



Configuring Connectivity between Avaya Communication Manager, Avaya Meeting Exchange Express Edition, and the Cantata Technology IMG 1010 Media Gateway Utilizing ISDN-PRI and SIP - Issue 1.0

Abstract

These Application Notes present the procedures for configuring connectivity between Avaya Communication Manager, Avaya Meeting Exchange Express Edition (Avaya Meeting Exchange), and the Cantata Technology IMG 1010 Media Gateway (IMG). The IMG provided T1 ISDN-PRI to SIP gateway functionality between Avaya Communication Manager and Avaya Meeting Exchange. This configuration enables telephones registered to either Avaya Communication Manager, or Avaya SIP Enablement Services access to a rich set of audio conferencing options provided by Avaya Meeting Exchange via the IMG.

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

1. Introduction

These Application Notes present the procedures for configuring connectivity between Avaya Communication Manager, Avaya Meeting Exchange Express Edition (Avaya Meeting Exchange), and the Cantata Technology IMG 1010 Media Gateway (IMG). The IMG provided T1 ISDN-PRI to SIP gateway functionality between Avaya Communication Manager and Avaya Meeting Exchange. This configuration enables telephones registered to either Avaya Communication Manager, or Avaya SIP Enablement Services access to a rich set of audio conferencing options provided by Avaya Meeting Exchange via the IMG.

Figure 1 illustrates the sample configuration utilized for this compliance tested solution. Avaya Communication Manager provided endpoint aggregation and media gateway functionality. For example, any telephone or trunk type associated with Avaya Communication Manager can interoperate with Avaya Meeting Exchange via the IMG. For this sample configuration, SIP, H.323, Digital, and Analog telephones were utilized.

Avaya Meeting Exchange is a SIP-based voice conferencing solution that runs on an S6100 server and provides mid-market enterprise customers with an IP based audio conferencing system. For this sample configuration, Avaya Meeting Exchange was provisioned to accept calls from Avaya Communication Manager via either direct or basic call flows. A direct call flow allows access to conferences provisioned on Avaya Meeting Exchange without entering a passcode. Conversely, to enter a conference via a basic call flow requires a passcode. Avaya Meeting Exchange was also administered for outbound calling, which enabled call origination from Avaya Meeting Exchange to participants registered to either Avaya Communication Manager, or Avaya SIP Enablement Services.

The IMG provides network connectivity for voice services, enabling the delivery of VoIP services via SIP into ISDN-PRI, CAS and SS7 networks, as well as IP to IP transcoding for network peering applications. For this sample configuration, the IMG provided SIP connectivity to Avaya Meeting Exchange and T1 ISDN-PRI connectivity to Avaya Communication Manager.

The end-to-end signaling and media connectivity is as follows:

- Signaling (SIP) and media (RTP) connectivity between Avaya Meeting Exchange and the IMG is depicted by the green dashed line.
- T1 signaling and media (ISDN-PRI) connectivity between Avaya Communication Manager and the IMG is depicted by the blue dotted line.

To account for the SIP telephones in this sample configuration, Avaya SIP Enablement Services was utilized as a SIP registration server only.

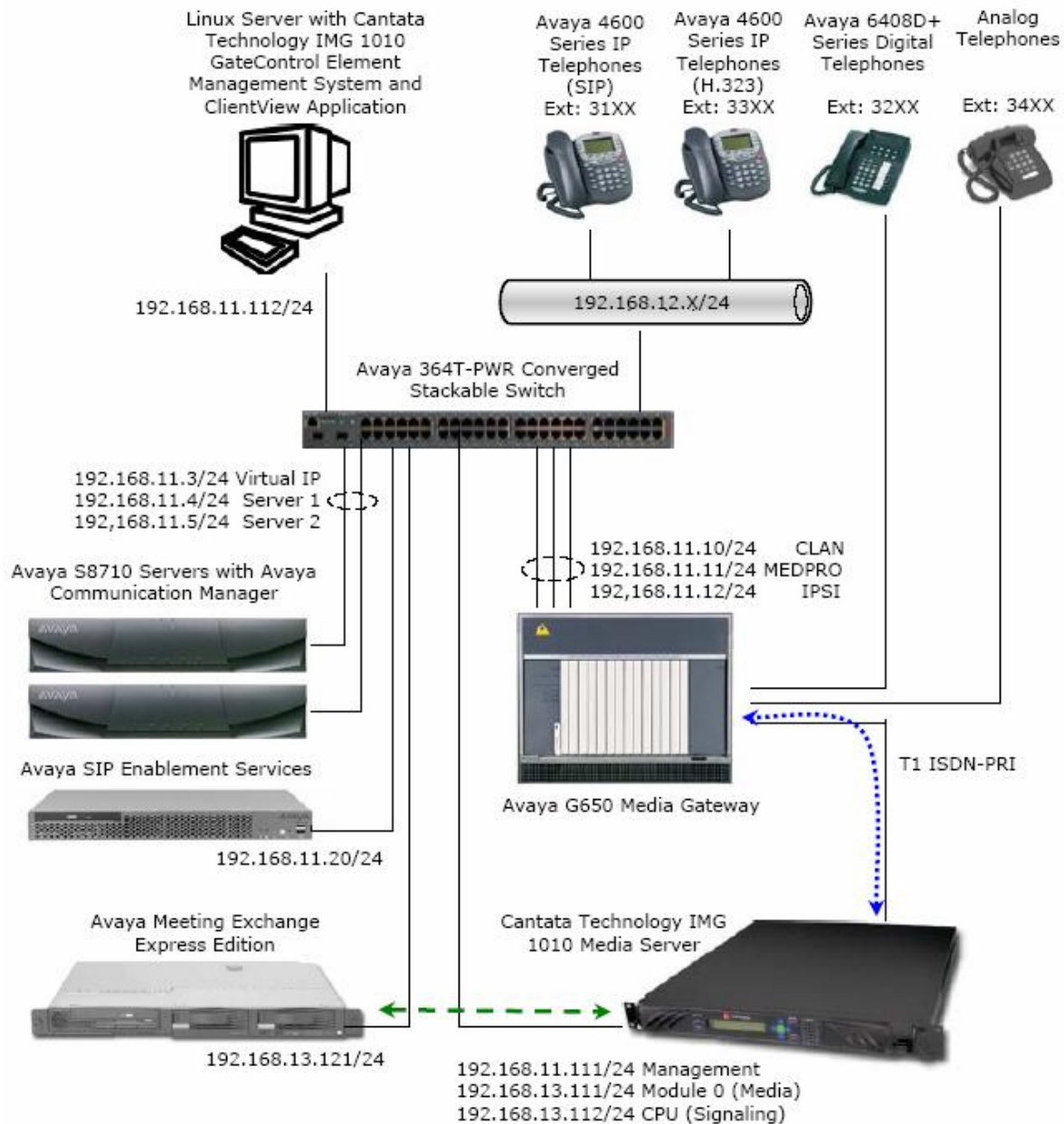


Figure 1: Sample Configuration

2. Equipment and Software Validated

The following equipment and software versions were used for this sample configuration:

Equipment	Software Version
Avaya S8710 Servers	Avaya Communication Manager 4.0 (R014x.00.1.731.2)
Avaya G650 Media Gateway <ul style="list-style-type: none">Avaya TN2312BP (IPSI)Avaya TN799DP (C-LAN)Avaya TN2302AP (MEDPRO)	HW12 FW040 HW01 FW024 HW20 FW117
Avaya Meeting Exchange Express Edition	S6100-2.5.60.0
Avaya SIP Enablement Services	SES04.0-04.0.033.6
Avaya C364T-PWR Converged Stackable Switch	4.5.14
Avaya 4600 Series IP Telephones	2.8 (H.323)
Avaya 4600 Series IP Telephones	2.2.2 (SIP)
Avaya 6408D+ Digital Telephones	--
Analog Telephones	--
Cantata Technology IMG 1010 Media Gateway	10.3.3
Cantata Technology IMG 1010 GateControl Element Management System	10.3.3.174
Cantata Technology ClientView	10.3.3.174

Table 1: Equipment and Software Versions

3. Avaya Communication Manager Configuration

This section displays the configuration for enabling Avaya Communication Manager to interoperate with Avaya Meeting Exchange via the IMG.

Avaya Communication Manager was administered from the System Access Terminal (SAT). In these Application Notes the SAT screens are shown with a gray shaded background. In some instances, the information from the original screen has been edited or annotated for brevity or clarity in presentation. For example, entries and/or fields in the SAT screens that were either modified or were required for these Application Notes are displayed with boldface type. Refer to [3] and [4] for additional information regarding the configuration displayed in this section.

3.1. Verify Licensing

The following steps verify licensing on Avaya Communication Manager that is required to support the configuration displayed in these Application Notes. If a required feature is not enabled or there is insufficient capacity, contact an authorized Avaya account representative to make the appropriate changes.

Step	Description
3.1.1	<p>Issue the command “display system-parameters customer-options”, and proceed to page 3. Verify that the ARS/AAR Dialing without FAC field is enabled.</p> <p><i>Note: The ARS/AAR Dialing without FAC feature allows direct access to Automatic Alternate Routing (AAR) and Automatic Route Selection (ARS) from the dial plan analysis table.</i></p> <pre>display system-parameters customer-options Page 3 of 11 OPTIONAL FEATURES Abbreviated Dialing Enhanced List? n Audible Message Waiting? y Access Security Gateway (ASG)? n Authorization Codes? n Analog Trunk Incoming Call ID? n Backup Cluster Automatic Takeover? n A/D Grp/Sys List Dialing Start at 01? n CAS Branch? n Answer Supervision by Call Classifier? n CAS Main? n ARS? y Change COR by FAC? n ARS/AAR Partitioning? y Computer Telephony Adjunct Links? y ARS/AAR Dialing without FAC? y Cvg Of Calls Redirected Off-net? n ASAI Link Core Capabilities? n DCS (Basic)? n ASAI Link Plus Capabilities? n DCS Call Coverage? n Async. Transfer Mode (ATM) PNC? n DCS with Rerouting? n Async. Transfer Mode (ATM) Trunking? n ATM WAN Spare Processor? n Digital Loss Plan Modification? n ATMS? n DS1 MSP? n Attendant Vectoring? y DS1 Echo Cancellation? n (NOTE: You must logoff & login to effect the permission changes.)</pre>

Step	Description
3.1.2	<p>Proceed to Page 4, and verify that the ISDN-PRI field is enabled.</p> <pre> display system-parameters customer-options Page 4 of 11 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 Forced Entry of Account Codes? n Multifrequency Signaling? y Global Call Classification? n Multimedia Appl. Server Interface (MASI)? n Hospitality (Basic)? y Multimedia Call Handling (Basic)? y Hospitality (G3V3 Enhancements)? n Multimedia Call Handling (Enhanced)? y IP Trunks? y IP Attendant Consoles? n (NOTE: You must logoff & login to effect the permission changes.) </pre>

3.2. Configure Connectivity

This section describes the steps for configuring ISDN-PRI trunking between Avaya Communication Manager and the IMG.

Step	Description
3.2.1	<p>Issue the command “add ds1 <xxxxx>”, where xxxxx is the location of the DS1 circuit pack in the Avaya G650 Media Gateway, and administer settings as displayed.</p> <ul style="list-style-type: none">• Enter a descriptive name for the DS1 circuit pack in the Name field.• Set the Signaling Mode field to isdn-pri.• Set the Connect field to pbx since this DS1 link is connected to another switch in a private network, e.g., the IMG.• Configure additional fields with boldface type as displayed, and use default settings for remaining fields. <pre>add ds1 01a06 Page 1 of 2 DS1 CIRCUIT PACK Location: 01A06 Name: IMG ISDN-PRI Bit Rate: 1.544 Line Coding: b8zs Line Compensation: 1 Framing Mode: esf Signaling Mode: isdn-pri Connect: pbx Interface: network TN-C7 Long Timers? n Country Protocol: 1 Interworking Message: PROgress Protocol Version: a Interface Companding: mulaw CRC? n Idle Code: 11111111 DCP/Analog Bearer Capability: 3.1kHz T303 Timer(sec): 4 Slip Detection? n Near-end CSU Type: other</pre>

Step	Description
3.2.2	<p>Issue the command “add signaling-group <n>”, where n is the number of an unallocated signaling group, and administer settings as displayed:</p> <ul style="list-style-type: none"> Set the Group Type field to isdn-pri. Set the Primary D-Channel field to utilize channel 24 on the DS1 circuit pack provisioned in Step 3.2.1. Use default settings for remaining fields.
	<div>add signaling-group 6 Page 1 of 5</div> <div style="text-align: center;">SIGNALING GROUP</div> <div> Group Number: 6 Group Type: isdn-pri Associated Signaling? y Max number of NCA TSC: 0 Primary D-Channel: 01A0624 Max number of CA TSC: 0 Trunk Group for NCA TSC: Trunk Group for Channel Selection: X-Mobility/Wireless Type: NONE TSC Supplementary Service Protocol: a </div>
3.2.3	<p>Issue the command “add trunk-group <n>”, where n is the number of an unallocated trunk group, and administer settings as displayed.</p> <ul style="list-style-type: none"> Enter a descriptive name for the trunk group in the Name field. Administer settings for the Group Type and Carrier Medium fields that are consistent with the signaling group provisioned in Step 3.2.2. Enter a number in the TAC (Trunk Access Code) field that is consistent with the configuration for the dial plan. Configure additional fields with boldface type as displayed, and use default settings for remaining fields.
	<div>add trunk-group 6 Page 1 of 21</div> <div style="text-align: center;">TRUNK GROUP</div> <div> Group Number: 6 Group Type: isdn CDR Reports: y Group Name: PRI Trunk to IMG-1010 COR: 1 TN: 1 TAC: 106 Direction: two-way Outgoing Display? n Carrier Medium: PRI/BRI Dial Access? n Busy Threshold: 255 Night Service: Queue Length: 0 Service Type: tie Auth Code? n TestCall ITC: rest Far End Test Line No: TestCall BCC: 4 </div>

Step	Description
3.2.4	<p>Proceed to Page 2, and administer hunting as displayed.</p> <ul style="list-style-type: none"> Set the Trunk Hunt field to descend. <i>Note: It is a convention to configure each side of the ISDN-PRI trunk to hunt for B-channels in opposite directions, e.g., ascending/descending. This helps avoid the possibility of glare conditions. Glare occurs when both sides of an ISDN interface select the same B-channel for call origination. For this sample configuration, Avaya Communication Manager is administered as descending.</i> Use default settings for remaining fields. <pre> add trunk-group 6 Page 2 of 21 Group Type: isdn 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/enbloc Trunk Hunt: descend 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 Administer Timers? n </pre>

Step	Description																																																																																																																																															
3.2.5	<p>Proceed to Page 5, and administer the members for the trunk group as displayed.</p> <ul style="list-style-type: none">Enter xxxxxyy in the Port field, where xxxxxx corresponds the location of the DS1 circuit pack in the Avaya G650 Media Gateway, and yy corresponds to the trunk group member.Enter the number of the signaling group provisioned in Step 3.2.2 in the Sig Grp field for each member.																																																																																																																																															
	<div><div>add trunk-group 6</div><div>Page5 of 21</div><div><div>TRUNK GROUP</div><div>Administered Members (min/max):1/23</div><div>Total Administered Members:23</div></div><div>GROUP MEMBER ASSIGNMENTS</div><table><thead><tr><th>Port</th><th>Code</th><th>Sfx</th><th>Name</th><th>Night</th><th>Sig Grp</th></tr></thead><tbody><tr><td>1: 01A0601</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>2: 01A0602</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>3: 01A0603</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>4: 01A0604</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>5: 01A0605</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>6: 01A0606</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>7: 01A0607</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>8: 01A0608</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>9: 01A0609</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>10: 01A0610</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>11: 01A0611</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>12: 01A0612</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>13: 01A0613</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>14: 01A0614</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>15: 01A0615</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>16: 01A0616</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>17: 01A0617</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>18: 01A0618</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>19: 01A0619</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>20: 01A0620</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>21: 01A0621</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>22: 01A0622</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr><tr><td>23: 01A0623</td><td>TN464</td><td>F</td><td></td><td></td><td>6</td></tr></tbody></table></div>	Port	Code	Sfx	Name	Night	Sig Grp	1: 01A0601	TN464	F			6	2: 01A0602	TN464	F			6	3: 01A0603	TN464	F			6	4: 01A0604	TN464	F			6	5: 01A0605	TN464	F			6	6: 01A0606	TN464	F			6	7: 01A0607	TN464	F			6	8: 01A0608	TN464	F			6	9: 01A0609	TN464	F			6	10: 01A0610	TN464	F			6	11: 01A0611	TN464	F			6	12: 01A0612	TN464	F			6	13: 01A0613	TN464	F			6	14: 01A0614	TN464	F			6	15: 01A0615	TN464	F			6	16: 01A0616	TN464	F			6	17: 01A0617	TN464	F			6	18: 01A0618	TN464	F			6	19: 01A0619	TN464	F			6	20: 01A0620	TN464	F			6	21: 01A0621	TN464	F			6	22: 01A0622	TN464	F			6	23: 01A0623	TN464	F		
Port	Code	Sfx	Name	Night	Sig Grp																																																																																																																																											
1: 01A0601	TN464	F			6																																																																																																																																											
2: 01A0602	TN464	F			6																																																																																																																																											
3: 01A0603	TN464	F			6																																																																																																																																											
4: 01A0604	TN464	F			6																																																																																																																																											
5: 01A0605	TN464	F			6																																																																																																																																											
6: 01A0606	TN464	F			6																																																																																																																																											
7: 01A0607	TN464	F			6																																																																																																																																											
8: 01A0608	TN464	F			6																																																																																																																																											
9: 01A0609	TN464	F			6																																																																																																																																											
10: 01A0610	TN464	F			6																																																																																																																																											
11: 01A0611	TN464	F			6																																																																																																																																											
12: 01A0612	TN464	F			6																																																																																																																																											
13: 01A0613	TN464	F			6																																																																																																																																											
14: 01A0614	TN464	F			6																																																																																																																																											
15: 01A0615	TN464	F			6																																																																																																																																											
16: 01A0616	TN464	F			6																																																																																																																																											
17: 01A0617	TN464	F			6																																																																																																																																											
18: 01A0618	TN464	F			6																																																																																																																																											
19: 01A0619	TN464	F			6																																																																																																																																											
20: 01A0620	TN464	F			6																																																																																																																																											
21: 01A0621	TN464	F			6																																																																																																																																											
22: 01A0622	TN464	F			6																																																																																																																																											
23: 01A0623	TN464	F			6																																																																																																																																											

3.3. Configure Call Routing

This section describes the steps for configuring call routing from Avaya Communication Manager to Avaya Meeting Exchange via the IMG. For this sample configuration, ARS/AAR dialing without FAC is utilized to route calls to Avaya Meeting Exchange. Note that other forms of call routing may be utilized.

Step	Description
3.3.1	<p>Issue the command “change dialplan analysis”, and administer settings to route any numbers beginning with a 4 and totaling 3 digits in length via AAR as displayed.</p> <pre> change dialplan analysis Page 1 of 12 DIAL PLAN ANALYSIS TABLE Percent Full: 1 Dialed Total Call Dialed Total Call Dialed Total Call String Length Type String Length Type String Length Type 0 1 fac 0 1 fac 0 1 fac 1 3 dac 1 3 dac 1 3 dac 2 3 aar 2 3 aar 2 3 aar 3 5 ext 3 5 ext 3 5 ext 4 3 aar 4 3 aar 4 3 aar 5 3 aar 5 3 aar 5 3 aar 6 3 aar 6 3 aar 6 3 aar 7 5 ext 7 5 ext 7 5 ext 8 2 fac 8 2 fac 8 2 fac 9 2 dac 9 2 dac 9 2 dac * 1 fac * 1 fac * 1 fac # 3 fac # 3 fac # 3 fac </pre>

Step	Description
3.3.2	<p>Issue the command “change route-pattern <n>”, where n is the number of an unallocated route pattern. Administer settings to utilize the trunk group provisioned in Step 3.2.3 to route calls from Avaya Communication Manager to the IMG.</p> <ul style="list-style-type: none"> Enter the number of the trunk group that was provisioned in Step 3.2.3 in the Grp No field. To disable restrictions for call routing via this route pattern, set the Facility Restriction Level (FRL) field to the lowest setting. Configure additional fields with boldface type as displayed, and use default settings for remaining fields.
	<pre> change route-pattern 6 Pattern Number: 6 Pattern Name: PRI Rt To IMG SCCAN? n Secure SIP? n Grp FRL NPA Pfx Hop Toll No. Inserted DCS/ IXC No Mrk Lmt List Del Digits QSIG 1: 6 0 0 Intw 2: n user 3: n user 4: n user 5: n user 6: n user BCC VALUE TSC CA-TSC ITC BCIE Service/Feature PARM No. Numbering LAR 0 1 2 M 4 W Request Dgts Format 1: Y Y Y Y Y n n rest Subaddress none 2: Y Y Y Y Y n n rest none 3: Y Y Y Y Y n n rest none 4: Y Y Y Y Y n n rest none 5: Y Y Y Y Y n n rest none 6: Y Y Y Y Y n n rest none </pre>

Step	Description																		
3.3.3	<p>Issue the command “change aar analysis x”, and add an entry in the table to utilize the route pattern provisioned in Step 3.3.2.</p> <ul style="list-style-type: none">• Enter a number in the Dialed String field that will be utilized by Avaya Meeting Exchange to map to a direct call flow.• Enter the number of the route pattern provisioned in Step 3.3.2 in the Route Pattern field.• Configure additional fields with boldface type as displayed, and use default settings for remaining fields.																		
<div>change aar analysis 4<div>Page1 of 2</div></div> <div>AAR DIGIT ANALYSIS TABLE<div>Percent Full:1</div></div> <table><tr><th>Dialed String</th><th>Total Min Max</th><th>Route Pattern</th><th>Call Type</th><th>Node Num</th><th>ANI Req'd</th></tr><tr><td>401</td><td>33</td><td>6</td><td>aar</td><td></td><td>n</td></tr><tr><td>444</td><td>33</td><td>6</td><td>aar</td><td></td><td>n</td></tr></table>		Dialed String	Total Min Max	Route Pattern	Call Type	Node Num	ANI Req'd	401	33	6	aar		n	444	33	6	aar		n
Dialed String	Total Min Max	Route Pattern	Call Type	Node Num	ANI Req'd														
401	33	6	aar		n														
444	33	6	aar		n														

4. Avaya Meeting Exchange Configuration

This section displays the configuration for enabling Avaya Meeting Exchange to interoperate with Avaya Communication Manager via the IMG. Avaya Meeting Exchange is administered and maintained using a standard web browser over a secure connection by entering **https://<IP address of Avaya Meeting Exchange>/mx** into the web browser’s Uniform Resource Locator (URL) bar.

4.1. Configure Connectivity

This section describes the steps for configuring SIP/TCP connectivity between Avaya Meeting Exchange and the IMG.

Step	Description
4.1.1	<p>Administer settings that enable SIP connectivity between Avaya Meeting Exchange and other SIP User Agents as follows:</p> <ul style="list-style-type: none"> From the web interface toolbar, click Configuration. Click SIP Agent under Bridge Configuration. Enter a SIP URI for Avaya Meeting Exchange that conforms to SIP standards in the SIP Address field. This field is used to populate the From Header Field in SIP INVITE messages from Avaya Meeting Exchange. To enable SIP/TCP connectivity on port 5060, this entry must contain 5060 and transport=tcp. The user field, S6100, must conform to SIP standards, and is selected to uniquely identify this server. For example, S6100 will be inserted in the From Header Field of SIP INVITE messages from Avaya Meeting Exchange and will display on a participant's endpoint when Dial-Out procedures from Avaya Meeting Exchange are invoked. This allows end-user's to identify a call from Avaya Meeting Exchange. Enter the SIP URI, as configured for the SIP Address field, in angled brackets in the Contact field. This field is used to populate the Contact Header Field in SIP INVITE messages from Avaya Meeting Exchange, and provides SIP User Agents, for these Application Notes the IMG, a means for acknowledging SIP messages from Avaya Meeting Exchange. Use default settings for remaining fields. Click the Submit button to add the configuration to the database.

AVAYA Meeting Exchange Express Edition
Install Engineer

Help Log Out Installation **Configuration** Provisioning Reset Server

System Configuration

- Global Settings
- Conference Defaults
- Directories
- Blast Dial Controls
- Playback Controls
- Adhoc Controls
- Scheduled Jobs**
- Recurrent Booking
- Bridge Configuration
- Media Server
- SIP Agent**
- System Maps
- URI to Service Map
- TelNum to URI Map

SIP Agent

* SIP Address sip:S6100@192.168.13.121:5060;transport=tcp

* Differentiated Service TOS Value 4

* Ethernet VLAN Value 10

Contact < sip:S6100@192.168.13.121:5060;transport=tcp >

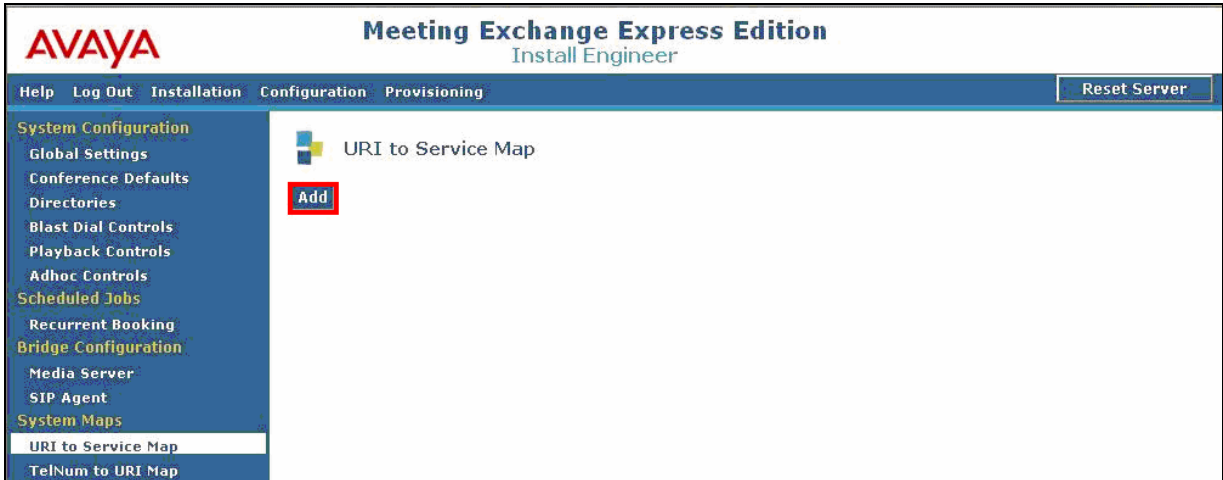
SIPPING Notification Interval 1

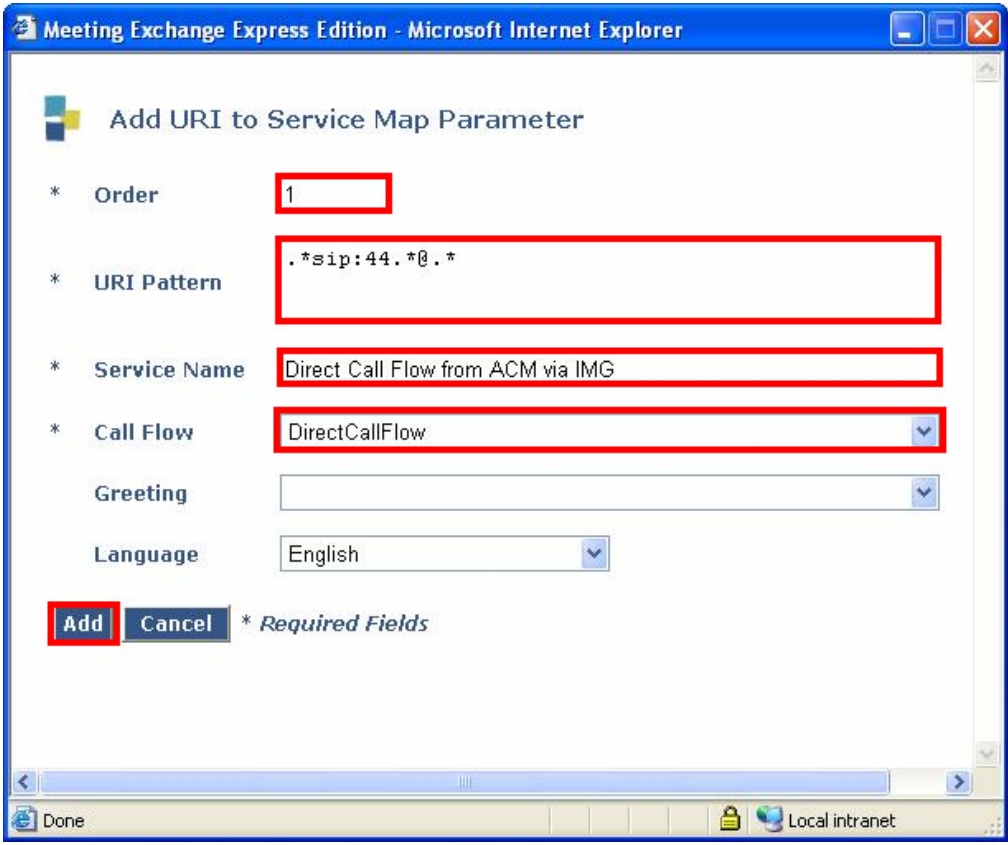
Submit * Required Fields

4.2. Configure Call Routing

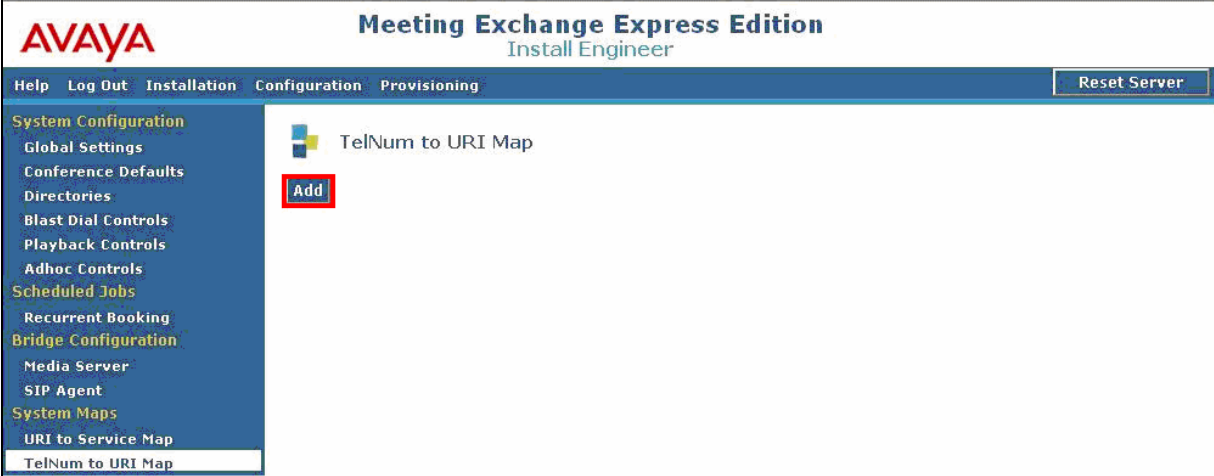
This section describes the steps for configuring call routing for Avaya Meeting Exchange. On Avaya Meeting Exchange, call routing is defined by service maps as follows:

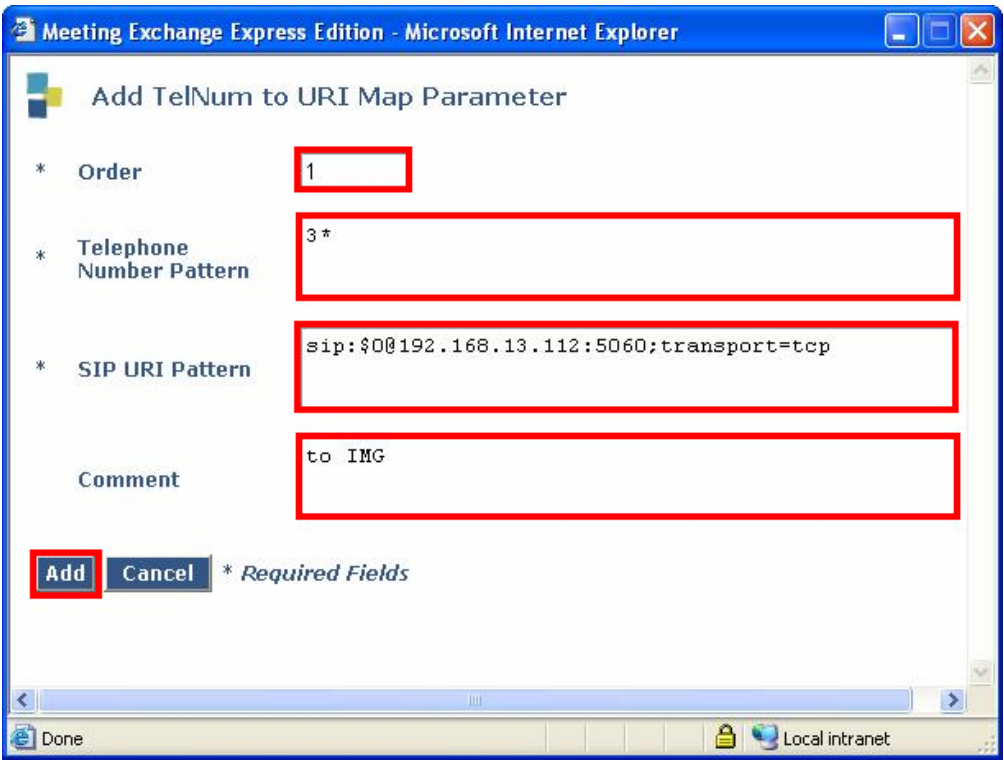
- For inbound calls to Avaya Meeting Exchange, service maps for URI to telephone number translations are utilized. These translations associate calls to Avaya Meeting Exchange with corresponding call flows, thus allowing for specific treatment for a participant based on incoming calls based on a SIP Uniform Resource Identifier (URI).
- For outbound calls from Avaya Meeting Exchange, service maps for telephone number to URI translations are utilized. These translations associate a telephone number pattern with a corresponding SIP URI of a SIP User Agent (UA), thus allowing call origination from Avaya Meeting Exchange to the SIP UA.


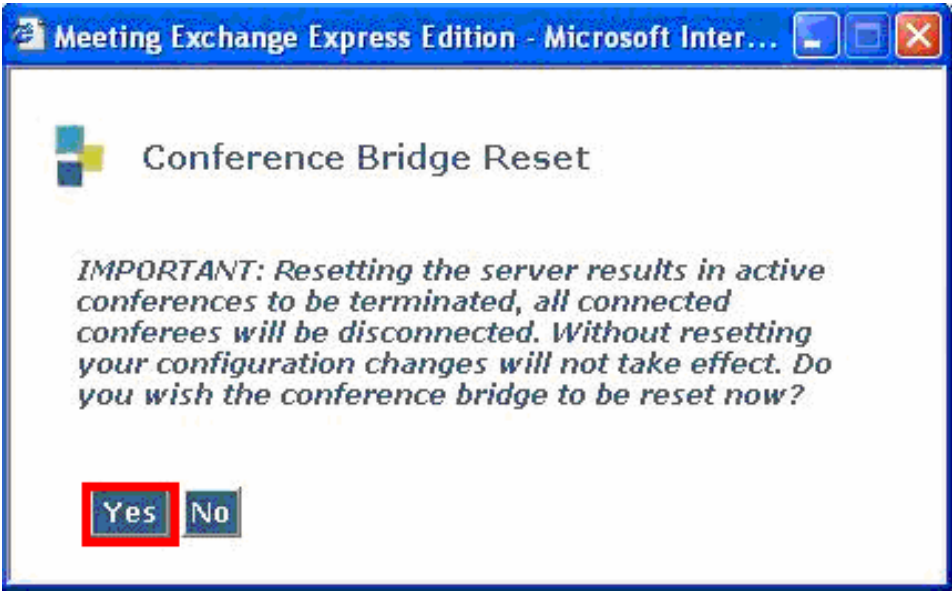
Step	Description
4.2.1	<p>To associate incoming calls to Avaya Meeting Exchange with a call flow, add a URI to service map entry as follows:</p> <ul style="list-style-type: none">• Click URI to Service Map under System Maps.• Click the Add button. 

Step	Description
4.2.2	<p>From the Add URI to Service Map Parameter screen, administer settings to enable a direct call flow for calls from Avaya Communication Manager via the IMG as follows:</p> <ul style="list-style-type: none"> • Leave the Order field at the default value. Avaya Meeting Exchange parses URI to service map entries for pattern matches in descending order, terminating the search once a pattern is matched. For this sample configuration, order is irrelevant as the patterns for call flows are mutually exclusive. • Enter a rule in the URI Pattern field to match the pattern of incoming Request URIs in SIP INVITE messages from Avaya Communication Manager via the IMG. Metacharacters such as . (matches any one character) or * (matches zero or more of the preceding character) may be utilized. For example, assume the IMG sends the following URI: <i>sip:444@192.168.13.121:5060;transport=tcp</i>. The entry in the URI Pattern field, <i>.*sip:44.*@.*</i>, would match <i>sip:44</i>, then zero or more characters, followed by <i>@</i>, then zero or more characters. • To allow access to conferences as moderator, without entering a passcode, select DirectCallFlow from the drop down menu for the Call Flow field. • Enter a descriptive name for this map in the Service Name field. • Click the Add button to add the map to the database. 

Step	Description															
4.2.3	<p>To associate incoming calls to Avaya Meeting Exchange with a basic call flow, repeat Step 4.2.1 to add a URI to service map entry for a basic call flow with the following parameters:</p> <ul style="list-style-type: none">• Leave the Order field at the default value.• Enter .<i>*sip:40.*@.*</i> in the URI Pattern field to match the pattern of incoming Request URIs in SIP INVITE messages from Avaya Communication Manager via the IMG.• To access a conference with an associated passcode, select BasicCallFlow from the drop down menu for the Call Flow field.• Enter a descriptive name for this map in the Service Name field.• The resulting URI to service map list is displayed below. <p><i>Note: The provisioning for the URI Pattern fields for the direct and basic call flows utilize wild cards that make the call flows mutually exclusive while maximizing the breadth of the pattern match. For example, the URI Pattern field for the basic call flow is .<i>*sip:40.*@.*</i>. This aligns with the provisioning for call routing on Avaya Communication Manager in Section 3.3, and allows 40x, where x can be any digit, to match this direct call flow.</i></p> <div><div><div><div><div>AVAYA</div><div>Meeting Exchange Express Edition</div><div>Install Engineer</div></div><div><div>Help</div><div>Log Out</div><div>Installation</div><div>Configuration</div><div>Provisioning</div></div><div><div>Reset Server</div></div></div><div><div><div>System Configuration</div><div>Global Settings</div><div>Conference Defaults</div><div>Directories</div><div>Blast Dial Controls</div><div>Playback Controls</div><div>Adhoc Controls</div><div>Scheduled Jobs</div><div>Recurrent Booking</div><div>Bridge Configuration</div><div>Media Server</div><div>SIP Agent</div><div>System Maps</div><div>URI to Service Map</div><div>TelNum to URI Map</div></div><div><div><div>URI to Service Map</div></div><table><thead><tr><th>Order</th><th>URI Pattern</th><th>Service Name</th><th>Call Flow</th><th>Greeting</th></tr></thead><tbody><tr><td><input type="checkbox"/></td><td>1 .<i>*sip:44.*@.*</i></td><td>Direct Call Flow from ACM via IMG</td><td>DirectCallFlow</td><td></td></tr><tr><td><input type="checkbox"/></td><td>2 .<i>*sip:40.*@.*</i></td><td>Basic Call Flow from ACM via IMG</td><td>BasicCallFlow</td><td>greeting</td></tr></tbody></table></div></div></div></div>	Order	URI Pattern	Service Name	Call Flow	Greeting	<input type="checkbox"/>	1 . <i>*sip:44.*@.*</i>	Direct Call Flow from ACM via IMG	DirectCallFlow		<input type="checkbox"/>	2 . <i>*sip:40.*@.*</i>	Basic Call Flow from ACM via IMG	BasicCallFlow	greeting
Order	URI Pattern	Service Name	Call Flow	Greeting												
<input type="checkbox"/>	1 . <i>*sip:44.*@.*</i>	Direct Call Flow from ACM via IMG	DirectCallFlow													
<input type="checkbox"/>	2 . <i>*sip:40.*@.*</i>	Basic Call Flow from ACM via IMG	BasicCallFlow	greeting												

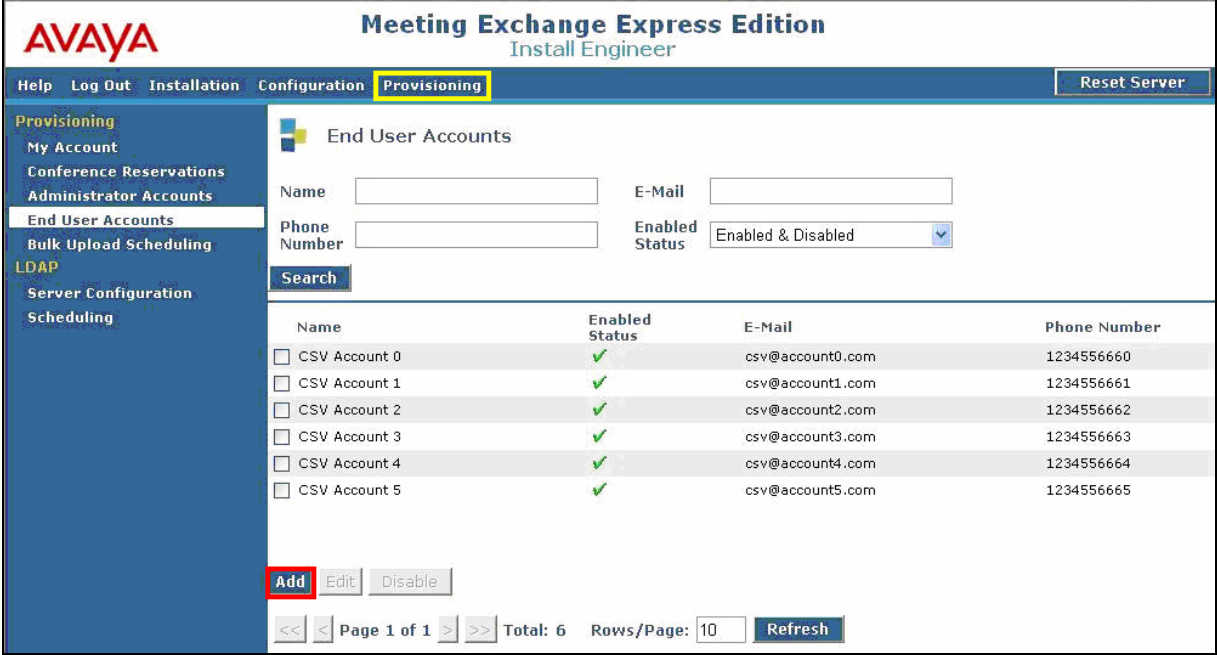
Step	Description
4.2.4	<p>To enable routing of outbound calls from Avaya Meeting Exchange, add a TelNum to URI map entry as follows:</p> <ul style="list-style-type: none"> • Click TelNum to URI Map under System Maps. • Click the Add button. 

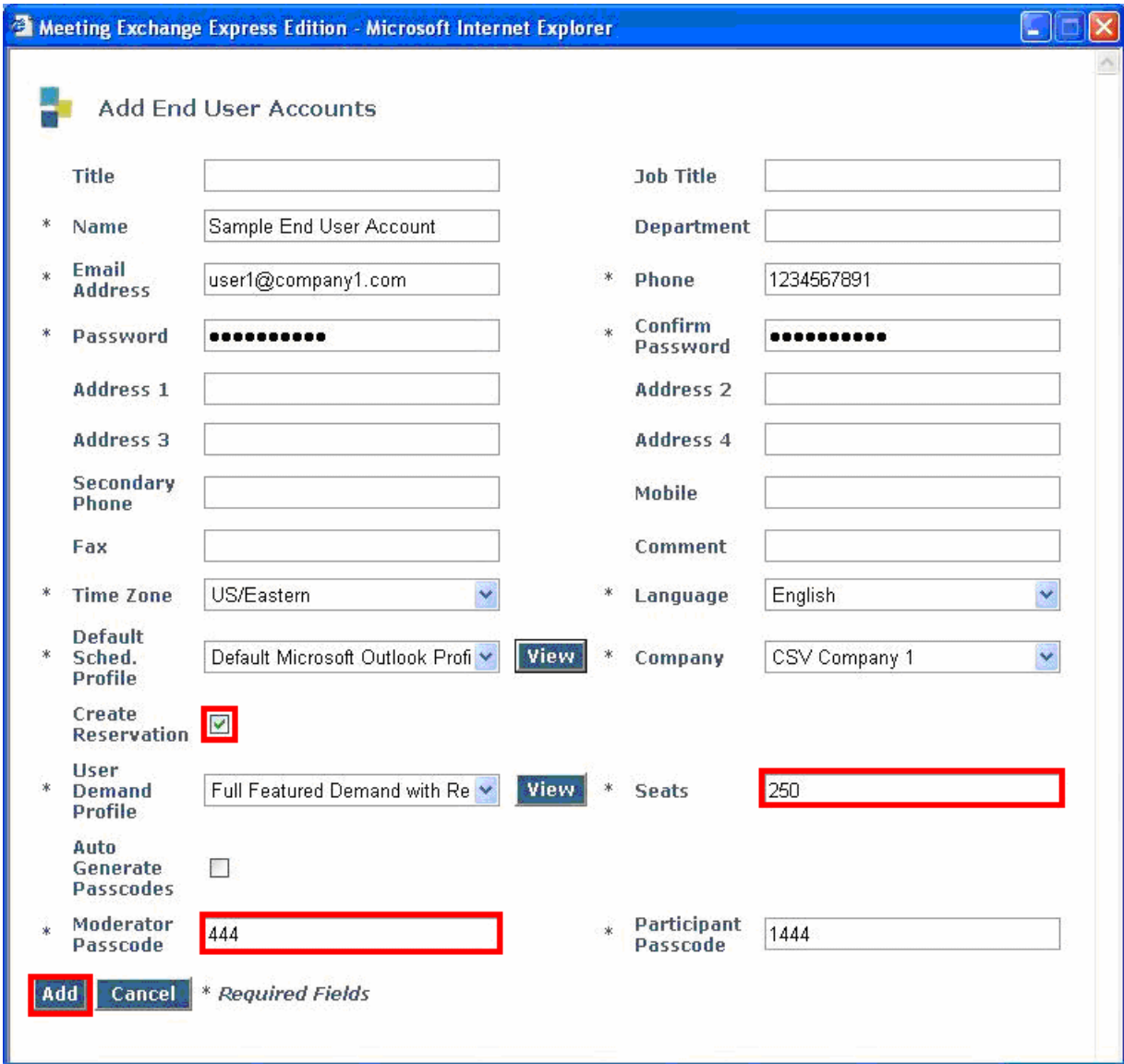
Step	Description
4.2.5	<p>From the Add TelNum to URI Map Parameter screen, administer settings to enable outbound calling to Avaya Communication Manager via the IMG as follows:</p> <ul style="list-style-type: none"> • Leave the Order field at the default value. Avaya Meeting Exchange parses TelNum to URI map entries for pattern matches in descending order, terminating the search once a pattern is matched. For this sample configuration, order is irrelevant as there is only one entry in the database. • Enter a rule in the Telephone Number Pattern field that matches the administration on for telephone extensions on Avaya Communication Manager. Metacharacters such as * (refers to a character string) or ? (refers to a single character) may be utilized. • To enable outbound calling from Avaya Meeting Exchange, enter a rule in the SIP URI Pattern field that conforms to SIP standards. To enable SIP/TCP connectivity for outbound calls to Avaya Communication Manager via the IMG, the rule must contain 5060 and transport=tcp. The metacharacter, \$0 is replaced by the entire Telephone Number Pattern at the location of \$0 in the SIP URI Pattern. For example, if 31002 is the dialed string, Avaya Meeting Exchange will send a SIP INVITE message with a SIP URI and To Header Field formatted as follows: <i>sip:31002@192.168.13.112:5060;transport=tcp.</i> • Click the Add button to add the map to the database. 

Step	Description
4.2.6	<p>Apply the configuration by clicking the Reset Server button  located on the right hand side of the web interface toolbar. Confirm this action by clicking Yes in the pop up window.</p> 

4.3. Provision Accounts

The following steps present an example of provisioning an end user account and associated conference reservation on Avaya Meeting Exchange.

Step	Description
4.3.1	<p>To provide end users access to the conferencing features available on Avaya Meeting Exchange, add an end user account as follows:</p> <ul style="list-style-type: none">• From the web interface toolbar, click Provisioning.• Click End User Accounts under Provisioning.• Click the Add button. <p><i>Note: Avaya Meeting Exchange comes with pre-provisioned accounts as displayed.</i></p> <div></div>

Step	Description
4.3.2	<p>From the Add End User Accounts screen, provision an end user account as follows:</p> <ul style="list-style-type: none"> • Check Create Reservation to generate a reservation for a conference that is associated with this end user account. • Enter the number of ports assigned to this conference in the Seats field. • Enter a number in the Moderator Passcode field that corresponds to the direct call flow provisioned in Step 4.2.2. • Refer to [1] for definitions regarding the remaining required fields on this screen. • Click the Add button to add the account to the database. 

Step	Description
4.3.3	<p>Modify the conference reservation corresponding to the end user account provisioned in Step 4.3.2 as follows:</p> <ul style="list-style-type: none"> Click Conference Reservations under Provisioning. Check the conference reservation corresponding to the end user account provisioned in Step 4.3.2. Click the Edit button.

AVAYA Meeting Exchange Express Edition
Install Engineer

Help Log Out Installation Configuration Provisioning Reset Server

Provisioning
My Account
Conference Reservations
Administrator Accounts
End User Accounts
Bulk Upload Scheduling
LDAP
Server Configuration
Scheduling

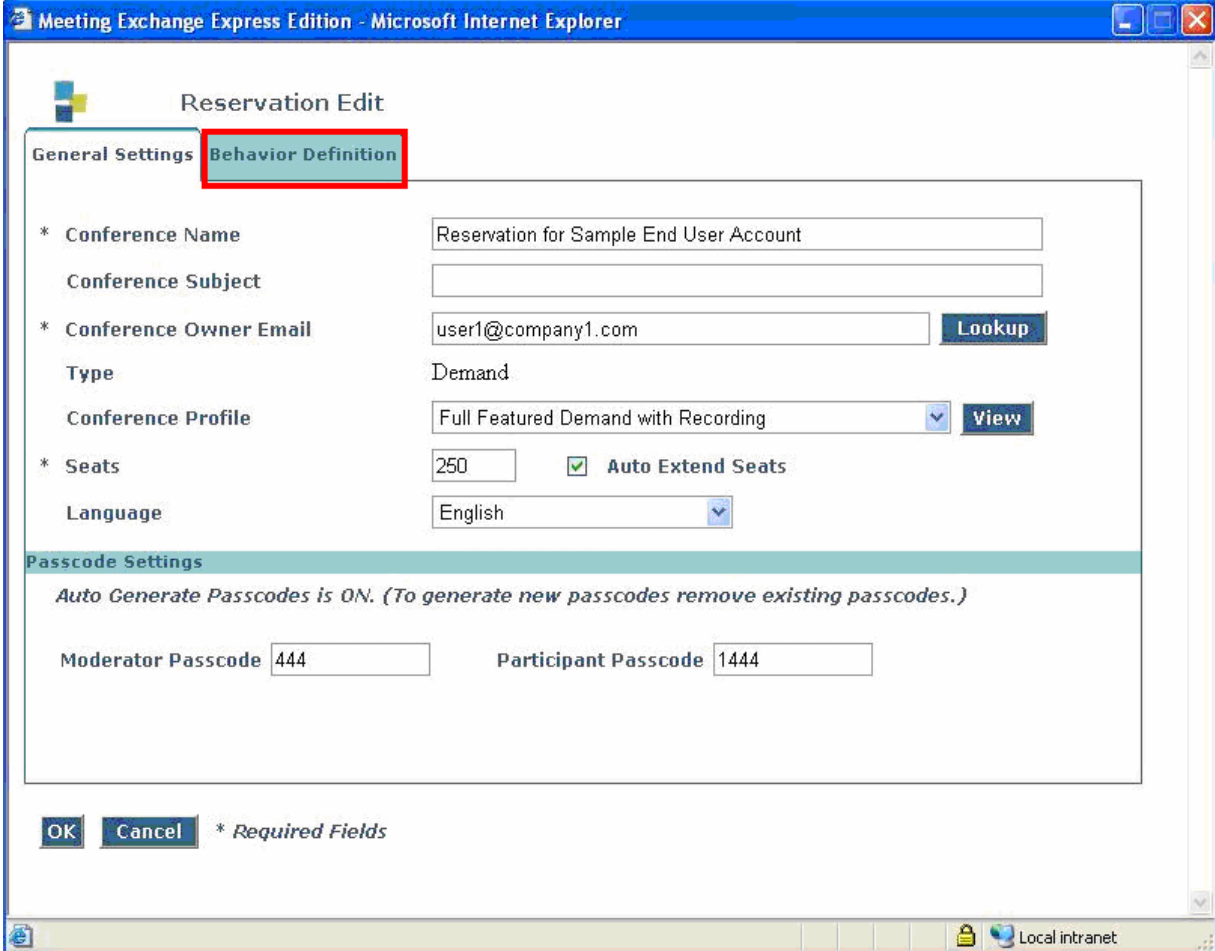
Conference Reservations

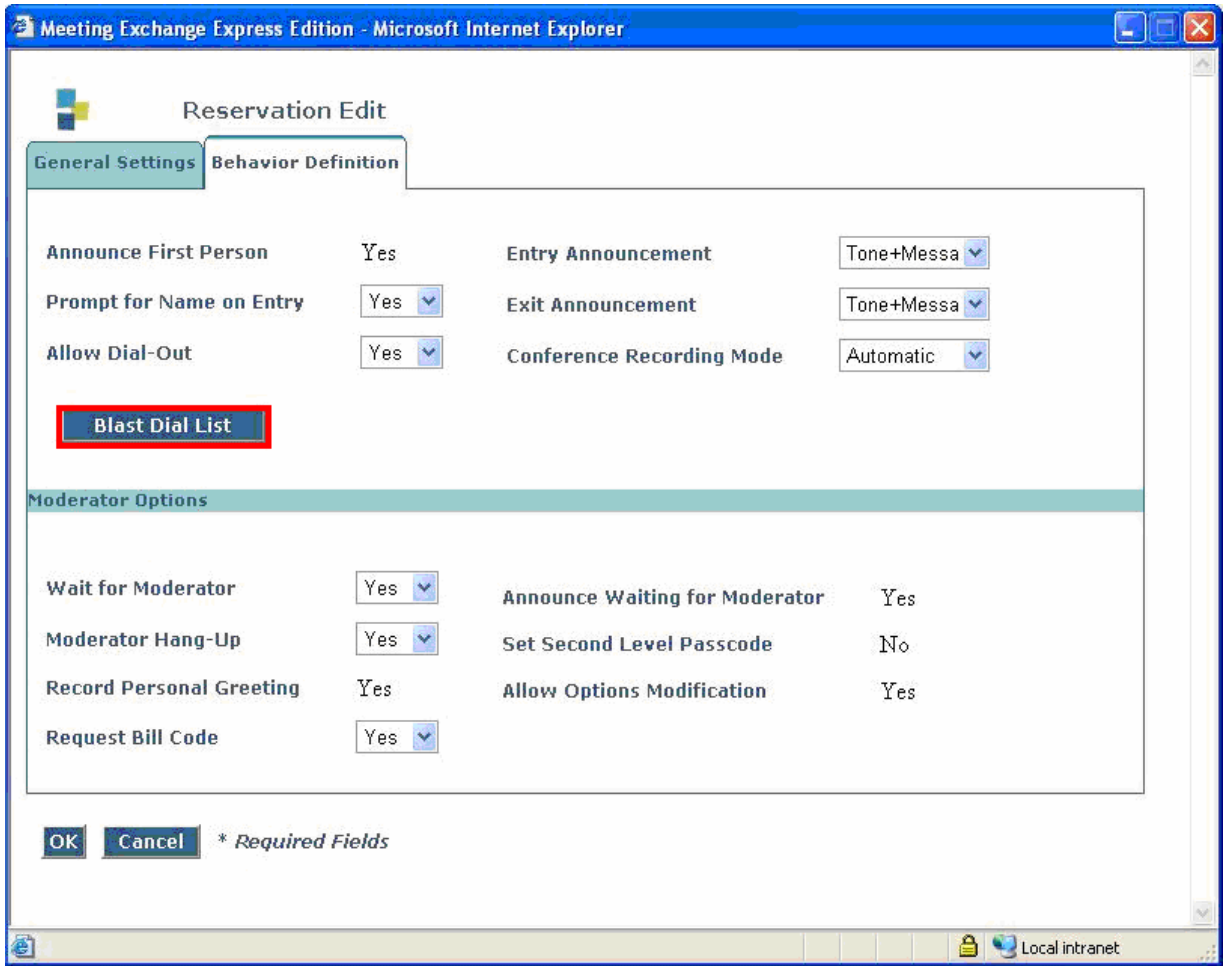
Conference Name Conference Owner Email
 Type Profile
 Rows/Page Search More ▼

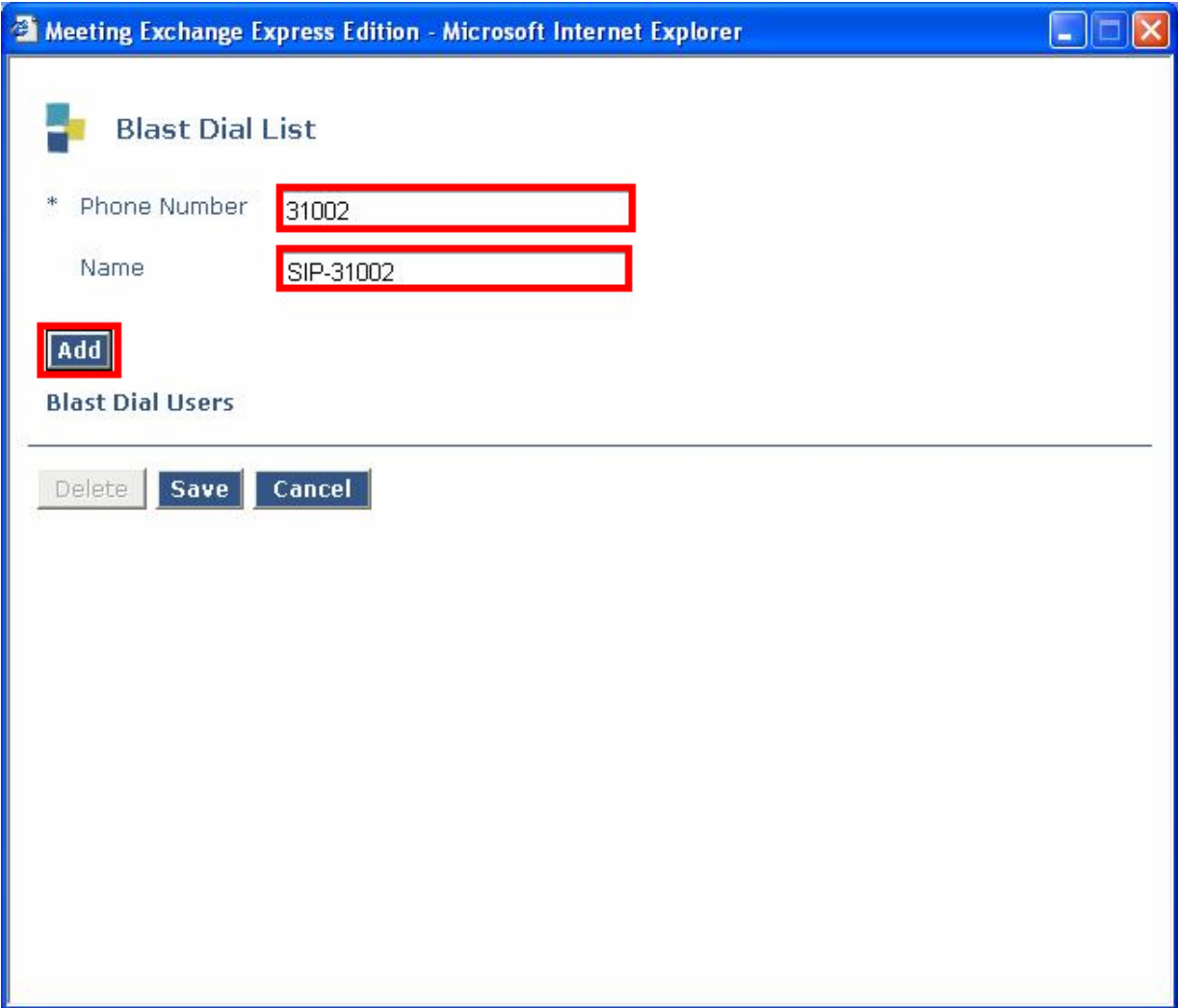
Total Records: 7 Page 1 of 1 << < Go To Page > >>

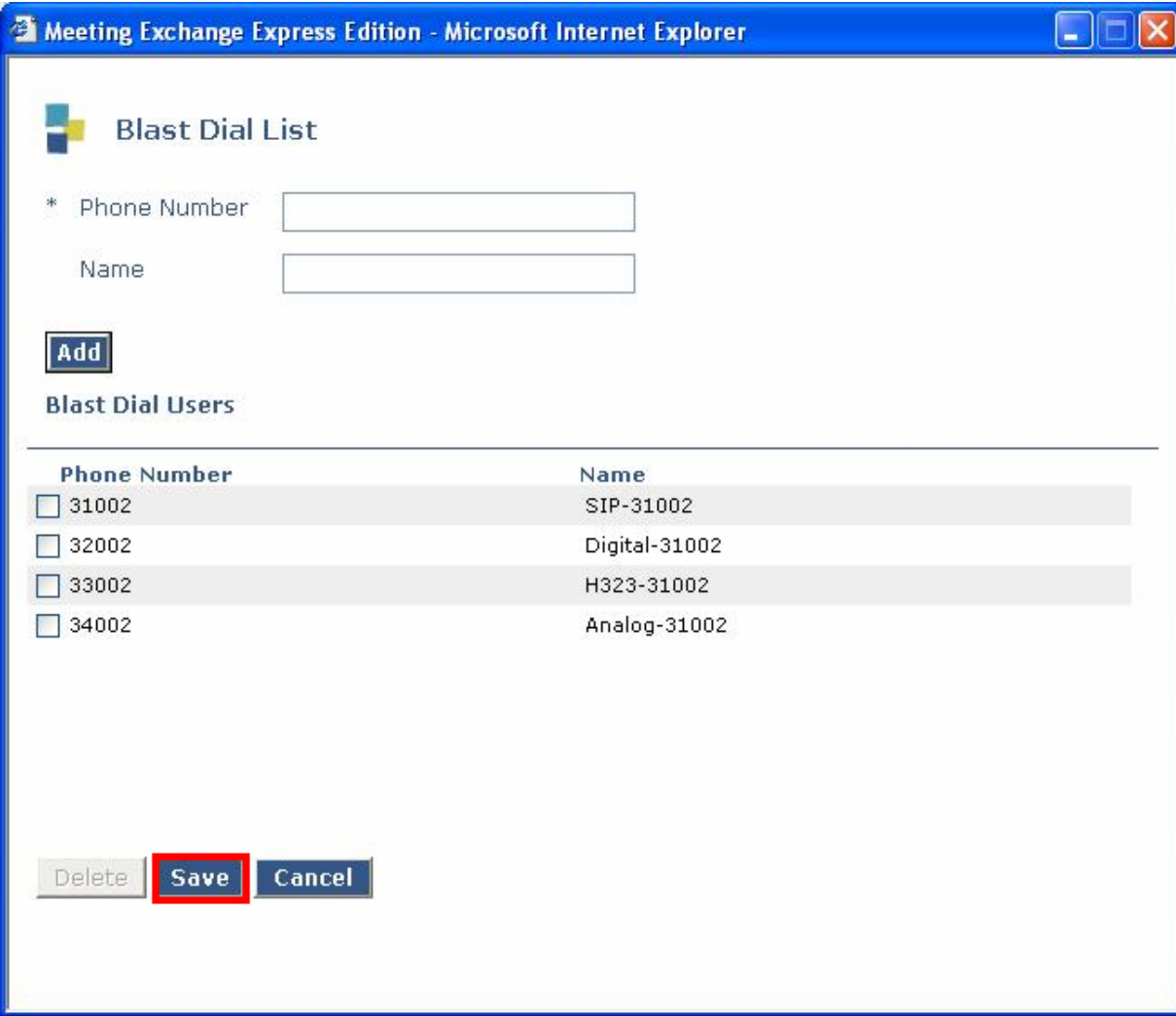
	Conference Name	Type	Start Date	Owner	Moderator Passcode	Participant Passcode
<input checked="" type="checkbox"/>	Reservation for Sample End User Account	On-demand		Sample End User Account	444	1444
<input type="checkbox"/>	Reservation for CSV Account 5	On-demand		CSV Account 5	22346	12346
<input type="checkbox"/>	Reservation for CSV Account 4	On-demand		CSV Account 4	22345	12345
<input type="checkbox"/>	Reservation for CSV Account 3	On-demand		CSV Account 3	22344	12344
<input type="checkbox"/>	Reservation for CSV Account 2	On-demand		CSV Account 2	22343	12343
<input type="checkbox"/>	Reservation for CSV Account 1	On-demand		CSV Account 1	22342	12342

Add Edit Delete

Step	Description
4.3.4	<p>The configuration displayed in the General Settings tab for this conference reservation is correlated with the configuration administered for the end user account provisioned in Step 4.3.2. Any updates made in this screen will be reflected in the corresponding end user account and vice-versa. To modify parameters associated with this conference reservation, click the Behavior Definition tab.</p> 

Step	Description
4.3.5	<p>The configuration displayed in the Behavior Definition tab may be modified to suit the requirements for this conference. For this sample configuration, a blast dial list was provisioned. To configure a blast dial list, click the Blast Dial List button.</p>  <p>The screenshot shows a web browser window titled "Meeting Exchange Express Edition - Microsoft Internet Explorer". Inside, there's a "Reservation Edit" dialog box with two tabs: "General Settings" and "Behavior Definition". The "Behavior Definition" tab is selected. It contains several configuration options with dropdown menus or checkboxes. A red rectangle highlights the "Blast Dial List" button. Below the main settings is a section titled "Moderator Options" with more settings. At the bottom are "OK" and "Cancel" buttons, and a note "* Required Fields". The browser's status bar at the bottom shows "Local intranet".</p>

Step	Description
4.3.6	<p>From the Blast Dial List screen, add entries to the blast dial list as follows:</p> <ul style="list-style-type: none"> • Enter a number in the Phone Number field that is associated with the following: <ul style="list-style-type: none"> ○ The telephone number pattern provisioned for the TelNum to URI map in Step 4.2.5. ○ Telephones registered to either Avaya Communication Manager, or Avaya SIP Enablement Services. • Enter a descriptive name for this phone number in the Name field. • Click the Add button to add entries to this blast dial list. • The resultant provisioning is shown below. 

Step	Description
4.3.7	<p>Repeat Step 4.3.6 to add additional phone numbers to the blast dial list. The resultant blast dial list is displayed below.</p> <ul style="list-style-type: none"> Click the Save button to save and associate the blast dial list with this conference. Click the OK button (displayed in the lower left hand corner of the Behavior Definition tab in Step 4.3.5) to save the modifications to this conference in the database. 

5. Cantata Technology IMG 1010 Configuration

This section displays the configuration for enabling the IMG to interoperate with Avaya Communication Manager as well as Avaya Meeting Exchange.

The IMG was administered from the Cantata Technology ClientView (ClientView) application running which was co-resident with the Cantata Technology GateControl Element Management System (GCEMS) running on a Linux server. Refer to the Cantata website for on-line documentation regarding the IMG, GCEMS and the ClientView application.

Note that this section displays the provisioning that was utilized for this sample configuration, and does not show exhaustive procedures for administering an initial configuration. For example, the screens for adding “new” elements to this sample configuration are not shown. However, the sequence of these procedures is relevant, as the configuration was administered in the order presented. Refer to the on-line help available on the Cantata website regarding procedures/commands to administer an initial configuration.

Figure 2 illustrates the main window of the ClientView application that was utilized to provision the IMG. The following panes appear in the main window:

- The **Configuration Tree**, which is located in the top-left portion of the main window. This pane contains all of the items that can be configured. Right-click an item to access additional configuration items. Creating an entry in the Configuration Tree opens the corresponding Configuration Pane.
- The **Configuration Pane**, which is located in the top-right portion of the main window. This pane shows the properties of the selected object. This pane is used to view and edit the configuration.
 - The column titled **As-Configured**, shows the current configuration for parameters, as defined by the **Property** column. Enter or edit values in the **User-Specified** column.

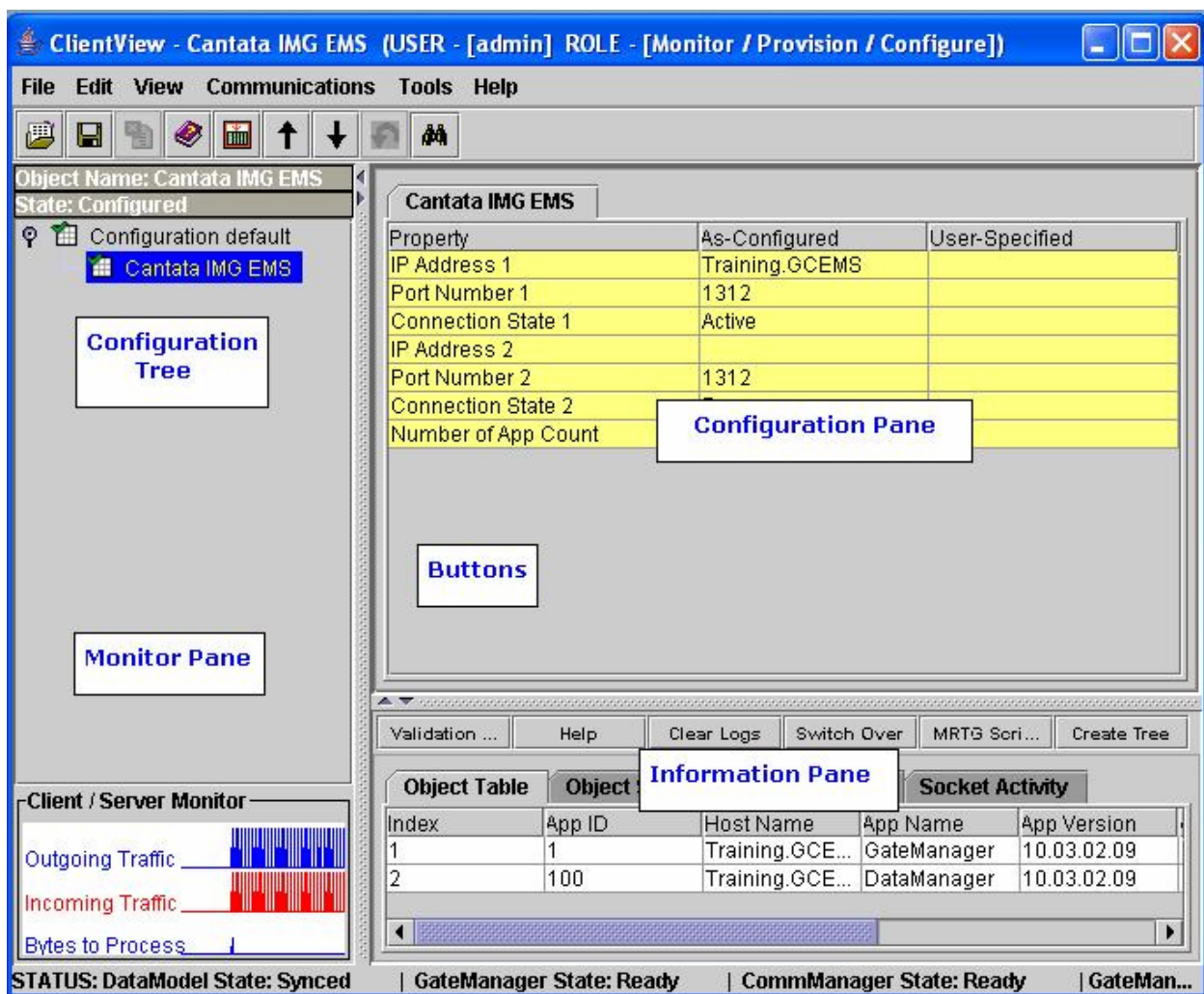
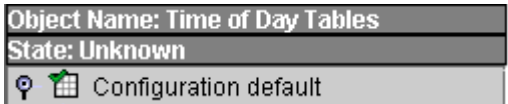
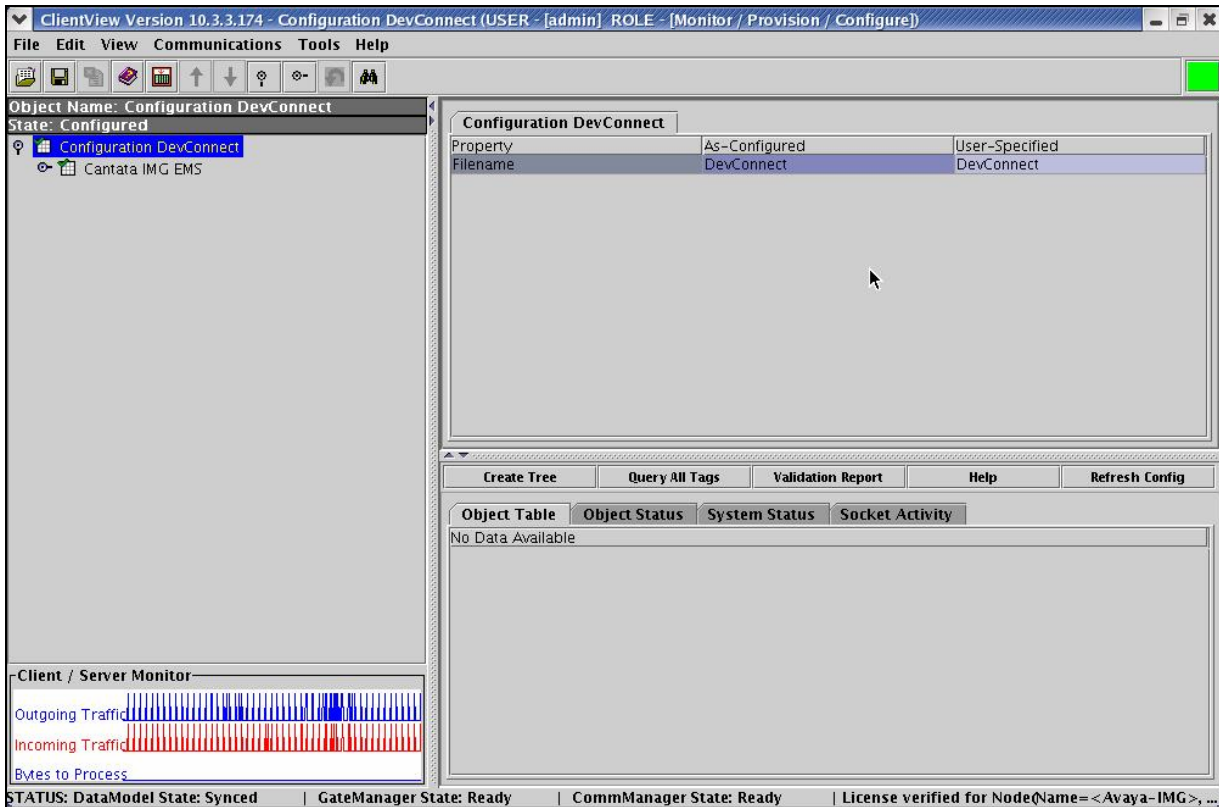
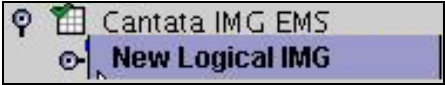
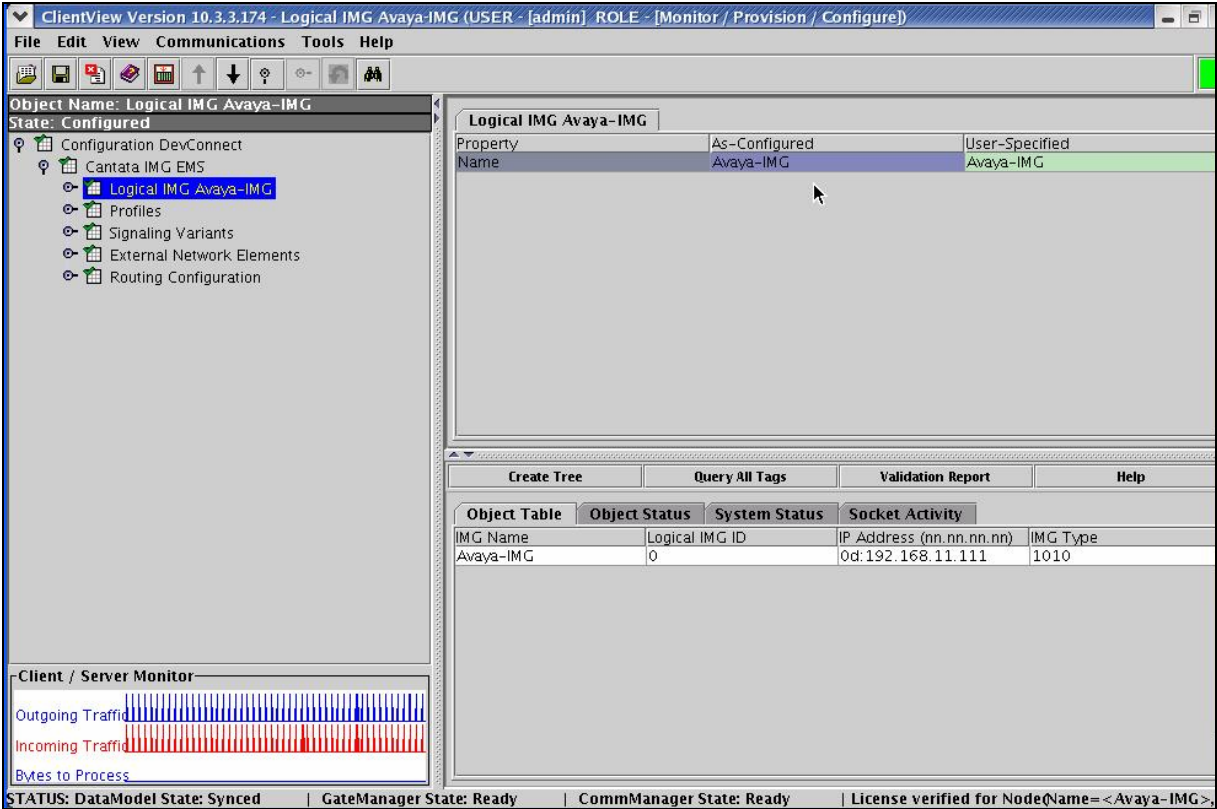
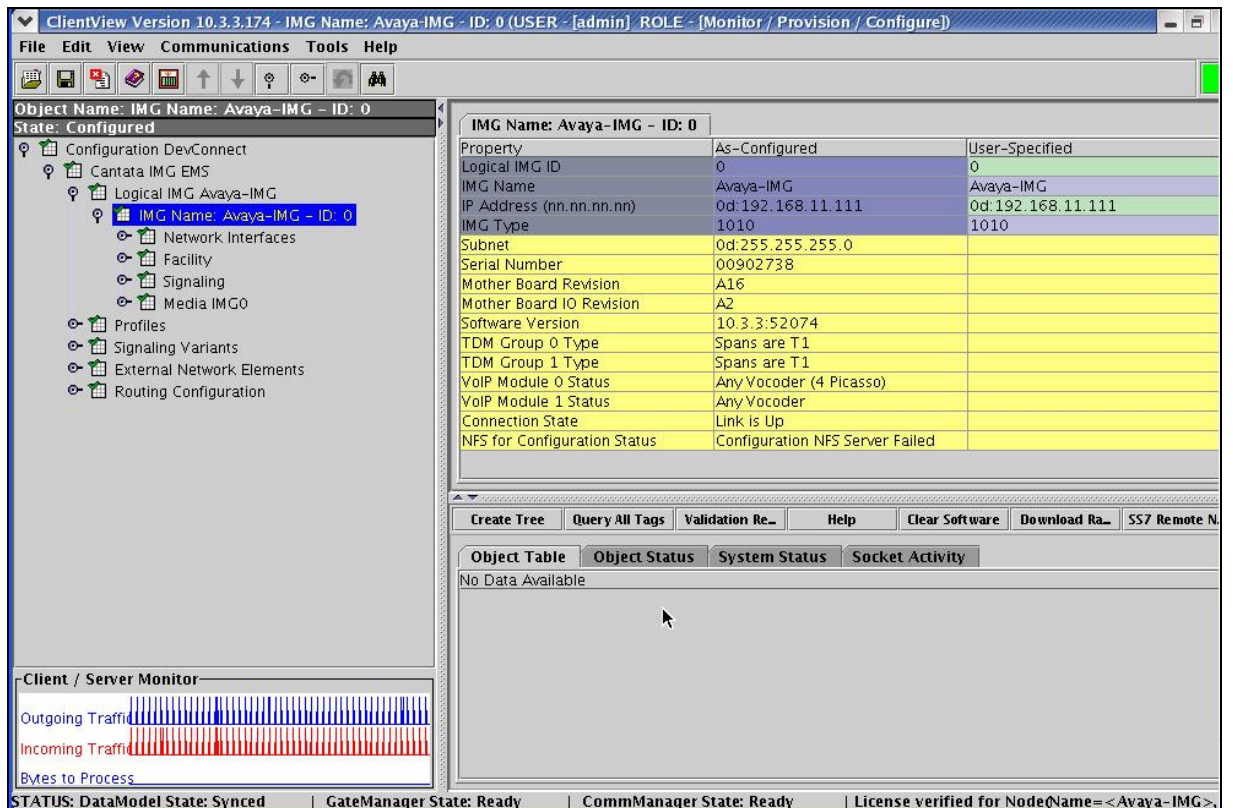


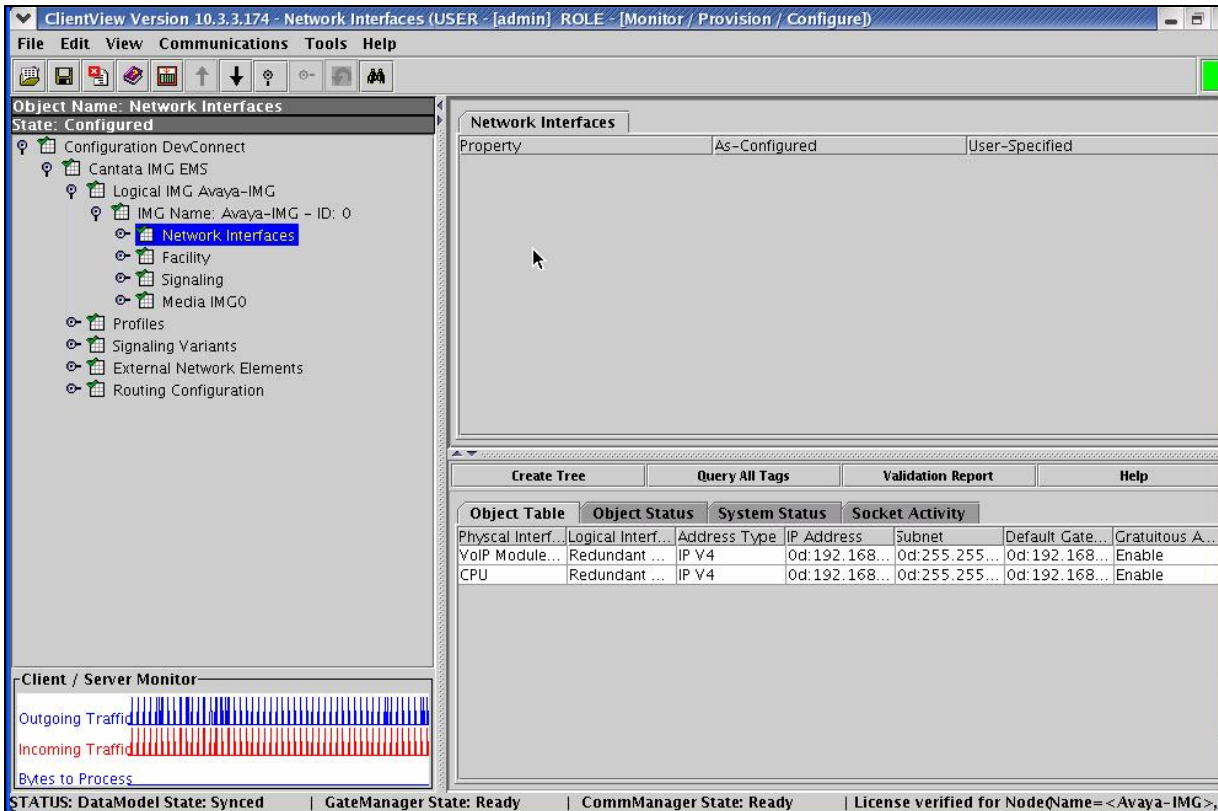
Figure 2: Cantata Technology ClientView Main Window

Step	Description
5.1.1	<p>A default configuration file named “default” is created when ClientView connects to GCEMS. To save the configuration file with a new name:</p> <ul style="list-style-type: none"> Right-click Configuration default in the Configuration Tree, and select Modify.  <ul style="list-style-type: none"> Enter a descriptive name in the Filename field in the Configuration Pane. To save the changes, right-click Configuration DevConnect, and select Commit. The resultant provisioning is shown below. 

Step	Description
5.1.2	<p>Create a logical IMG as follows:</p> <ul style="list-style-type: none"> Right-click Cantata IMG EMS in the Configuration Tree, and select New Logical IMG.  <ul style="list-style-type: none"> Enter a descriptive name for the logical IMG in the Name field in the Configuration Pane. To save the changes, right-click Logical IMG Avaya-IMG, and select Commit. The resultant provisioning is shown below. 

Step	Description
5.1.3	<p>Create a physical IMG as follows:</p> <ul style="list-style-type: none"> Right-click the logical IMG in the Configuration Tree, and select New Physical IMG. Enter a descriptive name for the physical IMG in the IMG Name field in the Configuration Pane. Enter the IP address of the physical IMG in the IP Address field. This is the same IP address assigned to the CTRL 0 port on the back of the IMG. Use default settings for remaining fields. To save the changes, right-click IMG Name: Avaya-IMG - ID:0, and select Commit. The resultant provisioning is shown below.



Step	Description																
5.1.4	<p>Create an object for Network Interfaces as follows:</p> <ul style="list-style-type: none">• Right-click the physical IMG in the Configuration Tree, and select New Network Interfaces.• To save the changes, right-click Network Interfaces, and select Commit.• The resultant provisioning is shown below.  <p>The screenshot shows the ClientView interface. On the left, the Configuration Tree is expanded to 'Network Interfaces'. The main pane displays the 'Network Interfaces' table with the following data:</p> <table><tr><th>Object Table</th><th>Object Status</th><th>System Status</th><th>Socket Activity</th></tr><tr><td>Physical Interf...</td><td>Logical Interf...</td><td>Address Type</td><td>IP Address</td></tr><tr><td>VoIP Module...</td><td>Redundant ...</td><td>IP V4</td><td>0d:192.168...</td></tr><tr><td>CPU</td><td>Redundant ...</td><td>IP V4</td><td>0d:192.168...</td></tr></table> <p>The bottom status bar indicates: STATUS: DataModel State: Synced GateManager State: Ready CommManager State: Ready License verified for NodeName=<Avaya-IMG>.</p>	Object Table	Object Status	System Status	Socket Activity	Physical Interf...	Logical Interf...	Address Type	IP Address	VoIP Module...	Redundant ...	IP V4	0d:192.168...	CPU	Redundant ...	IP V4	0d:192.168...
Object Table	Object Status	System Status	Socket Activity														
Physical Interf...	Logical Interf...	Address Type	IP Address														
VoIP Module...	Redundant ...	IP V4	0d:192.168...														
CPU	Redundant ...	IP V4	0d:192.168...														

Step	Description
5.1.5	<p>Create a Network Interface corresponding to VoIP Module 0: Port 0 as follows:</p> <ul style="list-style-type: none"> Right-click Network Interfaces in the Configuration Tree, and select New Network Interface. Select VoIP Module 0: Port 0 from the drop down list for the Physical Interface field in the Configuration Pane. Administer settings for module's IP network configuration in the IP Address, Subnet and Default Gateway fields respectively. Use default settings for remaining fields. To save the changes, right-click VoIP Module 0: Port 0, and select Commit. The resultant provisioning is shown below.

ClientView Version 10.3.3.174 - VoIP Module 0: Port 0 (USER - [admin] ROLE - [Monitor / Provision / Configure])

File Edit View Communications Tools Help

Object Name: VoIP Module 0: Port 0
State: Configured

Configuration Tree:

- Configuration DevConnect
 - Cantata IMG EMS
 - Logical IMG Avaya-IMG
 - IMG Name: Avaya-IMG - ID: 0
 - Network Interfaces
 - VoIP Module 0: Port 0** (Selected)
 - CPU
 - Facility
 - Signaling
 - Media IMG0
 - Profiles
 - Signaling Variants
 - External Network Elements
 - Routing Configuration

VoIP Module 0: Port 0

Property	As-Configured	User-Specified
Physical Interface	VoIP Module 0: Port 0	VoIP Module 0: Port 0
Logical Interface	Redundant Data	Redundant Data
Address Type	IP V4	IP V4
IP Address	0d:192.168.13.111	0d:192.168.13.111
Subnet	0d:255.255.255.0	0d:255.255.255.0
Default Gateway	0d:192.168.13.1	0d:192.168.13.1
Gratuitous ARP and ARP Respons...	Enable	Enable

Buttons: Create Tree, Query All Tags, Validation Report, Help

Object Table	Object Status	System Status	Socket Activity
Physical Interf...	Logical Interf...	Address Type	IP Address Subnet Default Gate... Gratuitous A...
VoIP Module...	Redundant ...	IP V4	0d:192.168... 0d:255.255... 0d:192.168... Enable
CPU	Redundant ...	IP V4	0d:192.168... 0d:255.255... 0d:192.168... Enable

Client / Server Monitor

Outgoing Traffic (Blue bars)
Incoming Traffic (Red bars)
Bytes to Process

STATUS: DataModel State: Synced | GateManager State: Ready | CommManager State: Ready | License verified for NodeName=<Avaya-IMG>

Step	Description
5.1.6	<p>Create a Network Interface corresponding to the CPU as follows:</p> <ul style="list-style-type: none"> Right-click Network Interfaces in the Configuration Tree, and select New Network Interface. Select CPU from the drop down list for the Physical Interface field in the Configuration Pane. Administer settings for module's IP network configuration in the IP Address, Subnet and Default Gateway fields respectively. Use default settings for remaining fields. To save the changes, right-click CPU, and select Commit. The resultant provisioning is shown below.

ClientView Version 10.3.3.174 - CPU (USER - [admin] ROLE - [Monitor / Provision / Configure])

File Edit View Communications Tools Help

Object Name: CPU
State: Configured

Configuration Tree:

- Configuration DevConnect
 - Cantata IMG EMS
 - Logical IMG Avaya-IMG
 - IMG Name: Avaya-IMG - ID: 0
 - Network Interfaces
 - VoIP Module 0: Port 0
 - CPU**
 - Facility
 - Signaling
 - Media IMG0
- Profiles
- Signaling Variants
- External Network Elements
- Routing Configuration

Configuration Details:

Property	As-Configured	User-Specified
Physical Interface	CPU	CPU
Logical Interface	Redundant Data	Redundant Data
Address Type	IP V4	IP V4
IP Address	0d:192.168.13.112	0d:192.168.13.112
Subnet	0d:255.255.255.0	0d:255.255.255.0
Default Gateway	0d:192.168.13.1	0d:192.168.13.1
Gratuitous ARP and ARP Respons...	Enable	Enable

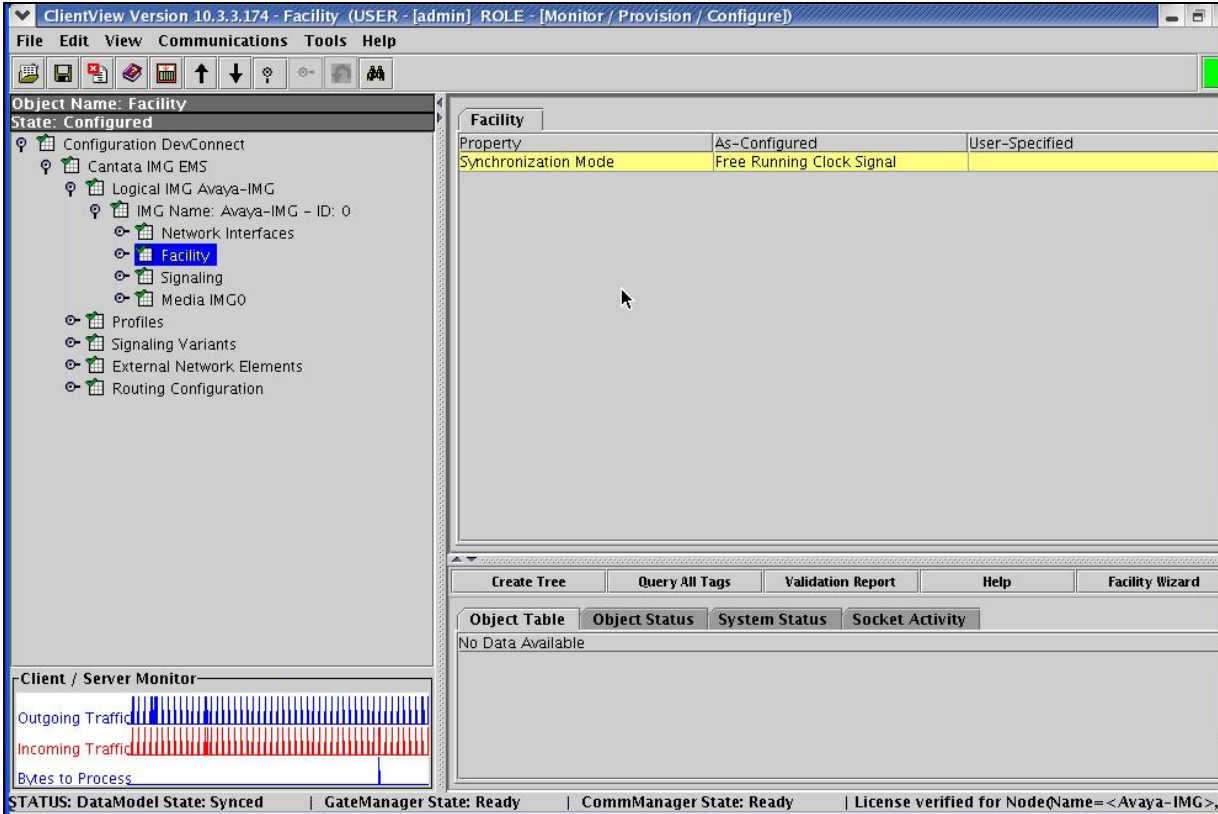
Client / Server Monitor

Outgoing Traffic

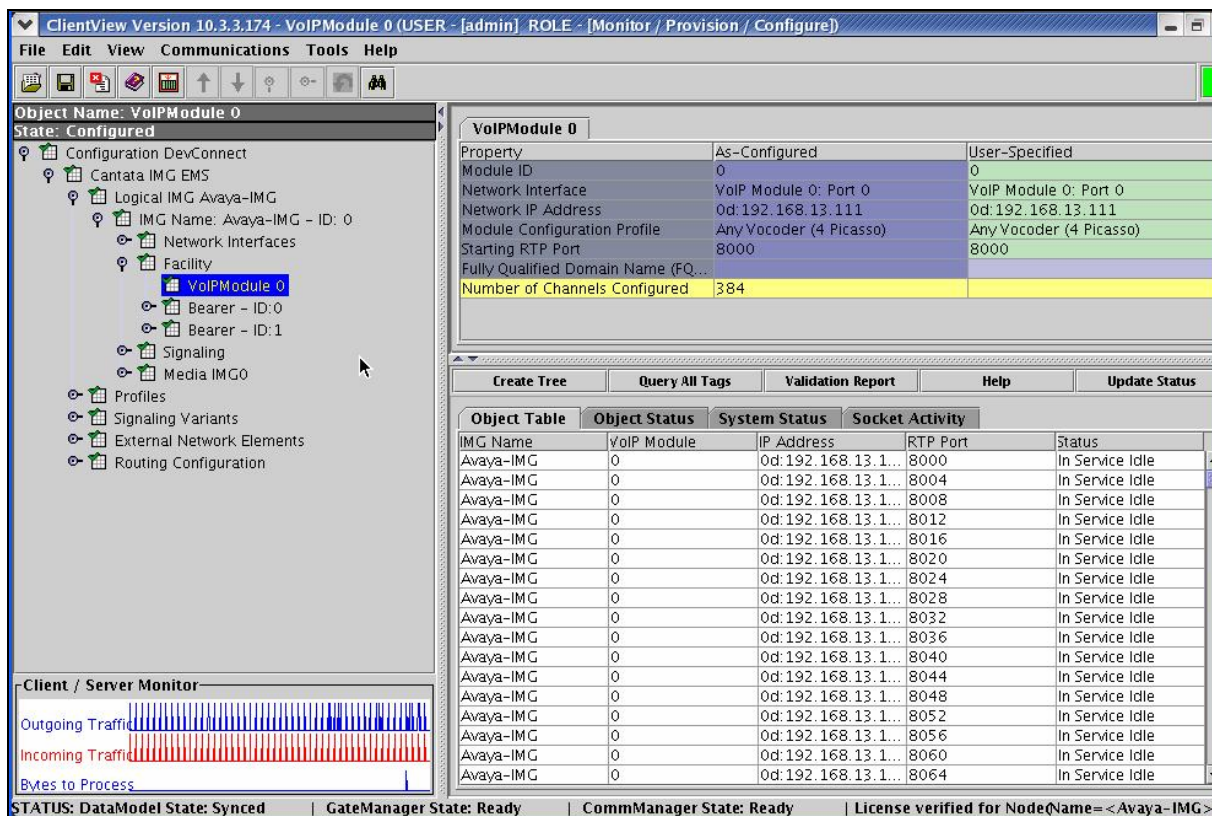
Incoming Traffic

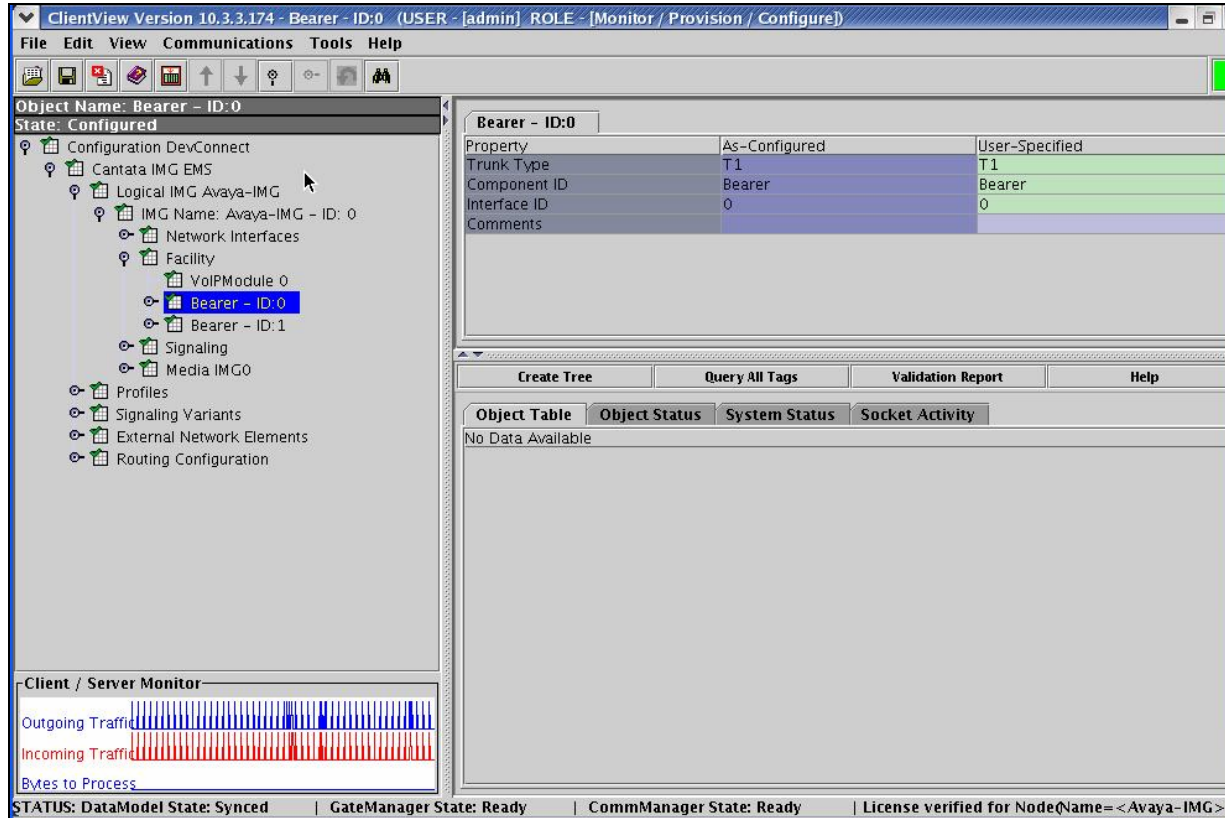
Bytes to Process

STATUS: DataModel State: Synced | GateManager State: Ready | CommManager State: Ready | License verified for NodeName=<Avaya-IMG>

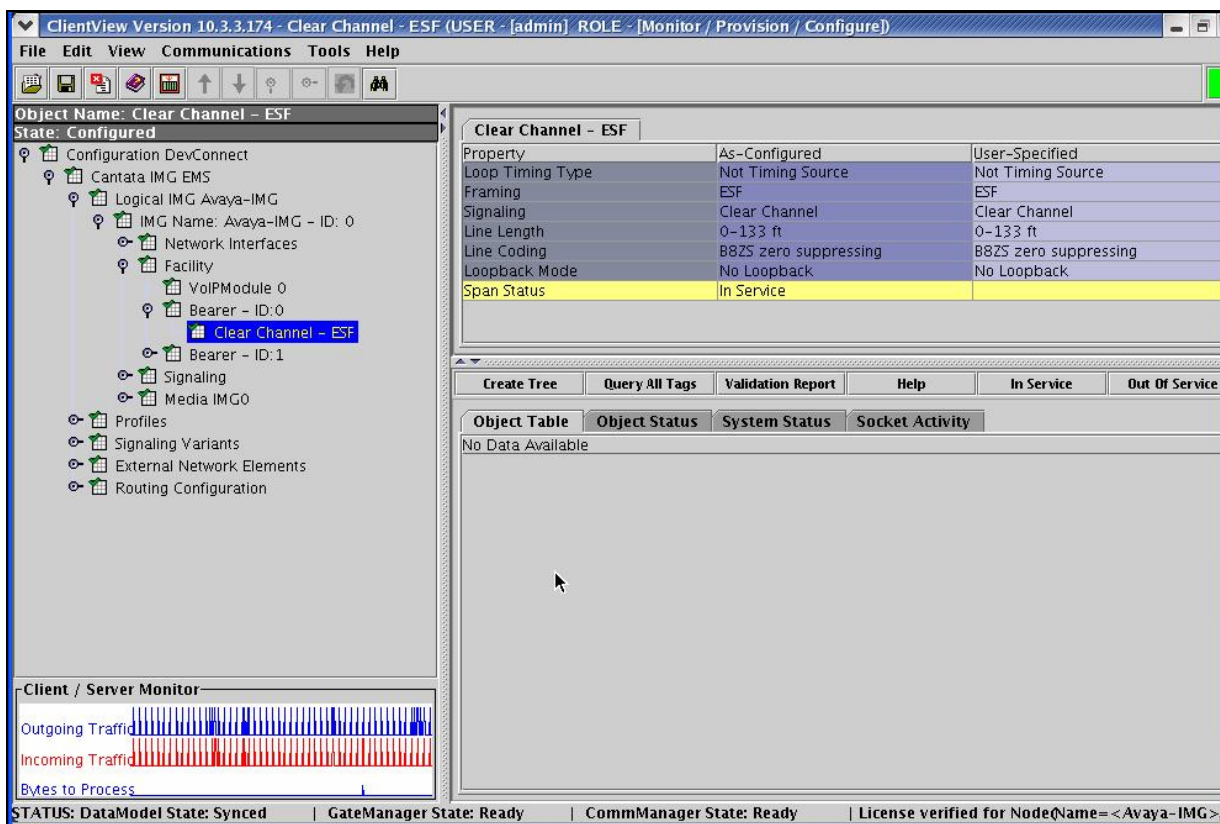
Step	Description						
5.1.7	<p>Create an object for a Facility as follows:</p> <ul style="list-style-type: none">• Right-click the physical IMG in the Configuration Tree, and select New Facility.• To save the changes, right-click Facility, and select Commit.• The resultant provisioning is shown below.  <p>The screenshot displays the ClientView software interface. On the left, the 'Configuration Tree' shows a hierarchy starting with 'Configuration DevConnect', followed by 'Cantata IMG EMS', 'Logical IMG Avaya-IMG', and then 'Facility' (which is highlighted). Other items in the tree include 'Network Interfaces', 'Signaling', 'Media IMG0', 'Profiles', 'Signaling Variants', 'External Network Elements', and 'Routing Configuration'. The main window area is titled 'Facility' and contains a table with the following data:</p> <table><tr><th>Property</th><th>As-Configured</th><th>User-Specified</th></tr><tr><td>Synchronization Mode</td><td>Free Running Clock Signal</td><td></td></tr></table> <p>Below the table, there are buttons for 'Create Tree', 'Query All Tags', 'Validation Report', 'Help', and 'Facility Wizard'. At the bottom of the window, a 'Client / Server Monitor' section shows traffic graphs for 'Outgoing Traffic' and 'Incoming Traffic', and a 'Bytes to Process' indicator. The status bar at the very bottom indicates: 'STATUS: DataModel State: Synced GateManager State: Ready CommManager State: Ready License verified for NodeName= <Avaya-IMG>'.</p>	Property	As-Configured	User-Specified	Synchronization Mode	Free Running Clock Signal	
Property	As-Configured	User-Specified					
Synchronization Mode	Free Running Clock Signal						

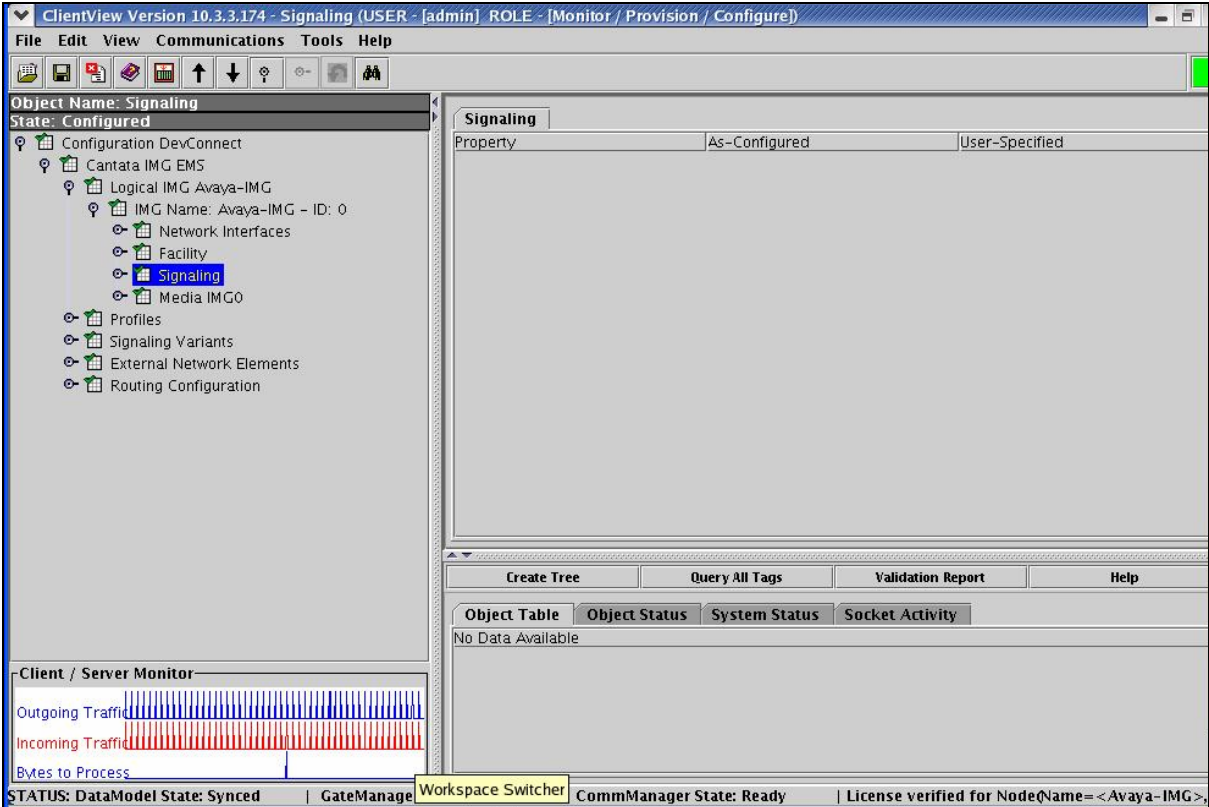
Step	Description
5.1.8	<p>Configure VoIP Facilities as follows:</p> <ul style="list-style-type: none"> Right-click Facility in the Configuration Tree, and select New Bearer - IP. Use default settings for all fields. <ul style="list-style-type: none"> <i>Note: The Network IP Address field is populated from the configuration provided for VoIP Module 0: Port 0 in Step 5.1.5.</i> To save the changes, right-click VoIPModule 0, and select Commit. The resultant provisioning is shown below.



Step	Description
5.1.9	<p>Configure a TDM DS1 as follows:</p> <ul style="list-style-type: none">• Right-click Facility in the Configuration Tree, and select New TDM DS1.• Select Bearer from the drop down list for the Component ID field.• Use default settings for remaining fields.• To save the changes, right-click Bearer - ID:0, and select Commit.• The resultant provisioning is shown below. 

Step	Description
5.1.10	<p>Configure a T1 Physical Span for ISDN-PRI as follows</p> <ul style="list-style-type: none"> Right-click the TDM DS1 created in Step 5.1.9 in the Configuration Tree, and select New T1 Physical Span. Select Clear Channel from the drop down list for the Signaling field in the Configuration Pane. <ul style="list-style-type: none"> <i>Note: Clear Channel corresponds to ISDN-PRI.</i> Administer settings for the Framing and Line Coding fields that correspond to the configuration on Avaya Communication Manager (see Step 3.2.1). Use default settings for remaining fields. To save the changes, right-click Clear Channel - ESF, and select Commit. The resultant provisioning is shown below.



Step	Description						
5.1.11	<p>Create an object for Signaling as follows:</p> <ul style="list-style-type: none">• Right-click the physical IMG in the Configuration Tree, and select New Signaling.• To save the changes, right-click Signaling, and select Commit.• The resultant provisioning is shown below.  <p>The screenshot shows the ClientView application interface. The title bar reads 'ClientView Version 10.3.3.174 - Signaling (USER - [admin] ROLE - [Monitor / Provision / Configure])'. The menu bar includes File, Edit, View, Communications, Tools, and Help. The left pane shows a Configuration Tree with the following structure:</p> <ul style="list-style-type: none">Configuration DevConnect<ul style="list-style-type: none">Cantata IMG EMS<ul style="list-style-type: none">Logical IMG Avaya-IMG<ul style="list-style-type: none">IMG Name: Avaya-IMG - ID: 0<ul style="list-style-type: none">Network InterfacesFacilitySignaling (highlighted)Media IMG0ProfilesSignaling VariantsExternal Network ElementsRouting Configuration <p>The right pane shows the 'Signaling' configuration page with a table for properties:</p> <table><tr><th>Property</th><th>As-Configured</th><th>User-Specified</th></tr><tr><td colspan="3"> </td></tr></table> <p>Below the table are buttons for 'Create Tree', 'Query All Tags', 'Validation Report', and 'Help'. At the bottom of the right pane are tabs for 'Object Table', 'Object Status', 'System Status', and 'Socket Activity'. The 'Object Table' tab is active and shows 'No Data Available'.</p> <p>The bottom status bar displays: 'STATUS: DataModel State: Synced GateManager Workspace Switcher CommManager State: Ready License verified for NodeName=<Avaya-IMG>'. A 'Client / Server Monitor' window is also visible in the bottom left corner, showing 'Outgoing Traffic' (blue bars), 'Incoming Traffic' (red bars), and 'Bytes to Process'.</p>	Property	As-Configured	User-Specified			
Property	As-Configured	User-Specified					

Step	Description
5.1.12	<p>Configure SIP Signaling as follows</p> <ul style="list-style-type: none"> Right-click Signaling in the Configuration Tree, and select New SIP. Administer settings in the Configuration Pane that enable SIP connectivity between the IMG and other SIP User Agents as follows: <ul style="list-style-type: none"> Enter the IP address assigned to the IMG in the SIP Signaling IP Address field. Enter values in the Local SIP Port and Default Transport Type fields that correspond to the configuration on Avaya Meeting Exchange (see Step 4.2.5). Use default settings for remaining fields. To save the changes, right-click SIP Signaling, and select Commit. The resultant provisioning is shown below.

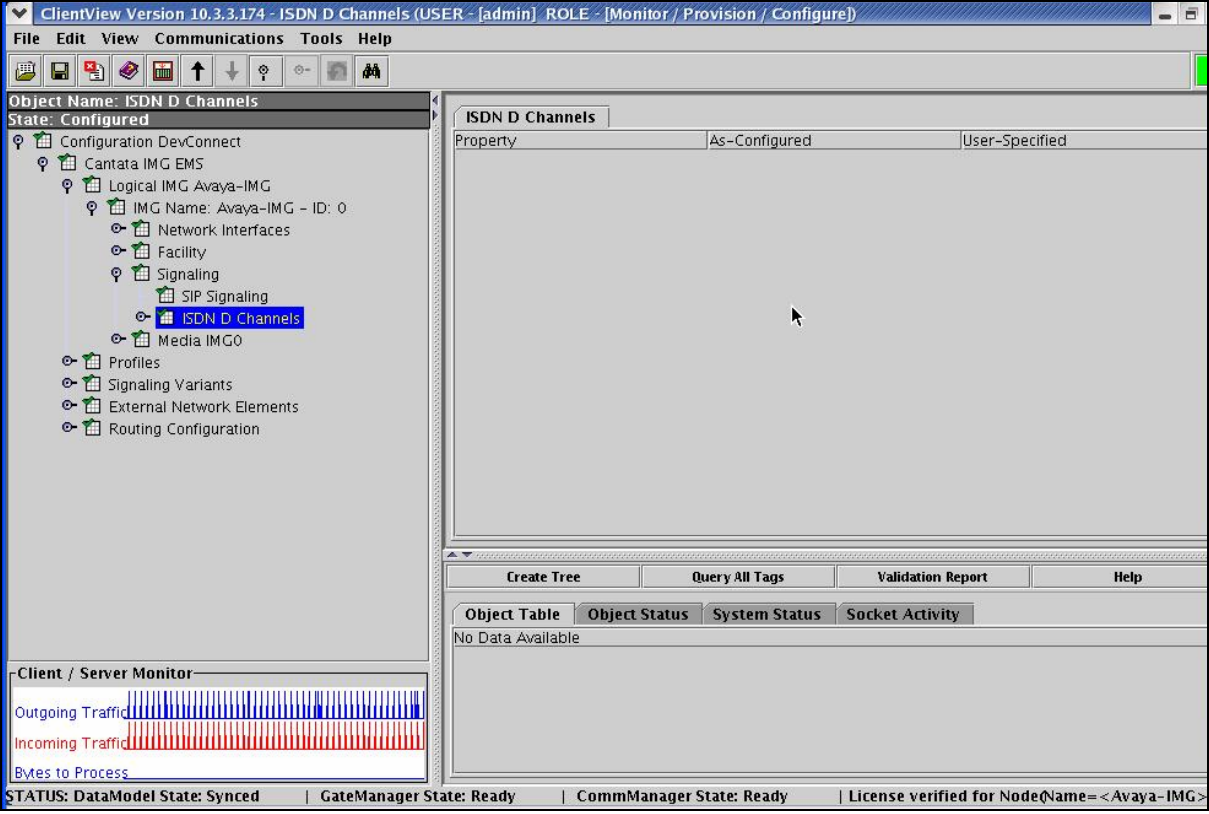
The screenshot displays the ClientView interface for configuring SIP Signaling. The left pane shows the Configuration Tree with the following structure:

- Configuration DevConnect
 - Cantata IMG EMS
 - Logical IMG Avaya-IMG
 - IMG Name: Avaya-IMG - ID: 0
 - Network Interfaces
 - Facility
 - VoIPModule 0
 - Clear Channel - ESF
 - Bearer - ID: 0
 - Bearer - ID: 1
 - CAS - ESF
 - Signaling
 - SIP Signaling** (Selected)
 - ISDN D Channels
 - Media IMG0

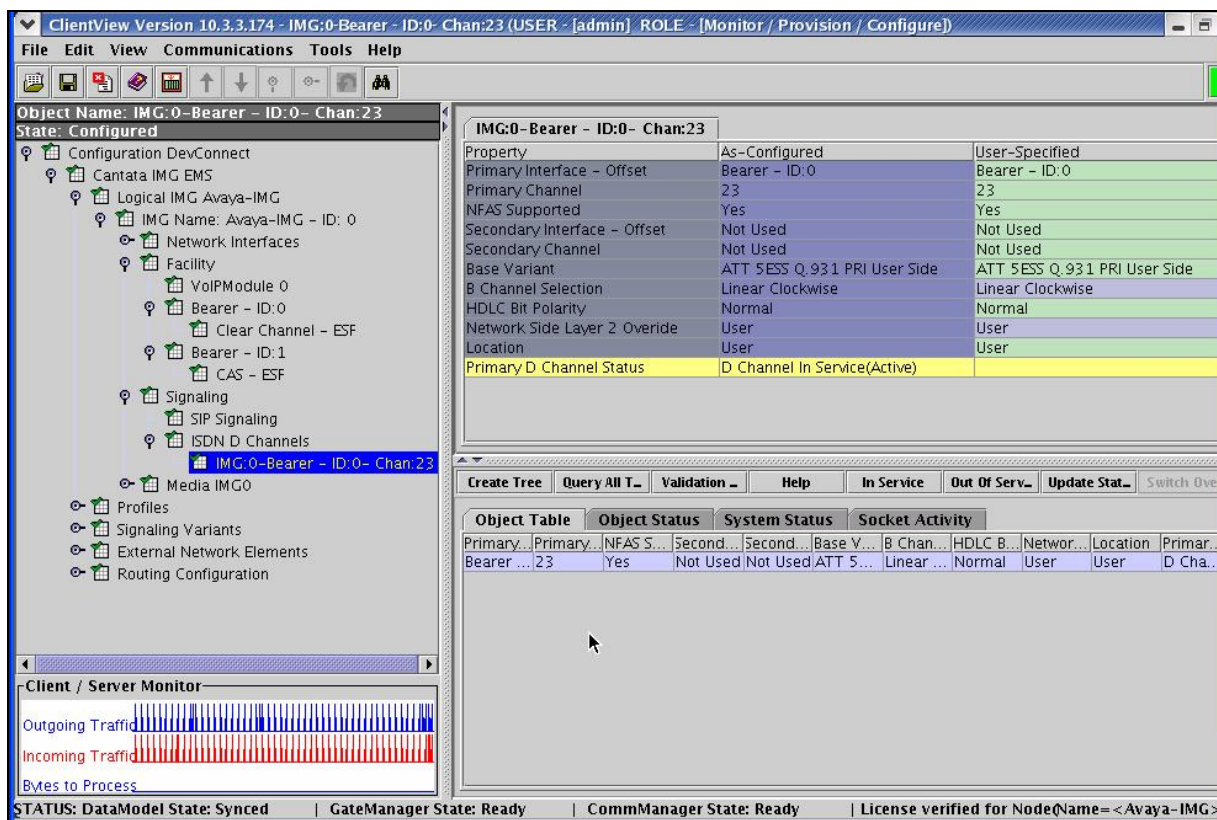
The right pane shows the SIP Signaling configuration table:

| Property | As-Configured | User-Specified |
|--------------------------------------|-------------------|-------------------|
| SIP Signaling IP Address | 0d:192.168.13.112 | 0d:192.168.13.112 |
| Local SIP Port | 5060 | 5060 |
| SIP Compact Header | Disable | Disable |
| Default Transport Type | TCP | TCP |
| Default SIP UserName (AOR) | CANTATA-IMG0 | CANTATA-IMG0 |
| Default SIP Authentication UserNa... | | |
| Default SIP Authentication Passwo... | | |
| Enable SIP-T | No | No |
| SIP-T Behavior | Not Used | Not Used |
| PrivacySupport | Off | Off |
| Remote IMG's SIP Profile | Default Profile | Default Profile |
| Fully Qualified Domain Name (FQ... | | |

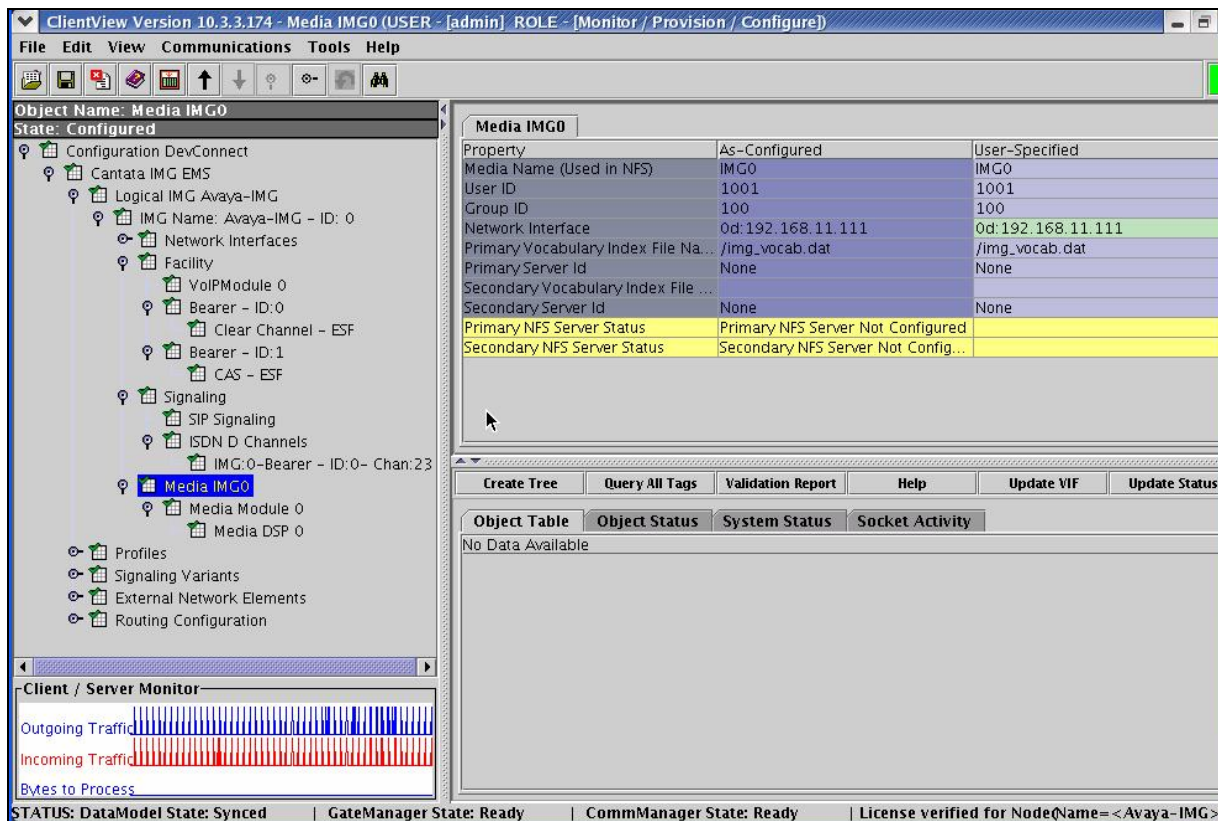
Below the table, there are buttons for 'Create Tree', 'Query All Tags', 'Validation Report', and 'Help'. The bottom section shows a 'Client / Server Monitor' with 'Outgoing Traffic' and 'Incoming Traffic' graphs, and a 'Bytes to Process' section. The status bar at the bottom indicates: 'STATUS: DataModel State: Synced | GateManager State: Ready | CommManager State: Ready | License verified for NodeName=<Avaya-IMG>.'

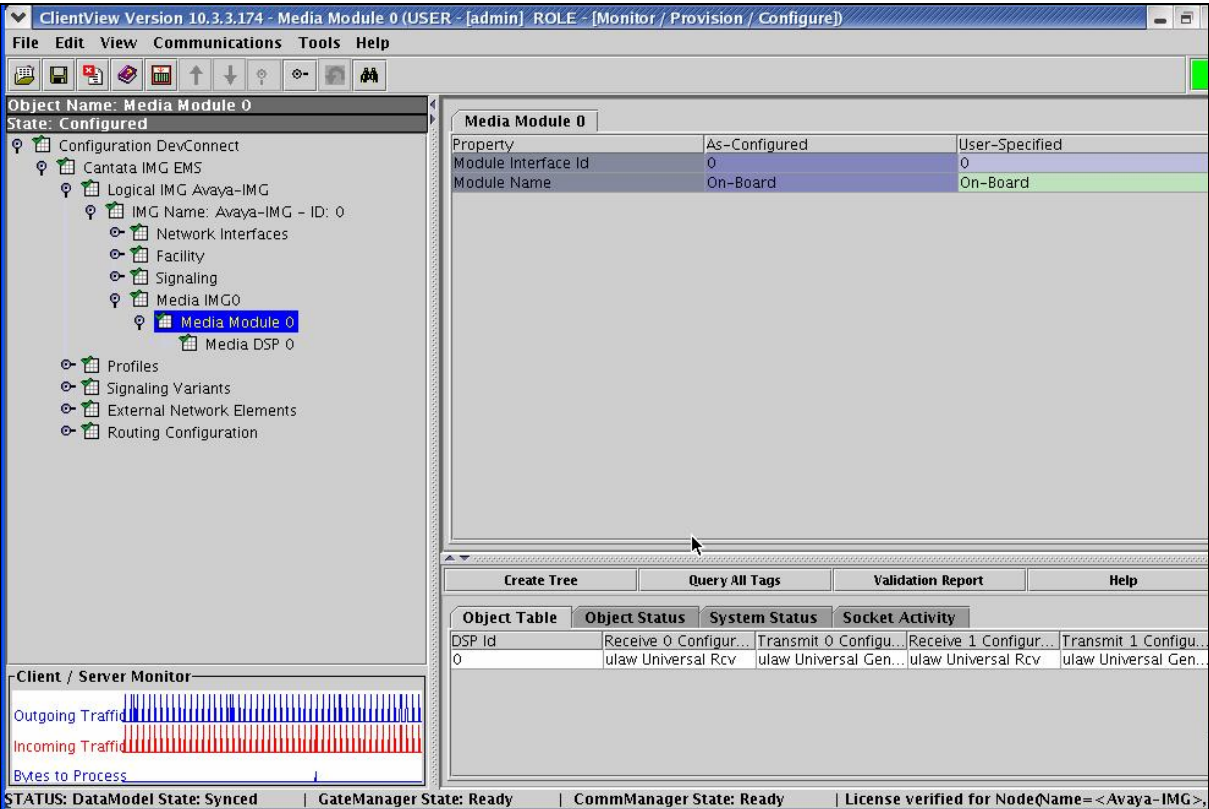
| Step | Description |
|--------|--|
| 5.1.13 | <p>Create an object for ISDN as follows:</p> <ul style="list-style-type: none"> • Right-click Signaling in the Configuration Tree, and select New ISDN. • To save the changes, right-click ISDN D Channels, and select Commit. • The resultant provisioning is shown below.  |

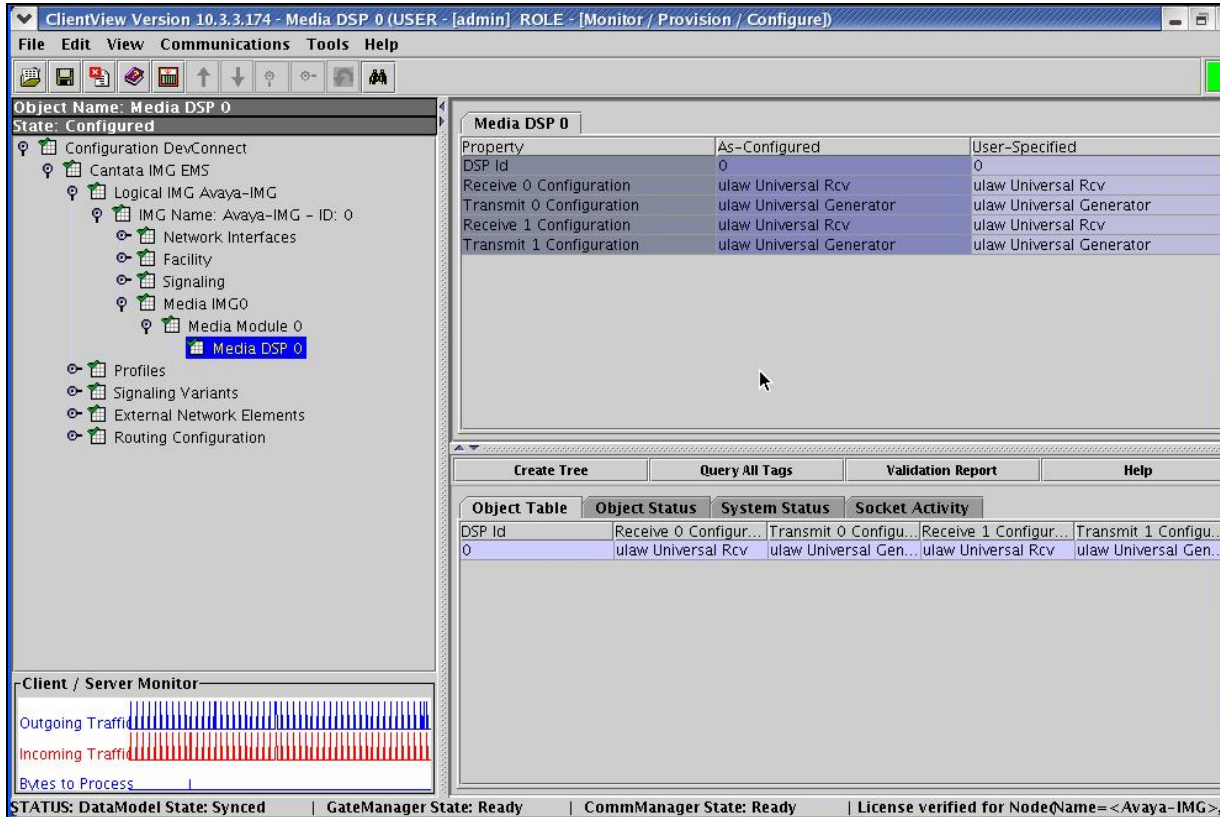
| Step | Description |
|--------|--|
| 5.1.14 | <p>Configure an ISDN D Channel as follows:</p> <ul style="list-style-type: none"> Right-click ISDN D Channels in the Configuration Tree, and select New ISDN D Channel. Administer settings for the Primary Channel, Base Variant, Network Side Layer 2 Override and Location fields that correspond to the configuration on Avaya Communication Manager (see Step 3.2.1, and Step 3.2.2) in the Configuration Pane. <ul style="list-style-type: none"> <i>Note: The IMG counts ISDN channels from zero, where Avaya Communication Manager counts from one.</i> Use default settings for remaining fields. To save the changes, right-click IMG:0-Bearer - ID:0- Chan:23, and select Commit. The resultant provisioning is shown below. |

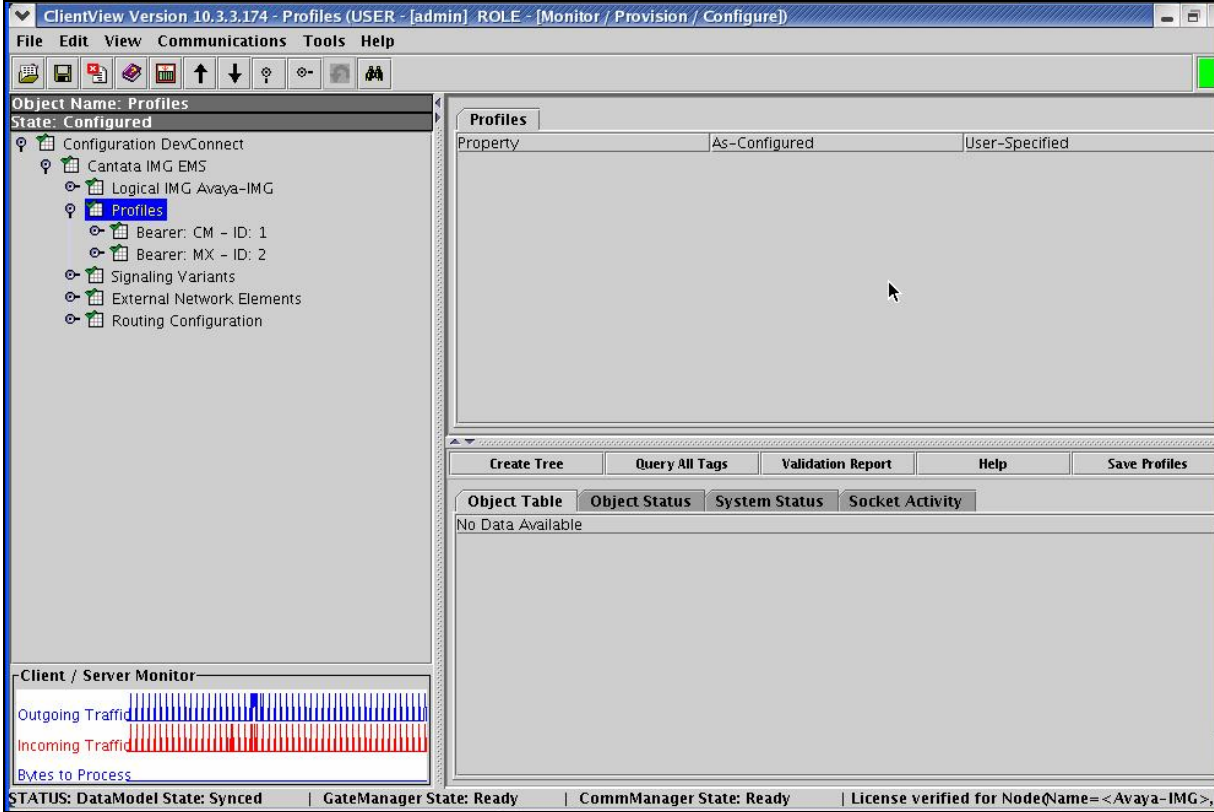


| Step | Description |
|--------|--|
| 5.1.15 | <p>Configure settings for Media as follows:</p> <ul style="list-style-type: none"> Right-click the physical IMG in the Configuration Tree, and select New Media. Select the Network File Server (NFS) from the drop down list for the Media Name field in the Configuration Pane. Enter the User ID of the NFS for UNIX permissions in the User ID field. Enter the Group ID of the NFS for UNIX permissions in the Group ID field. Use default settings for remaining fields. <p><i>Note: The Network Interface field is automatically populated with the IP address provisioned for the management interface for the IMG.</i></p> <ul style="list-style-type: none"> To save the changes, right-click Media IMG0, and select Commit. The resultant provisioning is shown below. |

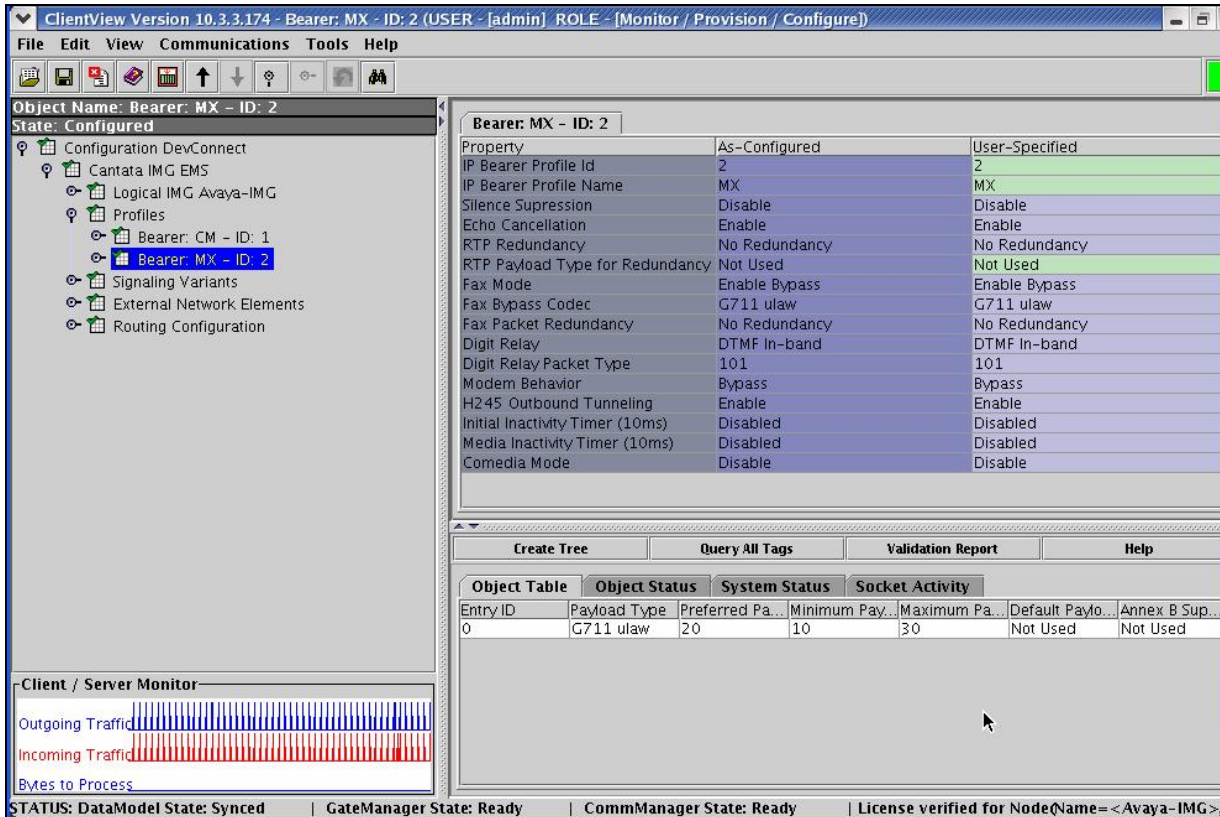


| Step | Description |
|--------|--|
| 5.1.16 | <p>Create an object for a Media Module as follows:</p> <ul style="list-style-type: none"> Right-click Media IMGO in the Configuration Tree, and select New Media Module. Use default settings for all fields. To save the changes, right-click Media Module 0, and select Commit. The resultant provisioning is shown below.  <p>The screenshot displays the ClientView interface for configuring a Media Module. The left pane shows the Configuration Tree with 'Media Module 0' selected. The right pane shows the 'Media Module 0' configuration table with properties: Property, As-Configured, and User-Specified. The table shows Module Interface Id as 0 and Module Name as On-Board. The bottom status bar shows 'STATUS: DataModel State: Synced GateManager State: Ready CommManager State: Ready License verified for NodeName=<Avaya-IMG>'.</p> |

| Step | Description | | | | | | | | | | | | | | | | | | |
|--------------------------|--|--------------------------|---------------|----------------|--------|---|---|-------------------------|--------------------|--------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------|--------------------|--------------------------|--------------------------|--------------------------|
| 5.1.17 | <p>Configure the Media Module DSP as follows:</p> <ul style="list-style-type: none">Right-click the Media Module created in Step 5.1.16 in the Configuration Tree, and select New Media DSP.Use default settings for all fields.To save the changes, right-click Media DSP 0, and select Commit.The resultant provisioning is shown below. <div><p>The screenshot displays the ClientView software interface for configuring a Media DSP. The Configuration Tree on the left shows the path to 'Media DSP 0'. The main configuration area shows the 'Media DSP 0' configuration table with the following data:</p><table><tr><th>Property</th><th>As-Configured</th><th>User-Specified</th></tr><tr><td>DSP Id</td><td>0</td><td>0</td></tr><tr><td>Receive 0 Configuration</td><td>ulaw Universal Rcv</td><td>ulaw Universal Rcv</td></tr><tr><td>Transmit 0 Configuration</td><td>ulaw Universal Generator</td><td>ulaw Universal Generator</td></tr><tr><td>Receive 1 Configuration</td><td>ulaw Universal Rcv</td><td>ulaw Universal Rcv</td></tr><tr><td>Transmit 1 Configuration</td><td>ulaw Universal Generator</td><td>ulaw Universal Generator</td></tr></table><p>The Client/Server Monitor at the bottom shows a graph of outgoing and incoming traffic. The status bar at the bottom indicates: STATUS: DataModel State: Synced GateManager State: Ready CommManager State: Ready License verified for NodeName=<Avaya-IMG></p></div> | Property | As-Configured | User-Specified | DSP Id | 0 | 0 | Receive 0 Configuration | ulaw Universal Rcv | ulaw Universal Rcv | Transmit 0 Configuration | ulaw Universal Generator | ulaw Universal Generator | Receive 1 Configuration | ulaw Universal Rcv | ulaw Universal Rcv | Transmit 1 Configuration | ulaw Universal Generator | ulaw Universal Generator |
| Property | As-Configured | User-Specified | | | | | | | | | | | | | | | | | |
| DSP Id | 0 | 0 | | | | | | | | | | | | | | | | | |
| Receive 0 Configuration | ulaw Universal Rcv | ulaw Universal Rcv | | | | | | | | | | | | | | | | | |
| Transmit 0 Configuration | ulaw Universal Generator | ulaw Universal Generator | | | | | | | | | | | | | | | | | |
| Receive 1 Configuration | ulaw Universal Rcv | ulaw Universal Rcv | | | | | | | | | | | | | | | | | |
| Transmit 1 Configuration | ulaw Universal Generator | ulaw Universal Generator | | | | | | | | | | | | | | | | | |

| Step | Description |
|--------|--|
| 5.1.18 | <p>Create an object for Profiles as follows:</p> <ul style="list-style-type: none"> • Right-click Cantata IMG EMS in the Configuration Tree, and select New Profiles. • To save the changes, right-click Profiles, and select Commit. • The resultant provisioning is shown below.  <p>The screenshot shows the ClientView interface. On the left, the 'Object Name: Profiles' tree is expanded, showing 'Cantata IMG EMS' with sub-items 'Logical IMG Avaya-IMG' and 'Profiles'. The 'Profiles' item is selected. The main pane shows the 'Profiles' configuration area with tabs for 'Property', 'As-Configured', and 'User-Specified'. The 'Property' tab is active, showing a table with columns 'Property', 'As-Configured', and 'User-Specified'. The table is empty. Below the table are buttons for 'Create Tree', 'Query All Tags', 'Validation Report', 'Help', and 'Save Profiles'. At the bottom, there is a 'Client / Server Monitor' section showing 'Outgoing Traffic' and 'Incoming Traffic' graphs, and a 'STATUS' bar with 'DataModel State: Synced', 'GateManager State: Ready', 'CommManager State: Ready', and 'License verified for NodeName= < Avaya-IMG>'.</p> |

| Step | Description |
|--------|---|
| 5.1.19 | <p>Configure an IP Bearer Profile corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none">• Right-click Profiles in the Configuration Tree, and select New IP Bearer Profile.• Enter a descriptive name for the IP Bearer Profile in the IP Bearer Profile Name field in the Configuration Pane.• Use default settings for remaining fields.• To save the changes, right-click Bearer: MX - ID:2, and select Commit.• The resultant provisioning is shown below. |



The screenshot displays the ClientView software interface. The title bar indicates 'ClientView Version 10.3.3.174 - Bearer: MX - ID: 2 (USER - [admin] ROLE - [Monitor / Provision / Configure])'. The main window is divided into several sections:

- Configuration Tree (Left):** Shows a hierarchy of objects including Configuration DevConnect, Cantata IMG EMS, Logical IMG Avaya-IMG, Profiles, Bearer: CM - ID: 1, Bearer: MX - ID: 2 (selected), Signaling Variants, External Network Elements, and Routing Configuration.
- Configuration Pane (Center):** Displays the configuration for 'Bearer: MX - ID: 2'. It includes a table with columns for Property, As-Configured, and User-Specified values.
- Client / Server Monitor (Bottom Left):** Shows graphs for Outgoing Traffic, Incoming Traffic, and Bytes to Process.
- Status Bar (Bottom):** Displays various system statuses: STATUS: DataModel State: Synced, GateManager State: Ready, CommManager State: Ready, and License verified for NodeName=<Avaya-IMG>.

| Step | Description |
|--------|--|
| 5.1.20 | <p>Assign a codec to the IP Bearer Profile corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"> Right-click the IP Bearer Profile created in Step 5.1.19 in the Configuration Tree, and select New Supported Vcoders. Select a codec from the drop down list for the Payload Type field that is supported on Avaya Meeting Exchange in the Configuration Pane. Use default settings for remaining fields. To save the changes, right-click Profile: 2 - Entry:0, and select Commit. The resultant provisioning is shown below. |

ClientView Version 10.3.3.174 - Profile: 2 - Entry:0 (USER - [admin] ROLE - [Monitor / Provision / Configure])

File Edit View Communications Tools Help

Object Name: Profile: 2 - Entry:0
State: Configured

Configuration Tree:

- Configuration DevConnect
 - Cantata IMG EMS
 - Logical IMG Avaya-IMG
 - Profiles
 - Bearer: CM - ID: 1
 - Bearer: MX - ID: 2
 - Profile: 2 - Entry:0**
 - Signaling Variants
 - External Network Elements
 - Routing Configuration

Profile: 2 - Entry:0

| Property | As-Configured | User-Specified |
|-----------------------------|---------------|----------------|
| Entry ID | 0 | 0 |
| Payload Type | G711 ulaw | G711 ulaw |
| Preferred Payload Size (ms) | 20 | 20 |
| Minimum Payload Size (ms) | 10 | 10 |
| Maximum Payload Size (ms) | 30 | 30 |
| Default Payload Type | Not Used | Not Used |
| Annex B Support | Not Used | Not Used |

Buttons: Create Tree, Query All Tags, Validation Report, Help

| Object Table | Object Status | System Status | Socket Activity | | | |
|--------------|---------------|-----------------|-----------------|---------------|------------------|----------------|
| Entry ID | Payload Type | Preferred Pa... | Minimum Pay... | Maximum Pa... | Default Paylo... | Annex B Sup... |
| 0 | G711 ulaw | 20 | 10 | 30 | Not Used | Not Used |

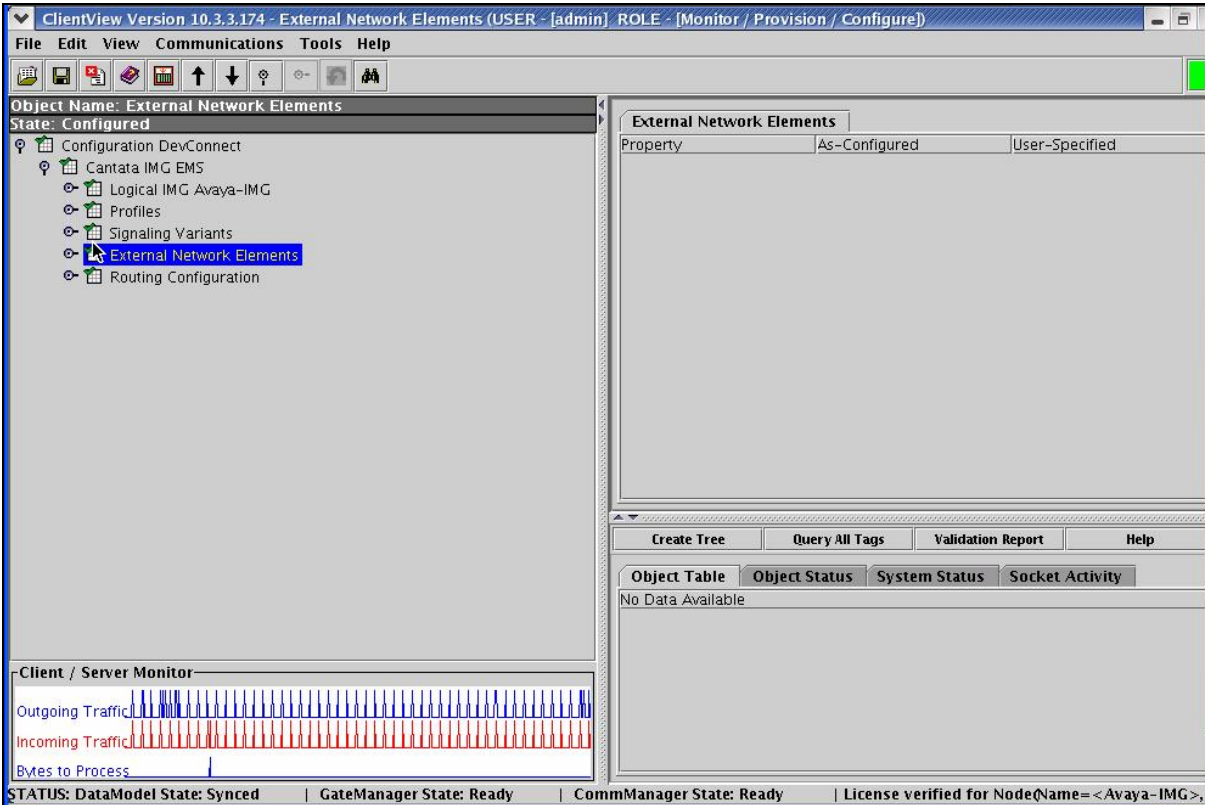
Client / Server Monitor

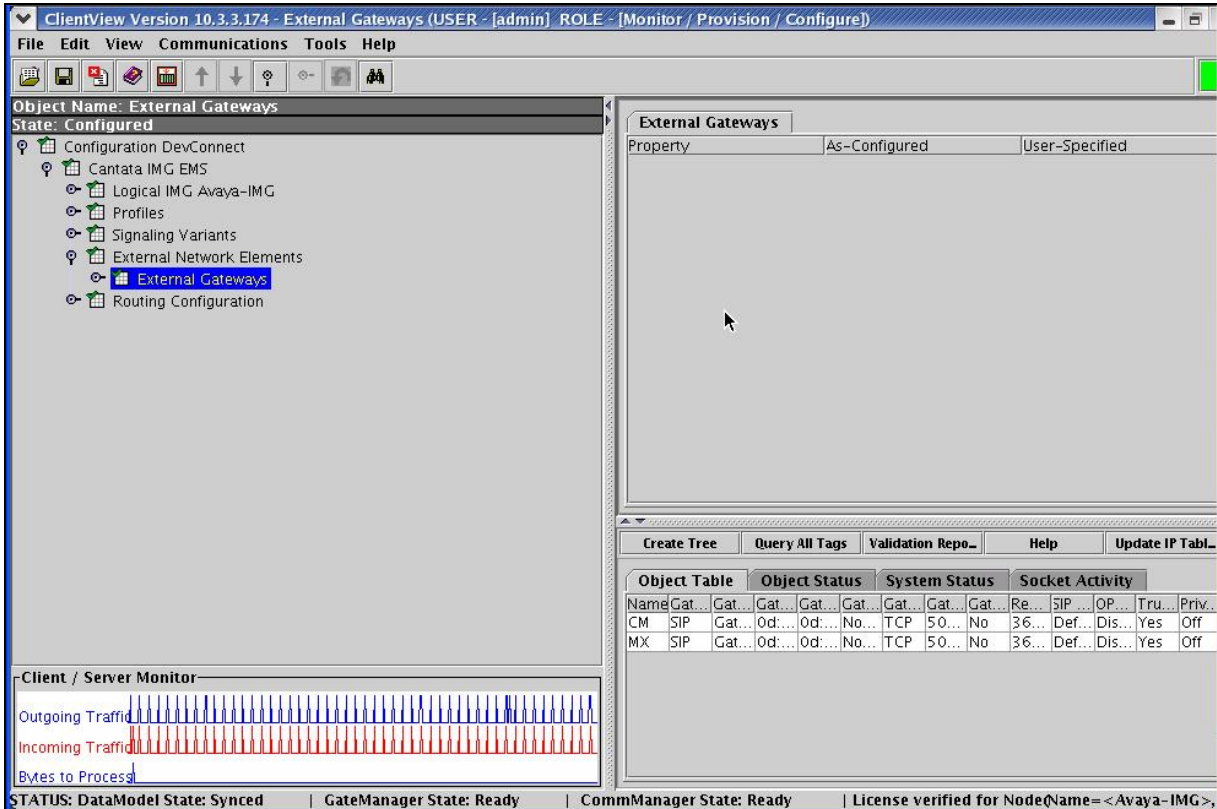
Outgoing Traffic: [Bar Chart]

Incoming Traffic: [Bar Chart]

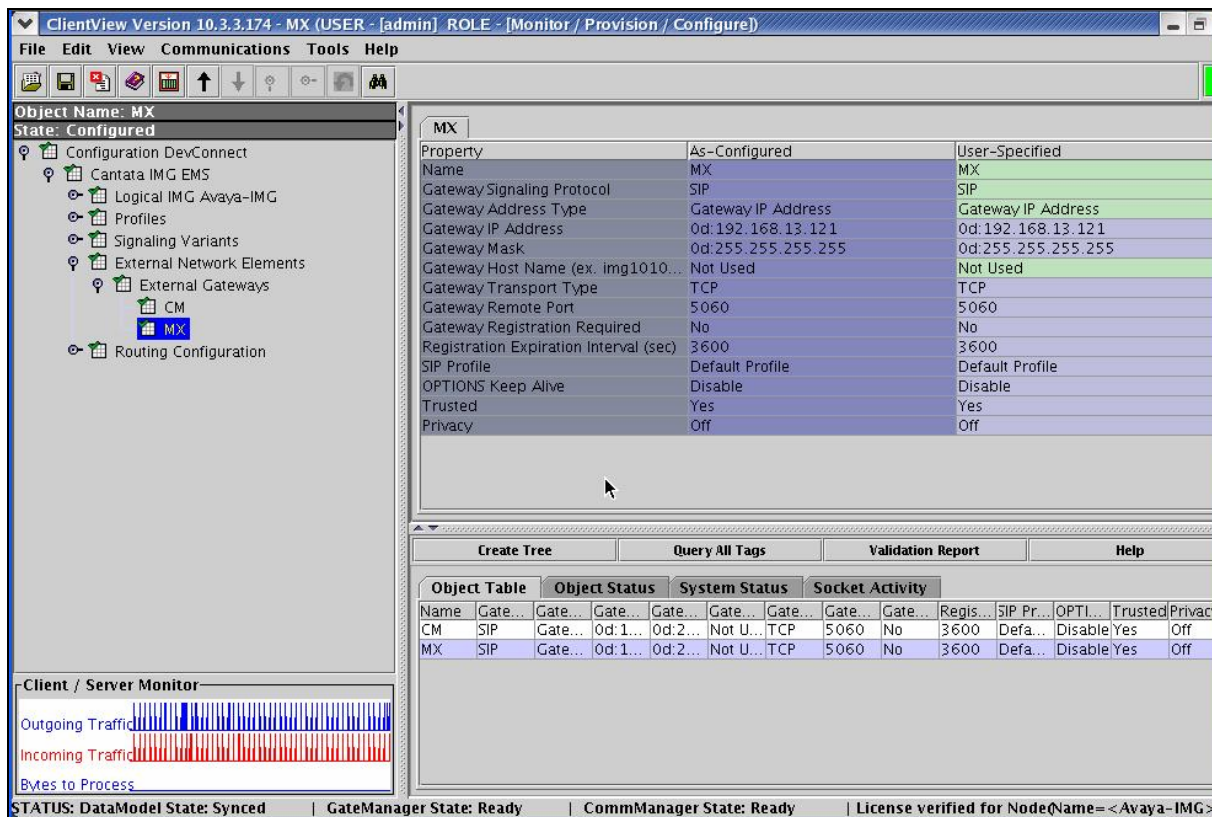
Bytes to Process: [Bar Chart]

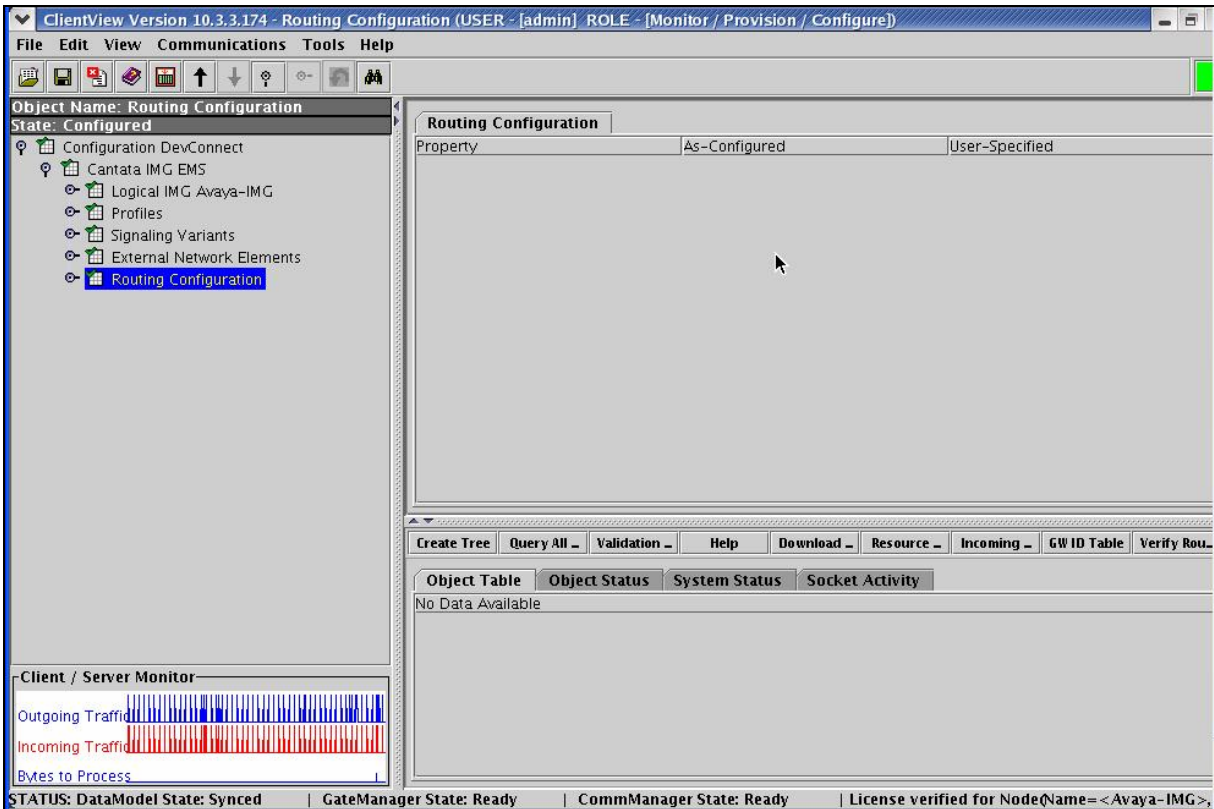
STATUS: DataModel State: Synced | GateManager State: Ready | CommManager State: Ready | License verified for NodeName=<Avaya-IMG>

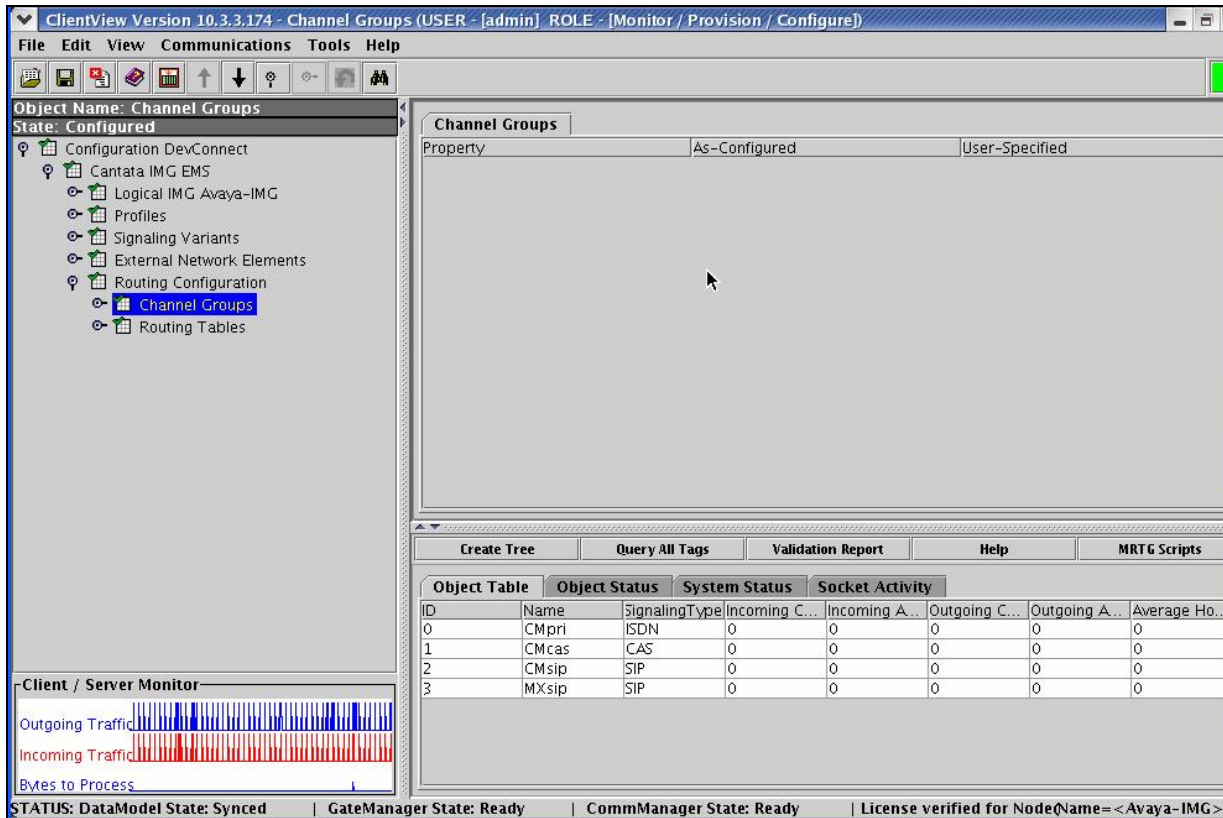
| Step | Description |
|--------|--|
| 5.1.21 | <p>Create an object for External Network Elements as follows:</p> <ul style="list-style-type: none"> Right-click Cantata IMG EMS in the Configuration Tree, and select New External Network Elements. To save the changes, right-click External Network Elements, and select Commit. The resultant provisioning is shown below.  |

| Step | Description | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|---|----------------|-----------------|-------------------|------------|----------|---------------|----------------|--|--|--|--------------|---------------|---------------|-----------------|------|--------|--------|--------|----|-----|--------|-------|----|-----|--------|-------|
| 5.1.22 | <p>Create an object for External Gateways as follows:</p> <ul style="list-style-type: none">• Right-click External Network Elements in the Configuration Tree, and select New External Gateways.• To save the changes, right-click External Gateways, and select Commit.• The resultant provisioning is shown below.  <p>The screenshot displays the ClientView interface. The Configuration Tree on the left shows the hierarchy: Configuration DevConnect > Cantata IMG EMS > Logical IMG Avaya-IMG > Profiles > Signaling Variants > External Network Elements > External Gateways. The main pane shows the 'External Gateways' configuration with a table of properties. The bottom pane shows a 'Client / Server Monitor' graph and status information.</p> <table><tr><th>Object Name</th><th>State</th></tr><tr><td>External Gateways</td><td>Configured</td></tr></table> <table><tr><th>Property</th><th>As-Configured</th><th>User-Specified</th></tr><tr><td></td><td></td><td></td></tr></table> <table><tr><th>Object Table</th><th>Object Status</th><th>System Status</th><th>Socket Activity</th></tr><tr><td>Name</td><td>Gat...</td><td>Gat...</td><td>Gat...</td></tr><tr><td>CM</td><td>SIP</td><td>Gat...</td><td>Od...</td></tr><tr><td>MX</td><td>SIP</td><td>Gat...</td><td>Od...</td></tr></table> <p>STATUS: DataModel State: Synced GateManager State: Ready CommManager State: Ready License verified for NodeName=<Avaya-IMG></p> | Object Name | State | External Gateways | Configured | Property | As-Configured | User-Specified | | | | Object Table | Object Status | System Status | Socket Activity | Name | Gat... | Gat... | Gat... | CM | SIP | Gat... | Od... | MX | SIP | Gat... | Od... |
| Object Name | State | | | | | | | | | | | | | | | | | | | | | | | | | | |
| External Gateways | Configured | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Property | As-Configured | User-Specified | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object Table | Object Status | System Status | Socket Activity | | | | | | | | | | | | | | | | | | | | | | | | |
| Name | Gat... | Gat... | Gat... | | | | | | | | | | | | | | | | | | | | | | | | |
| CM | SIP | Gat... | Od... | | | | | | | | | | | | | | | | | | | | | | | | |
| MX | SIP | Gat... | Od... | | | | | | | | | | | | | | | | | | | | | | | | |

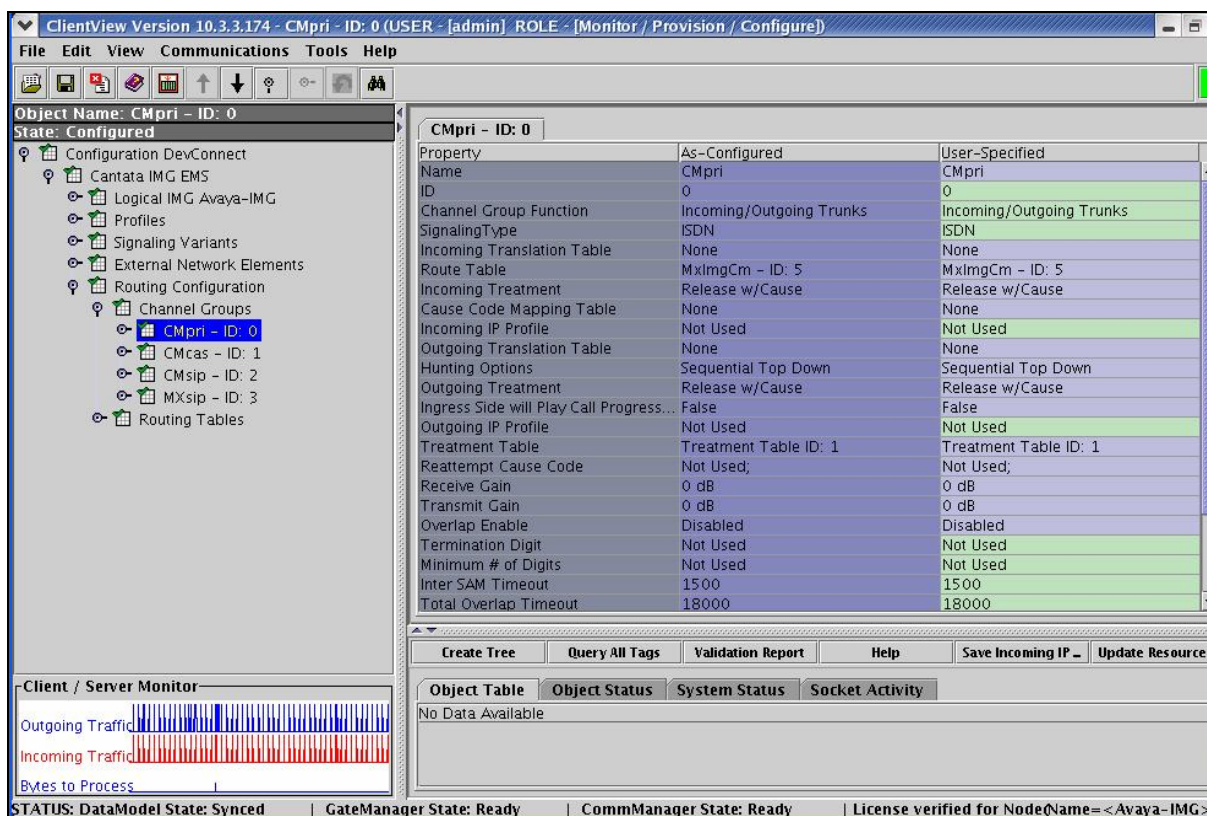
| Step | Description |
|--------|--|
| 5.1.23 | <p>Configure an External Gateway corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"> Right-click External Gateways in the Configuration Tree, and select New External Gateway. Enter a descriptive name for the IP Bearer Profile in the Name field in the Configuration Pane. Select SIP from the drop down list for the Gateway Signaling Protocol field. Enter the IP address of Avaya Meeting Exchange in the Gateway IP Address field. Use default settings for remaining fields. <p><i>Note: The settings for the Gateway Transport Type, and Gateway Remote Port fields are compatible with the configuration on Avaya Meeting Exchange (see Step 4.1.1, and Step 4.2.5).</i></p> <ul style="list-style-type: none"> To save the changes, right-click MX, and select Commit. The resultant provisioning is shown below. |



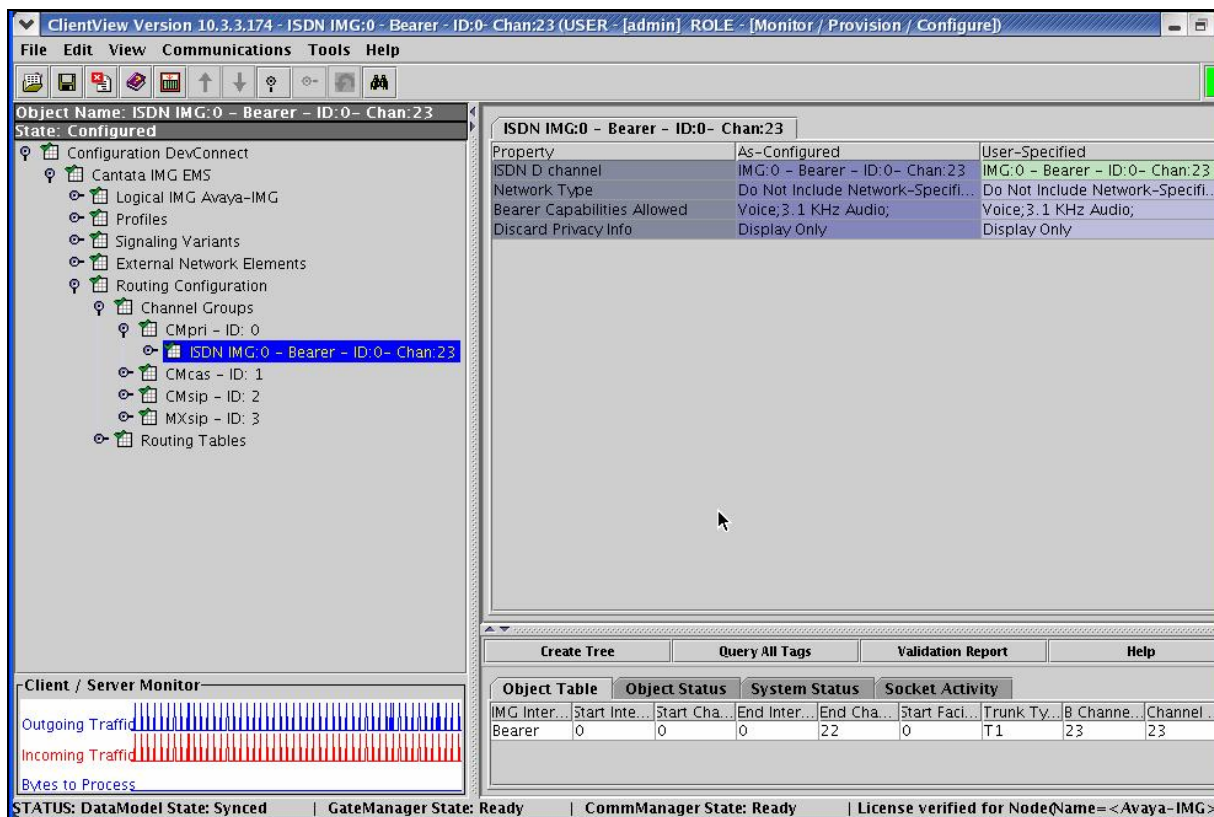
| Step | Description |
|--------|---|
| 5.1.24 | <p>Create an object for Routing Configuration as follows:</p> <ul style="list-style-type: none"> Right-click Cantata IMG EMS in the Configuration Tree, and select New Routing Configuration. To save the changes, right-click Routing Configuration, and select Commit. The resultant provisioning is shown below.  <p>The screenshot shows the ClientView interface. On the left, the 'Configuration Tree' is expanded to 'Routing Configuration'. The main pane shows the 'Routing Configuration' object with a 'Property' table. The bottom status bar indicates 'STATUS: DataModel State: Synced GateManager State: Ready CommManager State: Ready License verified for NodeName=<Avaya-IMG>'. A 'Client / Server Monitor' window is also visible, showing 'Outgoing Traffic' and 'Incoming Traffic' graphs.</p> |

| Step | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---|-------|------|---|---|---|---|---|---|-------|-----|---|---|---|---|---|---|-------|-----|---|---|---|---|---|---|-------|-----|---|---|---|---|---|
| 5.1.25 | <p>Create an object for Channel Groups as follows:</p> <ul style="list-style-type: none">• Right-click Routing Configuration in the Configuration Tree, and select New Channel Groups.• To save the changes, right-click Channel Groups, and select Commit.• The resultant provisioning is shown below.  <p>The screenshot displays the ClientView software interface. The title bar indicates 'ClientView Version 10.3.3.174 - Channel Groups (USER - [admin] ROLE - [Monitor / Provision / Configure])'. The menu bar includes File, Edit, View, Communications, Tools, and Help. The left pane, titled 'Object Name: Channel Groups' and 'State: Configured', shows a tree structure with 'Channel Groups' selected under 'Routing Configuration'. The main workspace shows the 'Channel Groups' configuration window with 'Property' set to 'As-Configured' and 'User-Specified'. Below this, there are buttons for 'Create Tree', 'Query All Tags', 'Validation Report', 'Help', and 'MRTG Scripts'. A table titled 'Object Table' shows signaling activity with columns for ID, Name, SignalingType, Incoming C..., Incoming A..., Outgoing C..., Outgoing A..., and Average Ho... The table contains four rows of data. At the bottom, there is a 'Client / Server Monitor' section with a graph showing 'Outgoing Traffic' (blue), 'Incoming Traffic' (red), and 'Bytes to Process' (blue). The status bar at the bottom shows 'STATUS: DataModel State: Synced GateManager State: Ready CommManager State: Ready License verified for NodeName= <Avaya-IMG>'.</p> <table><tr><th>ID</th><th>Name</th><th>SignalingType</th><th>Incoming C...</th><th>Incoming A...</th><th>Outgoing C...</th><th>Outgoing A...</th><th>Average Ho...</th></tr><tr><td>0</td><td>CMpri</td><td>ISDN</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>CMcas</td><td>CAS</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>2</td><td>CMsip</td><td>SIP</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>3</td><td>MXsip</td><td>SIP</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table> <p>STATUS: DataModel State: Synced GateManager State: Ready CommManager State: Ready License verified for NodeName= <Avaya-IMG></p> | ID | Name | SignalingType | Incoming C... | Incoming A... | Outgoing C... | Outgoing A... | Average Ho... | 0 | CMpri | ISDN | 0 | 0 | 0 | 0 | 0 | 1 | CMcas | CAS | 0 | 0 | 0 | 0 | 0 | 2 | CMsip | SIP | 0 | 0 | 0 | 0 | 0 | 3 | MXsip | SIP | 0 | 0 | 0 | 0 | 0 |
| ID | Name | SignalingType | Incoming C... | Incoming A... | Outgoing C... | Outgoing A... | Average Ho... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | CMpri | ISDN | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | CMcas | CAS | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | CMsip | SIP | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | MXsip | SIP | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Step | Description |
|--------|---|
| 5.1.26 | <p>Configure a Channel Group corresponding to Avaya Communication Manager as follows:</p> <ul style="list-style-type: none"> Right-click Channel Groups in the Configuration Tree, and select New Channel Group. Enter a descriptive name for the Channel Group in the Name field in the Configuration Pane. Select ISDN from the drop down list for the Signaling Type field. Select a hunt algorithm that selects B-channels inverse to the provisioning on Avaya Communication Manager (see Step 3.2.4) from the drop down list for the Hunting Options field. Use default settings for remaining fields. <p><i>Note: The administration for the Route Table field is displayed in this screen capture, although the Route Table has not been created. When providing the IMG with an initial configuration, create a Channel Group first, then create a Route Table, then edit the Channel Group to include the Route Table.</i></p> <ul style="list-style-type: none"> To save the changes, right-click CMpri - ID: 0, and select Commit. The resultant provisioning is shown below. |



| Step | Description |
|--------|---|
| 5.1.27 | <p>Assign a D-Channel to the Channel Group corresponding to Avaya Communication Manager as follows:</p> <ul style="list-style-type: none"> Right-click the Channel Group created in Step 5.1.26 in the Configuration Tree, and select New ISDN Group. Use default settings for all fields. To save the changes, right-click ISDN IMG:0 - Bearer - ID:0- Chan:23 and select Commit. The resultant provisioning is shown below. |



| Step | Description |
|--------|---|
| 5.1.28 | <p>Assign B-Channels to the ISDN Channel Group corresponding to Avaya Communication Manager as follows:</p> <ul style="list-style-type: none"> Right-click the ISDN Group created in Step 5.1.27 in the Configuration Tree, and select New Channel Group. Use default settings for all fields. To save the changes, right-click B Channels: Bearer-0, and select Commit. The resultant provisioning is shown below. |

ClientView Version 10.3.3.174 - B Channels: Bearer-0 (USER : [admin] ROLE : [Monitor / Provision / Configure])

File Edit View Communications Tools Help

Object Name: B Channels: Bearer-0
State: Configured

Configuration Tree:

- Configuration DevConnect
 - Cantata IMG EMS
 - Logical IMG Avaya-IMG
 - Profiles
 - Signaling Variants
 - External Network Elements
 - Routing Configuration
 - Channel Groups
 - CMpri - ID: 0
 - ISDN IMG.0 - Bearer - ID:0- Chan:23
 - B Channels: Bearer-0**
 - CMcas - ID: 1
 - CMsip - ID: 2
 - MXsip - ID: 3
 - Routing Tables

B Channels: Bearer-0

| Property | As-Configured | User-Specified |
|------------------------|---------------|----------------|
| IMG Interface | Bearer | Bearer |
| Start Interface Offset | 0 | 0 |
| Start Channel | 0 | 0 |
| End Interface Offset | 0 | 0 |
| End Channel | 22 | 22 |
| Start Facility Number | 0 | 0 |
| Trunk Type | T1 | |
| B Channel Count | 23 | |
| Channel Count | 23 | |

Client / Server Monitor

Outgoing Traffic

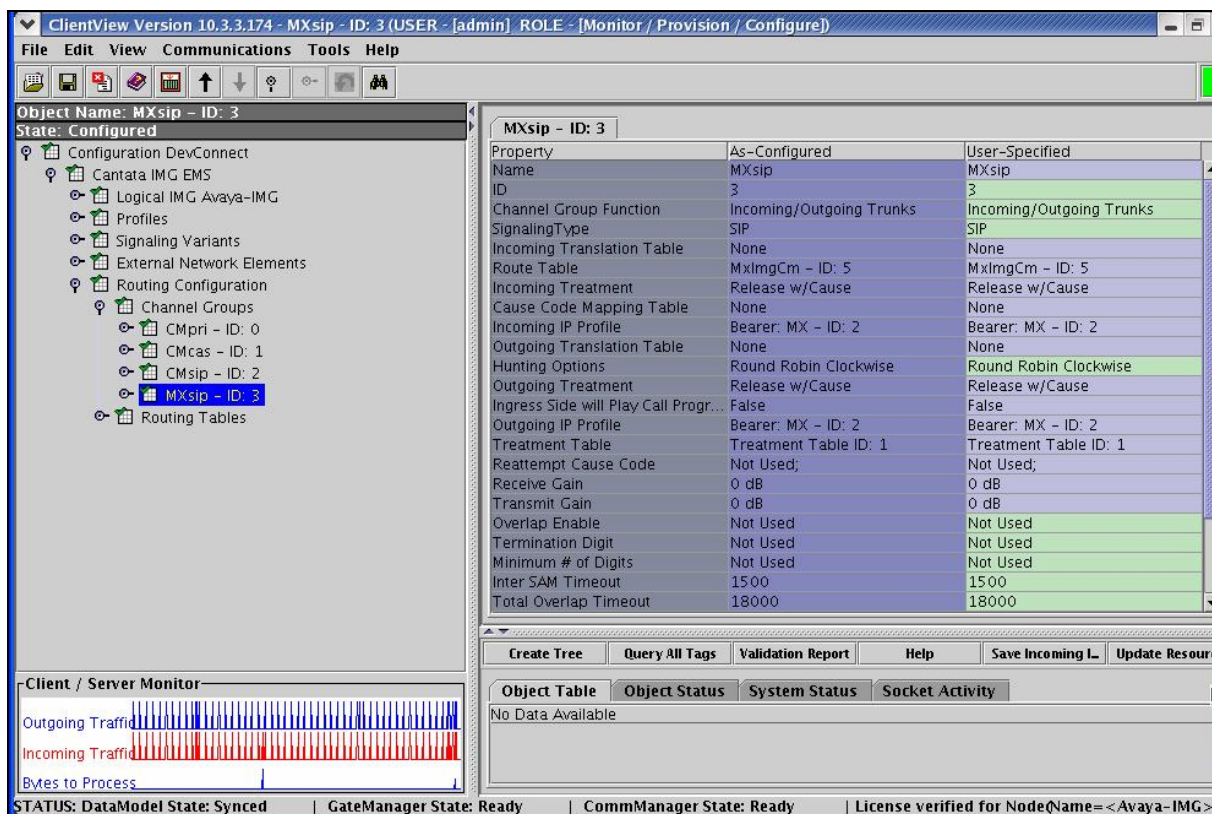
Incoming Traffic

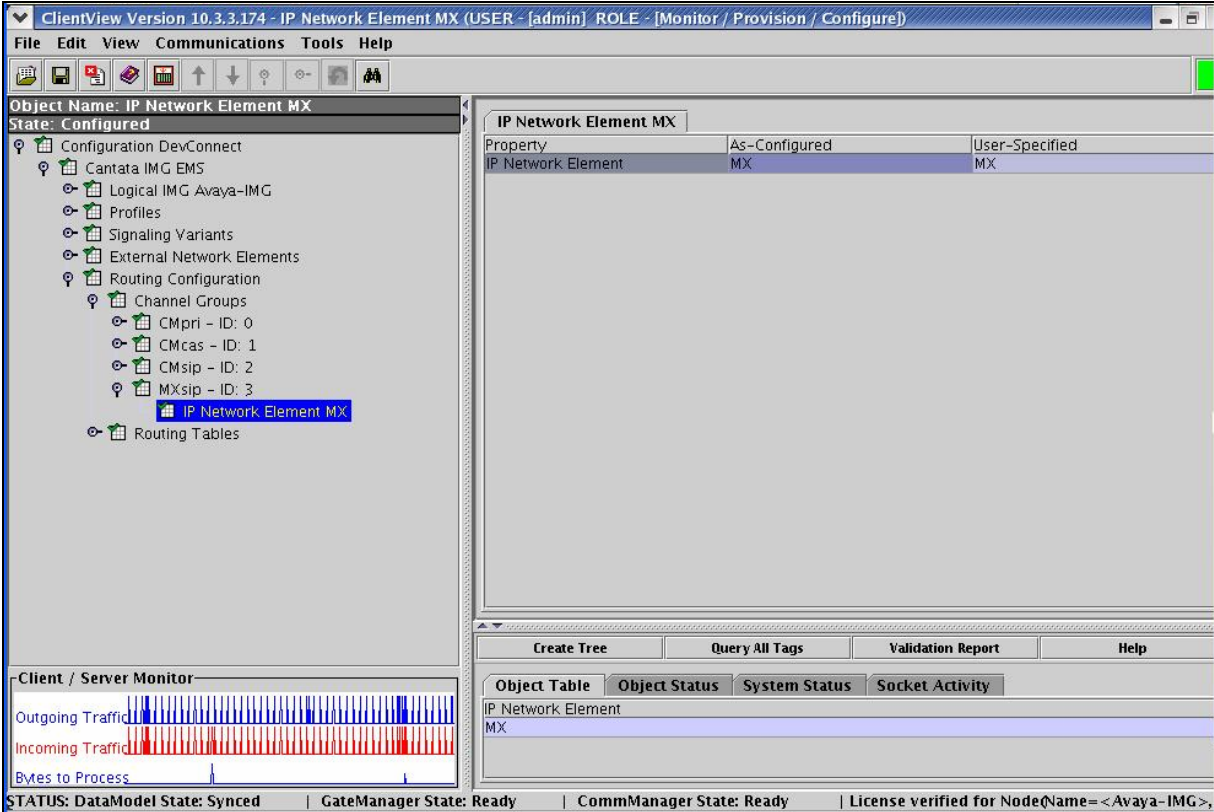
Bytes to Process

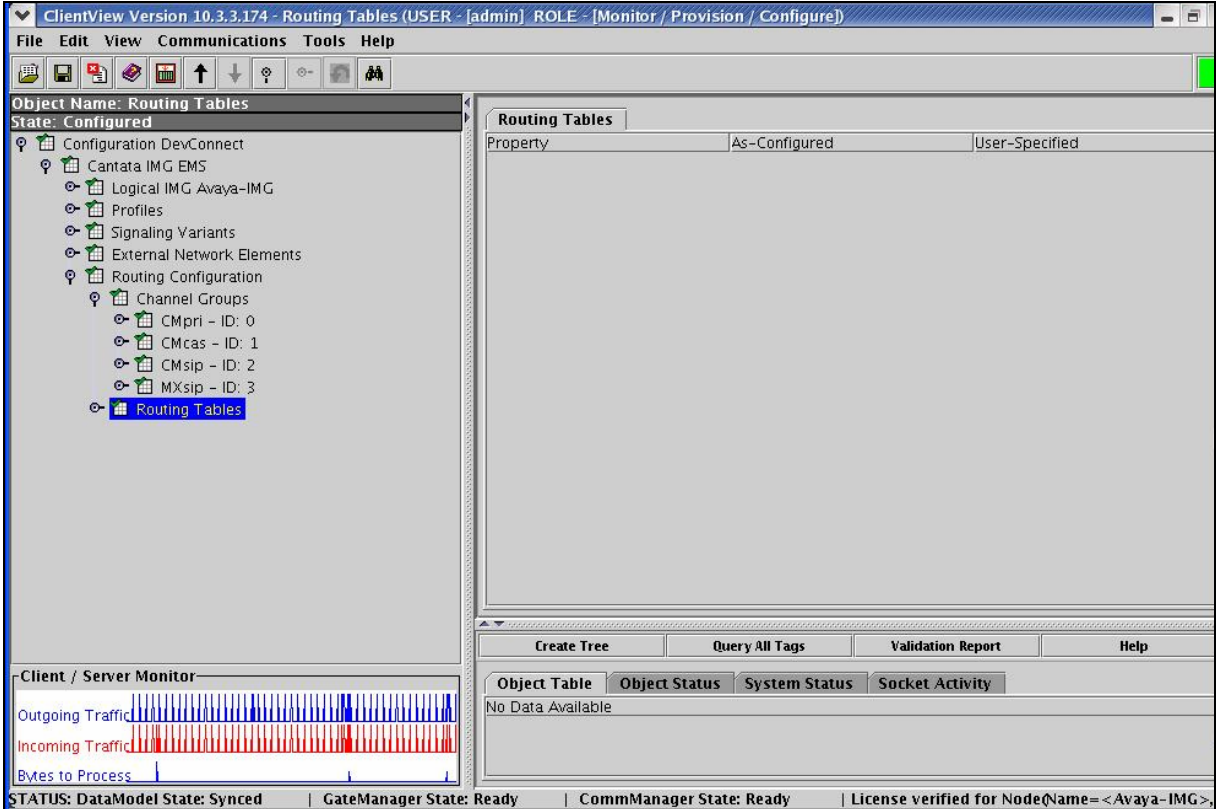
STATUS: DataModel State: Synced | GateManager State: Ready | CommManager State: Ready | License verified for Node(Name=<Avaya-IMG>)

| Object Table | Object Status | System Status | Socket Activity |
|---------------|------------------|---------------|-----------------|
| IMG Interface | Interface offset | Channel | Facility |
| Bearer | 0 | 0 | 0 |
| Bearer | 0 | 1 | 0 |
| Bearer | 0 | 2 | 0 |

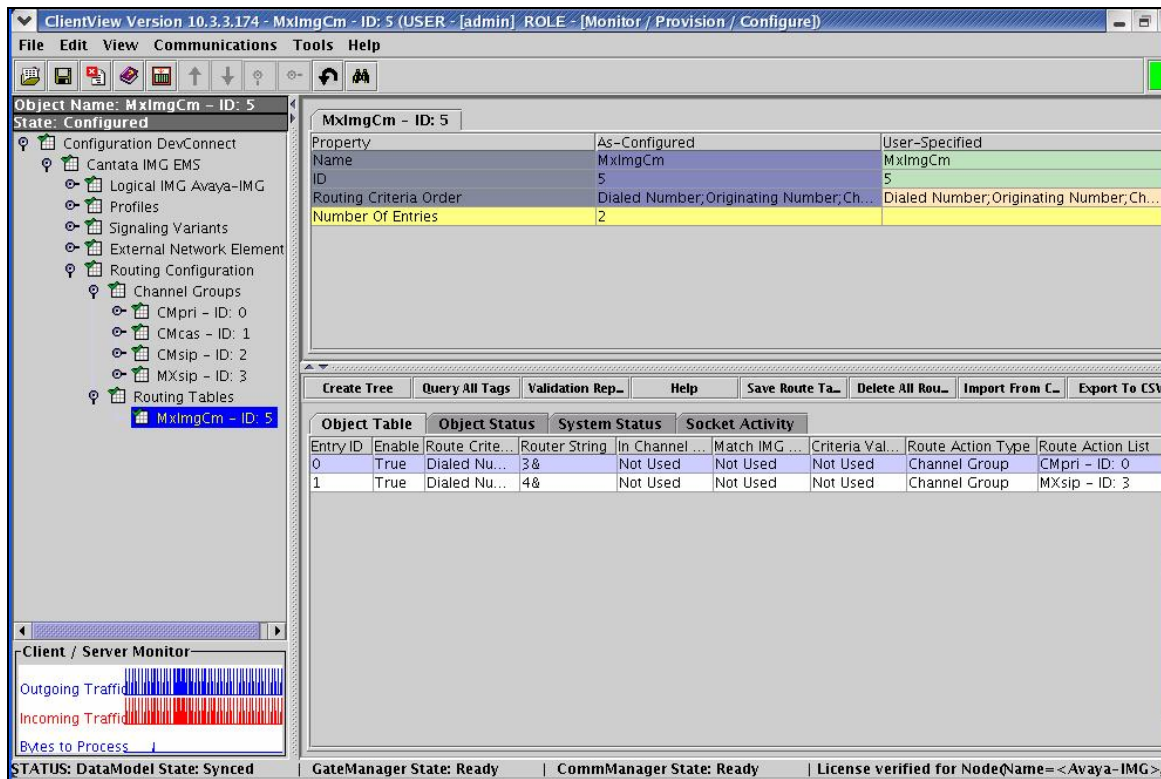
| Step | Description |
|--------|--|
| 5.1.29 | <p>Configure a Channel Group corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"> Right-click Channel Groups in the Configuration Tree, and select New Channel Group. Enter a descriptive name for the Channel Group in the Name field in the Configuration Pane. Select SIP from the drop down list for the Signaling Type field. Use default settings for remaining fields. <p><i>Note: The administration for the Route Table field is displayed in this screen capture, although the Route Table has not been created. When providing the IMG with an initial configuration, create a Channel Group first, then create a Route Table, then edit the Channel Group to include the Route Table.</i></p> <ul style="list-style-type: none"> To save the changes, right-click MXsip - ID: 3, and select Commit. The resultant provisioning is shown below. |



| Step | Description |
|--------|---|
| 5.1.30 | <p>Assign an IP Network Element to the Channel Group corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"> Right-click the Channel Group created in Step 5.1.29 in the Configuration Tree, and select New IP Network Element. Select the External Gateway provisioned in Step 5.1.23 from the drop down list for the IP Network Element field. To save the changes, right-click IP Network Element MX, and select Commit. The resultant provisioning is shown below.  |

| Step | Description |
|--------|--|
| 5.1.31 | <p>Create an object for Routing Tables as follows:</p> <ul style="list-style-type: none"> Right-click Routing Configuration in the Configuration Tree, and select New Routing Tables. To save the changes, right-click Routing Tables, and select Commit. The resultant provisioning is shown below.  |
| 5.1.32 | <p>Configure a Route Table as follows:</p> <ul style="list-style-type: none"> Right-click Routing Tables in the Configuration Tree, and select New Route Table. Enter a descriptive name for the Route Table in the Name field in the Configuration Pane. Use default settings for remaining fields. To save the changes, right-click the entry, and select Commit. See Step 5.1.33 for resultant provisioning. |

| Step | Description |
|--------|---|
| 5.1.33 | <p>Add route entries to the Route Table provisioned in Step 5.1.32 as follows:</p> <ul style="list-style-type: none"> To add a route entry corresponding to Avaya Communication Manager, right-click the Route Table in the Configuration Tree and select Add Route Entry. <ul style="list-style-type: none"> Enter a pattern to match extensions on Avaya Communication Manager, where & is a wildcard, in the Router String field in the New Entry dialog box. Select the Channel Group provisioned in Step 5.1.26 from the drop down list for the Outgoing Channel Group field. <p><i>Note: This is displayed below under the Route Action List column.</i></p> Click OK in the New Entry dialog box. To add a route entry corresponding to Avaya Meeting Exchange, right-click the Route Table in the Configuration Tree and select Add Route Entry. <ul style="list-style-type: none"> Enter a pattern to match the provisioning for call flows on Avaya Meeting Exchange, where & is a wildcard, in the Router String field in the New Entry dialog box. Select the Channel Group provisioned in Step 5.1.29 from the drop down list for the Outgoing Channel Group field. <p><i>Note: This is displayed below under the Route Action List column.</i></p> Click OK in the New Entry dialog box. The resultant provisioning is shown below. |



6. Interoperability Compliance Testing

6.1. General Test Approach

The general test approach was to place calls between Avaya Communication Manager and Avaya Meeting Exchange via the IMG utilizing the sample configuration displayed in **Figure 1**. The main objectives were to verify the following:

- Inbound calling from Avaya Communication Manager to scheduled and demand conferences provisioned on Avaya Meeting Exchange via the Cantata IMG 1010:
 - Direct call flow (without participant-access-code)
 - Basic call flow (with participant-access-code)
- Outbound calling from Avaya Meeting Exchange to stations registered to either Avaya Communication Manager, or Avaya SIP Enablement Services via the Cantata IMG 1010:
 - Blast dial to a pre-provisioned blast dial list
 - Originator dial-out
- Conference features for both moderator and participant accessed during a conference call via touchtone commands
- The following sub-set of the SIPPING-19 supplementary features for SIP endpoints:
 - Call hold
 - Attended/unattended call transfer
 - Call forward
 - Three-way conference
- The following transport methods for signaling between Avaya Meeting Exchange and the IMG:
 - TCP
 - UDP
- The following transport methods for signaling/media between Avaya Communication Manager and the IMG:
 - T1 ISDN-PRI
- The following codecs:
 - G711MU
- Subjective voice quality for endpoints participating in a conference.
- DTMF transmission via RFC 2833.

6.2. Test Results

All test cases, as defined by the general test approach, passed.

7. Verification Steps

The following steps were used to verify the administrative steps presented in these Application Notes and are applicable for similar configurations in the field.

| Step | Description |
|-------|---|
| 7.1.1 | <p>Verify ISDN-PRI connectivity between Avaya Communication Manager and the IMG by retrieving status regarding the trunk group provisioned in Step 3.2.3. From a SAT session:</p> <ul style="list-style-type: none"> Issue the command “status trunk <n>”, where n is the number of the trunk group to verify. Verify that all members in the trunk group are in-service/idle. |
| 7.1.2 | <p>Validate signaling and media connectivity for inbound calls to Avaya Meeting Exchange from Avaya Communication Manager via the IMG. This is accomplished by verifying that the trunk provisioned in Step 3.2.3 is utilized when a call from a phone registered to either Avaya Communication Manager, or Avaya SIP Enablement Services dials in to a conference provisioned on Avaya Meeting Exchange. From a SAT session:</p> <ul style="list-style-type: none"> Issue the command “list trace tac <n>”, where n is the TAC defined for the trunk group. From a station registered to either Avaya Communication Manager, or Avaya SIP Enablement Services, dial 444 to enter the conference provisioned in Section 4.3 as moderator via the direct call flow provisioned in Step 4.2.2. <p><i>Note: The trace below shows a station (33006) that dialed (444) and utilized the call routing provisioned in Section 3.3 to route the call to Avaya Meeting Exchange.</i></p> <pre>list trace tac 106</pre> <p style="text-align: right;">Page 1</p> <pre> LIST TRACE time data 10:50:29 dial 444 route:AAR 10:50:29 term trunk-group 6 cid 0x290 10:50:29 dial 444 route:AAR 10:50:29 route-pattern 6 preference 1 cid 0x290 10:50:29 seize trunk-group 6 member 23 cid 0x290 10:50:29 Calling Number & Name 33006 H.323 33006 V 10:50:29 Proceed trunk-group 6 member 23 cid 0x290 10:50:29 active trunk-group 6 member 23 cid 0x290 </pre> |

| Step | Description |
|-------|---|
| 7.1.3 | <p>Validate signaling and media connectivity for outbound calls from Avaya Meeting Exchange to Avaya Communication Manager via the IMG. This is accomplished by verifying that the trunk provisioned in Step 3.2.3 is utilized when a call is placed from a participant in conference on Avaya Meeting Exchange to a station registered to either Avaya Communication Manager, or Avaya SIP Enablement Services. From a SAT session:</p> <ul style="list-style-type: none"> • Issue the command “list trace tac <n>”, where n is the TAC defined for the trunk group. • From a station in a conference on Avaya Meeting Exchange, enter the appropriate touchtone command to invoke a blast dial to the blast dial list provisioned in Section 4.3. <p><i>Note: The trace below shows the call that originated from Avaya Meeting Exchange to a SIP station registered to Avaya SIP Enablement Services. The call utilized the trunk group between Avaya Communication Manager and the IMG.</i></p> <pre>list trace tac 106</pre> <p style="text-align: right;">Page 1</p> <pre> LIST TRACE time data 10:51:09 Calling party trunk-group 6 member 1 cid 0x291 10:51:09 Calling Number & Name 444 NO-CPName 10:51:09 active trunk-group 6 member 1 cid 0x291 10:51:09 dial 31002 10:51:09 term station 31002 cid 0x291 10:51:11 active station 31002 cid 0x291 </pre> |
| 7.1.4 | <p>Verify that calls to and from Avaya Meeting Exchange are managed correctly, e.g., callers are added/removed from conferences. This is verified by the following procedures:</p> <ul style="list-style-type: none"> • Log in to the Avaya Meeting Exchange server console with the appropriate credentials. • At the command prompt, enter the command:
 watch -t -n 5 -d "ipinfo -l egrep -ci active" <ul style="list-style-type: none"> ○ This command provides a real time, continuous update of port utilization on Avaya Meeting Exchange. |

8. Conclusion

These Application Notes presented a compliance-tested solution comprised of Avaya Communication Manager, Avaya Meeting Exchange Express Edition, and the Cantata Technology IMG 1010 Media Gateway. This solution enables connectivity between Avaya Communication Manager and Avaya Meeting Exchange Express Edition via the Cantata Technology IMG 1010 Media Gateway utilizing standards based SIP and ISDN-PRI connectivity.

9. Additional References

Avaya references are available at <http://support.avaya.com>.

- [1] *Avaya Meeting Exchange Express Edition Release 1.5 Administration and Maintenance Guide*, Issue 1, Doc ID: 04-601909, March 2007.
- [2] *Avaya Meeting Exchange Express Edition Release 1.5 Installation and Configuration Guide*, Issue 1, Doc ID: 04-601898, March 2007.
- [3] *Administrator Guide for Avaya Communication Manager*, Issue 3.1, Doc ID: 03-300509, February 2007.
- [4] *Administration for Network Connectivity for Avaya Communication Manager*, Issue 12, Doc ID: 555-233-504, February 2007.

Cantata references are available at: <http://www.cantata.com/>.

©2007 Avaya Inc. All Rights Reserved.

Avaya and the Avaya Logo are trademarks of Avaya Inc. All trademarks identified by ® and ™ are registered trademarks or trademarks, respectively, of Avaya Inc. All other trademarks are the property of their respective owners. The information provided in these Application Notes is subject to change without notice. The configurations, technical data, and recommendations provided in these Application Notes are believed to be accurate and dependable, but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.