servers. Click on Map to verify the incoming route pattern.</p> 

Step	Description
3.	<p>Incoming calls arriving at Avaya SIP Enablement Services are routed to the appropriate Avaya Communication Manager for termination services. This routing is specified in a Media Server Address Map configured on Avaya SIP Enablement Services. Verify the incoming route pattern by clicking on Edit to the left of “Incoming_Calls”.</p> 
4.	<p>In this configuration, the pattern specification (without the double quotes) for DID numbers assigned to the Incoming_Calls group is: “^sip:[0-9]*”. The syntax in the Pattern field is compared to the Uniform Resource Identifier (URI) of an incoming SIP INVITE message. If a match occurs, then the call is routed to the media server. In this example, URIs beginning with digits 0 to 9 and followed by any length of digits should be routed to Avaya Communication Manager.</p> <p>Note that the Media Server Contact is created automatically. In this example, the following contact was created: “sips:\$(user)@10.1.10.12:5061;transport=tls”. The contact specifies the IP address of the Avaya C-LAN card and the transport protocol used to send SIP signaling messages. The user in the original request URI is substituted for \$(user).</p> 

Step	Description
5.	<p>Outbound calls are first directed by Avaya Communication Manager routing decisions to the SIP trunk group (Section 3.3). These calls are then subject to further routing decisions determined by the Host Address Maps in Avaya SIP Enablement Services. Click Hosts → List and then Edit.</p> 
6.	<p>Click the Add Map In New Group link.</p> 

Step	Description
7.	<p>In the Add Host Address Map screen, configure the following.</p> <ul style="list-style-type: none"> • Name – Enter a descriptive name for the map. • Pattern – Specify an appropriate pattern for the call type. In this example, the pattern used is “^sip:07[0-9]{9}”. Any number 11 digits long beginning with 07 will use this host address map. • Replace URI – Leave the Replace URI checkbox selected. <p>Click the Add button.</p> 
8.	<p>Click the Continue button.</p> 

Step	Description
9.	<p>The next step is to enter the contact address for the QuesCom 400. Click on the Add Another Contact link associated with the address map added in Step 7.</p> 
10.	<p>In the Add Host Contact screen, the Contact field specifies the destination for the call and it is entered as: “sip:\$(user)@10.1.10.55:5060;transport=udp”, where 10.1.10.55 is the IP address of the QuesCom 400 in this configuration. The user part in the original request URI is inserted in place of the “\$(user)” string before the message is sent to the QuesCom 400. Click the Add button when completed.</p> 

Step	Description
11.	<p>Click the Continue button.</p> 
12.	<p>After making changes within Avaya SES, it is necessary to commit the database changes using the Update link that appears when changes are pending. Perform this step by clicking on the Update link or Hosts → Update All.</p> 
13.	<p>Administer the QuesCom 400 gateway as a trusted host, so that the SIP Bye messages from Quescom 400 will not be challenged by SES. To configure a trusted host, use the “trustedhost –a x –n y” command in the Linux shell of SES, where “x” is the IP address of the QuesCom 400, and “y” is the host name of the SES home server from Step 5.</p> <pre data-bbox="277 1591 1315 1644">craft@SEServer> trustedhost -a 10.1.10.55 -n SEserver.devconuk.avaya.com 10.1.10.55 is added to trusted host list.</pre> <p>After configuring the trusted host, the administrator must go back to the SES administration web interface, and click on the Update link in the bottom left pane as shown in Step 12 for the changes to take effect.</p>

5. Configure the QuesCom 400 IP/GSM

This section describes the steps for configuring the QuesCom 400 gateway. The steps are provided for illustration only; users should consult with Quescom for specific instructions.

5.1. QuesCom Server Configuration



Step	Description
1.	<p>After the initial installation of the QuesCom server, telnet into the QuesCom server from the management PC shown in figure 1, using the default IP address “192.168.1.1”. Log in using the appropriate username and password.</p> <pre>C:\> telnet 192.168.1.1 login: administrator Password: ***** Q400 IP/GSM Series, Serial# Q400-B4-00010381, Version IAD04.20B029P006 Security Patch SP001 Copyright (c) 1998-2005 QuesCom S.A.</pre> <p>At the prompt, type the following command <code>gwconfig /setup</code>.</p> <pre>X:\>gwconfig /setup Application has been registered to the QCFGSvc QCFGSvc Version 4.20.000.012 Copyright (c) 1998-2006 QuesCom S.A.</pre> <p>Enter “1” for English.</p> <pre>Enter the SmartIAD Administration language [1]: 1 English 2 French 3 German > 1 GWconfig language: English</pre> <p>Enter a name for the QuesCom 400 gateway.</p> <pre>Setting up SmartIAD components... Enter the SmartIAD network name [Q400]:Q400 SmartIAD Network Name: Q400</pre> <p>Enter IP address for the QuesCom gateway.</p> <pre>Enter the SmartIAD IP address [192.168.1.1]: 10.1.10.55 The SmartIAD IP address: 10.1.10.55</pre>

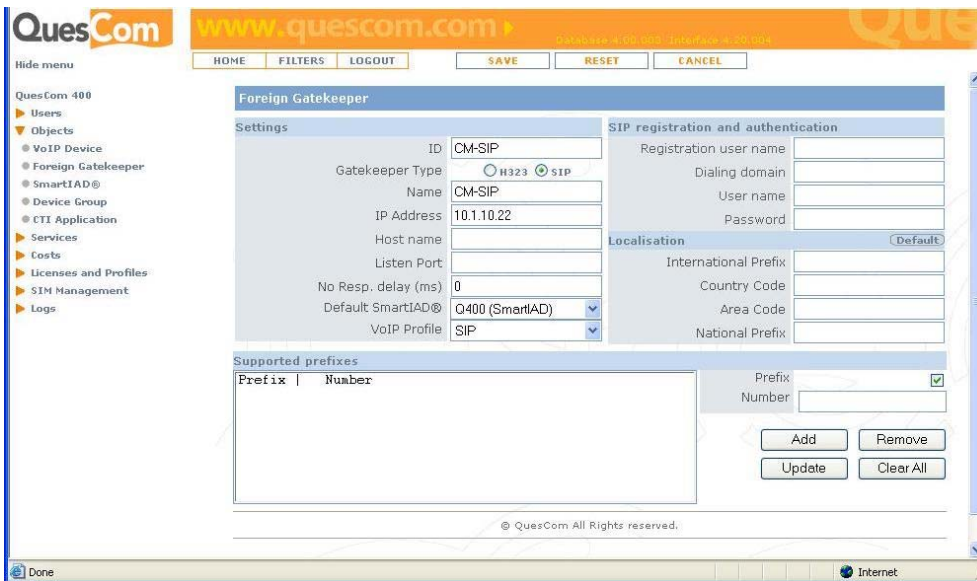

Step	Description
	Enter subnet mask or press enter to choose default.
	Enter the SmartIAD subnet mask [255.255.255.0]: The SmartIAD subnet mask: 255.255.255.0
	Enter default Gateway IP address.
	Enter the SmartIAD default Gateway [192.168.10.1]: 10.1.10.1 The SmartIAD default Gateway: 10.1.10.1
	Enter "2" for United Kingdom
	Enter the SmartIAD country code (ISDN, Tones, Numbering plan, Emails) [1]: 1 France 2 United Kingdom 3 Germany 4 Other > 2 ISDN Country: United Kingdom IVR language country: ENG - English Country Tones: United Kingdom Country Numbering: United Kingdom Network Operator: EuroISDN
	Enter "0" for the server to operate in Stand-Alone mode.
	Enter the 'Call Server' mode [0]: 0 Stand-Alone mode 1 Relay mode > 0 Call Server mode: Stand-Alone
	Enter Company Name. This can be any alphanumeric name.
	Enter Company Name []: Avaya
	Enter "1" to select the SIP protocol.
	Select the VoIP Protocol to use[0]: 0 H.323 1 SIP > 1 VoIP Protocol: SIP
	Enter "N" as the QuesCom 400 IP/GSM does not need to register to a GateKeeper.
	Does the QuesCom IP/GSM need to register to a GateKeeper [Y/N]: N

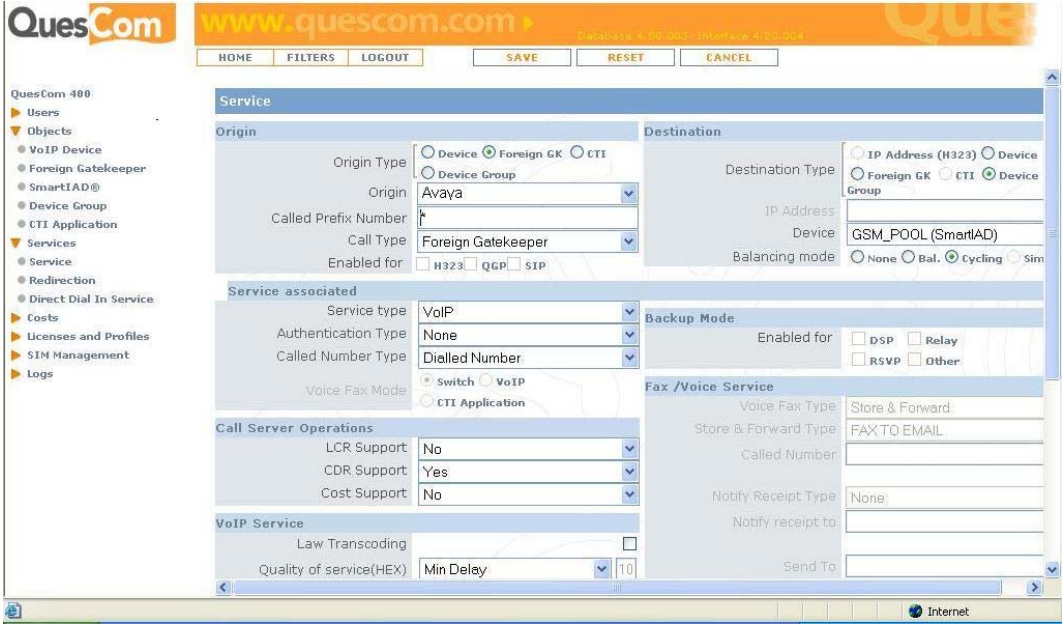
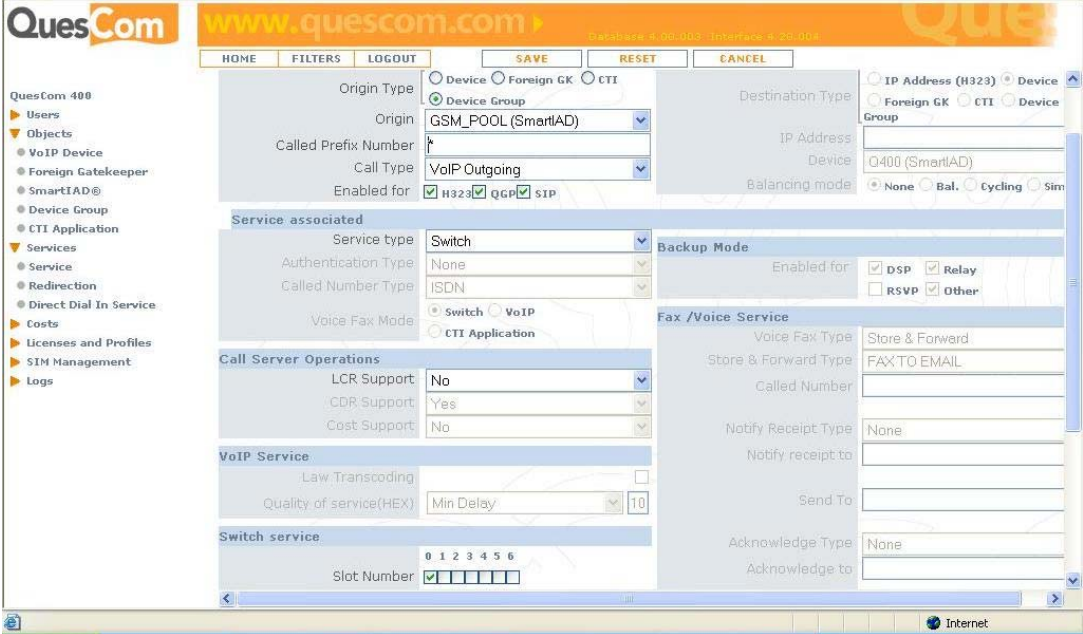
Step	Description
	Enter the name for Avaya SES.
	Enter the name of the SIP Proxy: CM-SIP SIP Proxy name: CM-SIP
	Enter the IP address for Avaya SES.
	Enter the IP Address of the SIP Proxy: 10.1.10.22 SIP Proxy IP Address: 10.1.10.22
	Follow the instruction and press any key to continue.
	Selected parameters for Quick setup mode are: SmartIAD Network Name: Q400 The SmartIAD IP address: 10.1.10.55 The SmartIAD subnet mask: 255.255.255.0 The SmartIAD default Gateway: 10.1.10.1 Press any key to continue..
	Enter "1" to confirm the setup.
	SmartIAD's serial number: Q400-B4-00010381 IVR language country: ENG - English Email language country: ENG - English Country Tones: United Kingdom Country Numbering: United Kingdom Call Server mode: Stand-Alone Company Name: Avaya VoIP Protocol: SIP SIP Proxy name = CM-SIP SIP Proxy IP Address = 10.1.10.22 Do you confirm this setup [1]: 0 No (to exit, and GWconfig /setup command can be re-entered) 1 Yes(to continue the setup and restart the QuesCom Q400) > 1 Setup is confirmed.
	Wait for 3 minutes for the QuesCom 400 gateway to reboot.
	Setting up SmartIAD System Configuration... Setting up Gateway Application... Please wait... Setting up Call Server Application... Setting up QuesCom QGsm Application... Setting up QuesCom Web Server Application... Setting up QuesCom ODBC Socket Server Application... Setting up QPortal Application... Please wait... Setting up NTPClient Application... Setting up Pilot Application... Setting up GeoPort Application... Rebooting system... Warning: Do not restart the SmartIAD, update process in progress... Please, wait up to 3 minutes.

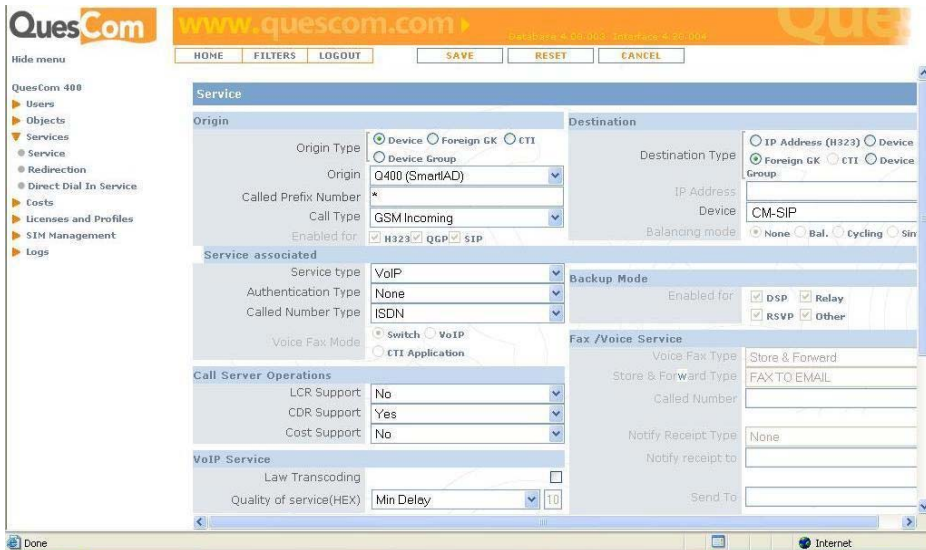

5.2. QuesCom Routing Configuration

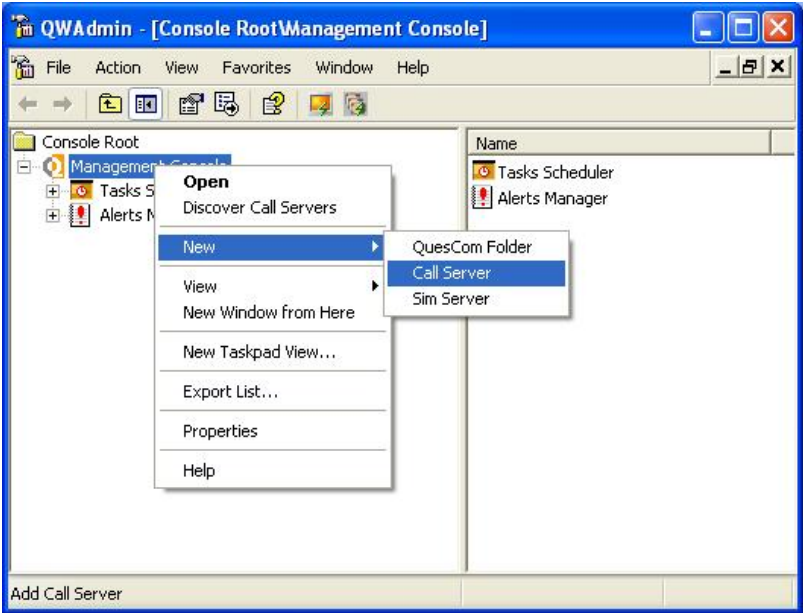
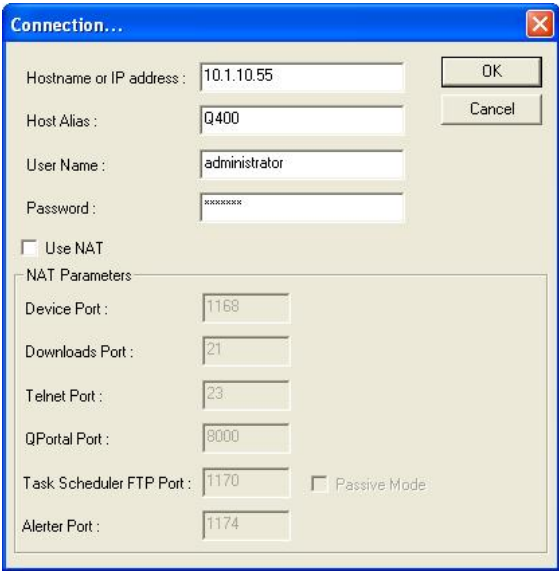
Step	Description
1.	<p>Open a web browser from the management PC and enter the following URL <code>http://<QuesCom 400 IPaddress:8000></code>. For this configuration “<code>http://10.1.10.55:8000</code>” was entered. Log in using the appropriate user name and password.</p> 
2.	<p>On the left hand side of the screen under the QuesCom 400 menu. Click on Licenses and Profiles → VoIP Profile. A default entry is created with Name “SIP” due to the initial configuration in Section 5.1. Click on the pencil (edit) button next to the “SIP” record.</p> 

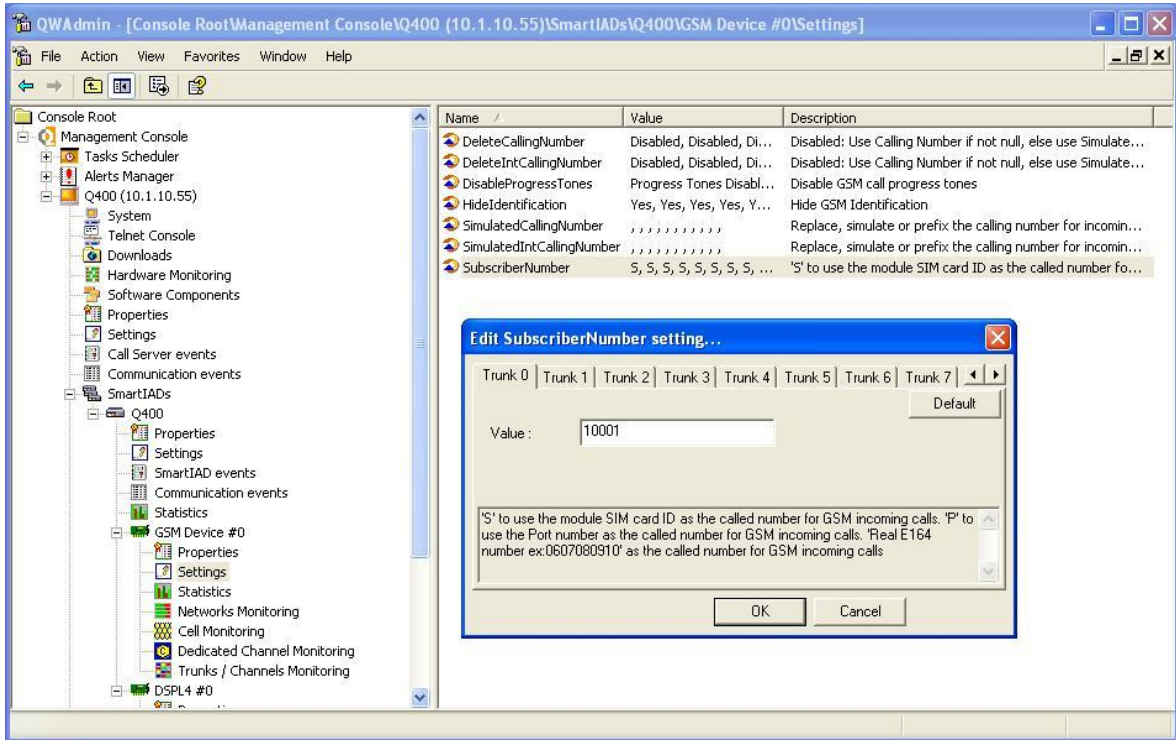
Step	Description
3.	<p>The following screen is presented for illustration. Default values may be retained on the VoIP Profile screen below.</p> 
4.	<p>On the left hand side of the screen under the QuesCom 400 menu, click on Objects → Foreign Gatekeeper. An entry with the ID “CM-SIP” and the IP address of Avaya SES is created due to the initial configuration in Section 5.1. Click on the pencil (edit) button next to the “CM-SIP” record.</p> 

Step	Description
5.	<p>Verify the VoIP Profile is set to “SIP”. No other changes need to be made to the default values on the Foreign Gatekeeper screen below.</p> 
6.	<p>Click on Services → Service. Four entries are present by default. ID “3” is created by default and is routing for outbound calls from Avaya Communication Manager via the Avaya SES to the QuesCom 400 gateway. ID “4” is routing of outbound calls from the QuesCom 400 gateway to the GSM network. Click on the pencil (edit) button next to ID “3” record.</p> 

Step	Description
7.	<p>Verify the Call Type is set to “Foreign Gatekeeper”. No other changes need to be made to the default values for the record ID 3 on the Service screen below.</p> 
8.	<p>From the screen shown in Step 6, click the pencil (edit) button next to ID “4”. Verify the Call Type is set to “VoIP Outgoing”. No other changes need to be made to the default values for the record ID 4 on the Service screen below.</p> 

Step	Description
9.	<p>Routing of inbound calls to the QuesCom 400 gateway from the GSM network is created by clicking on ADD RECORD button on the main Service screen shown in Step 6. On the Service screen, configure the following as shown below.</p> <ul style="list-style-type: none"> • Origin Type – select radio button “Device” • Origin – select “Q400(SmartAD)” • Called Prefix Number – enter “*” • Call Type – select “GSM Incoming” • Service type – select “VoIP” • Destination Type – select radio button “Foreign GK” • Device – select “CM-SIP” <p>The other parameters can be left with default values. Click on Save.</p> 
10.	<p>The inbound call route pattern added in Step 9 can be displayed on the main Service screen by clicking on Services → Service.</p> 

Step	Description
11.	<p>From the management PC shown in Figure 1, launch the QuesCom 400 QWA management console by clicking Start → Programs → QuesCom → QuesCom Management Console. Right click on Management Console and click New → Call Server.</p> 
12.	<p>In the Connection dialog, configure the following and click OK:</p> <ul style="list-style-type: none"> • Hostname or IP address – enter the IP address of the QuesCom 400 gateway • Host Alias – enter a descriptive name for the QuesCom 400 gateway • User Name and Password 

Step	Description
13.	<p>Expand the Management Console tree by clicking on Q400 (10.1.10.55) → SmartIADs → Q400 → GSM Device #0 → Settings → SubscriberNumber. In the Edit SubscriberNumber setting dialog box, click on the Trunk 0 tab and enter the extension that incoming calls will be routed to in the Value field. Replicate this field for all Trunk tabs 1 to 12 and click OK.</p> <p>Right click on Q400 under SmartIADs and click on Save configuration, then right click back on Q400 and click on Stop. Right click Q400 and click on Start and wait for the SIM cards to register.</p>  <p>The screenshot shows the QWAdmin console window. On the left, the tree view is expanded to 'SmartIADs > Q400 > GSM Device #0 > Settings > SubscriberNumber'. On the right, a table lists settings: DeleteCallingNumber, DeleteIntCallingNumber, DisableProgressTones, HideIdentification, SimulatedCallingNumber, SimulatedIntCallingNumber, and SubscriberNumber. The 'SubscriberNumber' setting is selected. Below the table, the 'Edit SubscriberNumber setting...' dialog box is open. It has tabs for Trunk 0 through Trunk 7. The 'Trunk 0' tab is active, showing a 'Value' field with '10001'. Below the field is a text box with instructions: 'S' to use the module SIM card ID as the called number for GSM incoming calls. 'P' to use the Port number as the called number for GSM incoming calls. 'Real E164 number ex:0607080910' as the called number for GSM incoming calls. At the bottom are 'OK' and 'Cancel' buttons.</p>

6. Interoperability Compliance Testing

The interoperability compliance testing focused on verifying the routing of inbound/outbound calls to/from the QuesCom 400.

6.1. General Test Approach

The general approach was to place inbound and outbound calls through the QuesCom 400 and verify successful call completion. The main objectives were to verify that:

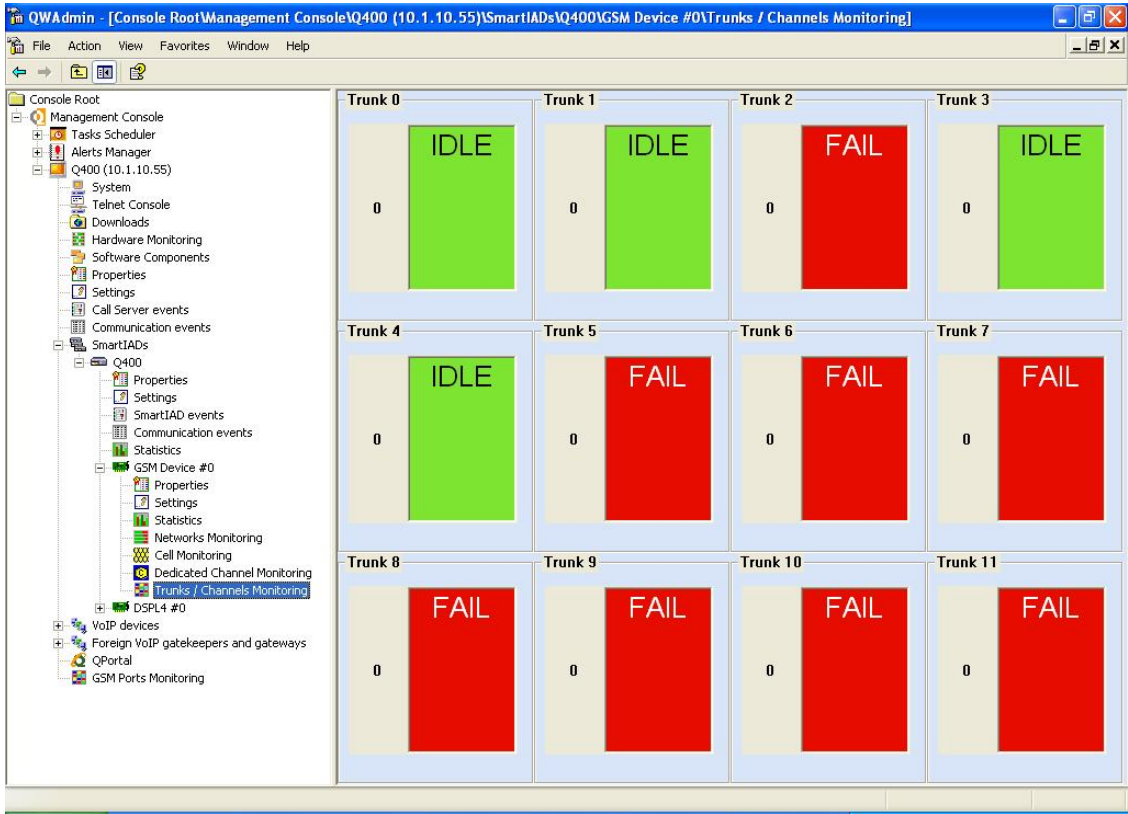
- When internal extensions place outbound calls to GSM numbers, the calls are routed to the QuesCom 400, and the QuesCom 400 decides on the least cost routing and routes the call to the GSM network.
- When the landline is out of service, all outbound calls can successfully be routed via the QuesCom 400 if need be.
- Inbound calls from the GSM network to the QuesCom 400 are successfully forwarded to Avaya SIP Enablement Services using both direct routing (mapping of a SIM card phone number to an Avaya Communication Manager extension) and post-dialing (SIM card answers an inbound call and upon a prompt, the external caller enters an Avaya Communication Manager extension).
- Transfers and conferences between Avaya Communication Manager stations complete properly on outbound and inbound calls routed through the QuesCom 400.

6.2. Test Results

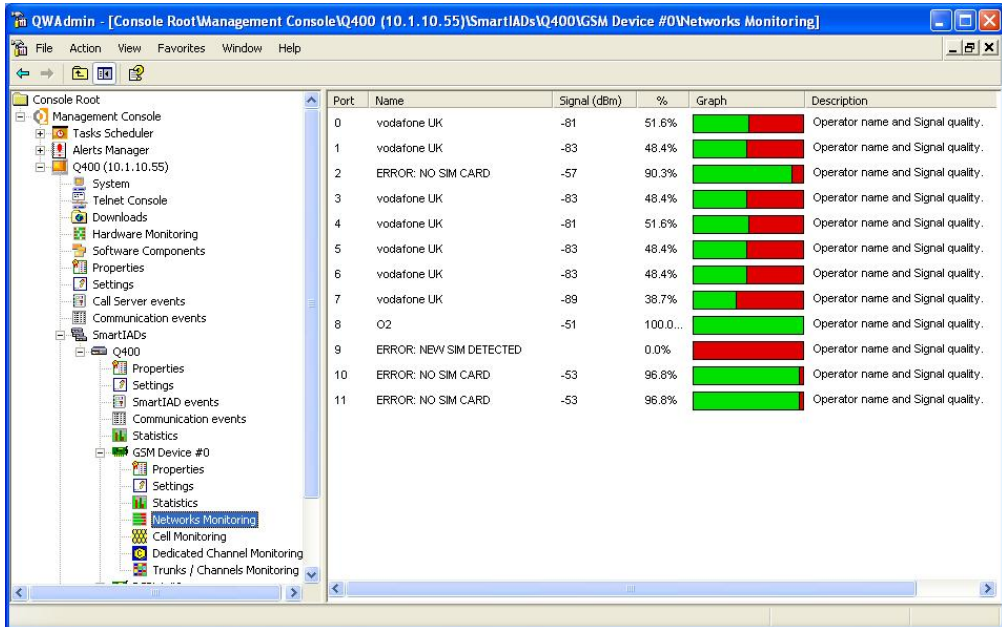
The test objectives of Section 6.1 were verified. For serviceability testing, outbound and inbound calls routed through the QuesCom 400 complete successfully after recovering from failures such as Ethernet cable disconnects, and resets of Avaya Communication Manager, Avaya SIP Enablement Services and the QuesCom 400.

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Communication Manager and QuesCom 400.

Step	Description
1.	<p>From the SAT, enter the command status signaling-group s, where s is the number of a signaling group configured in Section 3.2 and verify that the Group State is “in service”.</p> <p>From the SAT, enter the command status trunk-group t, where t is the number of a trunk group configured in Section 3.2, and verify that the Service States of all trunks are “in-service/idle” or “in-service/active”.</p>
2.	<p>Expand the Management Console tree by clicking on Q400 (10.1.10.55) → SmartIADs → Q400 → GSM Device #0 → Trunks/Channels Monitoring. Ensure the Trunks configured are the colour green with IDLE.</p> 

Step	Description
3.	Expand the Management Console tree by clicking on Q400(10.1.10.55) → SmartIADs → Q400 → GSM Device #0 → Networks Monitoring . Ensure the Signal(dBm) is above -90.



Port	Name	Signal (dBm)	%	Graph	Description
0	vodafone UK	-81	51.6%		Operator name and Signal quality.
1	vodafone UK	-83	48.4%		Operator name and Signal quality.
2	ERROR: NO SIM CARD	-57	90.3%		Operator name and Signal quality.
3	vodafone UK	-83	48.4%		Operator name and Signal quality.
4	vodafone UK	-81	51.6%		Operator name and Signal quality.
5	vodafone UK	-83	48.4%		Operator name and Signal quality.
6	vodafone UK	-83	48.4%		Operator name and Signal quality.
7	vodafone UK	-89	38.7%		Operator name and Signal quality.
8	O2	-51	100.0...		Operator name and Signal quality.
9	ERROR: NEW SIM DETECTED		0.0%		Operator name and Signal quality.
10	ERROR: NO SIM CARD	-53	96.8%		Operator name and Signal quality.
11	ERROR: NO SIM CARD	-53	96.8%		Operator name and Signal quality.

8. Support

Technical support from QuesCom can be requested in any of the following three ways.

- The corporate QuesCom Reporting Tool (QRT) account on the QuesCom web site at <http://support.quescom.com> and follow instructions.
- The Support Line number. +33 820203846 (France) Voice Message is available during off days and non-working time.
- Sending an email to support@quescom.com

9. Conclusion

These Application Notes describe the configuration steps required for QuesCom IP/GSM 400 to successfully interoperate with Avaya Communication Manager 3.1 and Avaya SIP Enablement Services 3.1. All feature functionality, performance, and serviceability test cases were completed successfully.

10. Additional References

This section references the Avaya and QuesCom IP/GSM 400 product documentation that are relevant to these Application Notes.

The following Avaya Documents are available at <http://support.avaya.com>

- Administrator Guide for Avaya Communication Manager, Document ID 03-300509, Issue 2, Feb 2006.
- Installing and Administering SIP Enablement Services Release 3.1, Document ID 03-600768, Issue 1.5, Feb 2006.

The following documents can be obtained from QuesCom.

- Getting Started with QuesCom 400 IP/GSM: GS-Q400IPGSM400-V01.pdf
- QuesCom 400 IP/GSM Administrator Guide: AG-Q400IPGSM400-V01.pdf
- How to configure GSM Incoming calls to a remote Gatekeeper: Configuring GSM incoming calls.pdf

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