



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Dialogic Brooktrout SR140 Fax Software with Avaya Aura[®] Communication Manager using an H.323 Trunk Interface - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring Dialogic Brooktrout SR140 Fax Software with Avaya Aura[®] Communication Manager using an H.323 trunk interface.

Dialogic Brooktrout SR140 Fax Software is a host-based Fax over IP (FoIP) engine utilized by fax servers to send and receive fax calls over an IP network. In the tested configuration, Avaya Aura[®] Communication Manager routed fax calls to and from a fax server utilizing the Dialogic Brooktrout SR140 Fax Software via an H.323 trunk.

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 describe the procedures for configuring Dialogic Brooktrout SR140 Fax Software with Avaya Aura[®] Communication Manager using an H.323 trunk interface.

Dialogic Brooktrout SR140 Fax Software is a host-based Fax over IP (FoIP) engine utilized by fax servers to send and receive fax calls over an IP network. In the tested configuration, Avaya Aura[®] Communication Manager routed fax calls to and from a fax server utilizing the Dialogic Brooktrout SR140 Fax Software via an H.323 trunk.

2. General Test Approach and Test Results

The general test approach was to make intra-site and inter-site fax calls to and from a fax server utilizing the Dialogic Brooktrout SR140 Fax Software. The fax server application software used during compliance testing was the Dialogic FaxDiag Tool (fdtool.exe).

2.1. Interoperability Compliance Testing

The compliance test cases tested interoperability between Dialogic Brooktrout SR140 Fax Software and Communication Manager by making intra-site and inter-site fax calls to and from fax servers that were connected to the Communication Manager systems via H.323 trunks. Specifically, the following fax operations were tested during compliance testing:

- Faxes from/to a fax server to/from an analog fax machine at a local site
- Faxes from/to a fax server to/from an analog fax machine at a remote site
- Faxes from/to a fax server to/from a fax server at a remote site

During compliance testing, both ISDN-PRI trunks and H.323 trunks were used to connect two Communication Manager systems between two sites.

Faxes were sent with various page lengths and resolutions. For capacity, a large number of 2-page faxes were continuously sent between the two fax servers. Serviceability testing included verifying proper operation/recovery from failed cables, unavailable resources, and Communication Manager and fax server restarts. Fax calls were tested with different Avaya Media Gateway media resources to process the fax data. This included the TN2302AP IP Media Processor (MedPro) circuit pack and the TN2602AP IP Media Processor circuit pack in the Avaya G650 Media Gateway; and the integrated Voice over Internet Protocol (VoIP) engine of the Avaya G450 Media Gateway.

2.2. Test Results

Dialogic Brooktrout SR140 Fax Software successfully passed compliance testing.

Fax calls consume DSP (Digital Signal Processing) resources for processing fax data on the TN2302AP IP Media Processor (MedPro) circuit pack and the TN2602AP IP Media Processor circuit pack in the Avaya G650 Media Gateway, and the integrated Voice over Internet Protocol (VoIP) engine of the Avaya G450 Media Gateway. To increase the capacity to support simultaneous fax calls, additional TN2302AP and/or TN2602AP MedPro circuit packs may need to be installed in

the Avaya G650 Gateway, and additional Avaya MM760 Media Module or Modules may need to be installed in the Avaya G450 Media Gateway. The information contained in the table below indicates DSP capacities/usage in the Avaya media processors. Customers should work with their Avaya sales representatives to ensure that their fax solutions have adequate licenses and DSP resources to match the intended fax capacity/usage.

Platform Device	DSP Resources per Platform Device	DSP Resources per FoIP Call
TN2302, MM760	64	4
TN2602	64	1

2.3. Support

Technical support for the Dialogic Brooktrout SR140 Fax Software can be obtained by contacting Dialogic at:

- Phone: 973-993-1443
- Web: <http://www.dialogic.com/support/contact/default.aspx>

3. Reference Configuration

The test configuration was designed to emulate two separate sites with multiple Port Networks at one site (Site 1), and modular Gateway resources at the other site (Site 2). **Figure 1** illustrates the configuration used in these Application Notes, with a focus on the configuration at Site 2. Communication Manager Servers and Gateways at the two sites were connected via H.323 and ISDN-PRI trunks. Faxes were alternately sent between the two sites using these two facilities.

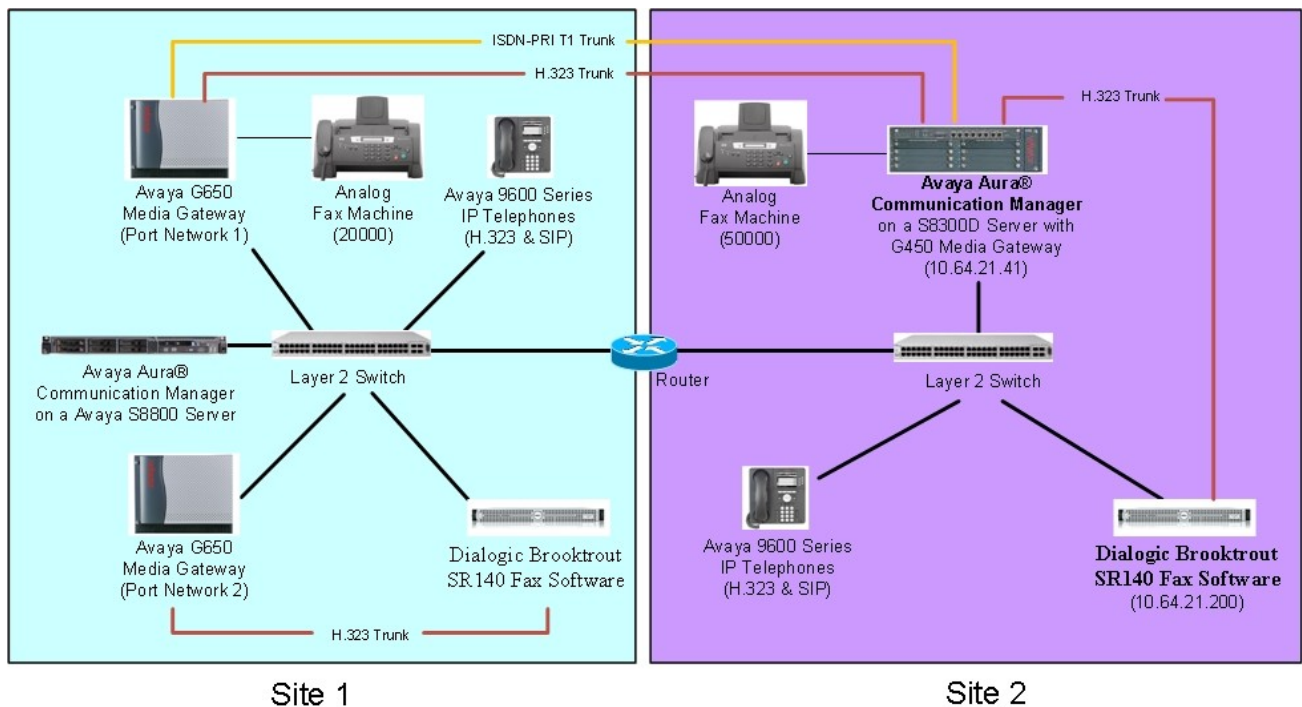


Figure 1: Dialogic Brooktrout SR140 Fax Software with Communication Manager

Site 1 had an Avaya S8800 Server running Communication Manager with two Avaya G650 Media Gateways. Each media gateway was configured as a separate port network in separate IP network regions. The fax server at this site communicated with Communication Manager via an H.323 trunk which terminated on a CLAN circuit pack in port network 2. IP media resources were provided by Media Processor (MedPro) circuit packs. Two versions of the MedPro circuit pack were tested in this configuration: TN2302AP and TN2602AP. Endpoints at this site included an Avaya 9600 Series IP Telephone (with H.323 and SIP firmware), and an analog fax machine.

Site 2 had an Avaya S8300D Server running Communication Manager in an Avaya G450 Media Gateway. The fax server at this site communicated with Communication Manager via an H.323 trunk. On the Avaya G450 Media Gateway, the signaling and media resources supporting the H.323 trunk were integrated directly on the media gateway processor. Endpoints at this site included Avaya 9600 Series IP Telephones (with H.323 and SIP firmware), and an analog fax machine.

The SIP phones at each site were registered with Session Manager (not pictured). Session Manager had no specific role in fax operations; therefore, this part of the configuration is not covered in these Application Notes. The IP telephones (H.323 and SIP) were not involved in the faxing operations. They were present in the configuration to verify VoIP telephone calls did not have an adverse impact on the FoIP faxing operations.

A fax call originating from a local fax server was sent to Communication Manager via an H.323 trunk. Based on the dialed digits, Communication Manager routed the fax call either to the local fax machine or to one of the trunks (ISDN-PRI or H.323) to reach the remote site. When the fax call reached the remote site, the Communication Manager at that site routed the call either to the local fax machine or to the local fax server over the H.323 trunk.

4. Equipment and Software Validated

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

Equipment	Software/Firmware
Site 1	
Avaya S8800 Server	Avaya Aura [®] Communication Manager 6.0.1 (R016x.00.1.510.1 with Patch 19358)
Avaya G650 Media Gateway (at Main Site) - 2 CLANs - 2 MedPros – TN2302 - 2 MedPros – TN2602	TN799DP - HW01 FW38 & HW13 FW 38 TN2302AP - HW20 FW120 TN2602AP - HW02 FW057
Avaya 9600 Series IP Deskphones (H.323)	Release 3.1 Service Pack 3 (96x0) Release 6 Service Pack 5 (96x1G)
Avaya 9600 Series IP Deskphones (SIP)	Release 2.6 Service Pack 5 (96x0) Release 6 Service Pack 2 (96x1G)
Analog Fax Machine	-
Fax Server – Dialogic FaxDiagTool on a Windows 2008 Server	Compiled with SDK 6.2.4
Dialogic Brooktrout SR140 Fax Software – Boston Bfv API – Boston Driver – Boston SDK – Boot ROM	v6.2.4 (Build 12) v6.2.0 (Build 4) v6.2.4 (Build 12) 6.2.1B9
Site 2	
Avaya S8300D Media Server	Avaya Aura [®] Communication Manager 6.0.1 (R016x.00.1.510.1 with Patch 19303)
Avaya G450 Media Gateway	31.18.1
Avaya 9600 Series IP Deskphones (H.323)	Release 3.1 Service Pack 3 (96x0) Release 6 Service Pack 5 (96x1G)
Avaya 9600 Series IP Deskphones (SIP)	Release 2.6 Service Pack 5 (96x0) Release 6 Service Pack 2 (96x1G)
Analog Fax Machine	-
Fax Server – Dialogic FaxDiagTool on a Windows 2003 Server	Compiled with SDK 6.2.4
Dialogic Brooktrout SR140 Fax Software – Boston Bfv API – Boston Driver – Boston SDK – Boot ROM	v6.2.4 (Build 12) v6.2.0 (Build 4) v6.2.4 (Build 12) 6.2.1B9

5. Configure Avaya Aura[®] Communication Manager

This section describes the Communication Manager configuration necessary to interoperate with the Dialogic Brooktrout SR140 Fax Software. It focuses on the configuration of the routing and H.323 trunk between Communication Manager and the fax server. All other components are assumed to be in place and previously configured, including the H.323 and ISDN-PRI trunks that connect Sites 1 and 2 in **Figure 1**.

The examples shown in this section refer to Site 2. Similar steps also apply to Site 1 using values appropriate for that location.

The configuration of Communication Manager was performed using the System Access Terminal (SAT). After the completion of the configuration, the **save translation** command was used to make the changes permanent.

5.1. Steps to Configure Communication Manager

The procedures for configuring Communication Manager include the following areas:

- Verify Communication Manager License (Step 1)
- Administer IP Network Region (Step 2)
- Administer IP Codec Set (Step 3)
- Administer IP Node Names (Step 4)
- Administer H.323 Signaling Group (Step 5)
- Administer H.323 Trunk Group (Step 6)
- Administer H.323 Signaling Group - Update (Step 7)
- Administer Public Unknown Numbering (Step 8)
- Administer Route Pattern (Step 9)
- Administer AAR Analysis (Step 10)

Step	Description
1.	<p>Verify Communication Manager License</p> <p>Use the display system-parameters customer-options command to verify that the Communication Manager license has proper permissions for features illustrated in these Application Notes. Navigate to Page 2, and verify that there is sufficient remaining capacity for H.323 trunks by comparing the Maximum Administered H.323 Trunks field value with the corresponding value in the USED column.</p> <p>The license file installed on the system controls the maximum trunks permitted. If there is insufficient capacity, contact an authorized Avaya sales representative to acquire the appropriate licenses.</p>
	<pre> display system-parameters customer-options OPTIONAL FEATURES IP PORT CAPACITIES USED Maximum Administered H.323 Trunks: 12000 57 Maximum Concurrently Registered IP Stations: 18000 9 Maximum Administered Remote Office Trunks: 12000 0 Maximum Concurrently Registered Remote Office Stations: 18000 0 Maximum Concurrently Registered IP eCons: 414 0 Max Concur Registered Unauthenticated H.323 Stations: 100 0 Maximum Video Capable Stations: 18000 0 Maximum Video Capable IP Softphones: 18000 1 Maximum Administered SIP Trunks: 24000 170 Maximum Administered Ad-hoc Video Conferencing Ports: 24000 0 Maximum Number of DS1 Boards with Echo Cancellation: 522 0 Maximum TN2501 VAL Boards: 128 0 Maximum Media Gateway VAL Sources: 250 1 Maximum TN2602 Boards with 80 VoIP Channels: 128 0 Maximum TN2602 Boards with 320 VoIP Channels: 128 0 Maximum Number of Expanded Meet-me Conference Ports: 300 0 (NOTE: You must logoff & login to effect the permission changes.) </pre>

Step	Description
2.	<p>Administer IP Network Region</p> <p>Use the change ip-network-region command to administer the network region settings. The values shown below are the values used during compliance testing. Note that the IP-IP Direct Audio settings must be disabled.</p> <ul style="list-style-type: none"> ▪ Authoritative Domain: <i>avaya.com</i> ▪ Name: Any descriptive name may be used (if desired). ▪ Intra-region IP-IP Direct Audio: <i>no</i> Inter-region IP-IP Direct Audio: <i>no</i> <p>By default, IP-IP direct audio (media shuffling) is enabled to allow audio traffic to be sent directly between IP endpoints without using media resources in the Avaya Media Gateway. Shuffling can be further restricted at the trunk level on the Signaling Group form.</p> <ul style="list-style-type: none"> ▪ Codec Set: <i>1</i> The codec set contains the list of codecs available for calls within this IP network region.
	<pre> change ip-network-region 1 Page 1 of 20 IP NETWORK REGION Region: 1 Location: Authoritative Domain: avaya.com Name: MEDIA PARAMETERS Intra-region IP-IP Direct Audio: no Codec Set: 1 Inter-region IP-IP Direct Audio: no UDP Port Min: 2048 IP Audio Hairpinning? n UDP Port Max: 3329 DIFFSERV/TOS PARAMETERS Call Control PHB Value: 46 Audio PHB Value: 46 Video PHB Value: 26 802.1P/Q PARAMETERS Call Control 802.1p Priority: 6 Audio 802.1p Priority: 6 Video 802.1p Priority: 5 AUDIO RESOURCE RESERVATION PARAMETERS H.323 IP ENDPOINTS RSVP Enabled? n H.323 Link Bounce Recovery? y Idle Traffic Interval (sec): 20 Keep-Alive Interval (sec): 5 Keep-Alive Count: 5 </pre>

Step	Description																
3.	<p>Administer IP Codec Set</p> <p>Use the change ip-network-set command to administer an IP codec set. IP codec set 1 was used during compliance testing. Multiple codecs can be listed in priority order to allow the codec used by a specific call to be negotiated during call establishment. The example below shows the values used during compliance testing.</p>																
	<pre>change ip-codec-set 1 Page 1 of 2</pre> <p style="text-align: center;">IP Codec Set</p> <pre>Codec Set: 1</pre> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Audio Codec</th> <th>Silence Suppression</th> <th>Frames Per Pkt</th> <th>Packet Size (ms)</th> </tr> </thead> <tbody> <tr> <td>1: G.711MU</td> <td>n</td> <td>2</td> <td>20</td> </tr> <tr> <td>2: G.729A</td> <td>n</td> <td>2</td> <td>20</td> </tr> <tr> <td>3:</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Audio Codec	Silence Suppression	Frames Per Pkt	Packet Size (ms)	1: G.711MU	n	2	20	2: G.729A	n	2	20	3:			
Audio Codec	Silence Suppression	Frames Per Pkt	Packet Size (ms)														
1: G.711MU	n	2	20														
2: G.729A	n	2	20														
3:																	
	<p>On Page 2, set the FAX Mode field to t.38-standard. The Modem Mode field should be set to off.</p> <p>Leave the FAX Redundancy setting at its default value of 0. A packet redundancy level can be assigned to improve packet delivery and robustness of FAX transport over the network (with increased bandwidth as trade-off). Avaya uses IETF RFC-2198 and ITU-T T.38 specifications as redundancy standard. With this standard, each Fax over IP packet is sent with additional (redundant) 0 to 3 previous fax packets based on the redundancy setting. A setting of 0 (no redundancy) is suited for networks where packet loss is not a problem.</p>																
	<pre>change ip-codec-set 1 Page 2 of 2</pre> <p style="text-align: center;">IP Codec Set</p> <pre>Allow Direct-IP Multimedia? y Maximum Call Rate for Direct-IP Multimedia: 2048:Kbits Maximum Call Rate for Priority Direct-IP Multimedia: 2048:Kbits</pre> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Mode</th> <th>Redundancy</th> </tr> </thead> <tbody> <tr> <td>FAX</td> <td>t.38-standard</td> <td>0</td> </tr> <tr> <td>Modem</td> <td>off</td> <td>0</td> </tr> <tr> <td>TDD/TTY</td> <td>US</td> <td>3</td> </tr> <tr> <td>Clear-channel</td> <td>n</td> <td>0</td> </tr> </tbody> </table>		Mode	Redundancy	FAX	t.38-standard	0	Modem	off	0	TDD/TTY	US	3	Clear-channel	n	0	
	Mode	Redundancy															
FAX	t.38-standard	0															
Modem	off	0															
TDD/TTY	US	3															
Clear-channel	n	0															

Step	Description
4.	<p>Administer IP Node Names</p> <p>Use the change node-names ip command to create a node name and enter the IP address of the fax server. Enter a descriptive name in the Name column and the IP address assigned to fax server in the IP address column. Also note the node name of the processor (procr) as it will be used later to configure the H.323 trunk between Communication Manager and the fax server.</p>
	<pre>change node-names ip Page 1 of 2 IP NODE NAMES Name IP Address AES_21_46 10.64.21.46 CM_20_40 10.64.20.40 CM_22_12_CLAN1A 10.64.22.16 CM_22_12_CLAN2A 10.64.22.19 IPO_21_64 10.64.21.64 SM_20_31 10.64.20.31 SM_21_31 10.64.21.31 default 0.0.0.0 faxserver 10.64.21.200 msgserver 10.64.21.41 procr 10.64.21.41 procr6 ::</pre>

Step	Description
5.	<p>Administer H.323 Signaling Group</p> <p>Use the add signaling-group command to create a signaling group for use by the H.323 trunk to the fax server. Signaling group 9 was configured using the parameters highlighted below. Default values may be used for all other fields.</p> <ul style="list-style-type: none"> ▪ Set the Group Type to <i>h.323</i>. ▪ The Trunk Group for Channel Selection is left blank until the trunk group is created. It will be updated later. ▪ Set the Near-end Node Name to the node name that maps to the IP address of the processor (i.e. <i>procr</i>) used to connect to fax server (see Step 4). ▪ Set the Far-end Node Name to the node name that maps to the IP address of the fax server configured in Step 4. ▪ Set the Near-end Listen Port and Far-end Listen Port to <i>1720</i>. ▪ Set the Far-end Network Region to the IP network region which contains Fax server. ▪ The DTMF over IP field was set to the default value of <i>in-band</i>. ▪ Set the Direct IP-IP Audio Connections field to <i>n</i>. This setting disables Media Shuffling on the trunk level. ▪ The default values were used for all other fields.
	<pre> add signaling-group 9 Page 1 of 6 SIGNALING GROUP Group Number: 9 Group Type: h.323 SBS? n Remote Office? n Max number of NCA TSC: 0 Q-SIP? n Max number of CA TSC: 0 IP Video? n Trunk Group for NCA TSC: Trunk Group for Channel Selection: X-Mobility/Wireless Type: NONE TSC Supplementary Service Protocol: a Network Call Transfer? n T303 Timer(sec): 10 H.245 DTMF Signal Tone Duration(msec): Near-end Node Name: procr Far-end Node Name: faxserver Near-end Listen Port: 1720 Far-end Listen Port: 1720 Far-end Network Region: 1 Calls Share IP Signaling Connection? n LRQ Required? n RRQ Required? n Media Encryption? n Bypass If IP Threshold Exceeded? n H.235 Annex H Required? n DTMF over IP: in-band Direct IP-IP Audio Connections? n Link Loss Delay Timer(sec): 90 IP Audio Hairpinning? n Enable Layer 3 Test? n Interworking Message: PROgress DCP/Analog Bearer Capability: 3.1kHz </pre>

Step	Description
6.	<p>Administer H.323 Trunk Group</p> <p>Use the add trunk group command to create a trunk group for the H.323 trunks to the Fax server. Trunk group 9 was configured using the parameters highlighted below. Default values may be used for all other fields.</p> <p>On Page 1:</p> <ul style="list-style-type: none"> ▪ Set the Group Type field to <i>isdn</i>. ▪ Enter a descriptive name for the Group Name. ▪ Enter an available trunk access code (TAC) that is consistent with the existing dial plan in the TAC field. ▪ Set the Carrier Medium to <i>H.323</i>. ▪ Set the Service Type field to <i>tie</i>. ▪ Set the Member Assignment Method to <i>auto</i>. ▪ Set the Signaling Group to the signaling group shown in the previous step. ▪ In Number of Members field, enter the number of trunks in the trunk group. This determines how many simultaneous calls can be supported by the configuration. ▪ Default values may be used for all other fields.
	<pre> add trunk-group 9 TRUNK GROUP Page 1 of 21 Group Number: 9 Group Type: isdn CDR Reports: y Group Name: H323 FaxServer COR: 1 TN: 1 TAC: 109 Direction: two-way Outgoing Display? n Carrier Medium: H.323 Dial Access? n Busy Threshold: 255 Night Service: Queue Length: 0 Service Type: tie Auth Code? n Member Assignment Method: auto Signaling Group: 9 Number of Members: 25 </pre>

Step	Description
	<p>Administer H.323 Trunk Group – Continued On Page 3:</p> <ul style="list-style-type: none"> ▪ Set the Send Name field and Send Calling Number field to y. These settings enable the sending of calling party name and number to the far end. ▪ Set the Format field to public. This field specifies the format of the calling party number sent to the far-end. ▪ Default values may be used for all other fields. <pre> add trunk-group 9 Page 3 of 21 TRUNK FEATURES ACA Assignment? n Measured: none Internal Alert? n Maintenance Tests? y Data Restriction? n NCA-TSC Trunk Member: Send Name: y Send Calling Number: y Used for DCS? n Send EMU Visitor CPN? n Suppress # Outpulsing? n Format: public UI IE Treatment: service-provider Replace Restricted Numbers? n Replace Unavailable Numbers? n Send Connected Number: n Network Call Redirection: none Hold/Unhold Notifications? n Send UI IE? y Modify Tandem Calling Number: no Send UCID? n Send Codeset 6/7 LAI IE? y </pre>
7.	<p>Administer Signaling Group – Update Use the change signaling-group command to update the Trunk Group for Channel Selection field with the trunk group created in Step 6.</p> <pre> change signaling-group 9 Page 1 of 6 SIGNALING GROUP Group Number: 9 Group Type: h.323 SBS? n Remote Office? n Max number of NCA TSC: 0 Q-SIP? n Max number of CA TSC: 0 IP Video? n Trunk Group for NCA TSC: Trunk Group for Channel Selection: 9 X-Mobility/Wireless Type: NONE TSC Supplementary Service Protocol: a Network Call Transfer? n T303 Timer(sec): 10 H.245 DTMF Signal Tone Duration(msec): Near-end Node Name: procr Far-end Node Name: faxserver Near-end Listen Port: 1720 Far-end Listen Port: 1720 Far-end Network Region: 1 LRQ Required? n Calls Share IP Signaling Connection? n RRQ Required? n Media Encryption? n Bypass If IP Threshold Exceeded? n H.235 Annex H Required? n DTMF over IP: in-band Direct IP-IP Audio Connections? n Link Loss Delay Timer(sec): 90 IP Audio Hairpinning? n Enable Layer 3 Test? n Interworking Message: PROGRESS DCP/Analog Bearer Capability: 3.1kHz </pre>

Step	Description
8.	<p>Administer Public Unknown Numbering Public unknown numbering defines the calling party number to be sent to the far-end. Use the change public-unknown-numbering command to create an entry that will be used by the trunk group defined in Step 6. In the example shown below, all calls originating from a 5-digit extension beginning with 5 and routed across any trunk group (since the Trk Grp(s) entry is blank) will be sent as a 5-digit calling number.</p> <pre> change public-unknown-numbering 0 Page 1 of 2 NUMBERING - PUBLIC/UNKNOWN FORMAT Total Ext Ext Trk CPN Total Len Code Grp(s) Prefix CPN 5 5 5 5 Total Administered: 2 Maximum Entries: 9999 Note: If an entry applies to a SIP connection to Avaya Aura(tm) Session Manager, the resulting number must be a complete E.164 number. </pre>

Step	Description
9.	<p>Administer Route Pattern</p> <p>Use the change route-pattern command to create a route pattern that will route calls to the H.323 trunk that connect to the fax server.</p> <p>A descriptive name was entered for the Pattern Name field. The Grp No field was set to the trunk group created in Step 6. The Facility Restriction Level (FRL) field was set to a level that allows access to this trunk for all users that require it. The value of 0 is the least restrictive level. The default values were used for all other fields.</p> <pre> change route-pattern 9 Page 1 of 3 Pattern Number: 9 Pattern Name: faxserver SCCAN? n Secure SIP? n Grp FRL NPA Pfx Hop Toll No. Inserted DCS/ IXC No Mrk Lmt List Del Digits QSIG Dgts Intw 1: 9 0 2: 3: 4: 5: 6: BCC VALUE TSC CA-TSC ITC BCIE Service/Feature PARM No. Numbering LAR 0 1 2 M 4 W Request Dgts Format Subaddress 1: y y y y y n n rest none 2: y y y y y n n rest none 3: y y y y y n n rest none 4: y y y y y n n rest none 5: y y y y y n n rest none 6: y y y y y n n rest none </pre>
10.	<p>Administer AAR Analysis</p> <p>Automatic Alternate Routing (AAR) was used to route calls to fax server. Use the change aar analysis command to create an entry in the AAR Digit Analysis Table for this purpose. The highlighted entry specifies that if the dialed number is 75000 and is 5 digits long, to use route pattern 9. Route pattern 9 routes calls to fax server.</p> <pre> change aar analysis 7 Page 1 of 2 AAR DIGIT ANALYSIS TABLE Location: all Percent Full: 1 Dialed Total Route Call Node ANI String Min Max Pattern Type Num Reqd 75000 5 5 9 aar n </pre>

6. Configure Dialogic Brooktrout SR140 Fax Software

This section describes the configuration of the Dialogic Brooktrout SR140 Fax Software. It assumes that a fax server application and all required software components, including Dialogic Brooktrout SR140 Fax Software, have been installed and properly licensed. For instructions on installing Dialogic Brooktrout SR140 Fax Software, consult the Dialogic Brooktrout SR140 Fax Software documentation (**Reference [3]**).

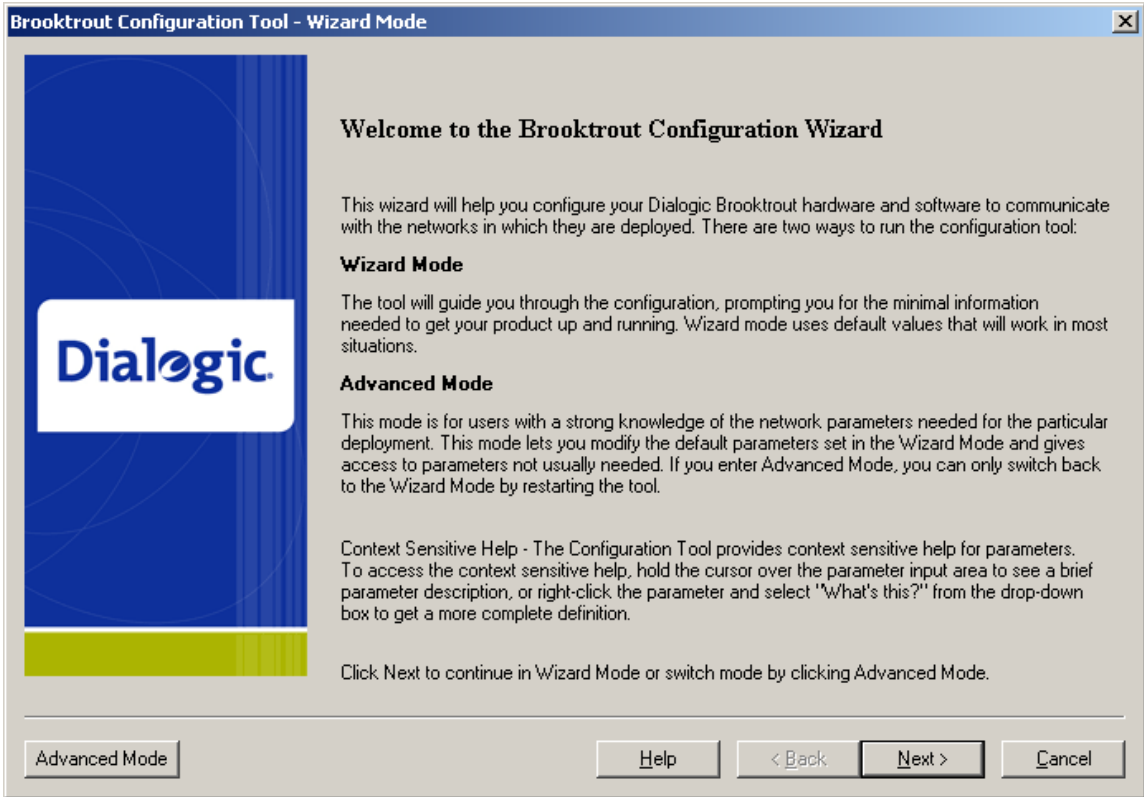
Note that the configurations documented in this section pertain to interoperability between the Dialogic Brooktrout SR140 Fax Software and the Avaya H.323 infrastructure. The standard configurations pertaining to the Dialogic Brooktrout SR140 Fax Software itself (e.g., administering fax channels) are not covered. For instructions on administering and operating the Dialogic Brooktrout SR140 Fax Software, consult the Dialogic Brooktrout SR140 Fax Software documentation (**Reference [3]**).

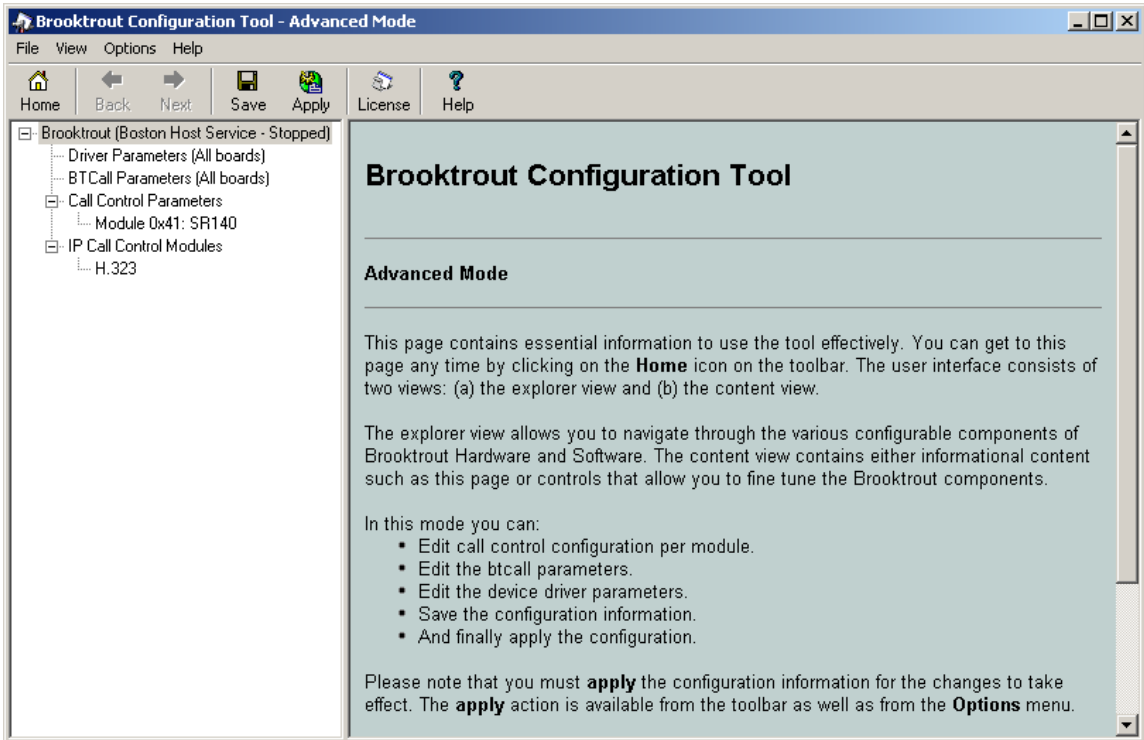
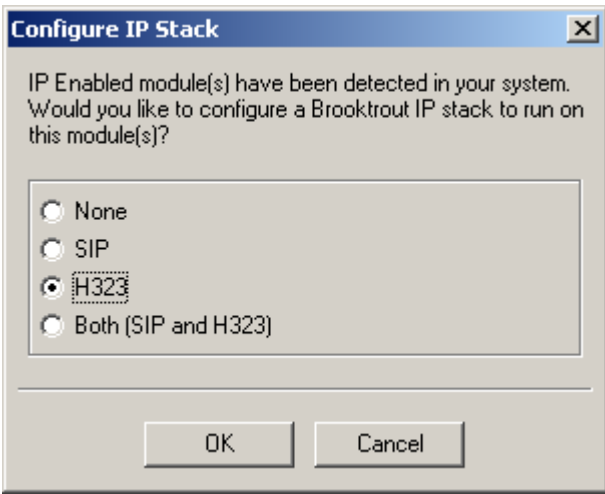
The examples shown in this section refer to Site 2 in **Figure 1**. Similar steps also apply to Site 1 using values appropriate for that location.

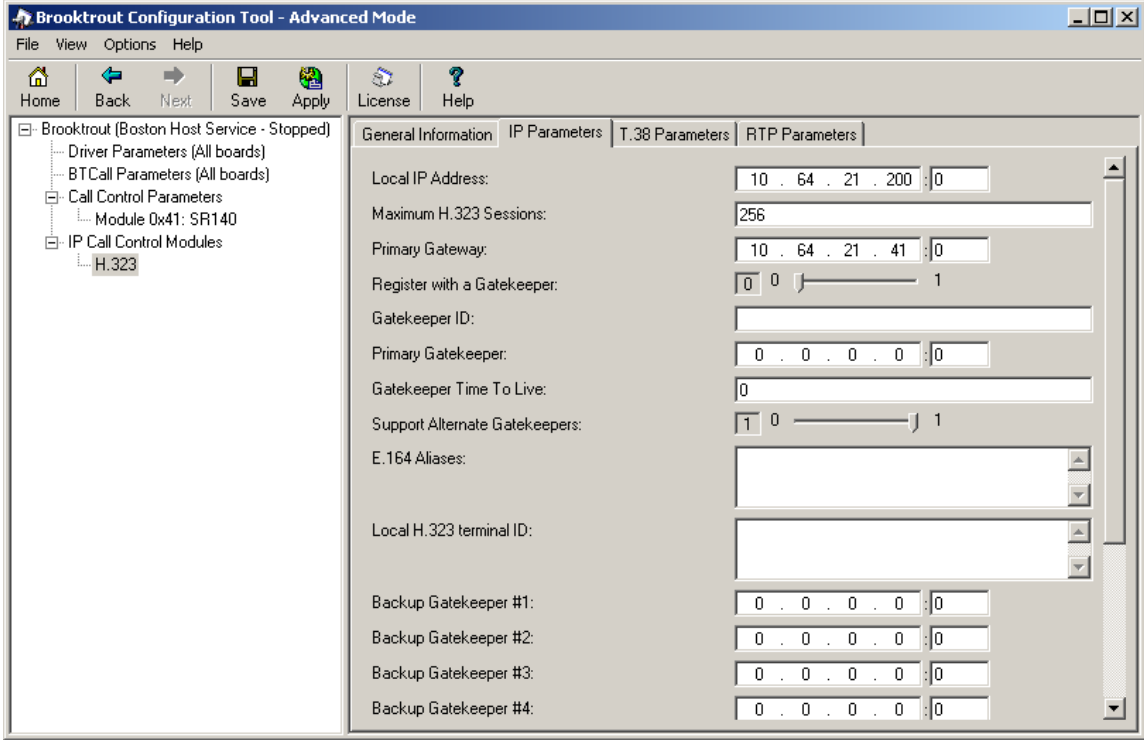
6.1. Steps to Dialogic Brooktrout SR140 Fax Software

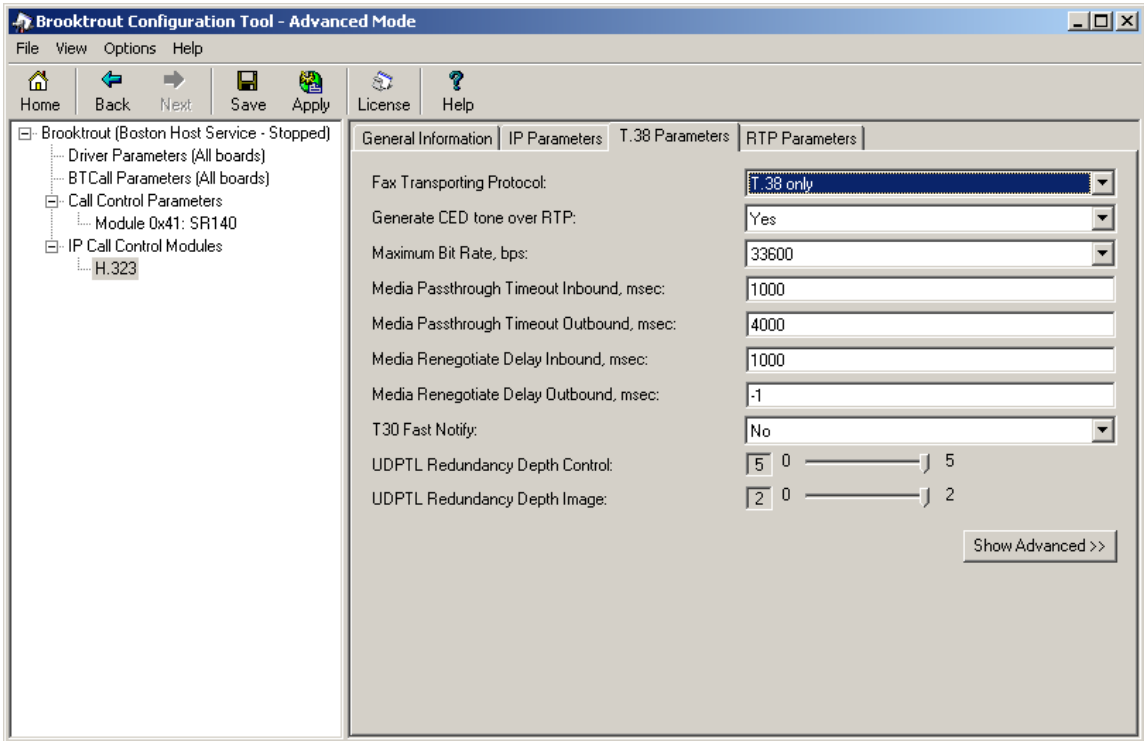
The configuration procedures covered in this section include the following:

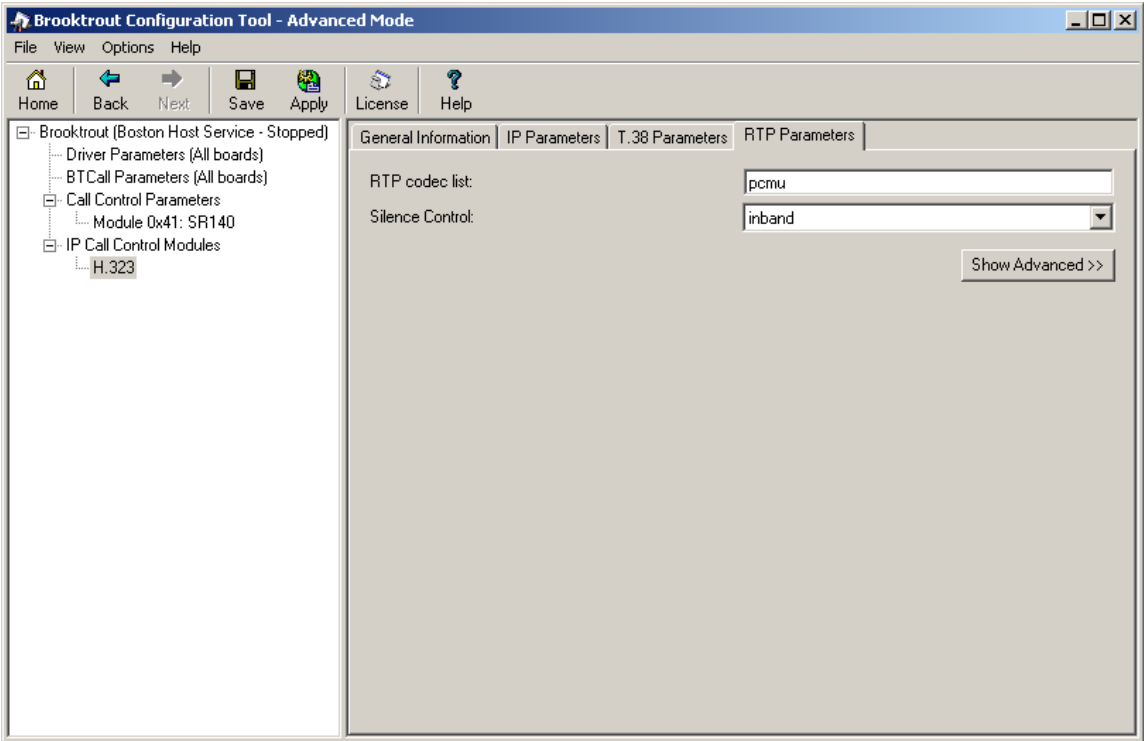
- Launch Brooktrout Configuration Tool (Step 1)
- Configure IP Stack (Step 2)
- Configure H.323 IP Parameters (Step 3)
- Configure T.38 Parameters (Step 4)
- Configure RTP Parameters (Step 5)
- Configure RTP Port Range (Step 6)
- Complete Brooktrout SR140 configuration (Step 7)

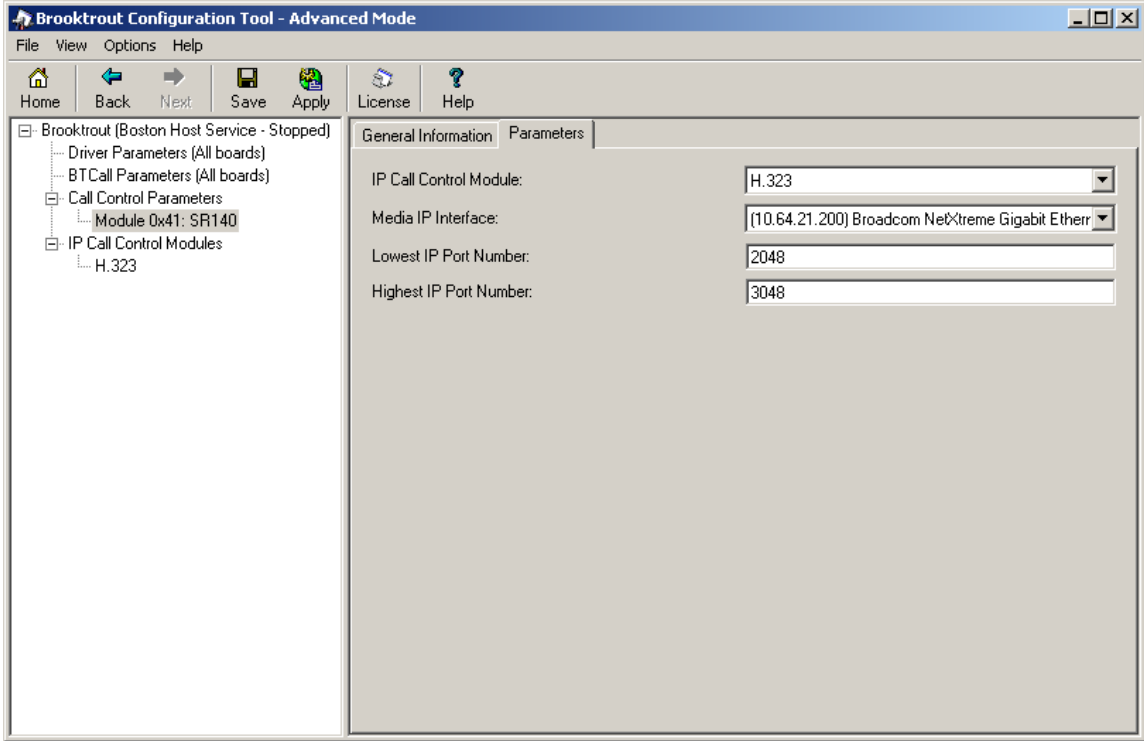
Step	Description
1.	<p>Launch Brooktrout Configuration Tool Navigate to the path of the Brooktrout configuration tool (i.e. configtool.exe) and launch the tool. The Brooktrout Configuration Tool – Wizard Mode window gets displayed. Click the Advanced Mode button on the bottom left.</p> 

Step	Description
2.	<p data-bbox="293 184 558 216">Configure IP Stack</p> <p data-bbox="293 220 987 252">The following configuration tool window is displayed.</p>  <p data-bbox="293 1066 1321 1136">Select Options → Configure IP Stack from the top menu. The screen below is displayed. Select H323 and click OK.</p> 

Step	Description
3.	<p data-bbox="293 184 727 220">Configure H.323 IP Parameters</p> <p data-bbox="293 258 1425 436"><i>Important: This step describes configuring the Primary H.323 Gateway address using the Brooktrout Configuration Tool. This method is sufficient if the fax server will communicate with a single H.323 gateway. Refer to the Dialogic Brooktrout SR140 Fax Software documentation for configuration details if the fax server will communicate with multiple H.323 gateways.</i></p> <p data-bbox="293 478 1354 583">From the pane on the left, navigate to Brooktrout → IP Call Control Modules → H.323 in the left navigation menu. Select the IP Parameters tab in the right pane. Configure the fields as follows:</p> <ul data-bbox="342 625 1425 804" style="list-style-type: none"> • Local IP Address – the IP address assigned to the fax server. If 0 is specified as the port, then port 1720 is used by default. • Primary Gateway –for Site 2, set to the IP address of the Avaya S8300D Server (Note: for Site 1, set to the IP address of the CLAN circuit pack used to connect to fax server). <p data-bbox="293 846 776 877">Use default values for all other fields.</p> 

Step	Description
4.	<p>Configure T.38 Parameters Select the T.38 Parameters tab. Configure the fields as shown below in the screenshot.</p> 

Step	Description
5.	<p>Configure RTP Parameters Select the RTP Parameters tab. Set the RTP codec list value to use only a single codec, either <i>pcmu</i> or <i>pcma</i> to match the codec used in your region.</p>  <p>The screenshot shows the 'Brooktrout Configuration Tool - Advanced Mode' window. The left sidebar contains a tree view with 'H.323' selected under 'IP Call Control Modules'. The main pane has tabs for 'General Information', 'IP Parameters', 'T.38 Parameters', and 'RTP Parameters'. The 'RTP Parameters' tab is active, showing 'RTP codec list' with a text input field containing 'pcmu' and 'Silence Control' with a dropdown menu set to 'inband'. A 'Show Advanced >>' button is visible at the bottom right of the main pane.</p>

Step	Description
6.	<p>Configure RTP Port Range From the pane on the left, navigate to Call Control Parameters → Module 0x41: SR140.</p> <p>Select the Parameters tabs. Configure the Lowest IP Port Number and Highest IP Port Number values to match the UDP Port Min and UDP Port Max values in the IP Network Region configuration screen in Communication Manager.</p> <p><i>Note: Communication Manager default port range is 2048 to 3329; however, the Brooktrout Configuration Tool range only spans 1000 ports. If Lowest IP Port Number is set to 2048, the Highest Port Number should automatically be set to 3048.</i></p> 

Step	Description
7.	<p data-bbox="293 186 883 218">Complete Brooktrout SR140 Configuration</p> <p data-bbox="293 222 1406 289">After verifying all the above parameters are properly set, click Save in the button menu and exit the Brooktrout Configuration Tool.</p> <p data-bbox="293 331 1398 436">From Windows explorer, navigate to the path of the Brooktrout call control configuration file (i.e. callctrl.cfg). Open the callctrl.cfg file and verify the following (making any edits as necessary):</p> <ul data-bbox="342 478 1425 621" style="list-style-type: none"> • Verify that the following configuration segment is present; and that the rtp_codec value under the [host_module.1/rtp] header matches the value specified in Step 5 above, either “pcmu” or “pcma”. (Note, . . . below indicates other entries under the header). <div data-bbox="391 663 1179 806" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre data-bbox="607 674 902 789">[host_module.1/rtp] ... rtp_codec=pcmu ...</pre> </div> <ul data-bbox="342 831 1365 936" style="list-style-type: none"> • Verify that rtp_ced_enable is set to <i>true</i> under the [host_module.1/t.38parameters] header. (Note, . . . below indicates other entries under the header). <div data-bbox="391 978 1179 1121" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre data-bbox="607 989 1078 1104">[host_module.1/t.38parameters] ... rtp_ced_enable=true ...</pre> </div> <p data-bbox="293 1157 1300 1188">After making and saving any edits in the callctrl.cfg file, restart the fax server.</p>

7. Verification Steps

The following steps may be used to verify the configuration:

- From Communication Manager SAT, use the:
 - **status signaling-group** to verify the signaling group to the fax server is in-service.
 - **status trunk-group** command to verify the trunk group to fax server is in-service.
 - **list trace tac** command to verify that fax calls are routed over the expected trunks.
- Verify fax calls can be placed to/from the fax server.

8. Conclusion

These Application Notes describe the procedures for configuring Dialogic Brooktrout SR140 Fax Software with Avaya Aura[®] Communication Manager using an H.323 trunk interface. Dialogic Brooktrout SR140 Fax Software successfully passed compliance testing.

9. Additional References

This section provides references to the product documentation relevant to these Application Notes. Avaya product documentation may be found at <http://support.avaya.com>.

[1] *Avaya Aura[™] Communication Manager Feature Description and Implementation*, Doc # 555-245-205, Release 6.0, Issue 8.0, June, 2010.

[2] *Administering Avaya Aura[™] Communication Manager*, Doc # 03-300509, Release 6.0, Issue 6.0, June, 2010.

[3] Dialogic Brooktrout SR140 Fax Software documentation may be found out <http://www.dialogic.com/en/Products/fax-boards-and-software/foip/sr140.aspx>.

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