Avaya Solution & Interoperability Test Lab

Application Notes for Configuring the Dialogic Brooktrout SR140 Fax Software with Avaya Communication Manager via H.323 - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring the Dialogic Brooktrout SR140 Fax Software with Avaya Communication Manager via an H.323 trunk.

The SR140 provides T.38 Fax over IP (FoIP) capabilities for integrating fax server applications and fax document management solutions with VoIP networks. This is achieved through the use of the SR140 software development kit (SDK). For the compliance test, Dialogic test utilities were used to send and receive faxes from the SR140 in the absence of an integrated fax application. The faxes were then directed between the SR140 and Avaya Communication Manager via an H.323 trunk established across an IP network.

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 the Dialogic Brooktrout SR140 Fax Software with Avaya Communication Manager via an H.323 trunk.

The SR140 provides T.38 Fax over IP (FoIP) capabilities for integrating fax server applications and fax document management solutions with VoIP networks. This is achieved through the use of the SR140 software development kit (SDK). For the compliance test, Dialogic test utilities were used to send and receive faxes from the SR140 in the absence of an integrated fax application. The faxes were then directed between the SR140 and Avaya Communication Manager via an H.323 trunk established across an IP network.

1.1. Configuration

Figure 1 illustrates the configuration used in these Application Notes. In the sample configuration, two sites are connected via an H.323 trunk, as well as by an ISDN-PRI trunk. Faxes can be sent between the two sites using either of these two trunks.

Site 1 has an Avaya S8500 Server running Avaya Communication Manager with two Avaya G650 Media Gateways. Each media gateway is configured as a separate port network in separate IP network regions. The SR140 at this site is running on a Windows 2003 Server and communicates to Avaya Communication Manager via an H.323 trunk whose signaling is terminated on a CLAN circuit pack in port network 2. The media resources required by the trunk are provided by the Media Processor (MedPro) circuit pack. Two versions of the MedPro circuit pack were tested in this configuration: TN2302 and TN2602. Endpoints at this site include Avaya 4600 Series IP Telephones (with H.323 firmware), Avaya 9600 Series IP Telephones (with H.323 firmware), and a fax machine.

Site 2 has an Avaya S8300 Server running Avaya Communication Manager in an Avaya G700 Media Gateway. The SR140 at this site is running on a Windows 2003 Server and communicates to Avaya Communication Manager via an H.323 trunk. On the Avaya G700 Media Gateway, the signaling and media resources needed to support the H.323 trunk are integrated directly on the media gateway processor. Endpoints at this site include Avaya 4600 Series IP Telephones (with H.323 firmware), Avaya 9600 Series IP Telephones (with H.323 firmware), and a fax machine.

Although the IP telephones are not involved in the faxing operations, they are present in the configuration to verify VoIP telephone calls are not affected by the faxing operations and vice versa.

Outbound fax calls originating from the SR-140 are sent to Avaya Communication Manager via the H.323 trunk. Based on the dialed digits, Avaya Communication Manager will direct the call to the local fax machine, the ISDN-PRI trunk or H.323 trunk to reach the remote site. Inbound fax calls terminating to the SR140 are first received by Avaya Communication Manager from the local fax machine or from across either trunk connected to the remote site. Avaya Communication Manager then directs the call over the H.323 trunk that connects to the local server running the SR140.

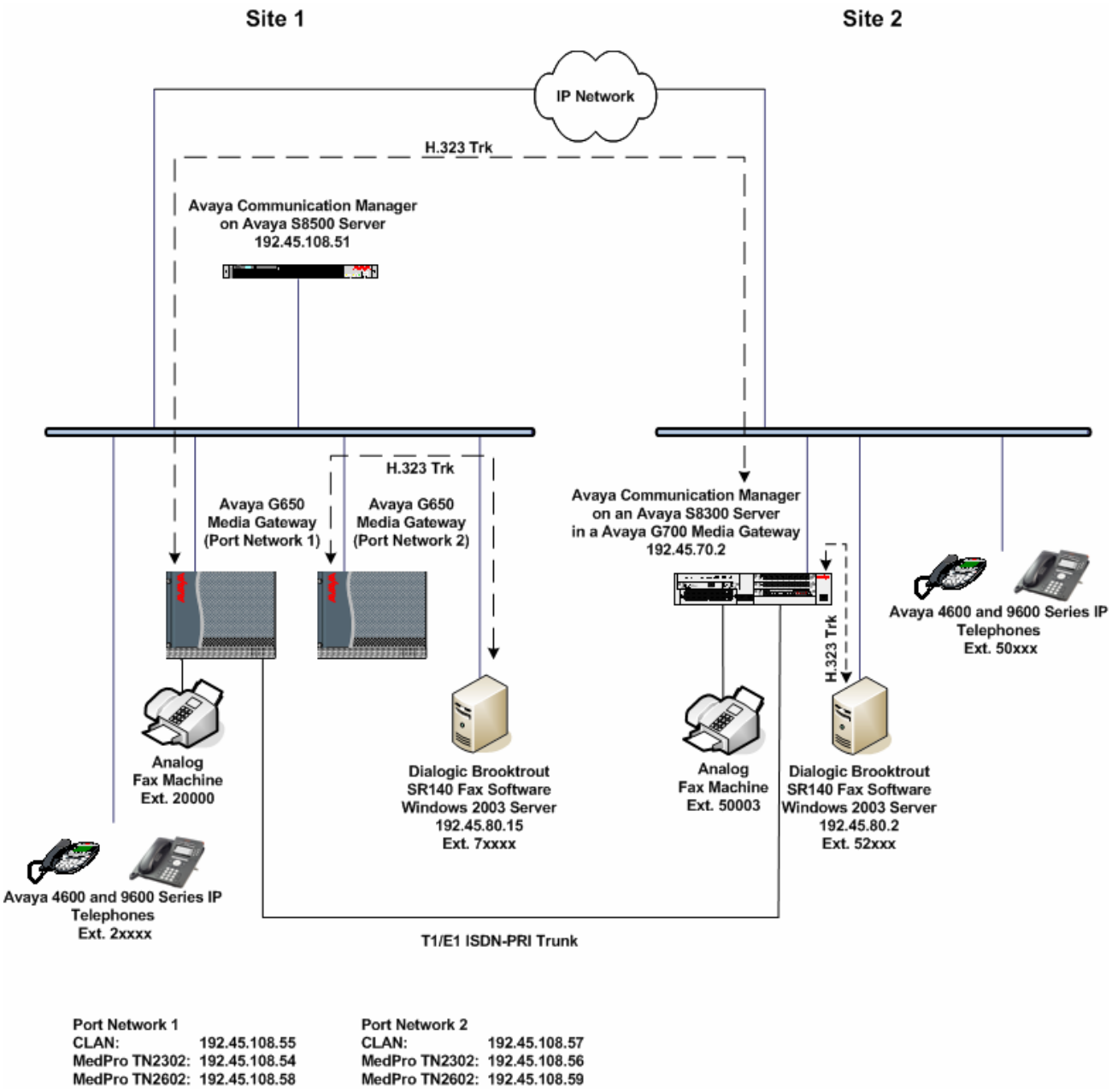


Figure 1: SR140 Test Configuration

2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8500 Server (at site1)	Avaya Communication Manager 5.1 with Service Pack (01.0.414.3-15962)
Avaya G650 Media Gateway (at site 1) - 2 CLANs - 2 MedPros – TN2302 - 2 MedPros – TN2602	 TN799DP - HW 01 FW 26 TN2302AP - HW 20 FW 118 TN2602AP - HW 02 FW 040
Avaya S8300 Server (at site 2)	Avaya Communication Manager 5.1 with Service Pack (01.0.414.3-15962)
Avaya G700 Media Gateway (at site 2)	28.17.0
Avaya 4600 Series IP Telephones (H.323)	2.8.3
Avaya 9600 Series IP Telephones (H.323) - Avaya one-X Deskphone Edition	1.5
Analog Fax Machines	-
Windows PCs	Windows XP Professional
Dialogic Brooktrout SR140 Fax Software Running on Windows 2003 Server	Boston Bfv API v5.3.20 (Build 69) Boston Driver v5.3.00 (Build 3) Boston SDK v5.1.05 (Build 69) Boot ROM 3.1.1B86A372

3. Configure Avaya Communication Manager

This section describes the Avaya Communication Manager configuration necessary to interoperate with the SR140. It focuses on the configuration of the H.323 trunk between Avaya Communication Manager and the SR140. All other components are assumed to be in place and previously configured, including the H.323 and ISDN-PRI trunks that connect both sites.

The examples shown in this section refer to site 1. However, unless specified otherwise, these same steps also apply to site 2 using values appropriate for site 2 from **Figure 1**.

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

Step	Description
1.	**IP Interfaces** Use the **list ip-interface all** command to identify which IP interfaces are located in which network region. The example below shows the IP interfaces used in the compliance test. All interfaces in cabinet 01 (port network 1) as indicated in the **Slot** field are in IP network region 1 as indicated in the **Net Rgn** field. These interfaces are highlighted below. Testing with the TN2302 and TN2602 circuit packs were done separately. When testing with the TN2302, the TN2602 was disabled (turned off) and vice versa as indicated in the **ON** field.

```
list ip-interface all

                                IP INTERFACES
                                                                        Net
ON Type  Slot  Code Sfx Node Name/      Subnet Mask     Gateway Address Rgn VLAN
                        IP-Address
-- ----  ----  ---- --- --------------- --------------- --------------- --- ----
y MEDPRO 01A02 TN2302   MEDPRO1A        255.255.255.0   192.45.108.1    1   n
                        192.45.108.54
y C-LAN  01A03 TN799  D CLAN1A          255.255.255.0   192.45.108.1    1   n
                        192.45.108.55
y MEDPRO 02A02 TN2302   MEDPRO2A        255.255.255.0   192.45.108.1    2   n
                        192.45.108.56
y C-LAN  02A03 TN799  D CLAN2A          255.255.255.0   192.45.108.1    2   n
                        192.45.108.57
n MEDPRO 01A04 TN2602   MEDPRO1A-2      255.255.255.0   192.45.108.1    1   n
                        192.45.108.58
n MEDPRO 02A04 TN2602   MEDPRO2A-2      255.255.255.0   192.45.108.1    2   n
                        192.45.108.59
```

Step	Description

2.	**IP Network Region – Region 1**
	The configuration of the IP network regions (**Steps 2 – 5**) is assumed to already be in place but is included here for clarity. At site 1, the Avaya S8500 Server, the Avaya G650 Media Gateway comprising port network 1 and all IP endpoints were located in IP network region 1 using the parameters described below. Use the **display ip-network-region** command to view these settings. The example below shows the values used for the compliance test.
	▪ A descriptive name was entered for the **Name** field.
	▪ **IP-IP Direct Audio** (shuffling) was enabled to allow audio traffic to be sent directly between IP endpoints without using media resources in the Avaya Media Gateway. This was done for both intra-region and inter-region IP-IP Direct Audio. This is the default setting. Shuffling can be further restricted at the trunk level on the **Signaling Group** form.
	▪ The **Codec Set** field was set to the IP codec set to be used for calls within this IP network region. In this case, IP codec set 1 was selected.
	▪ The default values were used for all other fields.
	
	At site 2, all IP components were located in IP network region 1 and the IP network region was configured in the same manner as shown below.
	
	`display ip-network-region 1 Page 1 of 19`
	`IP NETWORK REGION`
	`Region: 1`
	`Location: Authoritative Domain:`
	`**Name: PN1**`
	`MEDIA PARAMETERS **Intra-region IP-IP Direct Audio: yes**`
	`**Codec Set: 1** **Inter-region IP-IP Direct Audio: yes**`
	`UDP Port Min: 2048 IP Audio Hairpinning? n`
	`UDP Port Max: 3329`
	`DIFFSERV/TOS PARAMETERS RTCP Reporting Enabled? y`
	`Call Control PHB Value: 46 RTCP MONITOR SERVER PARAMETERS`
	`Audio PHB Value: 46 Use Default Server Parameters? y`
	`Video PHB Value: 26`
	`802.1P/Q PARAMETERS`
	`Call Control 802.1p Priority: 6`
	`Audio 802.1p Priority: 6`
	`Video 802.1p Priority: 5 AUDIO RESOURCE RESERVATION PARAMETERS`
	`H.323 IP ENDPOINTS RSVP Enabled? n`
	`H.323 Link Bounce Recovery? y`
	`Idle Traffic Interval (sec): 20`
	`Keep-Alive Interval (sec): 5`
	`Keep-Alive Count: 5`

Step	Description

3.	**IP Network Region 1 – Continued**
	On **Page 3**, codec sets are defined for inter-region calls. In the case of the compliance test at site 1, calls from IP network region 1 (**src rgn 1**) to IP network region 2 (**dst rgn 2**) used codec set 1. The default values were used for all other fields. At site 2, only one IP network region exists so no inter-region settings were required.
	
	`display ip-network-region 1 Page 3 of 19`
	
	`Inter Network Region Connection Management`
	
	`src dst codec direct WAN-BW-limits Video Intervening Dyn`
	`rgn rgn set WAN Units Total Norm Prio Shr Regions CAC IGAR AGL`
	`1 1 1 all`
	`1 2 1 y NoLimit n`
	`1 3 3 y NoLimit n all`

4.	**IP Network Region –Region 2**
	At site 1, IP network region 2 was created in a similar manner as IP network region 1 shown in **Step 2** but with a different name.
	
	`change ip-network-region 2 Page 1 of 19`
	`IP NETWORK REGION`
	`Region: 2`
	`Location: Authoritative Domain:`
	`Name: PN2`
	`MEDIA PARAMETERS Intra-region IP-IP Direct Audio: yes`
	`Codec Set: 1 Inter-region IP-IP Direct Audio: yes`
	`UDP Port Min: 2048 IP Audio Hairpinning? n`
	`UDP Port Max: 3329`
	`DIFFSERV/TOS PARAMETERS RTCP Reporting Enabled? y`
	`Call Control PHB Value: 46 RTCP MONITOR SERVER PARAMETERS`
	`Audio PHB Value: 46 Use Default Server Parameters? y`
	`Video PHB Value: 26`
	`802.1P/Q PARAMETERS`
	`Call Control 802.1p Priority: 6`
	`Audio 802.1p Priority: 6`
	`Video 802.1p Priority: 5 AUDIO RESOURCE RESERVATION PARAMETERS`
	`H.323 IP ENDPOINTS RSVP Enabled? n`
	`H.323 Link Bounce Recovery? y`
	`Idle Traffic Interval (sec): 20`
	`Keep-Alive Interval (sec): 5`
	`Keep-Alive Count: 5`

5.	**IP network region –Port Network 2**
	The inter-region codec setting was created similarly to **Step 3**.
	
	`display ip-network-region 2 Page 3 of 19`
	
	`Inter Network Region Connection Management`
	
	`src dst codec direct WAN-BW-limits Video Intervening Dyn`
	`rgn rgn set WAN Units Total Norm Prio Shr Regions CAC IGAR AGL`
	`2 1 1 y NoLimit n all`
	`2 2 1 all`

Step	Description

6.	**IP Node Names**
	Use the **change node-names** command to create a node name that maps to the SR140 server IP address. This node name is used in the configuration of the H.323 trunk signaling group. The example below shows the entry on Avaya Communication Manager at site 1.
	
	`change node-names ip` `Page 1 of 2`
	`IP NODE NAMES`
	`Name IP Address`
	`CLAN1A 192.45.108.55`
	`CLAN2A 192.45.108.57`
	`CMnorth 192.45.70.2`
	`MEDPRO1A 192.45.108.54`
	`MEDPRO1A-2 192.45.108.58`
	`MEDPRO2A 192.45.108.56`
	`MEDPRO2A-2 192.45.108.59`
	`SR140 192.45.80.15`
	`SES 192.45.108.50`
	`default 0.0.0.0`
	`procr 192.45.108.51`

7.	**IP Network Map**
	If the SR140 server is to be located in an IP network region other than the default region of 1, then the region is assigned using the **change ip-network-map** command. In the case of the compliance test, the SR140 server IP address at site 1 is assigned to IP network region 2 as shown in the example below. At site 2, the SR140 server is located in the default IP network region 1, so it does not require an IP address map entry.
	
	`change ip-network-map` `Page 1 of 32`
	`IP ADDRESS MAPPING`
	
	`Emergency`
	`Subnet Location`
	`From IP Address (To IP Address or Mask) Region` `VLAN Extension`
	`192.45 .80 .15 192.45 .80 .15 2` `n`
	`. . . . . .` `n`

Step	Description

8.	**Codecs**
	Use the **change ip-codec-set** command to verify that G.711MU or G.711A is contained in the codec list. The example below shows the values used in the compliance test.
	
	`display ip-codec-set 1 Page 1 of 2`
	
	`IP Codec Set`
	
	`Codec Set: 1`
	
	`Audio Silence Frames Packet`
	`Codec Suppression Per Pkt Size(ms)`
	`1: G.711MU n 2 20`
	`2:`

9.	**Fax**
	On **Page 2**, set that the **FAX Mode** field to ***t.38-standard.*** This is necessary to support the SR140 server added to port network 2. The **Modem Mode** field should be set to ***off***.
	
	`change ip-codec-set 1 Page 2 of 2`
	
	`IP Codec Set`
	
	`Allow Direct-IP Multimedia? n`
	
	`Mode Redundancy`
	`FAX t.38-standard 0`
	`Modem off 0`
	`TDD/TTY US 3`
	`Clear-channel n 0`

Step	Description

10.	**Signaling Group**
	Use the **add signaling group** command to create a signaling group for use by the H.323 trunk to the SR140 server. For the compliance test at site 1, signaling group 3 was configured using the parameters highlighted below. Default values may be used for all other fields.
	▪ Set the **Group Type** to ***h.323***.
	▪ 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 CLAN circuit pack used to connect to the SR140 server. Node names are defined using the **change node-names ip** command. For site 2, this node name would map to the IP address of the Avaya Media Server (***procr***).
	▪ Set the **Far-end Node Name** to the node name that maps to the IP address of the SR140 server.
	▪ Set the **Near-end Listen Port** and **Far-end Listen Port** to ***1720.***
	▪ Set the **Far-end Network Region** to the IP network region which contains the SR140.
	▪ Set the **Direct IP-IP Audio Connections** field to ***n***. This field must be set to ***n*** for interoperability with the SR140.
	▪ The default values were used for all other fields.
	
	`add signaling-group 3 Page 1 of 5`
	`SIGNALING GROUP`
	
	`Group Number: 3 **Group Type: h.323**`
	`Remote Office? n Max number of NCA TSC: 0`
	`SBS? n Max number of CA TSC: 0`
	`IP Video? n Trunk Group for NCA TSC:`
	`Trunk Group for Channel Selection:`
	`TSC Supplementary Service Protocol: a`
	`T303 Timer(sec): 10`
	
	`**Near-end Node Name: CLAN2A Far-end Node Name: SR140**`
	`**Near-end Listen Port: 1720 Far-end Listen Port: 1720**`
	`**Far-end Network Region: 2**`
	`LRQ Required? n Calls Share IP Signaling Connection? n`
	`RRQ Required? n`
	`Bypass If IP Threshold Exceeded? n`
	`H.235 Annex H Required? n`
	`DTMF over IP: out-of-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`
	`H.323 Outgoing Direct Media? n DCP/Analog Bearer Capability: 3.1kHz`

Step	Description
11.	**Trunk Group** Use the **add trunk group** command to create a trunk group for the H.323 trunk to the SR140 server. For the compliance test at site 1, trunk group 3 was configured using the parameters highlighted below. Default values may be used for all other fields. On **Page 1**: ▪ Set the **Group Type** field to ***isdn***. ▪ 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 ***H.323***. ▪ Set the **Service Type** field to ***tie***. ▪ Set the **Member Assignment Method** to ***auto***. ▪ 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. add trunk-group 3 Page 1 of 21 TRUNK GROUP Group Number: 3 **Group Type: isdn** CDR Reports: y **Group Name: SR140 TG** COR: 1 TN: 1 **TAC: *003** 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: 3** **Number of Members: 6**

Step	Description

12.	**Trunk Group – continued**
	On **Page 3**:
	▪ Set the **Send Name** field and **Send Calling Number** field to ***y***. The enables sending 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.
	
	`add trunk-group 3 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`**
	`UUI IE Treatment: service-provider`
	`Replace Restricted Numbers? n`
	`Replace Unavailable Numbers? n`
	`Send Connected Number: n`
	`Hold/Unhold Notifications? n`
	`Send UUI IE? y Modify Tandem Calling Number? n`
	`Send UCID? n`
	`Send Codeset 6/7 LAI IE? y`

13.	**Signaling Group – Update**
	Use the **change signaling-group** command to update the **Trunk Group for Channel Selection** field with the trunk group created in **Steps 11 – 12**.
	
	`change signaling-group 3 Page 1 of 5`
	`SIGNALING GROUP`
	`Group Number: 3 Group Type: h.323`
	`Remote Office? n Max number of NCA TSC: 0`
	`SBS? n Max number of CA TSC: 0`
	`IP Video? n Trunk Group for NCA TSC:`
	`Trunk Group for Channel Selection: 3`
	`TSC Supplementary Service Protocol: a`
	`T303 Timer(sec): 10`
	`Near-end Node Name: CLAN2A Far-end Node Name: SR140`
	`Near-end Listen Port: 1720 Far-end Listen Port: 1720`
	`Far-end Network Region: 2`
	`LRQ Required? n Calls Share IP Signaling Connection? n`
	`RRQ Required? n`
	`Bypass If IP Threshold Exceeded? n`
	`H.235 Annex H Required? n`
	`DTMF over IP: out-of-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`
	`H.323 Outgoing Direct Media? n DCP/Analog Bearer Capability: 3.1kHz`

Step	Description

14.	**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 11**. In the example shown below, all calls originating from a 5-digit extension beginning with 2 and routed across any trunk group (**Trk Grp** column is blank) will be sent as a 5-digit calling number.
	
	`change public-unknown-numbering 0 Page 1 of 2`
	`NUMBERING - PUBLIC/UNKNOWN FORMAT`
	`Total`
	`Ext Ext Trk CPN CPN`
	`Len Code Grp(s) Prefix Len`
	`Total Administered: 1`
	`5 2 5 Maximum Entries: 9999`

15.	**Route Pattern**
	Use the **change route-pattern** command to create a route pattern that will route calls to the H.323 trunk that connects to the SR140.
	
	The example below shows the route pattern used for the compliance test at site 1. A descriptive name was entered for the **Pattern Name** field. The **Grp No** field was set to the trunk group created in **Steps 11 - 12**. 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.
	
	`display route-pattern 3 Page 1 of 3`
	`Pattern Number: 3 Pattern Name: SR140`
	`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: 3 0 n user`
	`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`
	`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`

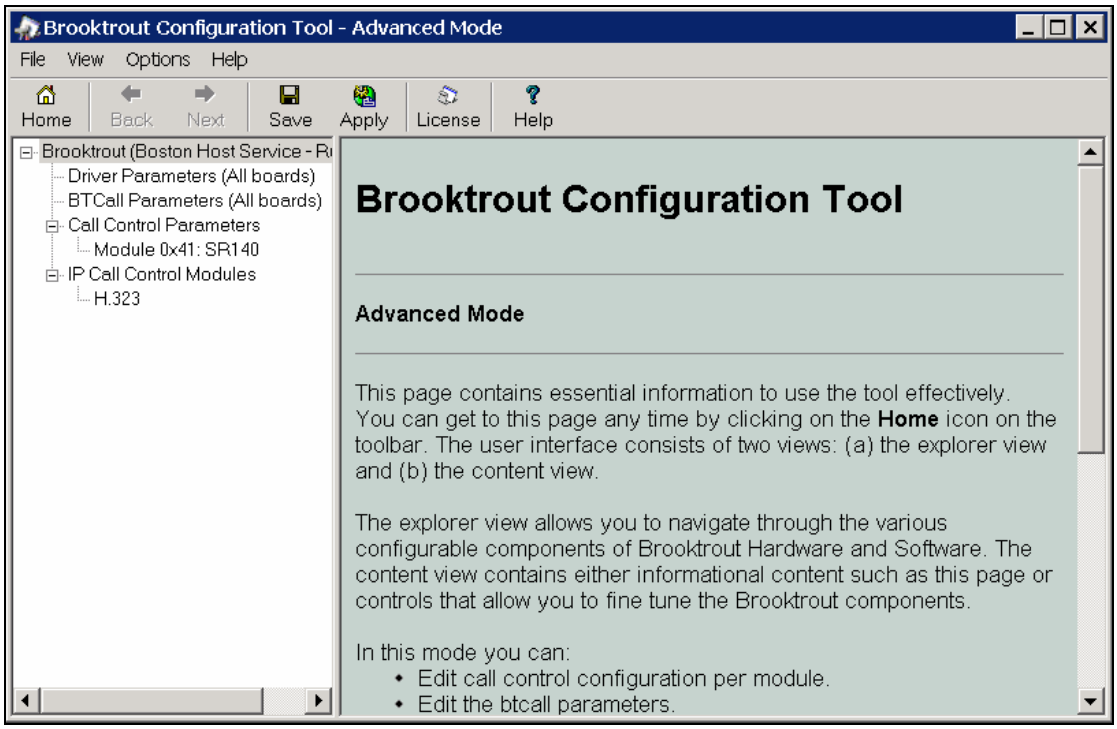
Step	Description
16.	**Routing Calls to the SR140** Automatic Alternate Routing (AAR) was used to route calls to the SR140. Use the **change aar analysis** command to create an entry in the AAR Digit Analysis Table for this purpose. The example below shows entries previously created for site 1 using the **display aar analysis** command. The highlighted entry specifies that numbers that begin with 7 and are 5 digits long, use route pattern 3. Route pattern 3 routes calls to the SR140.

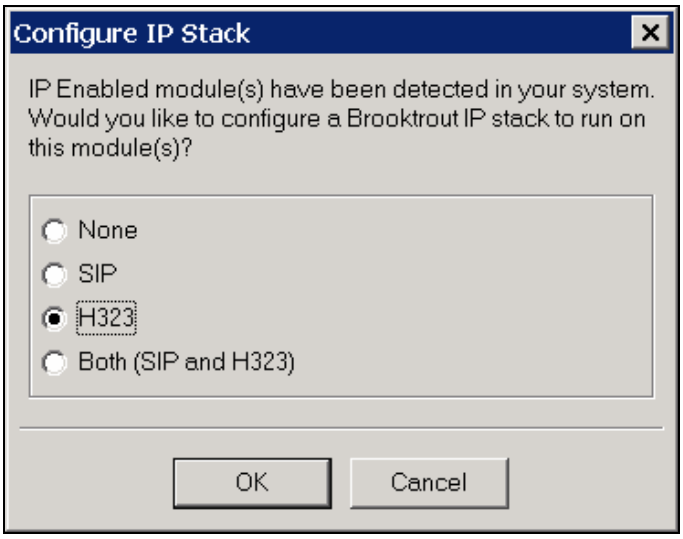
```
display aar analysis 0                                      Page   1 of   2
                           AAR DIGIT ANALYSIS TABLE
                                 Location:  all           Percent Full:    1

          Dialed           Total     Route    Call   Node  ANI
          String          Min  Max  Pattern   Type   Num   Reqd
    50                    5    5     4        aar          n
    52                    5    5     4        aar          n
    7                     5    5     3        aar          n
```

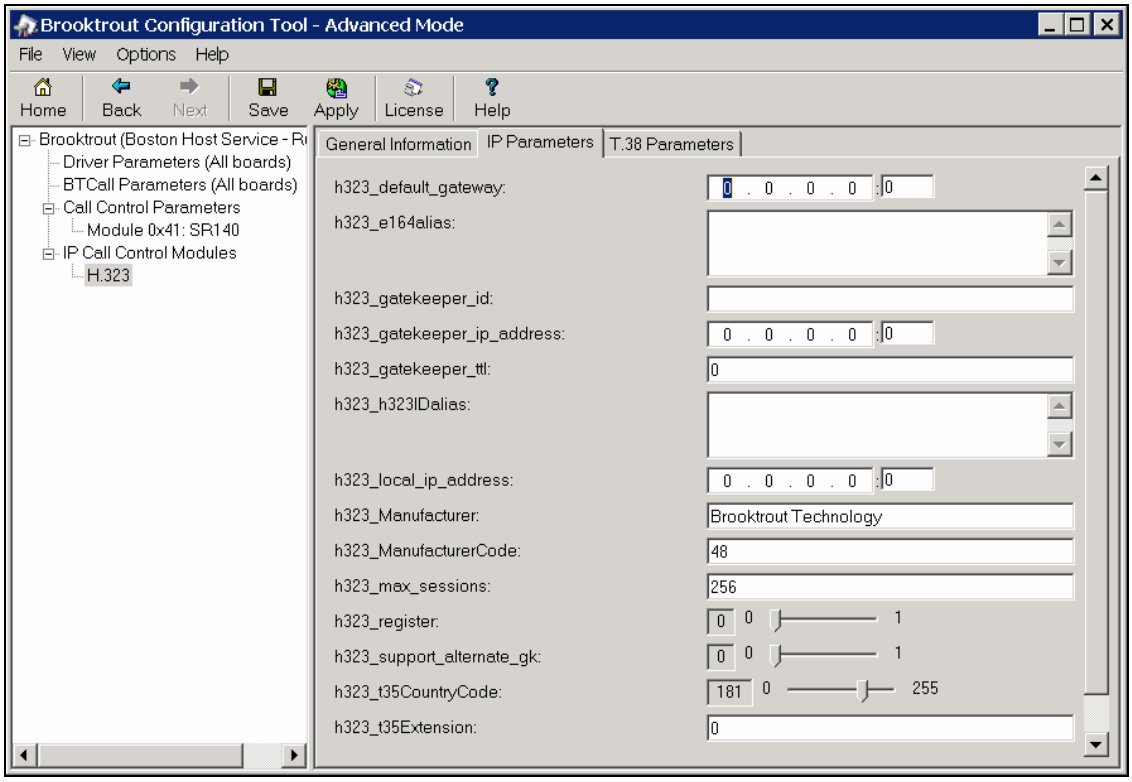
4. Configure Dialogic Brooktrout SR140

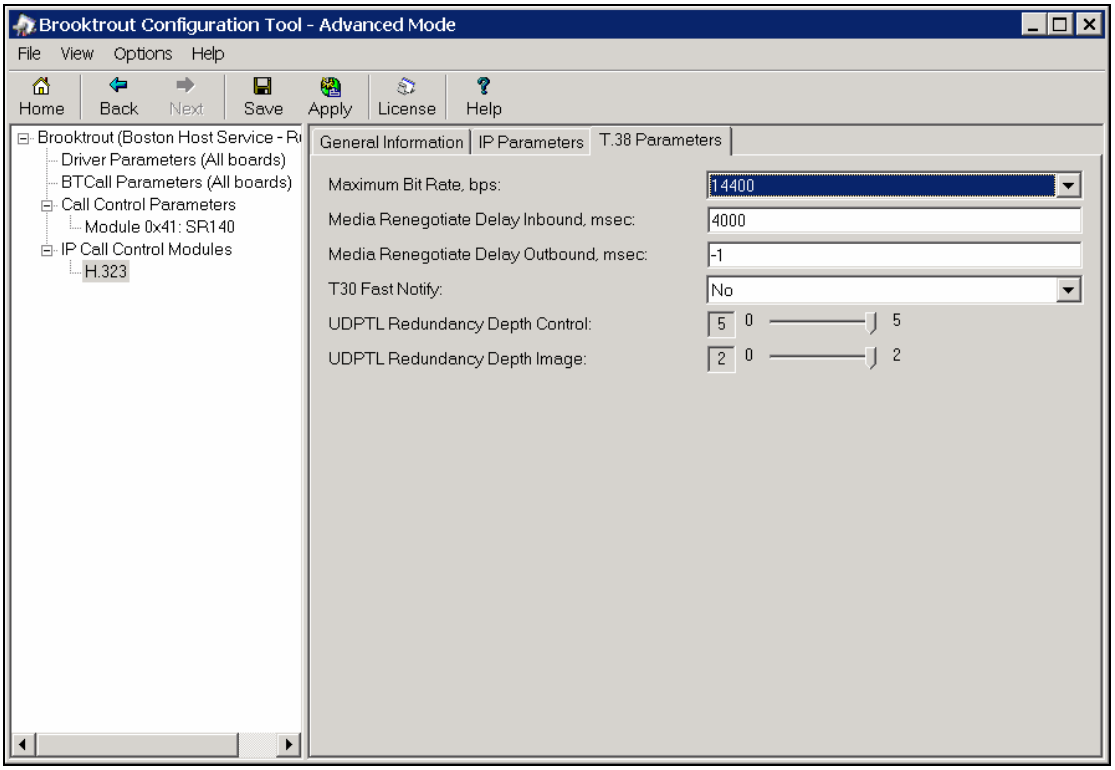
This section describes the configuration of the SR140. It assumes that all required software components have been installed and properly licensed as described in [3]. Some of the steps shown below may have been completed as part of the installation procedures and are simply shown here for completeness.

The examples shown in this section refer to site 1. However, unless specified otherwise, these same steps also apply to site 2 using values appropriate for site 2 from **Figure 1**.

Step	Description
1.	**Brooktrout Configuration Tool** The SR140 is configured using a Windows application called the Brooktrout Configuration Tool. Launch the application from the Windows Start Menu. In the **Brooktrout Configuration Tool** window that appears, navigate to **Options→ Configure IP Stack** to configure the IP stack settings. 

Step	Description
2.	**Configure IP Stack** A **Configure IP Stack** pop-up window appears. Select the **H.323** option. Click **OK** to continue. 

Step	Description
3.	**H.323 IP Parameters** From the **Brooktrout Configuration Tool** window, navigate to **Brooktrout→IP Call Control Modules→H.323.** On the **IP Parameters** tab, leave all the default values as shown below. The value of 0 used for many of the parameters, instructs the SR140 to accept these values from the controlling fax application; otherwise, use its default programmed values for these parameters. In the case of the compliance test, the controlling fax application is the Dialogic test utilities. When sending or receiving a fax using the test utilities at site 1, the IP address of the CLAN circuit pack that terminates the H.323 trunk on Avaya Communication Manager is specified on the test utilities command line. This is passed to the SR140 as the h323_default_gateway parameter. It is not necessary to pass the SR140 the port number to use for the h323_default_gateway because the SR140 will use the default programmed value of 1720. 

Step	Description
4.	**T.38 Parameters** On the **T.38 Parameters** tab, set the **Media Renegotiate Delay Outbound** field to ***-1***. Click the **Apply** button followed by the **Save** button to save the settings. Navigate to **File→Exit** to exit the Brooktrout Configuration Tool. 

5. Interoperability Compliance Testing

This section describes the compliance testing used to verify the interoperability of the Dialogic Brooktrout SR140 Fax Software with Avaya Communication Manager. This section covers the general test approach and the test results.

5.1. General Test Approach

The general test approach was to make intra-site and inter-site fax calls to and from the SR140. The inter-site calls were made using both an H.323 trunk and an ISDN-PRI trunk between sites. Faxes were sent with various page lengths, and resolutions. For performance testing, 100 2-page faxes were continuously sent between the two SR140 servers. Serviceability testing included verifying proper operation/recovery from failed cables, unavailable resources, Avaya Communication Manager restarts and SR140 restarts. Fax calls were also tested with different Avaya Media Gateway media resources to process the fax data. This included the TN2302 MedPro circuit pack, the TN2602 MedPro circuit pack and the integrated VOIP engine of the Avaya G700 Media Gateway.

5.2. Test Results

The SR140 successfully passed compliance testing. The following observations were made during the compliance test:

- Shuffling must be disabled on the H.323 trunk between the SR140 and Avaya Communication Manager.
- Fax failures/retransmissions were observed when using the TN2602 in the Avaya Media Gateway and receiving faxes over an H.323 trunk from the remote site and terminating on the local SR140 server. This is due to having multiple media resources in the path of the fax transmission which add additional delay. The multiple resources are due to the fact that shuffling must be disabled on the H.323 trunk between Avaya Communication Manager and the SR140 server. Thus, it is not recommended that the TN2602 be used in this particular scenario.

6. Verification Steps

The following steps may be used to verify the configuration:

- From the Avaya Communication Manager SAT, use the **status signaling-group** command to verify that the H.323 signaling group configured in **Section 3**, **Step 10** is in-service.
- From the Avaya Communication Manager SAT, use the **status trunk-group** command to verify that the H.323 trunk group configured in **Section 3**, **Steps 11 - 12** is in-service.
- Verify that fax calls can be placed to/from the SR140.

7. Support

For technical support on the SR140, contact Dialogic via the **Services & Support** tab at www.dialogic.com.

8. Conclusion

These Application Notes describe the procedures required to configure the Dialogic Brooktrout SR140 Fax Software to interoperate with Avaya Communication Manager. The SR140 successfully passed compliance testing with the observations documented in **Section 5.2**.

9. Additional References

[1] *Feature Description and Implementation For Avaya Communication Manager*, Doc # 555-245-205, Issue 6.0, January 2008.

[2] *Administrator Guide for Avaya Communication Manager*, Doc # 03-300509, Issue 4, January 2008.

[3] *Brooktrout SR140 SDK Installation and Configuration Guide*.

[4] *Brooktrout SR140 Fax Software Windows User Guide*.

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

Product documentation for the SR140 may be found at http://www.dialogic.com.

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