Avaya Solution & Interoperability Test Lab

Application Notes for Configuring FaxCore 2007 Fax Server with Avaya Communication Manager via H.323 - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring the FaxCore 2007 fax server with Avaya Communication Manager using an H.323 trunk.

FaxCore 2007 is a software based fax server that sends and receives fax calls over an IP network. In the tested configuration, Avaya Communication Manager directs fax calls to/from FaxCore 2007 fax server via an H.323 trunk established across the 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.

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1. Introduction

These Application Notes describe the procedures for configuring FaxCore 2007 with Avaya Communication Manager using an H.323 trunk.

FaxCore 2007 is a software based fax server that sends and receives fax calls over an IP network. FaxCore 2007 includes the Brooktrout SR140 T.38 Fax over Internet Protocol (FoIP) driver from Dialogic. In the tested configuration, Avaya Communication Manager directs fax calls to/from FaxCore 2007 via an H.323 trunk established across the IP network.

1.1. Interoperability Compliance Testing

The compliance test tested interoperability between FaxCore 2007 and Avaya Communication Manager by making intra-site and inter-site fax calls to and from FaxCore 2007 servers that are connected to the Avaya Communication Managers via H.323 trunks (see **Section 2** for detailed configuration). Specifically following fax operations were tested in the setup for the compliance test:

- Fax from FaxCore 2007 server to/from fax machine at local site
- Fax from FaxCore 2007 server to/from fax machine at remote site
- Fax from FaxCore 2007 server to/from FaxCore 2007 server at remote site

In addition, the inter-site calls were tested by 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, a large number of 2-page faxes were continuously sent between the two FaxCore 2007 servers. Serviceability testing included verifying proper operation/recovery from failed cables, unavailable resources, Avaya Communication Manager restarts and FaxCore 2007 server restarts. Fax calls were also tested with different Avaya Media Gateway media resources to process the fax data. This included the TN2302AP IP Media Processor (MedPro) circuit pack, the TN2602AP IP Media Processor circuit pack and the integrated Voice over Internet Protocol (VoIP) engine of the Avaya G700 Media Gateway.

1.2. Support

Technical support for FaxCore 2007 can be obtained by contacting FaxCore at

- Phone: (720) 870-2900 x302
- Email: support@faxcore.com
- Web: http://www.faxcore.com

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2. 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.

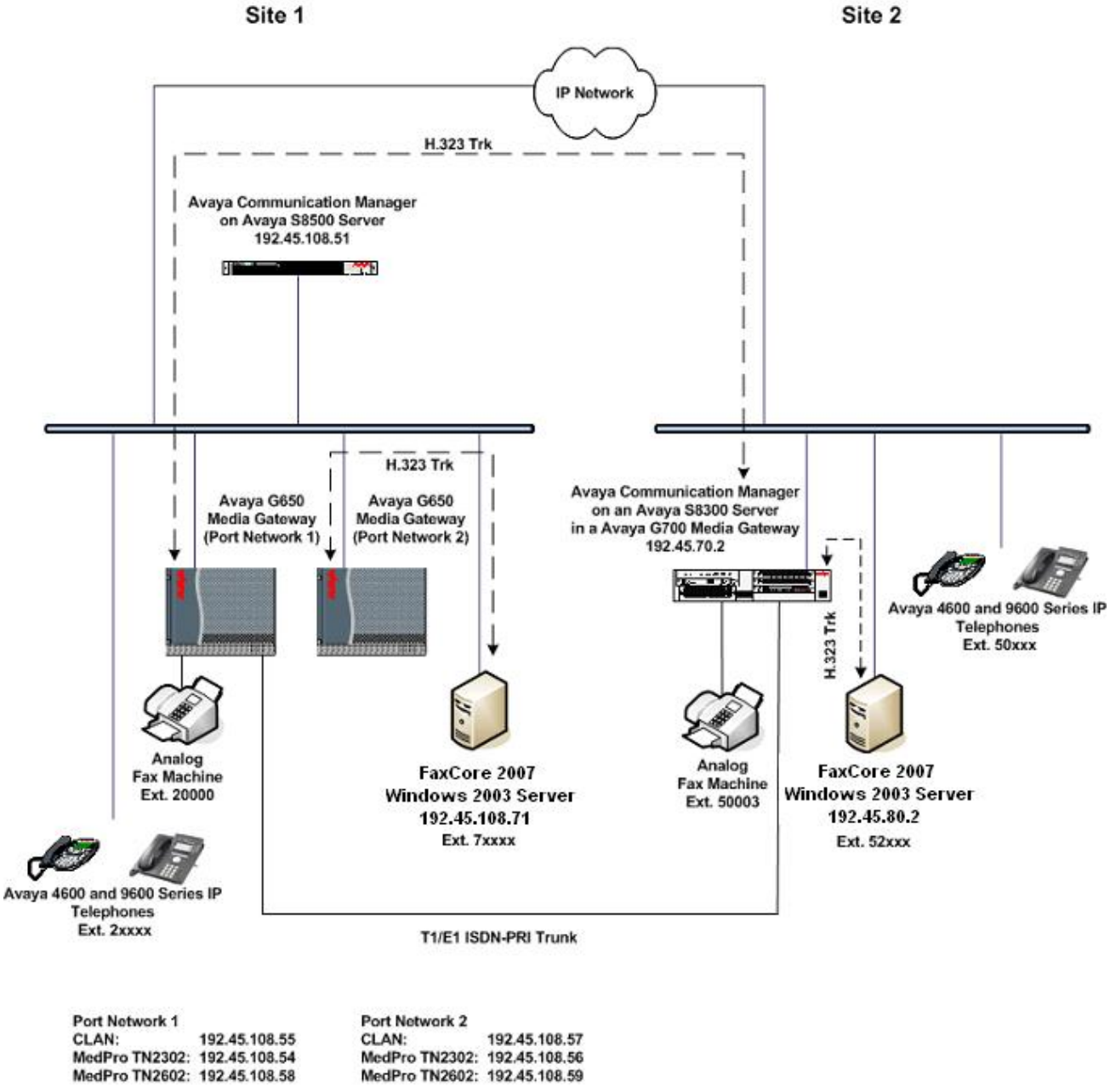

Figure 1: FaxCore 2007 Test Configuration

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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. FaxCore 2007 at this site is running on a FaxCore Mini Appliance (that bundles FaxCore 2007 and all supporting software on a packaged Windows 2003 Server PC) 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: TN2302AP and TN2602AP. 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. FaxCore 2007 at this site is also running on a FaxCore Mini Appliance 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 FoIP faxing operations and vice versa.

Outbound fax calls originating from FaxCore 2007 server 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 FaxCore 2007 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 FaxCore 2007 server.

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3. 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 5.1.0 with Service Pack (01.0.414.3-15962)
Avaya G650 Media Gateway (at Site 1) - 2 CLANs - 2 MedPros – TN2302 - 2 MedPros – TN2602	 TN799DP - HW01 FW26 TN2302AP - HW20 FW118 TN2602AP - HW02 FW040
Avaya S8300 Server (at Site 2)	Avaya Communication Manager 5.1.1 with Service Pack (01.1.415.1-16402)
Avaya G700 Media Gateway (at Site 2)	28.18.0
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 Telephones	-
Analog Fax Machines	-
FaxCore 2007 on Mini Appliance (Windows 2003 Server SP2)	Release 101008
Dialogic Brooktrout SR140 Config Tool Boston Bfv API Boston Driver Boston SDK Boot Rom	5.4.1 Build 14 v5.4.01 (Build 14) v.5.4.00 v5.2.01 (Build 14) 3.2.1B29

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4. Configure Avaya Communication Manager

This section describes the Avaya Communication Manager configuration necessary to interoperate with FaxCore 2007. It focuses on the configuration of the H.323 trunk between Avaya Communication Manager and FaxCore 2007. 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. 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
```


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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 and 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

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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

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Step	Description
6.	**IP Node Names** Use the **change node-names ip** command to create a node name that maps to the FaxCore 2007 server IP address. This node name is used in the configuration of the H.323 trunk signaling group in **Step 10**. The example below shows the entry on the 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 **FaxCore 192.45.108.71** SES 192.45.108.50 default 0.0.0.0 procr 192.45.108.51
7.	**IP Network Map** If the FaxCore 2007 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 FaxCore 2007 server IP address at site 1 is assigned to IP network region 2 as shown in the example below. At site 2, the FaxCore 2007 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 .108.71 192.45 .108.71 2** n . . . . . . n

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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 value 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 the **FAX Mode** field to ***t.38-standard*.** This is necessary to support the FaxCore 2007 server assigned to IP network region 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`

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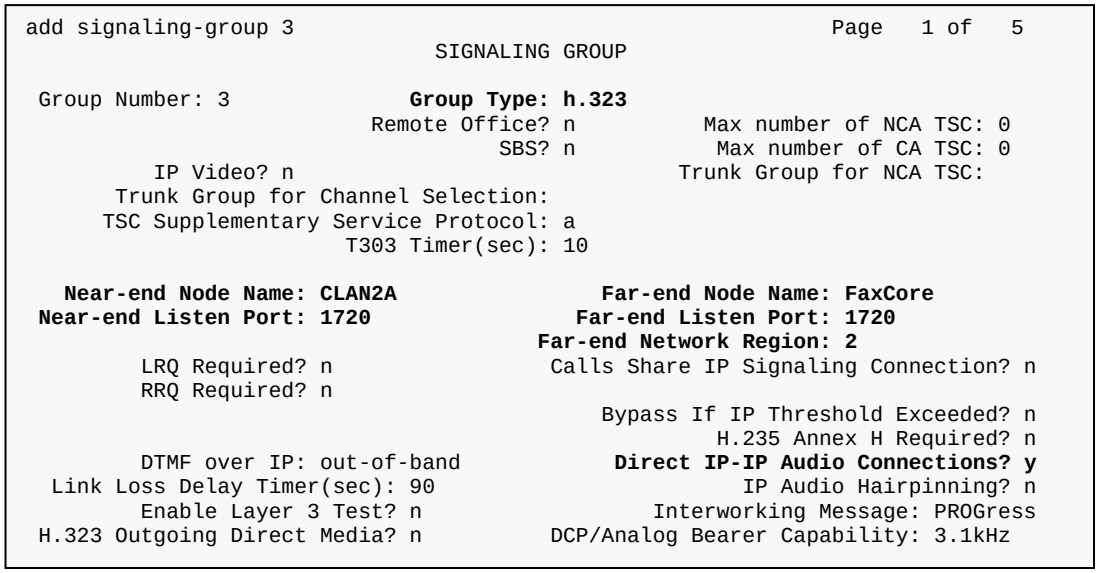
Step	Description
10.	**Signaling Group** Use the **add signaling-group** command to create a signaling group for use by the H.323 trunk to the FaxCore 2007 server. For the compliance test at site 1, signaling group 3 was configured using the parameters highlighted below. Default values may be used for 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 FaxCore 2007 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 S8300 Server (***procr***). ▪ Set the **Far-end Node Name** to the node name that maps to the IP address of the FaxCore 2007 server configured in **Step 6**. ▪ 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 FaxCore 2007 server. ▪ Set the **Direct IP-IP Audio Connections** field to ***y***. This setting enables media shuffling on the trunk level (see **Step 2** on **IP-IP Direct Audio**). ▪ 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: FaxCore
 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? y
  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
```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Step	Description

11.	**Trunk Group**
	Use the **add trunk group** command to create a trunk group for the H.323 trunk to the FaxCore 2007 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: FaxCore 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**`

12.	**Trunk Group – continued**
	On **Page 2**:
	Set the **Codeset to Send Display** field to ***0***.
	
	`add trunk-group 3 Page 2 of 21`
	`Group Type: isdn`
	`TRUNK PARAMETERS`
	`**Codeset to Send Display: 0** Codeset to Send National IEs: 6`
	`Charge Advice: none`
	`Supplementary Service Protocol: a Digit Handling (in/out): enbloc/enbloc`
	`Digital Loss Group: 18`
	`Incoming Calling Number - Delete: Insert: Format:`
	`Disconnect Supervision - In? y Out? n`
	`Answer Supervision Timeout: 0`

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Step	Description

13.	**Trunk Group – continued**
	On **Page 3**:
	▪ 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 **Numbering 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`

14.	**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 – 13**.
	
	`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: FaxCore`
	`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`

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Step	Description
15.	**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
16.	**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 FaxCore 2007 server. 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 – 13**. 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. change route-pattern 3 Page 1 of 3 Pattern Number: 3 **Pattern Name: FaxCore** 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

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Step	Description
17.	**Routing Calls to FaxCore 2007** Automatic Alternate Routing (AAR) was used to route calls to FaxCore 2007. 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 0** command. The 3rd highlighted entry specifies that numbers that begin with 7 and are 5 digits long use route pattern 3. Route pattern 3 routes calls to FaxCore 2007 at Site 1.
18.	**Routing Calls From Site 1 to Site 2** The AAR Digit Analysis Table in **Step 17** also shows that a 5-digit dialed number starting with 50 or 52 will use route pattern 4 by AAR. The previously created route pattern 4 as displayed below specifies that the call from Site 1 to the fax machine at 50003 or the FaxCore 2007 server at 52xxx at Site 2 will be routed to trunk group 4 which is an administered ISDN-PRI trunk. In the same way, this trunk group can be changed to an H.323 trunk for fax calls from Site 1 to Site 2 to go on an H.323 trunk.

```
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
```

```
display route-pattern 4                                     Page   1 of   3
                    Pattern Number: 4   Pattern Name: CMnorth RP
                                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: 4    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
 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
```


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Step	Description
19.	**Turn off Media Shuffling on H.323 Trunk between Sites** Use the **change signaling-group** command to turn off media shuffling on the previously administered H.323 trunk between Site 1 and Site 2 (in this compliance test, trunk group 5 was used at Site 1). This configuration is necessary to ensure successful fax operations between the 2 FaxCore 20007 servers across the H.323 trunk.

```
change signaling-group 5                                        Page   1 of   5
                               SIGNALING GROUP

 Group Number: 5              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: 5
     TSC Supplementary Service Protocol: a
                         T303 Timer(sec): 10

   Near-end Node Name: CLAN1A                Far-end Node Name: CMnorth
 Near-end Listen Port: 1720                Far-end Listen Port: 1720
                                         Far-end Network Region: 3
         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
```


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5. Configure FaxCore 2007

This section describes the configuration of FaxCore 2007. It assumes that the application and all required software components, including the Brooktrout SR140 fax software, have been installed and properly licensed. For instructions on sending and receiving faxes, consult the FaxCore 2007 Administrator Manual [3] and the FaxCore 2007 Getting Started Guide [4].

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

Step	Description
1.	**Launch Brooktrout Configuration Tool** On the FaxCore 2007 server, verify from the Windows Services applet that the following 2 services are not running; stop them if necessary: • Dialogic Corporation Boston Host Service • FXC2.FaxAgent Launch the Brooktrout Configuration Tool from Windows Start Menu. Navigate to **Start → All Programs → Brooktrout Configuration Tool**.

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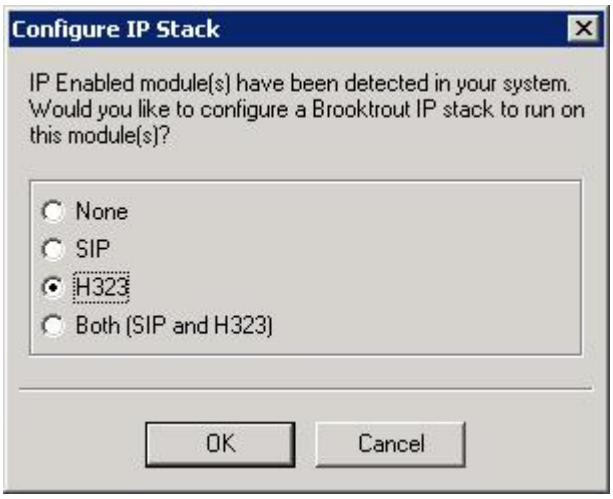
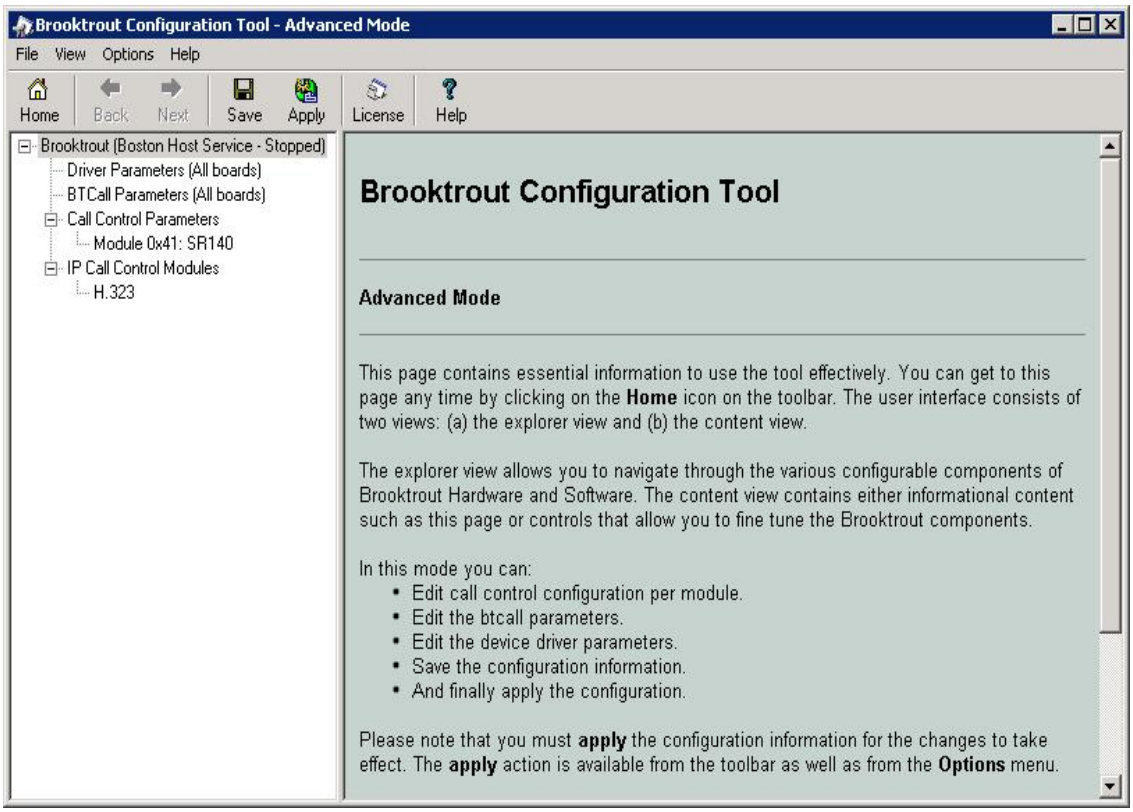
Step	Description
2.	**Configure IP Stack** A Configure IP Stack window is displayed on first invocation of the Brooktrout SR140 configuration tool (assuming the Brooktrout SR-140 licenses were installed):  Choose **H323** and click **OK**. The following SR140 configuration tool window is displayed. 

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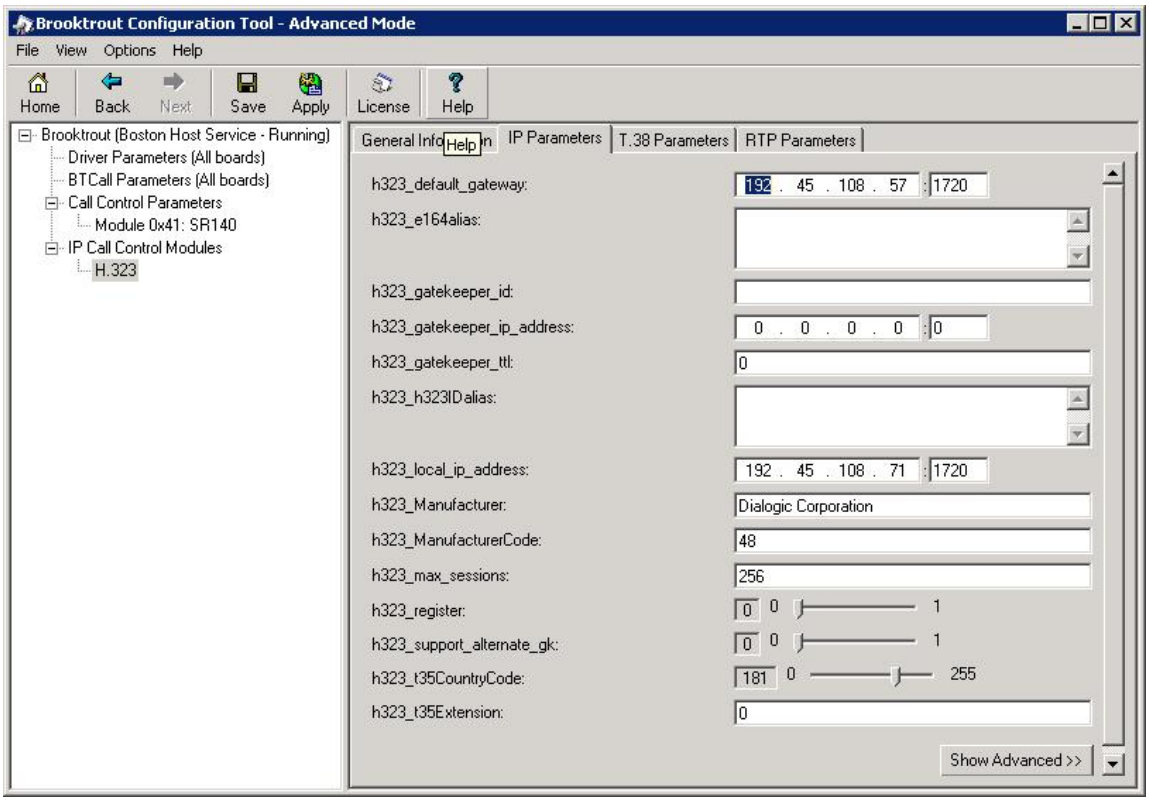
Step	Description
3.	**Configure Driver IP Parameters** On the main screen, navigate to **Brooktrout → IP Call Control Modules → H.323** in the left hand tree menu. Select the **IP Parameters** tab. Configure the fields as follows: • **h323_default_gateway** – for Site 1, set to the IP address of the CLAN circuit pack used to connect to the FaxCore 2007 server; for Site 2, set to the IP address of the Avaya S8300 Server. The associated port should be set to ***1720*** as in **Step 10** of Avaya Communication Manager configuration • **h323_local_ip_address** – set to the IP address of the FaxCore 2007 server; port should be set to ***1720*** Use default values for all other fields. . 

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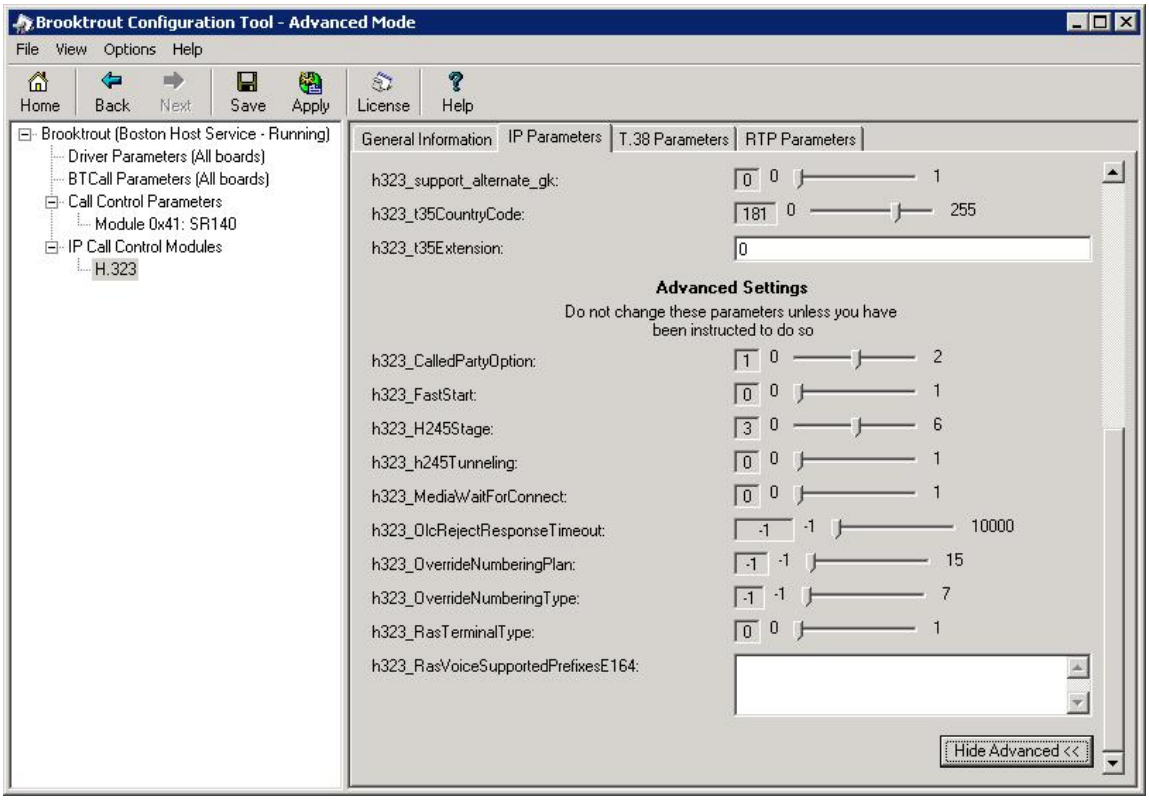
Step	Description
4.	**Configure Advanced Driver IP Parameters** On the **IP Parameters** screen, click the **Show Advanced** button. Configure the fields as follows: • **h323_FastStart** – set to ***0*** • **h323_H245Stage** – set to ***3*** • **h323_h245Tunneling** – set to ***0*** Use default values for all other fields. 

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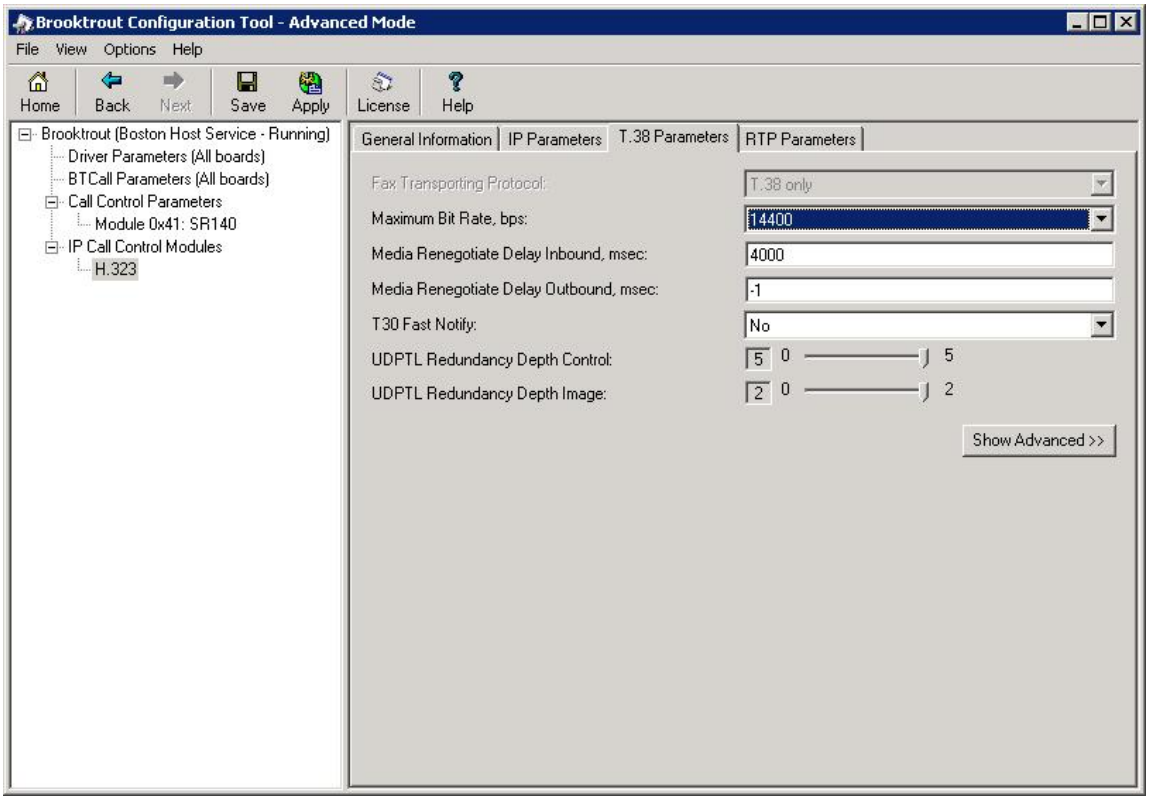
Step	Description
5.	**Configure T.38 Parameters** Select the **T.38 Parameters** tab. Configure the fields as shown below in the screenshot. 
6.	After verifying all the above parameters are properly set, click **Save**, then **Apply** in the button menu. This will start the **Dialogic Corporation Boston Host Service**. Verify from the Windows Services that the service was started (not shown). Then start the **FXC2.FaxAgent** service from the Windows Services (not shown).

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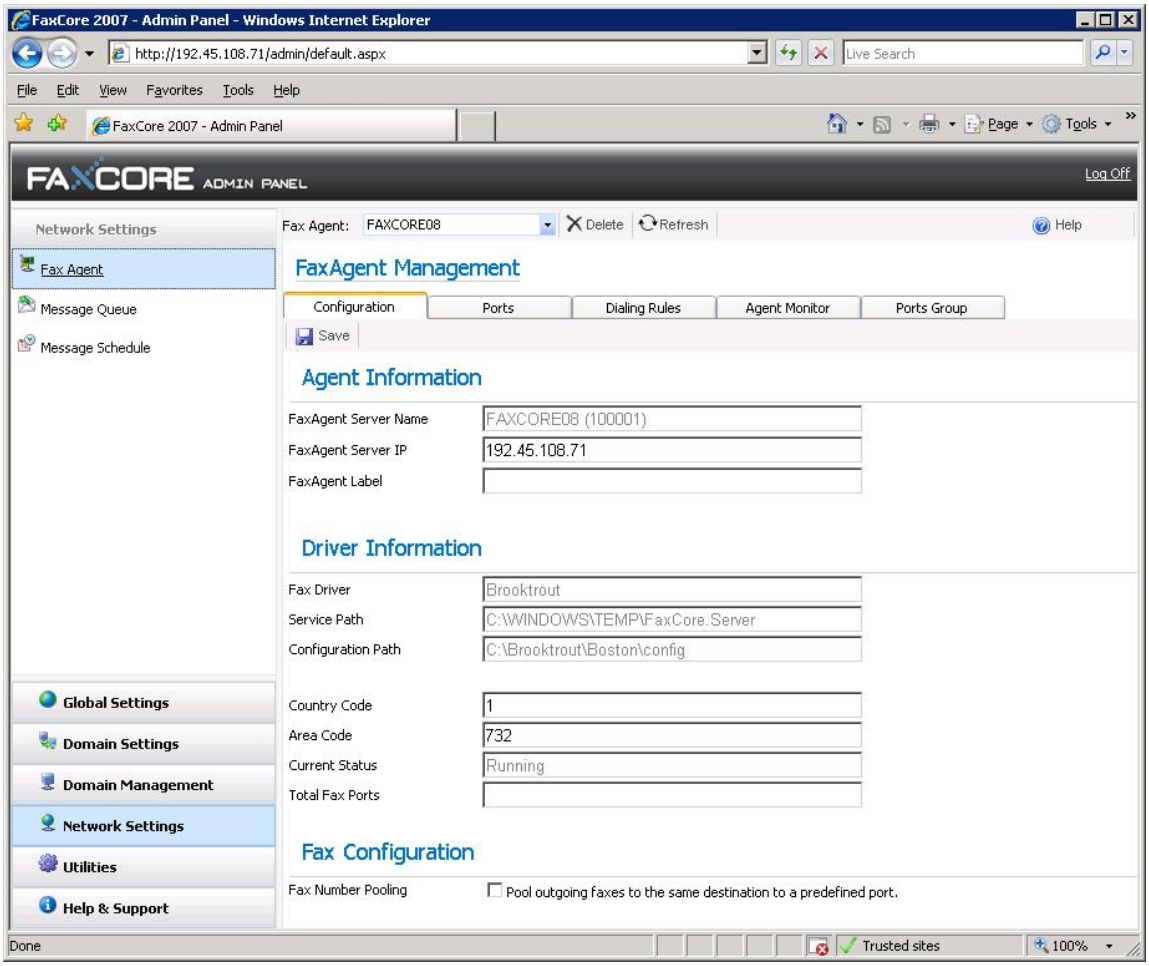
Step	Description
7.	**Verify FaxAgent Server IP** On the FaxCore 2007 server, access http://localhost/admin in the web browser. Log in with appropriate login credentials. Click on **Network Settings** in the lower left navigation tree, and then click **Fax Agent** in the upper left navigation tree. Select the **Configuration** tab in the display area. Verify that the **FaxAgent Server IP** is correctly set to the IP address of the FaxCore 2007 server. 

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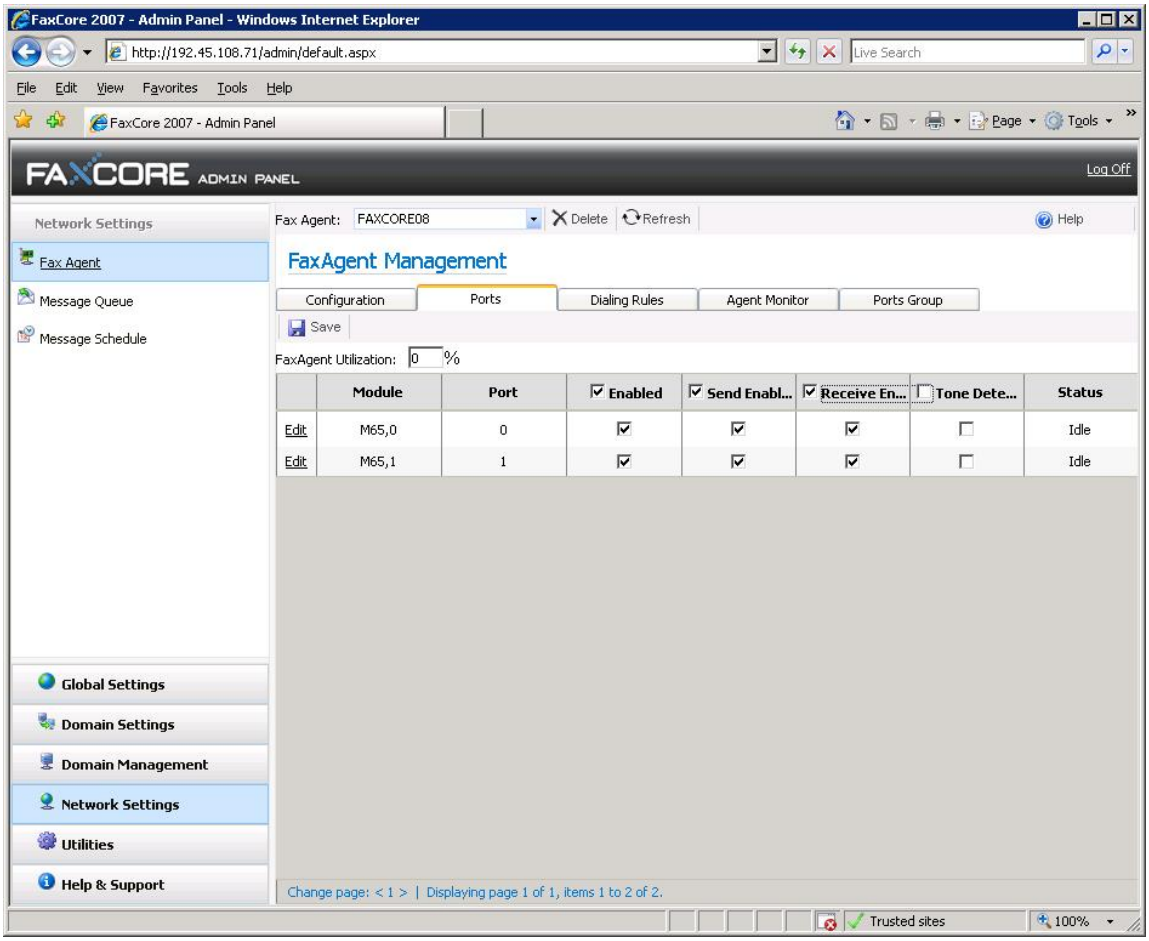
Step	Description
8.	**Configure Ports** Select the **Ports** tab in the browser display area. Enable all available ports (fax channels) for both **Send** and **Receive** as shown below: 

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6. General Test Approach and Test Results

This section describes the compliance testing used to verify the interoperability of FaxCore 2007 with Avaya Communication Manager. This section covers the general test approach and the test results.

6.1. General Test Approach

The general test approach was to make intra-site and inter-site fax calls to and from FaxCore 2007. The inter-site calls were made using both an H.323 trunk and an ISDN-PRI trunk between the sites. Faxes were sent with various page lengths, and resolutions. For performance testing, a large number of 2-page faxes were continuously sent between the two FaxCore 2007 servers. Serviceability testing included verifying proper operation/recovery from failed cables, unavailable resources, Avaya Communication Manager restarts and FaxCore 2007 server 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.

6.2. Test Results

FaxCore 2007 successfully passed compliance testing. The following observation was made during the compliance test:

- With media shuffling enabled on all the H.323 trunks (the H.323 trunks between FaxCore 2007 server and Avaya Communication Managers as well as the H.323 trunk between sites), fax failures were observed when sending faxes between the fax servers at each site. In the case of the compliance test, the working configuration for this scenario was to turn off media shuffling on the H.323 trunk between the 2 sites.

7. 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 groups configured in **Section 4**, **Step 10** and **Step 19** are 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 4**, **Steps 11 - 13** is in-service.
- Verify that fax calls can be placed to/from FaxCore 2007 server.
- From the Avaya Communication Manager SAT, use the **list trace tac** command to verify that fax calls are routed to the expected trunks.

8. Conclusion

These Application Notes describe the procedures required to configure FaxCore 2007 to interoperate with Avaya Communication Manager. FaxCore 2007 successfully passed compliance testing with the observations documented in **Section 6.2**.

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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] *FaxCore 2007 Administrator Guide*, v1.0.
[4] *FaxCore 2007 Getting Started Guide*, v1.0.

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

Product documentation for FaxCore 2007 may be obtained by contacting FaxCore support (see **Section 1.2** for contact information).

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