



## **Configuring Connectivity between Avaya Communication Manager, the Avaya Meeting Exchange S6200 Conferencing Server and the Cantata Technology Integrated Media Gateway 1010 Utilizing CAS and SIP - Issue 1.0**

### **Abstract**

These Application Notes present the procedures for configuring connectivity between Avaya Communication Manager, the Avaya Meeting Exchange S6200 Conferencing Server (Avaya Meeting Exchange) and the Cantata Technology Integrated Media Gateway 1010 (IMG). The IMG provided T1 CAS 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, the Avaya Meeting Exchange S6200 Conferencing Server (Avaya Meeting Exchange) and the Cantata Technology Integrated Media Gateway 1010 (IMG). The IMG provided Channel Associated Signaling (CAS) connectivity to Avaya Communication Manager, as well as SIP connectivity to 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.

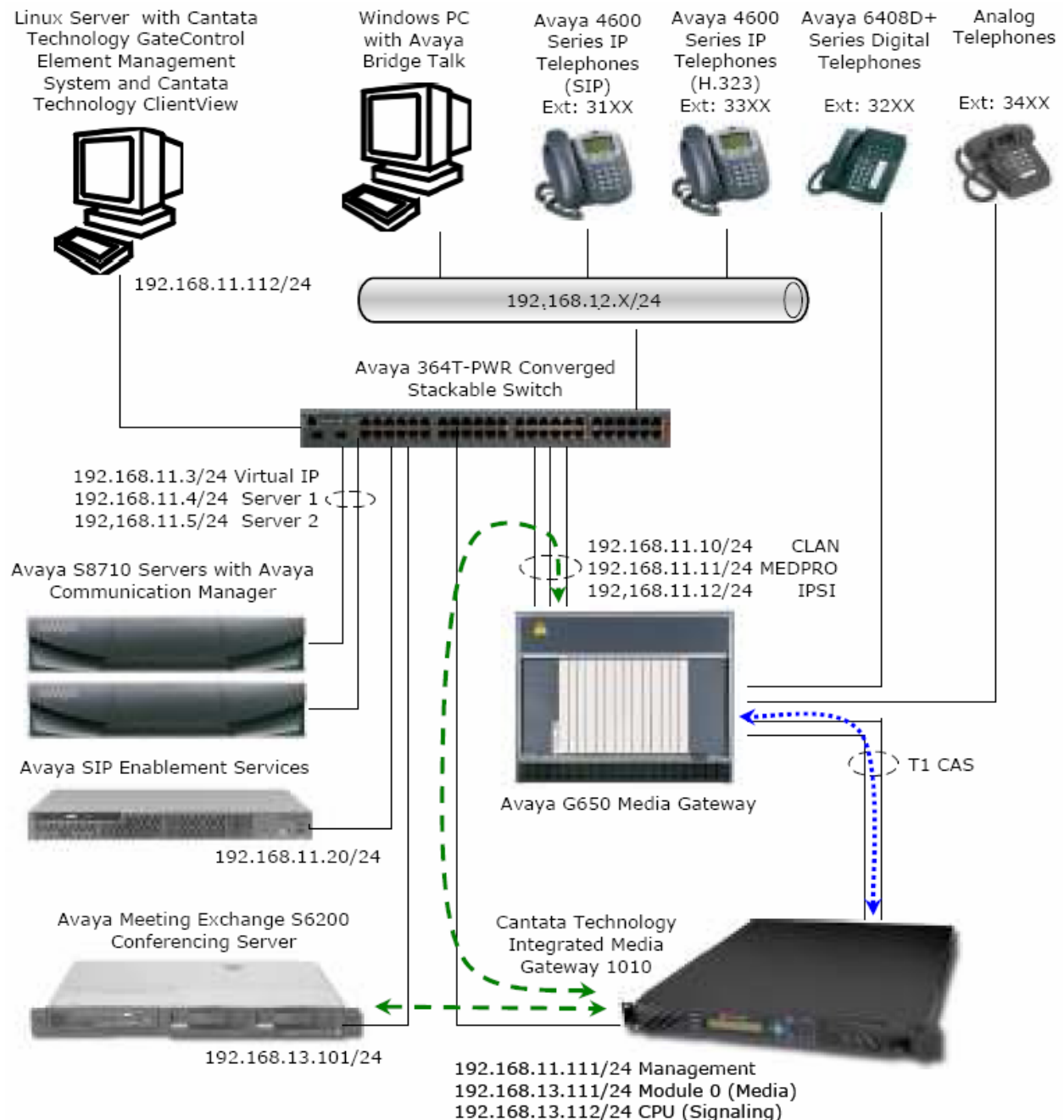
Avaya Meeting Exchange is a SIP-based voice conferencing solution that runs on an S6200 server and provides mid-market enterprise customers with an IP based audio conferencing system. For this sample configuration, Avaya Meeting Exchange was provisioned to accept calls from Avaya Communication Manager via the IMG through call branding that supported both direct and scan 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 CAS connectivity to Avaya Communication Manager.

It should be noted that Avaya Communication Manager supports direct SIP connectivity with Avaya Meeting Exchange. However, the premise of this compliance test effort was to validate the media gateway functionality of the IMG. Therefore, Avaya Communication Manager was configured for T1 CAS connectivity with the IMG, and the IMG was configured for SIP connectivity with Avaya Meeting Exchange. To account for the SIP telephones in this sample configuration, Avaya SIP Enablement Services was utilized as a SIP registration server only.

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 (CAS) connectivity between Avaya Communication Manager and the IMG is depicted by the blue dotted line.



**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"><li>Avaya TN2312BP (IPSI)</li><li>Avaya TN799DP (C-LAN)</li><li>Avaya TN2302AP (MEDPRO)</li></ul>	HW12 FW040 HW01 FW024 HW20 FW117
Avaya Meeting Exchange S6200 Conferencing Server	40102h mx7_1.3.00-84
Avaya Bridge Talk	4.0.03a
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 Integrated Media Gateway 1010	10.3.3
Cantata Technology 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 [1] and [2] 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 “<b>display system-parameters customer-options</b>” and proceed to Page 3. Verify that the <b>ARS/AAR Dialing without FAC</b> field is enabled.</p> <p><i>Note: The <b>ARS/AAR Dialing without FAC</b> 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 <b>ARS/AAR Dialing without FAC? y</b> 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 &amp; login to effect the permission changes.) </pre>

## 3.2. Configure Connectivity

This section describes the steps for configuring CAS trunking between Avaya Communication Manager and the IMG.

Step	Description
3.2.1	<p>Issue the command “<b>add ds1 &lt;xxxxx&gt;</b>”, where <b>xxxxx</b> 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"><li>• Enter a descriptive name for the DS1 circuit pack in the <b>Name</b> field.</li><li>• Set the <b>Signaling Mode</b> field to <b>robbed-bit</b>.</li><li>• Configure additional fields with boldface type as displayed and use default settings for remaining fields.</li></ul>
	<div><div>add ds1 1a07</div><div>Page 1 of 2</div><div>DS1 CIRCUIT PACK</div><div><div>Location: 01A07</div><div>Bit Rate: 1.544</div><div>Line Compensation: 1</div><div>Signaling Mode: robbed-bit</div><div>Name: IMG CAS</div><div>Line Coding: b8zs</div><div>Framing Mode: esf</div></div><div>Interface Companding: mulaw</div><div>Idle Code: 11111111</div><div>Slip Detection? n</div><div>Near-end CSU Type: other</div></div>

Step	Description
3.2.2	<p>Issue the command “<b>add trunk-group &lt;n&gt;</b>”, where <b>n</b> is the number of an unallocated trunk group and administer settings as displayed.</p> <ul style="list-style-type: none"> <li>• Enter a descriptive name for the trunk group in the <b>Group Name</b> field.</li> <li>• Set the <b>Group Type</b> field to <b>tie</b>.</li> <li>• Enter a number in the <b>TAC</b> (Trunk Access Code) field that is consistent with the configuration for the dial plan.</li> <li>• Set the <b>Trunk Type</b> field to a value that is compatible with the IMG media gateway settings.</li> <li>• Configure additional fields with boldface type as displayed and use default settings for remaining fields.</li> </ul>
	<pre> add trunk-group 7                                      Page 1 of 21                                       TRUNK GROUP  Group Number: 7                     Group Type: tie                     CDR Reports: y   Group Name: CAS Trunk to IMG-1010   COR: 1                     TN: 1             TAC: 107     Direction: two-way                Outgoing Display? y   Trunk Signaling Type:     Dial Access? y                    Busy Threshold: 255   Night Service:     Queue Length: 0                   Incoming Destination:       Comm Type: voice                 Auth Code? n                                      Trunk Flash? n  Trunk Type (in/out): wink/wink </pre>

Step	Description																																																																																																																																																																																																																																	
3.2.3	Proceed to Page 5 and administer the members for the trunk group as displayed. <ul style="list-style-type: none"><li>Enter <b>xxxxxyy</b> in the <b>Port</b> field, where <b>xxxxxx</b> corresponds the location of the DS1 circuit pack in the Avaya G650 Media Gateway and <b>yy</b> corresponds to the trunk group member.</li></ul>																																																																																																																																																																																																																																	
	<div>change trunk-group 7<div>Page5 of 21</div></div> <div>TRUNK GROUP</div> <div>Administered Members (min/max):1/24</div> <div>GROUP MEMBER ASSIGNMENTS</div> <div>Total Administered Members:24</div> <table><thead><tr><th>Port</th><th>Code</th><th>Sfx</th><th>Name</th><th>Night</th><th>Mode</th><th>Type</th><th>Ans</th><th>Delay</th></tr></thead><tbody><tr><td>1: 01A0701</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2: 01A0702</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3: 01A0703</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4: 01A0704</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5: 01A0705</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6: 01A0706</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7: 01A0707</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8: 01A0708</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9: 01A0709</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10: 01A0710</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11: 01A0711</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>12: 01A0712</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>13: 01A0713</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>14: 01A0714</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>15: 01A0715</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>16: 01A0716</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>17: 01A0717</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>18: 01A0718</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>19: 01A0719</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>20: 01A0720</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>21: 01A0721</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>22: 01A0722</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>23: 01A0723</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>24: 01A0724</td><td>TN464</td><td>F</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>	Port	Code	Sfx	Name	Night	Mode	Type	Ans	Delay	1: 01A0701	TN464	F							2: 01A0702	TN464	F							3: 01A0703	TN464	F							4: 01A0704	TN464	F							5: 01A0705	TN464	F							6: 01A0706	TN464	F							7: 01A0707	TN464	F							8: 01A0708	TN464	F							9: 01A0709	TN464	F							10: 01A0710	TN464	F							11: 01A0711	TN464	F							12: 01A0712	TN464	F							13: 01A0713	TN464	F							14: 01A0714	TN464	F							15: 01A0715	TN464	F							16: 01A0716	TN464	F							17: 01A0717	TN464	F							18: 01A0718	TN464	F							19: 01A0719	TN464	F							20: 01A0720	TN464	F							21: 01A0721	TN464	F							22: 01A0722	TN464	F							23: 01A0723	TN464	F							24: 01A0724	TN464	F						
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### 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 “<b>change dialplan analysis</b>” and administer settings to route any numbers beginning with a <b>5</b> and totaling <b>3</b> 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       1         3      dac       2         3      aar       3         5      ext       4         3      aar       5         3      aar       6         3      aar       7         5      ext       8         2      fac       9         2      dac       *         1      fac       #         3      fac </pre>

Step	Description
3.3.2	<p>Issue the command “<b>change route-pattern &lt;n&gt;</b>”, where <b>n</b> is the number of an unallocated route pattern. Administer settings to utilize the trunk group provisioned in <b>Step 3.2.2</b> to route calls from Avaya Communication Manager to the IMG.</p> <ul style="list-style-type: none"> <li>Enter the number of the trunk group that was provisioned in <b>Step 3.2.2</b> in the <b>Grp No</b> field.</li> <li>To disable restrictions for call routing via this route pattern, set the Facility Restriction Level (<b>FRL</b>) field to the lowest setting.</li> <li>Configure additional fields with boldface type as displayed and use default settings for remaining fields.</li> </ul>
	<pre> change route-pattern 7 Pattern Number: 7    Pattern Name: CAS 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: 7      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 2: Y Y Y Y Y n  n      rest 3: Y Y Y Y Y n  n      rest 4: Y Y Y Y Y n  n      rest 5: Y Y Y Y Y n  n      rest 6: Y Y Y Y Y n  n      rest </pre>

Step	Description																					
3.3.3	<p>Issue the command “<b>change aar analysis x</b>” and add entries in the table to utilize the route pattern provisioned in <b>Step 3.3.2</b>.</p> <ul style="list-style-type: none"><li>• Enter a number in the <b>Dialed String</b> field that will be utilized by Avaya Meeting Exchange to map to call branding for a direct call flow (see <b>Step 4.3.2</b>).</li><li>• Enter the number of the route pattern provisioned in <b>Step 3.3.2</b> in the <b>Route Pattern</b> field.</li><li>• Configure additional fields with boldface type as displayed and use default settings for remaining fields.</li><li>• Repeat these steps to add an entry that will be utilized by Avaya Meeting Exchange to map to call branding for a scan call flow (see <b>Step 4.3.3</b>).</li></ul>																					
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	<table><tr><th>Dialed String</th><th>Total Min</th><th>Total Max</th><th>Route Pattern</th><th>Call Type</th><th>Node Num</th><th>ANI Req'd</th></tr><tr><td>502</td><td>3</td><td>3</td><td>7</td><td>aar</td><td></td><td>n</td></tr><tr><td>501</td><td>3</td><td>3</td><td>7</td><td>aar</td><td></td><td>n</td></tr></table>	Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Req'd	502	3	3	7	aar		n	501	3	3	7	aar		n
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## 4. Avaya Meeting Exchange Configuration

This section displays the configuration for enabling Avaya Meeting Exchange to interoperate with Avaya Communication Manager via the IMG. Call routing, call branding and SIP connectivity are administered on Avaya Meeting Exchange via a Command Line Interface (CLI) accessed via a telnet connection. Conference related attributes are administered and maintained via the Avaya Bridge Talk application. Refer to [3], [4] and [5] for additional information regarding the configuration displayed in this section.

### 4.1. Configure Connectivity

This section describes the steps for configuring SIP connectivity between Avaya Meeting Exchange and other SIP User Agents (UA). The provisioning depicted in this section was administered via the CLI.

Step	Description
4.1.1	<p>Administer settings that enable SIP connectivity between Avaya Meeting Exchange and the IMG by editing the <b>system.cfg</b> file as follows:</p> <ul style="list-style-type: none"> <li>• From the <b>/usr/ipcb/config</b> directory, edit the <b>system.cfg</b> file with a text editor.</li> <li>• Enter the IP address of Avaya Meeting Exchange (as defined in the <b>/etc/hosts</b> file) for the <b>IPAddress</b> variable.</li> <li>• Enter a SIP URI for Avaya Meeting Exchange that conforms to SIP standards for the <b>MyListener</b> variable. This entry is used to populate the “From” header field in SIP INVITE messages from Avaya Meeting Exchange. To enable SIP connectivity on port 5060, this entry must contain <b>5060</b> and <b>transport=tcp</b>. The user field, <b>S6200</b>, must conform to SIP standards and is selected to uniquely identify this server. For example, <b>S6200</b> 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-users to identify a call from Avaya Meeting Exchange.</li> <li>• Enter a SIP URI for Avaya Meeting Exchange that conforms to SIP standards for the <b>respContact</b> variable. This entry is used to provide the IMG a Contact address to use for acknowledging SIP messages from Avaya Meeting Exchange.</li> <li>• Enter a value in seconds for the <b>sessionRefreshTimerValue</b> and <b>minSETimerValue</b> variables. These entries correspond to the Min-SE timer in SIP INVITE messages from Avaya Meeting Exchange.</li> </ul> <pre># ip address of the server IPAddress=192.168.13.101  # request we will be listening to MyListener=sip:S6200@192.168.13.101:5060;transport=tcp  # if this setting is populated will Overwrite the contact field in responses respContact=&lt;sip:S6200@192.168.13.101:5060;transport=tcp&gt;  # diff serv this value will appear on the TOS field of the IP packet DiffServTOSValue=0 # vlan value EthernetVlanValue=0  # initipcb process keep-alive time (seconds) processKeepAlivePollTime=11  # softms time interval (microseconds) softmsTimeInterval=20000  # bridgeTranslator time interval (seconds) bridgetranslatorTimeInterval=6  sessionRefreshTimerValue=86400 minSETimerValue=86400</pre>



## 4.2. Configure Call Routing

The following steps show procedures to enable call routing for Avaya Meeting Exchange, where call routing is defined as follows:

- For outbound calls from Avaya Meeting Exchange, telephone number to URI translations are utilized. These translations associate a telephone number pattern with a corresponding SIP URI, thus allowing call origination from Avaya Meeting Exchange.
- For inbound calls to Avaya Meeting Exchange, URI to telephone number translations are utilized. These translations associate calls to Avaya Meeting Exchange with corresponding call branding, based on incoming SIP URIs.

The provisioning depicted in this section was administered via the CLI.

Step	Description
4.2.1	<p>Administer settings to enable outbound calling from Avaya Meeting Exchange to Avaya Communication Manager via the IMG by adding telephone number to URI translations to the <b>telnumToUri.tab</b> file as follows:</p> <ul style="list-style-type: none"> <li>From the <b>/usr/ipcb/config</b> directory, edit the <b>telnumToUri.tab</b> file with a text editor.</li> <li>Add rules, separated by either tabs or single spaces, as a line in the file to route outbound calls from Avaya Meeting Exchange to the IMG. Metacharacters such as * (refers to a character string) or ? (refers to a single character) may be utilized. <ul style="list-style-type: none"> <li>The rule entered under the <b>TelnumPattern</b> column matches any five digit pattern with a leading “3”.</li> <li>The rule entered under the <b>TelnumConversion</b> column routes the call to the IP address of the CPU on the IMG via SIP/TCP. To enable SIP connectivity utilizing TCP, the rule must syntactically conform to SIP standards regarding URI and contain <b>5060</b> and <b>transport=tcp</b>. Avaya Meeting Exchange will replace <b>\$0</b> with the dialed number in outgoing SIP INVITE messages. For example, if <b>31001</b> is dialed, Avaya Meeting Exchange will format a SIP INVITE message with the following line in the SIP URI and “To” header field: <ul style="list-style-type: none"> <li><b>sip:31001@192.168.13.112:5060;transport=tcp</b></li> </ul> </li> </ul> </li> </ul> <p><i><b>Note:</b> Alternatively, call routing to Avaya Communication Manager via the IMG could have been enabled with the following entry:</i></p> <p><i><b>* sip:\$0@192.168.13.112:5060;transport=tcp</b>, where * is a wildcard and routes any dialed digits to the IMG.</i></p> <pre># telnum to uri conversion table # # This file is for dialing out from the Bridge to an external party. The # digits that are dialed are converted into the Request URI in the SIP INVITE. # For example, if the digits dialed were 936543 and one of the patterns was # "93?????" a match would take place. If the conversion for that match was # \$1 then the Request URI for the SIP INVITE would be sip:936543@10.221.11.250 #THE COMMENT COLUMN OR ANY OF THE COLUMNS SHOULD HAVE NO SPACES  TelnumPattern      TelnumConversion      comment 3????             sip:\$0@192.168.13.112:5060;transport=tcp  IMG</pre>

Step	Description
4.2.2	<p>Administer settings to associate incoming calls to Avaya Meeting Exchange with corresponding call branding by adding URI to telephone number translations to the <b>UriToTelnum.tab</b> file. These translations extract a value for the Direct Inward Dial (DID, also known as DDI in Europe).</p> <ul style="list-style-type: none"> <li>From the <b>/usr/ipcb/config</b> directory, edit the <b>UriToTelnum.tab</b> file with a text editor.</li> <li>Add rules, separated by either tabs or single spaces, as a line in the file to match the pattern of the “To” header field in SIP INVITE messages from the IMG. If the match is successful, the DID is extracted from the “To” header field. Metacharacters such as * or ? may be utilized. <ul style="list-style-type: none"> <li>The rules under the <b>TelnumPattern</b> and <b>TelnumConversion</b> columns work in conjunction. Assume the IMG sends a SIP INVITE message with the following “To” header field. The rule <b>"*&lt; sip: *@*"</b> matches the following: <ul style="list-style-type: none"> <li>To: &lt;sip:502@192.168.13.101&gt;, where <b>\$2</b> utilizes 502 (the variable mapped to the second *) as the DID value for the call.</li> </ul> </li> </ul> </li> <li>Enable an undefined caller to receive a prompt for operator assistance by adding an entry for a wildcard as the last line in this file. This entry accounts for the condition of an unmatched “To” header field.</li> </ul> <p><i><b>Note:</b> Entries in this file are read sequentially, therefore, the entry for the wildcard must be the last line in the file. Otherwise, all calls to Avaya Meeting Exchange would match the wildcard and thus receive a prompt for operator assistance.</i></p> <pre># request URI to telnum conversion table # # This table converts the Request URI in the SIP INVITE request to the # appropriate value specified when a pattern is matched. For example, if the # request Uri was "&lt;sip:3333@10.220.10.4&gt;" and one of the patterns was # "&lt;sip:*@*" a match would take place. If the conversion for that match was # \$1 then 3333 would be passed as the ddi for the call. If the conversion for # that match were "0000" then 0000 would be passed as their ddi for the call. #THE COMMENT COLLUM OR ANY OF THE COLLUMS SHOULD HAVE NO SPACES  TelnumPattern      TelnumConversion  comment "*&lt;sip:*@*"        \$2                IMG1010 *                  \$0                wildcard</pre>
4.2.3	<p>Reboot Avaya Meeting Exchange for changes to take effect.</p> <pre>[S6200]&gt; init 6</pre>

### 4.3. Configure Call Branding

The following steps provide examples of how to provision direct and scan call branding by utilizing the Call Branding Utility (CBUTIL) on Avaya Meeting Exchange. A command line utility, CBUTIL enables administrators to assign a specific annunciator message, line name, company name, system function, reservation group and prompt sets to a maximum of 30,000 DNIS or DID entries. Avaya Meeting Exchange parses these entries in numerically ascending order, with the wildcard character “?” last in the list. For example, 129? follows 1299. The last entry in the table consists entirely of wildcard characters. The number of characters in this entry corresponds to the number of DNIS/DDI digits specified in the Digit Parameters configuration.

Step	Description
4.3.1	<p>Prior to utilizing the CBUTIL utility, set the UNIX shell environment as follows:</p> <ul style="list-style-type: none"><li>• If not already logged on, login to the Avaya Meeting Exchange console to access the CLI with the appropriate credentials.</li><li>• At the command prompt, enter “<b>tcsh</b>” to set the UNIX shell environment.</li><li>• At the command prompt, enter “<b>cbutil</b>” to view a list and description of commands associated with the call branding utility.</li></ul>
	<pre># tcsh .tcshrc on /dev/pts002  You are connected to the root account. Your environment has been set to vt220.  This system currently has release 40102h of software installed.  S6200-&gt;cbutil cbutil Copyright 2004 Avaya, Inc. All rights reserved.  Usage: cbutil &lt;command&gt; [command-specific args...] where &lt;command&gt; may be one of:   add          Add an entry to the Call Branding table   remove       Remove an entry from the Call Branding table   update       Update an entry in the Call Branding table   lookup       Display an entry in the Call Branding table   count        Display the number of entries in the Call Branding table   list         List entries in the Call Branding table   dnissize     Set system configured max dnis length (1-16)   Note: This command should only be used when the bridge is not running.   Use "cbutil&lt;command&gt; -help" to get help on a specific command</pre>

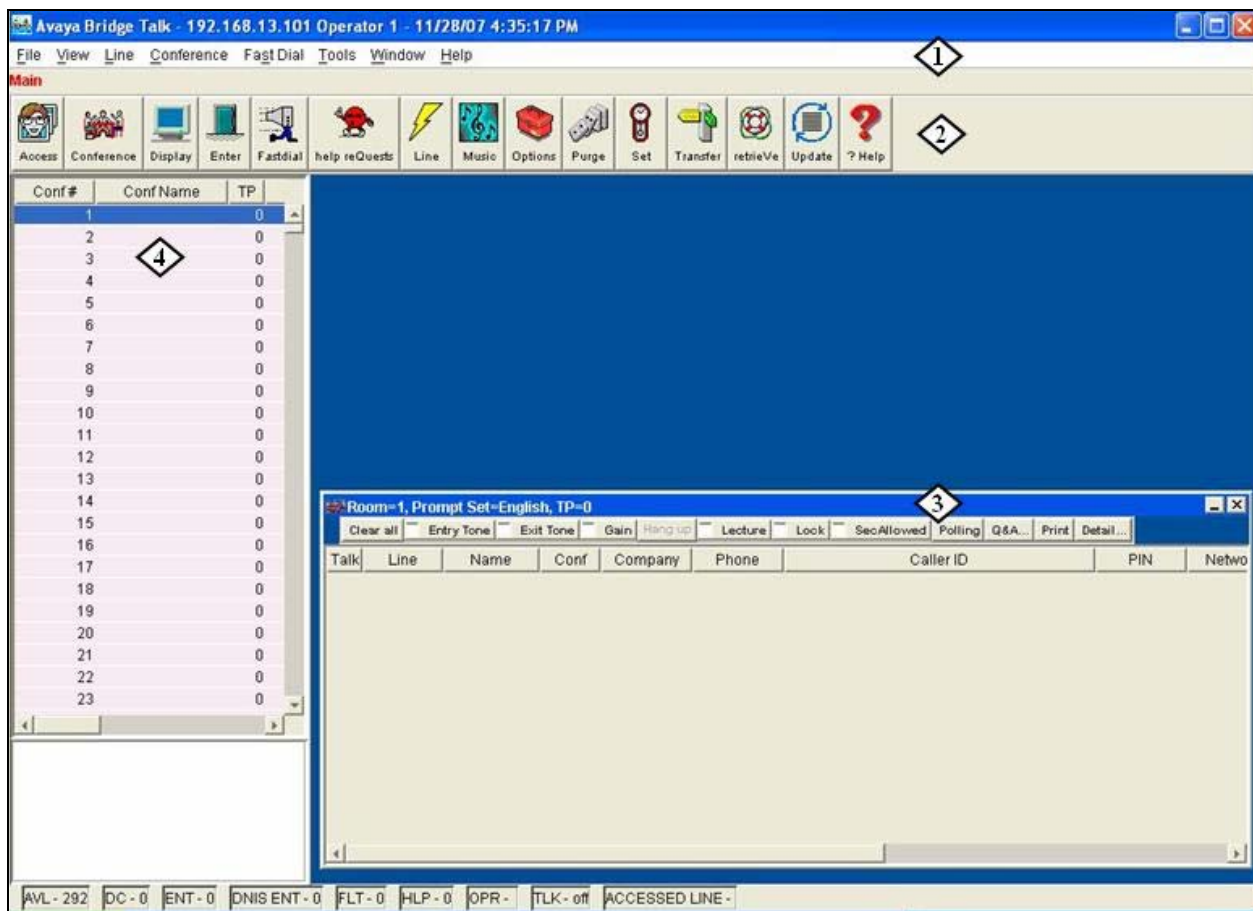
Step	Description																																
4.3.2	Administer call branding for a direct call flow as follows: <ul style="list-style-type: none"><li>Add an entry to the call branding table to map the DID value obtained from procedures in <b>Step 4.2.2</b> to a conference by entering <b>cbutil add 502 0 301 1 n direct</b> at the command prompt. The syntax for this command is case insensitive and is defined as follows. cbutil add &lt;dnis&gt; &lt;rg&gt; &lt;msg&gt; &lt;ps&gt; &lt;ucps&gt; &lt;func&gt; [-l &lt;ln&gt; -c &lt;cn&gt;], where,<ul style="list-style-type: none"><li>&lt;dnis&gt; DNIS</li><li>&lt;rg&gt; Reservation group</li><li>&lt;msg&gt; Annunciator message number</li><li>&lt;ps&gt; Prompt set number (0-20)</li><li>&lt;ucps&gt; Use conference prompt set (y/n)</li><li>&lt;func&gt; One of: DIRECT/SCAN/ENTER/HANGUP/AUTOVL/FLEX</li><li>-l &lt;"ln"&gt; Optional line name to associate with caller</li><li>-c &lt;"cn"&gt; Optional company name to associate with caller</li></ul></li></ul>																																
	S6200-> <b>cbutil add 502 0 301 1 n direct</b> cbutil Copyright 2004 Avaya, Inc. All rights reserved.																																
4.3.3	Repeat <b>Step 4.3.2</b> to add an entry to the call branding table for a scan call flow.																																
	S6200-> <b>cbutil add 501 0 1 1 n scan</b> cbutil Copyright 2004 Avaya, Inc. All rights reserved.																																
4.3.4	At the command prompt, enter “ <b>cbutil list</b> ” to verify the entries provisioned in <b>Step 4.3.2</b> and <b>Step 4.3.3</b> .  <i><b>Note:</b> The last entry in the call branding table, with a <b>DNIS</b> value <b>???</b>, was added previously and is a wild card entry. This entry captures any wrong number (e.g., unmatched <b>DID</b> values) and places the call into the enter queue for operator assistance.</i>																																
	S6200-> <b>cbutil list</b> cbutil Copyright 2004 Avaya, Inc. All rights reserved.																																
	<table><thead><tr><th>DNIS</th><th>Grp</th><th>Msg</th><th>PS</th><th>CP</th><th>Function</th><th>Line Name</th><th>Company Name</th></tr></thead><tbody><tr><td>501</td><td>0</td><td>1</td><td>1</td><td>N</td><td>SCAN</td><td></td><td></td></tr><tr><td>502</td><td>0</td><td>301</td><td>1</td><td>N</td><td>DIRECT</td><td></td><td></td></tr><tr><td>???</td><td>0</td><td>208</td><td>1</td><td>N</td><td>ENTER</td><td></td><td></td></tr></tbody></table>	DNIS	Grp	Msg	PS	CP	Function	Line Name	Company Name	501	0	1	1	N	SCAN			502	0	301	1	N	DIRECT			???	0	208	1	N	ENTER		
	DNIS	Grp	Msg	PS	CP	Function	Line Name	Company Name																									
501	0	1	1	N	SCAN																												
502	0	301	1	N	DIRECT																												
???	0	208	1	N	ENTER																												

## 4.4. Administer Conferences

The following steps utilize Avaya Bridge Talk to provision conferences on Avaya Meeting Exchange. Avaya Bridge Talk is an application that runs on a standard Windows based PC and is utilized for provisioning and managing conferencing applications on Avaya Meeting Exchange. Refer to [5] for information regarding the PC requirements. If any of the features displayed in the Avaya Bridge Talk screen captures are not present, contact an authorized Avaya sales representative to make the appropriate changes.

**Figure 2** illustrates the main window of the Avaya Bridge Talk application. The following is a brief description of the task areas of the window that were utilized for these Application Notes.

1. The Menu Bar, which includes menus for both Avaya Meeting Exchange specific and Windows-based commands.
2. The Main Tool Bar, which includes commands for entering command-line text.
3. The Conference Room, which displays information about features and attributes for individual conferences; and lists participants, moderators and their status.
4. The Conference Navigator, which displays a portion of the conferences currently running on the bridge as well as individual conference attributes or features.



**Figure 2: Avaya Bridge Talk Main Window**

Step	Description
4.4.1	<p>Create a new dial list for outbound calling from Avaya Meeting Exchange. From the Avaya Bridge Talk Menu Bar, select <b>Fast Dial → New</b>. From the <b>New Dial List</b> window that is displayed, add participants to the dial list as follows:</p> <ul style="list-style-type: none"> <li>• Enter a descriptive label for this dial list in the <b>Name</b> field.</li> <li>• Add entries to the dial list by clicking on the <b>Add</b> button for each participant. <ul style="list-style-type: none"> <li>◦ Enter a descriptive label for each participant in the <b>Name</b> field.</li> <li>◦ Enter a number in the <b>Telephone</b> field that corresponds to telephones registered to either Avaya Communication Manager or Avaya SIP Enablement Services.</li> </ul> </li> <li>• Enable conference participants on the dial list to enter the conference without a passcode by checking the <b>Directly to Conf</b> box.</li> <li>• Refer to [5] for provisioning the remaining fields in this screen.</li> <li>• Click on the <b>Save</b> button on the bottom of the screen.</li> </ul>

**New Dial List**

Name:  Optional Access Code:  ☒ Directly to Conf

Conferee List

☒ Display As Entered

Name	Company	Moderator	Q&A Priority	Telephone
SIP_31002		<input type="checkbox"/>		31002
Digital_32002		<input type="checkbox"/>		32002
H.323_33002		<input type="checkbox"/>		33002
Analog_34002		<input type="checkbox"/>		34002

Step	Description
4.4.2	<p>Schedule conferences that utilize the call branding for a direct call flow provisioned in <b>Section 4.3</b> as follows. From the Menu Bar, click <b>View → Conference Scheduler</b>. From the <b>Conference Scheduler</b> window that is displayed, click <b>File → Schedule Conference</b>. From the <b>Schedule Conference</b> window that is displayed, administer settings as follows:</p> <ul style="list-style-type: none"> <li>Enter a unique passcode in the <b>Conferee Code</b> field to allow access to this conference.</li> <li>Enter a unique passcode in the <b>Moderator Code</b> field to allow access to this conference with moderator/host privileges. <p><i>Note: Enable direct access (without entering a passcode) to this conference by ensuring the <b>Moderator Code</b> has associated call branding for a direct call flow (see <b>Step 4.3.2</b>).</i></p> </li> <li>Enter a descriptive label for this conference in the <b>Conference Name</b> field.</li> <li>Administer settings to enable an auto blast dial by setting the <b>Auto Blast</b> field to <b>Auto</b> and selecting the dial list provisioned in <b>Step 4.4.1</b> in the <b>Dial List</b> field. <ul style="list-style-type: none"> <li>Select a dial list by clicking on the <b>Dial List</b> button.</li> <li>[<i>Not Shown</i>] Select a dial list from the <b>Create, Select or Edit Dial List</b> window that is displayed.</li> </ul> </li> <li>Refer to [5] for provisioning of the remaining fields in this screen.</li> <li>Click on the <b>OK</b> button on the bottom of the screen.</li> </ul>



## 5. Cantata Technology Integrated Media Gateway 1010 Configuration

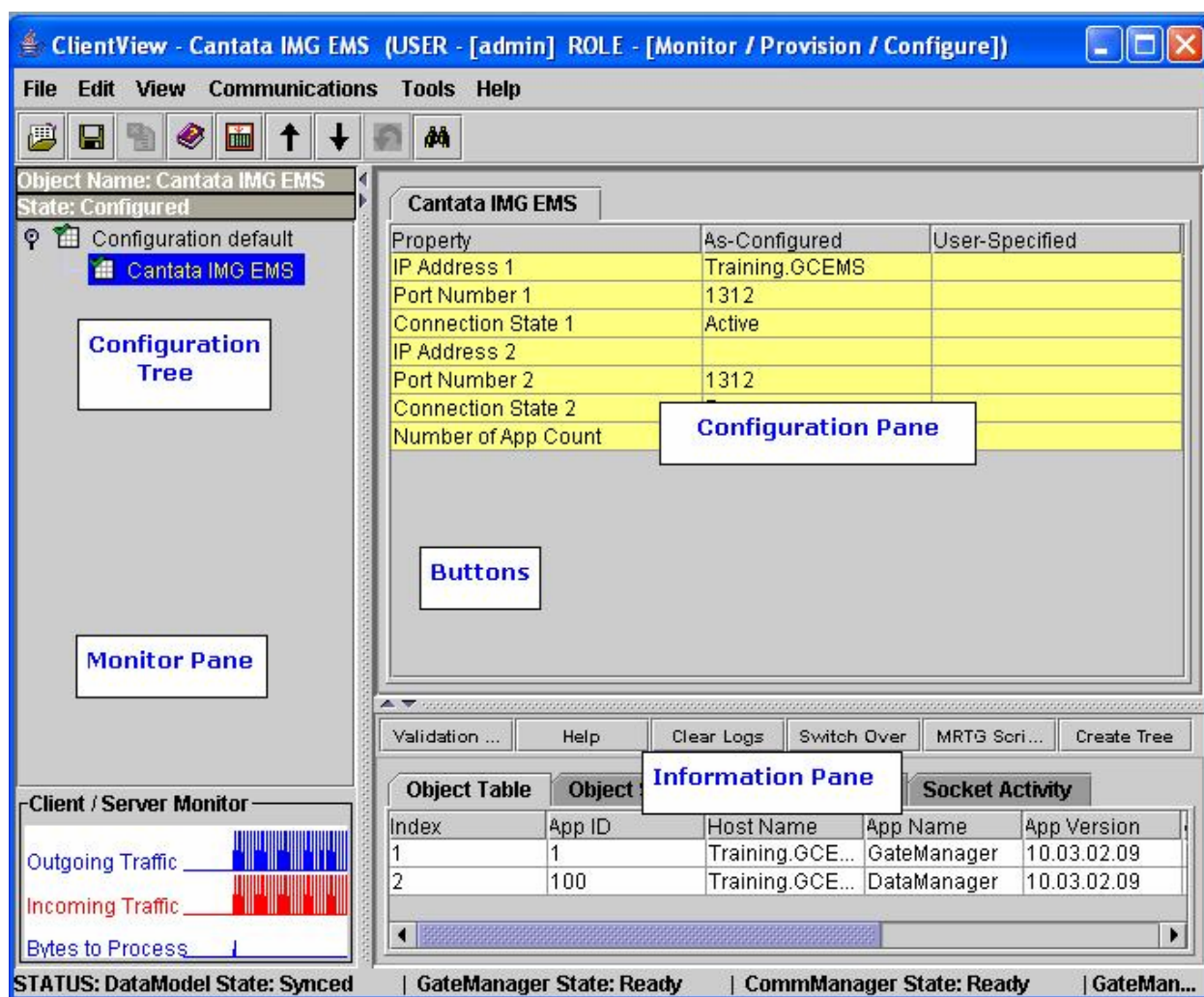
This section displays the configuration for enabling the IMG to interoperate with Avaya Communication Manager as well as Avaya Meeting Exchange.

The IMG was administered with the Cantata Technology ClientView (ClientView) application which is accessible from the Cantata Technology GateControl Element Management System (GCEMS). Refer to the Cantata website for on-line documentation regarding the IMG, ClientView and GCEMS.

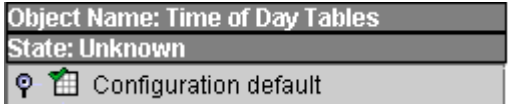
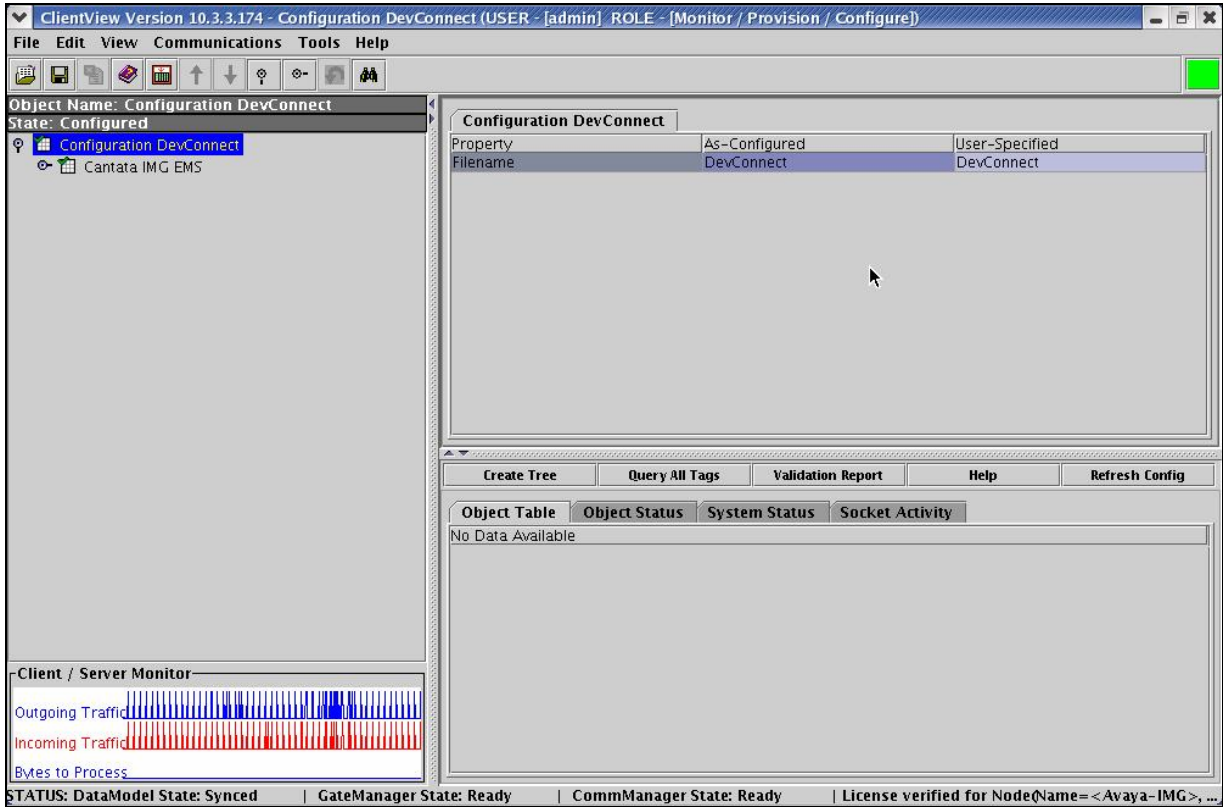
Note that this section displays the provisioning that was utilized for this sample configuration and does not show exhaustive procedures for administering an initial configuration. For example, the screens for adding “new” elements to this sample configuration are not shown. However, the sequence of 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.

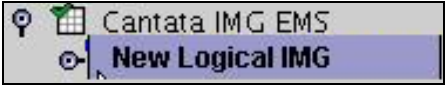
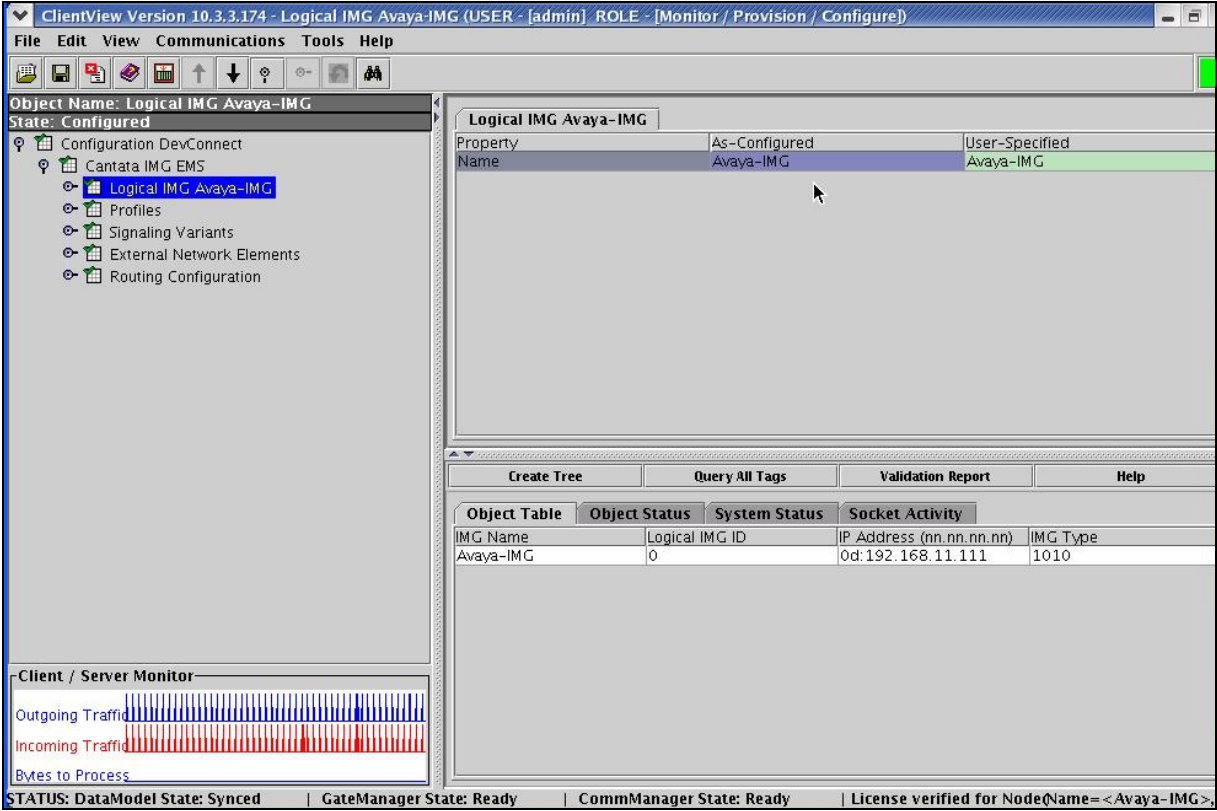
**Figure 3** illustrates the main window of the ClientView application that was utilized to provision the IMG. The following panes appear in the main window:

- 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.

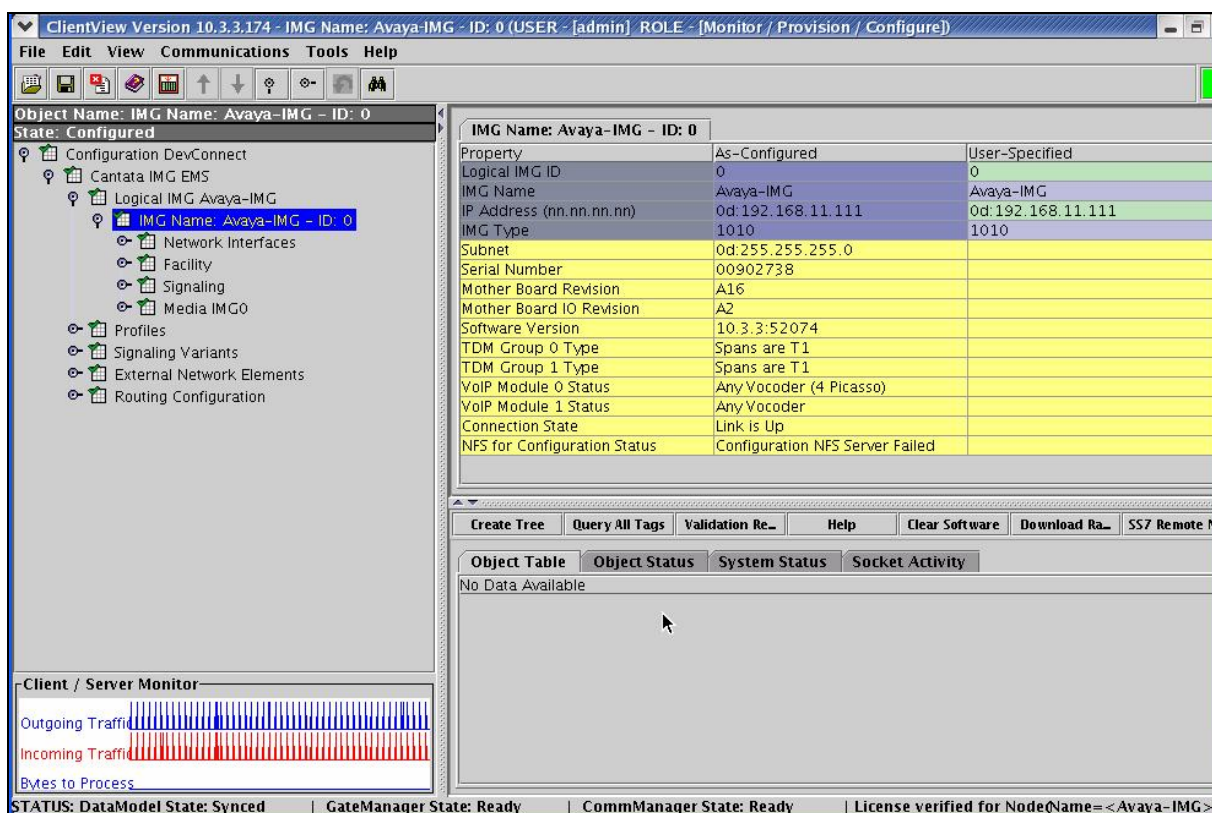


**Figure 3: Cantata Technology ClientView Main Window**

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"> <li>Right-click <b>Configuration default</b> in the Configuration Tree and select <b>Modify</b>.</li> </ul>  <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Enter a descriptive name in the <b>Filename</b> field.</li> <li>To save the changes, right-click <b>Configuration DevConnect</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul> 

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

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



Step	Description																					
5.1.4	<p>Create an object for Network Interfaces as follows:</p> <ul style="list-style-type: none"><li>• Right-click the physical IMG in the Configuration Tree and select <b>New Network Interfaces</b>.</li><li>• To save the changes, right-click <b>Network Interfaces</b> and select <b>Commit</b>.</li><li>• The resultant provisioning is shown below.</li></ul> <div><div><div>ClientView Version 10.3.3.174 - Network Interfaces (USER - [admin] ROLE - [Monitor / Provision / Configure])</div><div><div>File Edit View Communications Tools Help</div><div><div><div>Object Name: Network Interfaces</div><div>State: Configured</div><div><div>Configuration DevConnect</div><div><div>Cantata IMG EMS</div><div><div>Logical IMG Avaya-IMG</div><div><div>IMG Name: Avaya-IMG - ID: 0</div><div><div>Network Interfaces</div><div>Facility</div><div>Signaling</div><div>Media IMG0</div></div></div><div>Profiles</div><div>Signaling Variants</div><div>External Network Elements</div><div>Routing Configuration</div></div></div></div></div><div><div>Network Interfaces</div><div><div>Property</div><div>As-Configured</div><div>User-Specified</div></div></div><div><div>Create Tree</div><div>Query All Tags</div><div>Validation Report</div><div>Help</div></div><div><div>Object Table</div><div>Object Status</div><div>System Status</div><div>Socket Activity</div></div><table><tr><td>Physical Interf...</td><td>Logical Interf...</td><td>Address Type</td><td>IP Address</td><td>Subnet</td><td>Default Gate...</td><td>Gratuitous A...</td></tr><tr><td>VoIP Module...</td><td>Redundant ...</td><td>IP V4</td><td>0d:192.168...</td><td>0d:255.255...</td><td>0d:192.168...</td><td>Enable</td></tr><tr><td>CPU</td><td>Redundant ...</td><td>IP V4</td><td>0d:192.168...</td><td>0d:255.255...</td><td>0d:192.168...</td><td>Enable</td></tr></table><div><div>Client / Server Monitor</div><div><div>Outgoing Traffic</div><div>Incoming Traffic</div><div>Bytes to Process</div></div></div><div>STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for NodeName=&lt;Avaya-IMG&gt;</div></div></div></div></div>	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
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																



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

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**
            - 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

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

Incoming Traffic

Bytes to Process

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

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

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**

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:

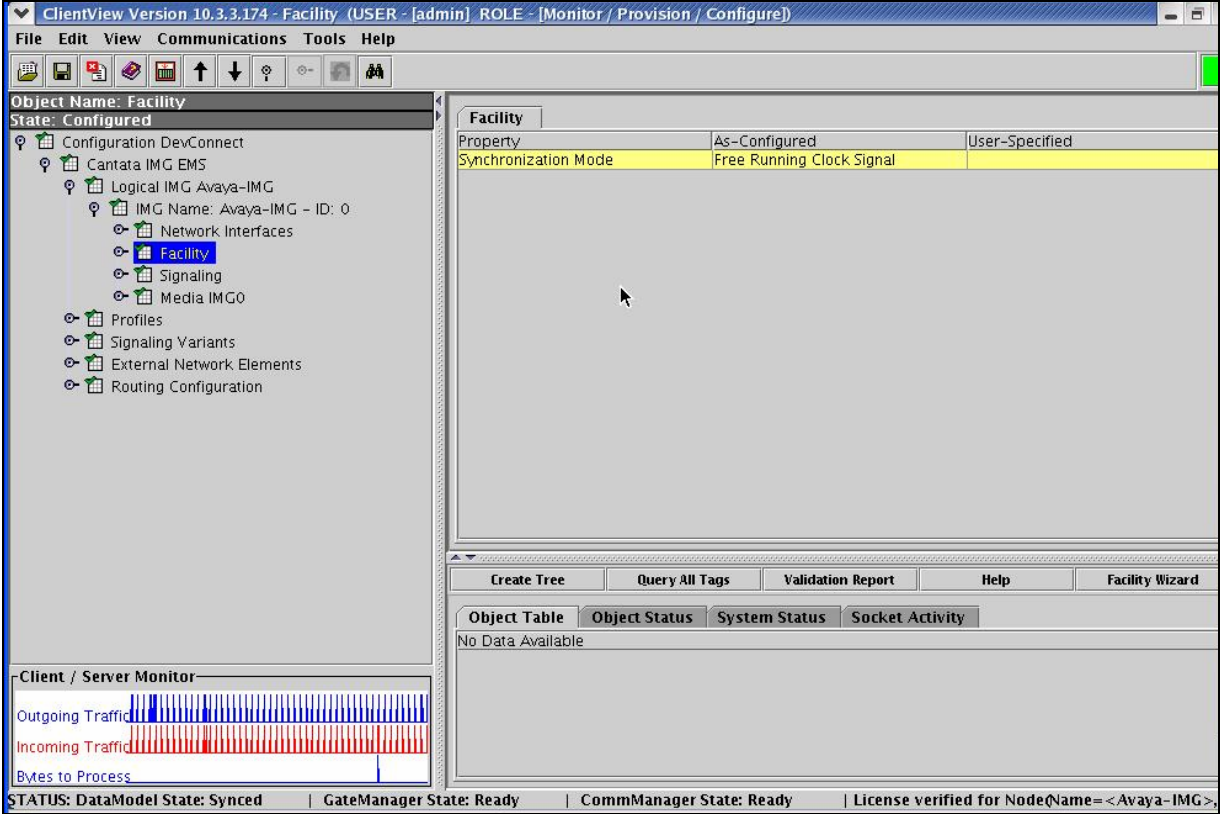
Outgoing Traffic: [Bar Chart]

Incoming Traffic: [Bar Chart]

Bytes to Process: [Bar Chart]

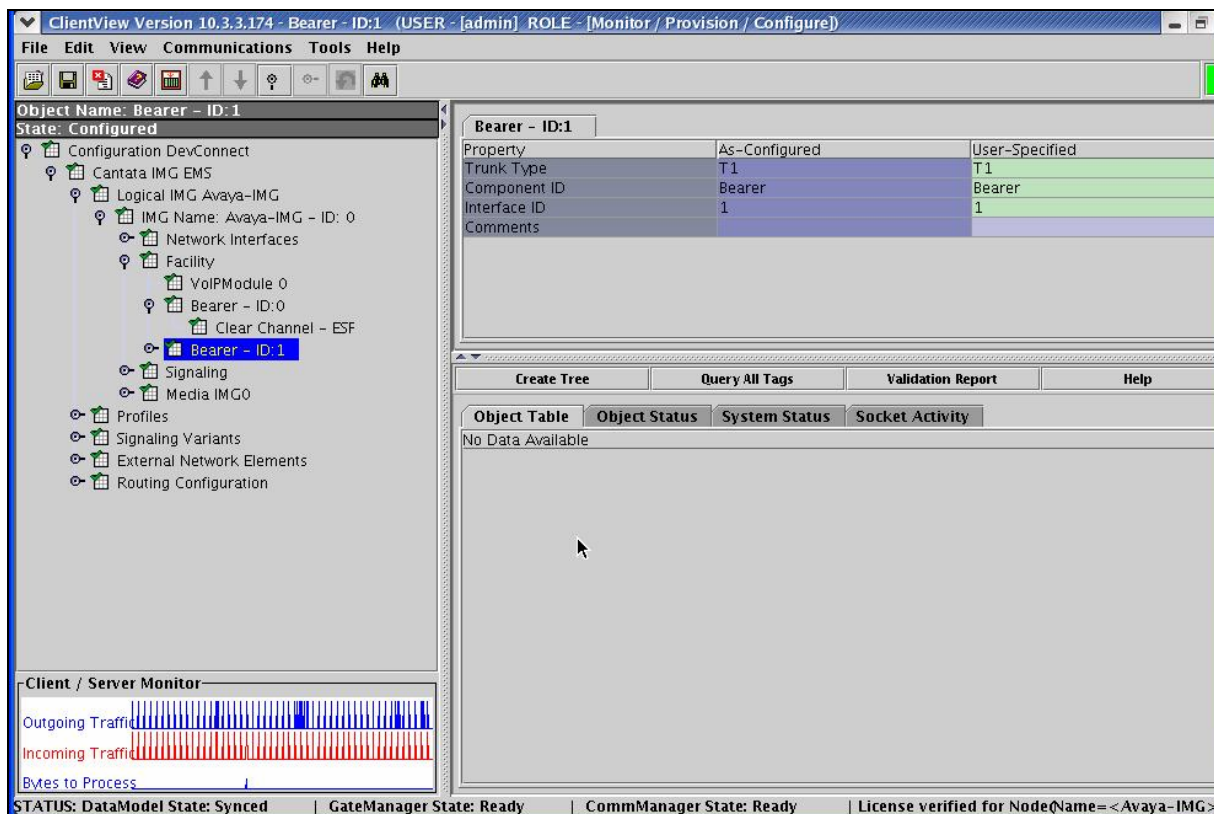
STATUS: DataModel State: Synced | GateManager State: Ready | CommManager State: Ready | License verified for NodeName=<Avaya-IMG>



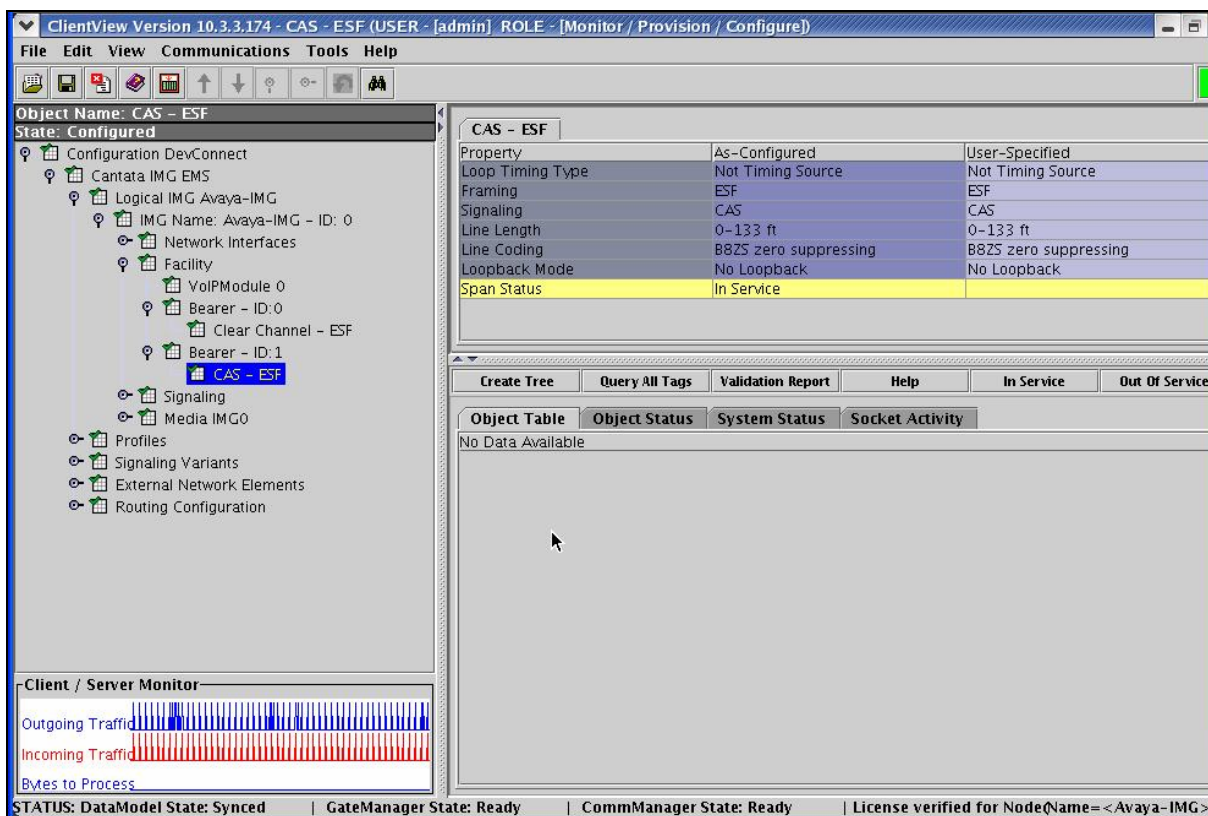
Step	Description
5.1.7	<p>Create an object for a Facility as follows:</p> <ul style="list-style-type: none"> <li>• Right-click the physical IMG in the Configuration Tree and select <b>New Facility</b>.</li> <li>• To save the changes, right-click <b>Facility</b> and select <b>Commit</b>.</li> <li>• The resultant provisioning is shown below.</li> </ul>  <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' (highlighted). Below this, various sub-objects like 'Network Interfaces', 'Signaling', and 'Media IMG0' are listed. The main right-hand pane is titled 'Facility' and contains a table with three columns: 'Property', 'As-Configured', and 'User-Specified'. The 'Synchronization Mode' property is highlighted in yellow, showing 'Free Running Clock Signal' in the 'As-Configured' column. At the bottom of the interface, a 'Client / Server Monitor' section shows traffic graphs for 'Outgoing Traffic' and 'Incoming Traffic'. The bottom status bar indicates 'STATUS: DataModel State: Synced', 'GateManager State: Ready', and 'CommManager State: Ready'.</p>

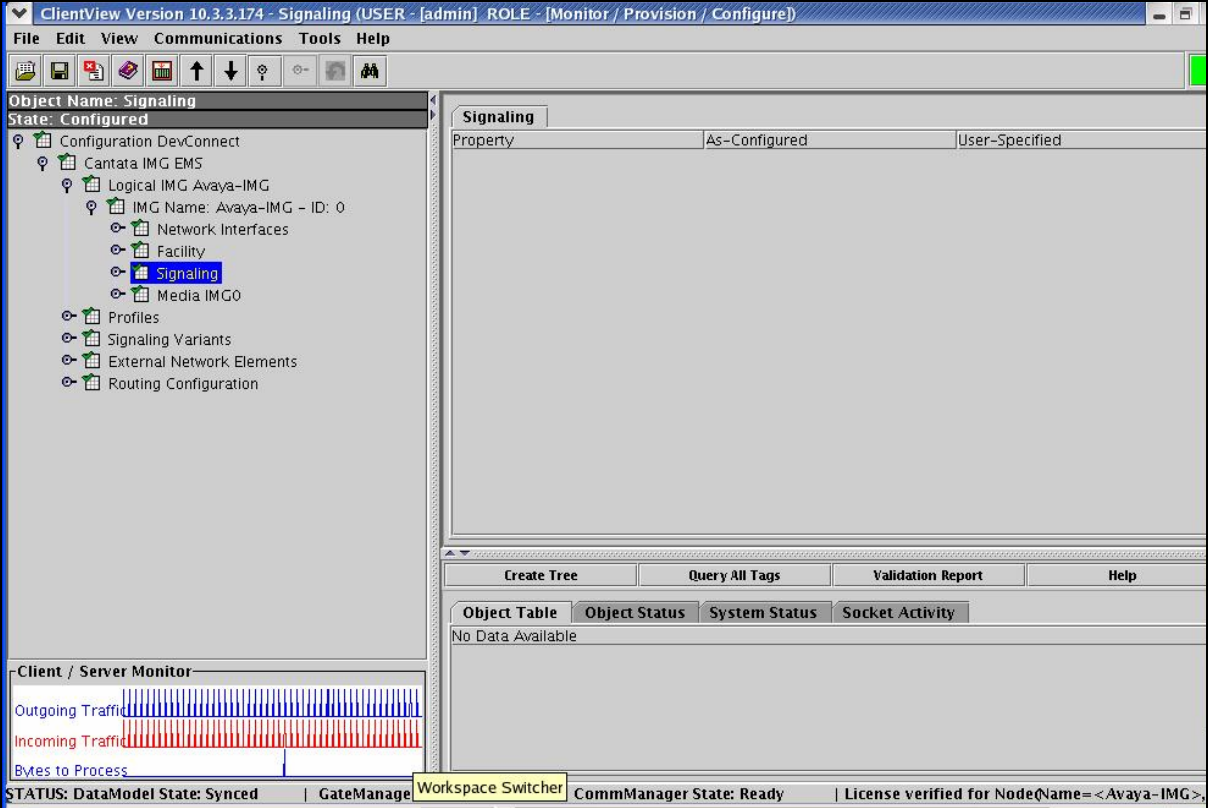
Step	Description																																																																																																				
5.1.8	<p>Configure VoIP Facilities as follows:</p> <ul style="list-style-type: none"><li>Right-click <b>Facility</b> in the Configuration Tree and select <b>New Bearer - IP</b>.</li></ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"><li>Use default settings for all fields.</li></ul> <p><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></p> <ul style="list-style-type: none"><li>To save the changes, right-click <b>VoIPModule 0</b> and select <b>Commit</b>.</li><li>The resultant provisioning is shown below.</li></ul>																																																																																																				
	<div><div><div>ClientView Version 10.3.3.174 - VoIPModule 0 (USER - [admin] ROLE - [Monitor / Provision / Configure])</div><div>File Edit View Communications Tools Help</div><div><div>Object Name: VoIPModule 0 State: Configured</div><div><ul style="list-style-type: none"><li>Configuration DevConnect<ul style="list-style-type: none"><li>Cantata IMG EMS<ul style="list-style-type: none"><li>Logical IMG Avaya-IMG<ul style="list-style-type: none"><li>IMG Name: Avaya-IMG - ID: 0<ul style="list-style-type: none"><li>Network Interfaces<ul style="list-style-type: none"><li>Facility<ul style="list-style-type: none"><li><b>VoIPModule 0</b><ul style="list-style-type: none"><li>Bearer - ID: 0</li><li>Bearer - ID: 1</li><li>Signaling<ul style="list-style-type: none"><li>Media IMG0</li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li><li>Profiles<ul style="list-style-type: none"><li>Signaling Variants</li><li>External Network Elements</li><li>Routing Configuration</li></ul></li></ul></li></ul></li></ul></div><div>Client / Server Monitor<ul style="list-style-type: none"><li>Outgoing Traffic</li><li>Incoming Traffic</li><li>Bytes to Process</li></ul></div></div><div><div>VoIPModule 0</div><table><thead><tr><th>Property</th><th>As-Configured</th><th>User-Specified</th></tr></thead><tbody><tr><td>Module ID</td><td>0</td><td>0</td></tr><tr><td>Network Interface</td><td>VoIP Module 0: Port 0</td><td>VoIP Module 0: Port 0</td></tr><tr><td>Network IP Address</td><td>0d: 192.168.13.111</td><td>0d: 192.168.13.111</td></tr><tr><td>Module Configuration Profile</td><td>Any Vocoder (4 Picasso)</td><td>Any Vocoder (4 Picasso)</td></tr><tr><td>Starting RTP Port</td><td>8000</td><td>8000</td></tr><tr><td>Fully Qualified Domain Name (FQ...</td><td></td><td></td></tr><tr><td>Number of Channels Configured</td><td>384</td><td></td></tr></tbody></table><div><div>Create Tree</div><div>Query All Tags</div><div>Validation Report</div><div>Help</div><div>Update Status</div></div><table><thead><tr><th>Object Table</th><th>Object Status</th><th>System Status</th><th>Socket Activity</th></tr></thead><tbody><tr><td>IMG Name</td><td>VoIP Module</td><td>IP Address</td><td>RTP Port</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8000</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8004</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8008</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8012</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8016</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8020</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8024</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8028</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8032</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8036</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8040</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8044</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8048</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8052</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8056</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8060</td></tr><tr><td>Avaya-IMG</td><td>0</td><td>0d: 192.168.13.1...</td><td>8064</td></tr></tbody></table></div></div><div>STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for NodeName=&lt;Avaya-IMG&gt;</div></div>	Property	As-Configured	User-Specified	Module ID	0	0	Network Interface	VoIP Module 0: Port 0	VoIP Module 0: Port 0	Network IP Address	0d: 192.168.13.111	0d: 192.168.13.111	Module Configuration Profile	Any Vocoder (4 Picasso)	Any Vocoder (4 Picasso)	Starting RTP Port	8000	8000	Fully Qualified Domain Name (FQ...			Number of Channels Configured	384		Object Table	Object Status	System Status	Socket Activity	IMG Name	VoIP Module	IP Address	RTP Port	Avaya-IMG	0	0d: 192.168.13.1...	8000	Avaya-IMG	0	0d: 192.168.13.1...	8004	Avaya-IMG	0	0d: 192.168.13.1...	8008	Avaya-IMG	0	0d: 192.168.13.1...	8012	Avaya-IMG	0	0d: 192.168.13.1...	8016	Avaya-IMG	0	0d: 192.168.13.1...	8020	Avaya-IMG	0	0d: 192.168.13.1...	8024	Avaya-IMG	0	0d: 192.168.13.1...	8028	Avaya-IMG	0	0d: 192.168.13.1...	8032	Avaya-IMG	0	0d: 192.168.13.1...	8036	Avaya-IMG	0	0d: 192.168.13.1...	8040	Avaya-IMG	0	0d: 192.168.13.1...	8044	Avaya-IMG	0	0d: 192.168.13.1...	8048	Avaya-IMG	0	0d: 192.168.13.1...	8052	Avaya-IMG	0	0d: 192.168.13.1...	8056	Avaya-IMG	0	0d: 192.168.13.1...	8060	Avaya-IMG	0	0d: 192.168.13.1...	8064
Property	As-Configured	User-Specified																																																																																																			
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Avaya-IMG	0	0d: 192.168.13.1...	8064																																																																																																		

Step	Description
5.1.9	<p>Configure a TDM DS1 as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>Facility</b> in the Configuration Tree and select <b>New TDM DS1</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Select <b>Bearer</b> from the drop down list for the <b>Component ID</b> field.</li> <li>Use default settings for remaining fields.</li> </ul> <ul style="list-style-type: none"> <li>To save the changes, right-click <b>Bearer - ID:1</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul>



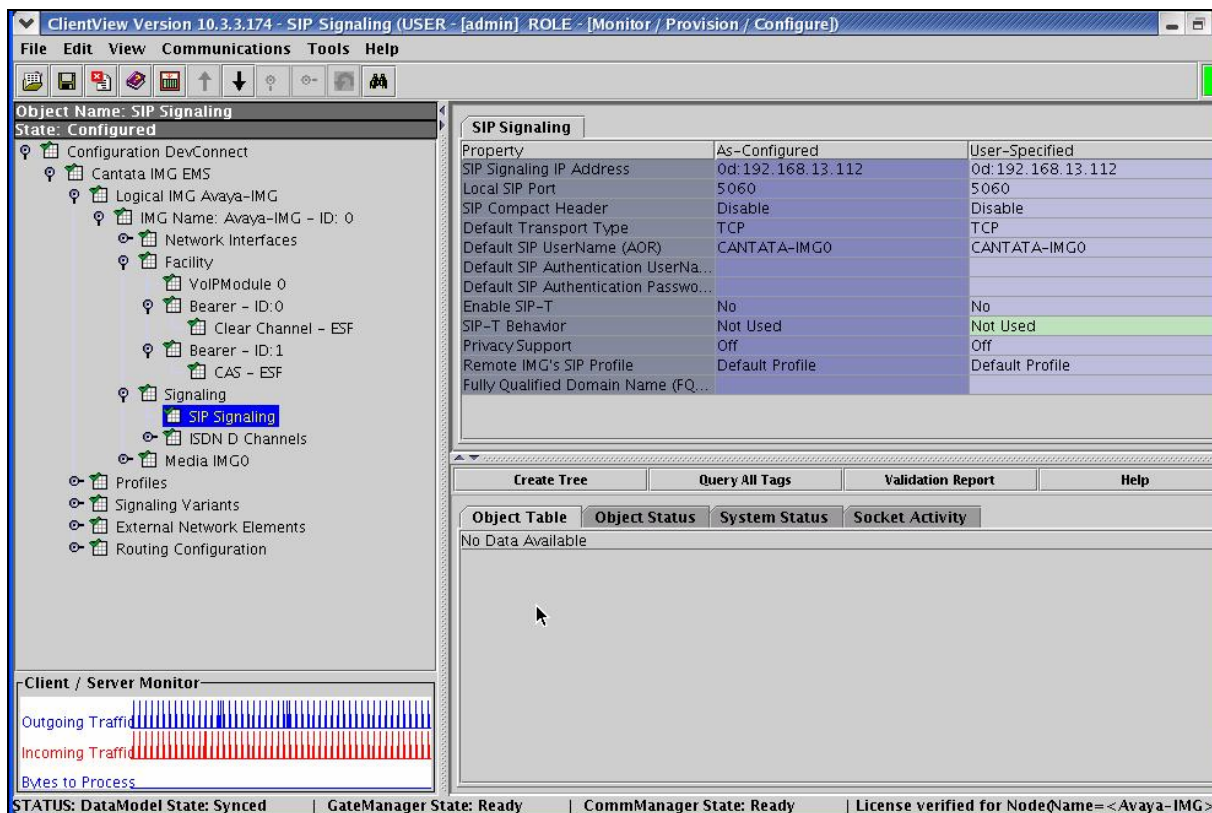
Step	Description
5.1.10	<p>Configure a T1 Physical Span for CAS as follows</p> <ul style="list-style-type: none"> <li>Right-click the TDM DS1 created in <b>Step 5.1.9</b> in the Configuration Tree and select <b>New T1 Physical Span</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: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



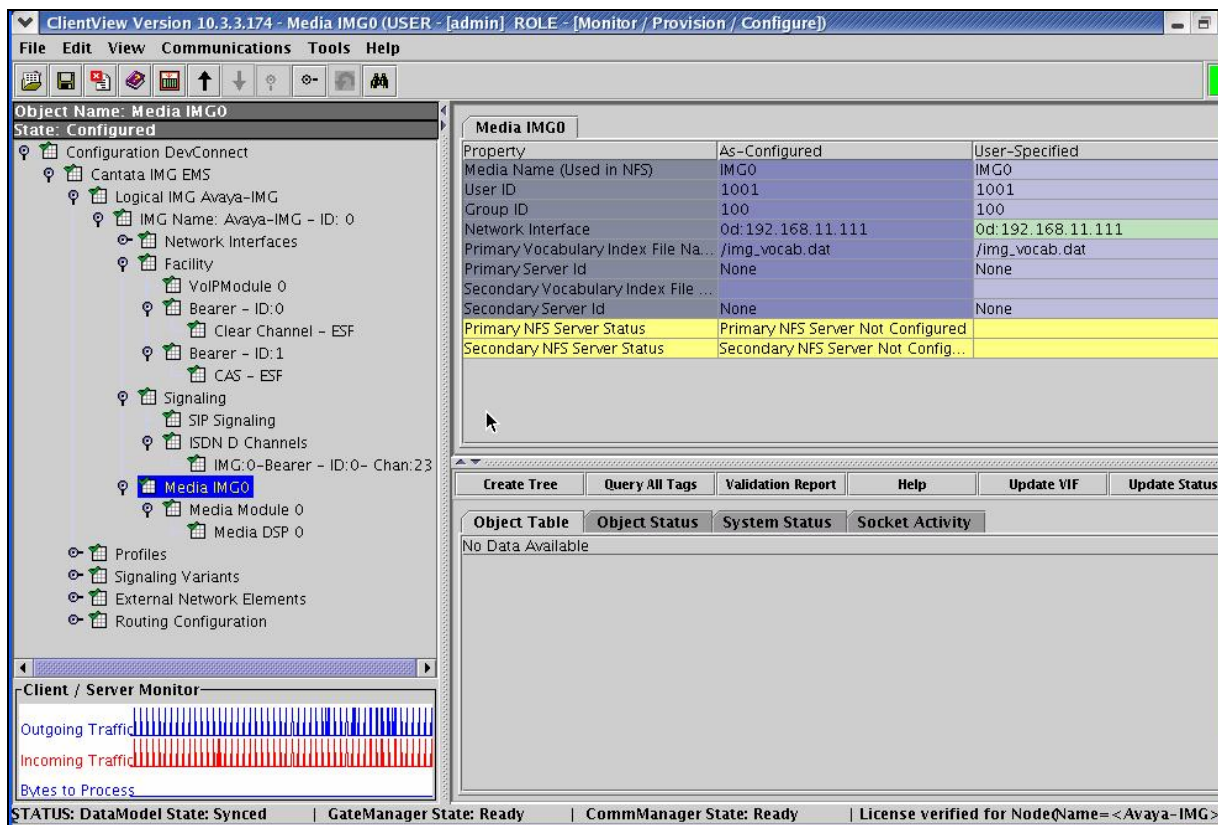
Step	Description
5.1.11	<p>Create an object for Signaling as follows:</p> <ul style="list-style-type: none"> <li>• Right-click the physical IMG in the Configuration Tree and select <b>New Signaling</b>.</li> <li>• To save the changes, right-click <b>Signaling</b> and select <b>Commit</b>.</li> <li>• The resultant provisioning is shown below.</li> </ul>  <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 'Signaling' selected under 'Logical IMG Avaya-IMG'. The right pane shows the 'Signaling' configuration page with tabs for Property, As-Configured, and User-Specified. The bottom status bar displays 'STATUS: DataModel State: Synced   GateManager Workspace Switcher CommManager State: Ready   License verified for NodeName=&lt;Avaya-IMG&gt;'. A 'Client / Server Monitor' window is also visible in the bottom left corner.</p>

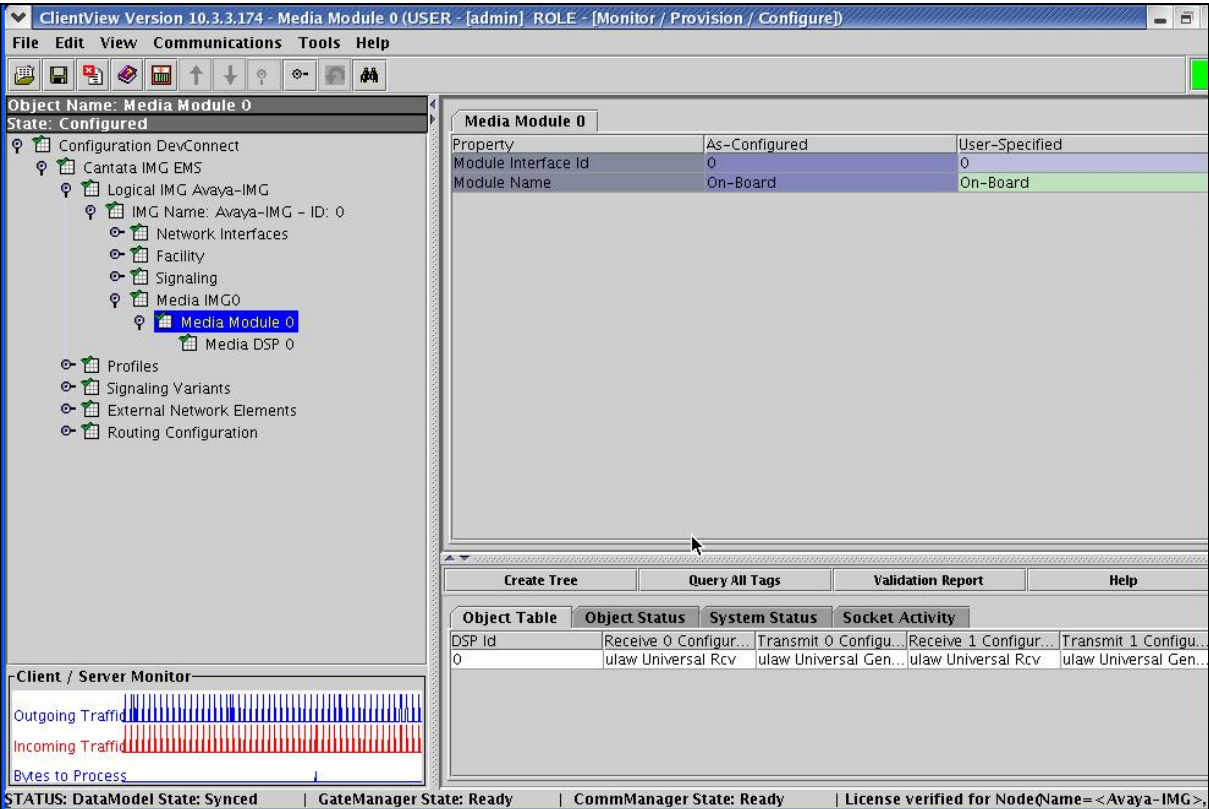


Step	Description
5.1.12	<p>Configure SIP Signaling to enable SIP connectivity between the IMG and other SIP UAs as follows</p> <ul style="list-style-type: none"> <li>Right-click <b>Signaling</b> in the Configuration Tree and select <b>New SIP</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Enter the IP address assigned to the CPU on the IMG in <b>Step 5.1.6</b> in the <b>SIP Signaling IP Address</b> field.</li> <li>Enter values in the <b>Local SIP Port</b> and <b>Default Transport Type</b> fields that correspond to the configuration on Avaya Meeting Exchange (see <b>Step 4.1.1</b>).</li> <li>Use default settings for remaining fields.</li> </ul> <ul style="list-style-type: none"> <li>To save the changes, right-click <b>SIP Signaling</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul>



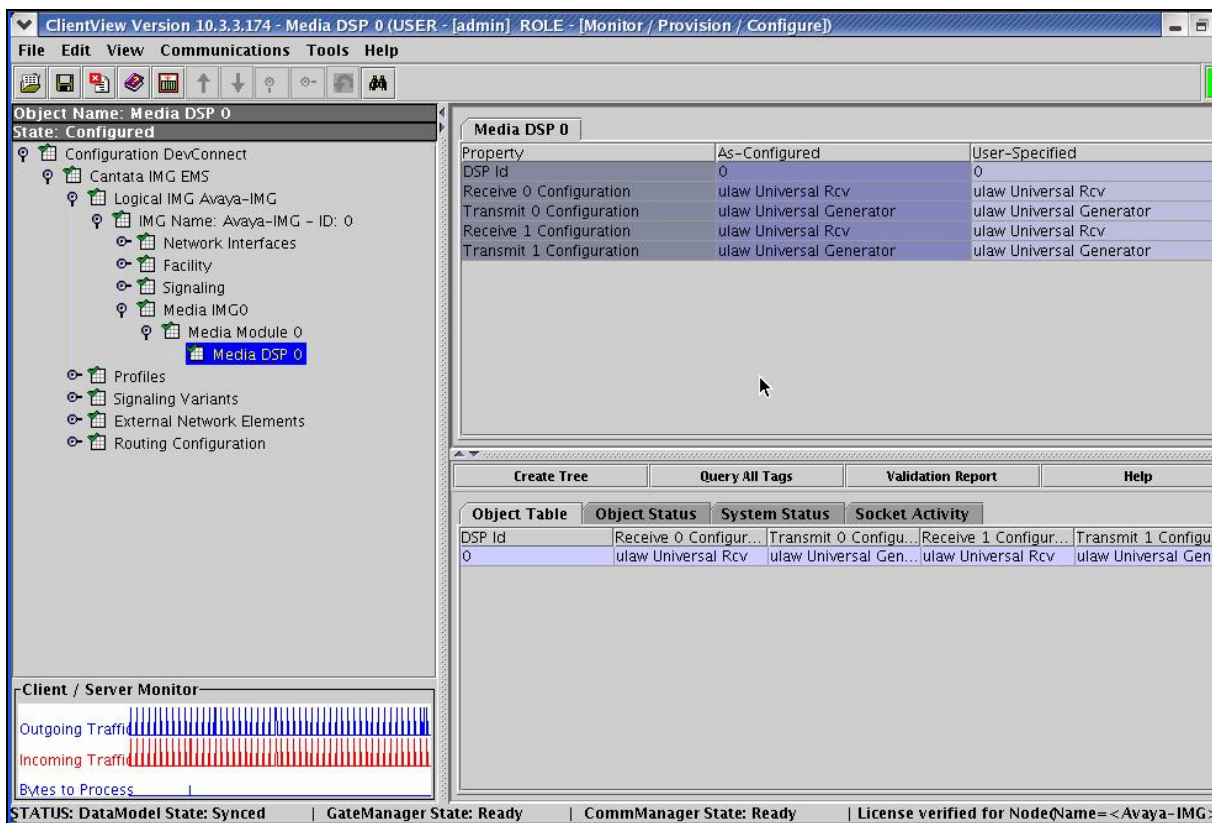
Step	Description
5.1.13	<p>Configure settings for Media as follows:</p> <ul style="list-style-type: none"> <li>Right-click the physical IMG in the Configuration Tree and select <b>New Media</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Select the Network File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

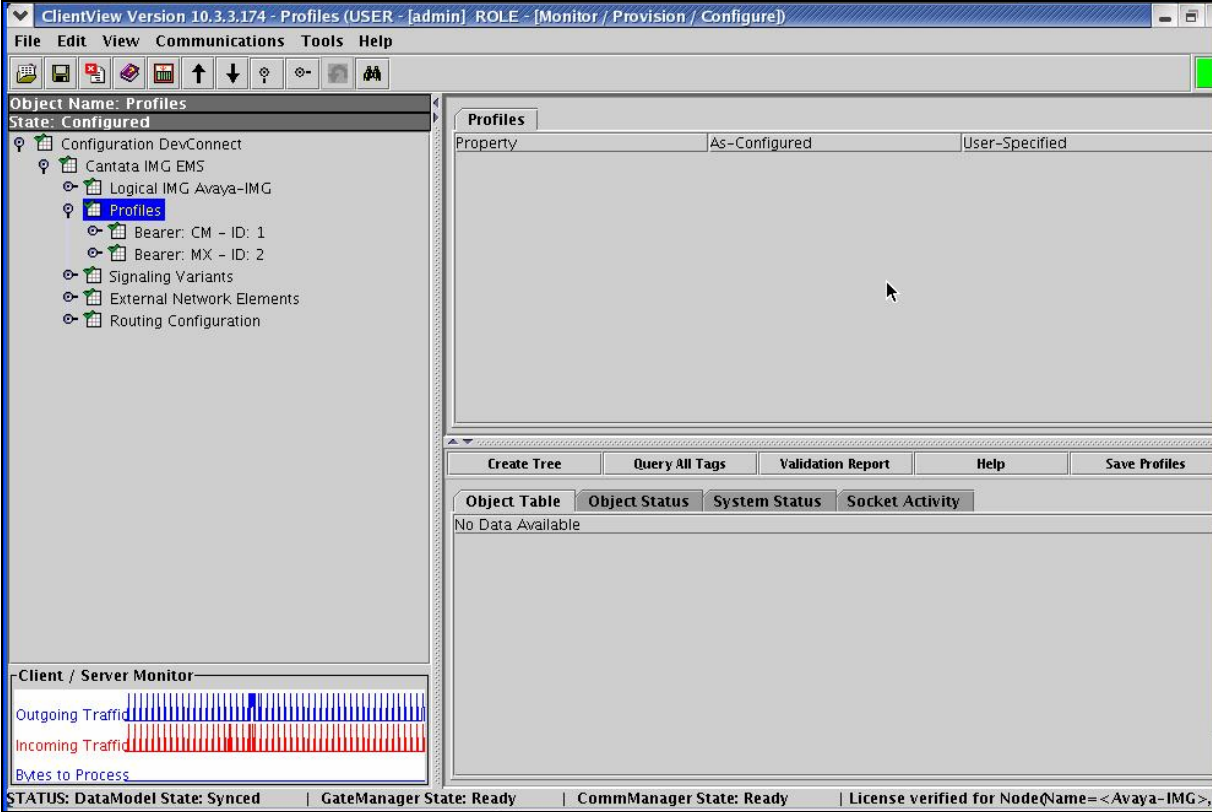


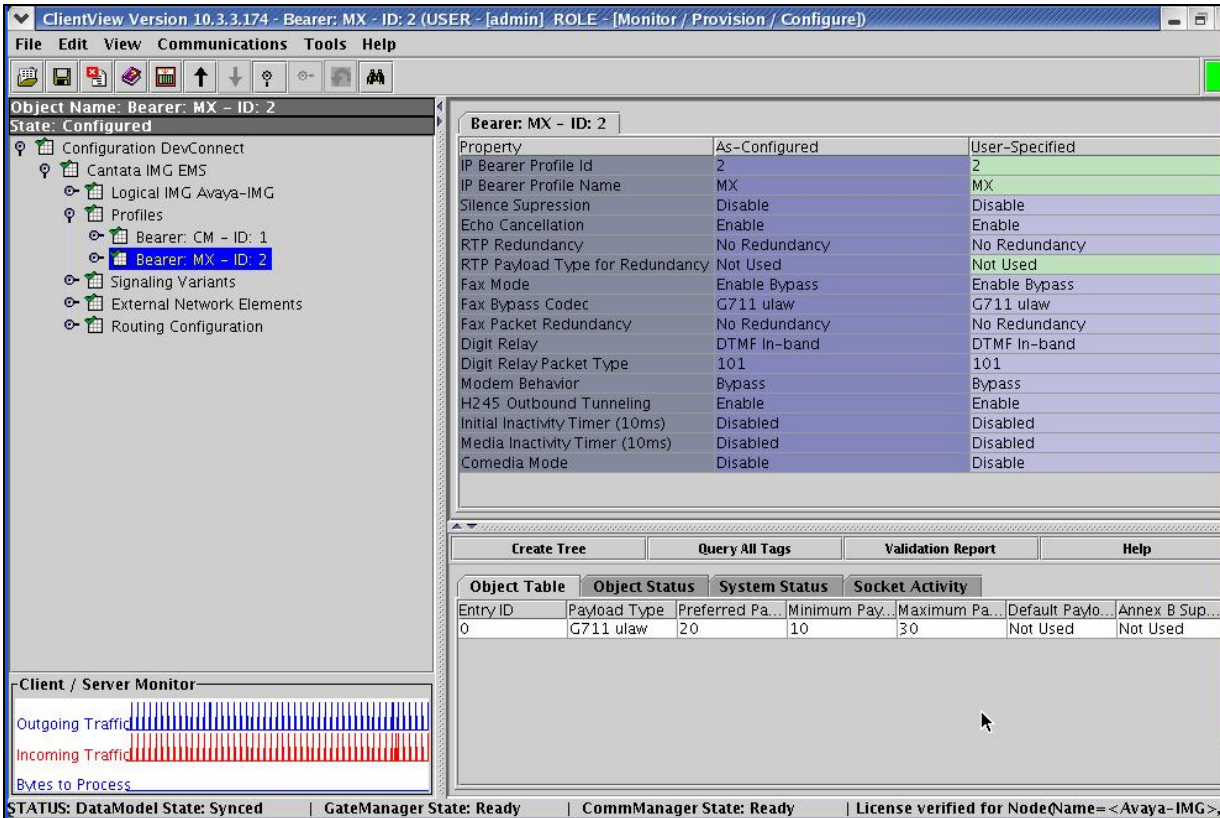
Step	Description
5.1.14	<p>Create an object for a Media Module as follows:</p> <ul style="list-style-type: none"> <li>• Right-click <b>Media IMGO</b> in the Configuration Tree and select <b>New Media Module</b>.</li> <li>• Use default settings for all fields.</li> <li>• To save the changes, right-click <b>Media Module 0</b> and select <b>Commit</b>.</li> <li>• The resultant provisioning is shown below.</li> </ul>  <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: Module Interface Id (0), Module Name (On-Board), and User-Specified (On-Board). The bottom pane shows the Client / Server Monitor with traffic graphs and status indicators.</p>

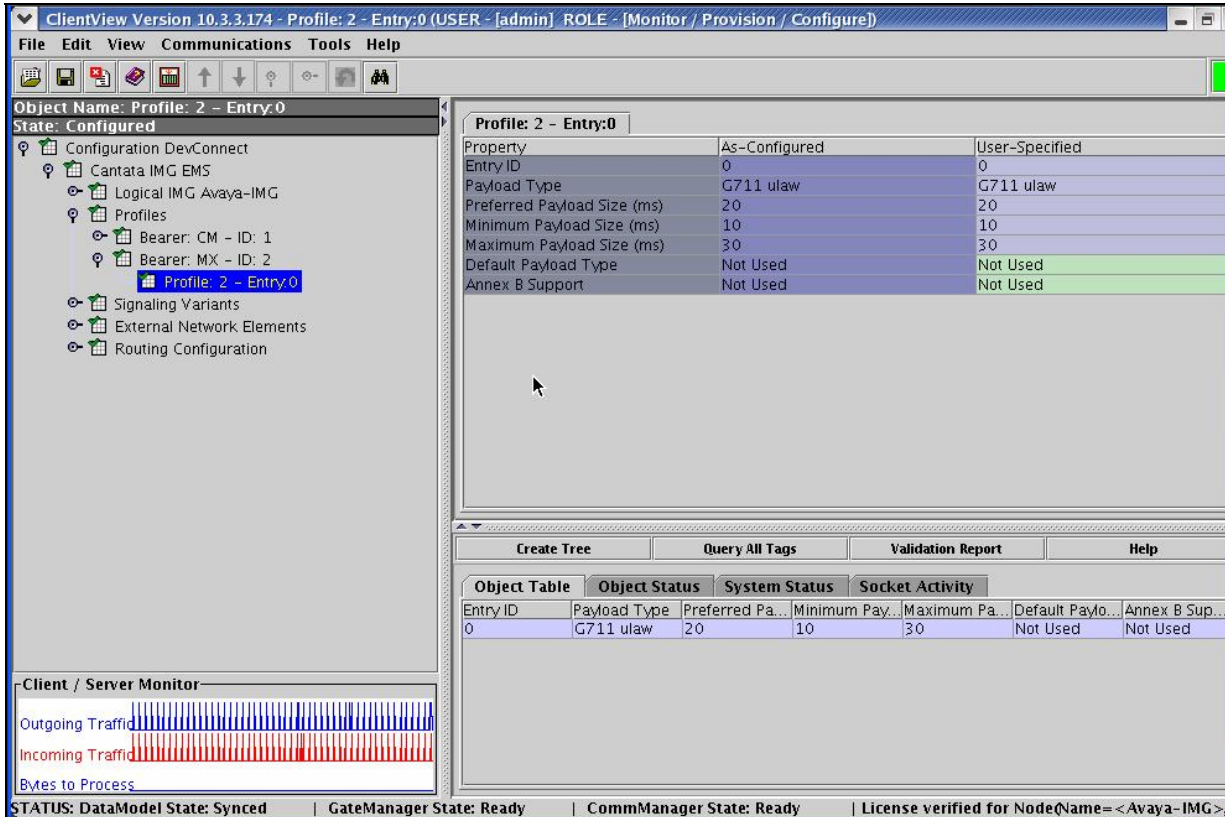


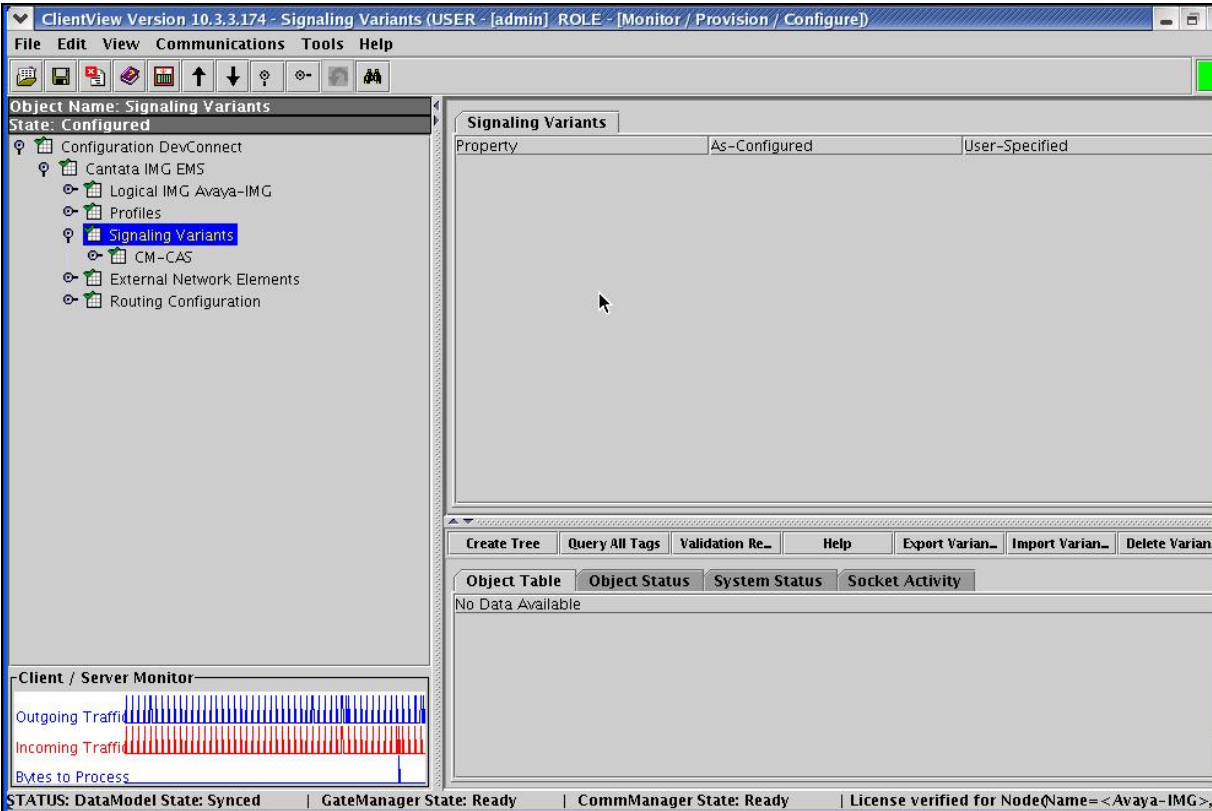
Step	Description
5.1.15	<p>Configure the Media Module DSP as follows:</p> <ul style="list-style-type: none"> <li>Right-click the Media Module created in <b>Step 5.1.14</b> in the Configuration Tree and select <b>New Media DSP</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Use default settings for all fields.</li> </ul> <ul style="list-style-type: none"> <li>To save the changes, right-click <b>Media DSP 0</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul>



Step	Description
5.1.16	<p>Create an object for Profiles as follows:</p> <ul style="list-style-type: none"> <li>• Right-click <b>Cantata IMG EMS</b> in the Configuration Tree and select <b>New Profiles</b>.</li> <li>• To save the changes, right-click <b>Profiles</b> and select <b>Commit</b>.</li> <li>• The resultant provisioning is shown below.</li> </ul>  <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 'Object Table' tab is also visible, showing 'No Data Available'. The bottom status bar indicates 'STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for NodeName= &lt;Avaya-IMG&gt;'. A 'Client / Server Monitor' window is also visible in the bottom left corner, showing 'Outgoing Traffic' and 'Incoming Traffic' graphs.</p>

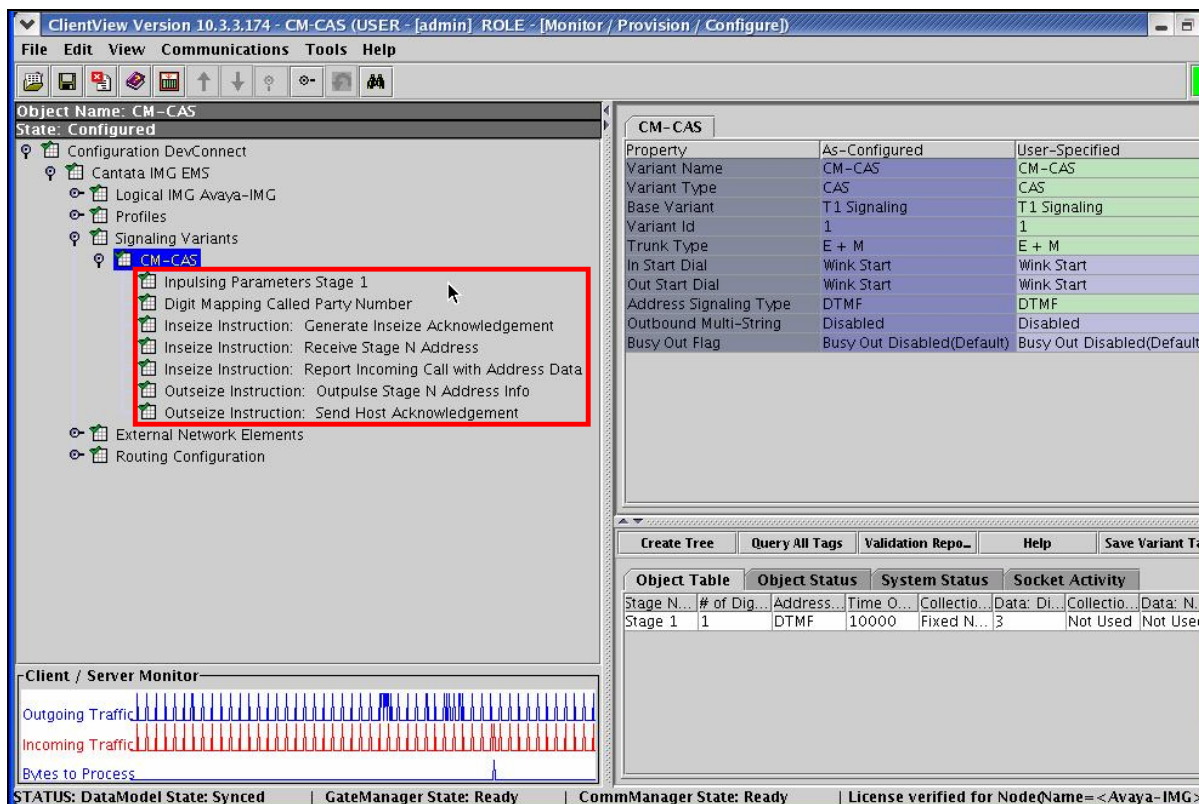
Step	Description
5.1.17	<p>Configure an IP Bearer Profile corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>Profiles</b> in the Configuration Tree and select <b>New IP Bearer Profile</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: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

Step	Description
5.1.18	<p>Assign a codec to the IP Bearer Profile corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"> <li>Right-click the IP Bearer Profile created in <b>Step 5.1.17</b> in the Configuration Tree and select <b>New Supported Vcoders</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Select a codec from the drop down list for the <b>Payload Type</b> field that is supported on Avaya Meeting Exchange.</li> <li>Use default settings for remaining fields.</li> <li>To save the changes, right-click <b>Profile: 2 - Entry:0</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul> 

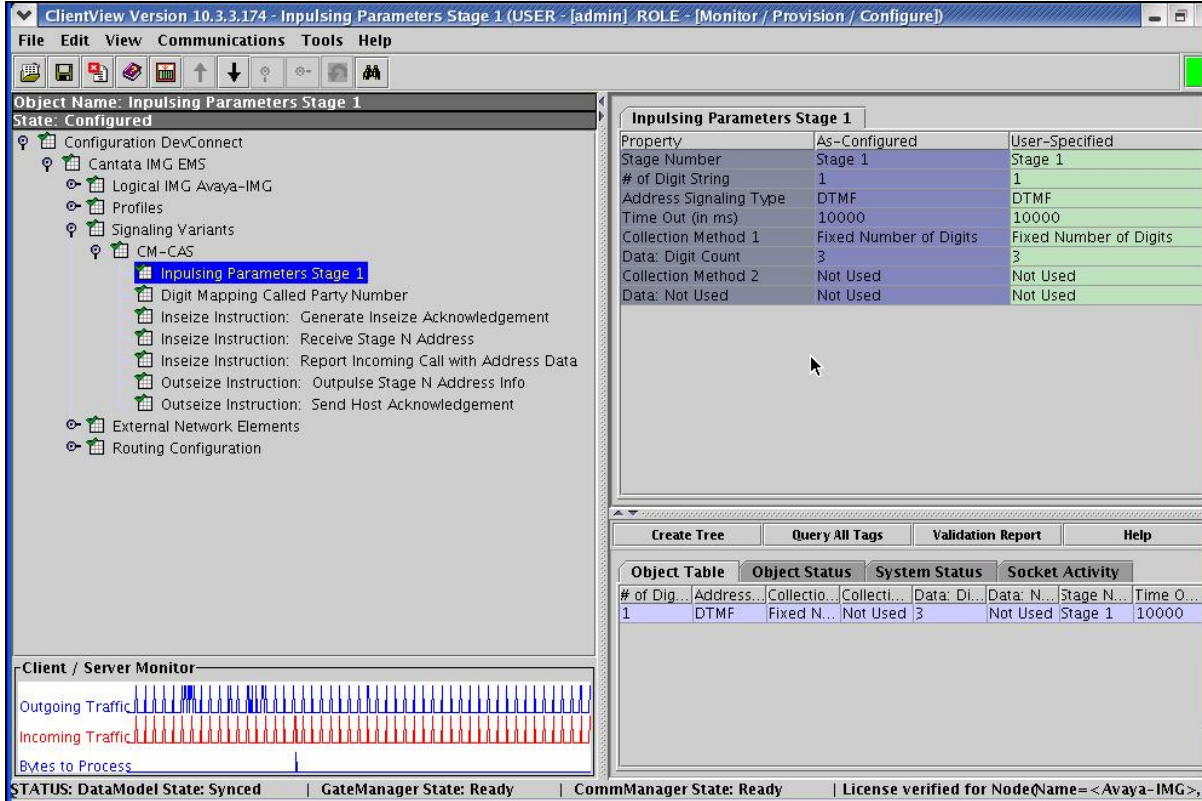
Step	Description
5.1.19	<p>Create an object for Signaling Variants as follows:</p> <ul style="list-style-type: none"> <li>• Right-click <b>Cantata IMG EMS</b> in the Configuration Tree and select <b>New Signaling Variants</b>.</li> <li>• To save the changes, right-click <b>Signaling Variants</b> and select <b>Commit</b>.</li> <li>• The resultant provisioning is shown below.</li> </ul>  <p>The screenshot shows the ClientView application interface. The title bar reads 'ClientView Version 10.3.3.174 - Signaling Variants (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"> <li>Configuration DevConnect       <ul style="list-style-type: none"> <li>Cantata IMG EMS           <ul style="list-style-type: none"> <li>Logical IMG Avaya-IMG               <ul style="list-style-type: none"> <li>Profiles                   <ul style="list-style-type: none"> <li><b>Signaling Variants</b> (highlighted)</li> <li>CM-CAS</li> </ul> </li> <li>External Network Elements</li> <li>Routing Configuration</li> </ul> </li> </ul> </li> </ul> </li> </ul> <p>The right pane is titled 'Signaling Variants' and contains a table with columns 'Property', 'As-Configured', and 'User-Specified'. The table is currently empty. Below the table are buttons: 'Create Tree', 'Query All Tags', 'Validation Re...', 'Help', 'Export Varian...', 'Import Varian...', and 'Delete Varian...'. At the bottom of the right pane are tabs: 'Object Table', 'Object Status', 'System Status', and 'Socket Activity'. The 'Object Status' tab is selected, showing 'No Data Available'. The bottom status bar displays: 'STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for NodeName=&lt;Avaya-IMG&gt;'.</p>



Step	Description
5.1.20	<p>Configure a Signaling Variant to enable CAS connectivity with Avaya Communication Manager as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>Signaling Variants</b> in the Configuration Tree and select <b>New Signaling Variant</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Enter a descriptive name for the Signaling Variant in the <b>Variant Name</b> field.</li> <li>Select <b>CAS</b> from the drop down list for the <b>Variant Type</b> field.</li> <li>Use default settings for remaining fields. Ensure that the settings match those on Avaya Communication Manager in <b>Section 3.2</b>.</li> </ul> <ul style="list-style-type: none"> <li>To save the changes, right-click <b>CM-CAS</b> and select <b>Commit</b>. <ul style="list-style-type: none"> <li>Right-click on <b>CM-CAS</b> to add objects. For this sample configuration, the objects shown in the configuration tree were added.</li> </ul> </li> <li>The resultant provisioning is shown below.</li> </ul>



Step	Description
5.1.21	<p>Modify the Impulsing Parameters object as follows:</p> <ul style="list-style-type: none"><li>Right-click the Impulsing Parameters object in the Configuration Tree.</li></ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"><li>Select <b>Stage 1</b> from the drop down list for the <b>Stage Number</b> field.</li><li>Use default settings for remaining fields.</li></ul> <ul style="list-style-type: none"><li>To save the changes, right-click <b>Impulsing Parameters Stage 1</b> and select <b>Commit</b>.</li><li>The resultant provisioning is shown below.</li></ul>



**ClientView Version 10.3.3.174 - Impulsing Parameters Stage 1 (USER - [admin] ROLE - [Monitor / Provision / Configure])**

File Edit View Communications Tools Help

Object Name: Impulsing Parameters Stage 1  
State: Configured

Configuration DevConnect

- Cantata IMG EMS
  - Logical IMG Avaya-IMG
    - Profiles
      - Signaling Variants
        - CM-CAS
          - Impulsing Parameters Stage 1**
          - Digit Mapping Called Party Number
          - Inseize Instruction: Generate Inseize Acknowledgement
          - Inseize Instruction: Receive Stage N Address
          - Inseize Instruction: Report Incoming Call with Address Data
          - Outseize Instruction: Outpulse Stage N Address Info
          - Outseize Instruction: Send Host Acknowledgement
        - External Network Elements
        - Routing Configuration

**Impulsing Parameters Stage 1**

Property	As-Configured	User-Specified
Stage Number	Stage 1	Stage 1
# of Digit String	1	1
Address Signaling Type	DTMF	DTMF
Time Out (in ms)	10000	10000
Collection Method 1	Fixed Number of Digits	Fixed Number of Digits
Data: Digit Count	3	3
Collection Method 2	Not Used	Not Used
Data: Not Used	Not Used	Not Used

Create Tree Query All Tags Validation Report Help

Object Table	Object Status	System Status	Socket Activity				
# of Dig...	Address...	Collectio...	Collecti...	Data: Di...	Data: N...	Stage N...	Time O...
1	DTMF	Fixed N...	Not Used	3	Not Used	Stage 1	10000

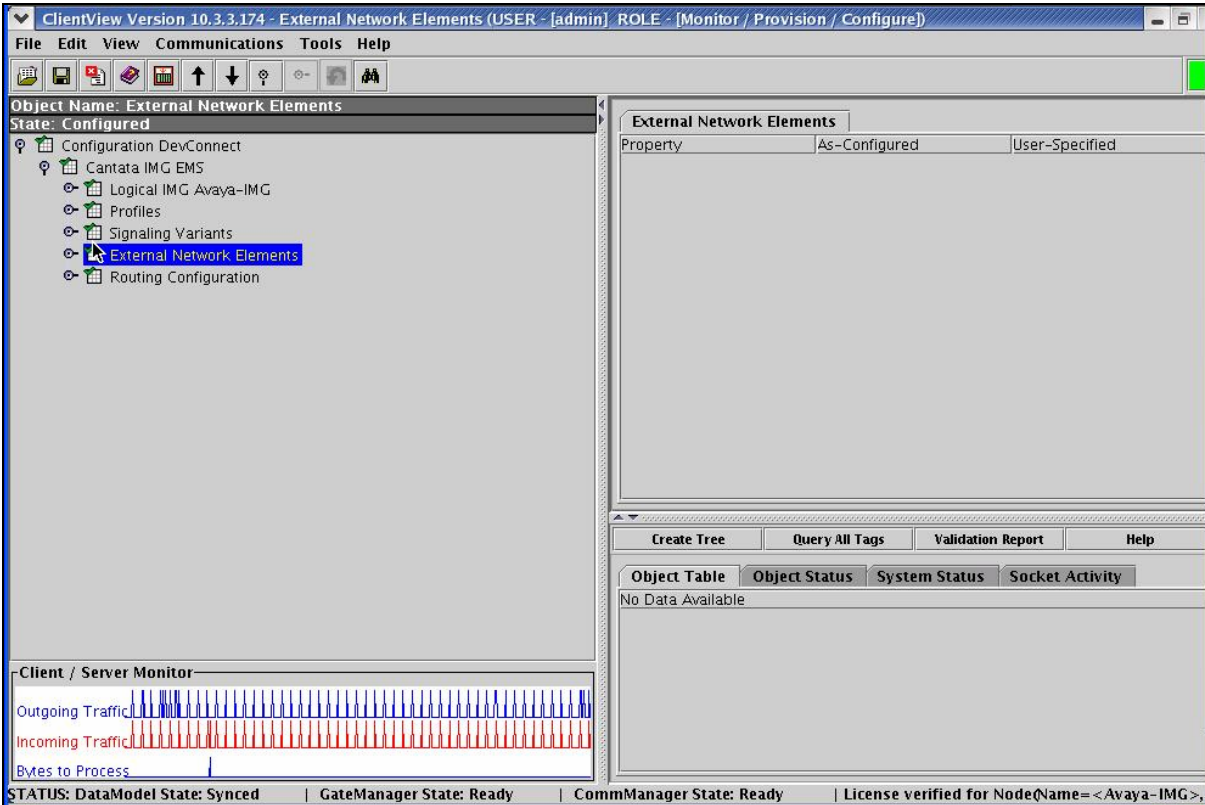
Client / Server Monitor

Outgoing Traffic

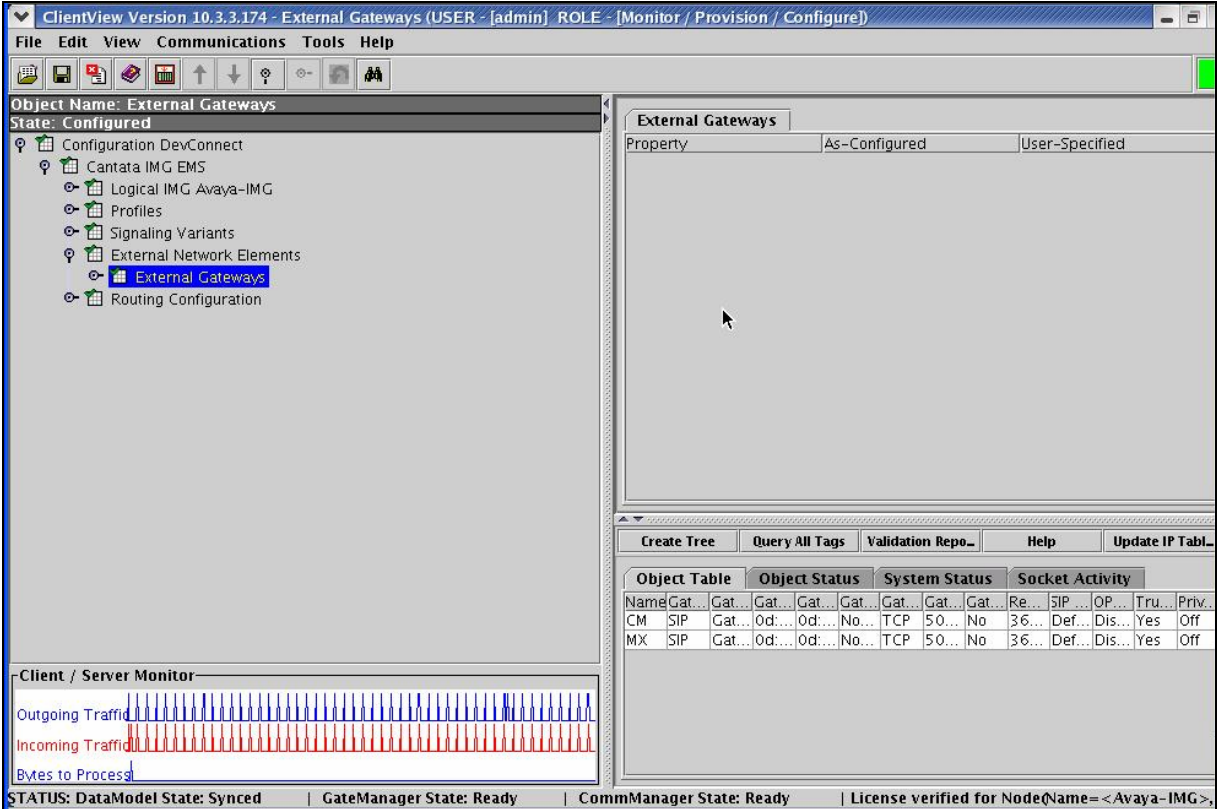
Incoming Traffic

Bytes to Process

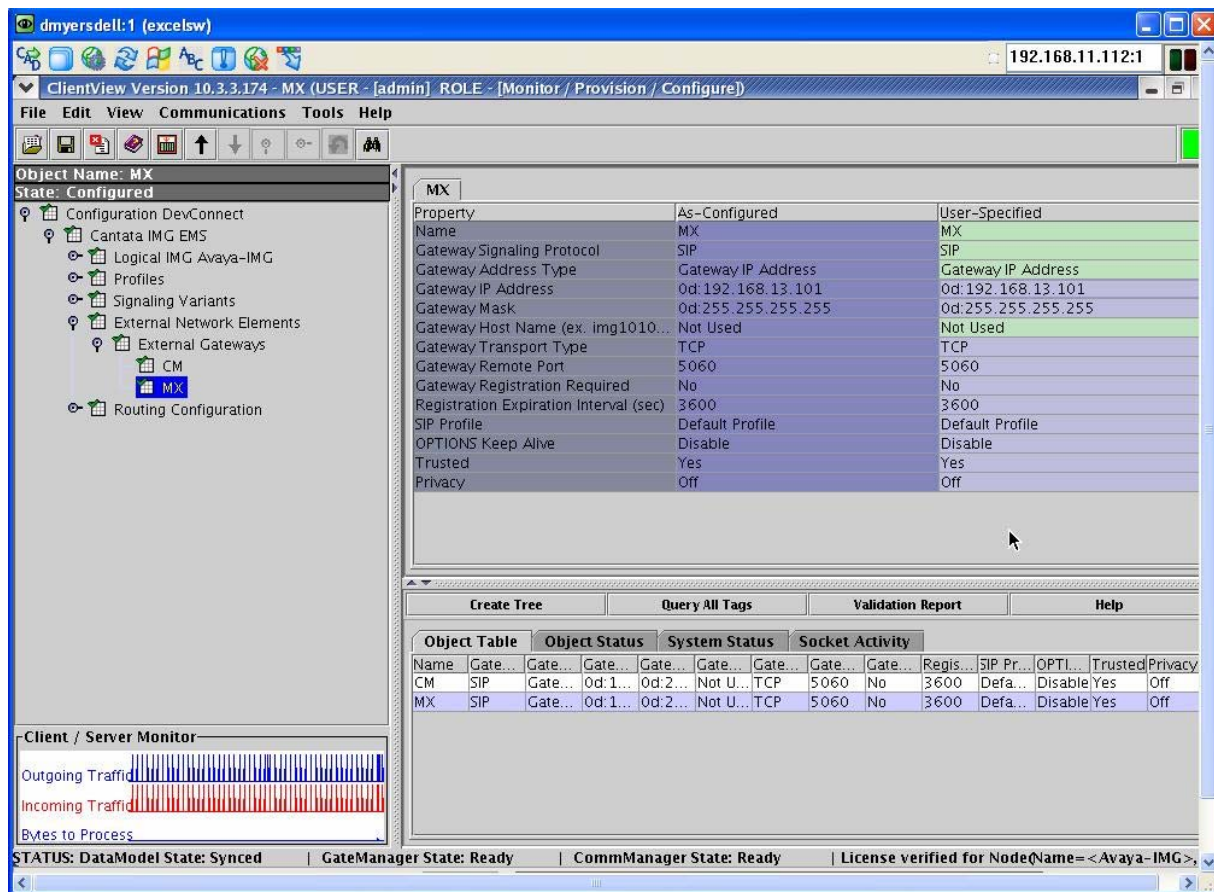
STATUS: DataModel State: Synced | GateManager State: Ready | CommManager State: Ready | License verified for NodeName=<Avaya-IMG>

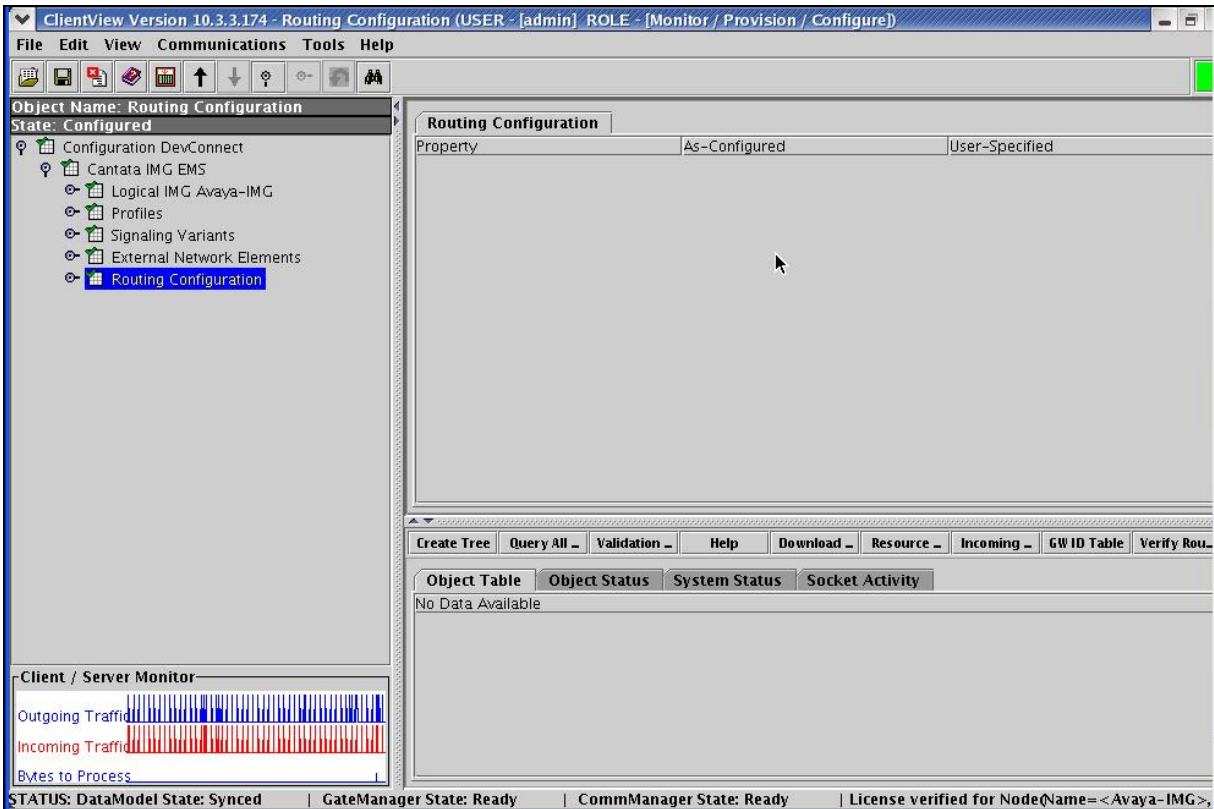
Step	Description
5.1.22	<p>Create an object for External Network Elements as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>Cantata IMG EMS</b> in the Configuration Tree and select <b>New External Network Elements</b>.</li> <li>To save the changes, right-click <b>External Network Elements</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul>  <p>The screenshot shows the ClientView interface. The main window title is 'ClientView Version 10.3.3.174 - External Network Elements (USER - [admin] ROLE - [Monitor / Provision / Configure])'. The menu bar includes File, Edit, View, Communications, Tools, and Help. The toolbar contains icons for file operations and navigation. The left pane shows the 'Object Name: External Network Elements' and 'State: Configured'. The configuration tree on the left includes 'Configuration DevConnect', 'Cantata IMG EMS', 'Logical IMG Avaya-IMG', 'Profiles', 'Signaling Variants', 'External Network Elements' (highlighted), and 'Routing Configuration'. The right pane shows the 'External Network Elements' configuration area with tabs for 'Property', 'As-Configured', and 'User-Specified'. Below this are buttons for 'Create Tree', 'Query All Tags', 'Validation Report', and 'Help'. The bottom section has tabs for 'Object Table', 'Object Status', 'System Status', and 'Socket Activity', with 'Object Table' selected showing 'No Data Available'. The bottom status bar displays 'STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for Node(Name= &lt;Avaya-IMG&gt;,'.</p>

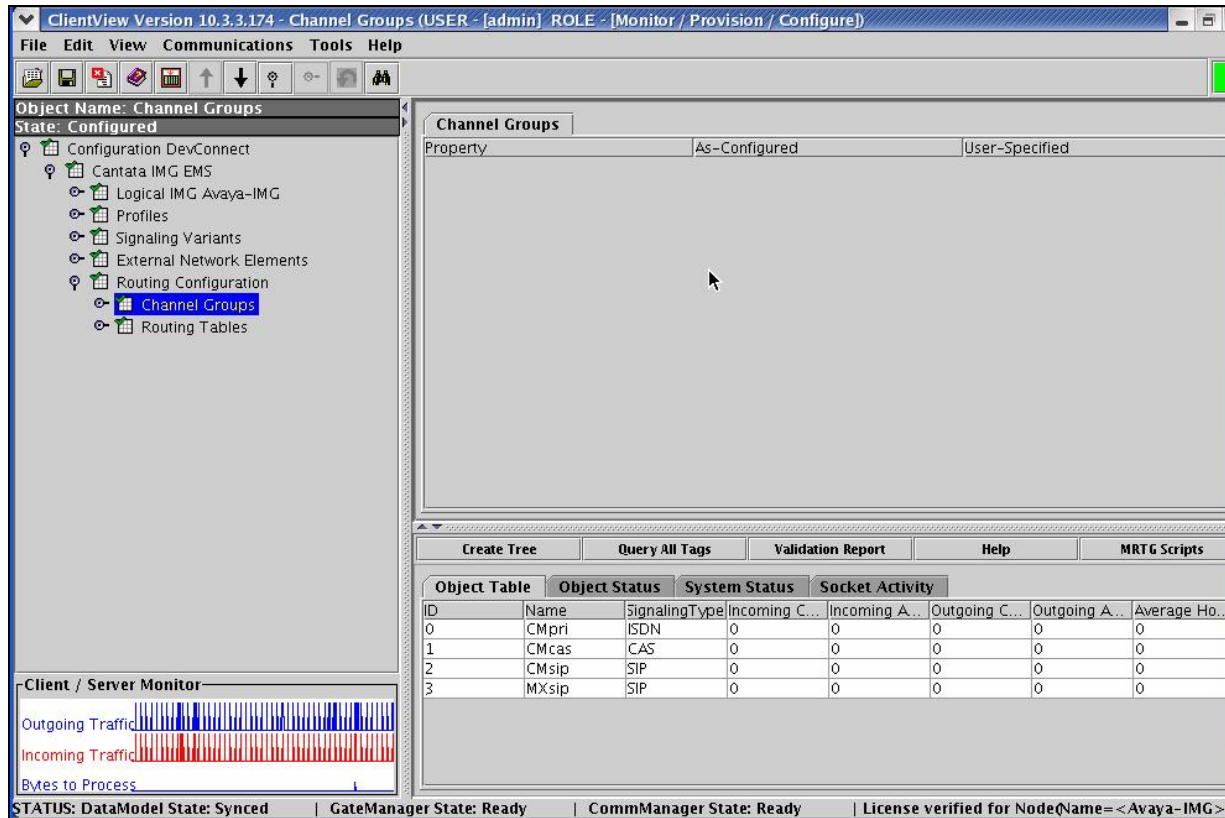


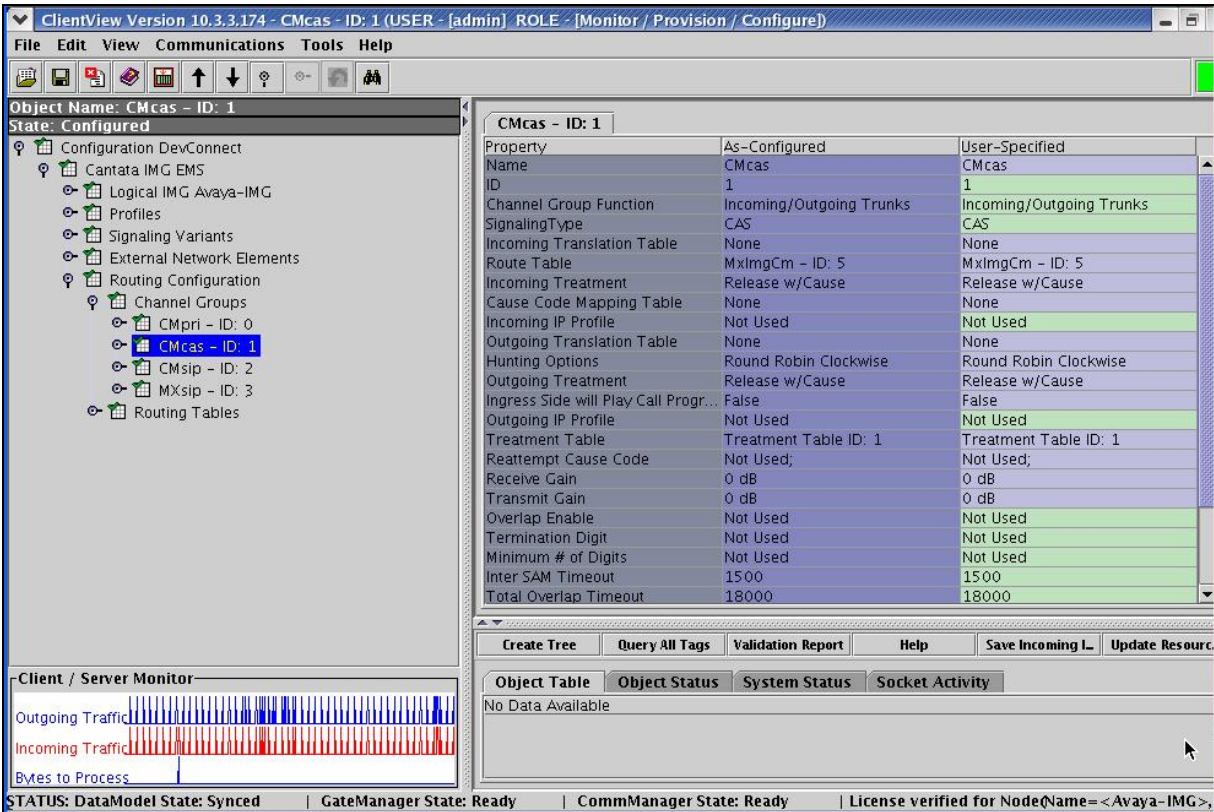
Step	Description
5.1.23	<p>Create an object for External Gateways as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>External Network Elements</b> in the Configuration Tree and select <b>New External Gateways</b>.</li> <li>To save the changes, right-click <b>External Gateways</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul>  <p>The screenshot shows the ClientView application interface. The title bar indicates 'ClientView Version 10.3.3.174 - External Gateways (USER - [admin] ROLE - [Monitor / Provision / Configure])'. The menu bar includes File, Edit, View, Communications, Tools, and Help. The Configuration Tree on the left shows a hierarchy: Configuration DevConnect &gt; Cantata IMG EMS &gt; Logical IMG Avaya-IMG &gt; Profiles &gt; Signaling Variants &gt; External Network Elements &gt; External Gateways (selected). The main pane shows the 'External Gateways' configuration with a 'Property' tab. The bottom section features a 'Client / Server Monitor' graph showing 'Outgoing Traffic' (blue) and 'Incoming Traffic' (red) over time. The status bar at the bottom displays: STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for NodeName= &lt;Avaya-IMG&gt;.</p>

Step	Description
5.1.24	<p>Configure an External Gateway corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>External Gateways</b> in the Configuration Tree and select <b>New External Gateway</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Enter a descriptive name for the IP Bearer Profile in the <b>Name</b> field.</li> <li>Select <b>SIP</b> from the drop down list for the <b>Gateway Signaling Protocol</b> field.</li> <li>Enter the IP address of Avaya Meeting Exchange in the <b>Gateway IP Address</b> field.</li> <li>Use default settings for remaining fields.</li> </ul> <p><i>Note: The settings for the <b>Gateway Transport Type</b> and <b>Gateway Remote Port</b> fields are compatible with the configuration on Avaya Meeting Exchange (see Step 4.2.1).</i></p> <ul style="list-style-type: none"> <li>To save the changes, right-click <b>MX</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul>

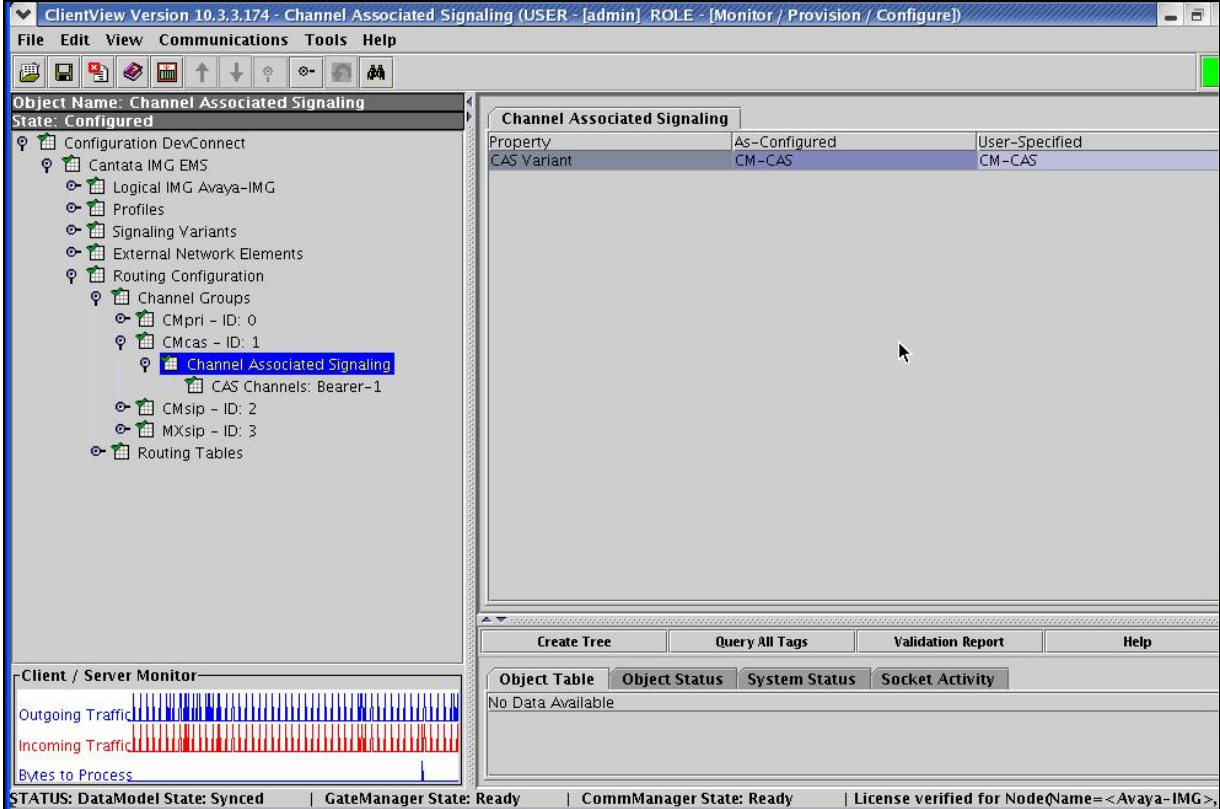


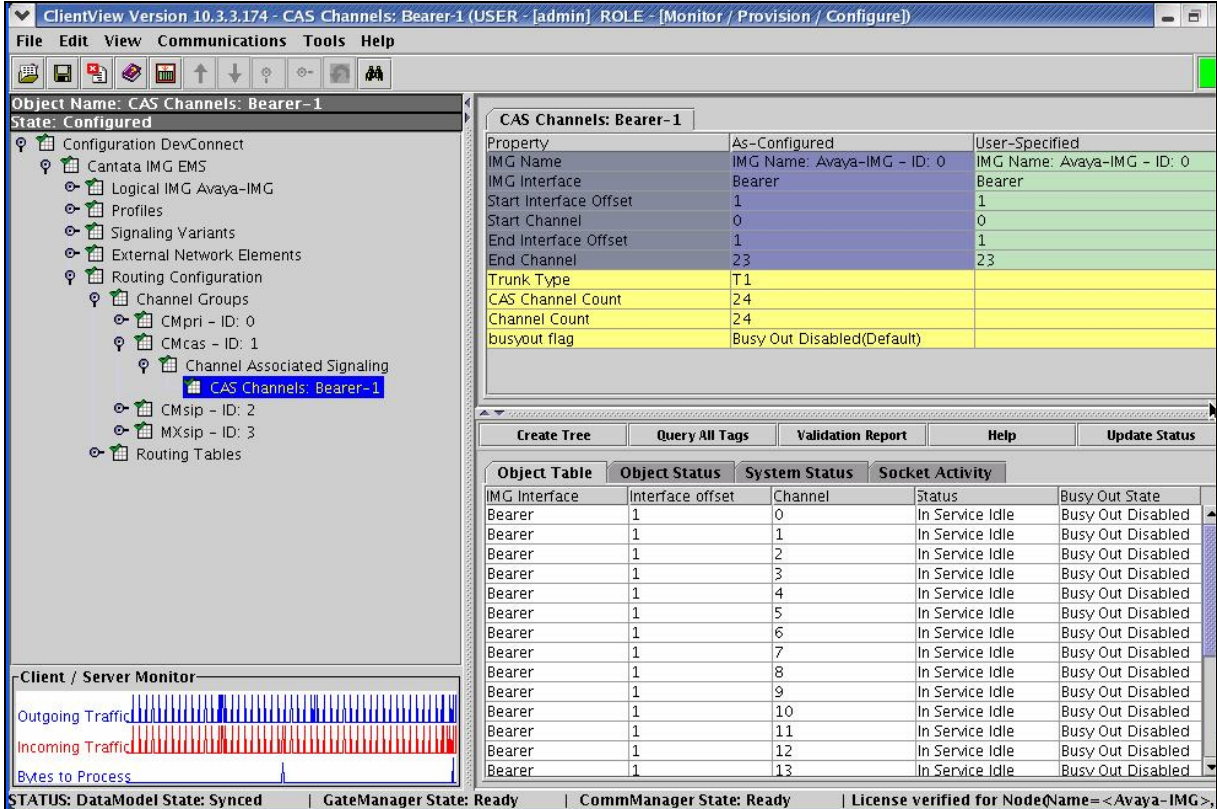
Step	Description
5.1.25	<p>Create an object for Routing Configuration as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>Cantata IMG EMS</b> in the Configuration Tree and select <b>New Routing Configuration</b>.</li> <li>To save the changes, right-click <b>Routing Configuration</b>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

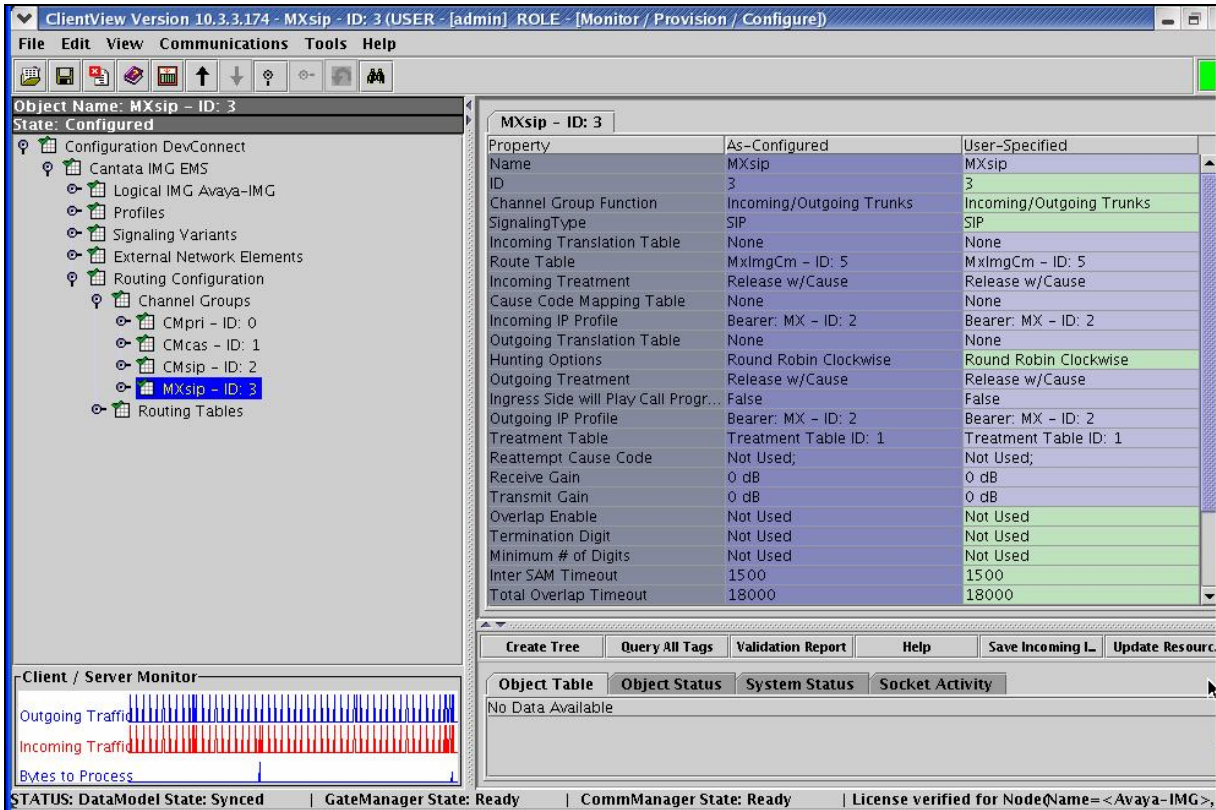
Step	Description																																								
5.1.26	<p>Create an object for Channel Groups as follows:</p> <ul style="list-style-type: none"><li>• Right-click <b>Routing Configuration</b> in the Configuration Tree and select <b>New Channel Groups</b>.</li><li>• To save the changes, right-click <b>Channel Groups</b> and select <b>Commit</b>.</li><li>• The resultant provisioning is shown below.</li></ul>  <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 pane shows the 'Channel Groups' configuration window with 'Property' set to 'As-Configured' and 'User-Specified'. The bottom pane shows a table of 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. The bottom status bar shows 'STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for NodeName=&lt;Avaya-IMG&gt;'. A 'Client / Server Monitor' section at the bottom left shows 'Outgoing Traffic' (blue), 'Incoming Traffic' (red), and 'Bytes to Process' (blue).</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>	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
5.1.27	<p>Configure a Channel Group corresponding to Avaya Communication Manager as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>Channel Groups</b> in the Configuration Tree and select <b>New Channel Group</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Enter a descriptive name for the Channel Group in the <b>Name</b> field.</li> <li>Select <b>CAS</b> from the drop down list for the <b>Signaling Type</b> field.</li> <li>Use default settings for remaining fields.</li> </ul> <p><i>Note: The administration for the <b>Route Table</b> field is displayed in this screen capture, although the <b>Route Table</b> has not been created. When providing the IMG with an initial configuration, create a <b>Channel Group</b> first, then create a <b>Route Table</b>, then edit the <b>Channel Group</b> to include the <b>Route Table</b>.</i></p> <ul style="list-style-type: none"> <li>To save the changes, right-click <b>CMcas - ID: 1</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul> 

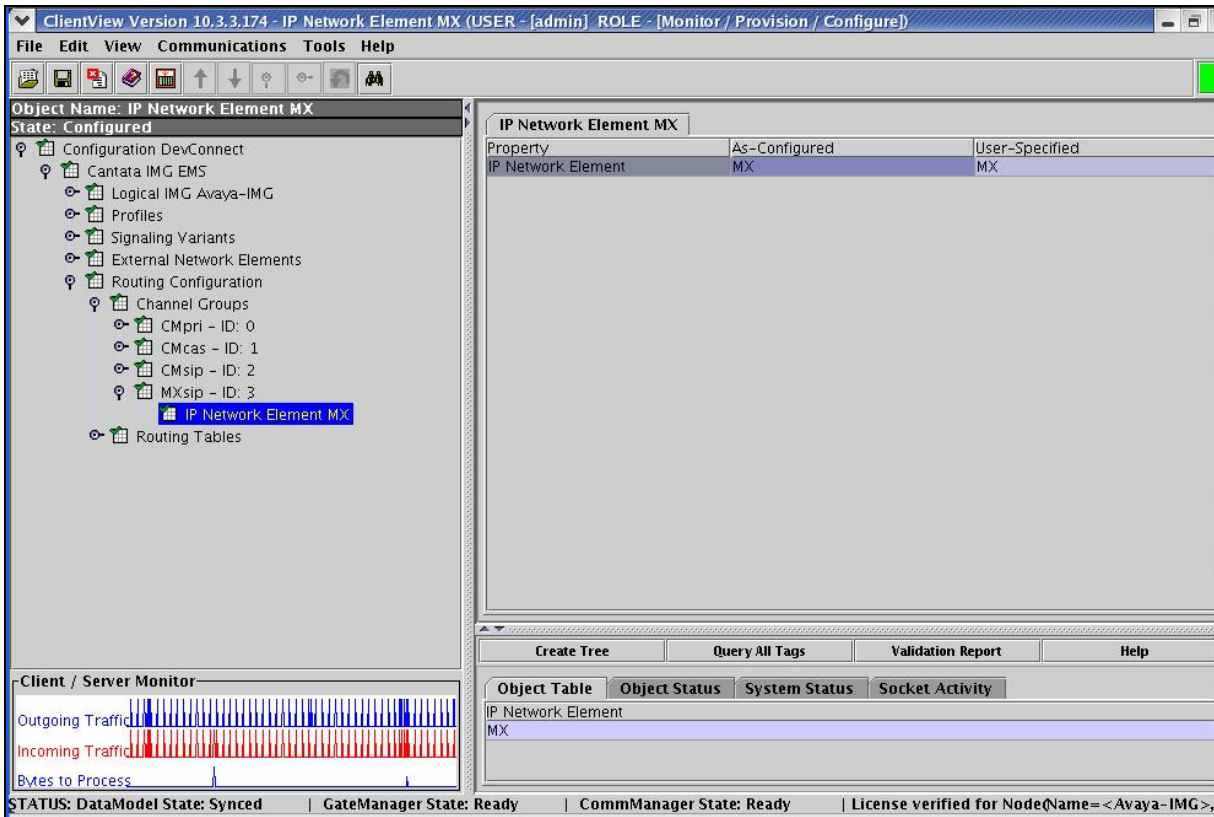


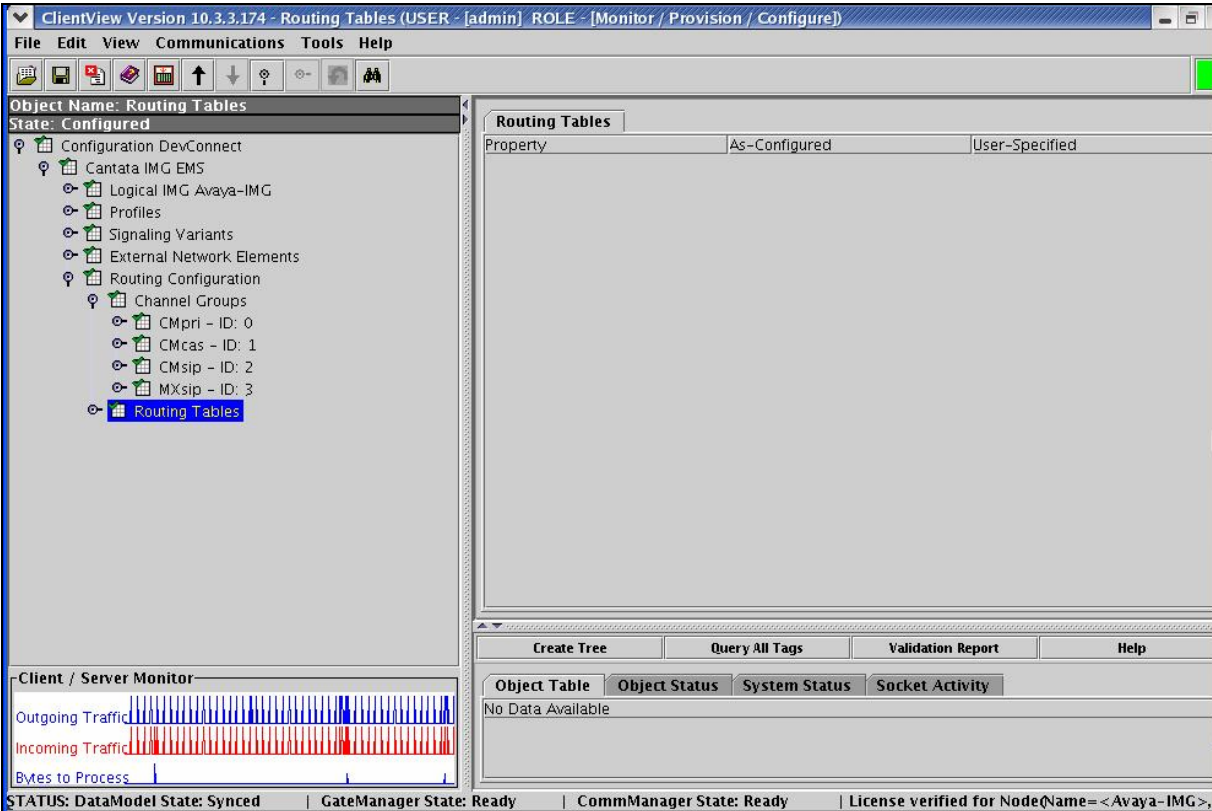
Step	Description
5.1.28	<p>Create an object for Channel Associated Signaling as follows:</p> <ul style="list-style-type: none"> <li>Right-click the Channel Group created in <b>Step 5.1.27</b> in the Configuration Tree and select <b>New Channel Associated Signaling</b>.</li> <li>Select the CAS Variant provisioned in <b>Step 5.1.20</b> from the drop down list for the <b>CAS Variant</b> field.</li> <li>To save the changes, right-click <b>Channel Associated Signaling</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul> 

Step	Description																																																																																																	
5.1.29	<p>Assign Channels to the CAS Channel Group corresponding to Avaya Communication Manager as follows:</p> <ul style="list-style-type: none"><li>Right-click <b>Channel Associated Signaling</b> in the Configuration Tree and select <b>New CAS Circuits</b>.</li></ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"><li>Select <b>Bearer</b> from the drop down list for the <b>IMG Interface</b> field</li><li>Use default settings for remaining fields.</li><li>To save the changes, right-click <b>CAS Channels: Bearer-1</b> and select <b>Commit</b>.</li><li>The resultant provisioning is shown below.</li></ul> <p><i>Note: The IMG counts channels from zero, where Avaya Communication Manager counts from one.</i></p> <div><p>The screenshot displays the ClientView interface. The left pane shows the Configuration Tree with 'CAS Channels: Bearer-1' selected. The right pane shows the configuration details for 'CAS Channels: Bearer-1' with a table of properties. Below this is a table showing the provisioning of channels for the Bearer interface.</p><table><tr><th>Property</th><th>As-Configured</th><th>User-Specified</th></tr><tr><td>IMG Name</td><td>IMG Name: Avaya-IMG - ID: 0</td><td>IMG Name: Avaya-IMG - ID: 0</td></tr><tr><td>IMG Interface</td><td>Bearer</td><td>Bearer</td></tr><tr><td>Start Interface Offset</td><td>1</td><td>1</td></tr><tr><td>Start Channel</td><td>0</td><td>0</td></tr><tr><td>End Interface Offset</td><td>1</td><td>1</td></tr><tr><td>End Channel</td><td>23</td><td>23</td></tr><tr><td>Trunk Type</td><td>T1</td><td></td></tr><tr><td>CAS Channel Count</td><td>24</td><td></td></tr><tr><td>Channel Count</td><td>24</td><td></td></tr><tr><td>busyout flag</td><td>Busy Out Disabled(Default)</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>IMG Interface</td><td>Interface offset</td><td>Channel</td><td>Status</td></tr><tr><td>Bearer</td><td>1</td><td>0</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>1</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>2</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>3</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>4</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>5</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>6</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>7</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>8</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>9</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>10</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>11</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>12</td><td>In Service Idle</td></tr><tr><td>Bearer</td><td>1</td><td>13</td><td>In Service Idle</td></tr></table></div>	Property	As-Configured	User-Specified	IMG Name	IMG Name: Avaya-IMG - ID: 0	IMG Name: Avaya-IMG - ID: 0	IMG Interface	Bearer	Bearer	Start Interface Offset	1	1	Start Channel	0	0	End Interface Offset	1	1	End Channel	23	23	Trunk Type	T1		CAS Channel Count	24		Channel Count	24		busyout flag	Busy Out Disabled(Default)		Object Table	Object Status	System Status	Socket Activity	IMG Interface	Interface offset	Channel	Status	Bearer	1	0	In Service Idle	Bearer	1	1	In Service Idle	Bearer	1	2	In Service Idle	Bearer	1	3	In Service Idle	Bearer	1	4	In Service Idle	Bearer	1	5	In Service Idle	Bearer	1	6	In Service Idle	Bearer	1	7	In Service Idle	Bearer	1	8	In Service Idle	Bearer	1	9	In Service Idle	Bearer	1	10	In Service Idle	Bearer	1	11	In Service Idle	Bearer	1	12	In Service Idle	Bearer	1	13	In Service Idle
Property	As-Configured	User-Specified																																																																																																
IMG Name	IMG Name: Avaya-IMG - ID: 0	IMG Name: Avaya-IMG - ID: 0																																																																																																
IMG Interface	Bearer	Bearer																																																																																																
Start Interface Offset	1	1																																																																																																
Start Channel	0	0																																																																																																
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End Channel	23	23																																																																																																
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busyout flag	Busy Out Disabled(Default)																																																																																																	
Object Table	Object Status	System Status	Socket Activity																																																																																															
IMG Interface	Interface offset	Channel	Status																																																																																															
Bearer	1	0	In Service Idle																																																																																															
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Bearer	1	8	In Service Idle																																																																																															
Bearer	1	9	In Service Idle																																																																																															
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Bearer	1	13	In Service Idle																																																																																															

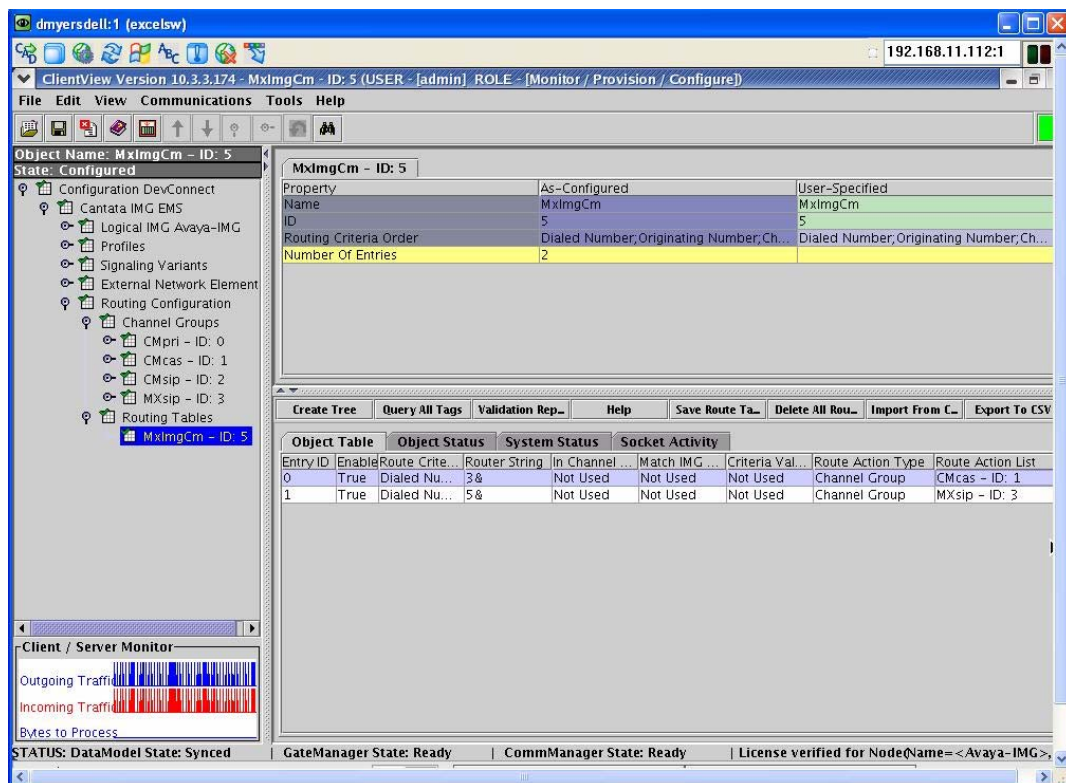
Step	Description
5.1.30	<p>Configure a Channel Group corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"> <li>Right-click <b>Channel Groups</b> in the Configuration Tree and select <b>New Channel Group</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>Enter a descriptive name for the Channel Group in the <b>Name</b> field.</li> <li>Select <b>SIP</b> from the drop down list for the <b>Signaling Type</b> field.</li> <li>Use default settings for remaining fields.</li> </ul> <p><i>Note: The administration for the <b>Route Table</b> field is displayed in this screen capture, although the <b>Route Table</b> has not been created. When providing the IMG with an initial configuration, create a <b>Channel Group</b> first, then create a <b>Route Table</b>, then edit the <b>Channel Group</b> to include the <b>Route Table</b>.</i></p> <ul style="list-style-type: none"> <li>To save the changes, right-click <b>MXsip - ID: 3</b> and select <b>Commit</b>.</li> <li>The resultant provisioning is shown below.</li> </ul>  <p>The screenshot displays the ClientView Version 10.3.3.174 interface. The Configuration Tree on the left shows the hierarchy: Configuration DevConnect &gt; Cantata IMG EMS &gt; Logical IMG Avaya-IMG &gt; Profiles &gt; Signaling Variants &gt; External Network Elements &gt; Routing Configuration &gt; Channel Groups &gt; MXsip - ID: 3. The main configuration pane shows the properties for MXsip - ID: 3, with a table comparing 'As-Configured' and 'User-Specified' values. The 'User-Specified' column is highlighted in green. The properties include Name, ID, Channel Group Function, SignalingType, Incoming Translation Table, Route Table, Incoming Treatment, Cause Code Mapping Table, Incoming IP Profile, Outgoing Translation Table, Hunting Options, Outgoing Treatment, Ingress Side will Play Call Progr..., Outgoing IP Profile, Treatment Table, Reattempt Cause Code, Receive Gain, Transmit Gain, Overlap Enable, Termination Digit, Minimum # of Digits, Inter SAM Timeout, and Total Overlap Timeout. The Client/Server Monitor at the bottom shows a graph of Outgoing Traffic (blue) and Incoming Traffic (red) over time, with a 'Bytes to Process' line. The status bar at the bottom indicates: STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for NodeName=&lt;Avaya-IMG&gt;.</p>



Step	Description
5.1.31	<p>Assign an IP Network Element to the Channel Group corresponding to Avaya Meeting Exchange as follows:</p> <ul style="list-style-type: none"><li>Right-click the Channel Group created in <b>Step 5.1.30</b> in the Configuration Tree and select <b>New IP Network Element</b>.</li></ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"><li>Select the External Gateway provisioned in <b>Step 5.1.24</b> from the drop down list for the <b>IP Network Element</b> field.</li><li>To save the changes, right-click <b>IP Network Element MX</b> and select <b>Commit</b>.</li><li>The resultant provisioning is shown below.</li></ul> 

Step	Description
5.1.32	<p>Create an object for Routing Tables as follows:</p> <ul style="list-style-type: none"> <li>• Right-click <b>Routing Configuration</b> in the Configuration Tree and select <b>New Routing Tables</b>.</li> <li>• To save the changes, right-click <b>Routing Tables</b> and select <b>Commit</b>.</li> <li>• The resultant provisioning is shown below.</li> </ul>  <p>The screenshot shows the ClientView interface. On the left, the 'Configuration Tree' is expanded to 'Routing Tables'. The main pane shows the 'Routing Tables' configuration with a 'Property' tab. At the bottom, there is a 'Client / Server Monitor' section with a graph showing 'Outgoing Traffic' (blue) and 'Incoming Traffic' (red). The status bar at the bottom indicates 'STATUS: DataModel State: Synced   GateManager State: Ready   CommManager State: Ready   License verified for NodeName= &lt;Avaya-IMG&gt;'.</p>
5.1.33	<p>Configure a Route Table as follows:</p> <ul style="list-style-type: none"> <li>• Right-click <b>Routing Tables</b> in the Configuration Tree and select <b>New Route Table</b>.</li> </ul> <p>In the Configuration Pane:</p> <ul style="list-style-type: none"> <li>○ Enter a descriptive name for the Route Table in the <b>Name</b> field.</li> <li>○ Use default settings for remaining fields.</li> </ul> <ul style="list-style-type: none"> <li>• To save the changes, right-click the entry and select <b>Commit</b>. See <b>Step 5.1.34</b> for resultant provisioning.</li> </ul>

Step	Description
5.1.34	<p>Add route entries to the Route Table provisioned in <b>Step 5.1.33</b> as follows:</p> <ul style="list-style-type: none"> <li>To add a route entry corresponding to Avaya Communication Manager, right-click the <b>Route Table</b> in the Configuration Tree and select <b>Add Route Entry</b>. <ul style="list-style-type: none"> <li>Enter a pattern to match extensions on Avaya Communication Manager, where &amp; is a wildcard, in the <b>Router String</b> field in the <b>New Entry</b> dialog box.</li> <li>Select the Channel Group provisioned in <b>Step 5.1.27</b> from the drop down list for the <b>Outgoing Channel Group</b> field. <p><i>Note: This is displayed below under the <b>Route Action List</b> column.</i></p> </li> <li>Click <b>OK</b> in the <b>New Entry</b> dialog box.</li> </ul> </li> <li>To add a route entry corresponding to Avaya Meeting Exchange, right-click the <b>Route Table</b> in the Configuration Tree and select <b>Add Route Entry</b>. <ul style="list-style-type: none"> <li>Enter a pattern to match the provisioning for call branding on Avaya Meeting Exchange, where &amp; is a wildcard, in the <b>Router String</b> field in the <b>New Entry</b> dialog box.</li> <li>Select the Channel Group provisioned in <b>Step 5.1.30</b> from the drop down list for the <b>Outgoing Channel Group</b> field. <p><i>Note: This is displayed below under the <b>Route Action List</b> column.</i></p> </li> <li>Click <b>OK</b> in the <b>New Entry</b> dialog box.</li> </ul> </li> <li>The resultant provisioning is shown below.</li> </ul>



## 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:
  - DNIS direct call branding (without participant-access-code)
  - SCAN call branding (with participant-access-code)
- Outbound calling from Avaya Meeting Exchange to telephones registered to either Avaya Communication Manager or Avaya SIP Enablement Services via the Cantata IMG 1010:
  - Auto/manual blast dial
  - Originator dial-out
  - Operator fast dial
- The following feature testing was executed:
  - Operator dial-out (Audio Path)
  - Operator dial-in (Audio Path)
  - Dial-out to a Flexible Digital Auxiliary Port Interface (FDAPI) channel for audio recording
  - Line Transfer initiated from Avaya Bridge Talk
  - Conference Transfer initiated from Avaya Bridge Talk
  - Moderator/participant conferencing features provided by Avaya Meeting Exchange
- The following sub-set of the SIPPING-19 supplementary features was verified:
  - Call hold
  - Attended/unattended call transfer
  - Call forward
  - Three-way conference
- The following transport methods for signaling were tested between Avaya Meeting Exchange and the Cantata IMG 1010:
  - TCP
  - UDP
- The following transport methods for signaling/media were tested between Avaya Communication Manager and the Cantata IMG 1010:
  - T1 CAS (Robbed-Bit)
- The following CODECS were tested:
  - G711MU
- Voice quality was subjectively verified using endpoints participating in a Conference.
- DTMF transmission was verified.

### 6.2. Test Results

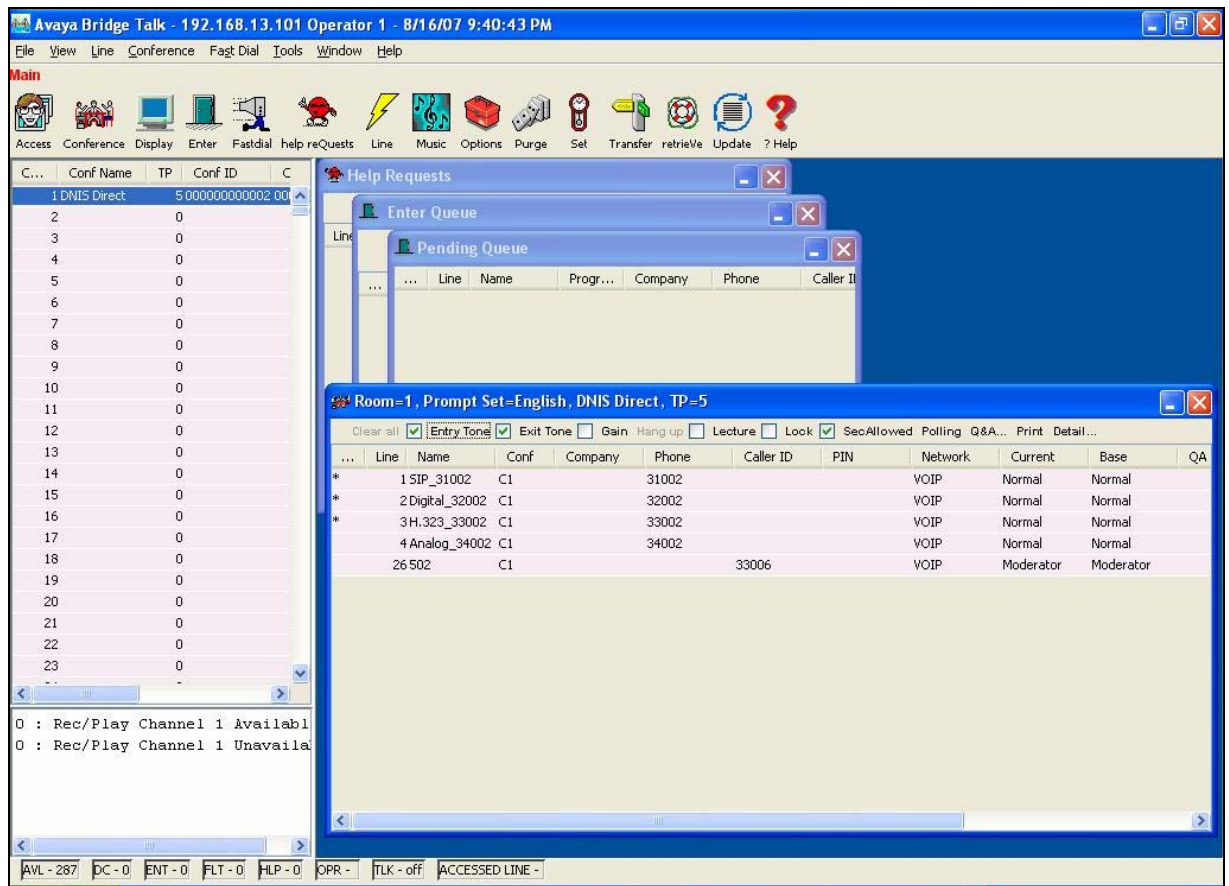
All test cases, as defined by the general test approach, passed.

## 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 CAS connectivity between Avaya Communication Manager and the IMG by retrieving status regarding the trunk group provisioned in <b>Step 3.2.2</b>. From a SAT session:</p> <ul style="list-style-type: none"> <li>Issue the command “<b>status trunk &lt;n&gt;</b>”, where <b>n</b> is the number of the trunk group to verify.</li> <li>Verify that all members in the trunk group are <b>in-service/idle</b>.</li> </ul>
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 <b>Step 3.2.2</b> 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"> <li>Issue the command “<b>list trace tac &lt;n&gt;</b>”, where <b>n</b> is the TAC defined for the trunk group.</li> <li>From a telephone registered to either Avaya Communication Manager, or Avaya SIP Enablement Services, dial <b>502</b> to enter the conference provisioned in <b>Section 4.4</b> as moderator via the call branding for a direct call flow provisioned in <b>Step 4.3.2</b>.</li> </ul> <p><i>Note: The trace below shows a station (33006) that dialed (502) and utilized the call routing provisioned in <b>Section 3.3</b> to route the call to Avaya Meeting Exchange. This step may be repeated to verify signaling and media connectivity for outbound calls from Avaya Meeting Exchange to Avaya Communication Manager via the IMG.</i></p> <pre>list trace tac 107</pre> <p style="text-align: right;">Page 1</p> <pre> LIST TRACE  time      data 14:33:09  Calling party station    33006 cid 0x330 14:33:09  Calling Number &amp; Name 33006 H.323 33006 V 14:33:09  dial 502 route:AAR 14:33:09  term trunk-group 7      cid 0x330 14:33:09  dial 502 route:AAR 14:33:09  route-pattern 7 preference 1 cid 0x330 14:33:09  seize trunk-group 7 member 8 cid 0x330 14:33:12  dial 502 route:AAR 14:33:12  outpulse done 502 14:33:12  active trunk-group 7 member 8 cid 0x330 </pre>

Step	Description
7.1.3	<p>Verify that calls to and from Avaya Meeting Exchange are managed correctly, e.g., participants are added/removed from conferences. This is accomplished by utilizing the Avaya Bridge Talk application.</p> <ul style="list-style-type: none"> <li>From a telephone registered to either Avaya Communication Manager, or Avaya SIP Enablement Services, dial <b>502</b> to enter a conference as <b>Moderator</b> (without passcode) while simultaneously invoking the associated auto blast dial feature for this conference (see <b>Step 4.4.2</b>).</li> <li>If not already logged on, log in to the Avaya Bridge Talk application with the appropriate credentials.</li> <li>From the Conference Navigator, double-click the appropriate entry to open the corresponding Conference Room.</li> <li>Verify conference participants are added/removed from conferences by observing the Conference Navigator and/or Conference Room windows.</li> </ul>



## 8. Conclusion

These Application Notes present a compliance-tested solution comprised of Avaya Communication Manager, the Avaya Meeting Exchange S6200 Conferencing Server and the Cantata Technology Integrated Media Gateway 1010. This solution enables connectivity between Avaya Communication Manager and the Avaya Meeting Exchange S6200 Conferencing Server via the Cantata Technology Integrated Media Gateway 1010 utilizing standards based SIP and CAS connectivity.

## 9. Additional References

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

- [1] *Administrator Guide for Avaya Communication Manager*, Issue 3.1, Doc ID: 03-300509, February 2007.
- [2] *Administration for Network Connectivity for Avaya Communication Manager*, Issue 12, Doc ID: 555-233-504, February 2007.
- [3] *Meeting Exchange 4.1 Administration and Maintenance S6200/S6800 Media Server*, Issue 1, Doc ID 04-601168, July 2006.
- [4] *Meeting Exchange 4.1 Configuring S6200, S6500 and S6800 Conferencing Servers*, Issue 1, Doc ID 04-601338, July 2006.
- [5] *Avaya Meeting Exchange Groupware Edition Version 4.1 User's Guide for Bridge Talk*, Doc ID 04-600878, Issue 2, July 2006.

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

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